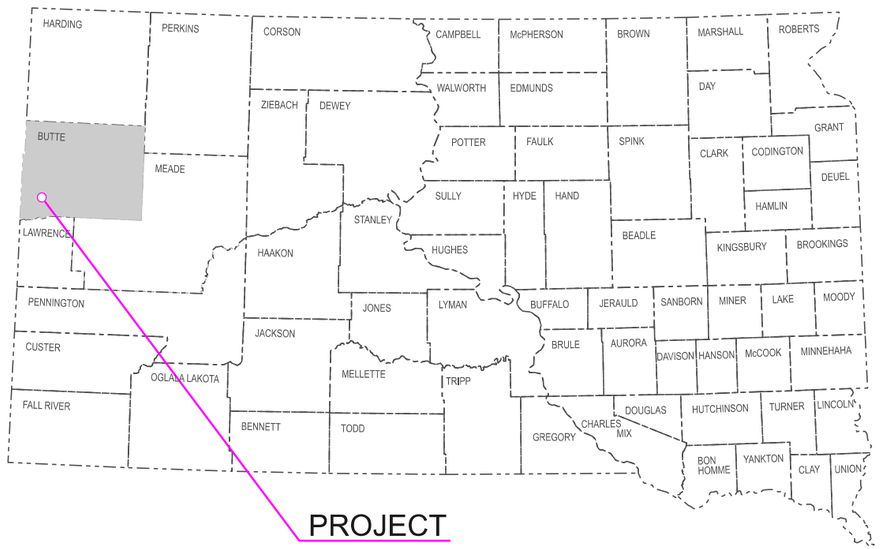


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

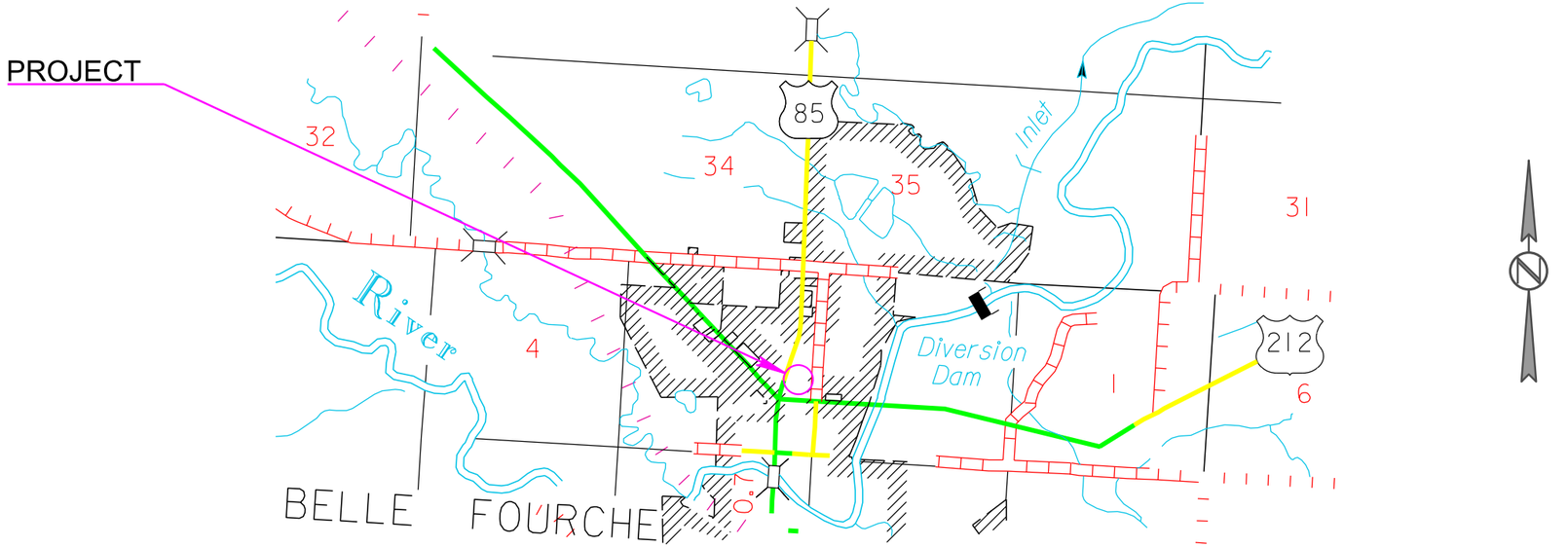
PROJECT 085-471
US HIGHWAY 85
BUTTE COUNTY

US 85 ROAD CLOSED SIGN
PCN I7EL

SD DOT	PROJECT	SECTION	SHEET
	085-471	Non	1/13

Plotting Date: 04/30/2024

INDEX OF SHEETS



ESTIMATE OF QUANTITIES – I7EL

Non-Section Method

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
* 009E0010	Mobilization	Lump Sum	LS
* 632E0014	1.75' Diameter Breakaway Support Concrete Footing	14.0	Ft
* 632E1245	W8x21 Steel Post	33.5	Ft
* 632E3113	Extruded Aluminum Sign, Nonremovable Copy High Intensity	60.5	SqFt
* 634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
* 635E4010	1 Section Vehicle Signal Head	2	Each
* 635E5405	Electrical Service Cabinet with Secondary Disconnect	1	Each
* 635E6200	Miscellaneous, Electrical	Lump Sum	LS
* 635E8120	2" Rigid Conduit, Schedule 40	580	Ft
* 635E9020	1/C #10 AWG Copper Wire	1,120	Ft

* - Denotes Non-Participating

SPECIFICATIONS

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

Any Black Hills Energy electrical related construction is to be done according to the specifications contained in Black Hills Energy's Construction Handbook Commercial 2021:

https://www.blackhillsenergy.com/sites/blackhillsenergy.com/files/construction-handbook-commercial_21.pdf

SEQUENCE OF OPERATIONS

1. Deploy temporary traffic control.
2. Call in locates.
3. Install sign footings.
4. Trench in conduit & install wire.
5. Install sign.
6. Make all electrical connections & install switch.
7. Restore disturbed area from trenching and sign installation.

GENERAL TRAFFIC CONTROL

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

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.

TRAFFIC CONTROL, MISCELLANEOUS

All costs for traffic control, including signs, will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

CONDUIT INSTALLATION

The Contractor will trench and install conduit from power source to metering point and from metering point to the sign. See drawings in these plans. Black Hills Energy, Inc. is the provider of power. Black Hills Energy, Inc. will provide the meter at the metering point, the wire from the source point to the metering point, and will provide 120V service ready to connect at the source point.

All costs associated with furnishing and installing 2" sch 40 conduit will be incidental to the contract unit price per foot for "2" Rigid Conduit, Schedule 40"

The restoration of all disturbed areas will be to the satisfaction of the Engineer. 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.

ELECTRICAL SERVICE CABINET WITH SECONDARY DISCONNECT

The electrical service cabinet will be a standard electrical service cabinet located adjacent to the power source.

The Contractor will install a NEMA 3R rainproof, 60 amp rated, non-fused safety switch (with lock) at the metering point. The secondary disconnect will be mounted on a galvanized steel post in accordance with standard plate 635.35.

METER SOCKETS

The meter sockets provided for the road closed sign by the Contractor will be a 200-amp, positive by-pass.

SIGN INSTALLATION

The Contractor will install the sign according to the "Erection Details for Two-Post Two-Direction Breakaway Sign Supports" drawings pages in these plans. The Contractor will install the beacons, and electrical components according to the "US Hwy 85 Road Closed Sign – Rear View" drawing in these plans.

