

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.				

CANTILEVER SIGN NOTES

1. Wind Loading: 80 MPH Velocity.
2. Maximum Height: 40'-0" from average surrounding terrain to the center of the sign panel (Regardless of post height). The Tubular Cantilever has been designed for site conditions which are level and neither elevated above the average surrounding terrain by more than the 40'-0" height shown nor supported on a bridge.
3. The maximum sign panel overlap onto elbow shall not exceed 7'-0" from field splice.
4. The sum of the sign panel area plus the exit panel area shall not exceed the maximum area shown in the TUBULAR CANTILEVER SIGN STRUCTURE TABLE. All signs shall be placed within Sign Panel Location.
5. Drill and tap for 1 1/2" chase nipples and plug with recessed pipe plugs. Place perpendicular to sign panel axis and away from approaching traffic.
6. If the tubular cantilever structure is erected as one unit the pipe assembly shall be adequately suspended to avoid distortions.
7. During sign erection the post shall be raked as necessary with the use of leveling nuts to make the sign panel level. See Traffic Signing Plans for specific locations and elevations.
8. The Optional Shop Splice may not be used when splice location is less than 7'-0" above the top of base plate.
9. The Field Splice surfaces shall be in full contact without gaps prior to the bolts being snug tightened and fully tensioned. The contact surface is the area defined by a 1 3/8" radius around each bolt.

GENERAL NOTES:

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.

Design Specifications - AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Edition of 1994.

Fatigue design based on NCHRP Report 412, Fatigue-Resistant Design of Cantilevered Signal, Sign and Light Supports.

All concrete shall be Class "S".

Reinforcing steel shall conform to ASTM Specification A615 (Grade 60).

All tubular structural frame pipe shall be welded or seamless steel pipe and shall conform to ASTM Specification (Fy = 35,000 psi):

A-53	Grade B,	Type E or S
A252	Grade 2,	Type E or S
A106	Grade B,	Type S only
API 5L	Grade B,	Type E or S
API 5LX	Grade X42,	Type E or S

All other Structural Steel shall conform to ASTM Specification A36 unless noted otherwise.

Stresses:

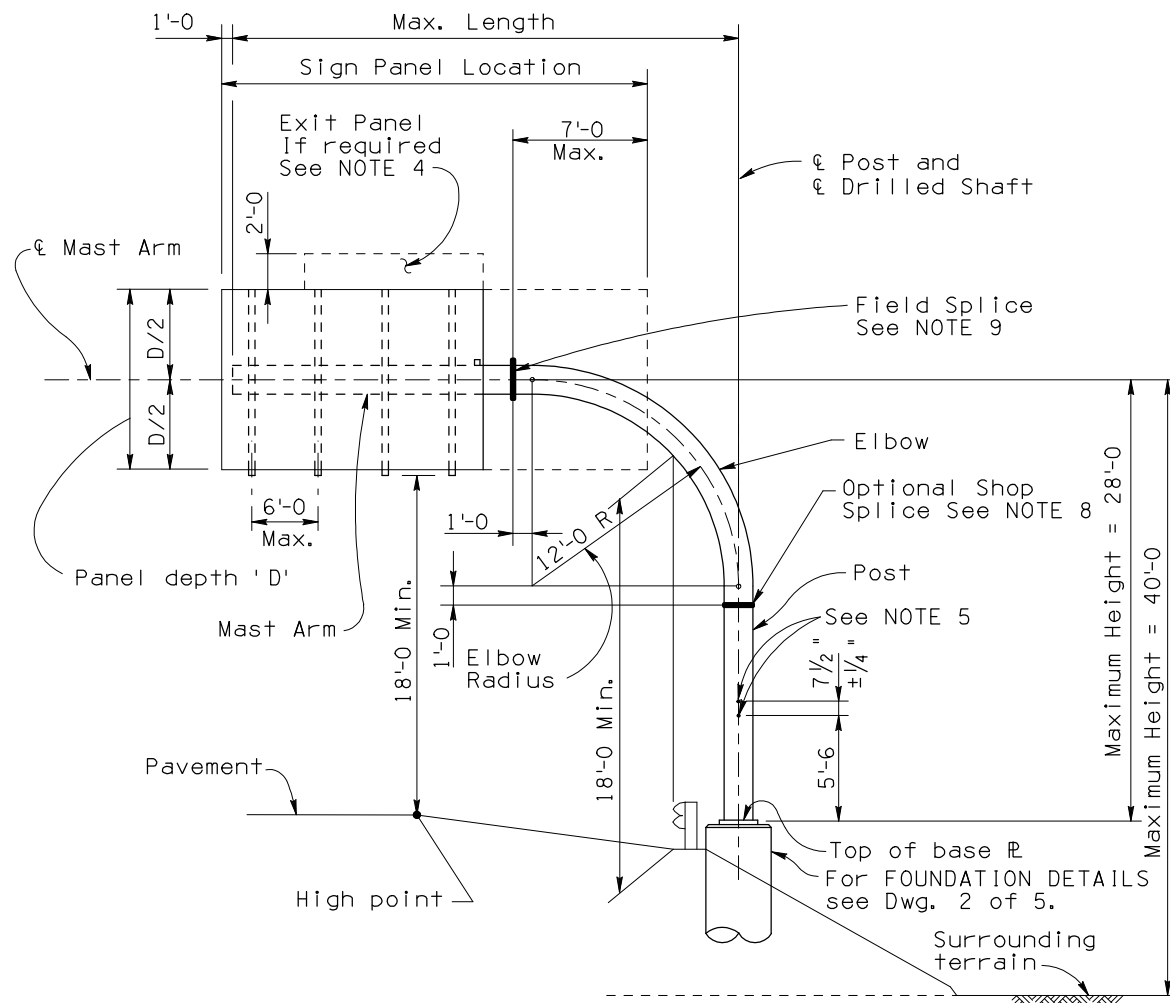
Class "S" concrete	f'c =	3500 psi
Grade 60 reinforcing steel	fs =	24000 psi
Structural steel (A36)	fs =	20000 psi
Tubular Structural Pipe	fb =	23100 psi

