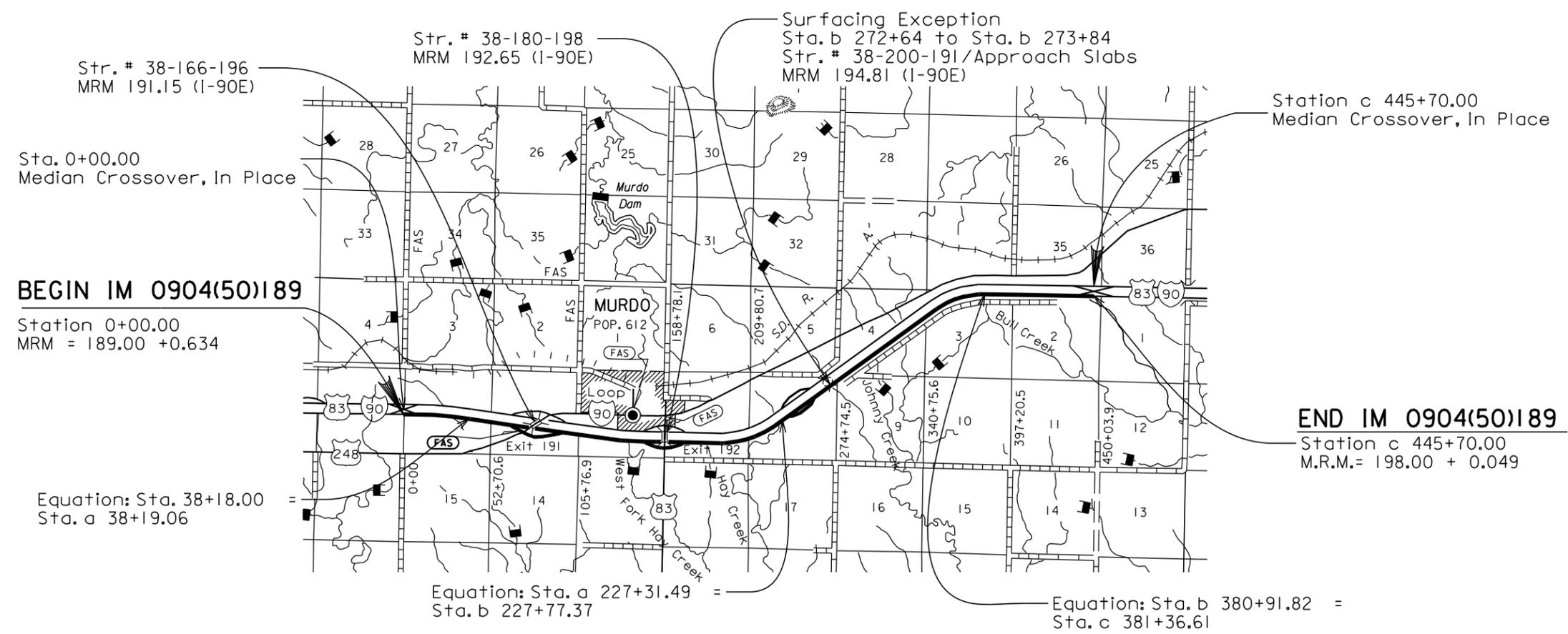


SECTION S: PERMANENT SIGNING PLANS

- S1 General Layout with Index
- S2 Quantities and Notes
- S3-S5 Delineator Details
- S6 Erection Details for Signs
- S7-S8 Erection Details for Posts



PLOT SCALE - 1:7906.18

PLOTTED FROM - IRPR25291

PLOT NAME - 1

FILE - ... \REGION\PR\J\JONE\00GL\TITLE.DGN

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0904(50)189	S2	S8

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0100	Remove Concrete Footing(s)	Lump Sum	LS
110E5020	Salvage Traffic Sign	13	Each
632E0014	1.75' Diameter Breakaway Support Concrete Footing	18.0	Ft
632E2000	4"x4" Amber Delineator with 1.12 Lb/Ft Post	16	Each
632E2004	4"x8" Amber Delineator with 1.12 Lb/Ft Post	18	Each
632E2020	4"x4" White Delineator with 1.12 Lb/Ft Post	118	Each
632E2024	4"x8" White Delineator with 1.12 Lb/Ft Post	52	Each
632E2520	Type 2 Object Marker	2	Each
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	1	Each

SALVAGE TRAFFIC SIGN

All existing signs listed for salvage in the Table of Signs to be Salvaged shall be dismantled and delivered to the Murdo Maintenance Yard. All bases, posts, footings and hardware become the property of the Contractor. All cost for labor and equipment necessary to remove, dismantle, and deliver the signs to the Murdo maintenance Yard shall be incidental to the contract unit price per each for Salvage Traffic Sign.

