

FOR BIDDING PURPOSES ONLY

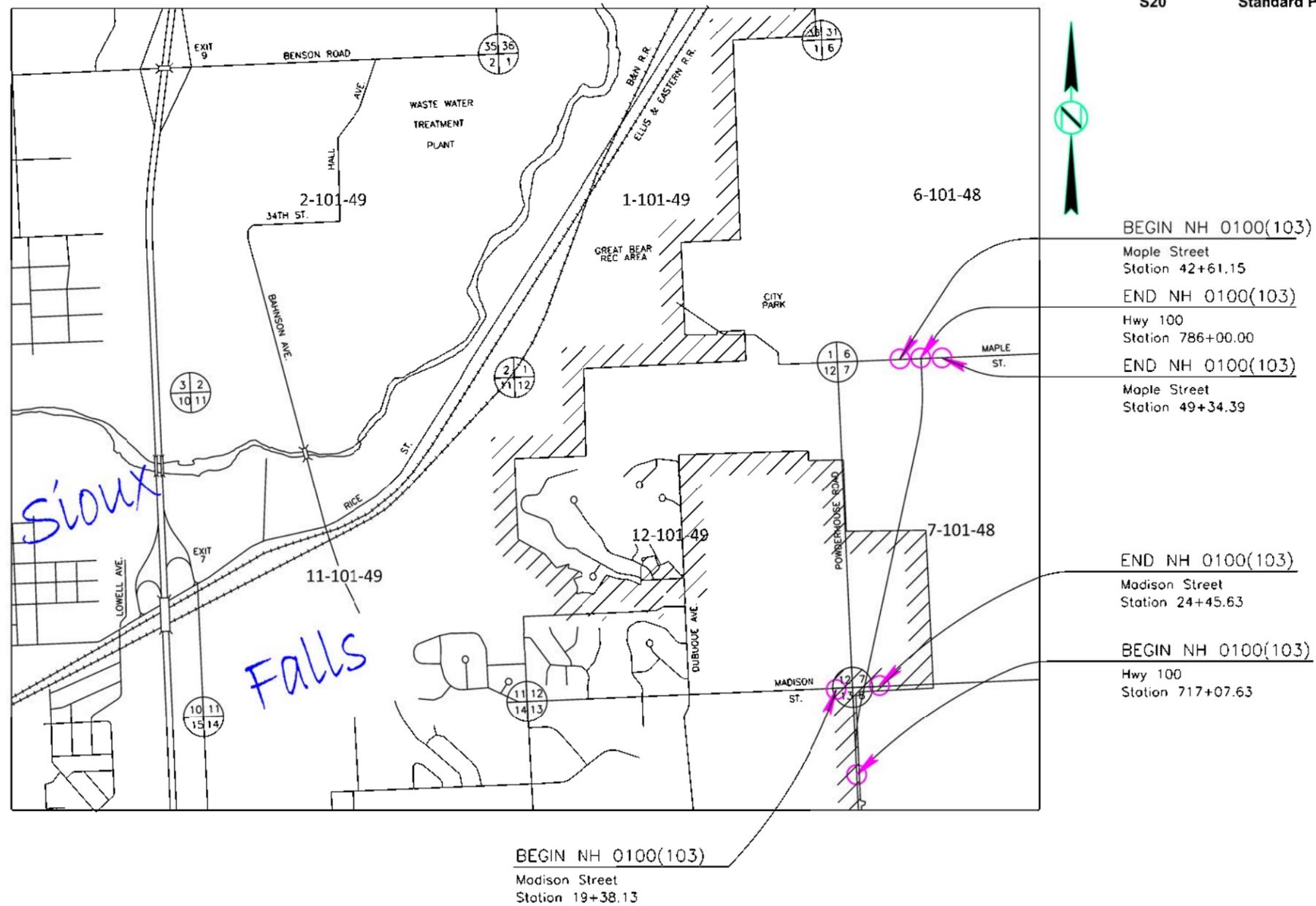
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S1	S20

Plotting Date: 12/30/2014

Section S: Permanent Signing Plans

INDEX OF SHEETS

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- S2 and S3 Estimate W/General Notes, Sign Removal Table, and Breakaway Support Table
- S4 and S5 Sign Installation Table
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- S13 Sign Details
- S14 Street Sign Placement
- S15 thru S19 Sign Installation Details
- S20 Standard Plate



PLOT SCALE - 1:200.103

PLOTTED FROM - ITRIND17

PLOT NAME - 1

FILE - ... \00KB SIGNING CONTAINER.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S2	S20

SECTION S PERMANENT SIGNING ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
110E5020	Salvage Traffic Sign	9	Each
632E0010	1.25' Diameter Breakaway Support Concrete Footing	40.0	Ft
632E0014	1.75' Diameter Breakaway Support Concrete Footing	16.0	Ft
632E1235	W6x20 Steel Post	50.0	Ft
632E1320	2.0"x2.0" Perforated Tube Post	261.1	Ft
632E1340	2.5"x2.5" Perforated Tube Post	105.8	Ft
632E3115	Extruded Aluminum Sign, Nonremovable Copy Super/Very High Intensity	85.0	SqFt
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	264.6	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	131.6	SqFt
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	1	Each

SCOPE OF PERMANENT SIGN WORK

The permanent sign work includes, but is not limited to, the following:

A. Items to be removed and salvaged by the Contractor:

Existing permanent signs and supports

B. Items to be furnished and installed by the Contractor:

1. Breakaway steel post sign supports with concrete footings
2. Perforated tube supports
3. Flat aluminum signs
4. Extruded Panel signs

SALVAGE TRAFFIC SIGN

Signs, reusable posts, and hardware damaged or lost due to carelessness shall be replaced in kind at the Contractor's expense.

Signs shall be separated from supports prior to stockpiling. Salvaged signs shall be neatly stockpiled without damaging them.

Cost for salvaging the STOP sign assemblies on Madison at 19+57R and 20+60L, including STOP signs with Light Emitting Diodes, supports, hardware, conduit, and attached conductor shall be included in the contract unit price per each for Salvage Traffic Sign.

Salvaged signs, posts, and related hardware [nuts, bolts, and miscellaneous mounting hardware] shall be delivered to the Minnehaha County Highway Department (605.367.4317).

REMOVE, SALVAGE, RELOCATE AND RESET PERMANENT SIGNS

The Contractor shall remove, salvage, relocate, and reset signs as indicated in the Sign Removal Sign Table.

The Contractor shall replace in kind any signs, supports, support bases or related hardware lost or damaged during the time the signs were removed, salvaged, stockpiled and reset. Any replacement materials shall be in kind and at the Contractor's expense.

Cost for removing, salvaging, stockpiling, and resetting an estimated one rural street name sign is included in the contract unit price per Each for Remove, Salvage, Relocate and Reset Traffic Sign.

FURNISH AND INSTALL TRAFFIC SIGNS

The signs listed in the Sign Installation Table in the plans as new installations shall be provided for the locations specified.

SIGN LEGEND, BORDER AND BACKGROUND

Flat aluminum signs shall be 0.100" flat sheet aluminum.

All signs are to be installed in accordance with Sections 632 and 982 of the Specifications.

All sign sheeting shall conform to AASHTO DESIGNATION:M 268.

All sign legend, border and background sheeting material shall meet or exceed standards for ASTM D4956 classified Type IV high intensity prismatic sheeting or Type XI super/very high intensity microprismatic sheeting, as indicated in the plans.

Sheeting material on warning signs shall be fluorescent yellow and meet or exceed standards for ASTM D4956 classified Type XI super/very high intensity microprismatic sheeting.

Side trim moldings shall be painted to match the color of the sign background sheeting. The color coat shall be preceded by a zinc chromatic primer.

POLE MOUNTED SIGNS

Signs mounted on signal poles, luminaire poles, and mast arms shall be attached with high strength stainless steel bands or galvanized pole clamps as recommended by the manufacturer. Mast arm sign supports shall conform to the specifications for cantilever sign supports. Mast arm supports shall be Pelco AB-0105 Astro-Brac Sign Band Mount manufactured by Pelco Products, Inc., 320 West 18th Street, Edmond, Oklahoma, or approved equal.

All sign mounting hardware shall be stainless steel or galvanized steel.

SIGN POSTS

The plan post lengths shall be field verified by the Contractor.

Breakaway anchor perforated tube post lengths listed in the Post Size/ Quantity columns of the Sign Installation Table include the minimum 0.8' (9")/post subgrade length.

Direct drive perforated tube post lengths listed in the Post Size/ Quantity columns of the Sign Installation Table include the minimum 4'/post subgrade length.

Supports shall be cut to provide the proper sign height where necessary.

Post anchors shall be 48" long. Two-piece anchor post systems are required for 2" perforated tube post anchor stub posts.

All breakaway sign supports shall comply with FHWA NCHRP 350 or Manual for Assessing Safety Hardware (MASH) crash-worthy requirements.

Perforated tube posts shall be fabricated from 12 gauge galvanized steel unless otherwise specified in the plans.

The Contractor shall provide block-outs or shall core holes 9" in diameter in concrete where sign posts are to be installed. The Contractor shall backfill each hole with cold mix asphalt concrete after the sign post has been installed, to the satisfaction of the Engineer.

CONCRETE FOOTINGS (CLASS M6)

The exposed portion of fixed base concrete footings shall be formed to provide a uniform diameter section and half-inch chamfer on the grout pad as shown on the footing details. The amount of exposed concrete footings on the up-slope side of the footing shall not be greater than 3 inches as shown on the footing details.

Footings for breakaway signs shall be below ground as shown on the footing details and need not be formed.

DATE DECAL

The Contractor shall affix a date decal to each new sign installed. Each decal is an approximately 2" X 2" self-adhesive sticker with removable paper backing and black numerals on a white background. The date decal displays the last two digits of the year the sign was manufactured (as illustrated).



One decal shall be placed in the extreme lower left corner of the back of flat aluminum signs, except street signs.

Sign supports or other obstructions shall not block the view of the date decal upon completion of the sign installation.

Cost for furnishing and installing of date decals on new signs shall be incidental to the contract unit price for the various signing bid items.

SIGN REMOVAL TABLE

SIGN DATA				
STATION	DESCRIPTION	SIGN SIZE (FT)	SALVAGE TRAFFIC SIGN *	REMOVE AND RESET
			110E5020	632E3520
MADISON ST				
19+57 R	STOP	2.50X 2.50	1{2PT}	
	ALL-WAY	1.50X 0.50		
19+81 L	STOP	2.50X 2.50	1{PT}	
	ALL-WAY	1.50X 0.50		
20+28 R	STOP	2.50X 2.50	1{PT}	
	ALL-WAY	1.50X 0.50		
20+33 L	MADISON ST	3.00X 0.75		1{PT}
	POWDER HOUSE RD	4.00X 0.75		
20+60 L	STOP	2.50X 2.50	1{2PT}	
	ALL-WAY	1.50X 0.50		
POWDERHOUSE RD (ABANDONED ALIGNMENT)				
L	SPEED LIMIT 45	2.00X 2.50	1{PT}	
L	STOP AHEAD	3.00X 3.00	1{PT}	
R	SPEED LIMIT 45	2.00X 2.50	1{L}	
MAPLE/264th ST				
46+71 L	OBJECT MARKER	0.50X 1.00	1{U}	
46+71 L	OBJECT MARKER	0.50X 1.00	1{U}	
TOTALS			9	1

* -Number and type- [{U}-Channel {L}uminaire
{PT} Perforated Tube {2PT} Two Perforated Tube] of support(s)

TWO POST BREAKAWAY SIGN SUPPORT TABLE

SIGN NUMBER	SIGN DESCRIPTION	SITE LOCATION	POST SIZE	FOOTING DIMENSIONS		STUB POST LENGTH	LONGITUDINAL STEEL		SPIRAL STEEL	
				DIA.	DEPTH		QTY - SIZE	LENGTH	DIA.	LENGTH
NA	Advance Street Name Signs	SD 100 Mainline	W 6 x 20	1' - 9"	4' - 0"	2' - 3"	8 - #6 Bars	3' - 8"	1' - 5"	29'

