DMS CABINET DESCRIPTION:

Front Panel Depth = 7'-10
Top Cabinet Width = 11"
Length = 27'-6¼"
Weight = 2290 Lbs

NOTES:

See Traffic Plans for the sign structure location.

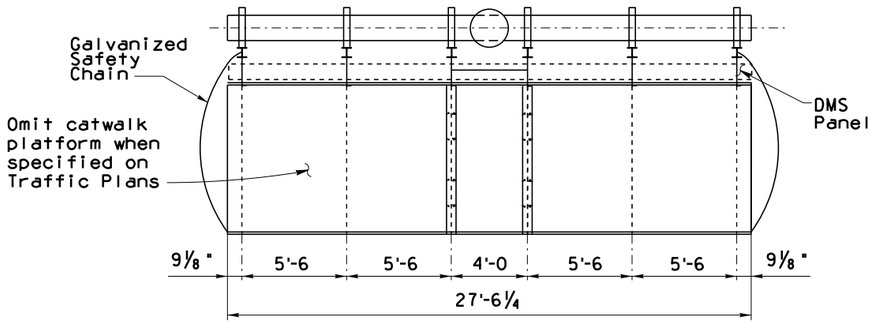
See Traffic Plans to determine if catwalk is optional. If catwalk is ommitted, the W6 X 20 mounting posts length shall be reduced by 1'-2 (See Section 1 on sheet 4 of 7).

PAY ITEM NOTES:

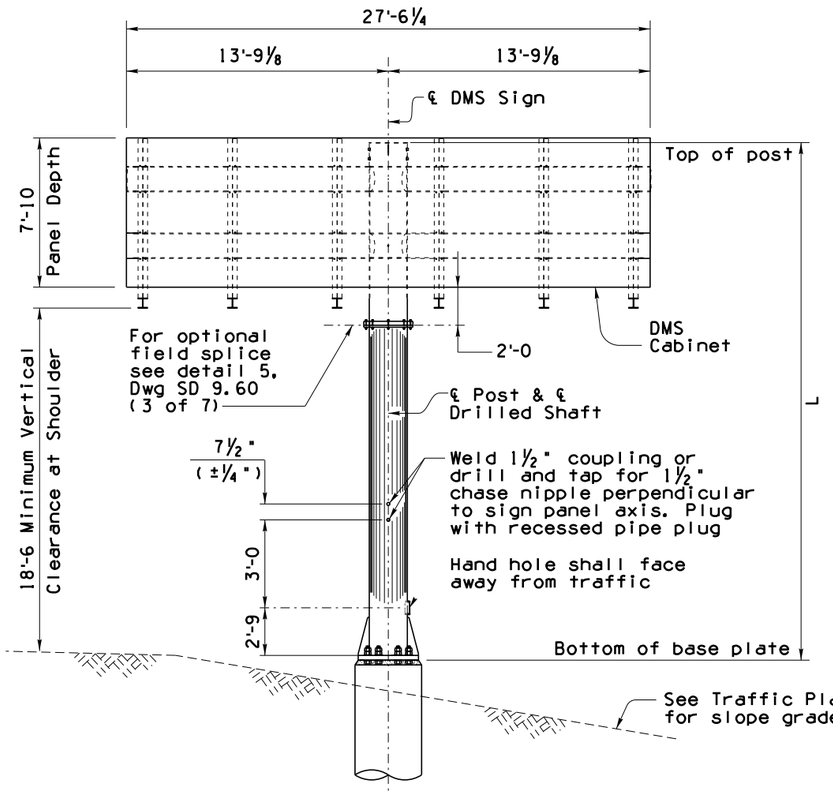
Pay Item for butterfly sign structure foundation includes the drilled shaft and the anchor bolt assembly.

Pay Item for butterfly sign structure foundation in the median with concrete barrier includes the drilled shaft, the formed pedestal on drilled shaft, and the anchor bolt assembly. For median formed pedestal details not shown here, see SD 9.10 (5 of 5).

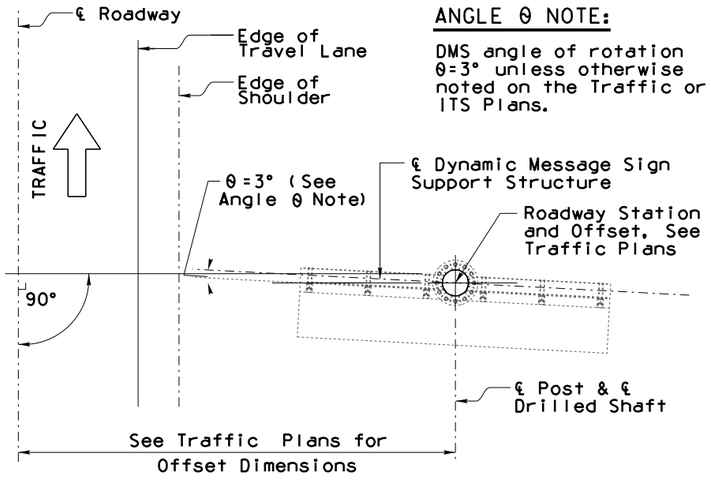
Pay Item	Description	Measure
6060036	SIGN STRUCTURE (BUTTERFLY DMS)	Each
6060080	FOUNDATION FOR BRIDGE SIGN STRUCTURE (BUTTERFLY DMS)	Each



PLAN (1)



ELEVATION (3)



ROADSIDE INSTALLATION PLAN (2)

ANGLE θ NOTE:

DMS angle of rotation θ=3° unless otherwise noted on the Traffic or ITS Plans.

GENERAL NOTES:

Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, Edition of 2021.

Design Specifications - AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Sixth Edition (2013) including the 2015, 2019 and 2020 interims.

Wind Loading: 90 MPH Velocity.

All concrete shall be Class "S" (f'c = 3,500 psi).

Reinforcing steel shall conform to ASTM A615 specification, and shall be furnished as Grade 60.

Structural Steel shall conform to ASTM A36 specification, unless noted otherwise.

All connection bolts shall be high strength bolts conforming to ASTM F3125 Grade A325 Specification. All high strength bolts, nuts and washers shall be galvanized in accordance with the requirements of ASTM F2329. All other steel shall be galvanized after fabrication in accordance with the requirements of ASTM A123.

All Tubular Structural Pipes shall be welded or seamless steel pipes, and shall conform to the ASTM specifications listed below:

A53	Grade B	Type E or S	Fy = 35 ksi
A252	Grade 2	Type E or S	Fy = 35 ksi
A106	Grade B	Type S only	Fy = 35 ksi
API 5L	Grade B	Type E or S	Fy = 35 ksi
API 5LX	Grade X42	Type E or S	Fy = 42 ksi
A500	Grade B		Fy = 46 ksi

Prior to erecting any portion of the Sign Structure, the Contractor shall provide the Engineer an erection plan for review and approval.

Dimensions shall not be scaled from drawings.

WELDING NOTES:

Welding of structural tubing shall conform to to the requirements of the American Welding Society (AWS), Structural Welding Code D1.1, latest edition.

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

All welding shall be continuos 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.

Drilled shaft location and top of drilled shaft elevation shall be field verified by the Contractor prior to fabrication of post.