The beacons will be amber and will flash in accordance with MUTCD standards. All costs associated with, furnishing, and installing the two beacons in the sign will be incidental to the contract unit price per each for "1-Section Vehicle Signal Head"

MISCELLANEOUS, ELECTRICAL

The two switches with labels can deviate from the drawing in these plans but must be able to serve the same function as the drawing intends. All costs associated with furnishing and installing the flasher relays, two switches with labels, electrical junction box on sign assembly, and 1.5" steel conduit on sign assembly will be incidental to the contract lump sum price for "Miscellaneous Electrical"

SHOP DRAWING AND CATALOG CUTS SUBMITTALS

The Contractor will submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

Adobe PDF submittals will be sent to the following email addresses:

Les.hermann@state.sd.us

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 sign will be as shown in the plans on the Sign Details sheet 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.

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.

NEW PERMANENT SIGNING

The Contractor may contact SDDOT RC Region Traffic office to obtain the design layout files for the sign. Contact information:

Steve.Kamarainen@state.sd.us

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 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 "Extruded Aluminum Sign, Nonremovable Copy 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 overlaminate 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

DIGITALLY PRINTED SIGNS (CONTINUED)

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.

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

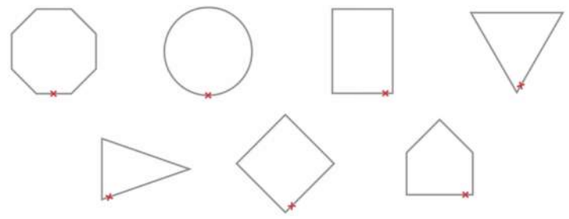
Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

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.



INSTALLATION OF OVERLAY

Overlays will be attached to the extruded aluminum panels beginning with the pieces along the top of the sign. Fastening will proceed from the top of the overlay downward working out any bulges.

Fasteners will be aluminum rivets 5/32" in diameter. Rivets will be placed at 9" +/- 1" centers along the horizontal and vertical seams. Rivets will be placed ¼" to ½" from the edges of the overlay pieces. Adjoining overlays will be butted tightly together before fastening begins. In addition to the perimeter rivets, fasteners are required inside the overlay spaced approximately 1' vertically and 2' horizontally from the overlay piece edges.

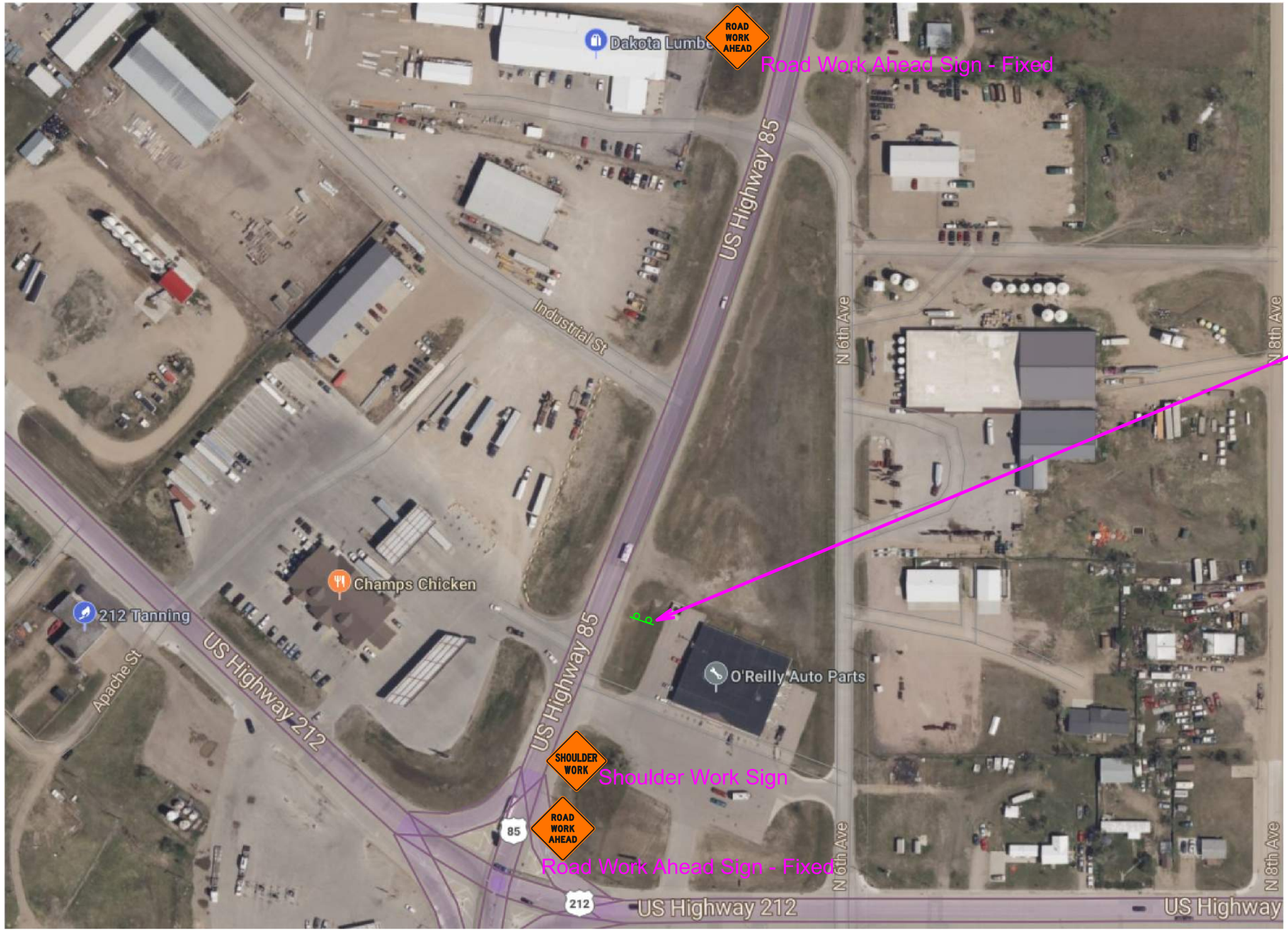
Prior to installing overlays, all in place extruded aluminum panels will be level and edges plumb. Post clips on the back of the sign will be tightened to the post.

All costs for leveling, plumbing and tightening will be incidental to the contract unit price per square foot for "Extruded Aluminum Sign, Nonremovable Copy High Intensity".

