

$P = \frac{84\alpha W}{L} - 0.02 L$  WHERE  
 $\alpha$  = AREA OF ONE CHORD TUBE IN SQUARE INCHES.  
 (USE 0.76 $\alpha$  FOR 4" DIA. x 1/4" AND 4 1/2" DIA. x 1/4" CHORDS)  
 $W$  = WIDTH OF TRUSS IN FEET.  
 $L$  = SPAN LENGTH IN FEET.

SAMPLE, GIVEN:  $\alpha = 4.123$  SQ. IN.,  $W = 6'-0"$  AND  $L = 100'$ .  
 SOLUTION:  $P = \frac{84 \times 4.123 \times 6.0}{100} - 0.02 \times 100 = 20.8 - 2 = 18.8$


**NOTE:**  
 IF CANTILEVERED, REMOVE CONCENTRATED LOAD NEAREST CANTILEVER END AND LOAD CANTILEVER SPAN AS SHOWN ABOVE.  
 15' OR LESS CANTILEVER SPANS NEED NOT BE TESTED.  
 REPEAT ABOVE TESTS BY ROTATING 180° (TO SIMULATE WIND REVERSAL). NO VERTICAL LOAD (D.L.) TEST WILL BE REQUIRED.  
 LOADS P SHALL NOT BE MORE THAN 16° FOR SPANS LESS THAN 55 FEET AND 20°. FOR ALL OTHERS.

**SIMULATED WIND-SHOP TEST LOADING**

TRUSS VARIABLES						
SPAN	"S"	"W"	MEMBER "A"	MEMBER "B"	MEMBER "C"	SHOP CAMBER
UP TO 70'-6"	6'-0"	5'-0"	2 1/2" DIA. x 1/8"	2 1/2" DIA. x 1/8"	1 3/4" DIA. x 1/8"	3/4"
71' TO 80'-6"	6'-0"	6'-0"	2 1/2" DIA. x 1/8"	2 1/2" DIA. x 1/8"	2" DIA. x 1/8"	1 1/4"
81' TO 90'-6"	6'-0"	6'-0"	2 1/2" DIA. x 1/8"	2 3/4" DIA. x 1/8"	2" DIA. x 1/8"	1 1/2"
91' TO 100'-6"	6'-0"	6'-0"	2 1/2" DIA. x 1/8"	2 3/4" DIA. x 1/8"	2" DIA. x 1/8"	2 1/4"
101' TO 110'-6"	7'-0"	7'-0"	2 1/2" DIA. x 1/8"	3" DIA. x 1/8"	2 1/4" DIA. x 1/8"	2 1/2"
111' TO 120'-6"	7'-0"	7'-0"	2 1/2" DIA. x 1/8"	3 1/2" DIA. x 1/8"	2 1/4" DIA. x 1/8"	2 3/4"
121' TO 130'-6"	7'-0"	7'-0"	3" DIA. x 1/8"	3 1/2" DIA. x 1/8"	2 1/4" DIA. x 1/8"	3 3/4"
131' TO 140'-6"	8'-0"	7'-0"	3" DIA. x 1/8"	3 3/4" DIA. x 1/8"	2 1/2" DIA. x 1/8"	3"
141' TO 150'-6"	8'-0"	7'-0"	3" DIA. x 1/8"	3 3/4" DIA. x 1/8"	2 3/4" DIA. x 1/8"	3 3/4"
151' TO 160'-6"	8'-0"	7'-0"	3" DIA. x 1/8"	3 3/4" DIA. x 1/8"	2 3/4" DIA. x 1/8"	4 1/2"

**NOTE:**  
 FOR SIZE OF CHORD MEMBERS, SEE DATA SHEET. SHOP CAMBER MAY BE PARABOLIC OR STRAIGHT, BUT SHALL BE SYMMETRICAL ABOUT CENTERLINE OF SPAN.

**GENERAL NOTES:**  
 ALL STRUCTURAL STEEL AND COLUMN BASE PLATES ASTM A36.  
 ALL ANCHOR BOLTS SHALL BE ASTM F1554, GRADE 36.  
 PROPOSED FIELD SPLICES SHALL BE SHOWN ON SHOP DRAWINGS FOR APPROVAL OF THE ENGINEER.  
 TRUSSES SHALL BE FABRICATED WITH A MINIMUM OF SPLICING IN TRUSS CHORDS.  
 FIELD SPLICING WILL NOT BE PERMITTED WITHIN THE MIDDLE ONE-THIRD OF SPAN.  
 PERMISSIBLE VENT HOLES (MAXIMUM 1/8" DIAMETER) SHALL BE PLACED A MINIMUM OF 3" FROM WELD ON LOW SIDE OF HORIZONTAL, VERTICAL AND DIAGONAL TUBES.  
 ALL SIGNS SHALL BE CENTERED VERTICALLY ABOUT THE HORIZONTAL  $\phi$  OF THE TRUSS.  
 FOR ADDITIONAL INFORMATION SEE DATA SHEET.

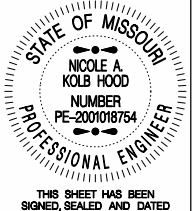


**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

**OVERHEAD SIGN TRUSSES**

ALUMINUM



STATE OF MISSOURI  
NICOLE A. KOLB HOOD  
NUMBER PE-2001018754  
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

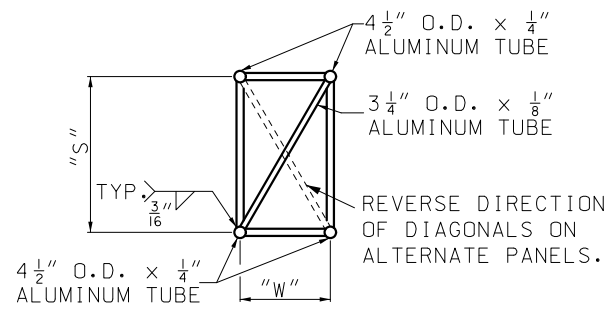
**903.10BD**

SHEET NO.  
1 OF 6

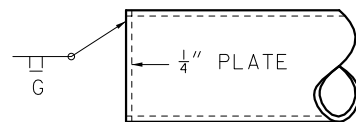
DATE EFFECTIVE: 01/01/2021  
DATE PREPARED: 10/14/2020

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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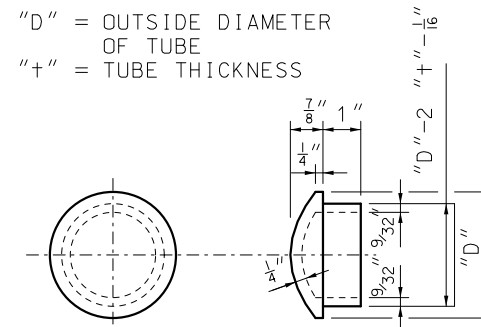


SECTION A-A

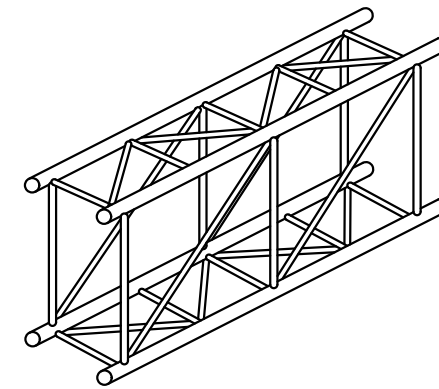


DETAIL OF ALTERNATE END CAP

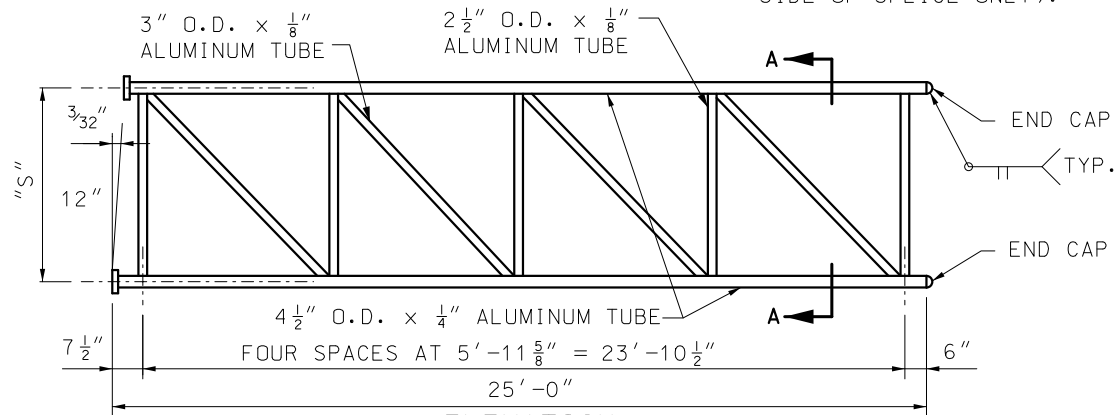
NOTE: WHEN THE VERTICALS, STRUTS AND SWAYS OBSTRUCT THE PLACING OF BOLTS IN THE FLANGES THESE MEMBERS MAY BE MOVED BACK IN ORDER TO CLEAR THE BOLTS. (ONE SIDE OF SPLICE ONLY).