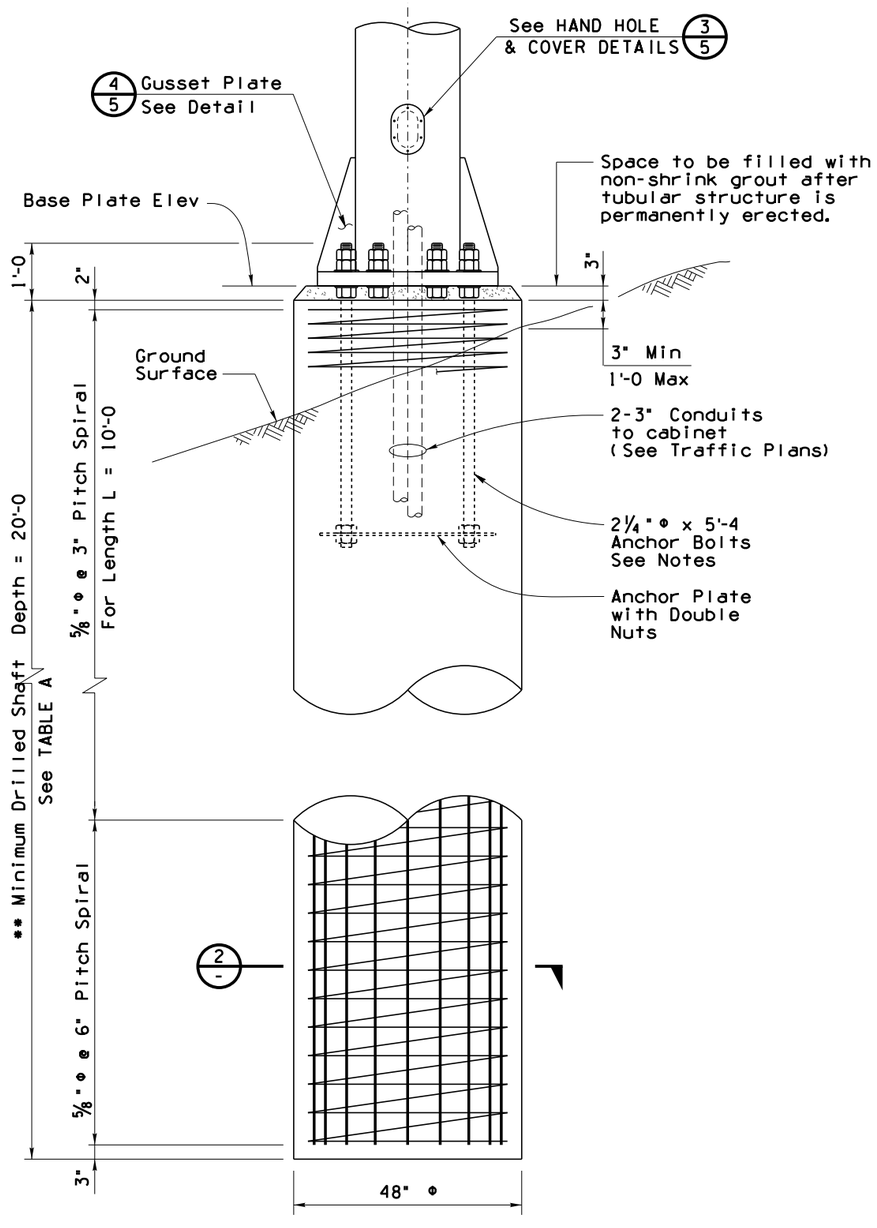
Shop drawings for sign structure fabrication shall not be submitted until the drilled shaft is constructed, and the top of the drilled shaft elevation has been verified.

BUTTERFLY SIGN STRUCTURE		POST PIPE DATA			MAST ARM PIPE DATA			
Maximum DMS Dimensions	Max DMS Weight	Pipe Nominal Diameter (IN)	Pipe Wall Thickness (IN)	*Max Post Height L (FT)	Pipe Nominal Diameter (IN)	Pipe Wall Thickness (IN)	Mast Arm Lenght (FT)	Mast Arm Spacing (FT)
27'-6¼ W x 7'-10 H x 11" D	2290 Lbs	24.0	0.50	28'-0	16.0	0.50	27'-6¼	3'-6

* Maximum design post height. Project specific post height shall be determined by elevations provided in the traffic plans.

STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING
GROUP MANAGER D. EBERHART APPROVED	DYNAMIC MESSAGE SIGN BUTTERFLY GENERAL PLAN AND ELEVATION
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	DRAWING NO. SD 9.60 (1 of 7)

PRIOR DISTRIBUTION DATE

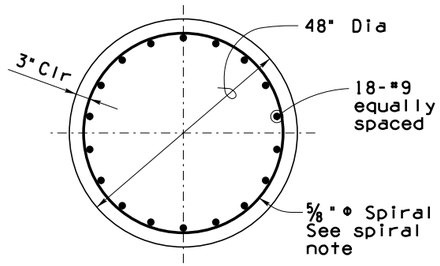


DRILLED SHAFT ELEVATION (1)

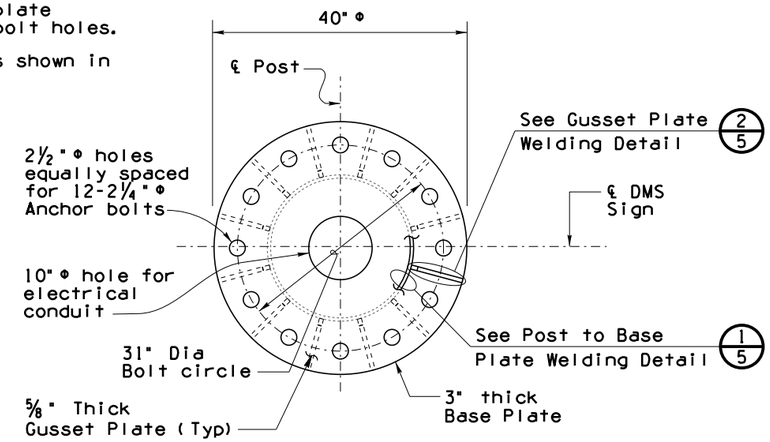
(**) Drilled shaft depth is based on uniform soils condition with unit weight = 110 pcf, friction angle phi = 29 degrees, modulus of subgrade reaction K=50 psf/ft. Depth or design of the drilled shaft shall be revised by the Engineer of Record for weaker soils or rock embedment, and all revision shall be shown on the project plans.

NOTES:

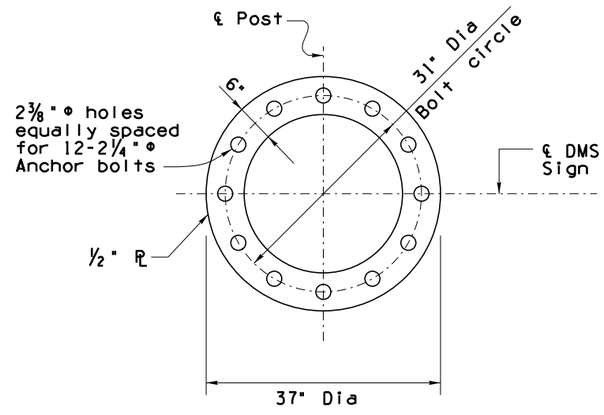
1. Provide 2 Hardened Steel washers, 2 Hex nuts and one leveling nut for each bolt. At final position of post, all top and bottom nuts of anchor bolts shall be snug tightened against base plate.
2. Gusset plates shall be placed perpendicular to base plate and post face, and shall be centered between anchor bolt holes.
3. Base Plate, Post, and Gusset plates welds shall be as shown in Details 1 and 2 on Sheet S-9.60 (5 of 7).



SECTION (2)



3" BASE PLATE DETAILS (3)



½" ANCHOR PLATE DETAILS (4)

TABLE A	
Max. Slope	'X'
8:1	0'
6:1	1'
4:1	2'
2:1	4'
1½:1	5'
1:1	8'

Drilled Shaft Depth shall be adjusted for ground slope. Add a value of 'X' in TABLE A to the minimum Drilled Shaft depth to obtain the total length of shaft.

FOUNDATION NOTES:

All anchor bolts shall conform to ASTM F1554 Grade 55 Specifications. The upper 1'-2 and lower 6" shall be threaded. The upper 1'-8 shall be galvanized in accordance with the requirements of ASTM A153.

Provide bolt template during installation of anchor bolts. The bolt template shall be fabricated of ¼" thick (Min.) steel plate, similar to anchor plate details, and shall be match drilled to each base plate.

Drilled shaft concrete shall be class S, and shall be placed within undisturbed material or compacted embankment.

Top of drilled shaft shall be formed to 1'-0 below ground surface. Compacted backfill shall be in place prior to erecting post.

