

See construction plan set for special inspection program requirements by engineer of record.

Washington State Fair Grounds
Tensile Membrane Structure
Puyallup, Washington

LOADING CRITERIA – IBC 2018/ASCE 7-16 - OPEN STRUCTURE

- A. LOADS ARE CALCULATED PER ASCE 7-16
- B. DESIGN FABRIC PRESTRESS IS 15 POUNDS PER LINEAR INCH IN BOTH THE WARP AND FILL DIRECTIONS.
- C. LIVE LOAD FOR THE CANOPY IS 12.0 PSF UNIFORM (ignore)
- D. SNOW LOAD WAS CALCULATED AS FOLLOWS:
 - $P_f = 0.7 \times C_e \times C_t \times I_s \times P_g$
 - $C_e = 0.9$ (Exposure C, Fully Exposed Roof)
 - $C_t = 1.2$ (Unheated structures)
 - $I_s = 1.0$ (Risk category II building)
 - $P_g = 25$ psf (ground snow load) > 20 psf, $P_m = 20(I_s) = 20$ psf
 - $P_f = 0.7 \times 0.9 \times 1.2 \times 1.0 \times 25 = 18.9$ psf --> USE $P_m = 20$ psf
 - (Case 1) Uniform Balanced Snow (SL1)
 - (Case 2) X Unbalanced Snow (SL2)
 - (Case 3) Y Unbalanced Snow (SL3)
- E. WIND LOADS FOR THE ROOF ARE BASED ON A WIND VELOCITY OF 98 MPH.

WIND SPEED $V = 98$ MPH (3 Sec Gust, Risk category II)
MEAN HEIGHT = 35 FEET, EXPOSURE "C"
 $K_z = 1.01$ (35 feet high, exposure C)
 $K_{zt} = 1.0$
 $K_d = 0.85$
 $K_e = 1.0$
 $q_z = 0.00256 \times K_z \times K_{zt} \times K_d \times K_e \times V^{2.0}$
 $q_z = 0.00256 \times 1.01 \times 1.0 \times 0.85 \times 1.0 \times 98^{2.0}$
 $q_z = 21.11$ psf
 $G_h = 0.85$
 $P = 0.6 \times (q_z \times G_h \times C_p)$ for ASD Load
 $P = 0.6 \times (21.11 \times 0.85 \times C_p) = 10.77 \times C_p$ --> USE 11 psf $\times C_p$

VALUES FOR C_p WERE APPLIED TO THE STRUCTURE ON AN ELEMENT BY ELEMENT BASIS AS TABULATED BELOW (Pitched Free Roofs – ASCE7-16 Fig.27.3.5).

LOAD CASE A:

Windward side	slope	coefficient
	90 to 45 deg.	1.1 inward
	45 to 38	1.3 inward
	38 to 30	1.3 inward
	30 to 15	1.1 inward
	15 to 0	1.1 inward
Leeward side	slope	coefficient
	90 to 45 deg.	0.9 inward
	45 to 38	0.6 inward
	38 to 30	0.2 inward
	30 to 15	0.4 outward
	15 to 0	0.3 outward

LOAD CASE B:

Windward side	slope	coefficient
	90 to 45 deg.	0.3 outward
	45 to 38	0.2 outward
	38 to 30	0.1 outward
	30 to 15	0.1 inward
	15 to 0	0.2 inward
Leeward side	slope	coefficient
	90 to 45 deg.	0.5 outward
	45 to 38	0.9 outward
	38 to 30	0.8 outward
	30 to 15	1.1 outward
	15 to 0	1.2 outward

F. SEISMIC LOADS ARE CALCULATED AS FOLLOWS:

$S_s = 1.27, S_1 = 0.438$
Site Class E
 $F_a = 1.2$
 $F_v = 2.324$
 $S_{MS} = F_a S_s = 1.2 \times 1.27 = 1.524$
 $S_{M1} = F_v S_1 = 2.324 \times 0.438 = 1.018$
 $S_{DS} = 2/3 S_{MS} = 2/3 \times 1.524 = 1.016$
 $S_{D1} = 2/3 S_{M1} = 2/3 \times 1.018 = 0.679$
At Risk Category II,
Seismic category D (Table 11.6-1, 11.6-2)

$C_s = S_{DS} / (R/I_e)$
 $S_{DS} = 1.016$
 $R = 1.0, I_e = 1.0$ (Steel Ordinary Moment Frames
For Nonbuilding Structures Similar to Buildings)
 $I_e = 1.0$ (Risk Category II)

$C_s = 1.016 / (1.0 / 1.0) = 1.016$
 C_s need not exceed
 $C_s = S_{D1} / (T(R/I_e))$ for $T \leq T_L$
WHERE $S_{D1} = 0.679$
 $T = C_t h_n^x$
 $C_t = 0.02, x = 0.75$ (Table 12.8-2)
 $h_n = 35$ feet
 $T = 0.02 \times 35^{0.75}$
 $= 0.288$ sec < $T_L = 6$ sec (Fig 22-14)

$C_s = 0.679 / (0.288 \times (1.0 / 1.0))$
 $= 2.358$
Therefore
 $C_s = 1.016$

Horizontal Seismic Load Effect including Overstrength
 $E_{mh} = 0.0 E_h$
 $= 0(C_s W)$
 $= 1.0 \times 1.016 \times W = 1.02 W$
(Note) Apply 100% (1.02W) of the force for one direction plus
30% (0.31W) of the force for perpendicular direction.

Vertical Seismic Load Effect
 $E_v = 0.2 S_{DS} D$
 $= 0.2 \times 1.016 \times W = 0.20 W$

G. SIGN CONVENTION: POSITIVE FORCES ARE DEFINED TO BE IN THE DIRECTION OF THE X-Y AXIS SHOWN ON THE REACTION NODE MAP WITH Z ACTING UP AND OUT OF THE PAGE.