Fixed Sign Layout

SD DOT	PROJECT	SECTION	SHEET
	085-471	Non	4/13

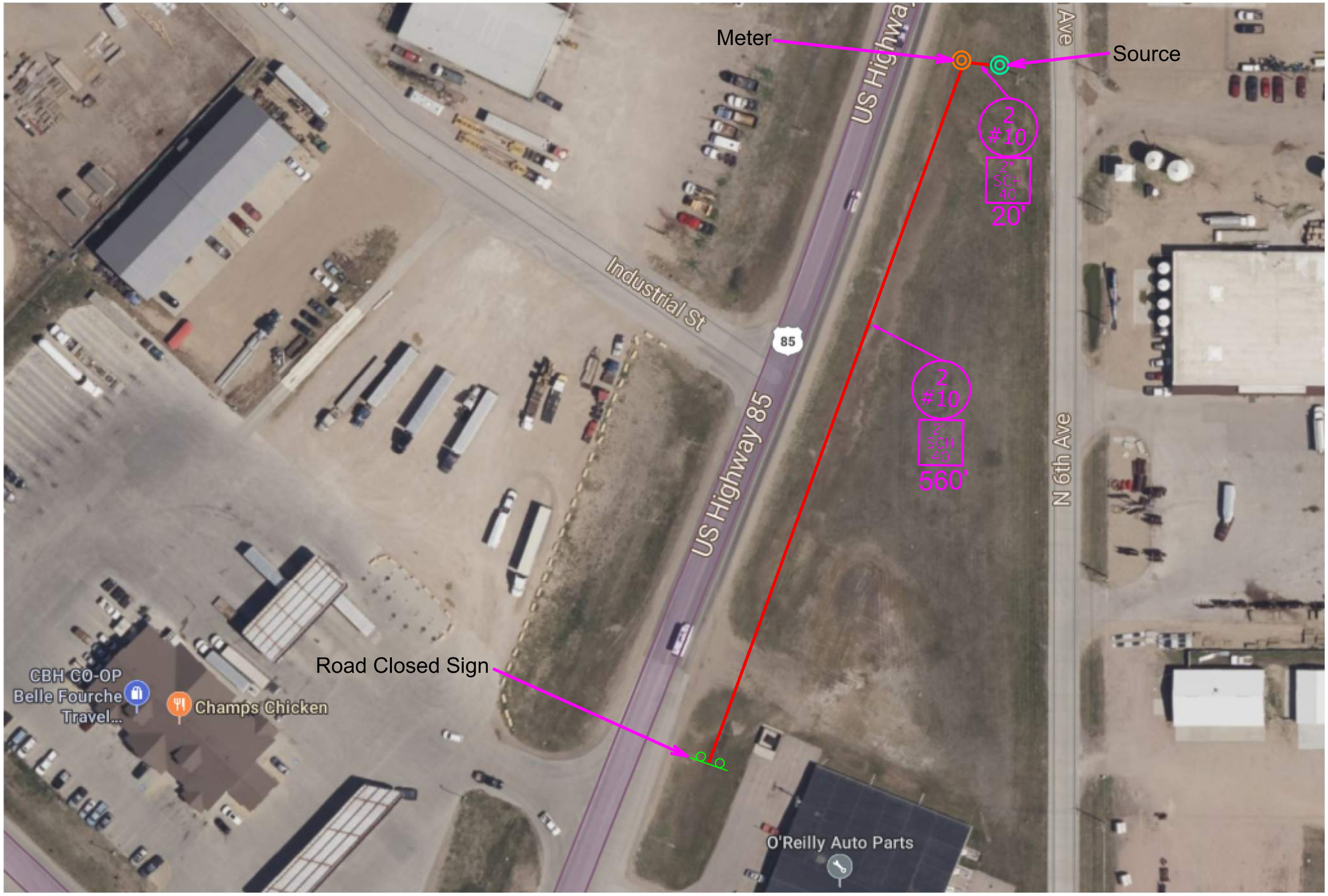
Plotting Date: 04/30/2024



US Hwy 85 Road Closed Sign - Conduit & Wiring Details

SD DOT	PROJECT	SECTION	SHEET
	085-471	Non	5/13

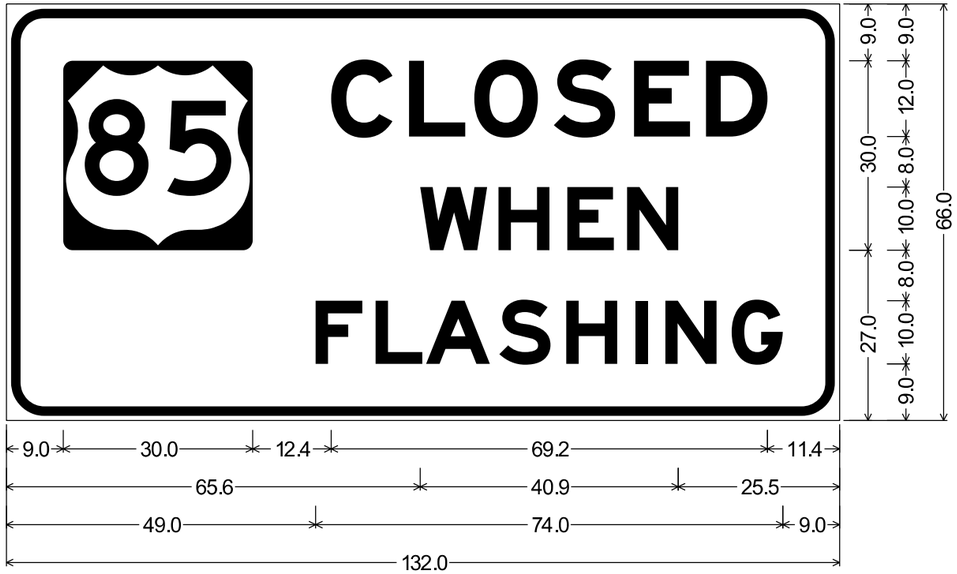
Plotting Date: 04/26/2024



SD DOT	PROJECT	SECTION	SHEET
	085-471	Non	6/13

Plotting Date: 03/08/2024

SIGN DETAILS



6.0" Radius, 1.5" Border, 0.8" Indent, Black on White;
Rounded Rectangle 1.5" Radius;
"CLOSED", E Mod 2K; "WHEN", E Mod 2K; "FLASHING", E Mod 2K;
Table of widths and spaces

9.0	85 30.0	12.4	C 9.8	2.6	L 8.9	1.4	O 10.1	2.5	S 9.7	3.0	E 8.9	2.5	D 9.8	11.4				
65.6	W 10.6	1.8	H 8.1	2.8	E 7.4	2.1	N 8.1	25.5										
49.0	F 7.4	2.1	L 7.4	0.6	A 10.1	1.5	S 8.1	2.5	H 8.1	2.8	I 2.0	2.8	N 8.1	2.4	G 8.1	9.0		

WIDTH x HEIGHT	11' 0" x 5' 6"	
BORDER WIDTH	1.5" inset 0.75"	
CORNER RADIUS	6.0"	
BACKGROUND	TYPE:	Type XI SUPER/VERY High Intensity
	COLOR:	WHITE
LEGEND / BORDER	TYPE:	Opaque
	COLOR:	BLACK

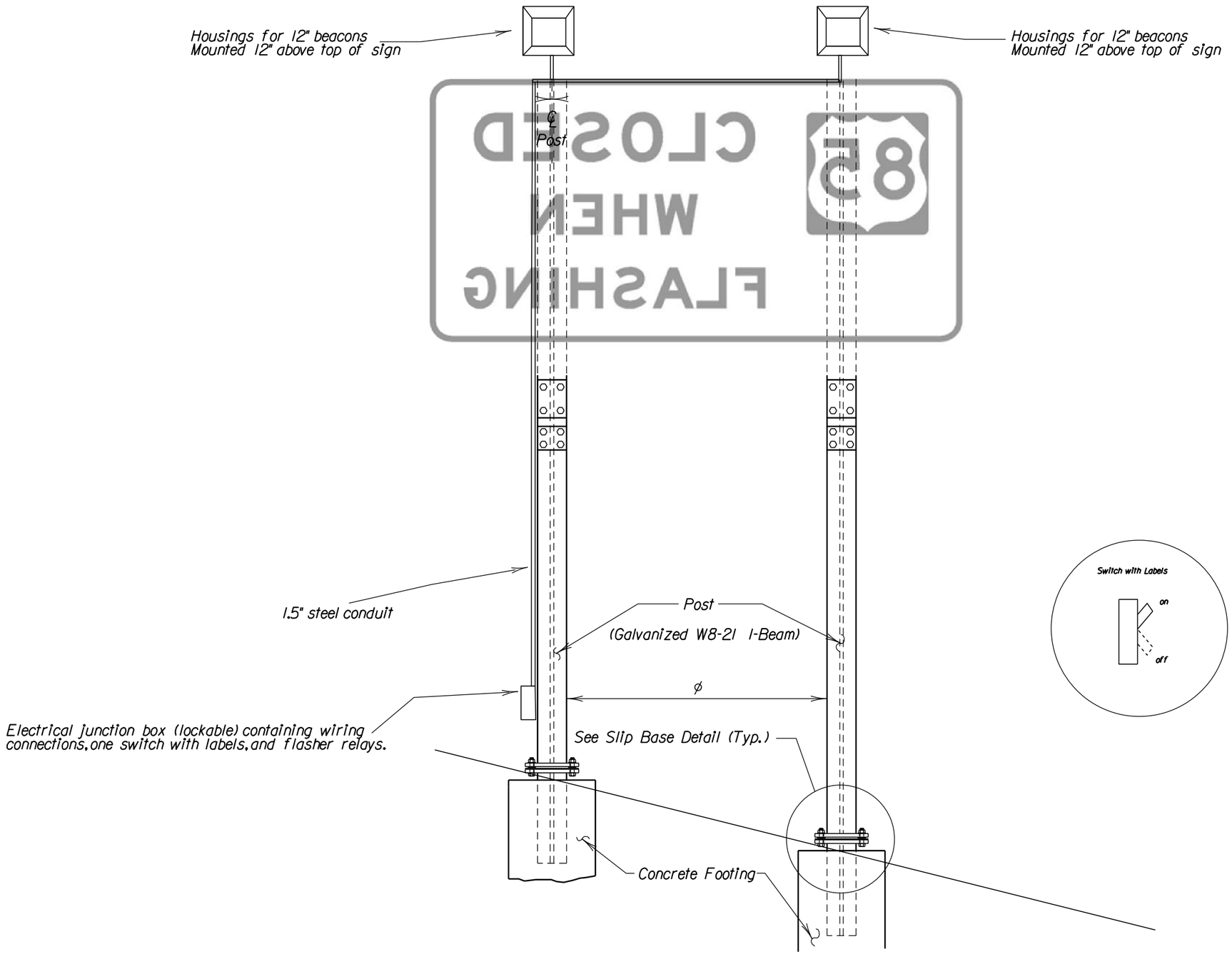
HWY	MRM	SIGN									POST								SIGN DESCRIPTION	WORK TO BE DONE	LF of W 8x21	SQFT XI
		Side of Road	Width (in)	Height (in)	Direction Facing	Location	New Sign	Sign Type	Square Footage	Sheeting Type	New Post	Length Post #1 (ft)*	Offset to center of Post #1 (ft)	Length Post #2 (ft)*	Offset to center of Post #2 (ft)	Size	# of Posts	Shear Slip Base				
US 85	56.65	Right	132	66	South	ROW	YES	EXTR. ALUM	60.5	XI	YES	16.5	33.0	17.0	39.6	W 8x21	2	YES	US 85 - CLOSED WHEN FLASHING	INSTALL NEW SIGN ON NEW POSTS. INSTALL FLASHING BEACONS ABOVE NEW SIGN.	33.5	60.5