SIGN INSTALLATION TABLE

SIGN DATA										POST DATA					FOOTING DATA					
STATION	DESCRIPTION	SIGN CODE	SIGN SIZE (Ft)	SIGN AREA (SqFt)			OFFSET* (R)IGHT/ (L)EFT	SIGN FACES	COMMENTS	POST LENGTHS X		BREAK-AWAY #	SIZE/QUANTITY (Ft)				FOOTINGS (Ft)		FOOTING LENGTHS	
				EA §	Type IV	TYPE XI				INSIDE	OUTSIDE		W6x20 STEEL	2.0"x2.0" TUBE	2.5"x2.5" TUBE	BREAKAWAY		INSIDE	OUTSIDE	
																1.25' DIA.	1.75' DIA.			
SD100				632E3115	632E3203	632E3205						632E1235	632E1320	632E1340		632E0010	632E0014			
712+25 L	DIVIDED HIGHWAY	W6-1	3.00X 3.00			9.0				11.3'	S				11.3		4.0		4.0	
719+75 R	TWO WAY TRAFFIC	W6-3	3.00X 3.00			9.0				11.3'	S				11.3		4.0		4.0	
719+75 L	KEEP RIGHT	R4-8	2.00X 2.50		5.0					9.5'	S		9.5				4.0		4.0	
734+75 L	DIVIDED HIGHWAY ENDS	W6-2	3.00X 3.00			9.0				11.3'	S				11.3		4.0		4.0	
730+50 L	ONE WAY	R6-6R	3.00X 1.00		3.0		R	WEST	SIGNAL POLE MOUNTED											
	ONE WAY	R6-1L	3.00X 1.00		3.0		R	EAST	SIGNAL POLE MOUNTED											
	 ONLY	R3-5L	2.50X 3.00		7.5		R	SOUTH	MAST ARM MOUNTED CENTERED OVER TURN LANE											
	 ONLY	R3-5R	2.50X 3.00		7.5		R	SOUTH	MAST ARM MOUNTED CENTERED OVER TURN LANE											
730+57 L	KEEP RIGHT	R4-8c	1.50X 2.50		3.8			NORTH	CENTER IN MEDIAN-BLOCKOUT REQUIRED	10.3'	A		10.3							
730+83 R	DO NOT ENTER	R5-1	3.00X 3.00			9.0	2.0' R	NW		10.0'	S			10.0		4.0		4.0		
731+41 R	 ONLY	R3-5L	2.50X 3.00		7.5			EAST	MAST ARM MOUNTED CENTERED OVER TURN LANE											
731+69 L	 ONLY	R3-5L	2.50X 3.00		7.5			WEST	MAST ARM MOUNTED CENTERED OVER TURN LANE											
732+34 R	ONE WAY	R6-6R	3.00X 1.00		3.0			WEST	SIGNAL POLE MOUNTED											
	ONE WAY	R6-1L	3.00X 1.00		3.0			EAST	SIGNAL POLE MOUNTED											
	 ONLY	R3-5L	2.50X 3.00		7.5			NORTH	MAST ARM MOUNTED CENTERED OVER TURN LANE											
	 ONLY	R3-5R	2.50X 3.00		7.5			NORTH	MAST ARM MOUNTED CENTERED OVER TURN LANE											
732+76 L	DO NOT ENTER	R5-1	3.00X 3.00			9.0	2.0' R	NW		10.0'	S			10.0		4.0		4.0		
732+97 R	KEEP RIGHT	R4-8c	1.50X 2.50		3.8			NORTH	CENTER IN MEDIAN-BLOCKOUT REQUIRED	10.3'	A		10.3							
734+00 R	SPEED LIMIT 45	R2-1	2.00X 2.50		5.0		2.0' R	NORTH		10.3'	A		10.3							
734+80 L	BARRICADE BOARDS (1 INSTALLATION CONSISTING OF 3 BOARDS ON 2 SUPPORTS)		8.00X 0.80		19.2				INSTALL FACING APPROACHING TRAFFIC ON THE PRESENT POWDERHOUSE ROAD ALIGNMENT.	11.6'	A		11.6							
SHEET TOTALS				0.0	93.8	45.0						0.0	52.0	53.9		24.0	0.0			

* - Distance from edge of shoulder or back of curb to edge of the sign. § - E(xtruded) A(l)uminum
 # - (S)lip Base, (A)nchor Stub Post, or (D)irect Drive X -Plan post lengths are estimates. The post lengths shall be field verified by the Contractor.

SIGN INSTALLATION TABLE

SIGN DATA										POST DATA				FOOTING DATA					
STATION	DESCRIPTION	SIGN CODE	SIGN SIZE (Ft)	SIGN AREA (SqFt)			OFFSET* (R)IGHT/ (L)EFT	SIGN FACES	COMMENTS	POST LENGTHS X		BREAK-AWAY #	SIZE/QUANTITY (Ft)			FOOTINGS (Ft)		FOOTING LENGTHS	
				EA §	Type IV	TYPE XI				INSIDE	OUTSIDE		W6x20 STEEL	2.0"x2.0" TUBE	2.5"x2.5" TUBE	BREAKAWAY		INSIDE	OUTSIDE
																1.25' DIA.	1.75' DIA.		
SD100				632E3115	632E3203	632E3205						632E1235	632E1320	632E1340	632E0010	632E0014			
741+46 L		D3-2	10.00X 5.50	55.0				INSTALL EDGE OF SIGN 2' FROM FACE OF CURB AND A MINIMUM OF 2' FROM THE EDGE OF THE BIKE PATH.	12.5'	12.5'	S	25.0'				8.0	4.0	4.0	
758+00 L	SPEED LIMIT 45	R2-1	2.00X 2.50		5.0		2.0' R	NORTH		10.3'	A		10.3						
759+03 R	DO NOT ENTER	R5-1	3.00X 3.00			9.0	2.0' R	NW		10.0'	S			10.0	4.0		4.0		
759+08 L	KEEP RIGHT	R4-8c	1.50X 2.50		3.8			NORTH	CENTER IN MEDIAN-BLOCKOUT REQUIRED	10.3'	A		10.3						
759+61 L	STOP	R1-1	2.50X 2.50			5.2	2.0' R	WEST		10.3'	S			10.3	4.0		4.0		
760+33 R	STOP	R1-1	2.50X 2.50			5.2	2.0' R	EAST		10.3'	S			10.3	4.0		4.0		
760+91 R	KEEP RIGHT	R4-8c	1.50X 2.50		3.8			SOUTH	CENTER IN MEDIAN-BLOCKOUT REQUIRED	10.3'	A		10.3						
761+00 L	DO NOT ENTER	R5-1	3.00X 3.00			9.0	2.0' R	SE		10.0'	S			10.0	4.0		4.0		
762+00 R	SPEED LIMIT 45	R2-1	2.00X 2.50		5.0		2.0' R	NORTH		10.3'	A		10.3						
773+00 R		SPECIAL	10.00X 3.00	30.0					INSTALL EDGE OF SIGN 2' FROM FACE OF CURB AND A MINIMUM OF 2' FROM THE EDGE OF THE BIKE PATH.	12.5'	12.5'	S	25.0'				8.0	4.0	4.0
777+60 R	STOP AHEAD	W3-1	3.00X 3.00			9.0		SOUTH		11.3'				11.3					
784+29 L	SPEED LIMIT 45	R2-1	2.00X 2.50		5.0		2.0' R	NORTH		10.3'	A		10.3						
784+40 L	KEEP RIGHT	R4-8c	1.50X 2.50		3.8			NORTH	CENTER IN MEDIAN-BLOCKOUT REQUIRED	10.3'	A		10.3						
785+10 R	STOP ALL-WAY	R1-1 R1-3P	3.00X 3.00 1.50X 0.50			7.5 0.8	12.0' R	SOUTH		10.5'	A		10.5						
786+05	ROAD CLOSED BARRICADE BOARDS	R11-2	4.00X 2.50 8.00X 0.80		10.0 134.4			SOUTH	FULL ROADWAY CLOSURE INSTALLED AT THE TERMINATED PCC PAVING ON SD100.	81.2'	A		81.2						
				(7 INSTALLATIONS CONSISTING OF 3 BOARDS ON 2 SUPPORTS)															
MAPLE St/264th St																			
37+45 R	STOP AHEAD	W3-1	3.00X 3.00			9.0	12.0' R	WEST		10.0'	A		10.0						
44+95 R	STOP ALL-WAY	R1-1 R1-3P	3.00X 3.00 1.50X 0.50			7.5 0.8	12.0' R	WEST		10.5'	A		10.5						
L	STOP ALL-WAY	R1-1 R1-3P	3.00X 3.00 1.50X 0.50			7.5 0.8	12.0' R	EAST	INSTALL 6' IN ADVANCE OF CROSSWALK MARKING. SEE SECTION M.	10.5'	A		10.5						
54+50 L	STOP AHEAD	W3-1	3.00X 3.00			9.0	12.0' R	EAST		10.0'	A		10.0						
R	NO OUTLET	W14-2	2.50X 2.50			6.3	12' R		INSTALL ON THE PRESENT POWDER HOUSE ROAD FACING SOUTHBOUND TRAFFIC 50'-75' SOUTH OF MAPLE STREET.	14.6'	D		14.6						
SHEET TOTALS				85.0	170.8	86.6						50.0	209.1	51.9	16.0	16.0			
PROJECT TOTALS				85.0	264.6	131.6						50.0	261.1	105.8	40.0	16.0			

* - Distance from edge of shoulder or back of curb to edge of the sign. § - E(xtruded) A(l)uminum # - (S)lip Base, (A)nchor Stub Post, or (D)irect Drive X - Plan post lengths are estimates. The post lengths shall be field verified by the Contractor. SHEET 2 OF 2

PERMANENT SIGNING LAYOUT

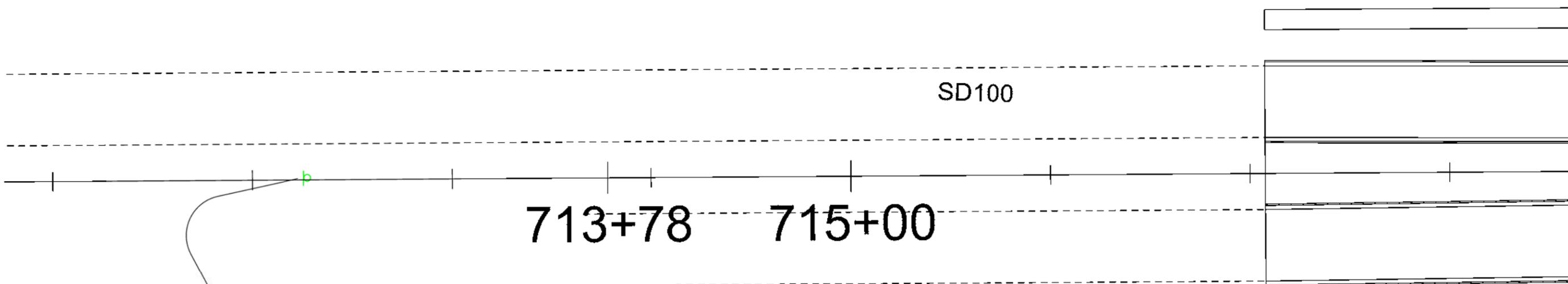
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S6	S20

Plotting Date: 12/31/2014



NO SCALE



713+78 715+00



712+25

PLOT SCALE - 1:50,000

PLOTTED FROM - ITRHINT17

PLOT NAME - 2

FILE - ... \000KB SIGNING CONTAINER.DGN

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S7	S20

Plotting Date: 12/31/2014

PERMANENT SIGNING LAYOUT



719 + 75



734 + 75



719 + 75

SD100

720+00

725+00

PLOT SCALE - 1:50,000

PLOTTED FROM - ITRHINT17

PLOT NAME - 3

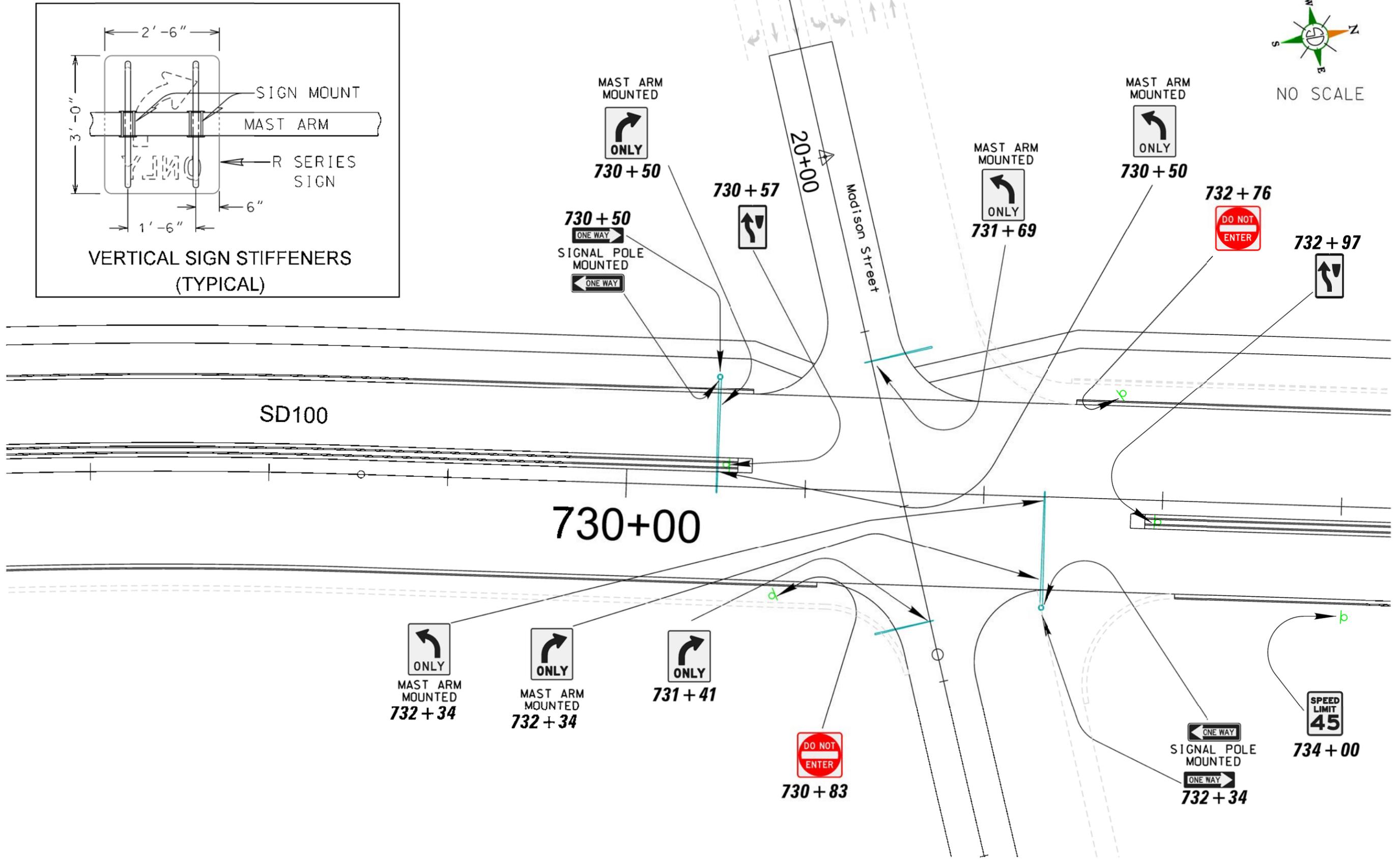
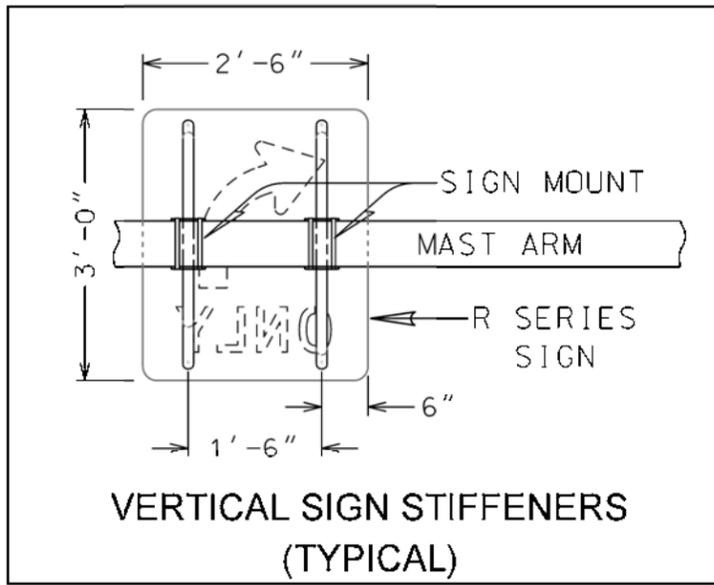
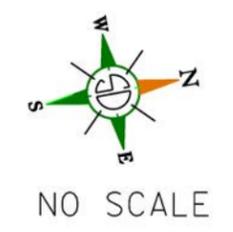
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S8	S20