TABLE OF SIGNS TO BE SALVAGED

M.R.M.	Sign Description	Sign Support
190.85	EXIT 191	Steel
191.48	YIELD	Telespar
191.75	Route Markers	Telespar
192.20	Home Of	Telespar
192.43	EXIT 192	Steel
192.89	YIELD	Telespar
193.04	Give 'Em a Brake	Telespar
193.09	Slippery / Wet	Telespar
193.19	Route Markers	Telespar
193.31	Speed Limit	Telespar
193.39	Emergency Park	Telespar
194.27	No Littering	Telespar
194.48	YIELD	Telespar

PERMANENT SIGNING

Salvaged signs shall be reset by State forces.

SIGN POST FOOTINGS

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.

Sign Post Footing Data is shown in the Erection Details for Two-Post One-Direction Breakaway Sign Supports sheets.

REMOVE EXISTING CONCRETE SIGN POST FOOTINGS

The Contractor shall remove the two concrete sign footings located at Sta. 141+00 Right to a minimum of 2' below the ground surface. Restoration of the disturbed area shall be to the satisfaction of the Engineer.

All costs for removing the two footings of the existing sign shall be incidental to the contract Lump Sum price for "Remove Concrete Footing(s)".

REMOVE, SALVAGE, RELOCATE AND RESET TRAFFIC SIGN

The existing "I90 Closed When Flashing" sign located at Sta. 141+00 Right shall be removed and reset as directed by the Engineer due to the widening of the road at this location.

Existing traffic sign, posts and hardware removed and not salvaged for reset shall become the property of the Contractor.

Any damage to the sign during the removal and reset of this sign shall be at the cost of the Contractor.

The installation height of signs shall not exceed the minimum by more than 1.0 foot.

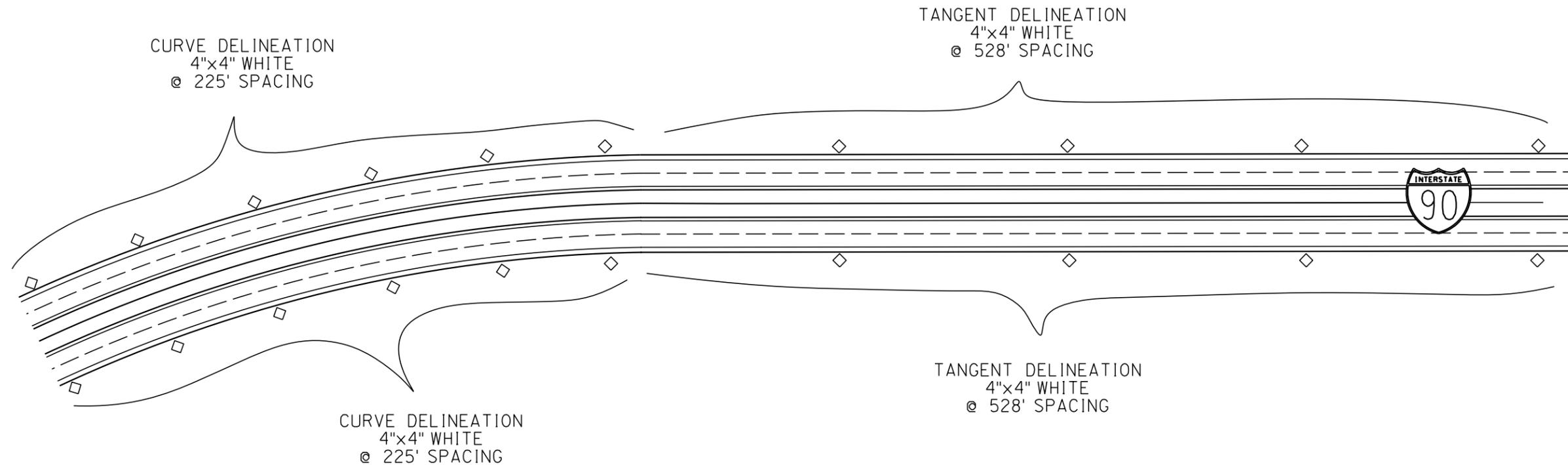
All costs associated with the removal, salvage, relocate and reset of this sign including any electrical connections and hardware shall be incidental to the contract unit price per each for "Remove, Salvage, Relocate and Reset Traffic Sign".

DELINEATOR (MAINLINE INTERSTATE)

Do not add extra delineators at the truck check pullout areas, follow the Delineator Layout Mainline Interstate diagram.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0904(50)189	S3	S8

DELINEATOR LAYOUT MAINLINE INTERSTATE (TYPICAL)