* Contractor shall field verifty the post length prior to ordering

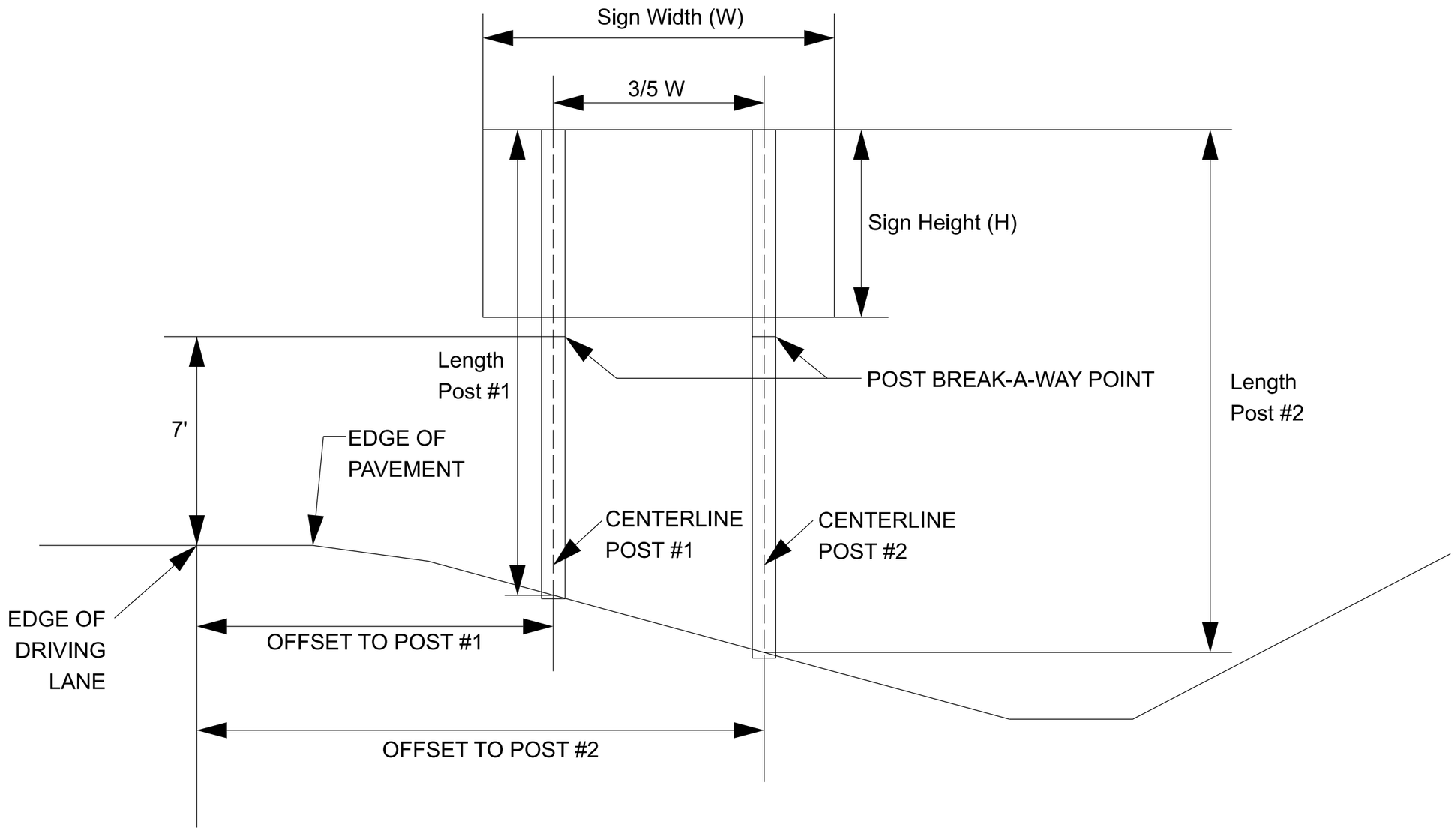
SD DOT	PROJECT	SECTION	SHEET
	085-471	Non	7/13

Plotting Date: 03/07/2024

US Hwy 85 Road Closed Sign - Rear View



Sign Offset Details



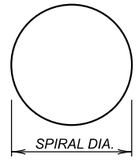
PROJECT	SECTION	SHEET
085-471	Non	9/13

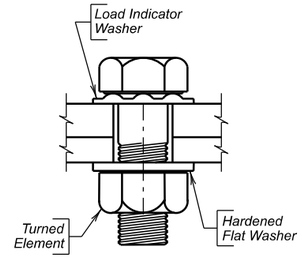
Plotting Date: 03/08/2024

SITE LOCATION	POST SIZE	FOOTING DIMENSIONS		STUB POST LENGTH	LONGITUDINAL STEEL QUANTITIES			# SPIRAL STEEL QUANTITIES	
		DIA.	DEPTH		NO.	SIZE	LENGTH	DIA.	LENGTH
Hwy 85 - MRM 56.65 North of Hwy 212	W 8x21	1.75	7	2.25	8	#6	6.6667	1.4167	42.25

⧖ # Spirals - Use 12" pitch and 1 ½ extra turns at each end. Use 1 ½ 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.