H. THE EFFECTS OF MEMBRANE PRESTRESS AND DEAD LOAD ARE INCLUDED IN ALL LOAD CASES.

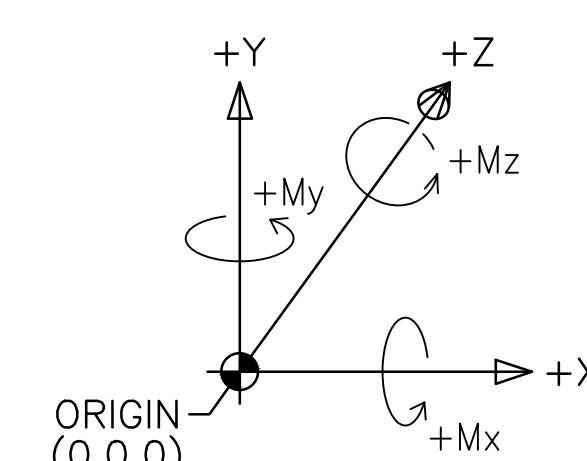
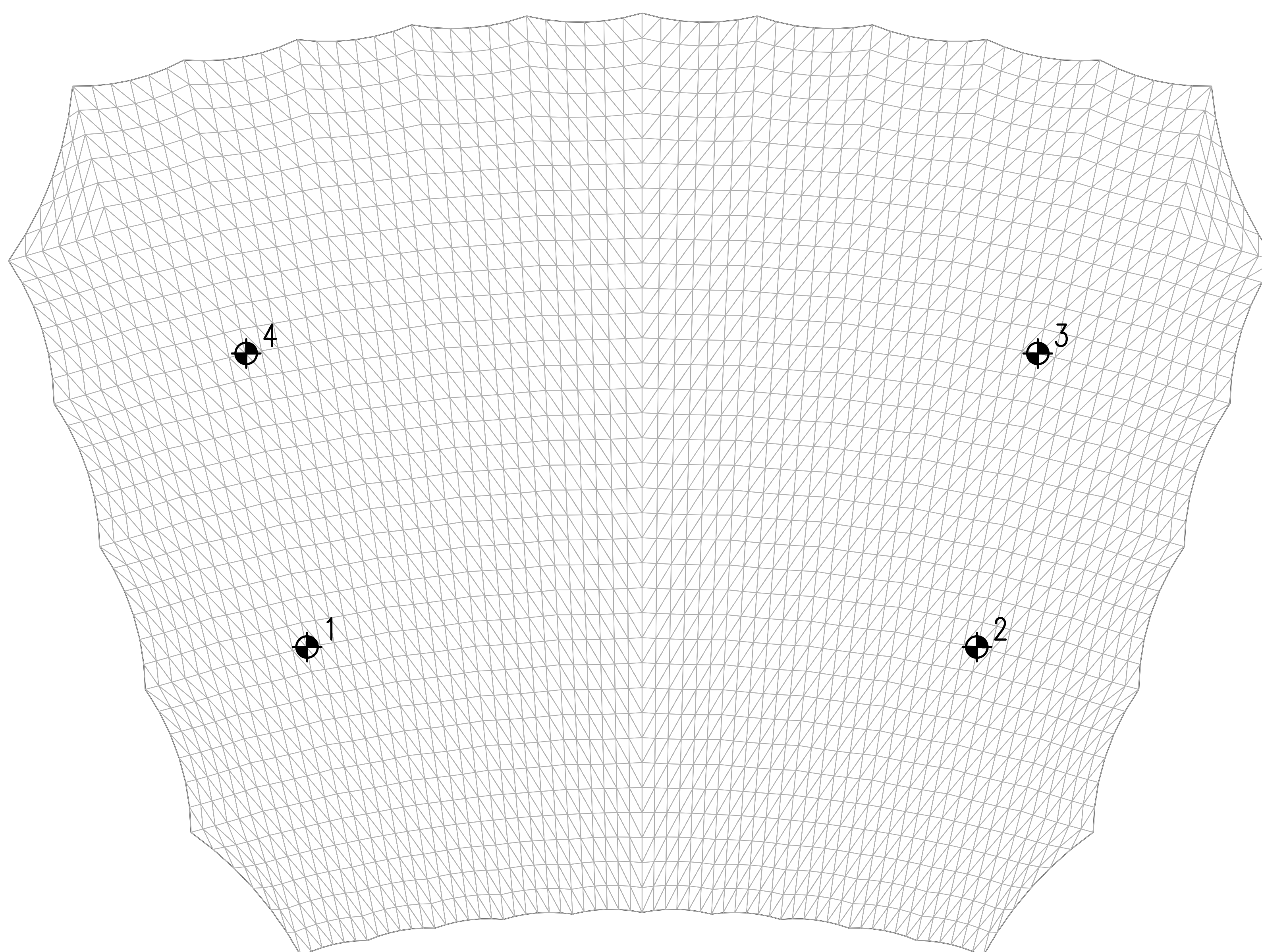
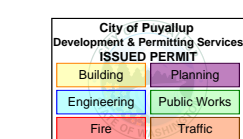
I. THE LOADS TABULATED REPRESENT FORCES THAT ARE APPLIED TO THE BUILDING OR FOUNDATION AT THAT LOCATION.

J. THE COORDINATES SHOWN MAY NOT REFLECT THE FINAL WORK POINTS IN THE STRUCTURE, THEY ARE FOR ANALYSIS PURPOSES ONLY.

LOAD CASE DESCRIPTION

- (Case 1) Prestress : DL+PS
- (Case 2) Uniform Balanced Snow Load : DL+PS+SL1
- (Case 3) Unbalanced Snow Load : 1 DL+PS+SL2
- (Case 4) Unbalanced Snow Load : 1 DL+PS+SL3
- (Case 5) Wind Load (Uniform Uplift Wind) : DL+PS+WL1
- (Case 6) Wind Load (+X wind at case A) : DL+PS+WL2
- (Case 7) Wind Load (+Y wind at case A) : DL+PS+WL3
- (Case 8) Wind Load (-Y wind at case A) : DL+PS+WL4
- (Case 9) Wind Load (+XY wind at case A) : DL+PS+WL5
- (Case 10) Wind Load (+X wind at case B) : DL+PS+WL6
- (Case 11) Wind Load (+Y wind at case B) : DL+PS+WL7
- (Case 12) Wind Load (-Y wind at case B) : DL+PS+WL8
- (Case 13) Wind Load (+XY wind at case B) : DL+PS+WL9
- (Case 14) Uniformed Balanced Snow Load + Wind Load : DL+0.75SL1+0.75WL3
- (Case 15) X Unbalanced Snow Load + Wind Load : DL+0.75SL2+0.75WL3
- (Case 16) Y Unbalanced Snow Load + Wind Load : DL+0.75SL3+0.75WL3
- (Case 17) +X Seismic Load : DL+PS+(0.7E_v + 0.7E_{mh})@+X
- (Case 18) +Y Seismic Load : DL+PS+(0.7E_v + 0.7E_{mh})@+Y
- (Case 19) -Y Seismic Load : DL+PS+(0.7E_v + 0.7E_{mh})@-Y
- (Case 20) +XY Seismic Load : DL+PS+(0.7E_v + 0.7E_{mh})@+XY
- (Case 21) +X Seismic Load + Snow Load : DL+PS+(0.525E_v + 0.525E_{mh})@+X + 0.75SL1
- (Case 22) +Y Seismic Load + Snow Load : DL+PS+(0.525E_v + 0.525E_{mh})@+Y + 0.75SL1
- (Case 23) -Y Seismic Load + Snow Load : DL+PS+(0.525E_v + 0.525E_{mh})@-Y + 0.75SL1
- (Case 24) +XY Seismic Load + Snow Load : DL+PS+(0.525E_v + 0.525E_{mh})@+XY + 0.75SL1

REACTION NODE	COORDINATES	X(ft)	Y(ft)	Z(ft)
No. 1		-23.426	0.000	11.396
2		23.426	0.000	11.396
3		27.686	20.542	14.063
4		-27.686	20.542	14.063