Plotting Date: 12/30/2014

PERMANENT SIGNING LAYOUT

FOR BIDDING PURPOSES ONLY



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

PLOTTED FROM - ITRH1IND17

PLOT NAME - 4

FILE - ... \00KB SIGNING CONTAINER.DGN

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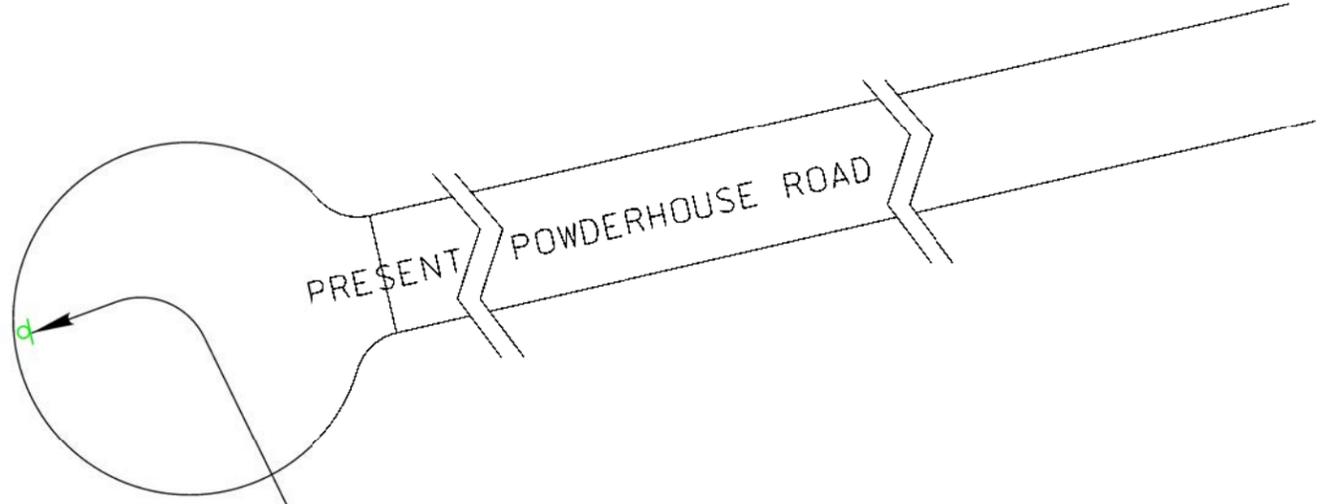
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S9	S20

Plotting Date: 12/30/2014

PERMANENT SIGNING LAYOUT



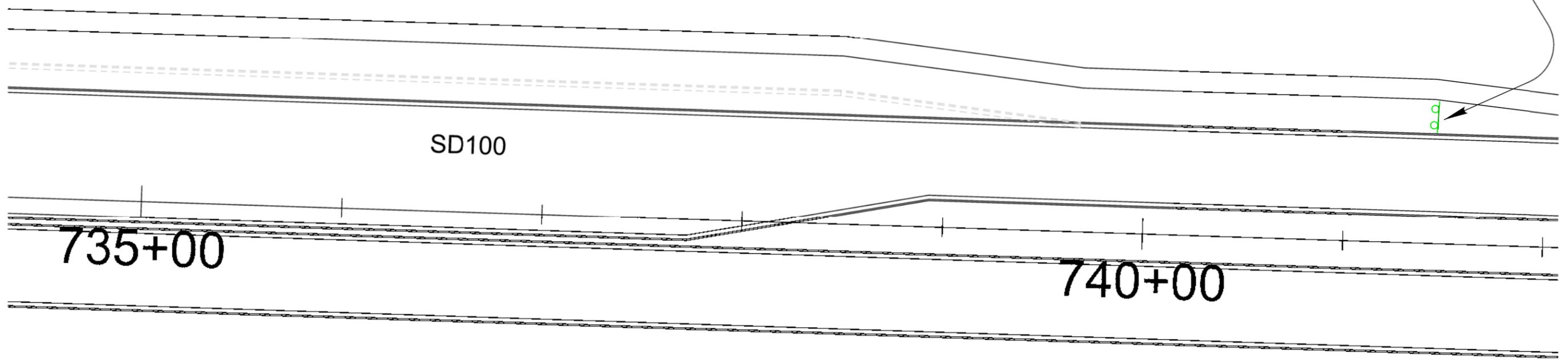
NO SCALE



Install facing approaching traffic.



741 + 46



SD100

735+00

740+00

PLOT SCALE - 1/8" = 100'

PLOTTED FROM - ICH1IND17

PLOT NAME - 5

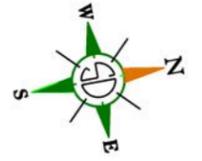
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S10	S20

Plotting Date: 12/30/2014

PERMANENT SIGNING LAYOUT

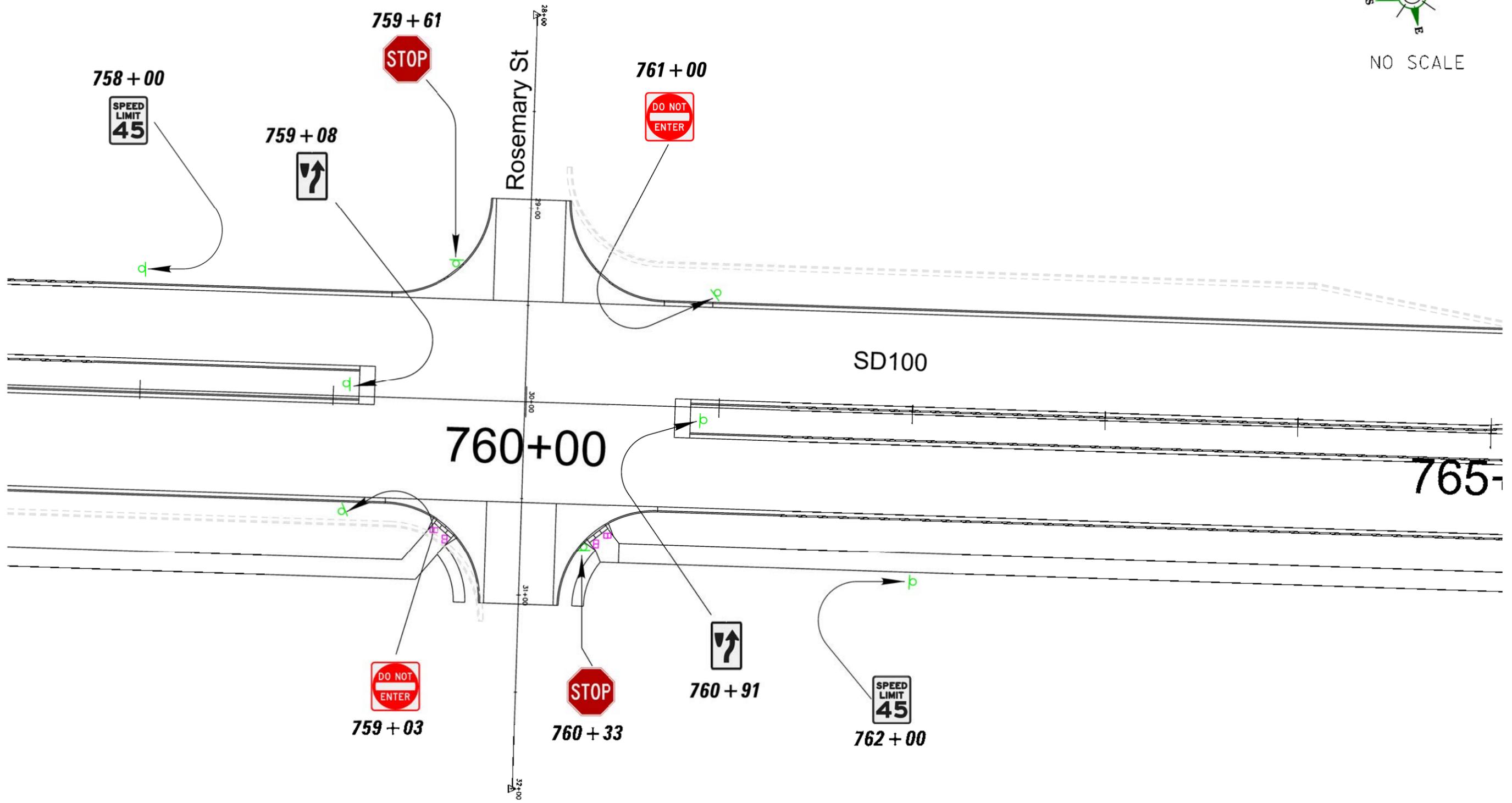


NO SCALE

PLOT SCALE - 1"=50.00'