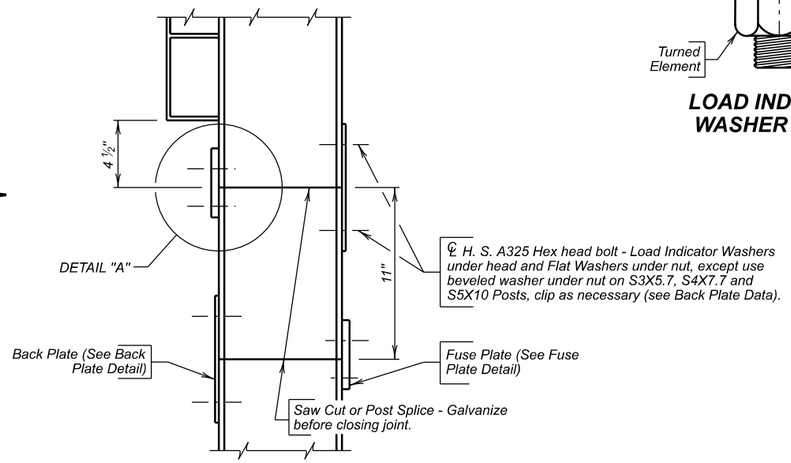
NOTE:
The above is a Site Specific data entry table and the inserted information is the responsibility of the Region Traffic Engineer.



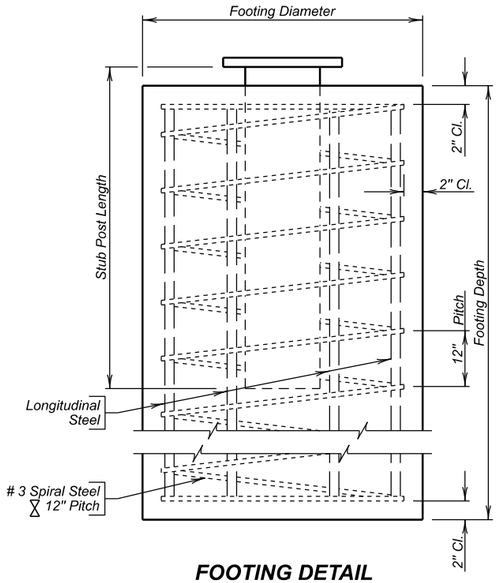


LOAD INDICATOR WASHER DETAIL

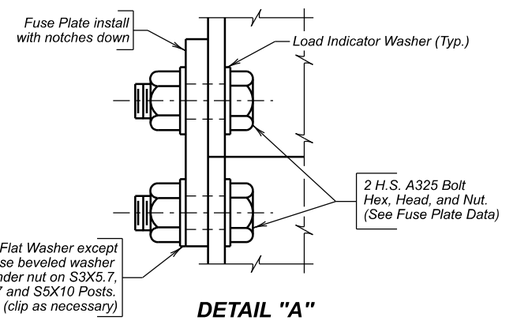
TRAFFIC DIRECTION



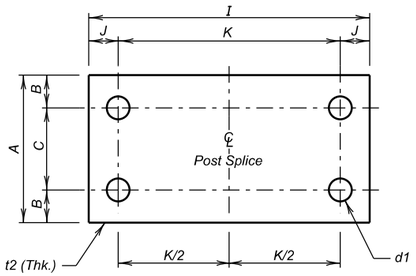
FUSE & BACK PLATE INSTALLATION



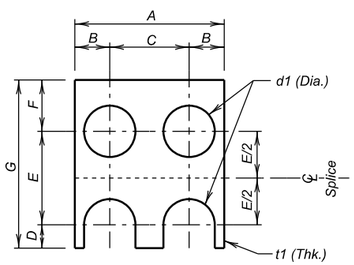
FOOTING DETAIL



DETAIL "A"



BACK PLATE DETAIL



FUSE PLATE DETAIL

NOTES

1. Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 2001 Edition with 2003 Interims.
2. Concrete Footings shall be Class M6 - fc = 4000 p. s. i.
3. Structural Steel shall comform 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 A1064, 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 ½" 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.
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 1.5 Structural Welding Code.

PROCEDURE FOR ASSEMBLING SLIP BASE

1. Place galvanized Sheet Metal Diaphrams 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

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.

TABLE 1 - FUSE PLATE DATA

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 1/8"	5/8" Ø	1/4"	1/2" Ø
S4X7.7	2 5/8"	9/16"	1 1/2"	1/2"	1 1/2"	1 1/8"	3 1/8"	5/8" Ø	1/4"	1/2" Ø
S5X10	3"	11/16"	1 5/8"	5/8"	2 1/4"	1 1/8"	4"	3/4" Ø	3/8"	5/8" Ø
W6X12	4"	15/16"	2 1/8"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" Ø	3/8"	5/8" Ø
W6X15	6"	1 3/8"	3 1/4"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" Ø	3/8"	5/8" Ø
W6X20	6"	1 3/8"	3 1/4"	5/8"	2 1/2"	1 3/8"	4 1/2"	3/4" Ø	3/8"	5/8" Ø
W8X18	5 1/4"	1 5/16"	2 5/8"	3/4"	2 1/2"	1 3/8"	4 5/8"	7/8" Ø	1/2"	3/4" Ø
W8X21	5 1/4"	1 5/16"	2 5/8"	3/4"	2 1/2"	1 3/8"	4 5/8"	7/8" Ø	1/2"	3/4" Ø
W8X24	6 1/2"	1 1/2"	3 1/2"	7/8"	3"	1 5/8"	5 1/2"	1"Ø	9/16"	7/8" Ø
W8X28	6 1/2"	1 9/16"	3 3/8"	7/8"	3"	1 3/4"	5 5/8"	1"Ø	1/2"	7/8" Ø
W8X31	8"	1 5/8"	4 3/4"	1"	3 1/2"	2"	6 1/2"	1 1/8" Ø	5/8"	1" Ø
W10X33	8"	1 7/8"	4 1/4"	1 1/8"	4 1/2"	2 1/4"	7 7/8"	1 1/4" Ø	3/4"	1 1/8" Ø

TABLE 5 - BACK PLATE DATA

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" Ø	1/4"	1/2" Ø
S4X7.7	2 5/8"	9/16"	1 1/2"	1 1/4"	4 1/2"	7"	5/8" Ø	1/4"	1/2" Ø
S5X10	3"	11/16"	1 5/8"	1 1/4"	4 3/4"	7 1/4"	3/4" Ø	1/4"	5/8" Ø
W6X12	4"	15/16"	2 1/8"	1 1/4"	4 3/4"	7 1/4"	3/4" Ø	1/4"	5/8" Ø
W6X15	6"	1 3/8"	3 1/4"	1 1/4"	5 1/4"	7 3/4"	3/4" Ø	1/4"	5/8" Ø
W6X20	6"	1 3/8"	3 1/4"	1 1/4"	5 1/4"	7 3/4"	3/4" Ø	1/4"	5/8" Ø
W8X18	5 1/4"	1 5/16"	2 5/8"	1 3/8"	5 3/4"	8 1/2"	7/8" Ø	1/4"	3/4" Ø
W8X21	5 1/4"	1 5/16"	2 5/8"	1 3/8"	5 3/4"	8 1/2"	7/8" Ø	1/4"	3/4" Ø
W8X24	6 1/2"	1 1/2"	3 1/2"	1 5/8"	6"	9 1/4"	1"Ø	5/16"	7/8" Ø
W8X28	6 1/2"	1 9/16"	3 3/8"	1 3/4"	6"	9 1/2"	1"Ø	3/8"	7/8" Ø
W8X31	8"	1 5/8"	4 3/4"	2"	6 1/2"	10 1/2"	1 1/8" Ø	3/8"	1" Ø
W10X33	8"	1 7/8"	4 1/4"	2 1/2"	7"	1' - 0"	1 1/4" Ø	7/16"	1 1/8" Ø