REACTION NODE MAP
NTS

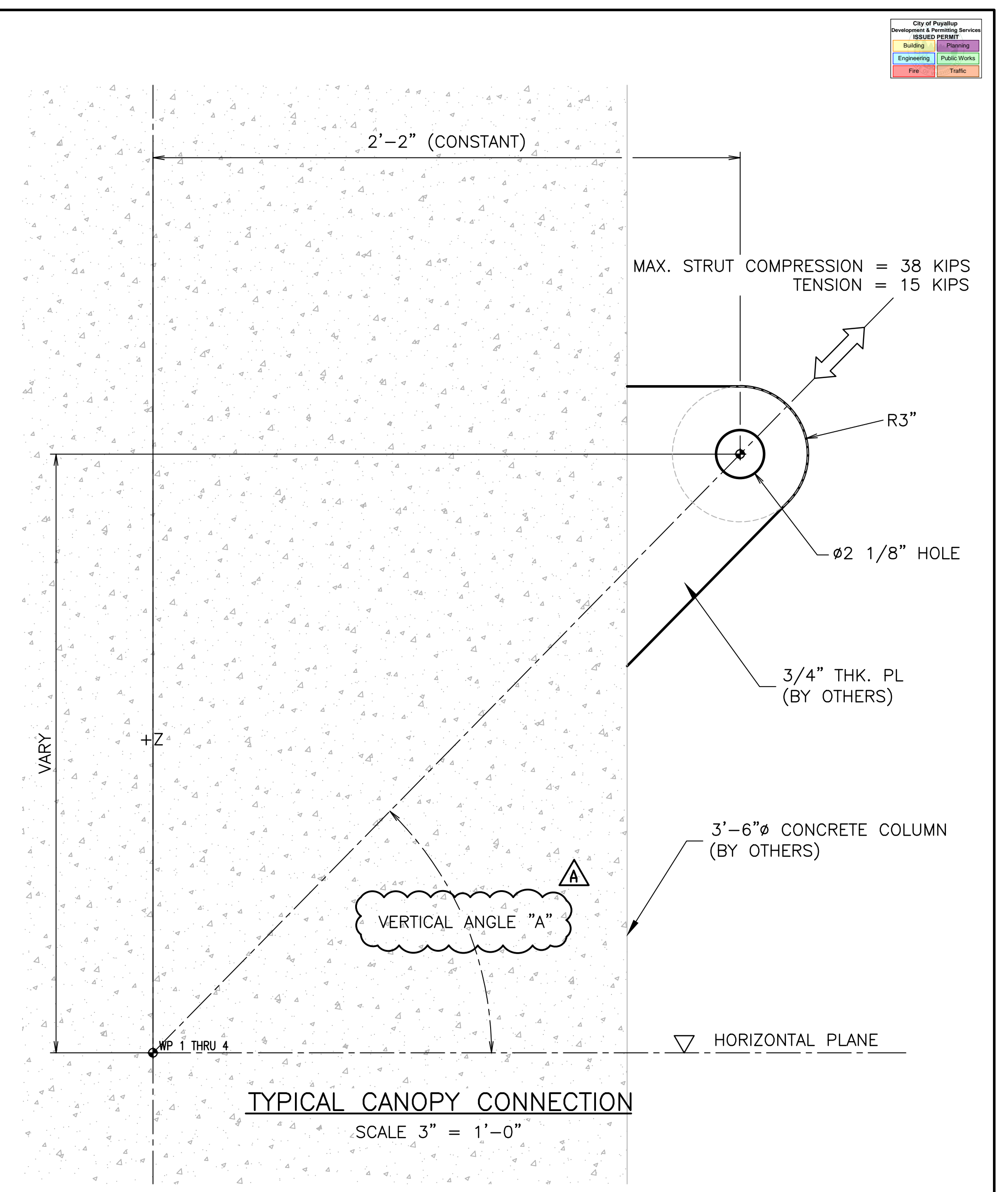
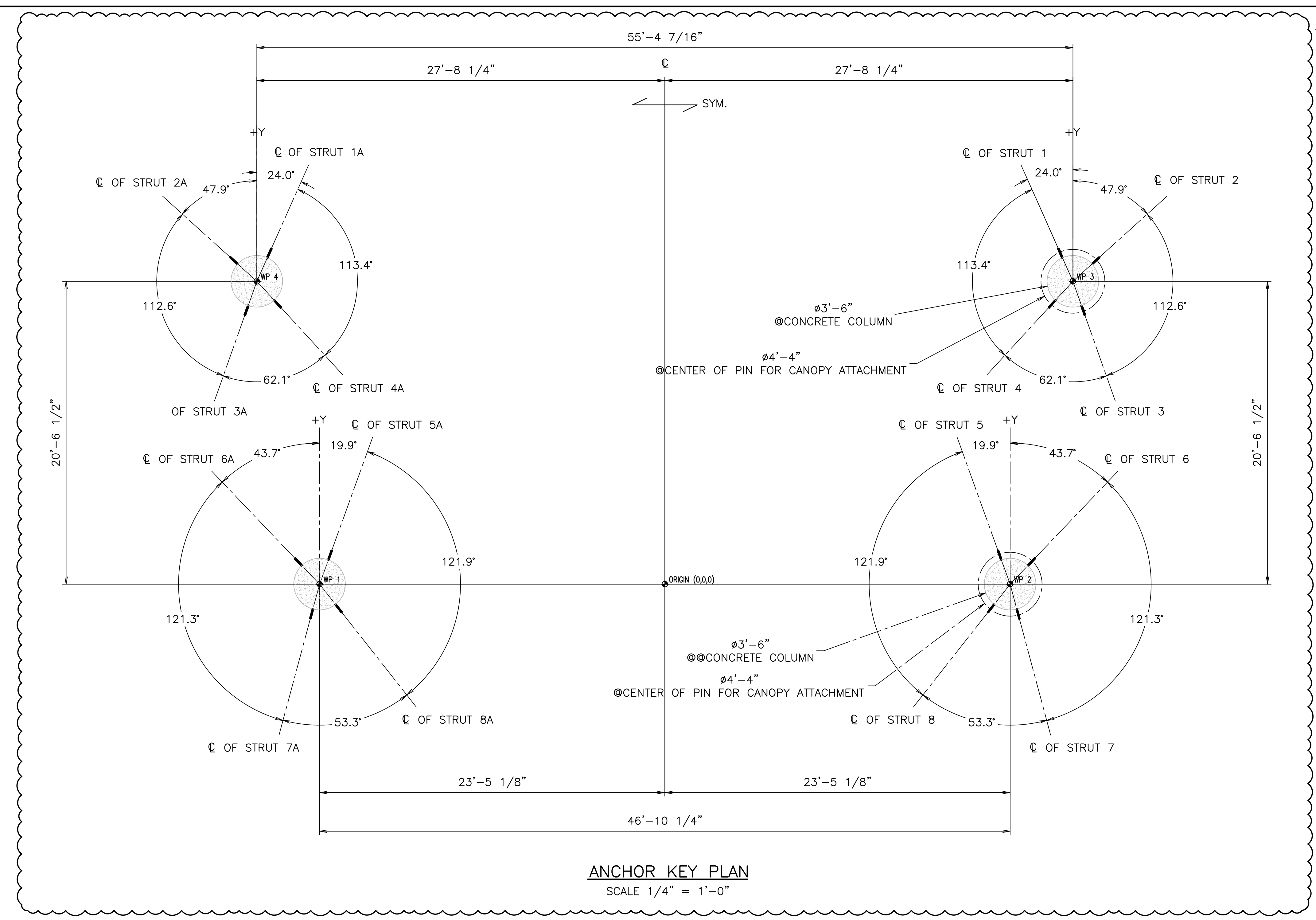
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Mar 6 2024
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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
A	REVISE SEISMIC CRITERIA	2/26/24	MI	MI	MI