PLOT NAME - 6

FILE - ... \00KB SIGNING CONTAINER.DGN

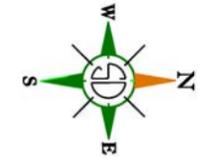


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S11	S20

Plotting Date: 12/30/2014

PERMANENT SIGNING LAYOUT

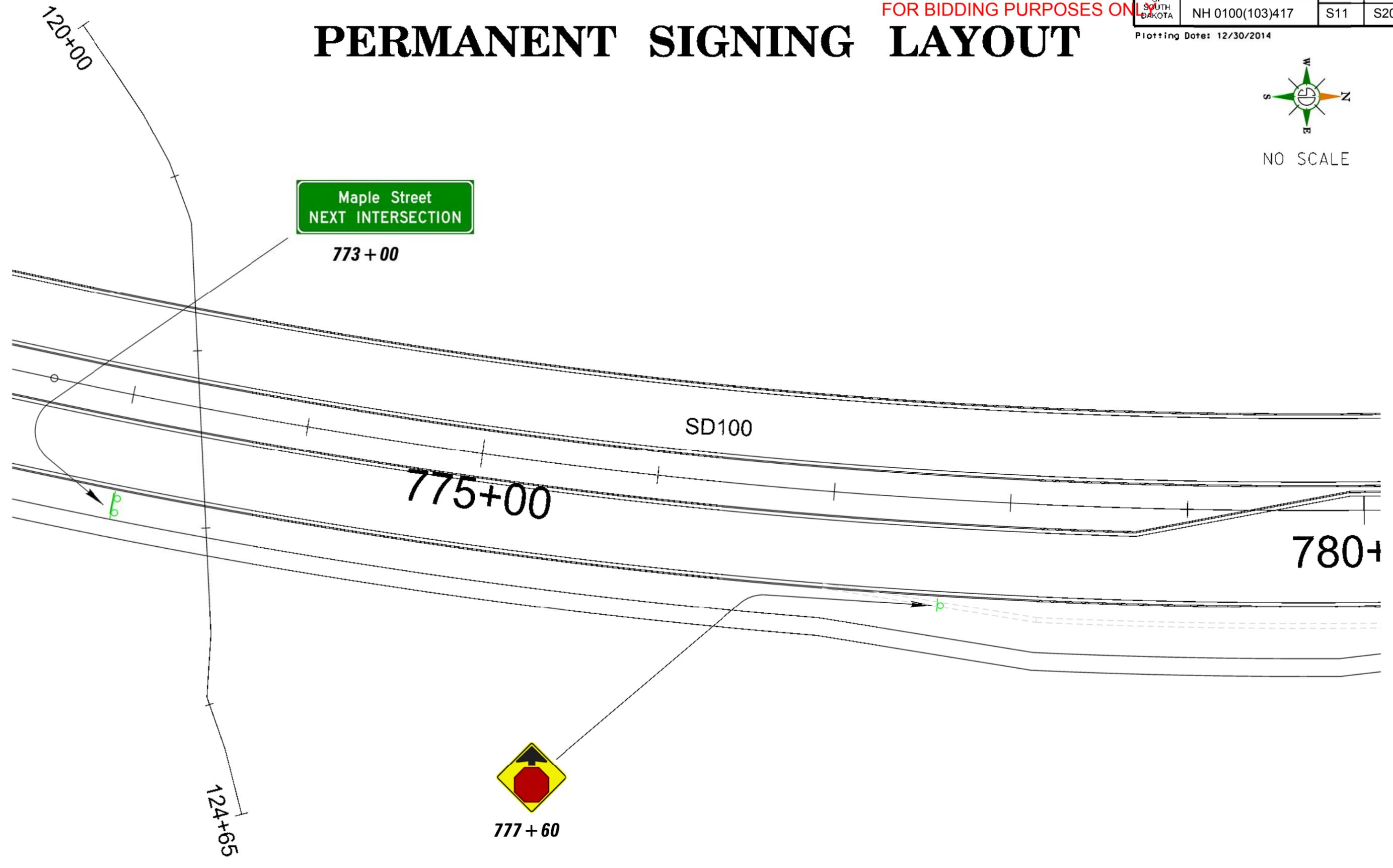


NO SCALE

PLOT SCALE - 1:52,0258

PLOT NAME - 7

FILE - ... \00KB SIGNING CONTAINER.DGN



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS

Plotting Date: 12/31/2014

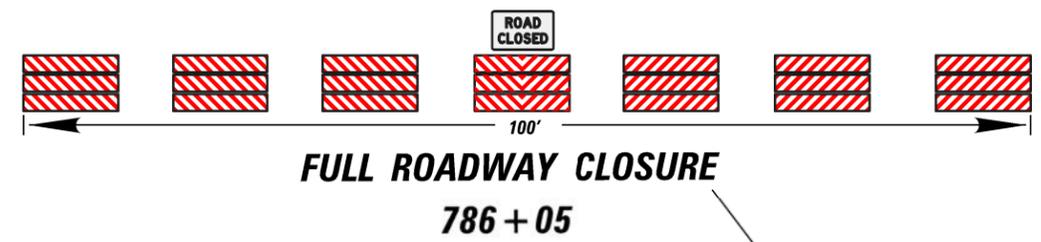
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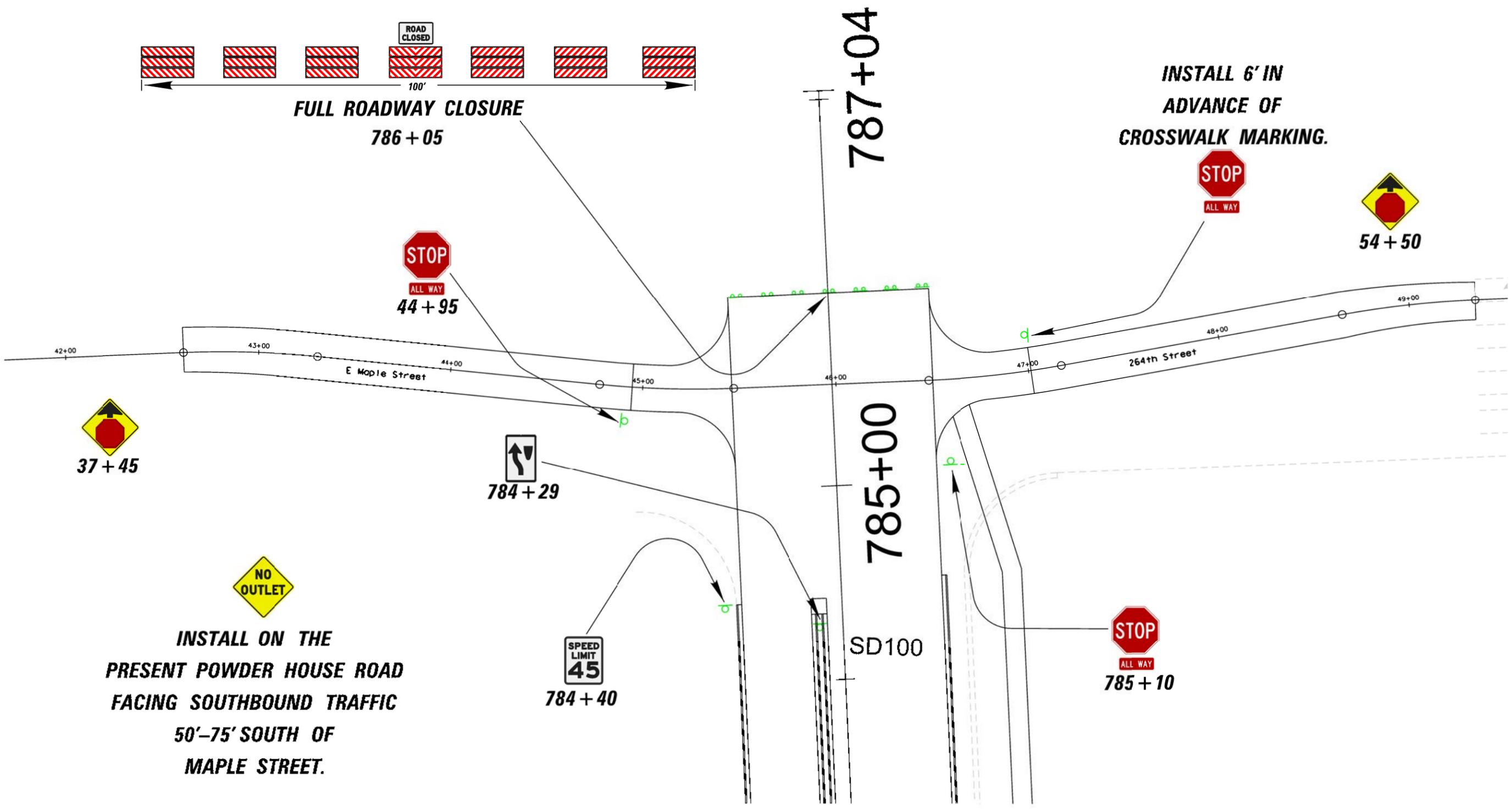
PLOT SCALE - 1/4" = 100'

PLOT NAME - 8

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INSTALL 6' IN ADVANCE OF CROSSWALK MARKING.



NO OUTLET

INSTALL ON THE PRESENT POWDER HOUSE ROAD FACING SOUTHBOUND TRAFFIC 50'-75' SOUTH OF MAPLE STREET.

PLOTTED FROM - ITRMIND17

ADVANCE STREET NAME SIGN DETAILS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S13	S20

Plotting Date: 12/30/2014

**EXTRUDED ALUMINUM SIGNS WITH NONREMOVABLE COPY-HIGH INTENSITY SHEETING-
WHITE BORDER AND LEGEND ON GREEN BACKGROUND**



STATION	XXX+XX
WIDTH X HEIGHT	10'-0" X 5'-6"
BORDER-DIVIDER WIDTH	1.5"
CORNER RADIUS	8.25"
LEGEND	4"D/8"D
BACKGROUND	TYPE: HIGH INTENSITY COLOR: GREEN
LEGEND/BORDER	TYPE: HIGH INTENSITY COLOR: WHITE



STATION	773+00
WIDTH X HEIGHT	10'-0" X 3'-0"
BORDER-DIVIDER WIDTH	1.5"
CORNER RADIUS	4.5"
LEGEND	4"D/8"D
BACKGROUND	TYPE: HIGH INTENSITY COLCR: GREEN
LEGEND/BORDER	TYPE: HIGH INTENSITY COLCR: WHITE

PLOT SCALE - 1:2,73135

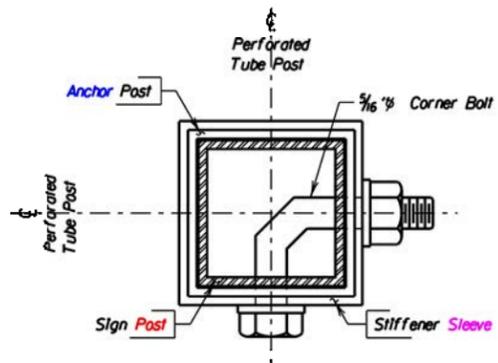
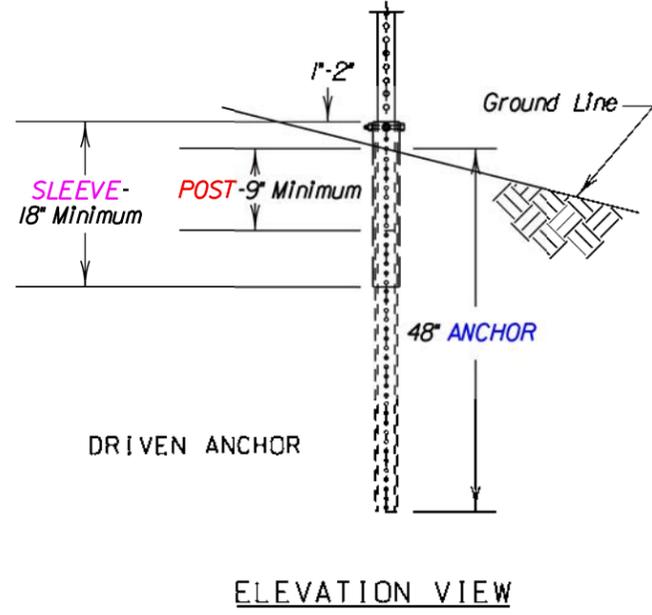
PLOTTED FROM - ITRHINT17

PLOT NAME - 9

FILE - ... \00KB SIGNING CONTAINER.DGN

PLOT SCALE - 1:206,452

PLOT NAME - 10

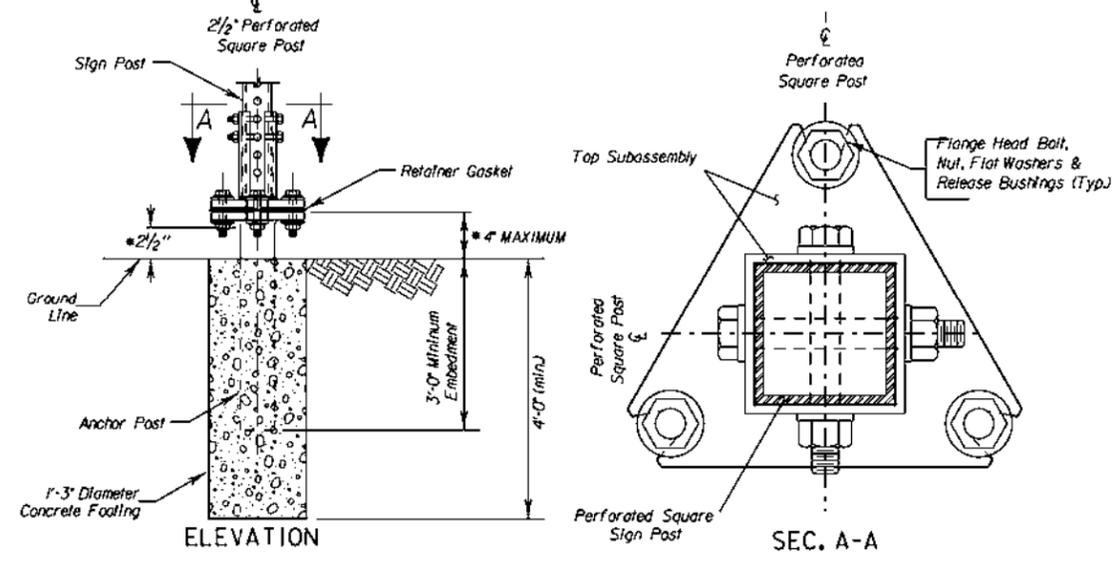


POST SIZES		
Sign Post	2"	2 1/4"
Anchor Post	2 1/4"	2 1/2"
Stiffener Sleeve	2 1/2"	* 3"

* - 7 Gauge Steel

NOTE: Perforated tube post with breakaway anchor base shall be 12 gauge galvanized steel, unless otherwise specified in the plans. Sign installations must meet or exceed NCHRP 350 or The AASHTO Manual for Assessing Safety Hardware (MASH) crashworthy requirements and be FHWA approved.

PERFORATED TUBE POST
BREAKAWAY TWO-PIECE ANCHOR DETAILS
(Typical)



* - Dimensions shown may vary by Manufacturer. The Contractor shall use Manufacturer recommended assembly parts and procedures. Sign installations must meet NCHRP 350 or MASH breakaway requirements and be FHWA approved.

GENERAL NOTES-

1. Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 4th Edition, with 2002, 2003, and 2004 Interims.
2. The manufacturer shall provide certification that the posts and hardware furnished have essentially the same chemistry, mechanical properties and geometry as those used in the FHWA tests and will meet the FHWA change in velocity requirements.
3. The manufacturer shall 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 shall be galvanized in accordance with ASTM A653, Des. G-90.
5. All hardware shall be galvanized in accordance with ASTM A153.