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

1 OF 2

DESIGNED BY	DRAWN BY	CHECKED BY	
RH/DM	RH/TB/MDG	RH/DM/PW	BRIDGE ENGINEER
CNTYPCNX	PCNXDSPG	BSTDBS2C	

Plotted From - TRBE1NT09 File - ...\dgn\7EL - Sign Details.dgn

SD DOT	PROJECT	SECTION	SHEET
	085-471	Non	10/13

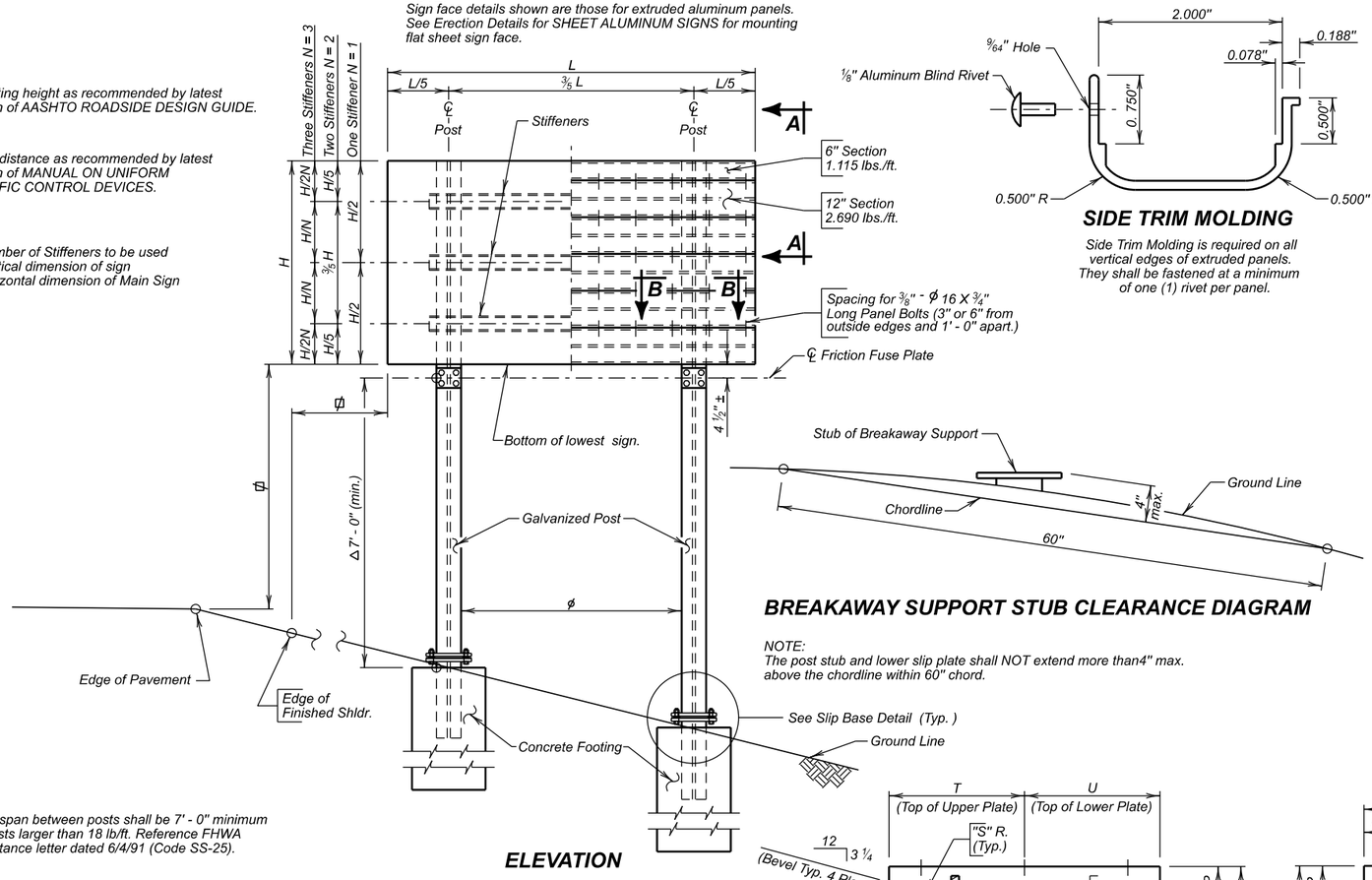
Plotting Date: 03/08/2024

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

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

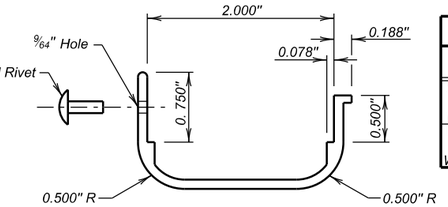
ϕ Clear distance as recommended by latest edition of MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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



ϕ 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).

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.

STIFFENER DATA

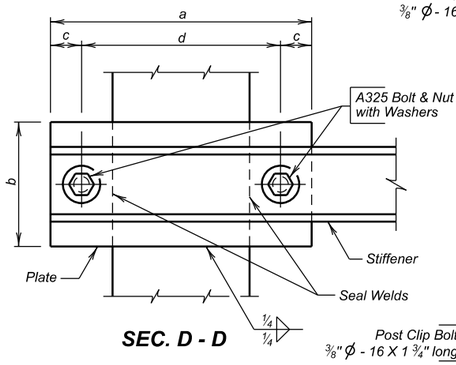
Post	Stiffener	a	b	c	d	Bolt (A325)	Plate Thk.
S3X5.7 thru W8X21	C3X5	10 1/2"	5"	1 1/4"	8"	5/8" ϕ	5/16"
W8X24 thru W10X45	C5X6.7	13 1/2"	6"	1 1/2"	10 1/2"	7/8" ϕ	3/8"

STIFFENER NOTES

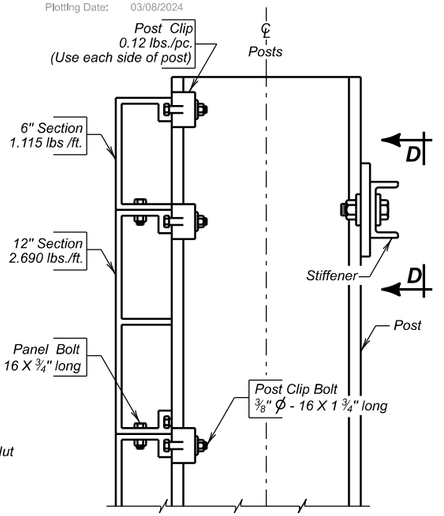
1. Stiffeners must always be used on Two Post Breakaway signs regardless of type of sign face employed.
2. Number of stiffeners used, N, shall be as follows:
   if H < = 2' - 0" then N = 1
   if 2' - 0" < H < = 8' - 0" then N = 2
   if 8' - 0" < H < = 15' - 0" then N = 3

BREAKAWAY SUPPORT STUB CLEARANCE DIAGRAM

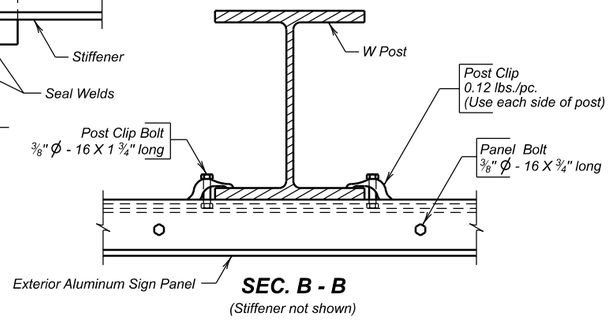
NOTE:
The post stub and lower slip plate shall NOT extend more than4" max. above the chordline within 60" chord.