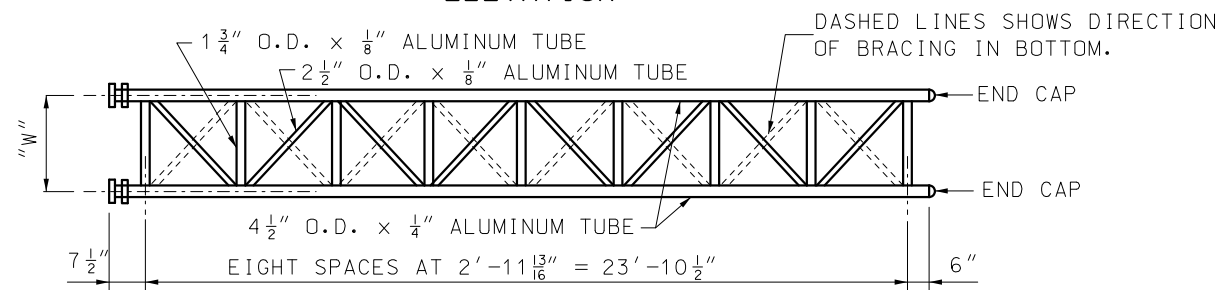
DETAIL OF END CAP CASTING (DRIVE FIT TYPE)



TYPICAL ISOMETRIC VIEW OF TRUSS

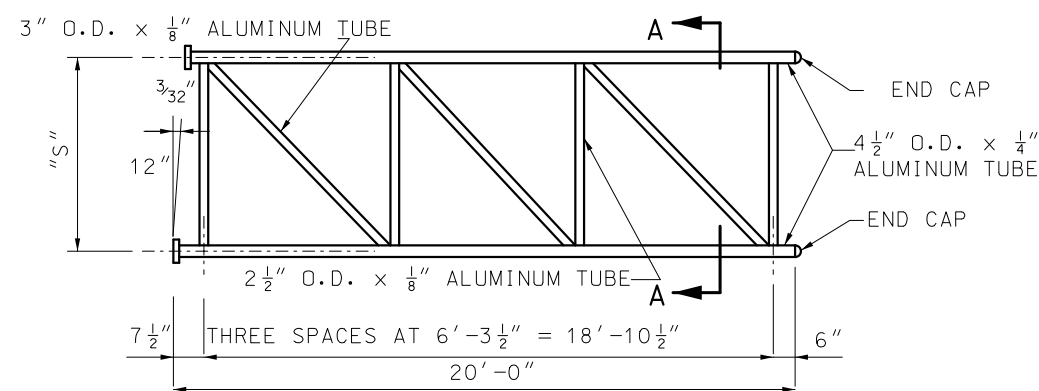


ELEVATION

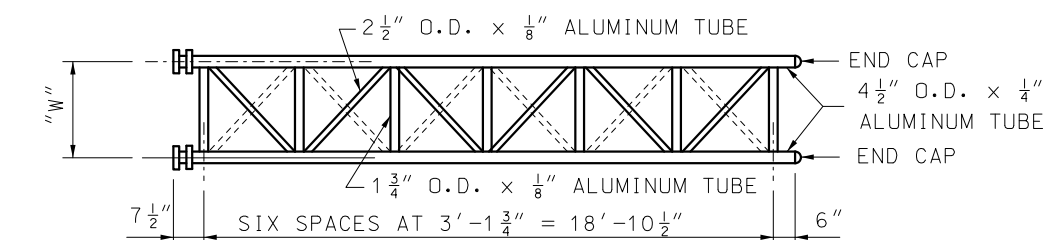


PLAN

25' - CANTILEVER SECTIONS

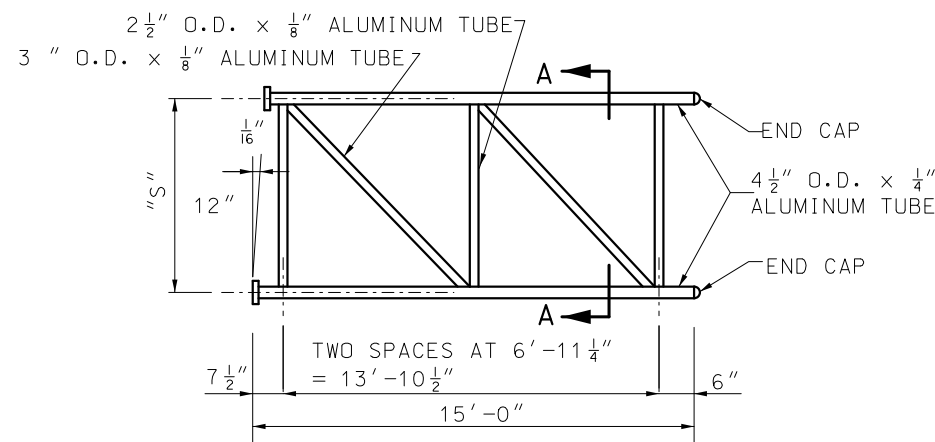


ELEVATION

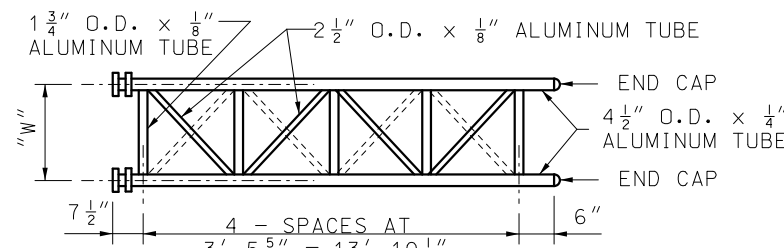


PLAN

20' - CANTILEVER SECTIONS

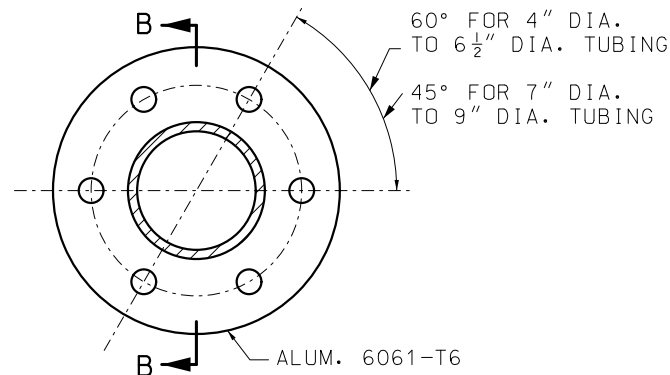


ELEVATION

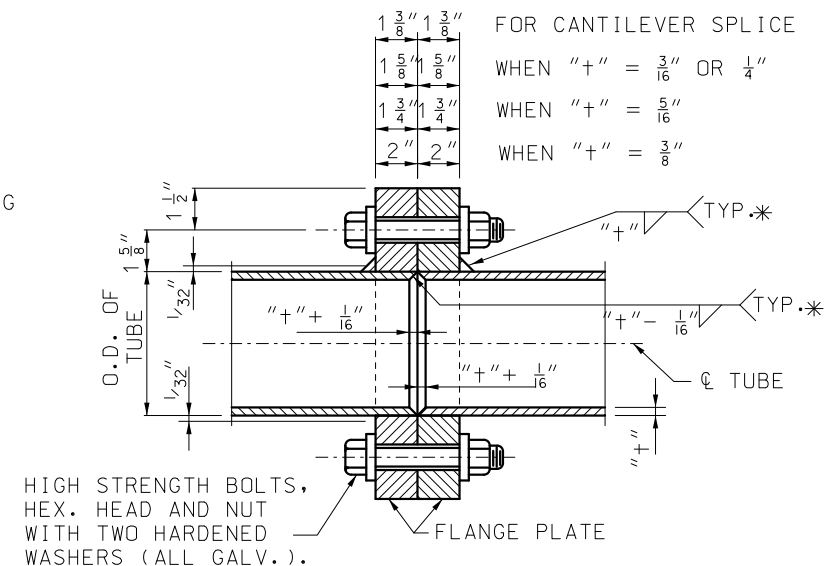


PLAN

15' - CANTILEVER SECTIONS



PLAN OF FLANGE PLATE



SECTION B-B

HIGH STRENGTH BOLTS, HEX. HEAD AND NUT WITH TWO HARDENED WASHERS (ALL GALV.).

\* "+ " = SMALLER TUBE WALL THICKNESS.