SINGLE PERFORATED TUBE POST BREAKAWAY SUPPORT WITH SLIPBASE
AND CONCRETE FOOTING
(Typical)

PLOTTED FROM - ITRH10117

FILE - ... \00KB SIGNING CONTAINER.DGN

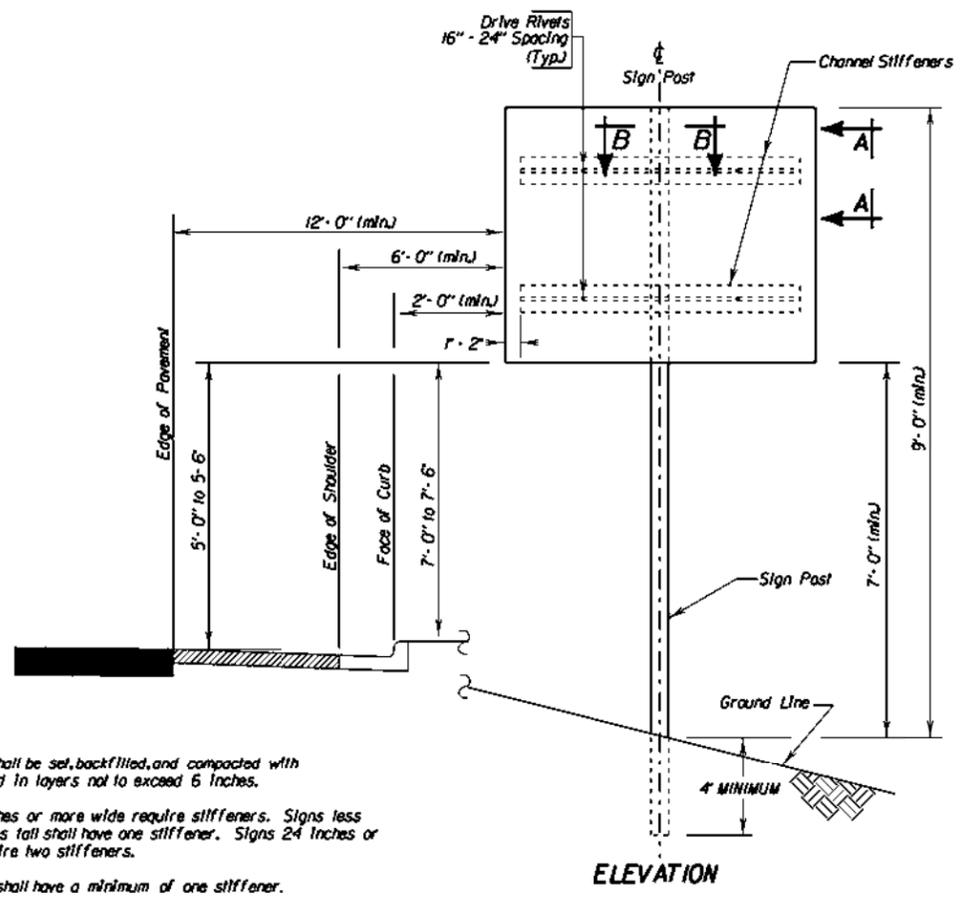
PLOT SCALE - 1:206.452

PLOTTED FROM - IERHUND17

FOR BIDDING PURPOSES ONLY

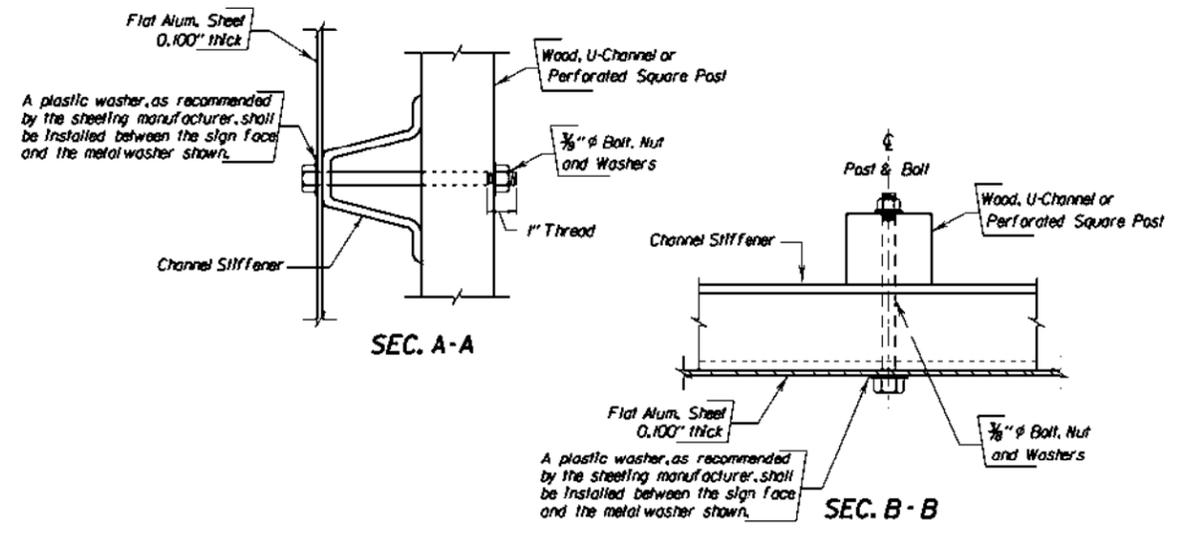
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S15	S20

Plotting Date: 12/30/2014

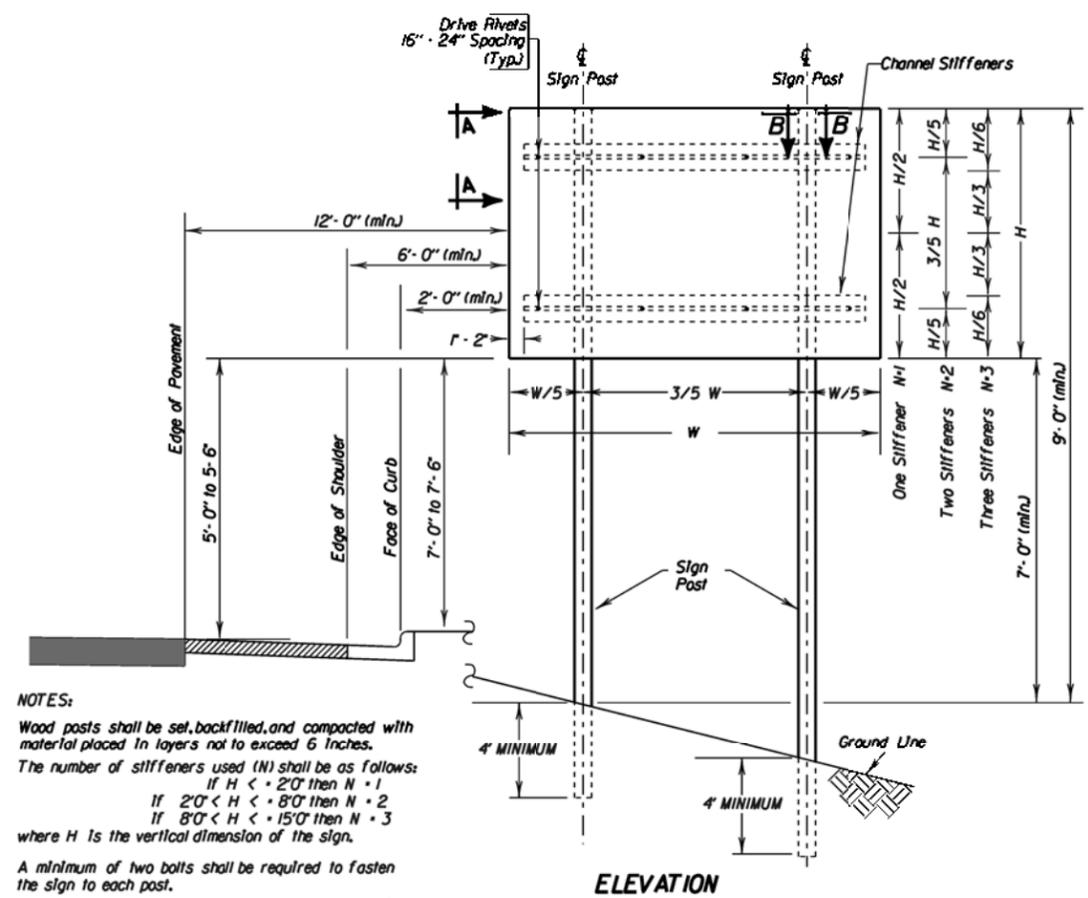


NOTES:
 Wood posts shall be set, backfilled, and compacted with material placed in layers not to exceed 6 inches.
 Signs 48 inches or more wide require stiffeners. Signs less than 24 inches tall shall have one stiffener. Signs 24 inches or more tall require two stiffeners.
 W14-3 signs shall have a minimum of one stiffener.

ELEVATION

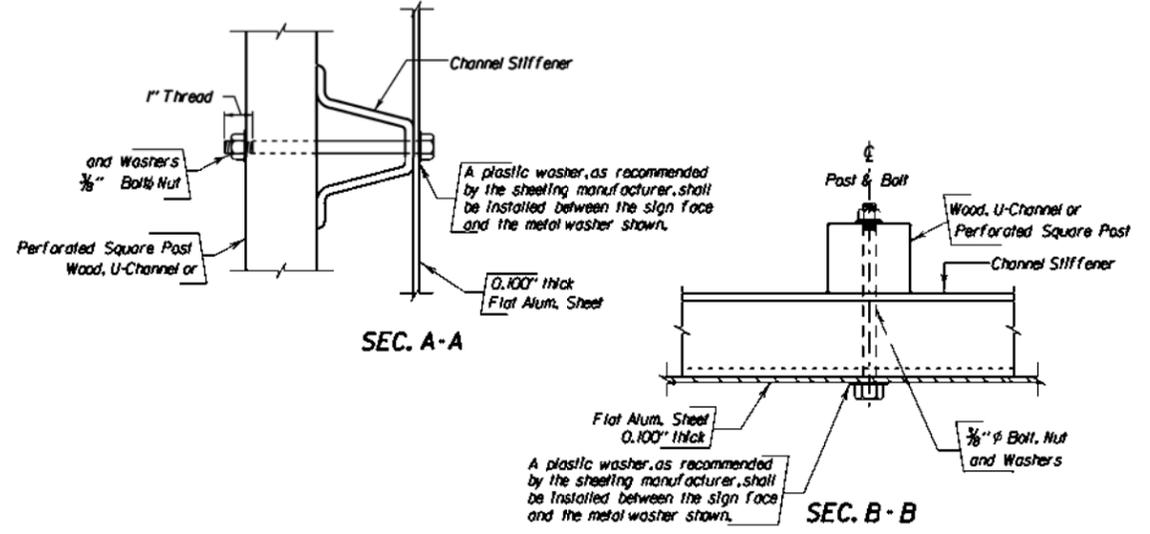


SINGLE POST BREAKAWAY SIGN SUPPORT
(Typical Sign and Stiffener Details)



NOTES:
 Wood posts shall be set, backfilled, and compacted with material placed in layers not to exceed 6 inches.
 The 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 $N = 3$
 where H is the vertical dimension of the sign.
 A minimum of two bolts shall be required to fasten the sign to each post.

ELEVATION



TWO POST BREAKAWAY SIGN SUPPORTS
(Typical Sign and Stiffener Details)

PLOT NAME - 11

FILE - ... \00KB SIGNING CONTAINER.DGN

STREET NAME SIGNS {TYPICAL LOCATIONS}

FOR BIDDING PURPOSES ONLY

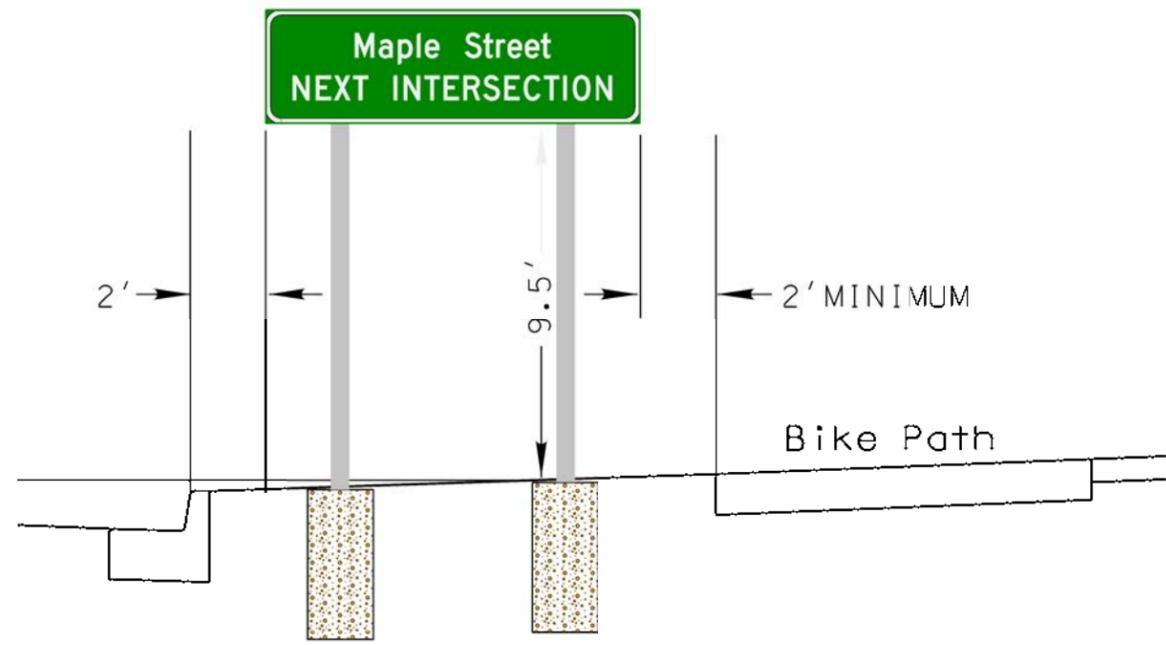
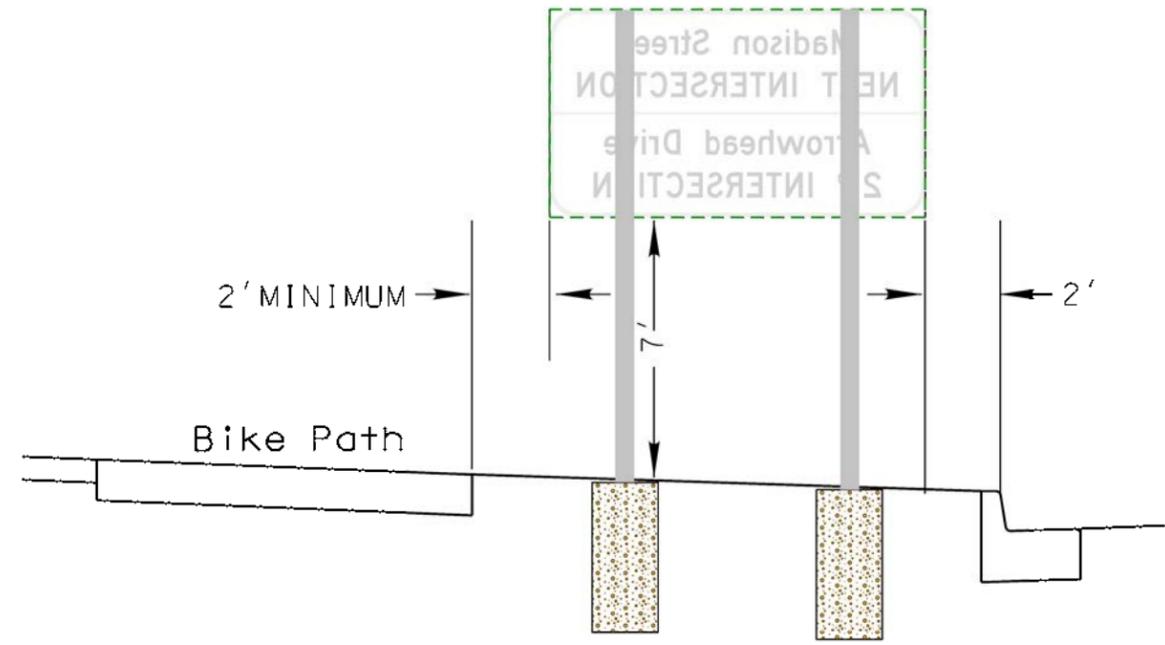
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S16	S20