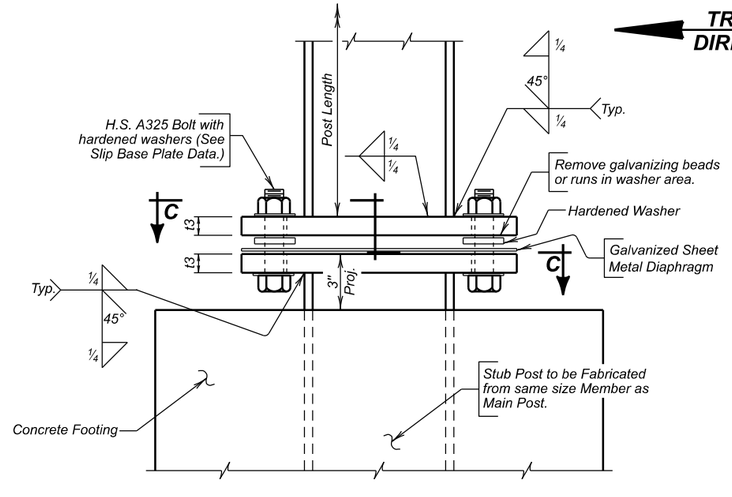
SEC. D - D



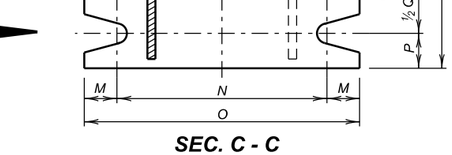
SEC. A - A



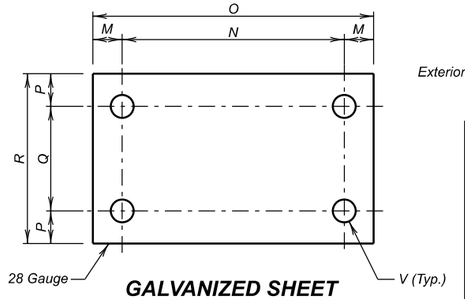
SEC. B - B
(Stiffener not shown)



TRAFFIC DIRECTION



SEC. C - C



GALVANIZED SHEET METAL DIAPHRAGM

TABLE 3 - SHEET METAL DIAPHRAGM DATA

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"	4 1/4"	7 1/2"	1 1/8"
W10X33	1 3/4"	11 1/4"	1' - 3"	1 7/8"	5"	9"	1 1/8"

TABLE 4 - SLIP BASE PLATE DATA

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"	9/32"	3 3/4"	3 3/4"	5/8"	1/2" ϕ	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" ϕ	142" - #
S5X10	7/8"	7 1/4"	9"	3/4"	2"	3 1/2"	11/32"	4 1/2"	4 1/2"	7/8"	5/8" ϕ	345" - #
W6X12	7/8"	8 1/4"	10"	7/8"	2 3/4"	4 1/2"	11/32"	5"	5"	7/8"	5/8" ϕ	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" ϕ	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" ϕ	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" ϕ	554" - #
W8X21	1 1/4"	11 1/4"	1' - 1 3/4"	1 1/4"	3 1/2"	6"	15/32"	6 7/8"	6 7/8"	1"	7/8" ϕ	645" - #
W8X24	1 1/2"	11"	1' - 2"	1 5/8"	4 1/4"	7 1/2"	15/32"	7"	7"	1"	7/8" ϕ	645" - #
W8X28	1 5/8"	11 1/4"	1' - 2 1/2"	1 5/8"	4 1/4"	7 1/2"	17/32"	7 1/4"	7 1/4"	1 1/8"	1" ϕ	735" - #
W8X31	1 3/4"	11 1/4"	1' - 2 3/4"	1 7/8"	5 1/4"	9"	17/32"	7 3/8"	7 3/8"	1 1/8"	1" ϕ	735" - #
W10X33	1 3/4"	1' - 2"	1' - 5 1/2"	1 7/8"	5 1/4"	9"	17/32"	8 3/4"	8 3/4"	1 1/4"	1" ϕ	735" - #

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

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

DESIGNED BY	DRAWN BY	CHECKED BY	
RH/DM	TB/MDG	RH/DM/PW	BRIDGE ENGINEER
CNTYPCNX	PCNXDSPG	BSTDBS2D	

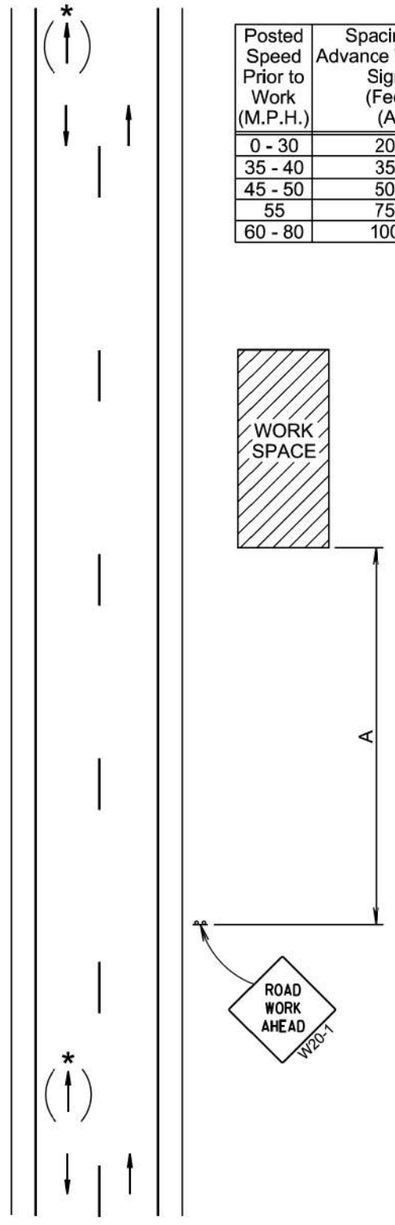
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated will be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

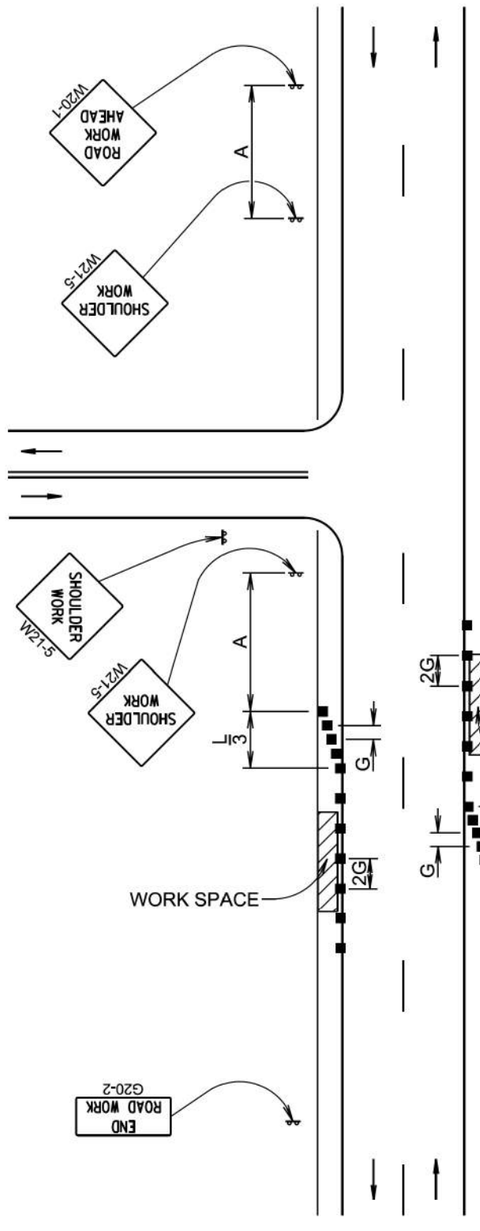
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000

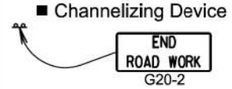
January 22, 2021

Published Date: 2024 | SDDOT | WORK BEYOND THE SHOULDER | PLATE NUMBER 634.01 | 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