NOTE: A WELDING SEQUENCE ASSURING FULL CONTACT OF FLANGE FACES SHALL BE REQUIRED. DRILL OR REAM FLANGE HOLES 1/16" LARGER THAN NORMAL DIAMETER OF BOLTS OR TUBING.

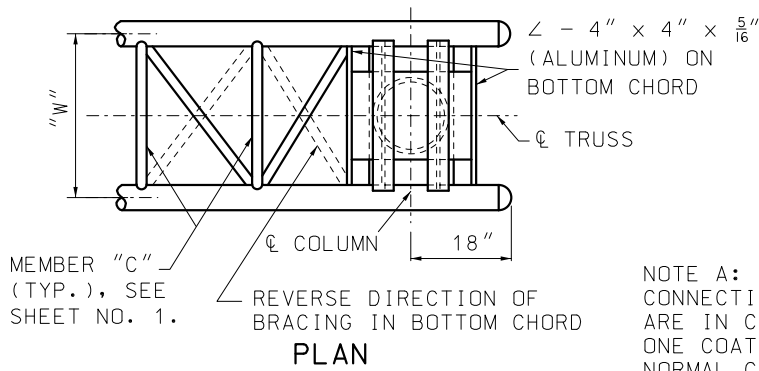
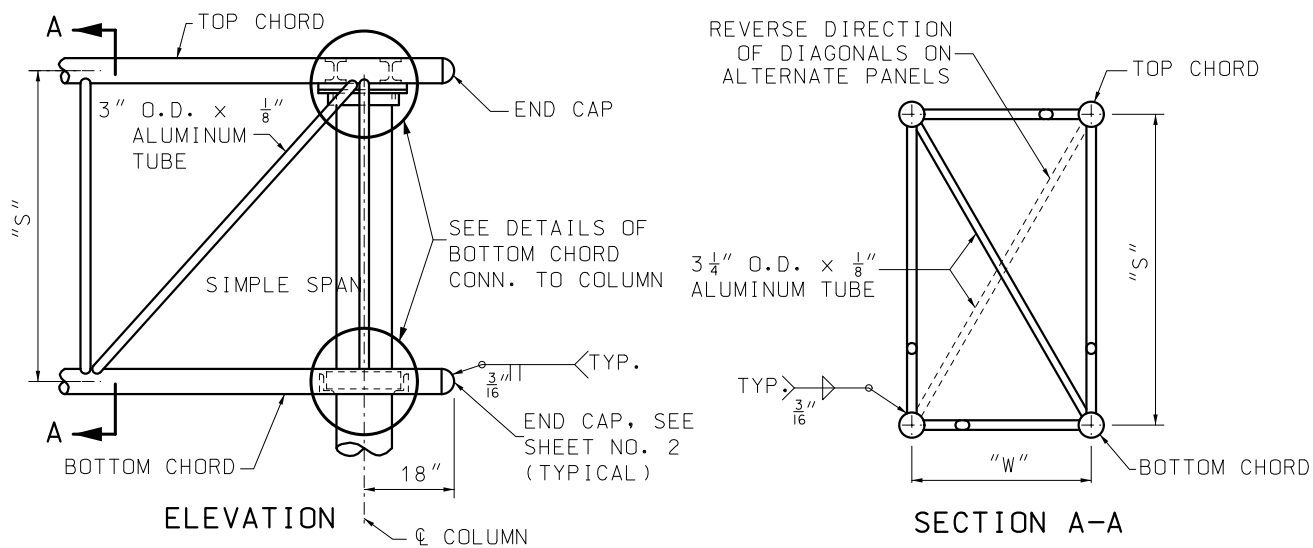
TUBE SIZE	BOLT NO. AND DIA.	TORQUE
4" DIA. TO ALL DIAMETERS	6- 3/4" DIA.	320 FT.LB. OR ONE-HALF TURN
4 1/2" DIA. THROUGH 6 1/2" DIA.	6- 3/4" DIA.	320 FT.LB. OR ONE-HALF TURN
7" DIA. THROUGH 7 1/2" DIA.	8- 3/4" DIA.	320 FT.LB. OR ONE-HALF TURN
8" DIA. THROUGH 9" DIA.	8- 7/8" DIA.	470 FT.LB. OR ONE-HALF TURN

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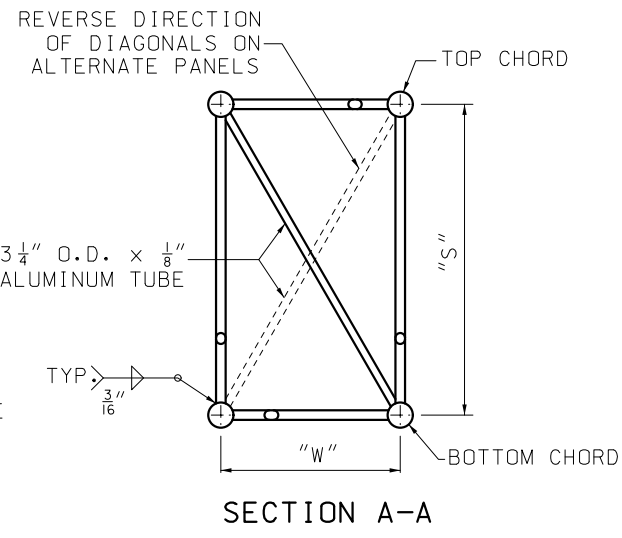
STATE OF MISSOURI  
 NICOLE A. KOLB HOOD  
 NUMBER PE-2001018754  
 PROFESSIONAL ENGINEER

**OVERHEAD SIGN TRUSSES**  
 ALUMINUM

DATE EFFECTIVE: 01/01/2021  
 DATE PREPARED: 10/14/2020  
**903.10BD**  
 SHEET NO. 2 OF 6

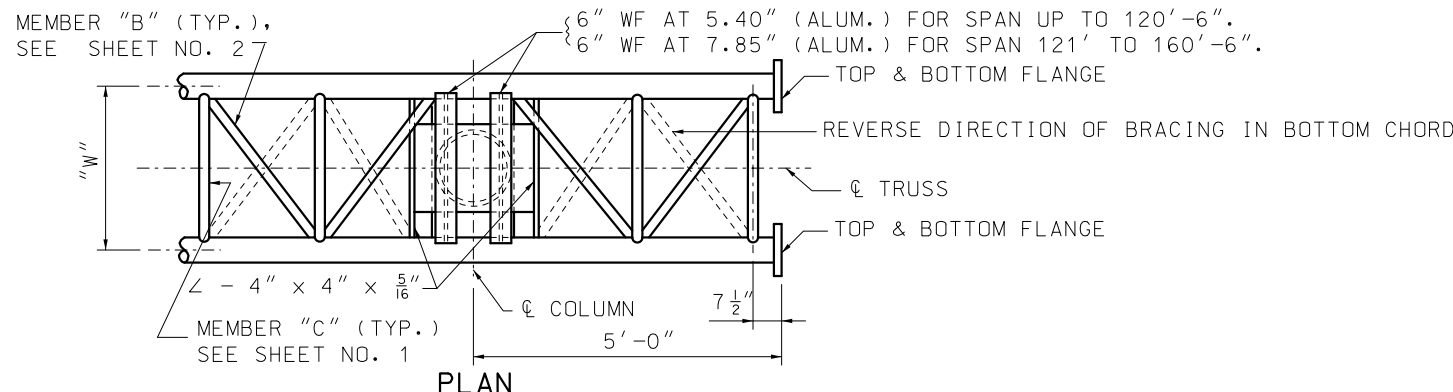
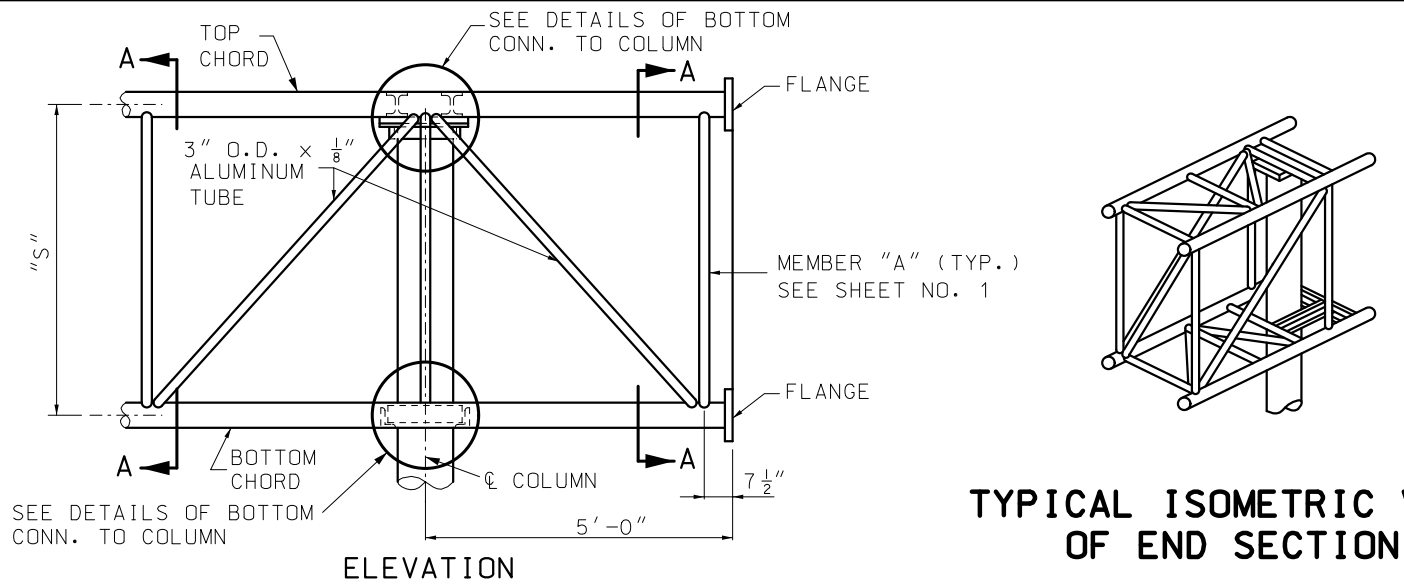