LEGEND

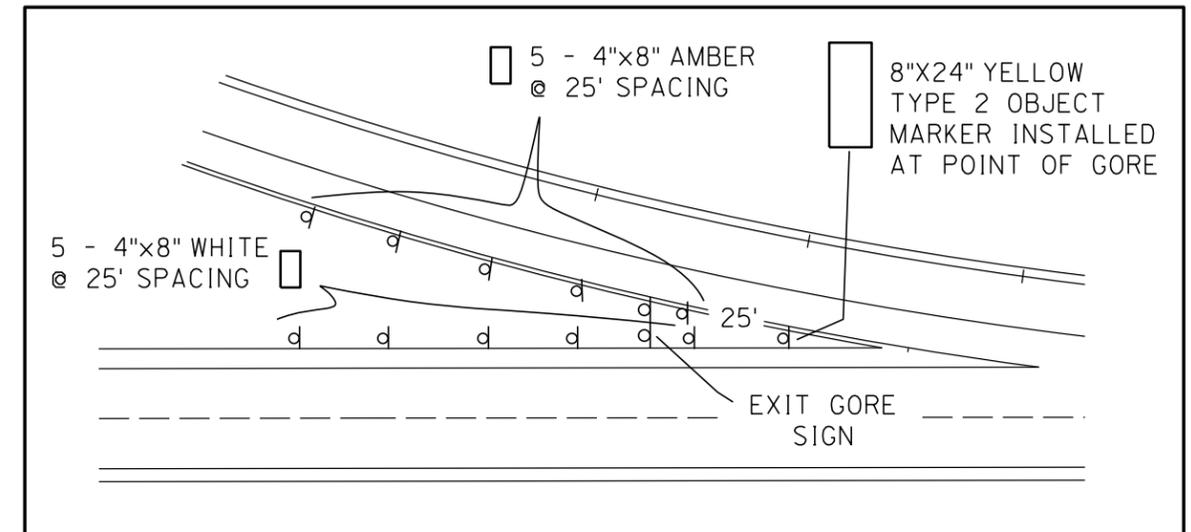
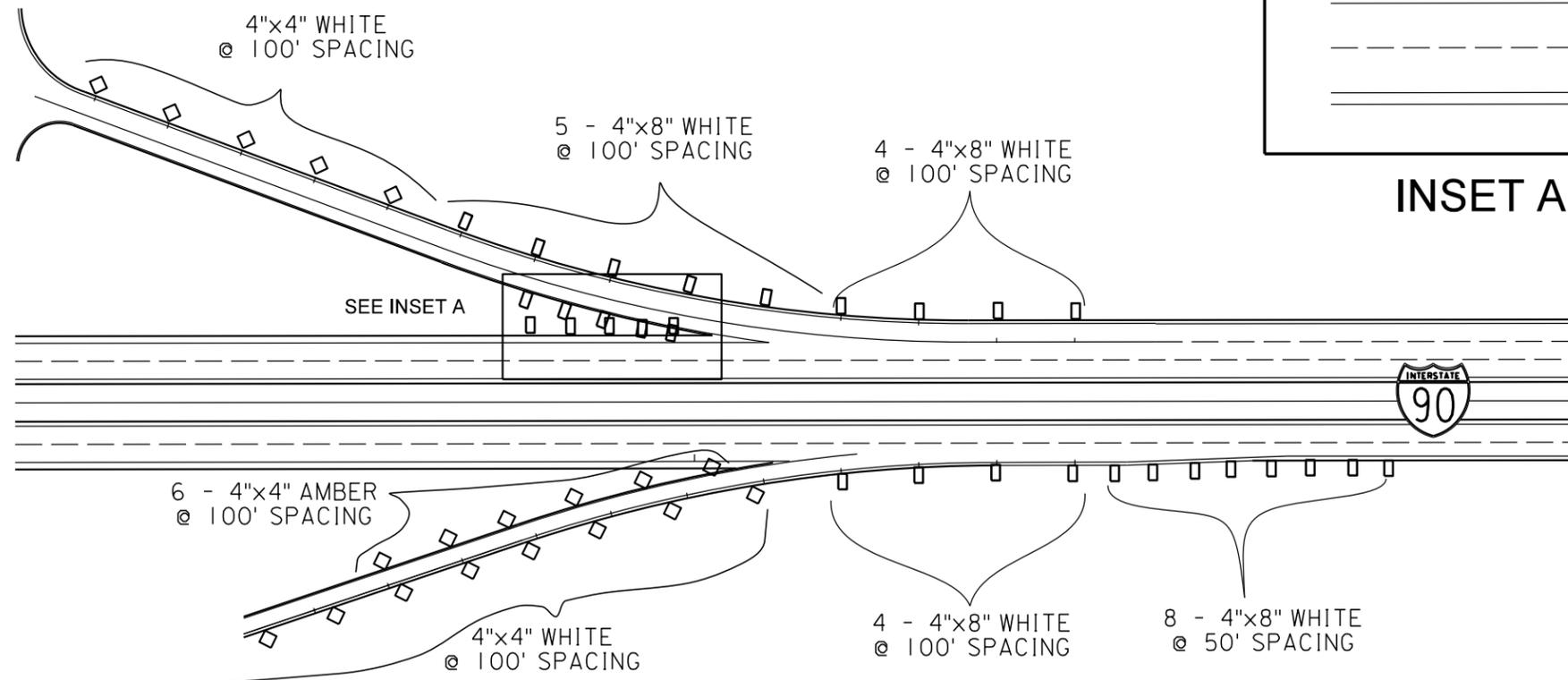
◇ 4"x4" DELINEATOR