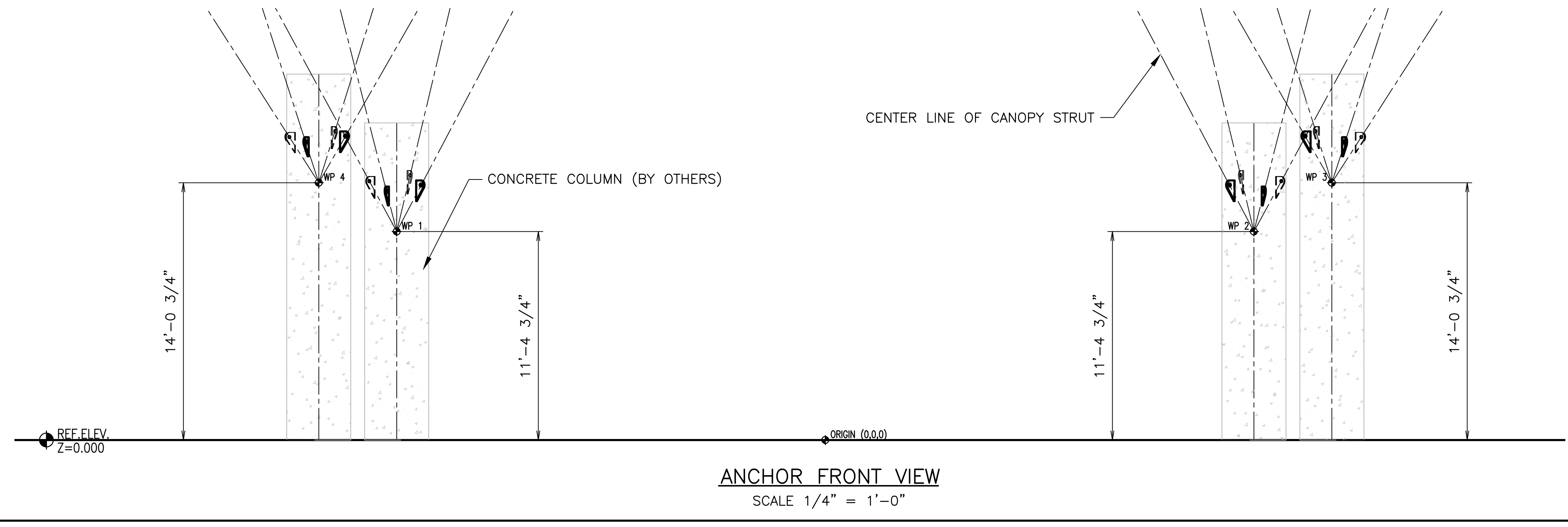
REVISIONS	
NAME	DATE
MI	10/13/23
MI	10/13/23
MI	10/13/23

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6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234	
TITLE INTERFACE LOADING CRITERIA AND REACTION NODE MAP WASHINGTON STATE FAIRGROUNDS	
SCALE	DWG. NO.
AS NOTED	23008 - 1000
	REV A



STRUT NAME	VERTICAL ANGLE "A"
STRUT 1 / STRUT 1A	52.433°
STRUT 2 / STRUT 2A	49.090°
STRUT 3 / STRUT 3A	45.895°
STRUT 4 / STRUT 4A	49.718°
STRUT 5 / STRUT 5A	54.911°
STRUT 6 / STRUT 6A	51.840°
STRUT 7 / STRUT 7A	45.572°
STRUT 8 / STRUT 8A	49.567°

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 Mar 6 2024
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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
A	ADD STRUT NAME AND VERTICAL ANGLE	2/1/24	MI	MI	MI

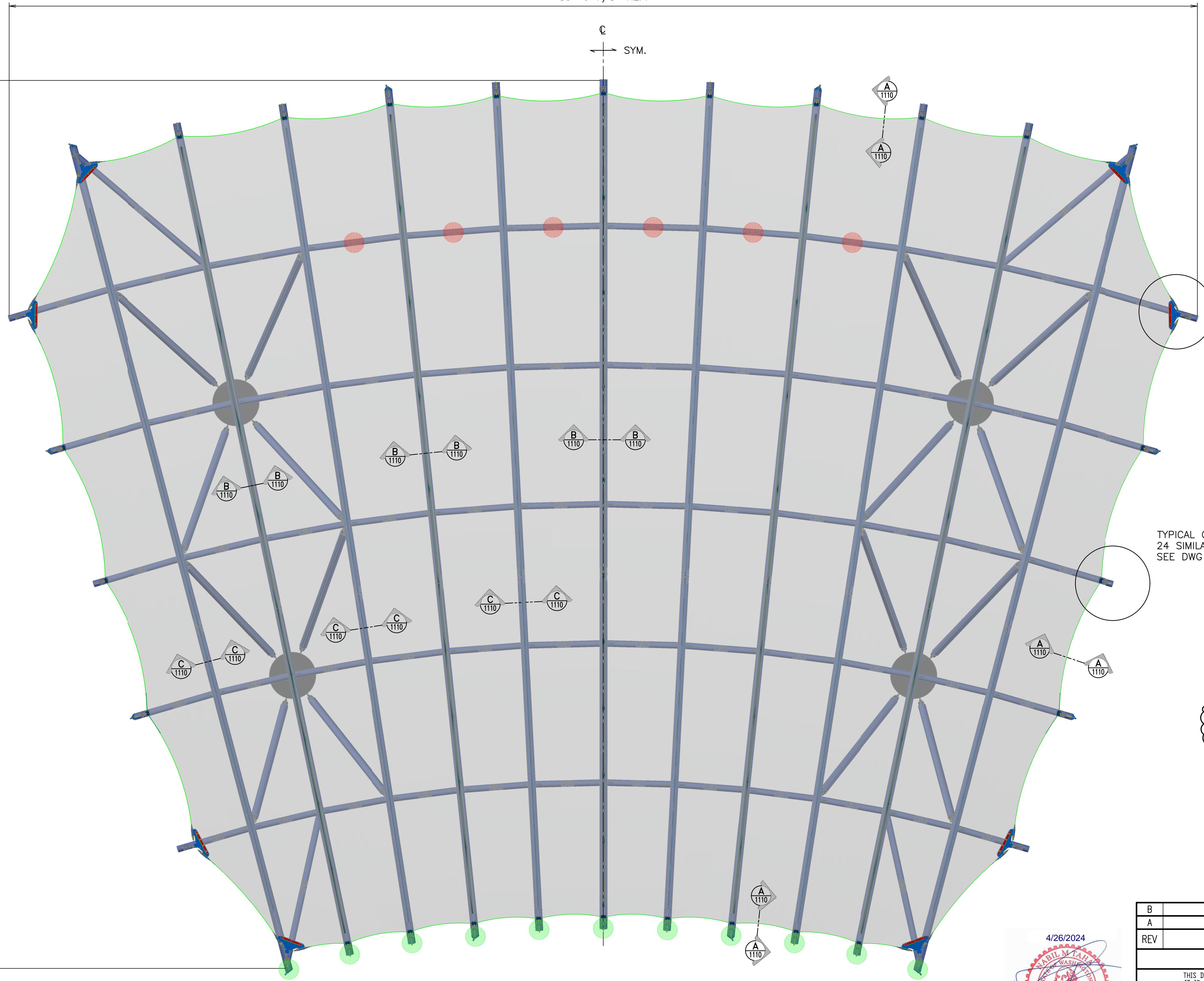
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NAME	DATE
DRAWN BY MI	10/13/23
CHECKED BY MI	10/13/23
ENGINEER MI	10/13/23
FINAL REVIEW	