**TRUSS END WITHOUT CANTILEVER**

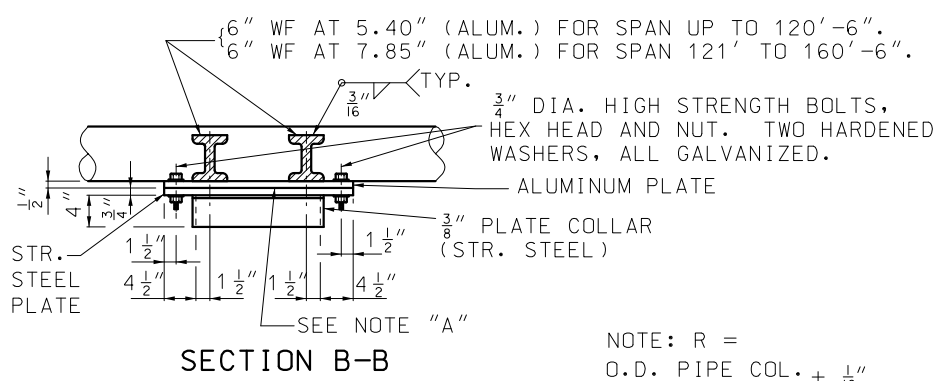
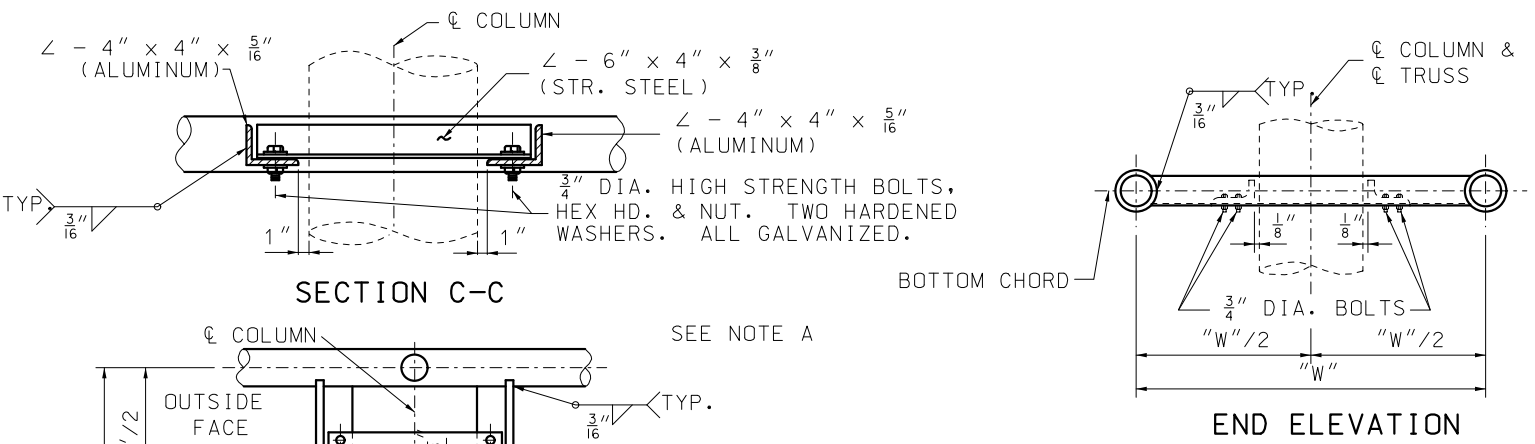


NOTE:  
FOR DIMENSIONS "S" AND  
"W" SEE SHEET NO. 1.

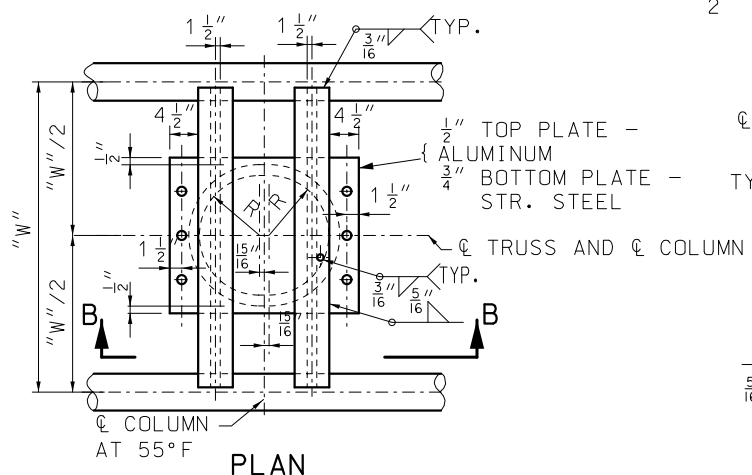
NOTE A:  
CONNECTIONS IN WHICH STEEL AND ALUMINUM  
ARE IN CONTACT SHALL BE PROTECTED AS FOLLOWS:  
ONE COAT ZINC CHROMATE ON ALUMINUM SURFACES.  
NORMAL CLEANING AND PAINTING ON STEEL SURFACES.  
ZINC CHROMATE REQUIRED IF STEEL IS GALVANIZED.



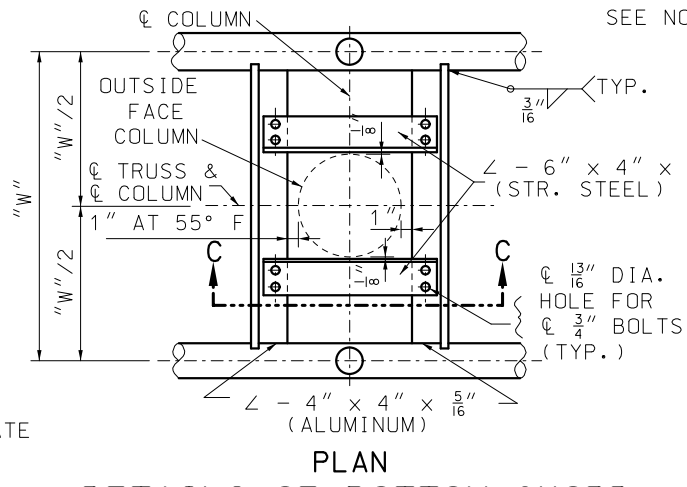
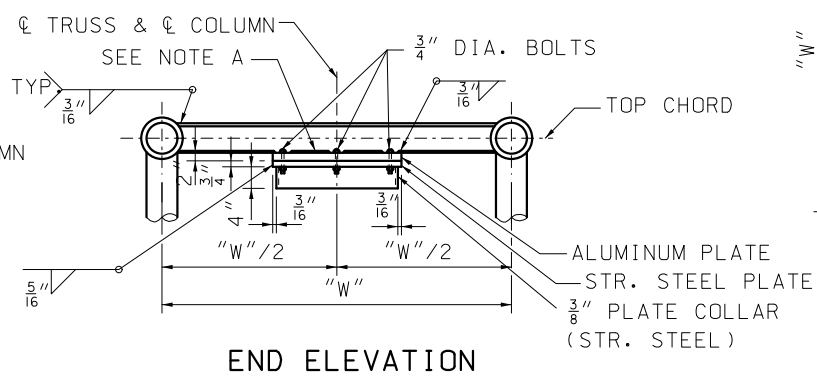
**TRUSS END MODIFIED FOR CANTILEVER**



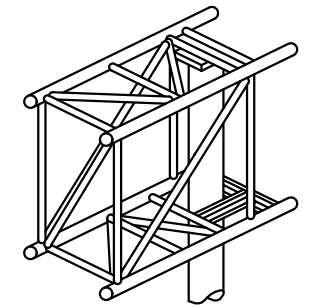
NOTE: R =  
 $\frac{\text{O.D. PIPE COL.} + \frac{1}{16}}{2}$