NO SCALE

POSTS SHALL BE 1.12 LB/FT

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 09041501189	S4	S8

DELINEATOR LAYOUT RAMPS



INSET A - GORE AREA DELINEATION (TYPICAL)

NO SCALE

LEGEND

- ◇ 4"x4" DELINEATOR
- 4"x8" DELINEATOR

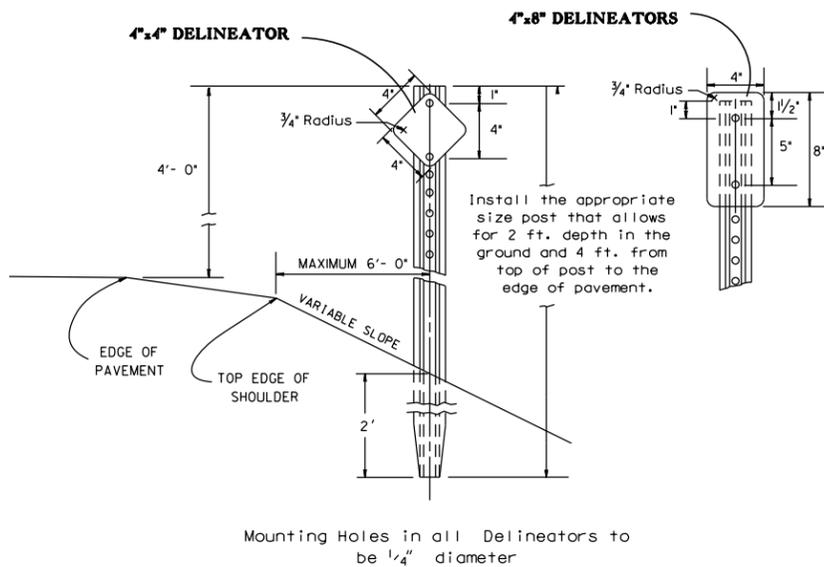
POSTS SHALL BE 1.12 LB/FT

DELINEATOR ERECTION DETAILS

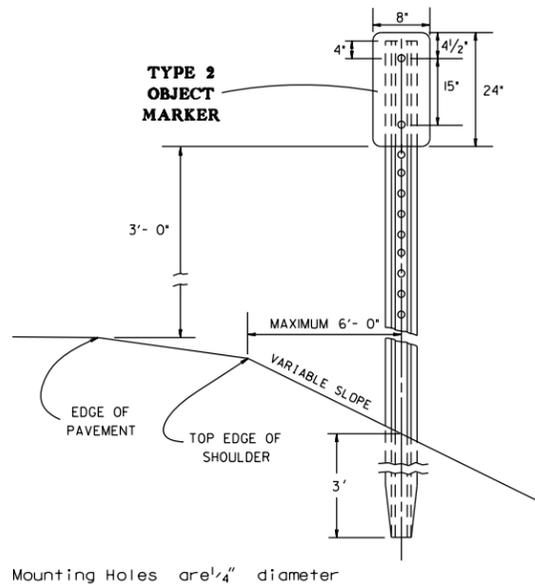
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0904(50)189	S5	S8

POST DETAIL

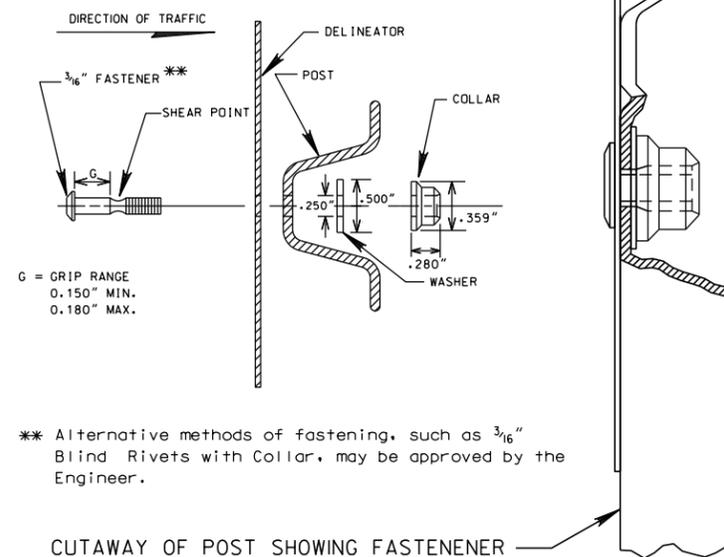
4"x4" and 4"x8" DELINEATORS



TYPE 2 OBJECT MARKER INSTALLATION with Yellow Diamond Grade reflective sheeting



DETAIL FOR SINGLE MOUNTING DELINEATORS ON POST

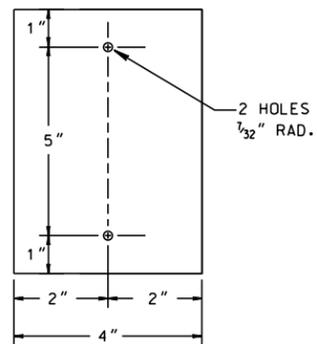
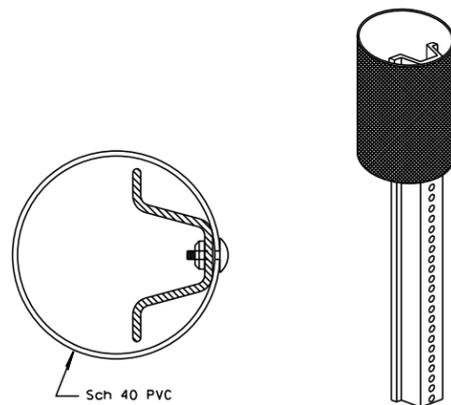