BIRDAR 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234	
INTERFACE ANCHOR KEY PLAN WASHINGTON STATE FAIRGROUNDS	
SCALE AS NOTED	DWG. NO. 23008 - 1010
	REV A

89'-6 7/8" REF.

SYM.

66'-11 1/2" REF.



TYPICAL CORNER DETAIL <CD-1>
 8 SIMILAR PLACES
 SEE DWG1120

TYPICAL CABLE INTERMEDIATE DETAIL <CD-2>
 24 SIMILAR PLACES
 SEE DWG1120

(NOTE)

- : (6) CLAMPS LOCATION FOR SIGN ATTACHMENT
 MAXIMUM DEAD LOAD AT EACH POINT = 170LBS
- : (11) CLAMPS LOCATION FOR GUTTER ATTACHMENT
 MAXIMUM RAIN LOAD AT EACH POINT = 150LBS

OVERALL PLAN
 SCALE 1/4" = 1'-0"

4/26/2024

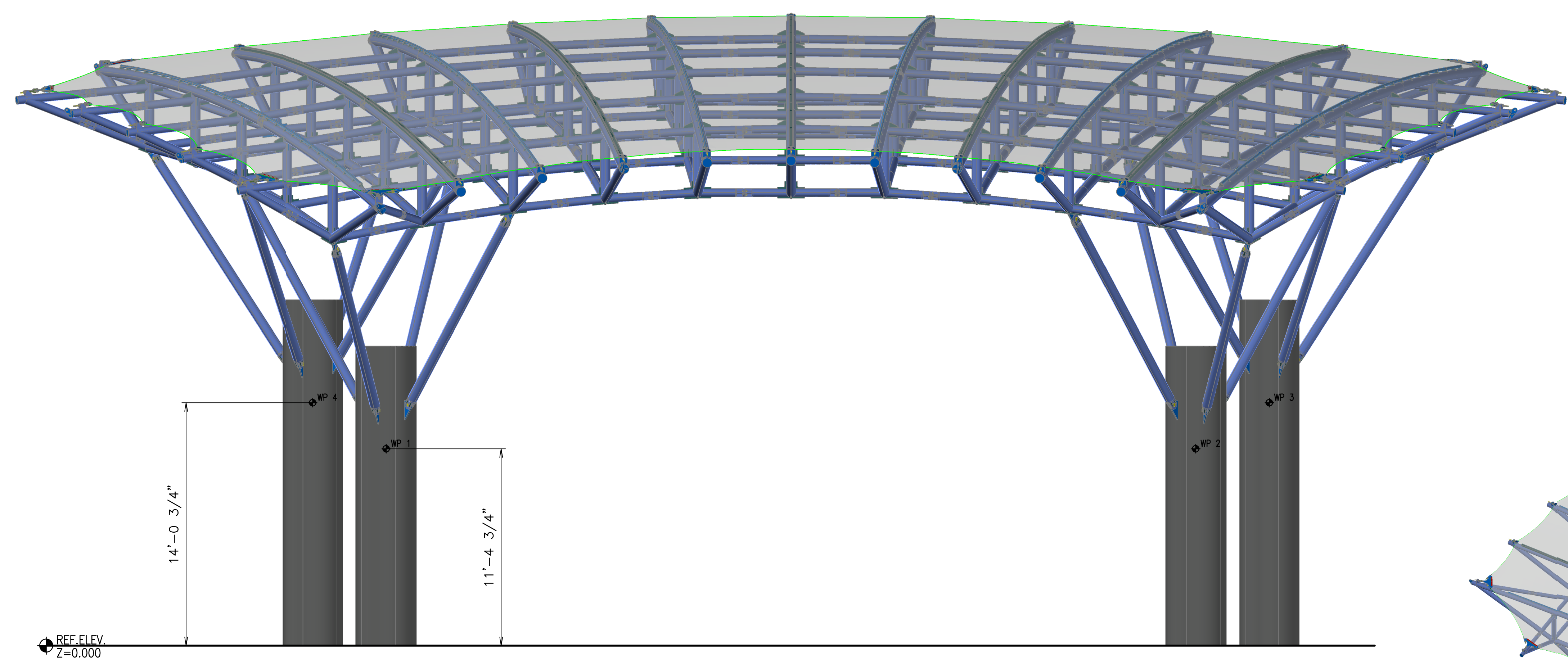
Expires 07/26/2025