**DETAIL OF TOP CHORD CONNECTION TO COLUMN**



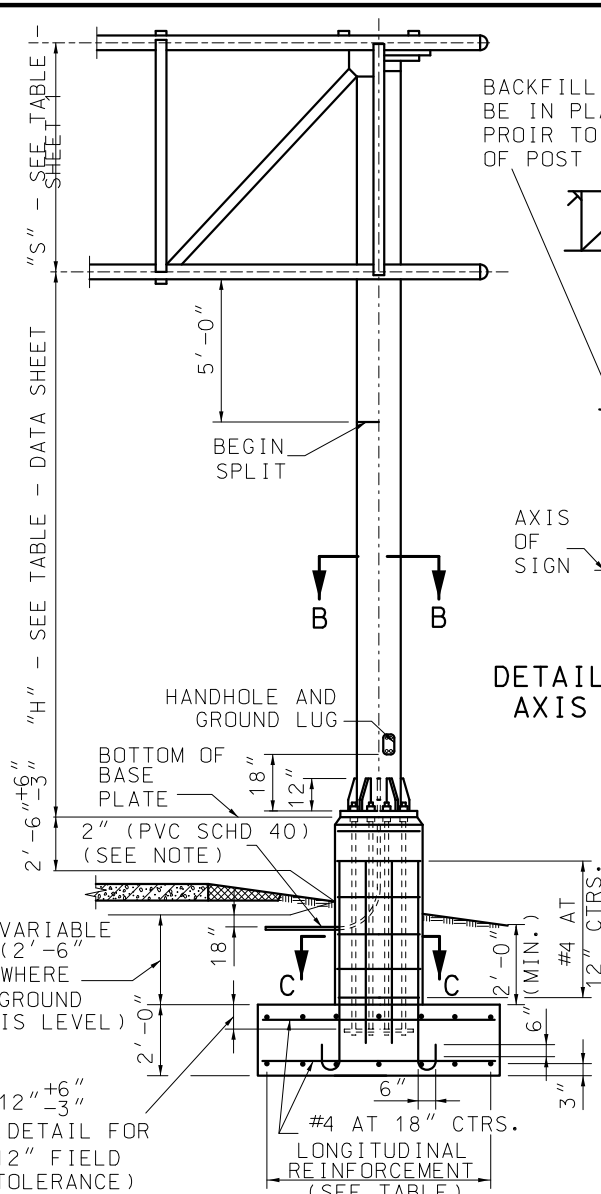
**DETAILS OF BOTTOM CHORD CONNECTION TO COLUMN**



**TYPICAL ISOMETRIC VIEW OF END SECTION**

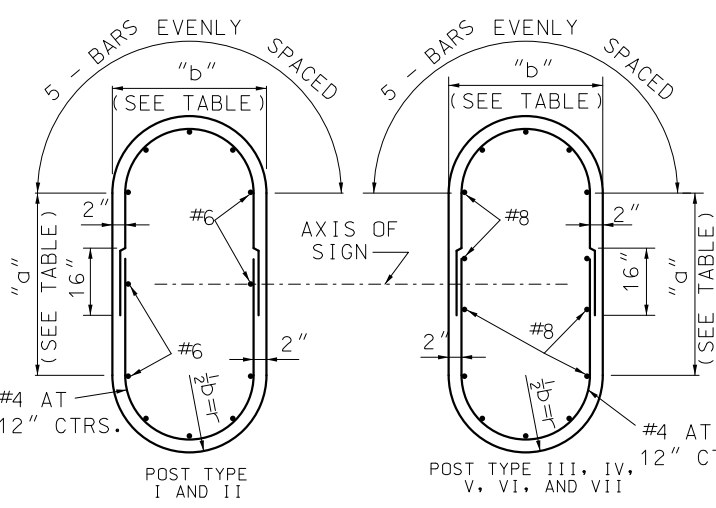
	<b>MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION</b> 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
	<b>OVERHEAD SIGN TRUSSES</b> ALUMINUM	
	DATE EFFECTIVE: 01/01/2021 DATE PREPARED: 10/14/2020	SHEET NO. <b>903.10BD</b> 3 OF 6

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



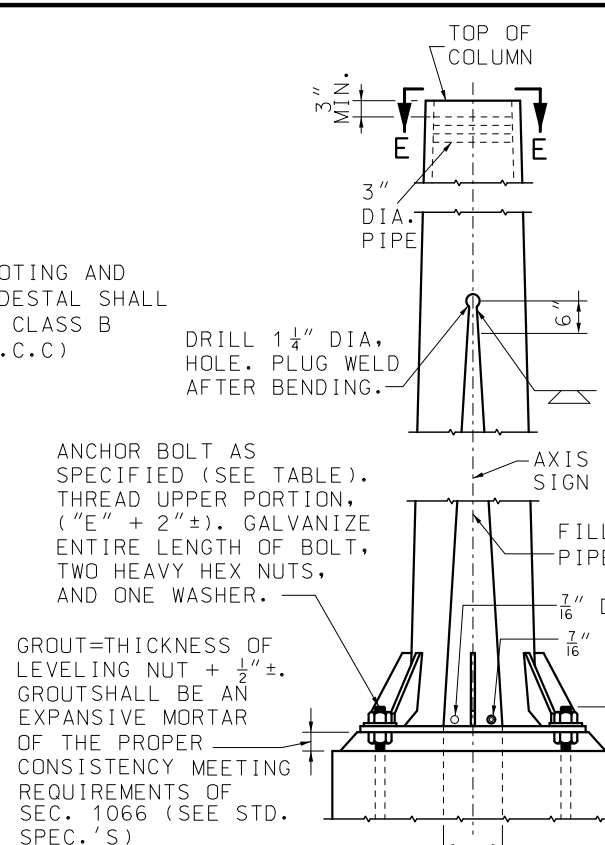
**ELEVATION**

NOTE: THE 2" CONDUIT IN THE CONCRETE PEDESTAL SHALL BE PVC SCHEDULE 40 AND SHALL BE PLACED WITH A MINIMUM RADIUS BEND OF 9 1/2".

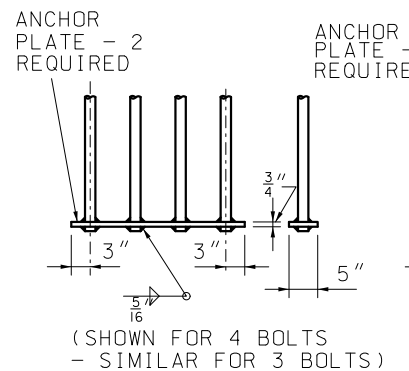


**SECTION C-C**

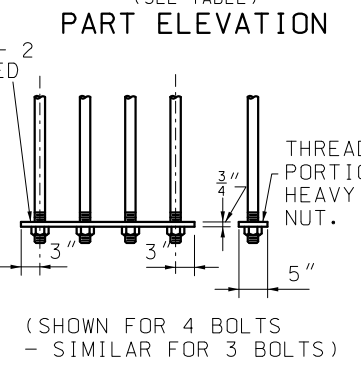
(TYPICAL SECTION SHOWING REINFORCING STEEL)  
NOTE: FOR DETAILS OF ALTERNATE PEDESTAL, SEE SHEET NO. 5 OF 6.



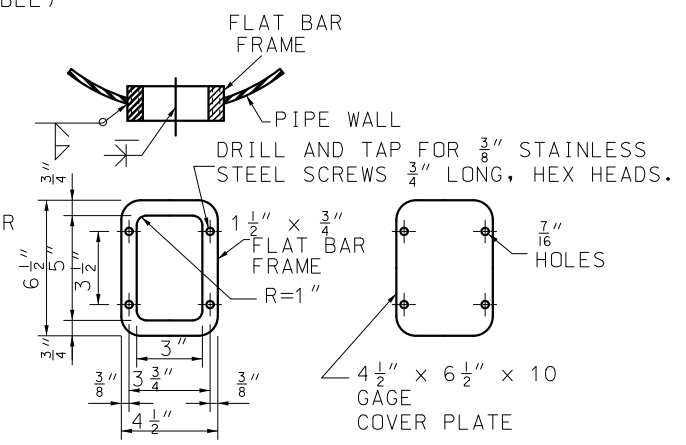
**PART ELEVATION**



**ANCHORAGE DETAIL A**



**ANCHORAGE DETAIL B (OPTIONAL)**

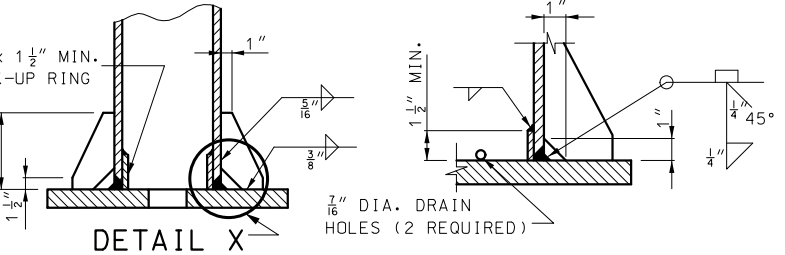


**HANDHOLE AND COVER DETAIL**

NOTE: HANDHOLE REQUIRED ONLY IN POWER COLUMN.