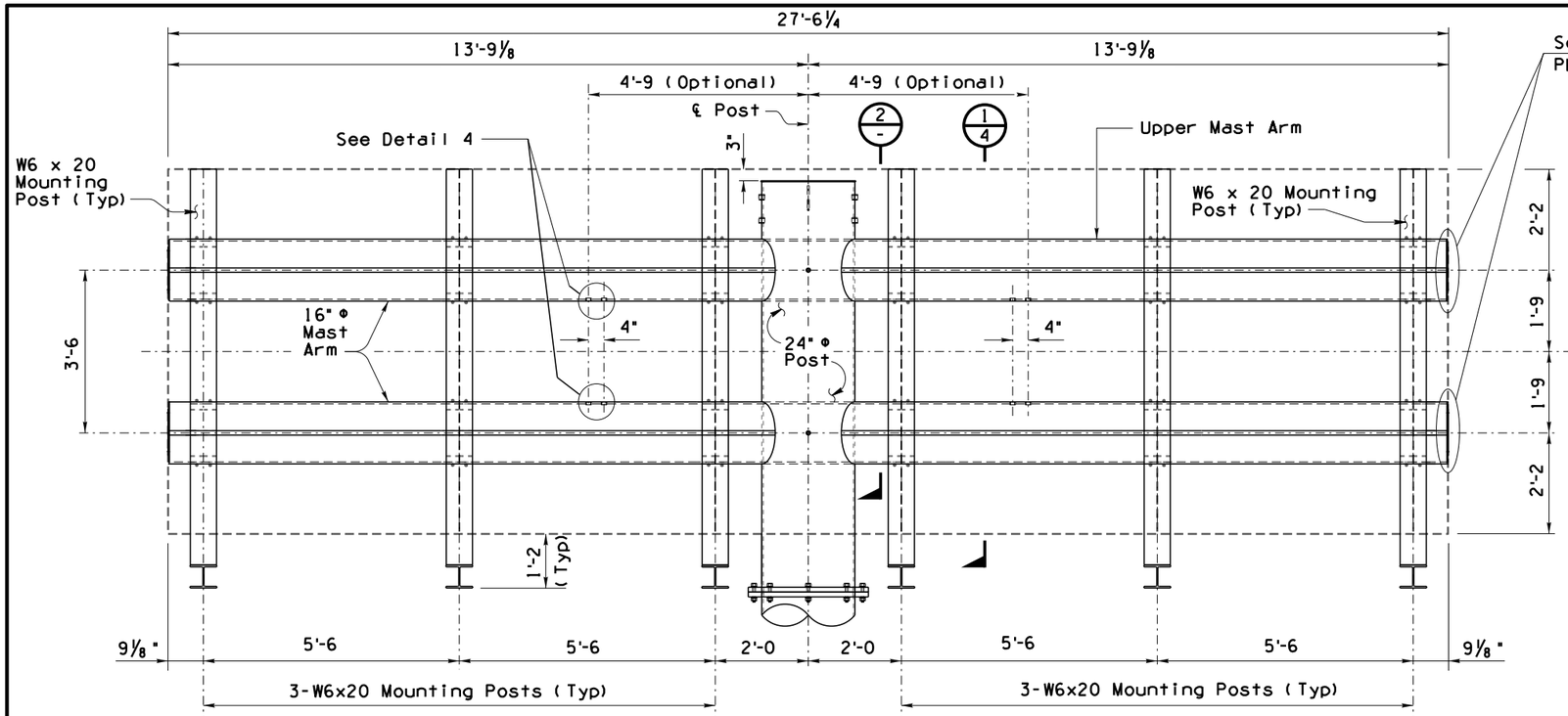
Butterfly sign structure foundation in the median includes a formed pedestal. See SD 9.10 (5 of 5) for median formed pedestal details.

SPIRAL NOTE:

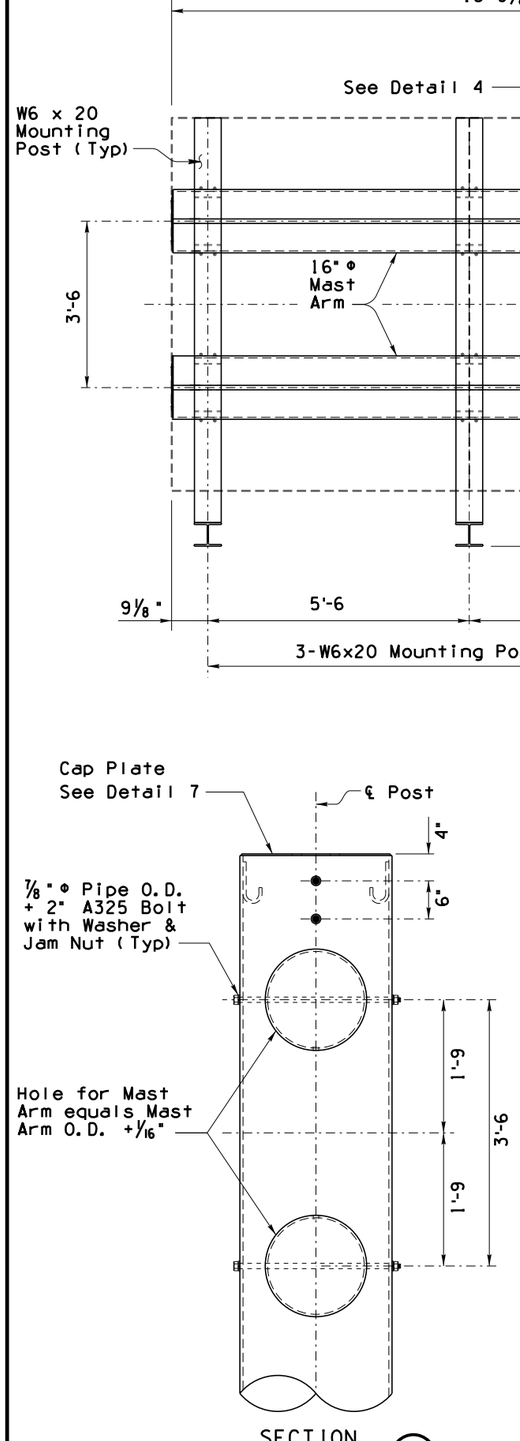
The ⅝" diameter spiral shall be cold drawn steel wire conforming to AASHTO M32 except minimum Yield Strength = 60,000 psi. Lap 1½ turns at top and bottom of spiral.

PRIOR DISTRIBUTION DATE

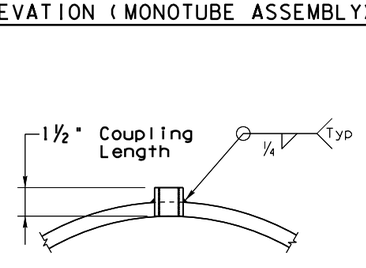
STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING DYNAMIC MESSAGE SIGN BUTTERFLY FOUNDATION DETAILS DRAWING NO. SD 9.60 (2 of 7)



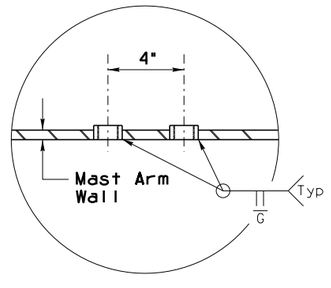
ELEVATION (MONOTUBE ASSEMBLY) 1



SECTION 2



NPS COUPLING DETAIL 3

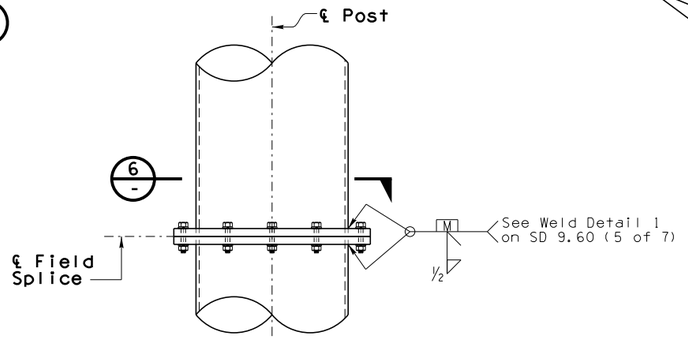


OPTIONAL MAST ARM NPS DETAIL 4

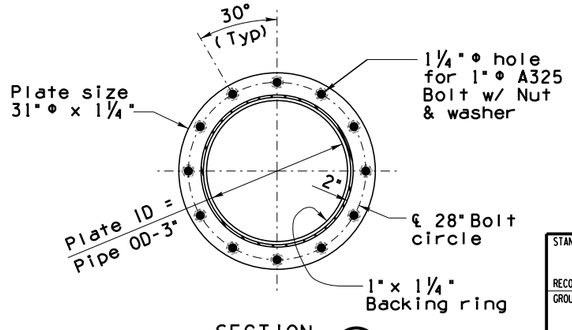
See Note

NOTE:

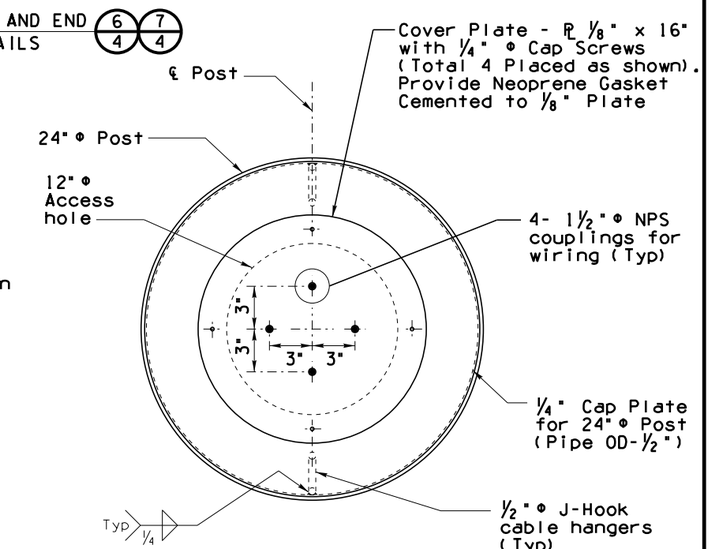
Flush mount 2-1½" NPS for wiring between both sign Mast Arms as shown (Optional).



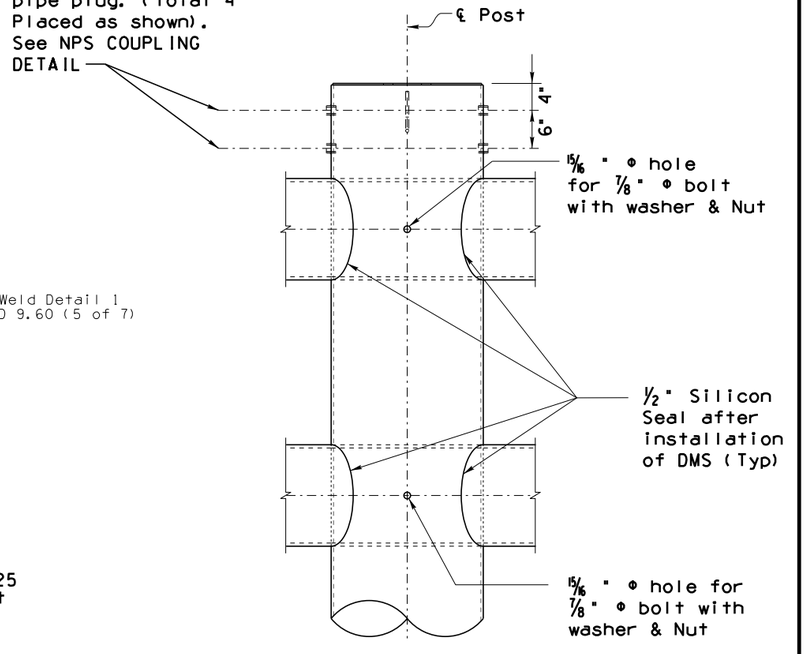
OPTIONAL FIELD SPLICE 5



SECTION 6



POST CAP PLATE DETAIL 7



MAST ARM TO POST CONNECTION 8

Note to Designer:
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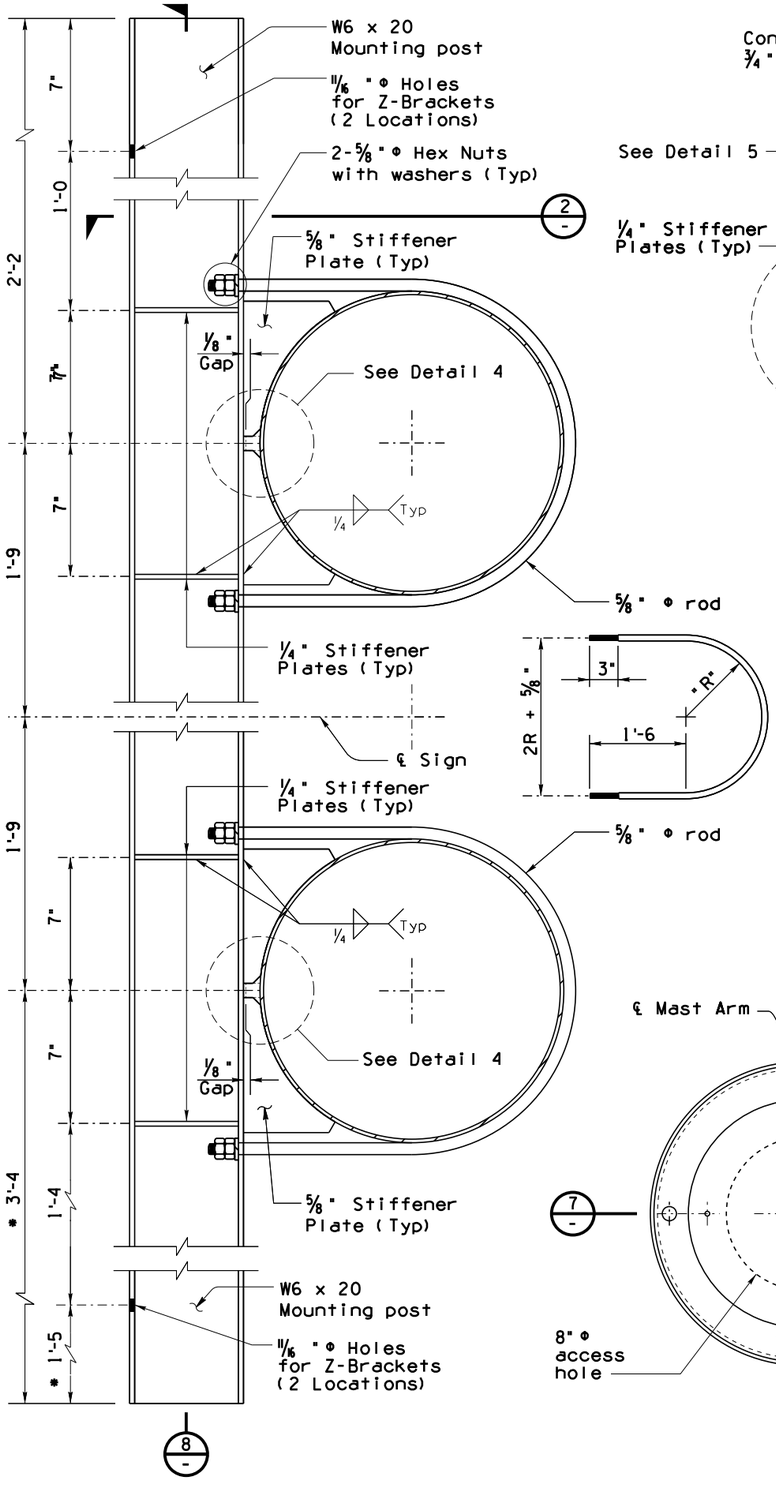
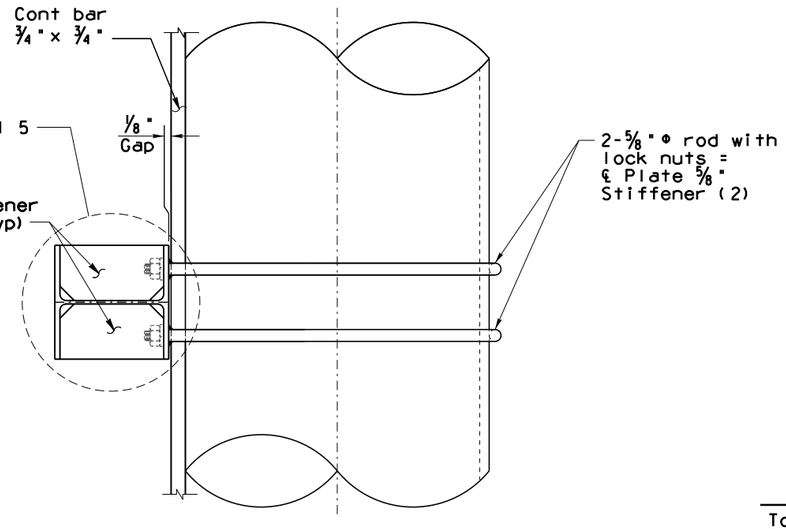
PRIOR DISTRIBUTION DATE