1.12 lb./ft. flanged channel post painted green (delineator post)

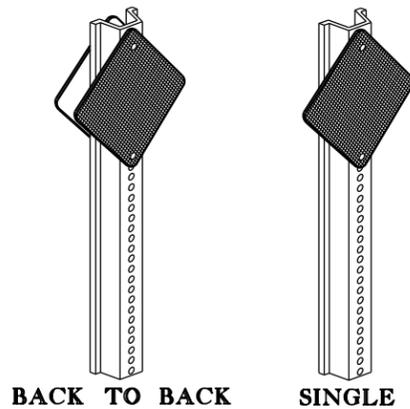
3/8" Diameter
TYP. 30 HOLES

30 HOLES
AT 1 INCH
CENTERS

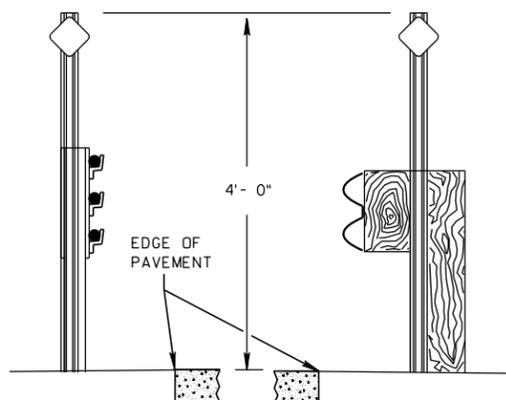
4" TUBULAR DELINEATORS



4"x4" DELINEATORS

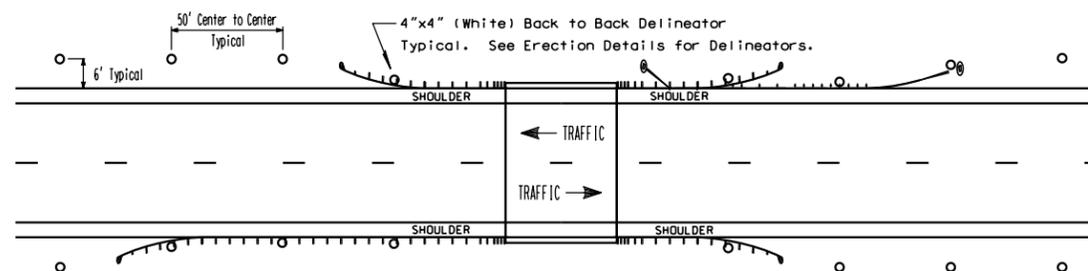


PLACEMENT BEHIND GUARDRAIL

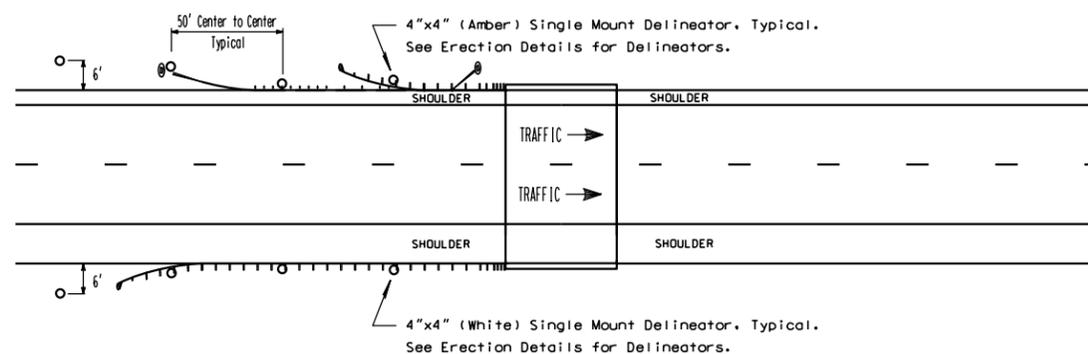


LOCATION DETAILS

STRUCTURE WIDTH GREATER THAN OR EQUAL TO FULL ROADWAY WIDTH



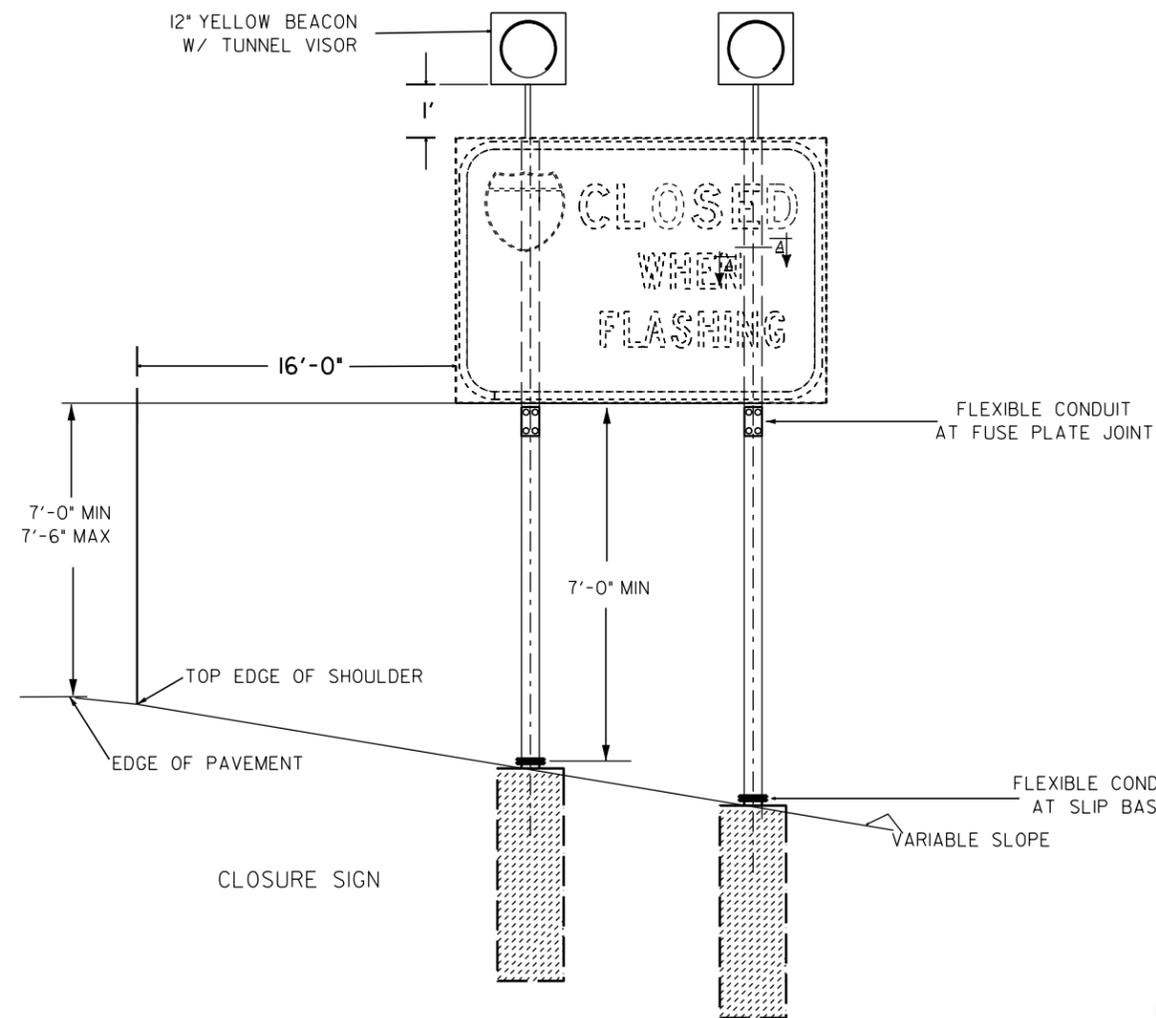