POST TYPE	PIPE COLUMN	DIMENSION "E"	SPLIT	BASE PLATE SIZE*	ANCHOR BOLTS DIA.	PEDESTAL SIZE*		FOOTING SIZE*	LONGITUDINAL FOOTING REINFORCEMENT		CONCRETE C.Y.
						a	b		TOP	BOTTOM	
I	12" STD. AT 65.42	8 1/2"	6"	2'-6" x 23" x 1 1/2"	6 AT 2 1/4"	4'-0"	2'-11"	7'-0" x 14'-6"	7-#5 BARS	7-#6 BARS	10.9
II	14" O.D. AT 72.09	8 1/2"	9 1/2"	3'-0" x 2'-0" x 1 1/2"	6 AT 2 1/4"	4'-4"	3'-0"	8'-0" x 16'-0"	8-#5 BARS	9-#6 BARS	13.2
III	16" O.D. AT 82.77	8 3/4"	11 1/2"	3'-4" x 2'-2" x 1 3/4"	6 AT 2 1/4"	4'-8"	3'-2"	8'-6" x 17'-6"	9-#5 BARS	9-#7 BARS	15.2
IV	18" O.D. AT 93.45	9 1/2"	12 1/2"	3'-7" x 2'-4" x 2"	6 AT 2 1/2"	5'-1"	3'-4"	9'-6" x 19'-0"	10-#5 BARS	10-#8 BARS	18.1
V	20" O.D. AT 104.13	9 1/2"	13"	3'-10" x 2'-9" x 2"	8 AT 2 1/2"	5'-4"	3'-9"	10'-0" x 20'-0"	10-#5 BARS	10-#8 BARS	20.6
VI	24" O.D. AT 125.49	9 1/2"	10 1/2"	4'-0" x 3'-3" x 2"	8 AT 2 1/2"	5'-6"	4'-3"	10'-6" x 21'-0"	11-#5 BARS	11-#8 BARS	23.3
VII	24" O.D. AT 125.49	9 1/2"	13 1/2"	4'-3" x 3'-3" x 2"	8 AT 2 1/2"	5'-9"	4'-3"	11'-0" x 22'-0"	11-#5 BARS	11-#9 BARS	25.1

\* BASE PLATES, PEDESTAL, AND FOOTINGS, LONGER SIDES SHALL BE NORMAL TO AXIS OF SIGN.

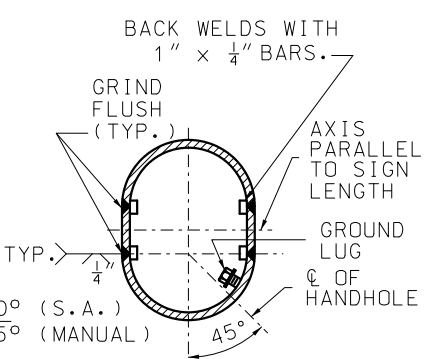


**PART SECTION A-A**

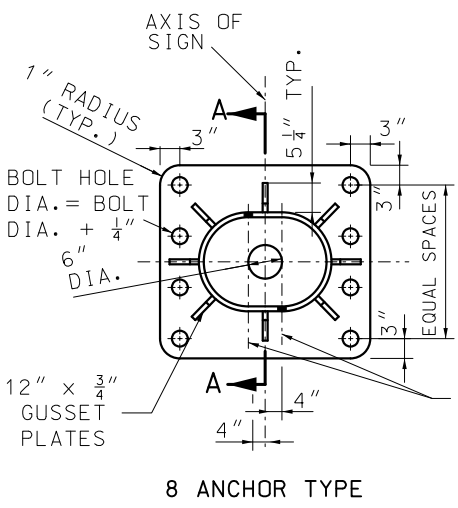
**DETAIL X**

GENERAL NOTES:

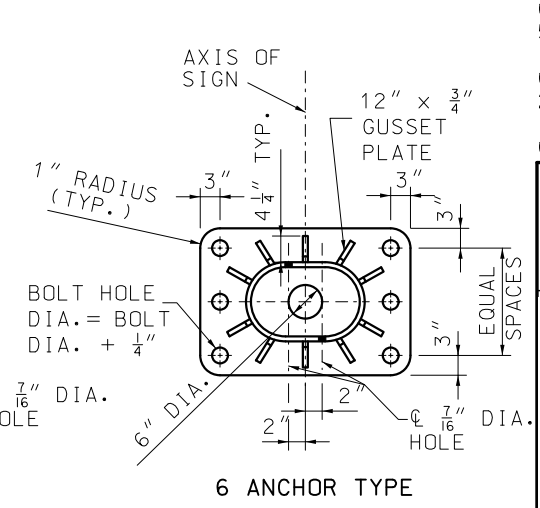
- A TAPERED TUBE OF EQUIVALENT SIZE AND THICKNESS MAY BE SUBSTITUTED FOR PIPE POST.
- ALL STEEL PIPE COLUMNS SHALL BE EITHER GRADE "B" SEAMLESS STEEL PIPE OR GRADE "B" ELECTRIC RESISTANCE WELDED STEEL PIPE; ASTM SPECIFICATION A53. NO OBJECTIONABLE SEAMS WILL BE PERMITTED.
- ALL STRUCTURES SHALL BE GROUNDED.
- BURR THREADS ON ALL ANCHOR BOLTS.
- A HORIZONTAL WELDED SPLICE MAY BE FABRICATED IN THE COLUMN BETWEEN THE TOP OF PIPE AND 4'-0" BELOW THE BOTTOM CHORDS OF THE TRUSS WHEN DETAILED ON THE PIPE AND 4'-0" BELOW THE BOTTOM CHORDS OF THE TRUSS WHEN DETAILED ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER.
- GROUND LUGS SHALL BE LOCATED INSIDE COLUMN NEAR HAND HOLE.
- QUANTITIES FOR PEDESTAL, BASED ON NOMINAL HEIGHT OF 5'-0".
- QUANTITIES FOR FOOTING, BASED ON NOMINAL DEPTH OF 2'-0".
- QUANTITIES SHOWN ARE FOR ONE COLUMN ONLY.



**SECTION B-B (FOR SPLIT COLUMNS ONLY)**



**8 ANCHOR TYPE**



**6 ANCHOR TYPE**

**TYPICAL BASE PLATES**

**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**  
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**STATE OF MISSOURI**  
NICOLE A. KOLB HOOD  
NUMBER PE-2001018754  
PROFESSIONAL ENGINEER

**OVERHEAD SIGN TRUSSES**  
ALUMINUM

DATE EFFECTIVE: 01/01/2021  
DATE PREPARED: 10/14/2020

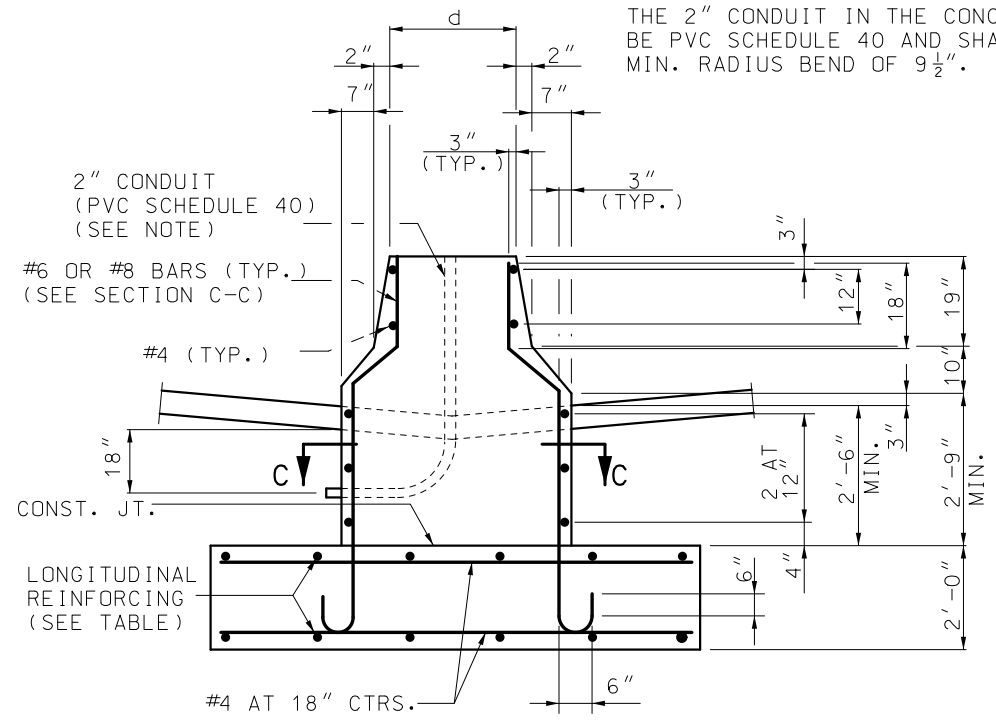
**903.10BD**

SHEET NO. 4 OF 6

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

NOTE:  
THE 2" CONDUIT IN THE CONCRETE PEDESTAL SHALL BE PVC SCHEDULE 40 AND SHALL BE PLACED WITH A MIN. RADIUS BEND OF 9 1/2".