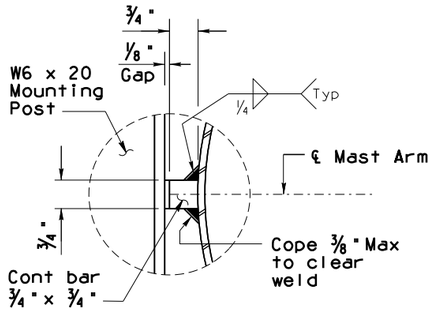
STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING DYNAMIC MESSAGE SIGN BUTTERFLY DMS MONOTUBE ASSEMBLY DRAWING NO. SD 9.60 (3 of 7)



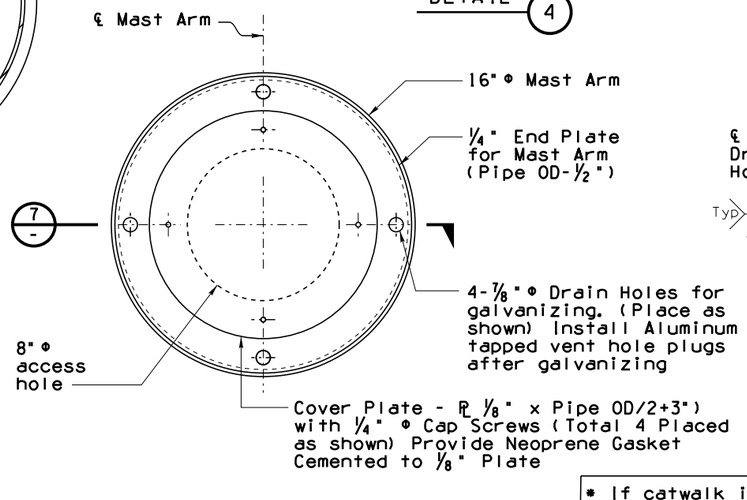
SECTION 1



SECTION 2

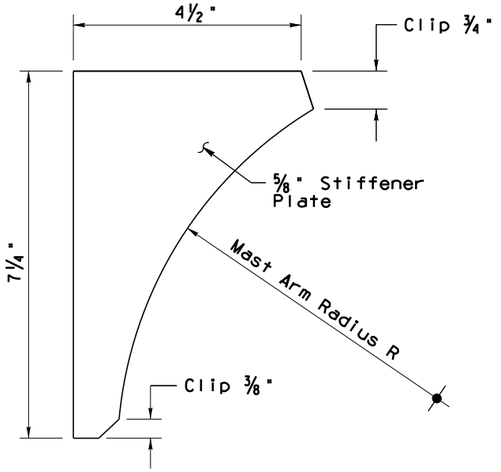


DETAIL 4



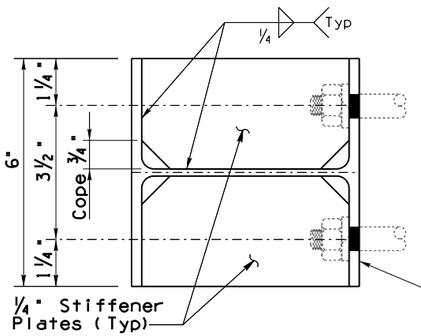
COVER & END PLATE DETAIL 6

* If catwalk is ommitted, the W6x20 mounting posts length will be reduced by 1'-2 from the bottom.

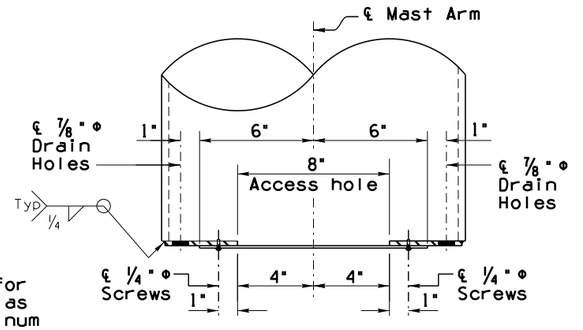


5/8 " STIFFENER PLATE 3

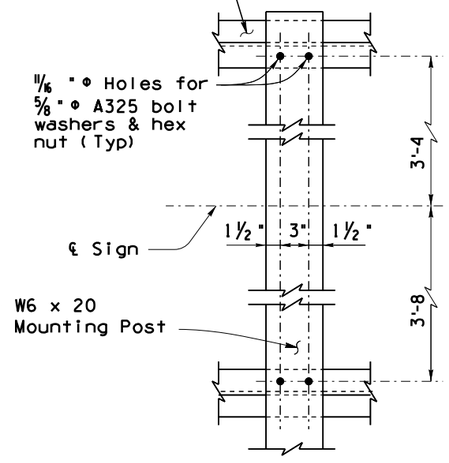
Total of 4 Stiffeners per bracket assembly



DETAIL 5



COVER & END PLATE DETAIL 7



SECTION 8

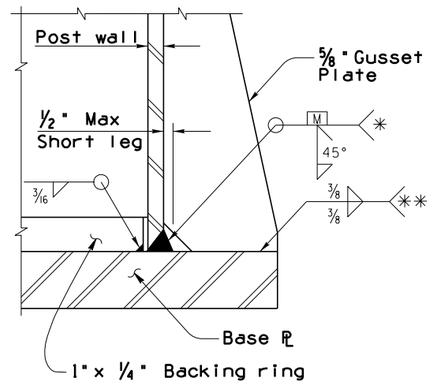
Z-Bracket NOTE:

Barrier tape shall be used at any point of contact between alumninum Z-Mounting Brackets (provided by manufacturer) and steel sign supports. The contractor shall supply the tape based on manufacturer's recommendations. The contractor shall submit the type of tape to be used to the Engineer for approval.

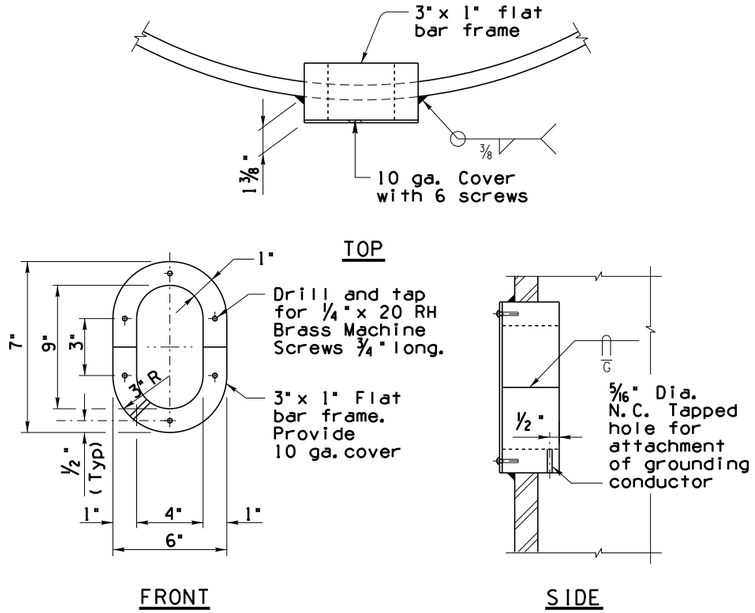
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING DYNAMIC MESSAGE SIGN BUTTERFLY DMS MAST ARM DETAILS DRAWING NO. SD 9.60 (4 of 7)