All bolts shall conform to ASTM Specification A325. All bolts, nuts and washers shall be galvanized in accordance with the requirements of ASTM A153. All other steel shall be galvanized after fabrication in accordance with ASTM A123.

Welding of structural tubing shall conform to the requirements of the American Welding Society, Structural Welding Code, D1.1-80, as modified by the AASHTO Standard Specifications for Welding of Structural Steel Highway Bridges, 1981. All other welding shall conform to the requirements of the American Welding Society, ANSI/AASHTO/AWS D1.5-96 Bridge Welding Code. All welding shall be continuous unless noted otherwise. All butt welds shall be full penetration using prequalified welding procedures and shall be tested by ultrasonic testing. All butt welds shall be ground flush, full width. Grinding striations shall be parallel to length of member.

The Column to base plate weld (WELD DETAIL A) and pipe flange to elbow and mast arm welds (WELD DETAIL C) shall be tested by ultrasonic testing.

Dimensions shall not be scaled from drawings.



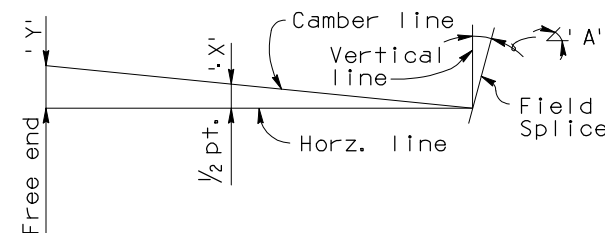
TUBULAR CANTILEVER SIGN STRUCTURE ELEVATION

Note to Designer: The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

NO.	DATE	DESCRIPTION OF REVISIONS
1	01/10/09	Original Issue
2		
3		
4		

TYPE	TUBULAR FRAME		PIPE WALL THICKNESS INCHES			Max. Length feet	Panel Depth 'D'	PAYMENT ITEM			
	Nominal Pipe Dia.	Max. Area Sq. Ft.	Post	Elbow	Mast Arm			CANTILEVER SIGN STRUCTURE		FOUNDATION	
								Item Number	Measurement	Item Number	Measurement
1C	16"	92	1.219	1.219	.500	33'-0"	12'-0"	6060131	Ea	6060254	Ea
2C	18"	151	1.156	1.156	.625	33'-0"	12'-0"	6060132	Ea	6060255	Ea
3C	20"	245	1.280	1.280	.625	33'-0"	12'-0"	6060133	Ea	6060256	Ea
4C	22"	186	1.125	1.125	.875	43'-0"	10'-0"	6060134	Ea	6060257	Ea

TYPE	Post Height (Ft)	CAMBER		Angle 'A'
		'X'	'Y'	
1C	0-5	7/8"	1 5/8"	0° 20' 00"
	5.1-10	1"	2"	0° 24' 30"
	10.1-15	1 1/8"	2 1/4"	0° 29' 00"
2C	0-5	7/8"	1 1/2"	0° 18' 00"
	5.1-10	1"	1 3/4"	0° 22' 00"
	10.1-15	1 1/8"	2 1/8"	0° 26' 00"
3C	0-5	5/8"	1 1/8"	0° 13' 30"
	5.1-10	3/4"	1 3/8"	0° 16' 30"
	10.1-15	7/8"	1 5/8"	0° 20' 00"
4C	0-5	1 5/8"	3"	0° 25' 00"
	5.1-10	1 7/8"	3 1/2"	0° 30' 00"
	10.1-15	2 1/8"	4 1/8"	0° 35' 30"



CAMBER DIAGRAM

1. The camber shown is required to be built into mast arm. Members shall be erected so that camber is provided above the horizontal line thru the field splice.
2. The calculated camber provides for deflections due to dead loads of tubular cantilever structure and dead loads due to sign panels and attachments. For post heights between 0'-0" and 15'-0" values of 'A', 'X', and 'Y' shall be interpolated.
3. The pipe flange of mast arm shall be perpendicular to its longitudinal axis. The pipe flange of elbow shall be tilted from the vertical line at the angle given in the TUBULAR CANTILEVER SIGN STRUCTURE TABLE.

DESIGN APPROVED <i>James R. Pyne</i>	ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION BRIDGE GROUP STRUCTURE DETAIL
APPROVED FOR DISTRIBUTION <i>J. Daniel Davis</i>	TUBULAR SIGN STRUCTURES TUBULAR CANTILEVER GENERAL PLAN
ROUTE	LOCATION
TRACS NO.	DRAWING NO. SD 9.10 (1of5) OF