**PART ELEVATION  
(TYPE A CONCRETE TRAFFIC BARRIER)**

POST TYPE	PIPE COLUMN	PEDESTAL SIZE *		FOOTING SIZE *	LONGITUDINAL FOOTING REINFORCEMENT		CONCRETE C.Y.	
		c	d		TOP	BOTTOM	TYPE A MEDIAN BARRIER	TYPE C MEDIAN BARRIER
I	12" STD. AT 65.42	5'-9"	2'-1"	7'-0" x 14'-6"	7 - #5 BARS	7 - #6 BARS	10.9	11.6
II	14" O.D. AT 72.09	6'-2"	2'-2"	8'-0" x 16'-0"	8 - #5 BARS	9 - #6 BARS	13.2	14.0
III	16" O.D. AT 82.77	6'-7"	2'-4"	8'-6" x 17'-6"	9 - #5 BARS	9 - #7 BARS	15.2	16.1
IV	18" O.D. AT 93.45	7'-1"	2'-6"	9'-6" x 19'-0"	10 - #5 BARS	10 - #8 BARS	18.1	19.1
V	20" O.D. AT 104.13	7'-8"	2'-11"	10'-0" x 20'-0"	10 - #5 BARS	10 - #8 BARS	20.6	21.7
VI	24" O.D. AT 125.49	8'-3"	3'-5"	10'-6" x 21'-0"	11 - #5 BARS	11 - #8 BARS	23.3	24.6
VII	24" O.D. AT 125.49	8'-6"	3'-5"	11'-0" x 22'-0"	11 - #5 BARS	11 - #9 BARS	25.1	26.5

\* BASE PLATES, PEDESTAL, AND FOOTINGS LONGER SIDES SHALL BE NORMAL TO AXIS OF SIGN.

NOTE:  
THE 2" CONDUIT IN THE CONCRETE PEDESTAL SHALL BE PVC SCHEDULE 40 AND SHALL BE PLACED WITH A MIN. RADIUS BEND OF 9 1/2".

GENERAL NOTES:

A TAPERED TUBE OF EQUIVALENT SIZE AND THICKNESS MAY BE SUBSTITUTED FOR PIPE POST.

ALL STEEL PIPE COLUMNS SHALL BE EITHER GRADE "B" SEAMLESS STEEL PIPE OR GRADE "B" ELECTRIC RESISTANCE WELDED STEEL PIPE; A.S.T.M. SPECIFICATION A53.

NO OBJECTIONABLE SEAMS WILL BE PERMITTED.

ALL STRUCTURES SHALL BE GROUNDED.

BURR THREADS ON ALL ANCHOR BOLTS.

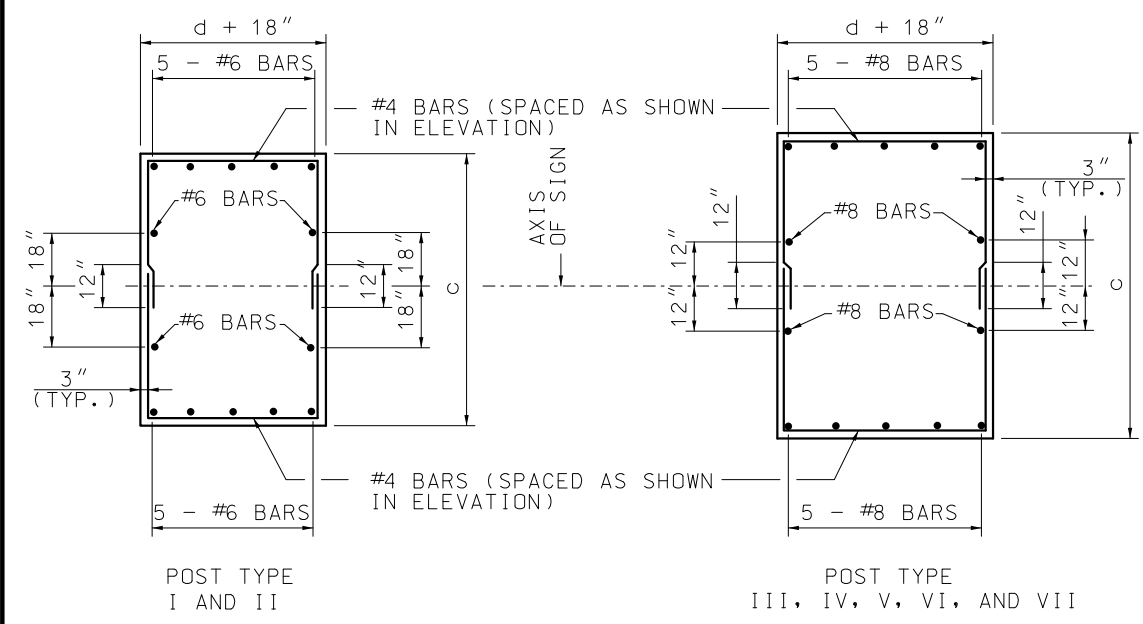
PIPE COLUMN, BASE PLATE, ANCHOR BOLTS AND NOTES PERTAINING TO THESE ITEMS HAVE BEEN OMITTED FOR CLARITY. REFER TO SHEET NO. 4 OF 6 FOR DETAILS OF THESE ITEMS.

GROUND LUGS SHALL BE LOCATED INSIDE COLUMN NEAR HAND HOLE.

QUANTITIES FOR PEDESTAL, BASED ON NOMINAL HEIGHT OF 5'-2" (TYPE A MEDIAN BARRIER) OR 6'-0" (TYPE C MEDIAN BARRIER).

QUANTITIES FOR FOOTING, BASED ON NOMINAL DEPTH OF 2'-0".

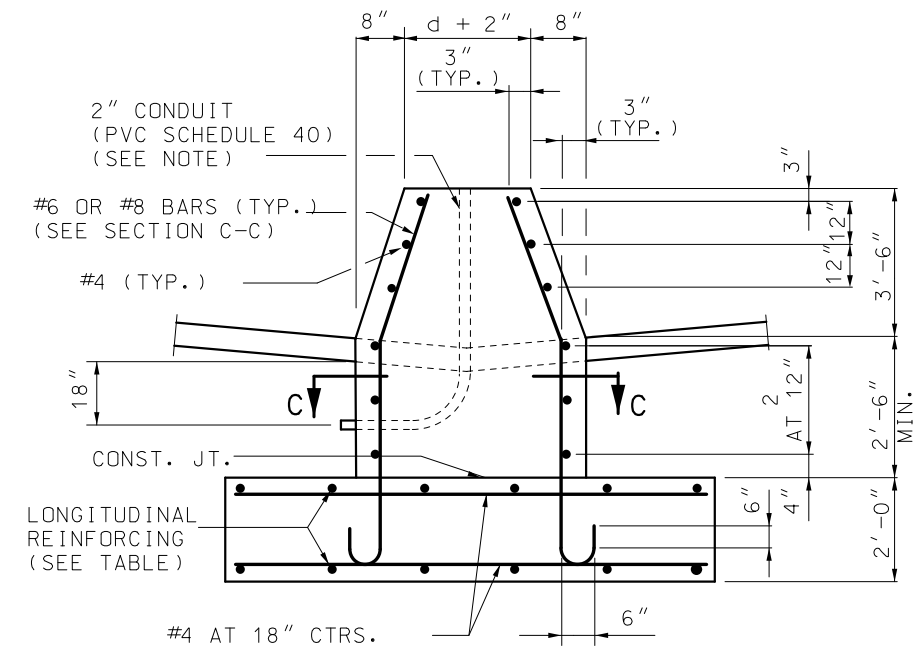
QUANTITIES SHOWN ARE FOR ONE COLUMN ONLY.



