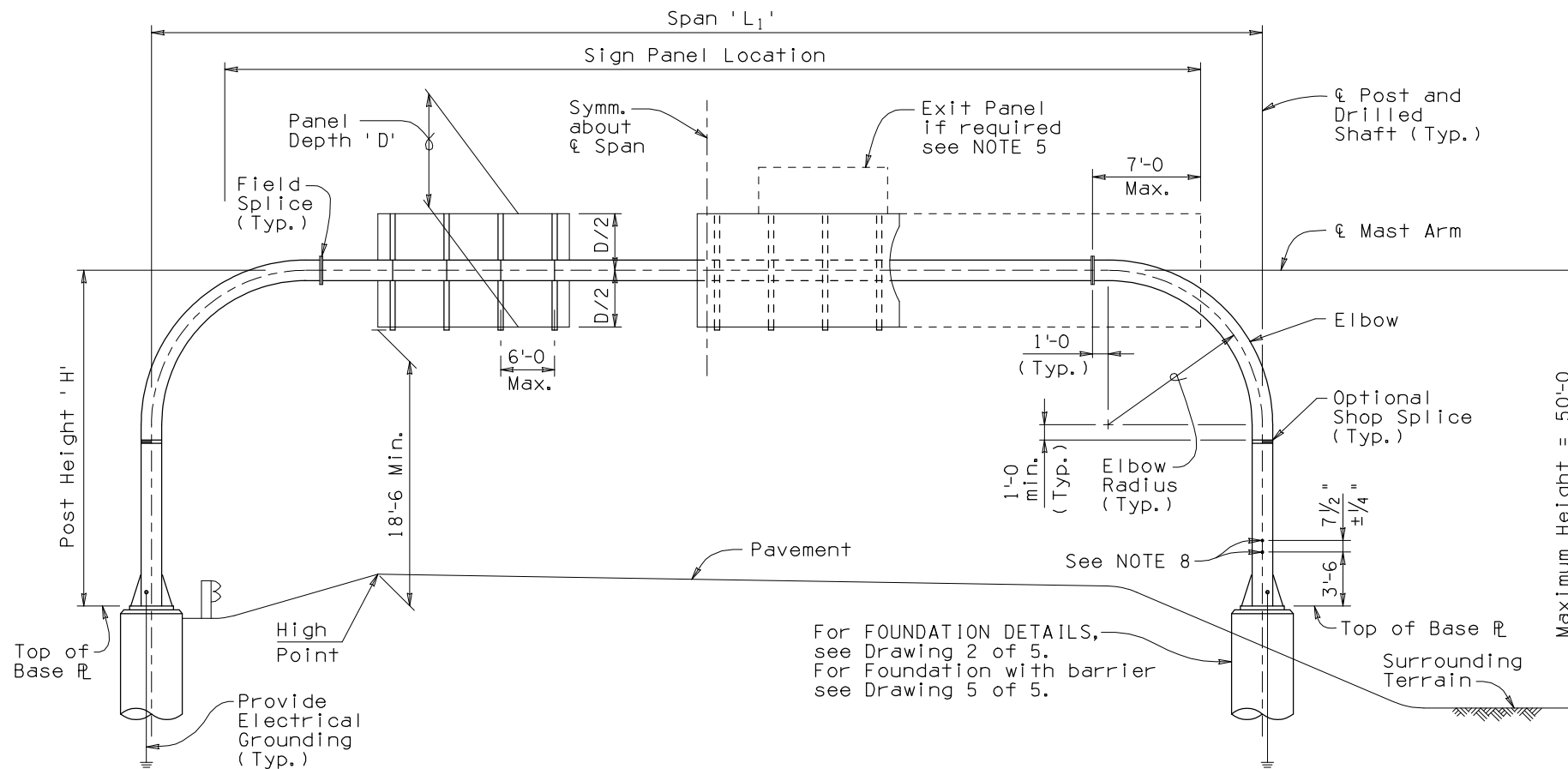


Note to Designer: The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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



TUBULAR FRAME SIGN STRUCTURE ELEVATION

**GENERAL NOTES:**

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

Design Specifications - AASHTO LRFD Bridge Design Specifications, 5th Edition 2010.