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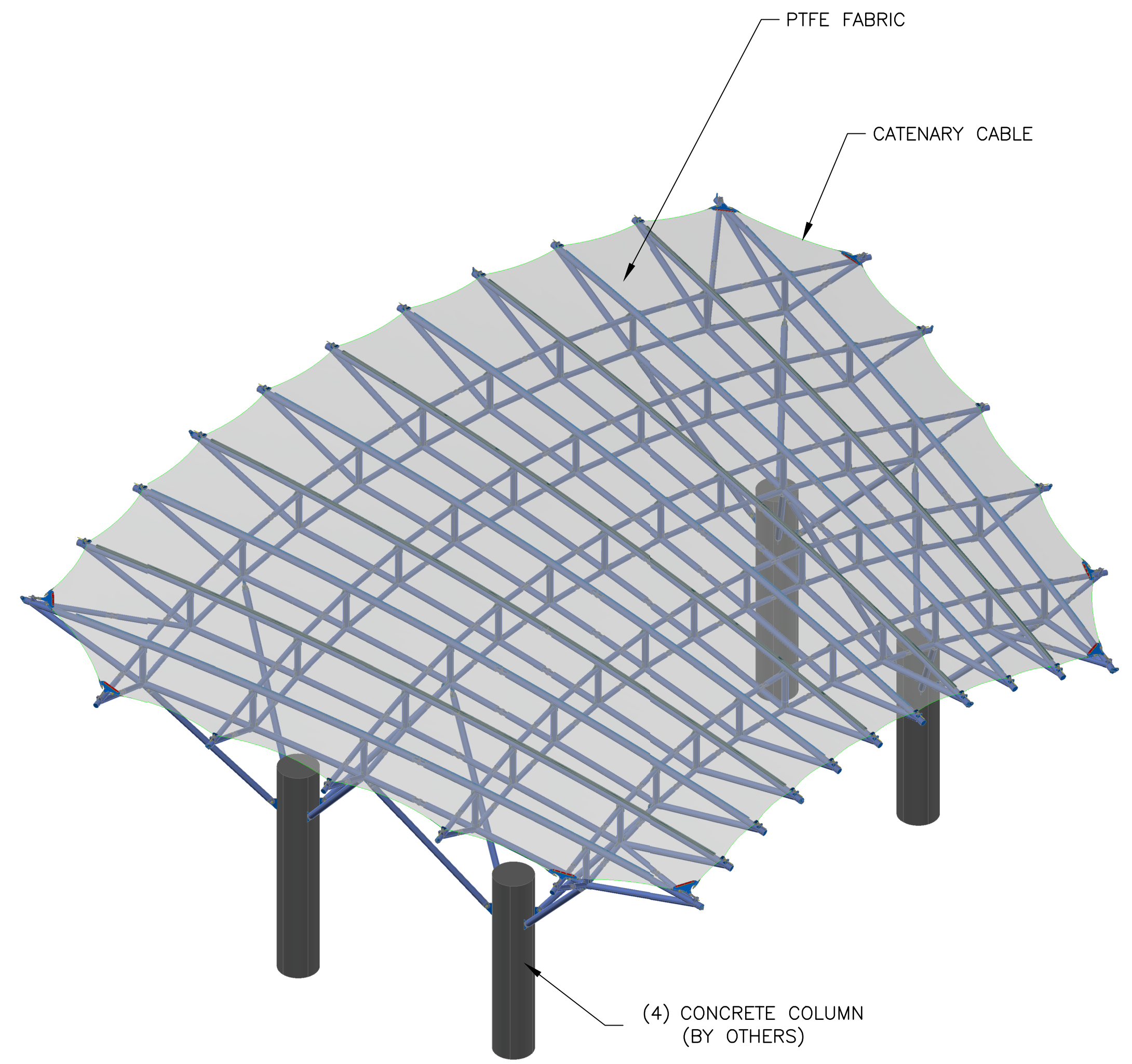
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
B	REVISE NOTE	2/29/24	MI	MI	MI
A	ADD NOTE	1/31/24	MI	MI	MI
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR

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NAME	DATE
DRAWN BY MI	10/13/23
CHECKED BY MI	10/13/23
ENGINEER MI	10/13/23
FINAL REVIEW	
SCALE	DRAWING SIZE AS NOTED

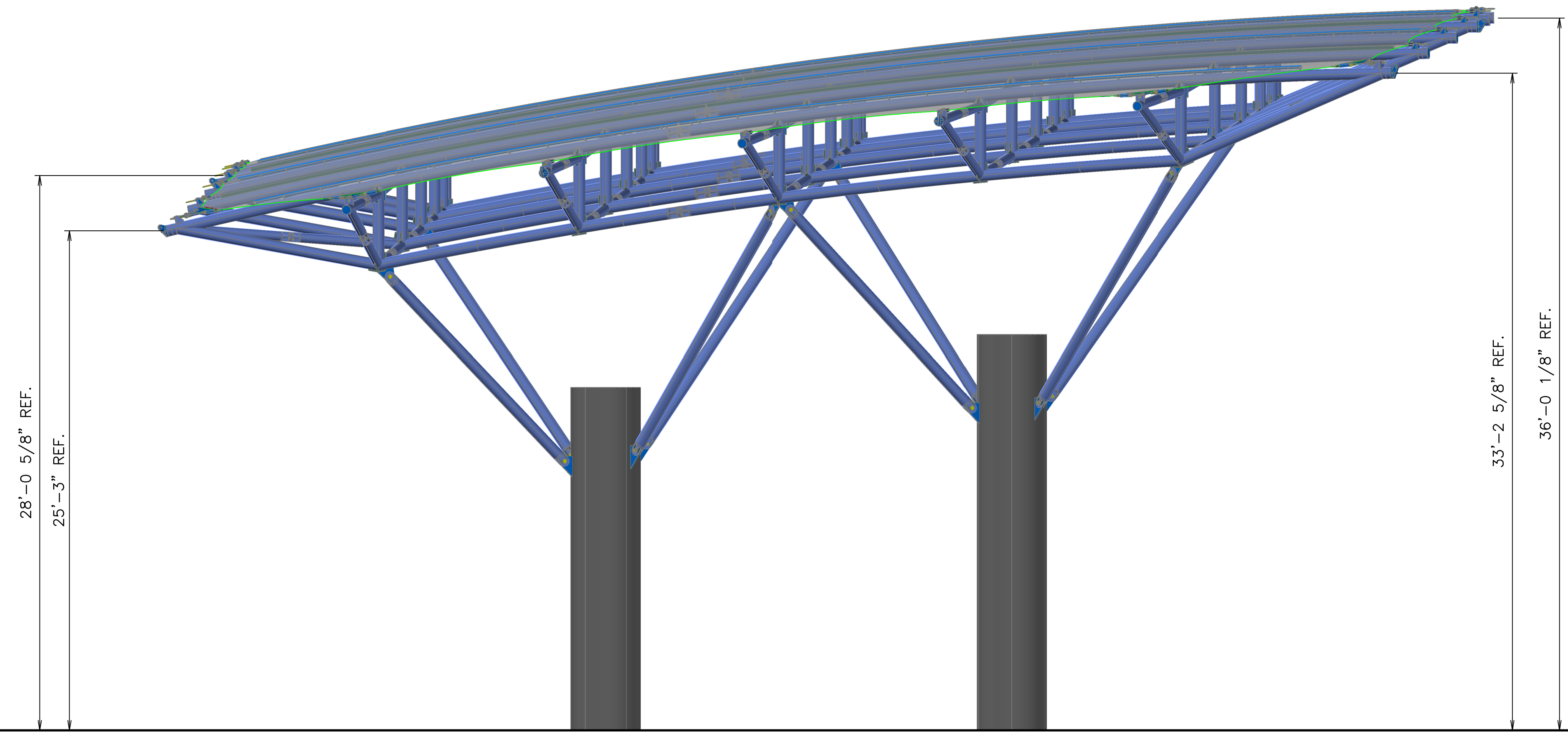
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TITLE INTERFACE OVERALL CANOPY PLAN WASHINGTON STATE FAIRGROUNDS	
DWG. NO. 23008 - 1100	REV B



FRONT VIEW
SCALE 1/4" = 1'-0"