**SECTION C-C  
TYPICAL SECTION SHOWING  
REINFORCING STEEL**

**DETAILS OF ALTERNATE PEDESTAL**

(TO BE USED ADJACENT TO TYPE "A" OR "C" MEDIAN BARRIER)



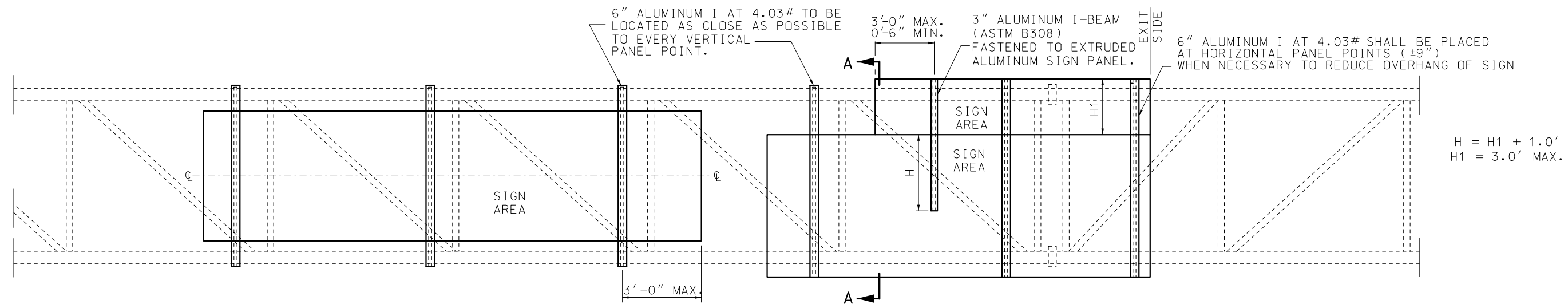
**PART ELEVATION  
(TYPE C CONCRETE TRAFFIC BARRIER)**

**MoDOT** MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
105 WEST CAPITOL JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

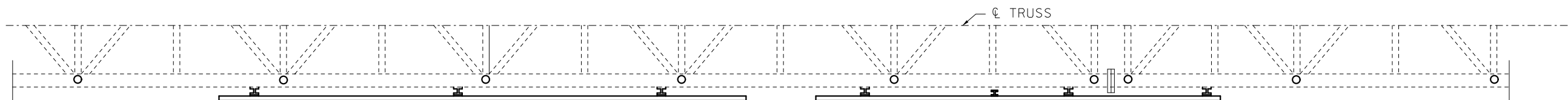
STATE OF MISSOURI  
NICOLE A. KOLB HOOD  
NUMBER PE-2001018754  
PROFESSIONAL ENGINEER  
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

**OVERHEAD SIGN TRUSSES  
ALUMINUM**

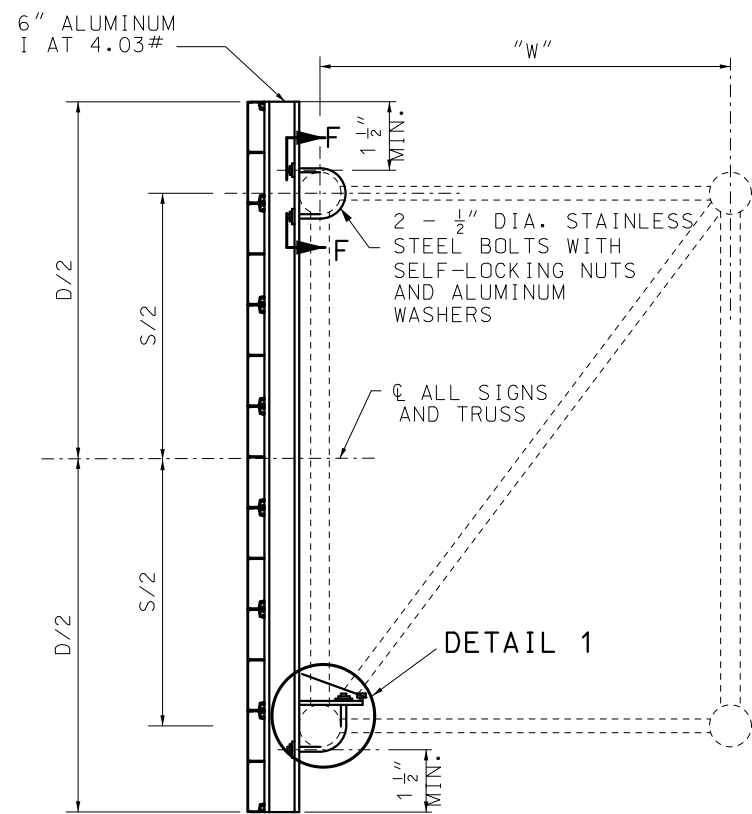
DATE EFFECTIVE: 01/01/2021	<b>903.10BD</b>	SHEET NO. 5 OF 6
DATE PREPARED: 10/14/2020		



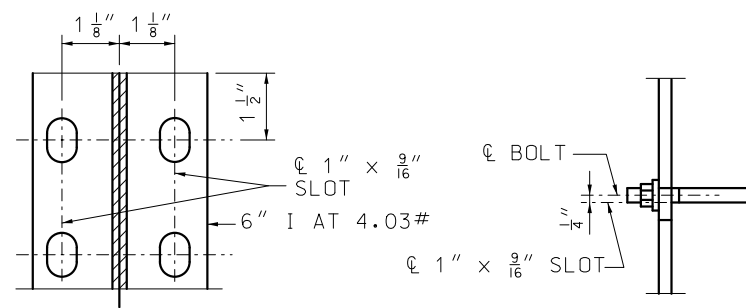
TYPICAL ELEVATION OF SIGN COMPONENTS



TYPICAL HALF PLAN OF SIGN COMPONENTS

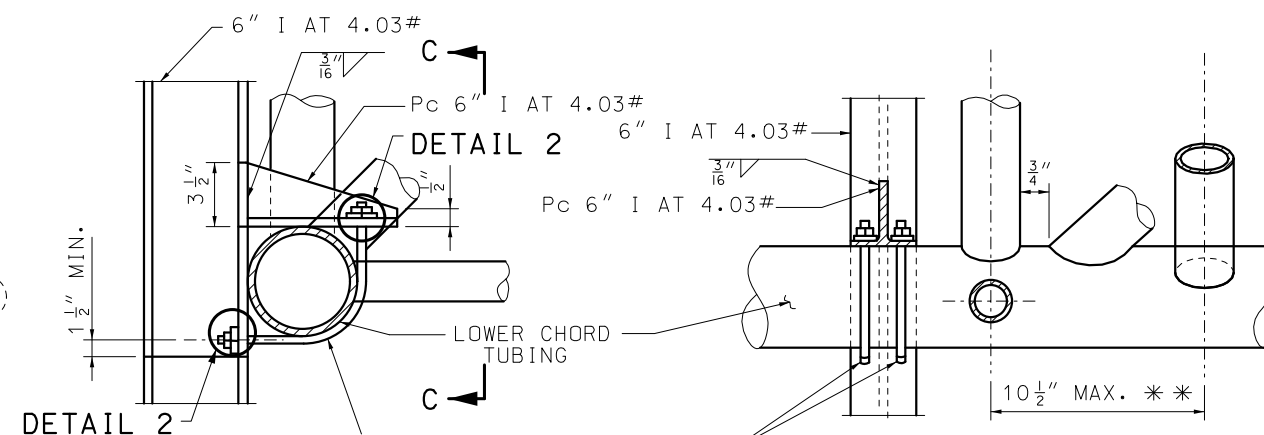


SECTION A-A  
TYPICAL SECTION OF SIGN SUPPORT



SECTION F-F

DETAIL 2



DETAIL 1

SECTION C-C

\*\* LOCATE THE INTERIOR DIAGONAL AS CLOSE AS POSSIBLE TO THE CENTERLINE OF THE PANEL POINT WITHOUT OVER-LAPPING WELDS.

GENERAL NOTES:

EXIT NO. PANELS SHALL BE MOUNTED FLUSH WITH THE EXIT SIDE OF THE GUIDE SIGN.

ALL SIGNS SHALL BE CENTERED VERTICALLY ABOUT THE HORIZONTAL CL OF THE TRUSS.

SEE STD. PLAN 903.09 FOR LIGHTING DETAILS IF LIGHTING THE SIGN IS NECESSARY.

SEE STD. PLAN 903.03 FOR SIGN MOUNTING DETAILS.

ALL MATERIAL ALUMINUM EXCEPT AS NOTED.

**MoDOT** MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL JEFFERSON CITY, MO 65102  
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STATE OF MISSOURI  
 NICOLE A. KOLB HOOD  
 NUMBER PE-2001018754  
 PROFESSIONAL ENGINEER  
 THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

**OVERHEAD SIGN TRUSSES**  
SIGN MOUNTING DETAIL

DATE EFFECTIVE: 01/01/2021  
 DATE PREPARED: 10/14/2020

**903.10BD**

SHEET NO.  
6 OF 6

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.