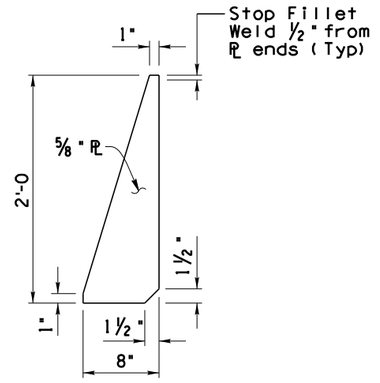
✳ Preheat per AWS requirements



POST TO BASE PLATE WELDING (1)

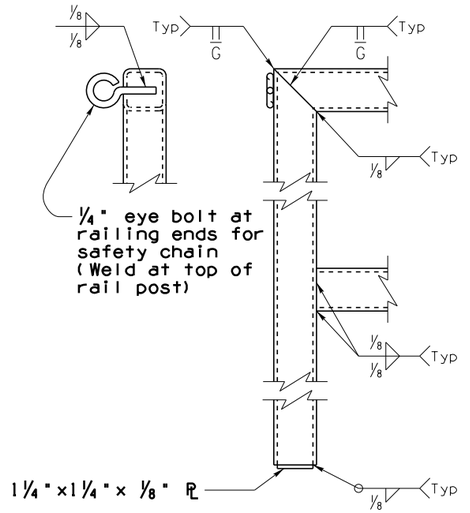


HAND HOLE & COVER DETAILS (3)



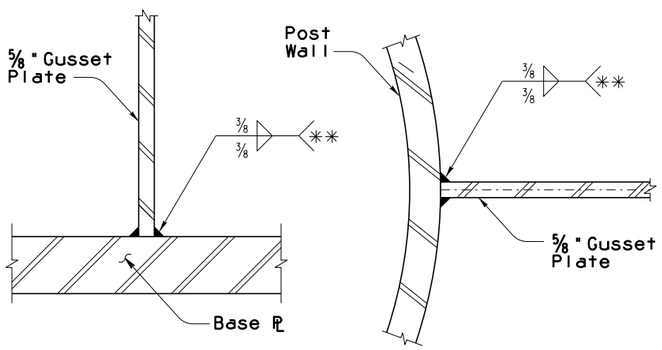
GUSSET PLATE DETAIL (4)

For location of Gusset Plates, See SD 9.60 (2 of 5).



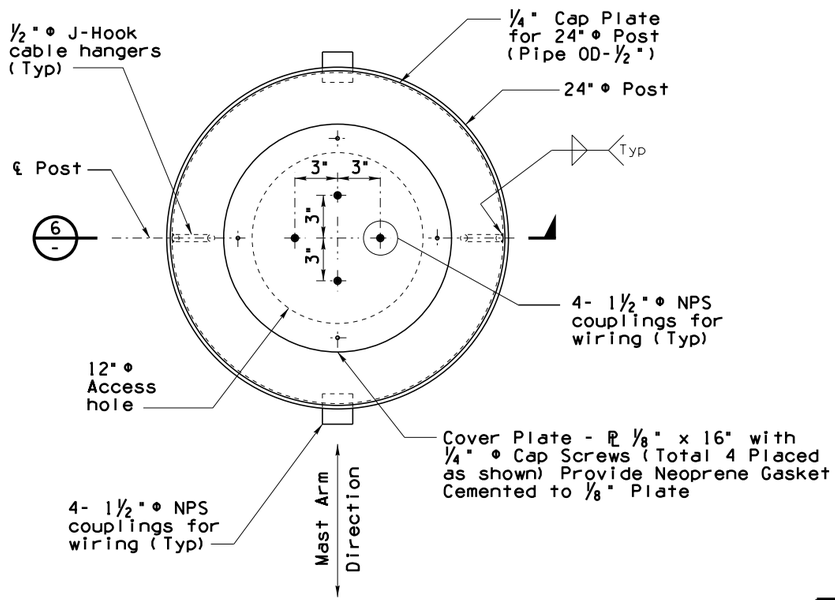
HANDRAIL WELD DETAILS

✳✳ Stop fillet weld 1/2" from plate ends

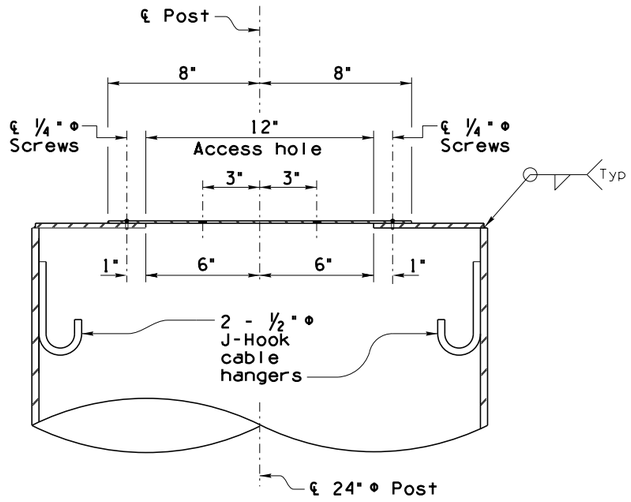


To Base Plate — To Post Wall

GUSSET PLATE WELDING (2)



CAP PLATE DETAIL (5)



POST CAP PLATE SECTION DETAIL (6)

Post NPS couplers not shown for clarity

Note to Designer:
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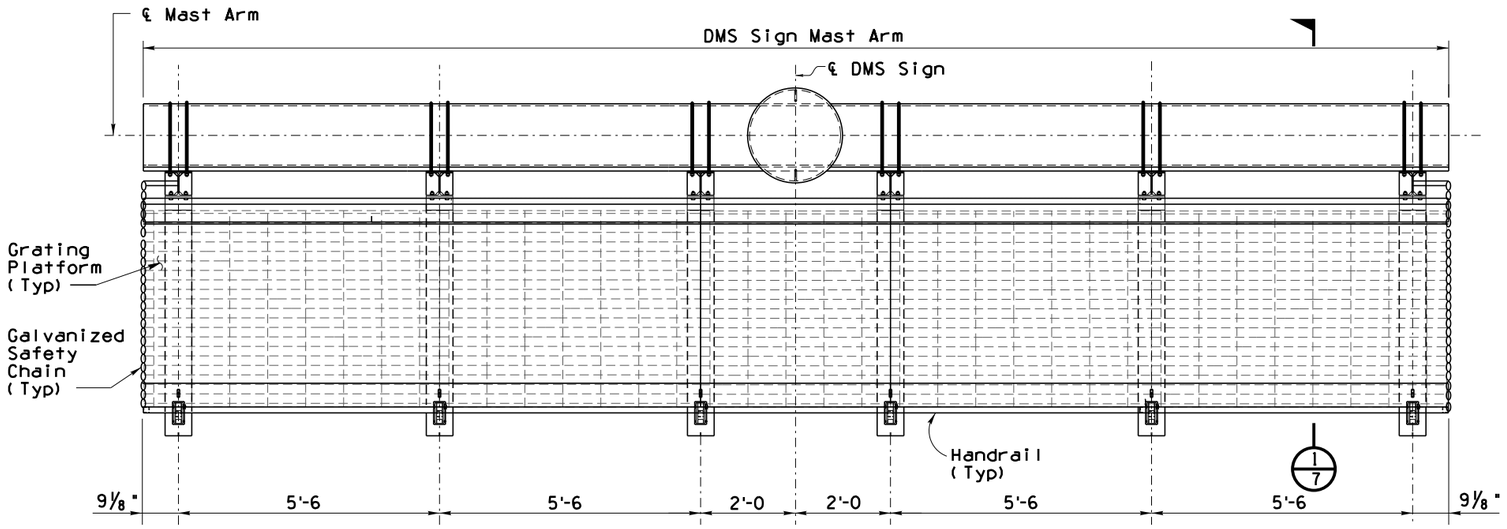
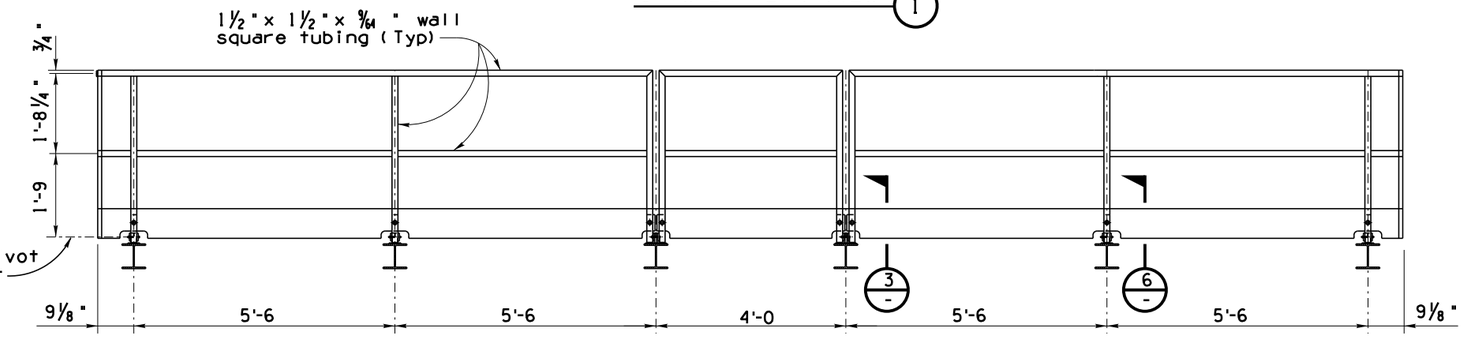
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING
GROUP MANAGER D. EBERHART APPROVED	DYNAMIC MESSAGE SIGN BUTTERFLY MISCELLANEOUS DETAILS
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	DRAWING NO. SD 9.60 (5 of 7)