STRUCTURE WIDTH GREATER THAN OR EQUAL TO FULL ROADWAY WIDTH - ONE-WAY TRAFFIC



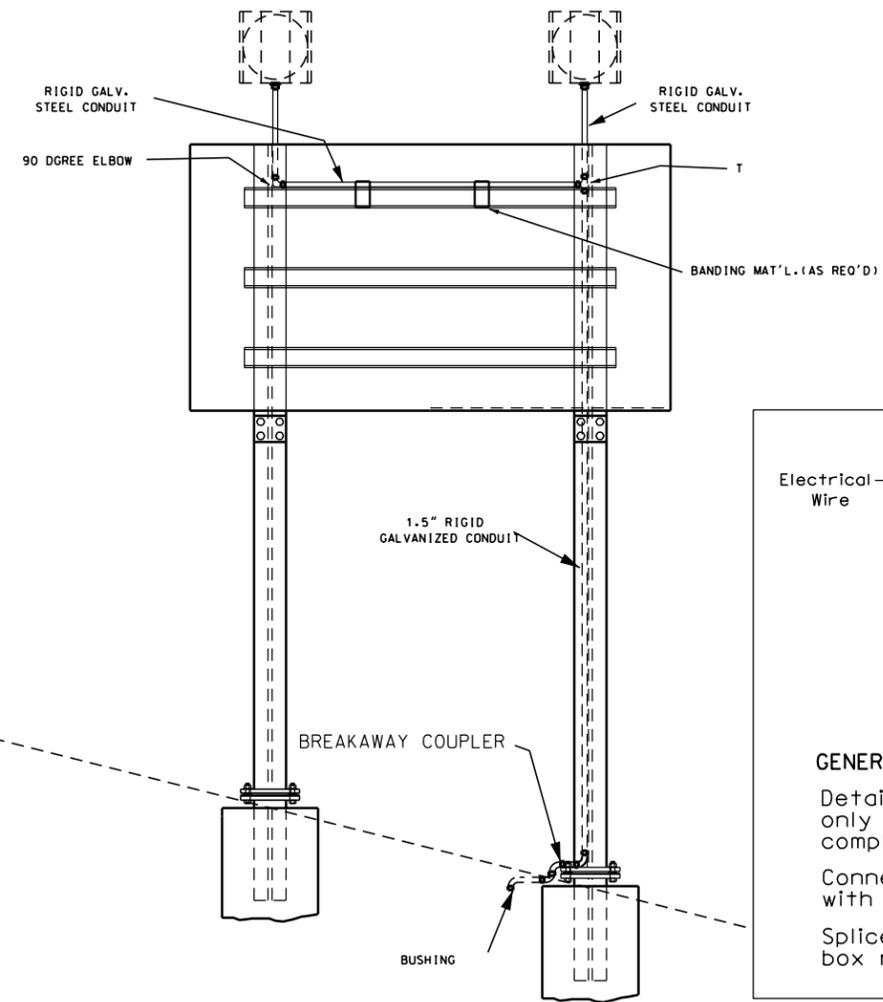
(TYPICAL)

ERECTION DETAILS FOR INTERSTATE HIGHWAY SIGNS

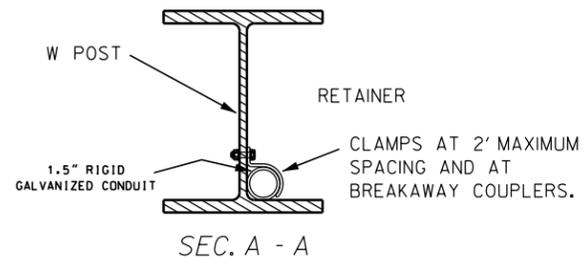
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0904(50)189	S6	S8
Plotting Date: 07/18/2016			



FRONT VIEW



REAR VIEW



Breakaway Splice

Electrical Wire

Fuse

Approved Splice

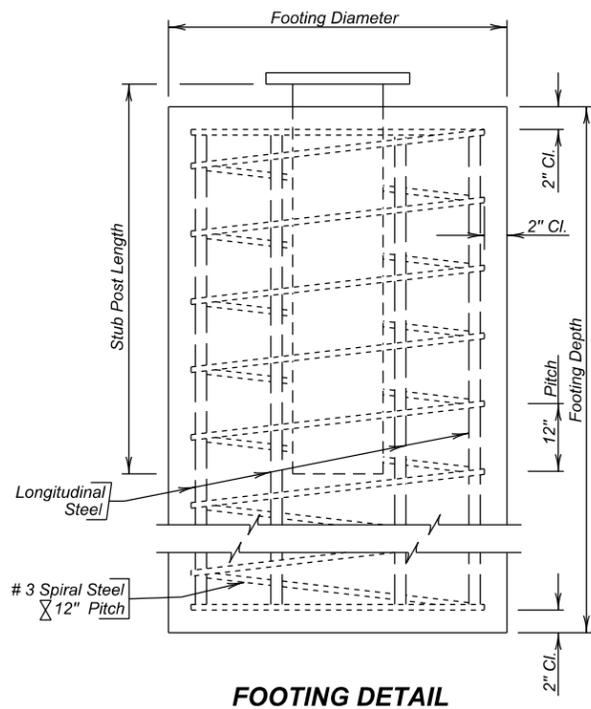
Ground per NEC

GENERAL NOTES:
 Details are provided for example only and are not intended to be a complete design.
 Connectors shall be breakaway type with the male plugs pointing down.
 Splice may be located within junction box nearest the base of the sign.

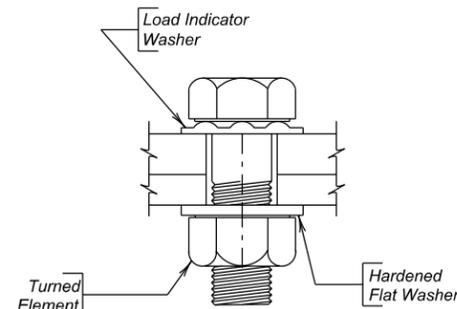
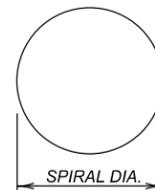
SITE LOCATION	POST SIZE	FOOTING DIMENSIONS		STUB POST LENGTH	LONGITUDINAL STEEL QUANTITIES			# SPIRAL STEEL QUANTITIES	
		DIA.	DEPTH		NO.	SIZE	LENGTH	DIA.	LENGTH
I 90 Closed When Flashing	W 8x28	1.75'	9'	2.5'	8	#6	8'-8"	1'-5"	52'

∑ # 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.