PERSPECTIVE VIEW
NTS

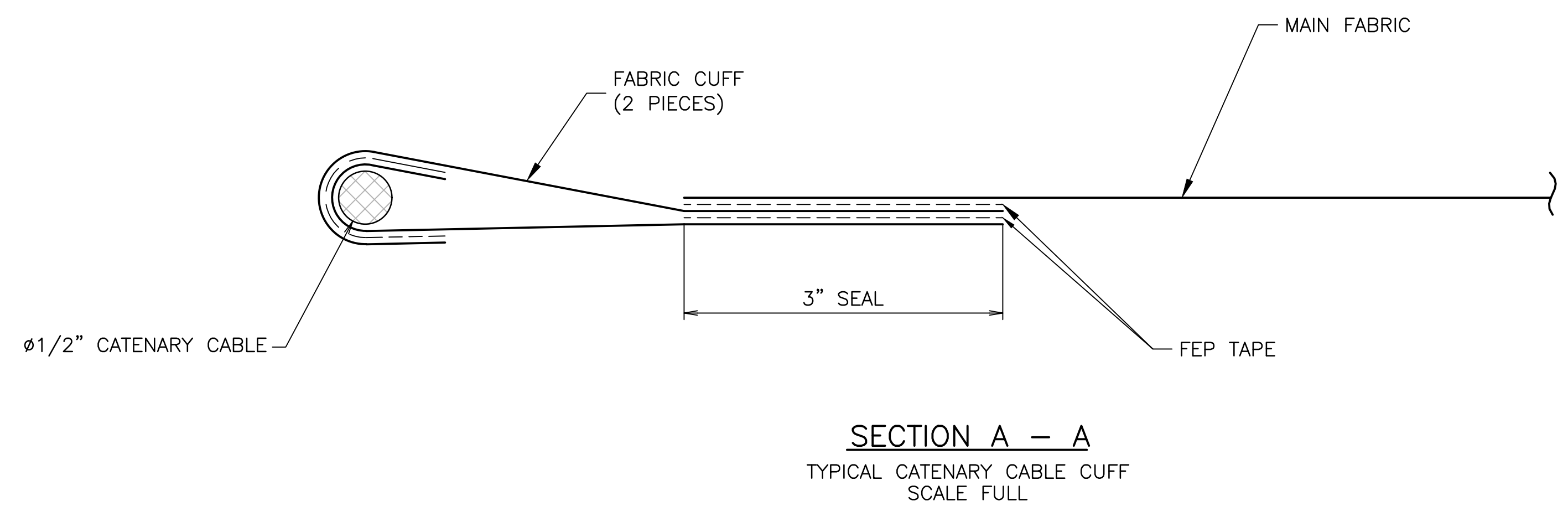
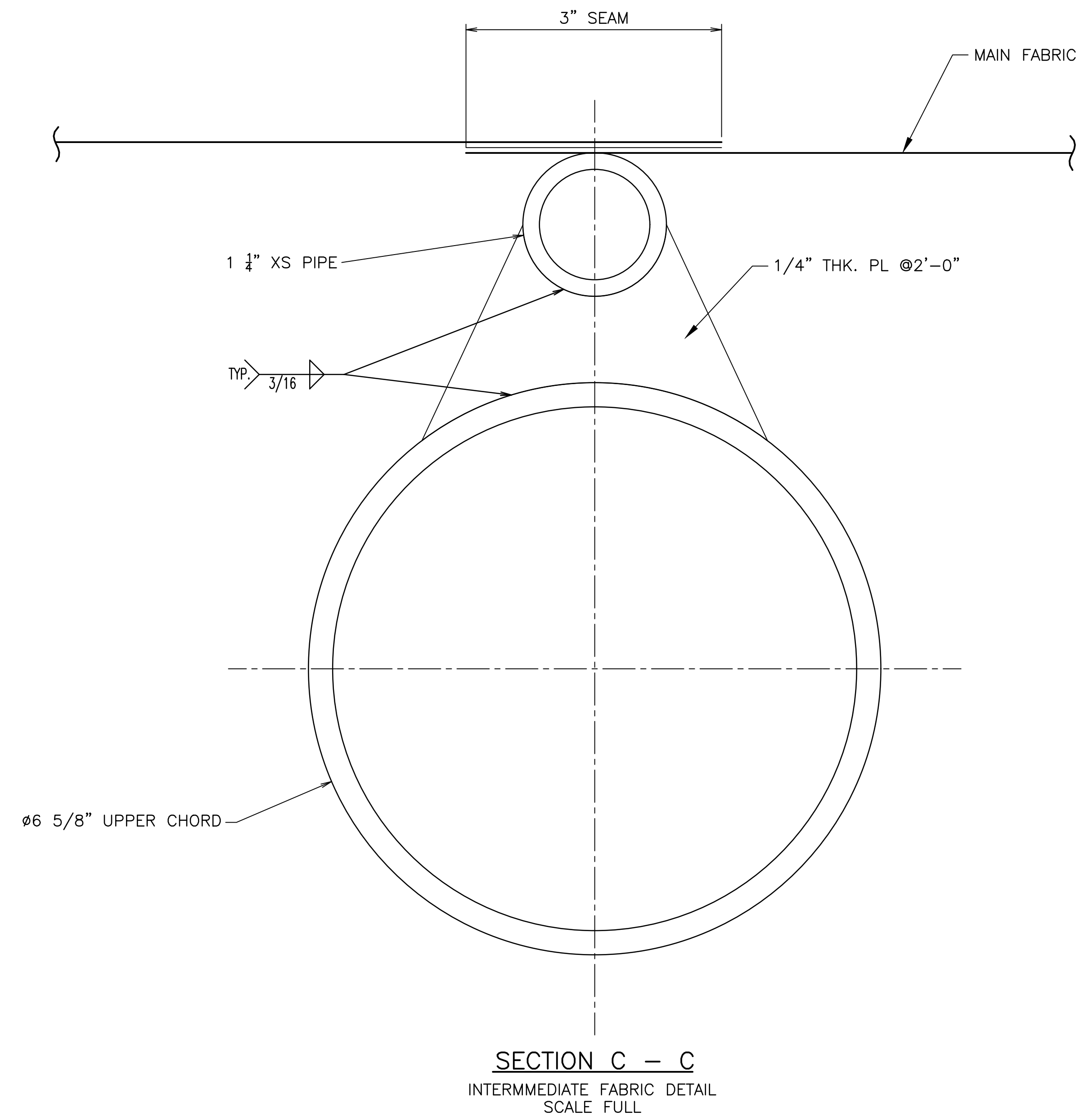
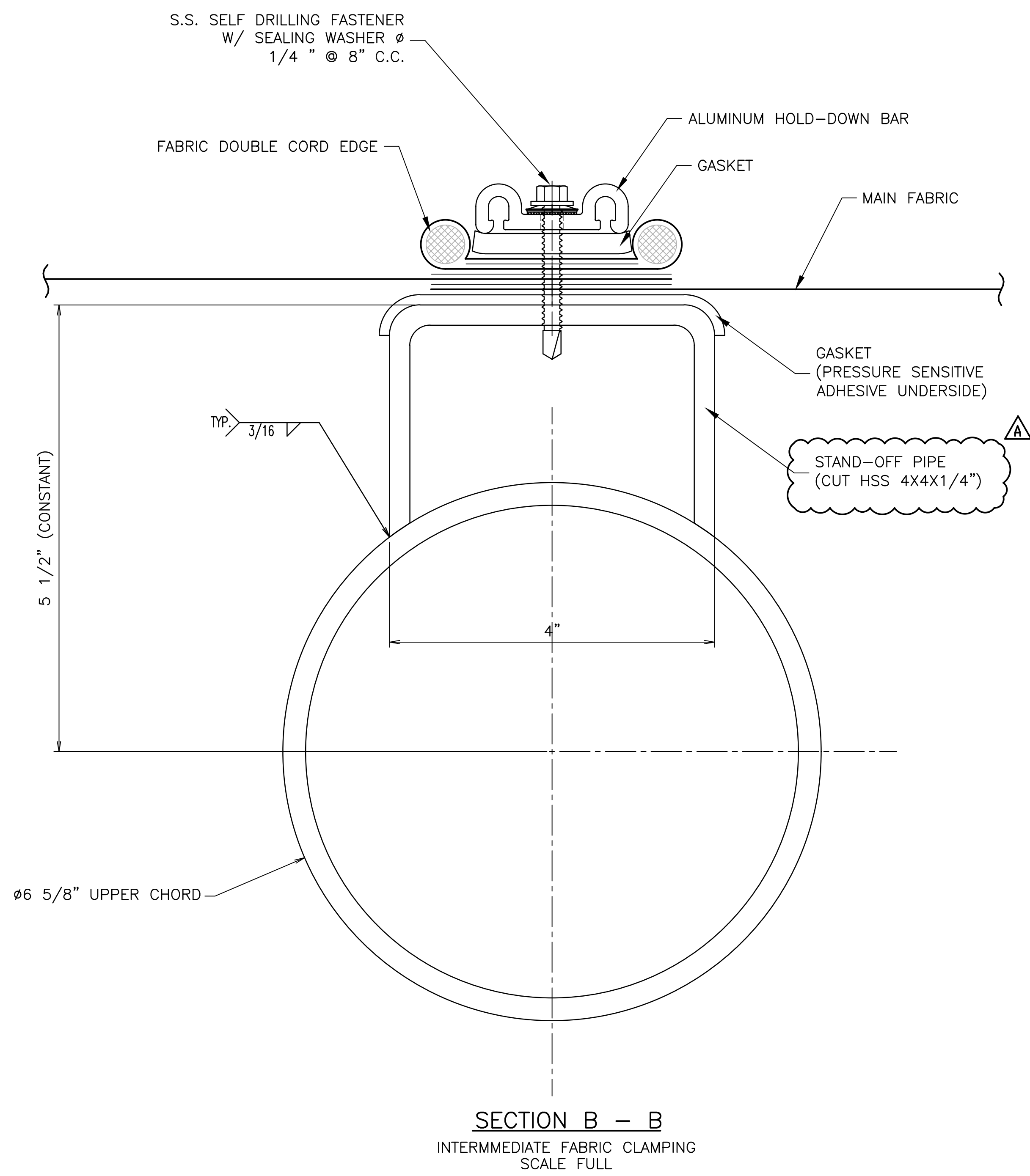