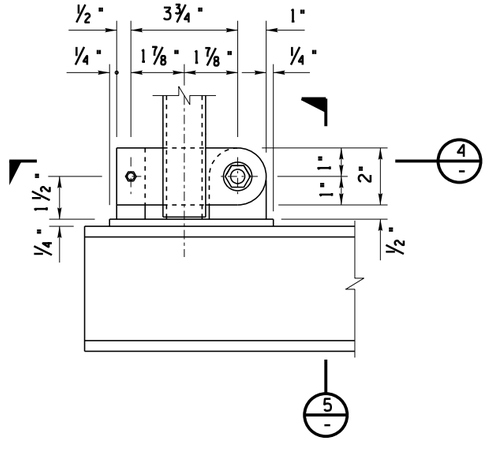


CATWALK PLAN VIEW (1)



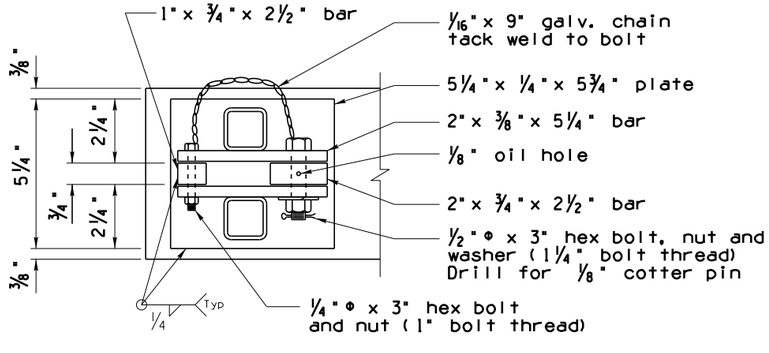
NOTE:

Provide ⅝" Φ holes for ½" Φ pivot bolts and ⅜" Φ holes for ¼" Φ lock bolts

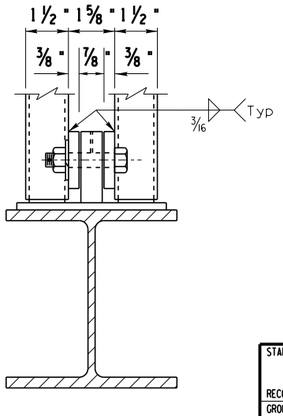


SECTION (Dual Post) (3)

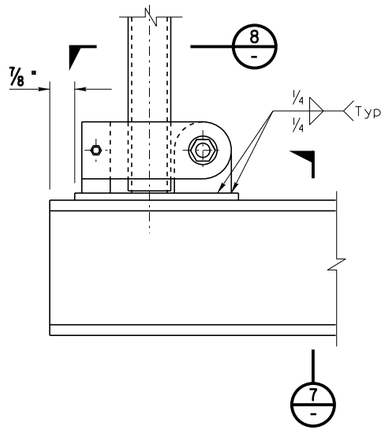
HANDRAIL ELEVATION (2)



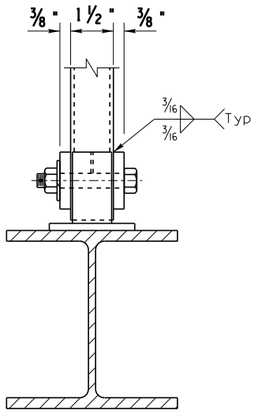
SECTION (Dual Post) (4)



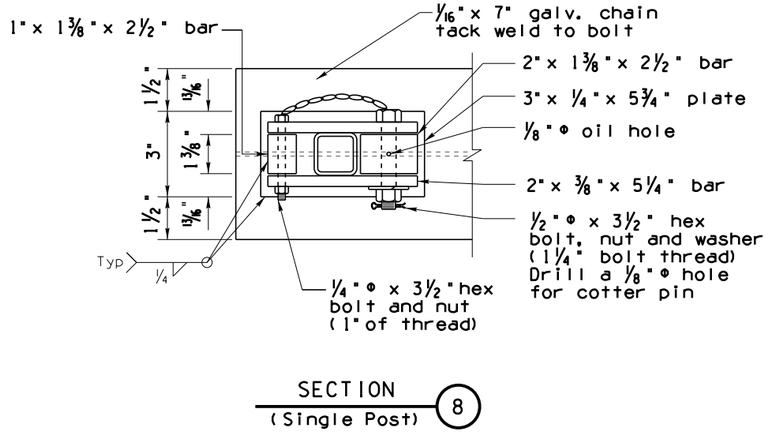
SECTION (Dual Post) (5)



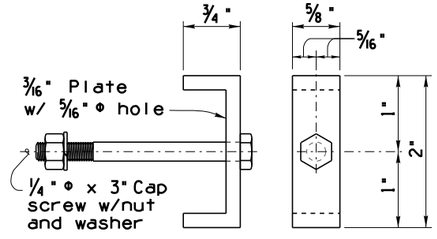
SECTION (Single Post) (6)



SECTION (Single Post) (7)



SECTION (Single Post) (8)