■ Channelizing Device



The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

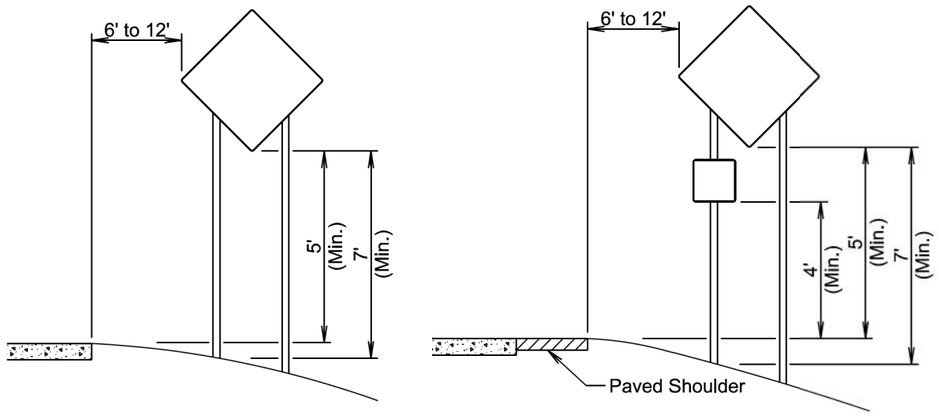
Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

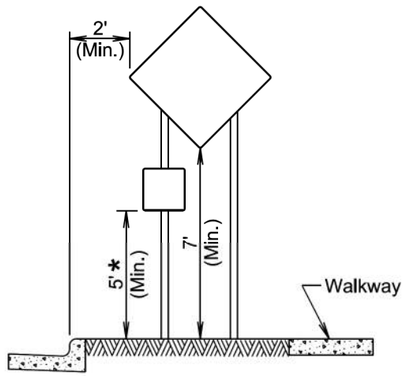
January 22, 2021

Published Date: 2024 | SDDOT | WORK ON SHOULDERS | PLATE NUMBER 634.03 | Sheet 1 of 1

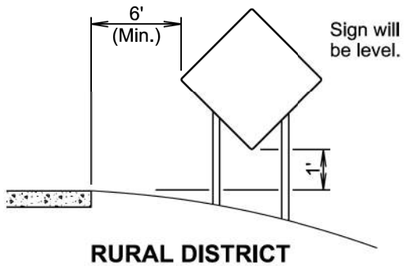


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

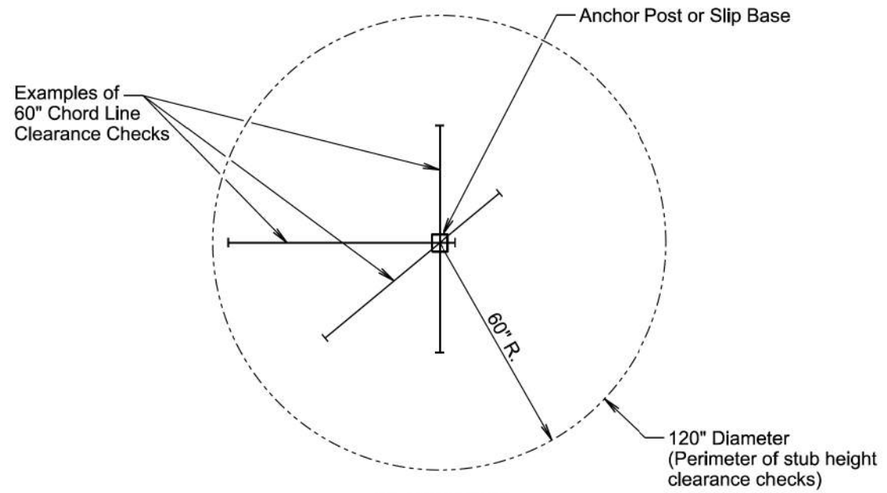


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

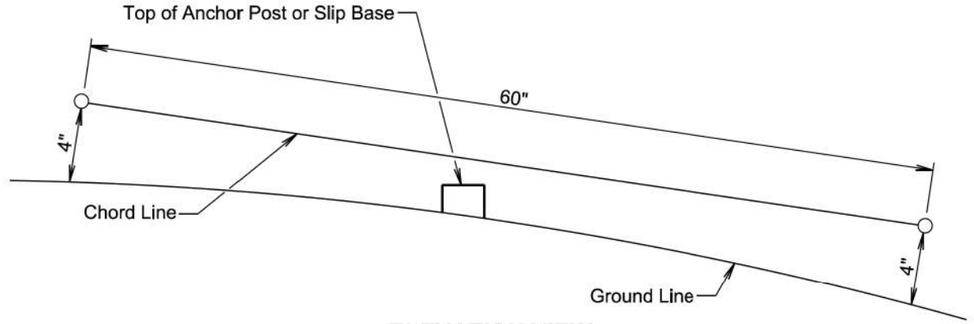
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2024	SDDOT	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:

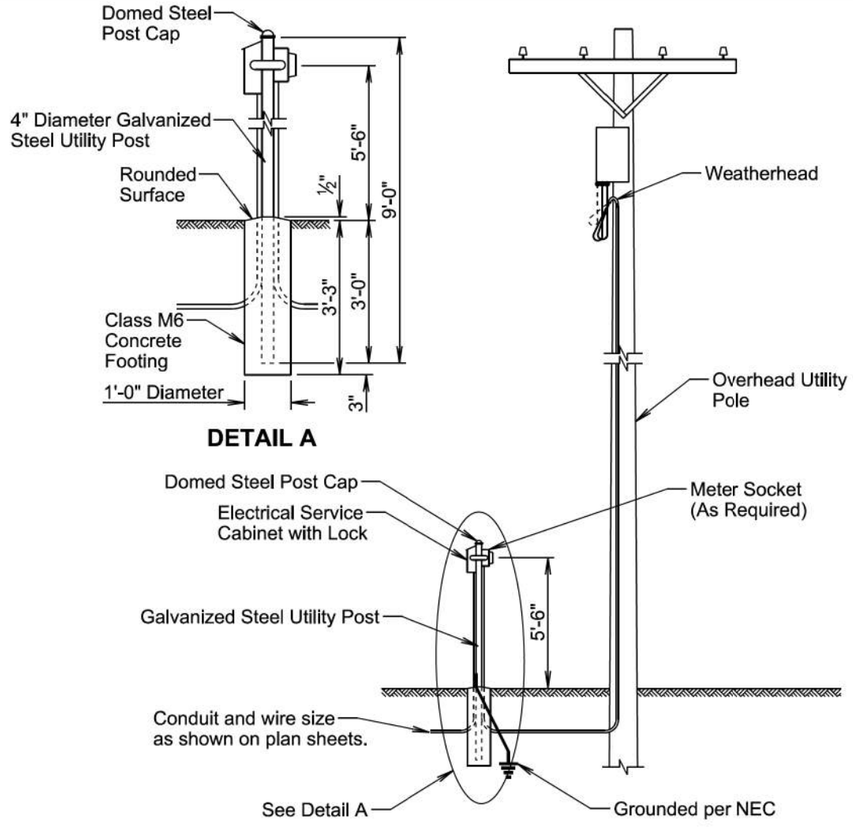
The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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: 2024	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



ELEVATION VIEW

GENERAL NOTES:

The service cabinet will include an externally mounted 15A receptacle outlet. The receptacle will be housed in a lockable NEMA 3R enclosure. The Contractor will furnish a lock and keys to the Engineer as directed.

The concrete for the post footing will be class M6 concrete.

The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.

The Contractor will contact and coordinate his/her work with the Utility Companies regarding hookup requirements, fees, materials, and equipment necessary.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, equipment, hookup fees, all items within the cabinet, lockable enclosure with receptacle outlet, lock and keys, post, concrete footing, post cap, meter socket if required, conduit, and incidentals will be incidental to the contract unit price per each for "Electrical Service Cabinet".

November 19, 2022

Published Date: 2024	SDDOT	GALVANIZED STEEL UTILITY POST WITH OVERHEAD UTILITY POLE	PLATE NUMBER 635.35 Sheet 1 of 1