Plotting Date: 12/30/2014

PLOT SCALE - 1:4.86441

PLOT NAME - 12

FILE - ... \00KB SIGNING CONTAINER.DGN



PLOTTED FROM - ITRHINT17

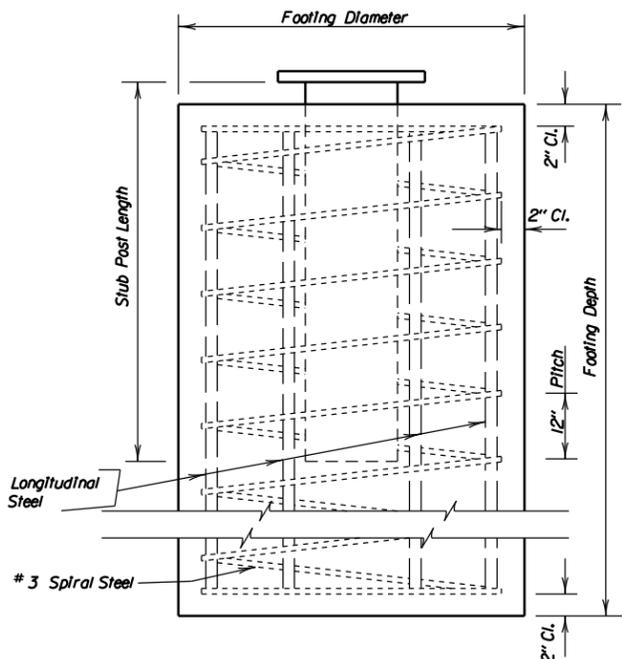
Plotting Date: 12/31/2014

FOR BIDDING PURPOSES ONLY

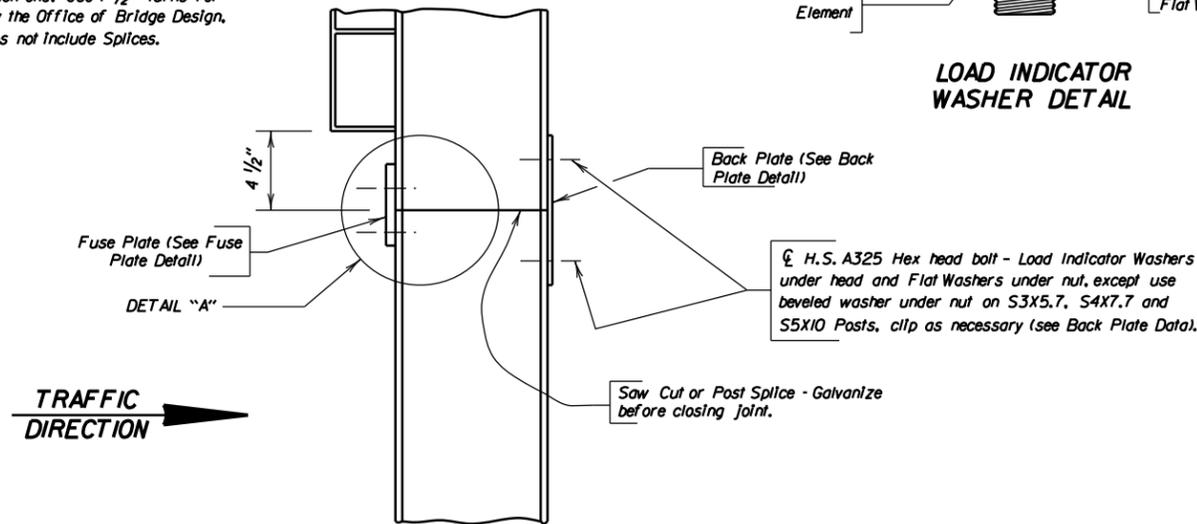
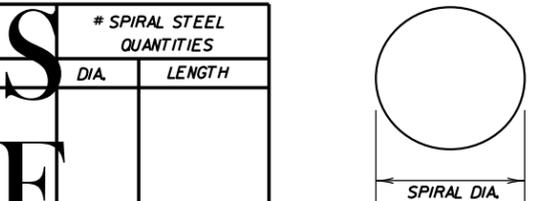
SITE LOCATION	POST SIZE	FOOTING DIMENSIONS		STUB POST LENGTH	LONGITUDINAL STEEL QUANTITIES			# SPIRAL STEEL QUANTITIES	
		AREA	DEPTH		NO.	SIZE	LENGTH	DIA.	LENGTH
SEE NOTES FOR TABLE									

* Spirals - Use 6" 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.

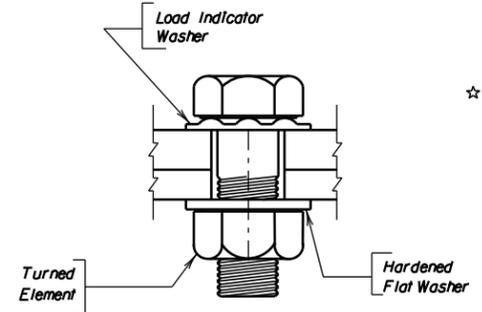
NOTE: The above is a Site Specific data entry table and the inserted information is the responsibility of the Region Traffic Engineer.



FOOTING DETAIL

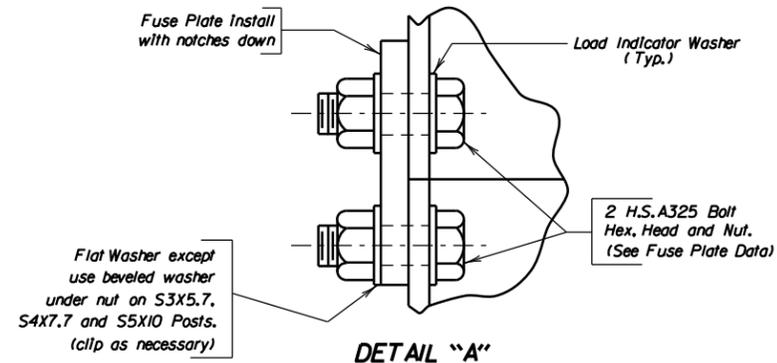


FUSE & BACK PLATE INSTALLATION

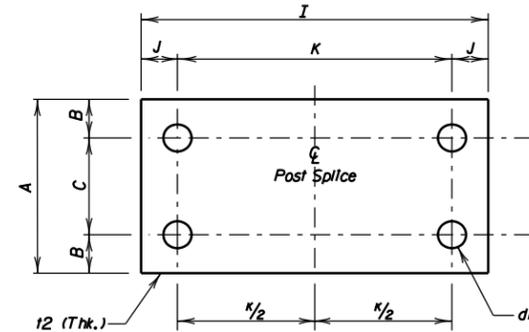


LOAD INDICATOR WASHER DETAIL

1/2" H.S. A325 Hex head bolt - Load Indicator Washers under head and Flat Washers under nut, except use beveled washer under nut on S3X5.7, S4X7.7 and S5X10 Posts, clip as necessary (see Back Plate Data).



DETAIL "A"



BACK PLATE DETAIL

NOTES-

- 1. Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 2009 Edition.
- 2. Concrete Footings shall be Class M6 - f_c = 4000 p.s.i.
- 3. Structural Steel shall conform to ASTM A36.
- 4. All Reinforcing Steel, except spirals, shall conform to ASTM 615 Grade 60.
- 5. Spiral Reinforcing Steel may be fabricated from cold drawn wire ASTM A62, or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.
- 6. 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 A153, or F2329 as applicable.
- 7. All structural steel including Posts and Post Stubs shall be galvanized in accordance with ASTM A123.
- 8. 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).
- 9. All welding and weld inspection shall be in accordance with the latest edition of AWS D 1.1 Structural Welding Code.

PROCEDURE FOR ASSEMBLING SLIP BASE-

- 1. Place galvanized Sheet Metal Diaphragms on top of the lower slip plate.
- 2. Connect main post to Stub Post with clean unlubricated bolts and nuts with one Hardened Washer on each bolt between slip plates.
- 3. Plumb post by adding shims between slip plates.
- 4. 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.
- 5. 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-

- 1. High strength bolts shall be tightened so as to obtain a residual tension by the use of load indicator washers.
- 2. High strength bolts may be tightened by the "Turn of the Nut" method as provided in Section 11.5.6.4.4 of the AASHTO Standard Specifications for Highway Bridges in lieu of #1 above.

SHOP PLANS-

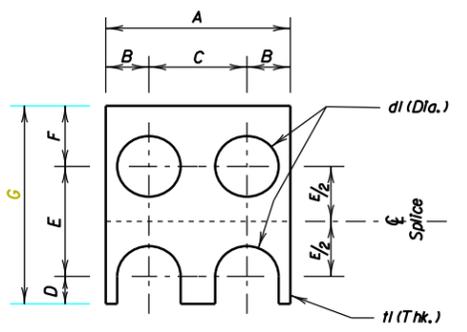
The fabricator shall initially submit two (2) copies of the shop plans to the Office of Bridge Design for review. One reviewed copy will be sent back to the fabricator who will then make changes, if any, and then send the Office of Bridge Design six (6) final approved copies for distribution.

TABLE 1 - FUSE PLATE DATA

Post Size	A	B	C	D	E	F	G	dl	t1	Bolt Size
S3X5.7	2 5/8"	3/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 1/8"	5/8" φ	1/4"	1/2" φ
S4X7.7	2 5/8"	3/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 1/8"	7/8" φ	1/4"	1/2" φ
S5X10	3"	1/16"	1 3/8"	3/8"	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"	3/8"	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"	3/8"	2 1/2"	1 3/8"	4 1/2"	3/4" φ	3/8"	5/8" φ
W8X18	5 1/4"	1 7/16"	2 5/8"	3/4"	2 1/2"	1 3/8"	4 7/8"	7/8" φ	1/2"	3/4" φ
W8X21	5 1/4"	1 3/16"	2 3/8"	3/4"	2 1/2"	1 3/8"	4 3/8"	7/8" φ	1/2"	3/4" φ
W8X24	6 1/2"	1 1/2"	3 1/2"	7/8"	3"	1 3/8"	5 1/2"	1" φ	3/16"	7/8" φ
W8X28	6 1/2"	1 3/16"	3 7/8"	7/8"	3"	1 3/4"	5 5/8"	1" φ	1/2"	7/8" φ
W8X31	8"	1 3/8"	4 3/4"	1"	3 1/2"	2"	6 1/2"	1 1/8" φ	3/8"	1" φ
W10X33	8"	1 7/8"	4 1/4"	1 1/8"	4 1/2"	2 1/4"	7 7/8"	1 1/4" φ	3/4"	1 1/8" φ

TABLE 5 - BACK PLATE DATA

Post Size	A	B	C	J	K	I	dl	t2	Bolt Size
S3X5.7	2 5/8"	3/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" φ	1/4"	1/2" φ
S4X7.7	2 5/8"	3/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" φ	1/4"	1/2" φ
S5X10	3"	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
W8X18	5 1/4"	1 7/16"	2 5/8"	1 3/8"	5 3/4"	8 1/2"	7/8" φ	1/4"	3/4" φ
W8X21	5 1/4"	1 3/16"	2 3/8"	1 3/8"	5 3/4"	8 1/2"	7/8" φ	1/4"	3/4" φ
W8X24	6 1/2"	1 1/2"	3 1/2"	1 3/8"	6"	9 1/4"	1" φ	3/16"	7/8" φ
W8X28	6 1/2"	1 3/16"	3 7/8"	1 3/4"	6"	9 1/2"	1" φ	3/16"	7/8" φ
W8X31	8"	1 3/8"	4 3/4"	2"	6 1/2"	10 1/2"	1 1/8" φ	3/8"	1" φ
W10X33	8"	1 7/8"	4 1/4"	2 1/2"	7"	11' 0"	1 1/4" φ	1/16"	1 1/8" φ



FUSE PLATE DETAIL

ERECTION DETAILS FOR TWO-POST ONE-DIRECTION BREAKAWAY SIGN SUPPORTS S. D. DEPT. OF TRANSPORTATION DECEMBER 1994 1 OF 2

☆ Update specifications and ASTM reference	8/4/09	MG	
* Specification Update	7/11/05	AV	
MK	REVISION	DATED	
DESIGNED BY RH/DM CNTYPCEM	DRAWN BY TB PCMDSPG	CHECKED BY RH/DM BSTDRS2A	APPROVED <i>Kevin N. Goeden</i> BRIDGE ENGINEER

PLOT SCALE - 1:0.165@26

PLOTTED FROM - TRWJLN17

PLOT NAME - 13

FILE - ... \00KB SIGNING CONTAINER.DGN

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S18	S20

Plotting Date: 12/31/2014

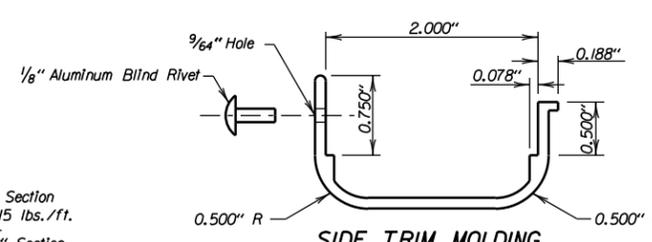
PLOT SCALE - 1" = 10'-0" (165/026)

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

△ 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.