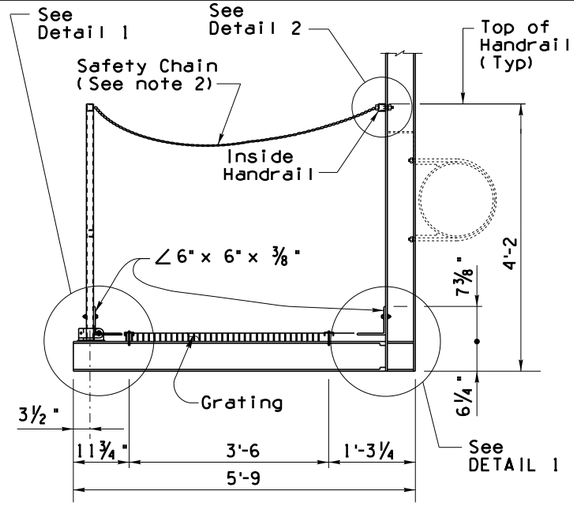


DETAIL 5

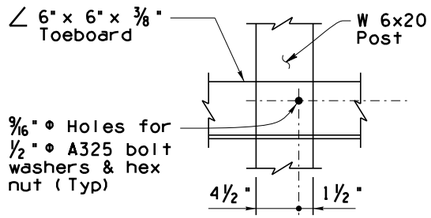
GRATING CLIP

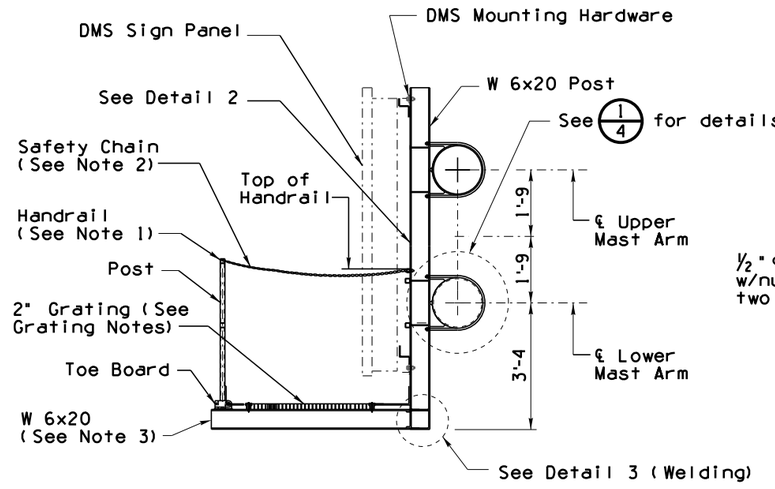
STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING
GROUP MANAGER D. EBERHART APPROVED	DYNAMIC MESSAGE SIGN BUTTERFLY CATWALK ASSEMBLY AND HANDRAIL
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	DRAWING NO. SD 9.60 (6 of 7)

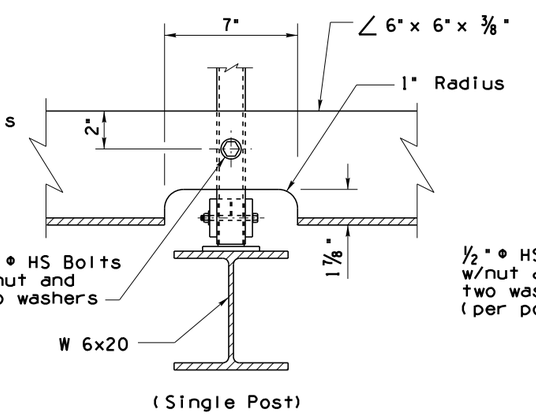
PRIOR DISTRIBUTION DATE

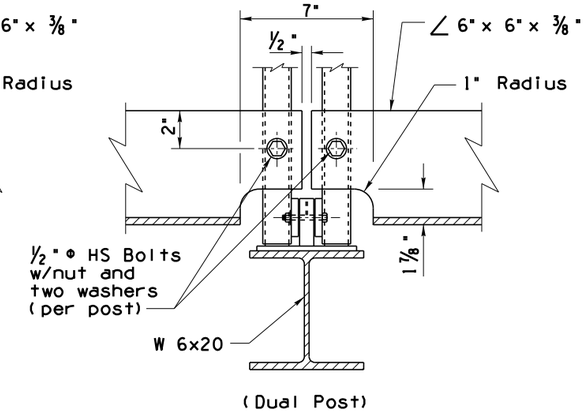


DMS CATWALK (1)

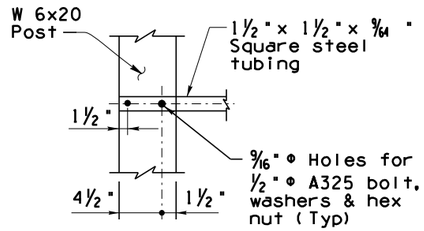


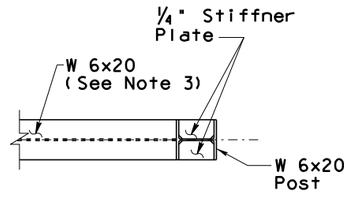




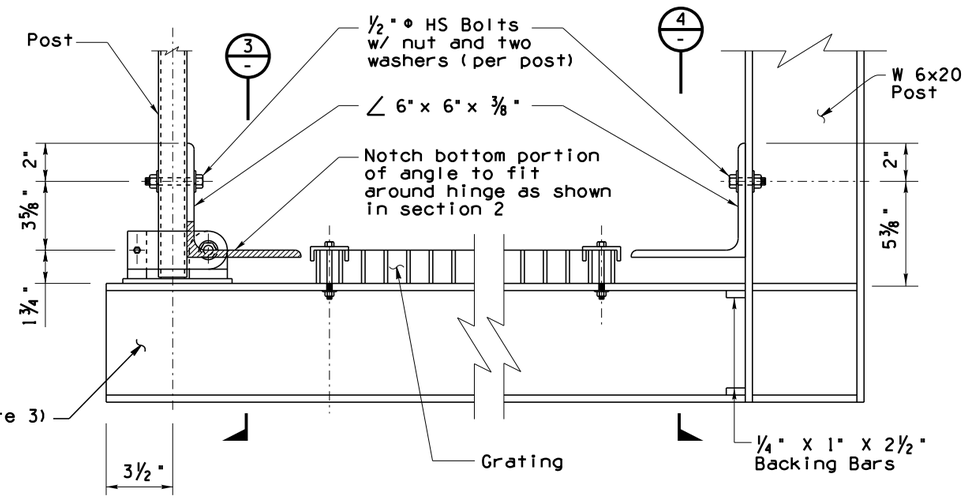


HANDRAIL (2)





SECTION (3)

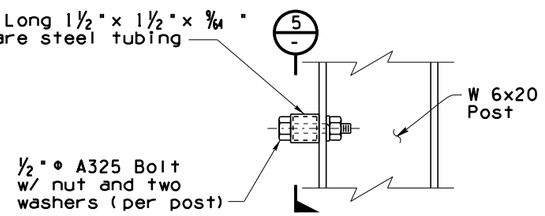


DETAIL 1

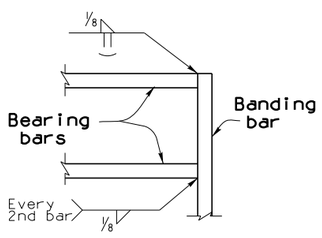
SECTION (4)

SECTION (5)

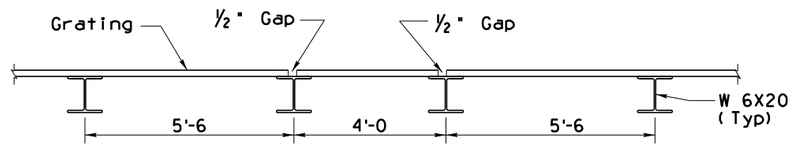
SECTION (6)



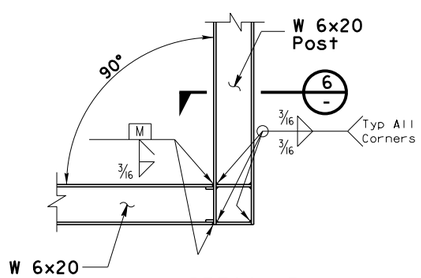
DETAIL 2



DETAIL 4



PARTIAL GRATING ELEVATION



DETAIL 3
(WELDING)

GRATING NOTES:

Welded grating shall meet the standard requirements of ANSI/NAAMM MGB 531-00. Grating shall be 2" x 3/16" bearing bars at 1 3/16" centers and cross bars at 4" centers.

All grating shall have 2" x 3/16" banding bars at both ends.

Weld bearing bars to banding bars with 1/8" fillet weld, one side every second bar and as shown in Detail 3.

All grating to be straight and true after fabrication. Grating shall be galvanized.

NOTES:

1. The Field splice surface shall be in full contact without gaps proir 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.
2. 3/16" galvanized safety chain with 1- 1/4" snap hook at end of catwalks.
3. Omit horizontal W 6X20, backing bars and stiffeners when Catwalk is specifically omitted on Traffic Plans.

PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 03/22 DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING DYNAMIC MESSAGE SIGN BUTTERFLY CATWALK DETAILS DRAWING NO. SD 9.60 (7 of 7)