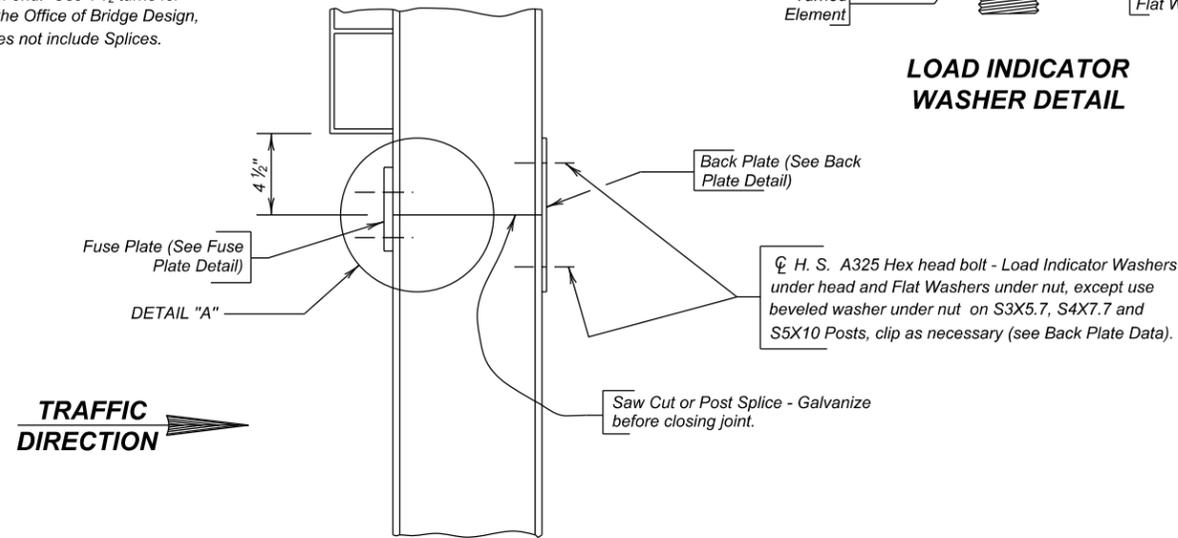
NOTE: The above is a Site Specific data entry table and the inserted information is the responsibility of the Region Traffic Engineer.



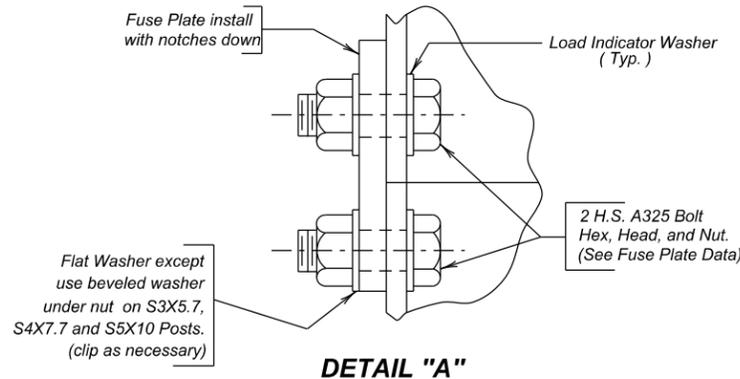
FOOTING DETAIL



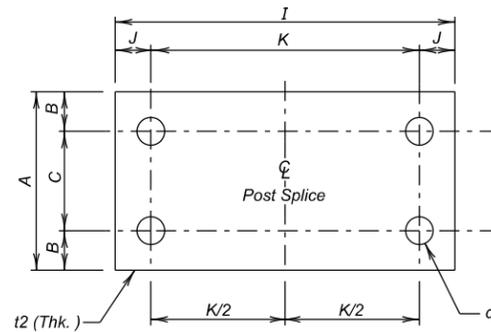
LOAD INDICATOR WASHER DETAIL



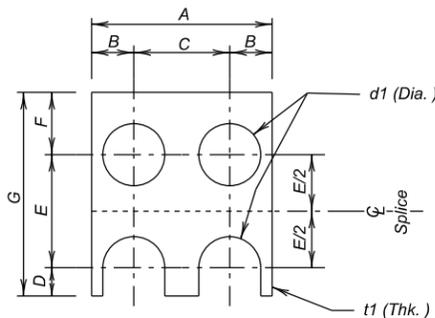
FUSE & BACK PLATE INSTALLATION



DETAIL "A"



BACK PLATE DETAIL



FUSE PLATE DETAIL

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

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.

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

DESIGNED BY	DRAWN BY	CHECKED BY	
RH/DM	TB	RH/DM	Kevin N. Goeden
CNTYPCNX	PCNXDSPG	BSTDBS2A	BRIDGE ENGINEER