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.

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, latest Edition. 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 the length of member.

All other welding shall conform to the requirements of the American Welding Society, ANSI/AASHTO/AWS D1.5 Bridge Welding Code, latest Edition.

The Column to base plate weld (WELD DETAIL A) shall be tested by ultrasonic testing.

All Concrete shall be Class "S" (f'c = 3500 psi).

Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars. All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.

Dimensions shall not be scaled from drawings.

Drilled shaft locations and top of drilled shaft elevations shall be field verified by the Contractor prior to fabrication of posts.

TUBULAR FRAME DATA FOR SIGN PANEL SUPPORT													
TUBULAR FRAME					PIPE WALL THICKNESS (INCHES)			SIGN PANEL		PAYMENT ITEMS			
Frame Type	Frame Span 'L1'	Nominal Pipe Dia.	90° Elbow Radius	Max. Post Height 'H'	Post	Elbow	Mast Arm	Max. Area Sq. Ft.	Max. Depth 'D'	BRIDGE SIGN STRUCTURE		FOUNDATIONS	
										Item Number	Measurement	Item Number	Measurement
1F	20' - 40'	12"	10'-0"	28'-0"	1.312	1.312	1.000	450	12'	6060045	Ea	6060075	Ea
2F	41' - 70'	16"	10'-0"	30'-0"	1.219	1.219	0.500	690	12'	6060046	Ea	6060076	Ea
3F	71' - 110'	20"	12'-0"	30'-0"	1.280	1.280	0.625	920	12'	6060047	Ea	6060078	Ea
4F	111' - 142'	22"	12'-0"	30'-0"	1.125	1.125	0.875	920	12'	6060048	Ea	6060079	Ea

**OVERHEAD SIGN NOTES:**

1. Wind Loading: 90 MPH Velocity
2. Maximum Height: 50'-0" from average surrounding terrain to the center of the mast arm (Regardless of post height). The Tubular Overhead has been designed for site conditions which are level and neither elevated above the average surrounding terrain by more than the 50'-0" height shown nor supported on a bridge.
3. Maximum difference between post heights for an individual frame = 5'-0".
4. The maximum sign panel overlap onto elbow shall not exceed 7'-0" from field splice.
5. The sum of the sign panel area plus the exit panel area shall not exceed the maximum area shown in table. All signs shall be placed within Sign Panel Location.
6. For Standard pipe mast arms with lengths greater than 60'-0" an optional field splice will be permitted at the third points of mast arm length to facilitate hauling operations.
7. The Optional Shop Splice may not be used when the splice location is less than 5'-0" above the top of base plate. Shop splice of pipe sections (other than shown) are not permitted without prior approval.
8. Drill and tap for 1/2" chase nipples and plug with recessed pipe plugs. Place perpendicular to sign panel axis and away from approaching traffic. Install nipples on shoulder posts only.
9. Before any portion of the tubular frame is assembled in its final position, the Contractor shall demonstrate to the Engineer by preassembly or other approved methods that the span length of the frame in the no load condition is equal to (± 1/2 inch) the field measured span length between foundations.
10. If the tubular frame is erected as one unit the frame shall be adequately suspended to avoid distortions or changes in span length between base plates.
11. 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.
12. Provide electrical grounding at pole foundations per ADOT Standard Specification Sect. 732-3.03.

NO	DATE	DESCRIPTION OF REVISIONS
1	6-01	Original Issue
2	8-02	Correction of Type II Span
3	6-04	General Update
4	3-11	Type II span length and sign area

DESIGN APPROVED <i>Shafiq U. Hasan</i>		ARIZONA DEPARTMENT OF TRANSPORTATION INTERMODAL TRANSPORTATION DIVISION <b>BRIDGE GROUP STRUCTURE DETAIL</b>	
APPROVED FOR DISTRIBUTION <i>Jason A. Nehme</i>		TUBULAR SIGN STRUCTURES TUBULAR FRAME GENERAL PLAN	
ROUTE	PROJECT NO.	FA NO.	DRAWING NO. SD 9.20 (1 of 5)
LOCATION			SHEET NO. OF