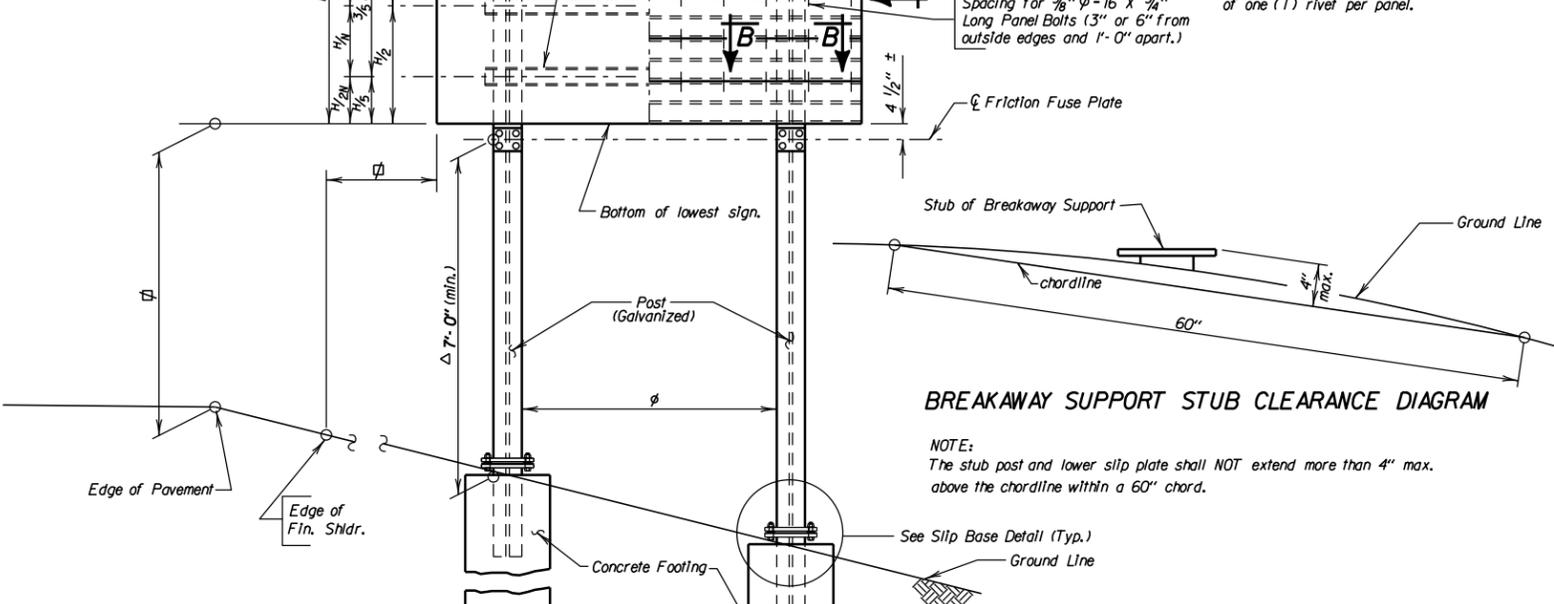
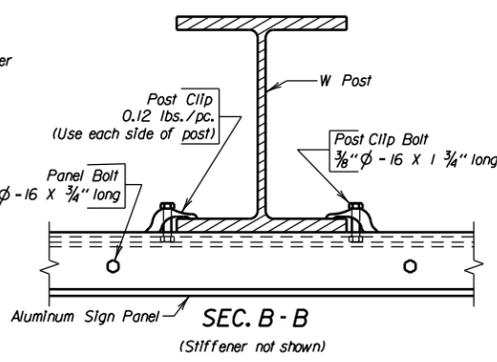
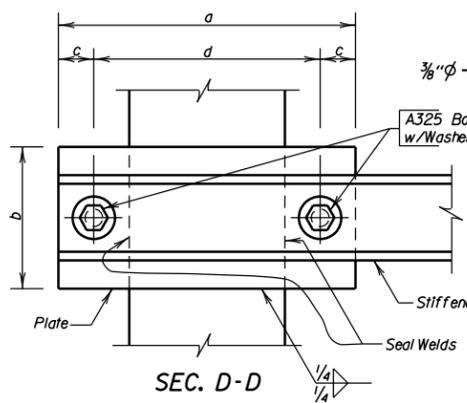
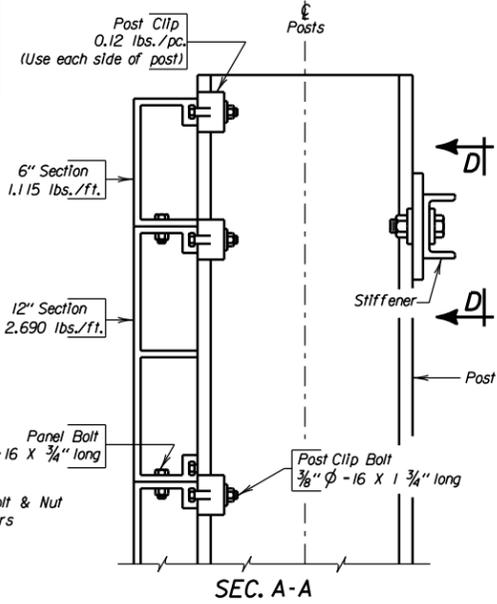
NOTE- N = Number of Stiffeners to be used
H = Vertical dimension of sign
L = Horizontal dimension of Main Sign



Post	Stiffener	a	b	c	d	Bolt (A325)	Plate Thk.
S3X5.7 thru W8X21	C3X5	10 1/2"	5"	1 1/4"	8"	3/8" ∅	3/16"
W8X24 thru W10X33	C5X6.7	13 1/2"	6"	1 1/2"	10 1/2"	7/8" ∅	3/8"

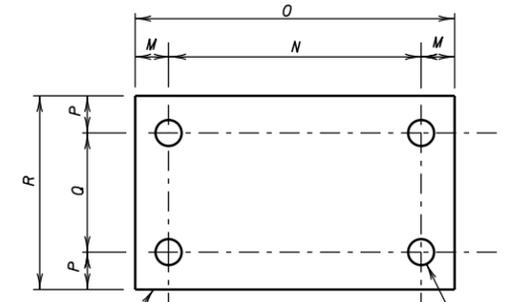
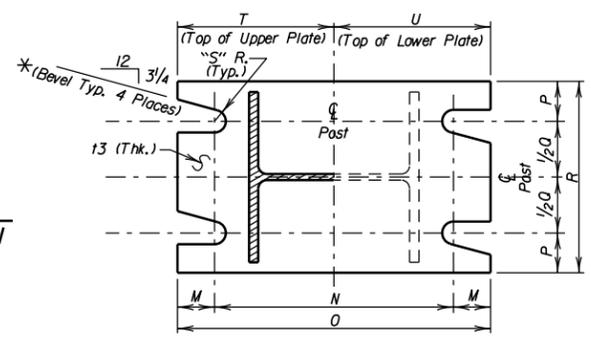
STIFFENER NOTES-

- 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 $H \leq 2'-0"$ 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 equals the vertical dimension of the sign panel of sign cluster.



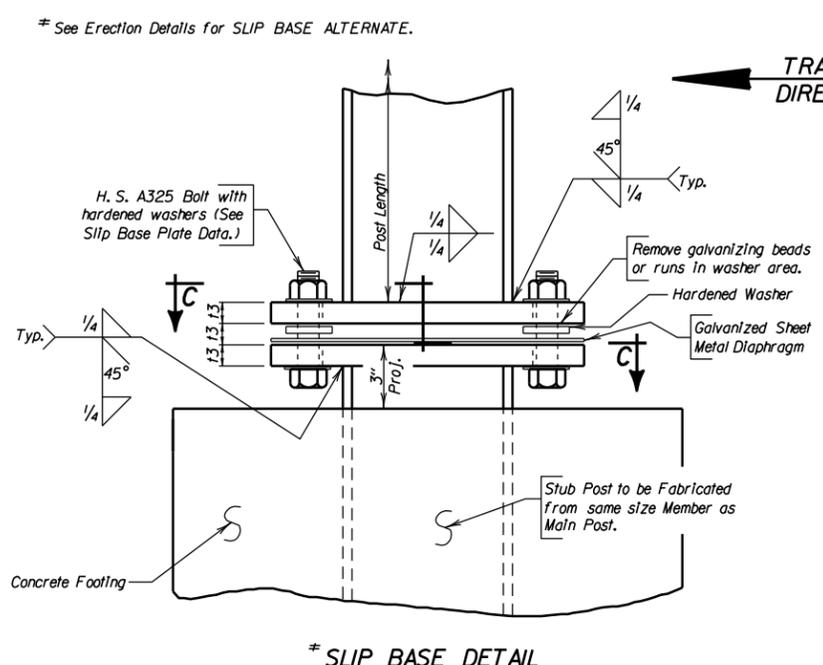
BREAKAWAY SUPPORT STUB CLEARANCE DIAGRAM

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



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"
W8X18	1 1/8"	10 1/2"	1'-0 3/4"	1 1/4"	3 1/2"	6"	7/8"
W8X21	1 1/4"	11 1/4"	1'-1 3/4"	1 1/4"	3 1/2"	6"	1"
W8X24	1 1/2"	11"	1'-2"	1 5/8"	4 1/4"	7 1/2"	1"
W8X28	1 5/8"	11 1/4"	1'-2 1/2"	1 5/8"	4 1/4"	7 1/2"	1 1/8"
W8X31	1 3/4"	11 1/4"	1'-2 3/4"	1 7/8"	5 1/4"	9"	1 1/8"
W10X33	1 3/4"	1'-2"	1'-5 1/2"	1 7/8"	5 1/4"	9"	1 1/8"

Post Size	M	N	O	P	Q	R	S	T	U	13	Bolt Size	Bolt Torque
S3X5.7	3/4"	6"	7 1/2"	3/4"	1 1/2"	3"	9/32"	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"	9/32"	3 3/4"	3 3/4"	5/8"	1/2" ∅	142" - #
S5X10	7/8"	7 1/4"	9"	3/4"	2"	3 1/2"	11/32"	4 1/2"	4 1/2"	7/8"	3/8" ∅	345" - #
W6X12	7/8"	8 1/4"	10"	7/8"	2 3/4"	4 1/2"	11/32"	5"	5"	7/8"	3/8" ∅	345" - #
W6X15	1 1/8"	8 1/2"	10 3/4"	1 1/4"	4"	6 1/2"	13/32"	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"	13/32"	6 1/8"	6 1/8"	1"	3/4" ∅	554" - #
W8X18	1 1/8"	10 1/2"	1'-0 3/4"	1 1/4"	3 1/2"	6"	13/32"	6 3/8"	6 3/8"	1"	3/4" ∅	554" - #
W8X21	1 1/4"	11 1/4"	1'-1 3/4"	1 1/4"	3 1/2"	6"	13/32"	6 7/8"	6 7/8"	1"	7/8" ∅	645" - #
W8X24	1 1/2"	11"	1'-2"	1 5/8"	4 1/4"	7 1/2"	13/32"	7"	7"	1"	7/8" ∅	645" - #
W8X28	1 5/8"	11 1/4"	1'-2 1/2"	1 5/8"	4 1/4"	7 1/2"	13/32"	7 1/4"	7 1/4"	1 1/8"	1" ∅	735" - #
W8X31	1 3/4"	11 1/4"	1'-2 3/4"	1 7/8"	5 1/4"	9"	13/32"	7 3/8"	7 3/8"	1 1/8"	1" ∅	735" - #
W10X33	1 3/4"	1'-2"	1'-5 1/2"	1 7/8"	5 1/4"	9"	13/32"	8 3/4"	8 3/4"	1 1/4"	1" ∅	735" - #



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 1994

DESIGNED BY RH/DM STANDARDS	DRAWN BY TB BSTDBS2B	CHECKED BY RH/DM	APPROVED John C. Cole BRIDGE ENGINEER
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PLOT NAME - 14 FILE - ... \00KB SIGNING CONTAINER.DGN

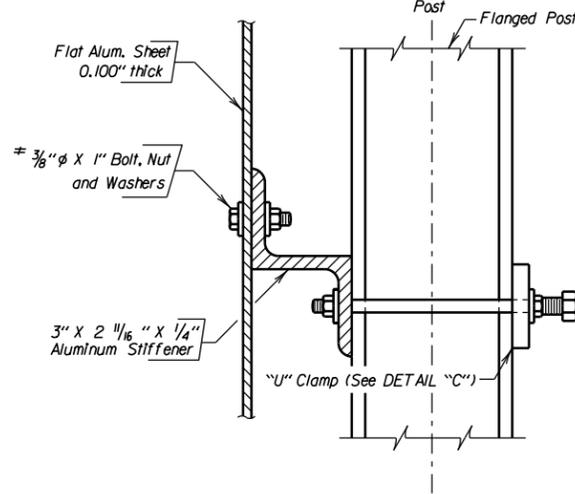
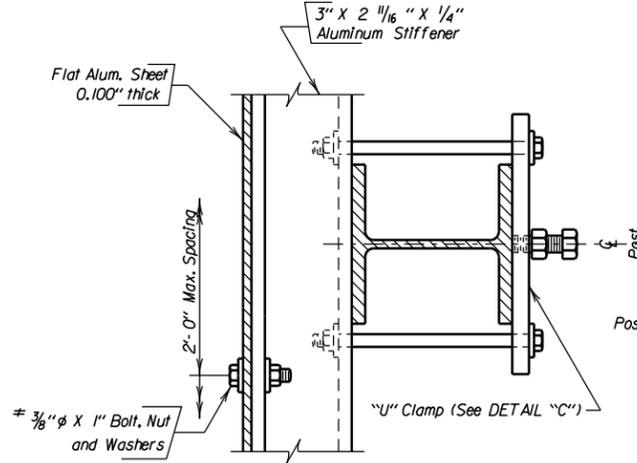
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT NH 0100(103)417	SHEET S19	TOTAL SHEETS S20
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Plotting Date: 12/31/2014

PLOT SCALE - 1:0.165026

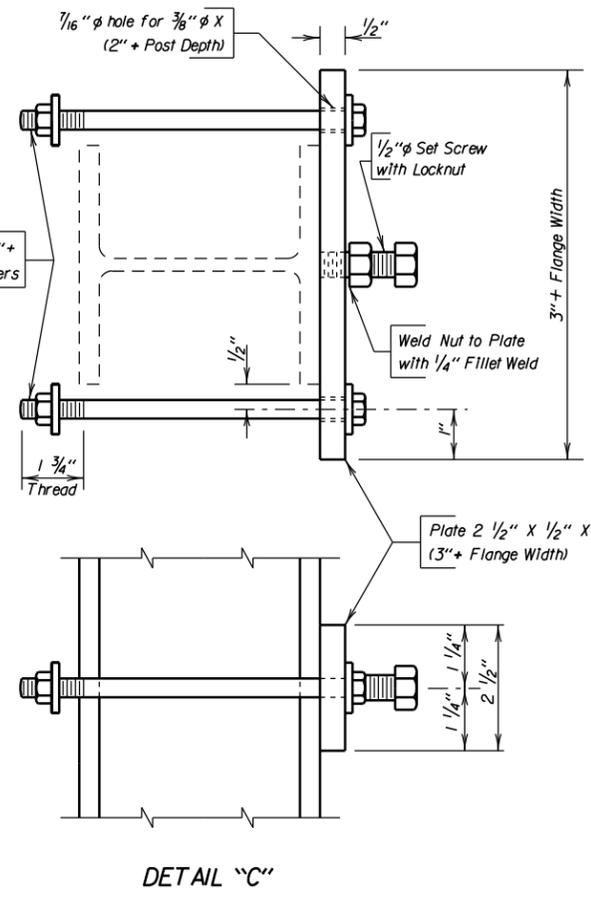
PLOT NAME - 15



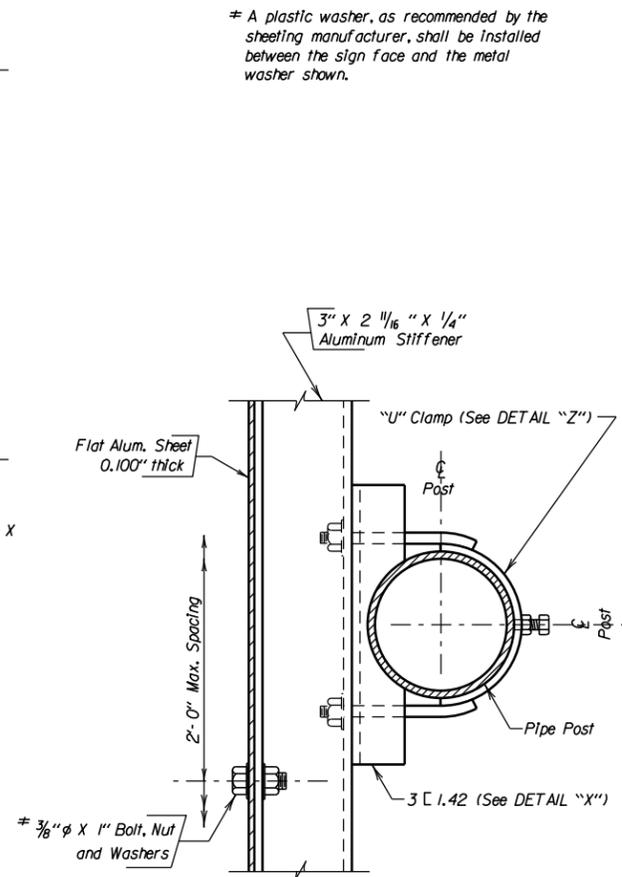
DETAILS FOR MOUNTING SHEET ALUMINUM SIGNS ON STEEL FLANGED POSTS

STIFFENER NOTES-

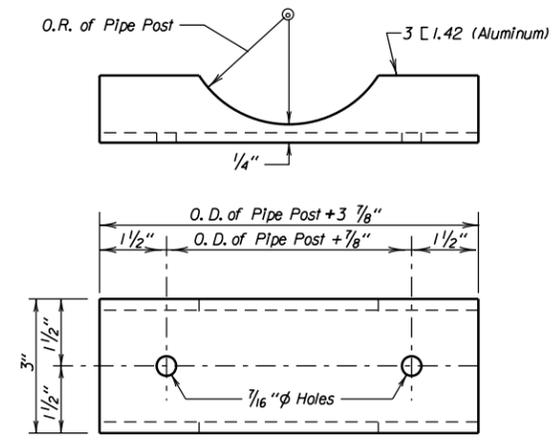
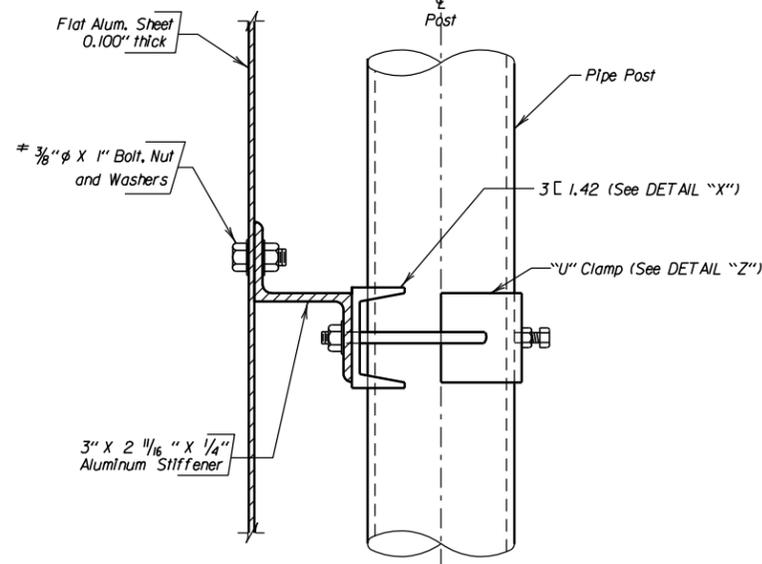
- Stiffeners must always be used on multiple post breakaway signs regardless of type of sign face employed.
- Number of stiffeners used, N, shall be as follows:
 If $H \leq 2'-0"$ then $N = 1$
 If $2'-0" < H \leq 8'-0"$ then $N = 2$
 If $8'-0" < H \leq 15'-0"$ then $N = 3$
 where H equals the vertical dimension of the sign panel of sign cluster.
- All stiffener Bolts and Nuts shall conform to ASTM A307. Washers shall conform to ASTM F436. All hardware shall be galvanized in accordance with ASTM A153.



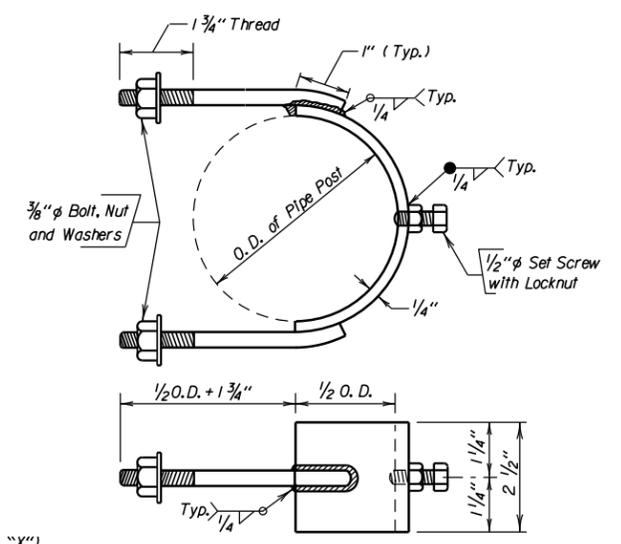
POSITIONING OF TOP AND BOTTOM STIFFENERS



DETAILS FOR MOUNTING SHEET ALUMINUM SIGNS ON STEEL PIPE POSTS



DETAIL "X"



DETAIL "Z"

ERECTION DETAILS FOR SHEET ALUMINUM SIGNS (ON FLANGED AND PIPE POSTS)
 S. D. DEPT. OF TRANSPORTATION
 DECEMBER 1994

1 OF 1

MK	REVISION	DATED	BY
DESIGNED BY RH/DM	DRAWN BY RH/TB	CHECKED BY RH/DM	APPROVED John C. Cole BRIDGE ENGINEER
STANDARDS	BSTD/SASI		

PLOTTED FROM - TRWJUN17

FILE - ... \00KB SIGNING CONTAINER.DGN

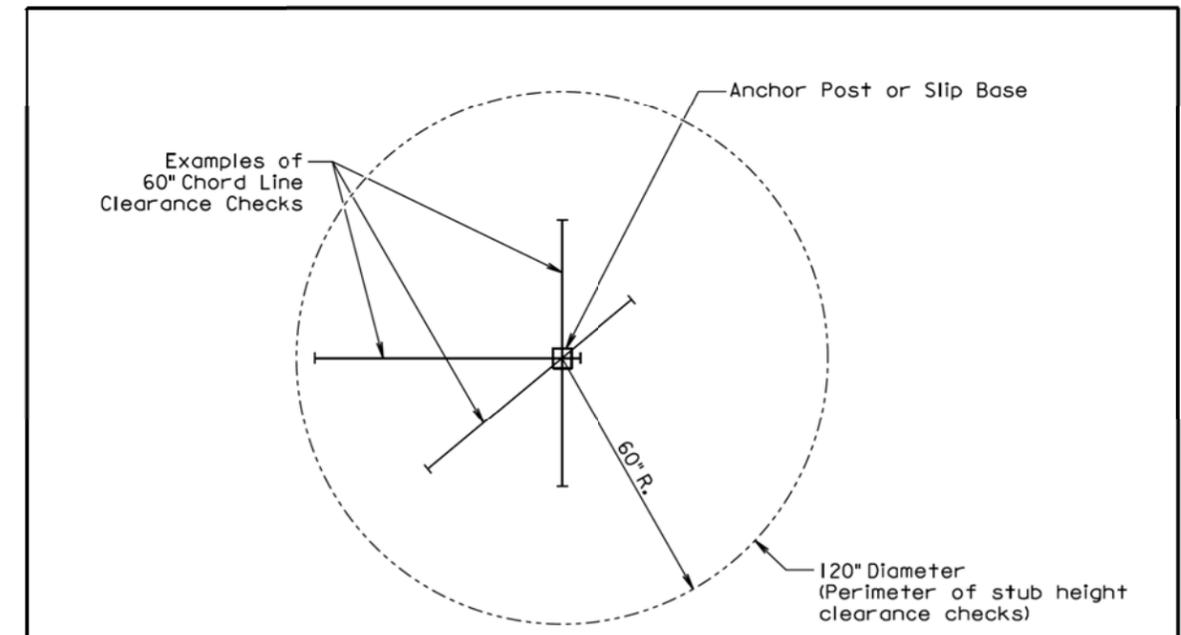
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(103)417	S20	S20

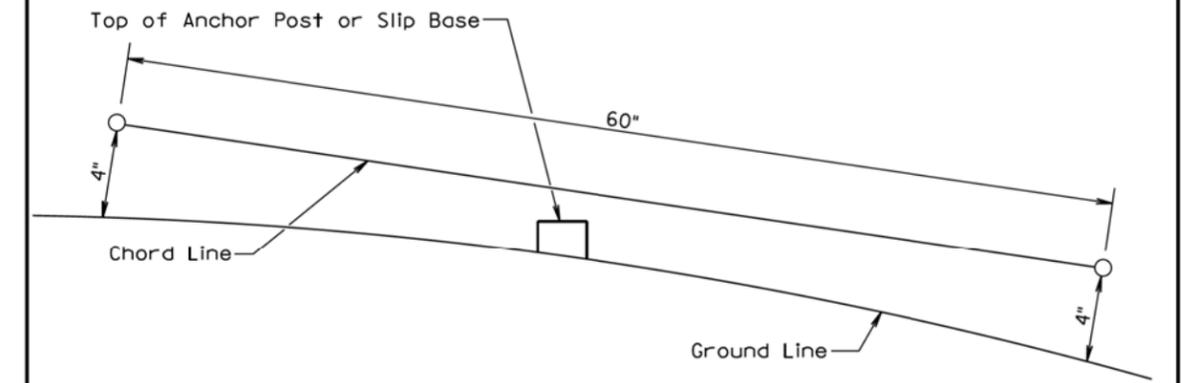
Plotting Date: 12/30/2014

PLOT SCALE - 1:206.452

PLOT NAME - 16



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 4th Qtr. 2014

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BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER
634.99

Sheet 1 of 1

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