SIDE VIEW
SCALE 1/4" = 1'-0"

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DRAWN BY	MI 10/13/23				
CHECKED BY	MI 10/13/23				
ENGINEER	MI 10/13/23				
FINAL REVIEW		INTERFACE OVERALL CANOPY VIEW WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE AS NOTED	DWG. NO. 23008 - 1101			REV





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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
A	REVISED SECONDARY STEEL	3/1/24	MI	MI	MI

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CHECKED BY MI	10/13/23
ENGINEER MI	10/13/23
FINAL REVIEW	

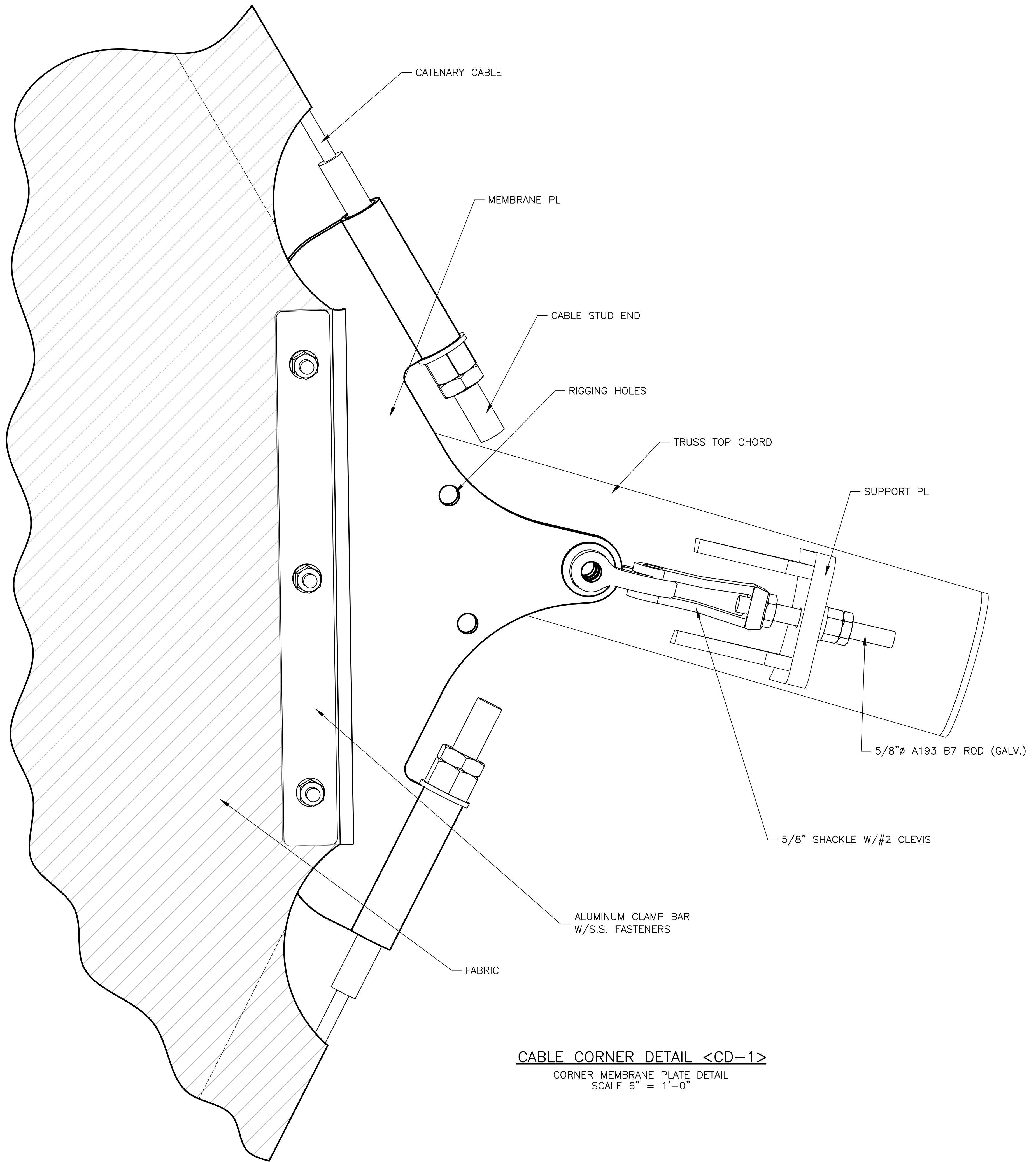
BIRDAR
6461 MAIN STREET
AMHERST, N.Y. 14221-7075, U.S.A.
TELEPHONE: 716-633-9500 FAX: 716-204-1234

TITLE
**INTERFACE
FABRIC CLAMPING DETAIL
WASHINGTON STATE FAIRGROUNDS**

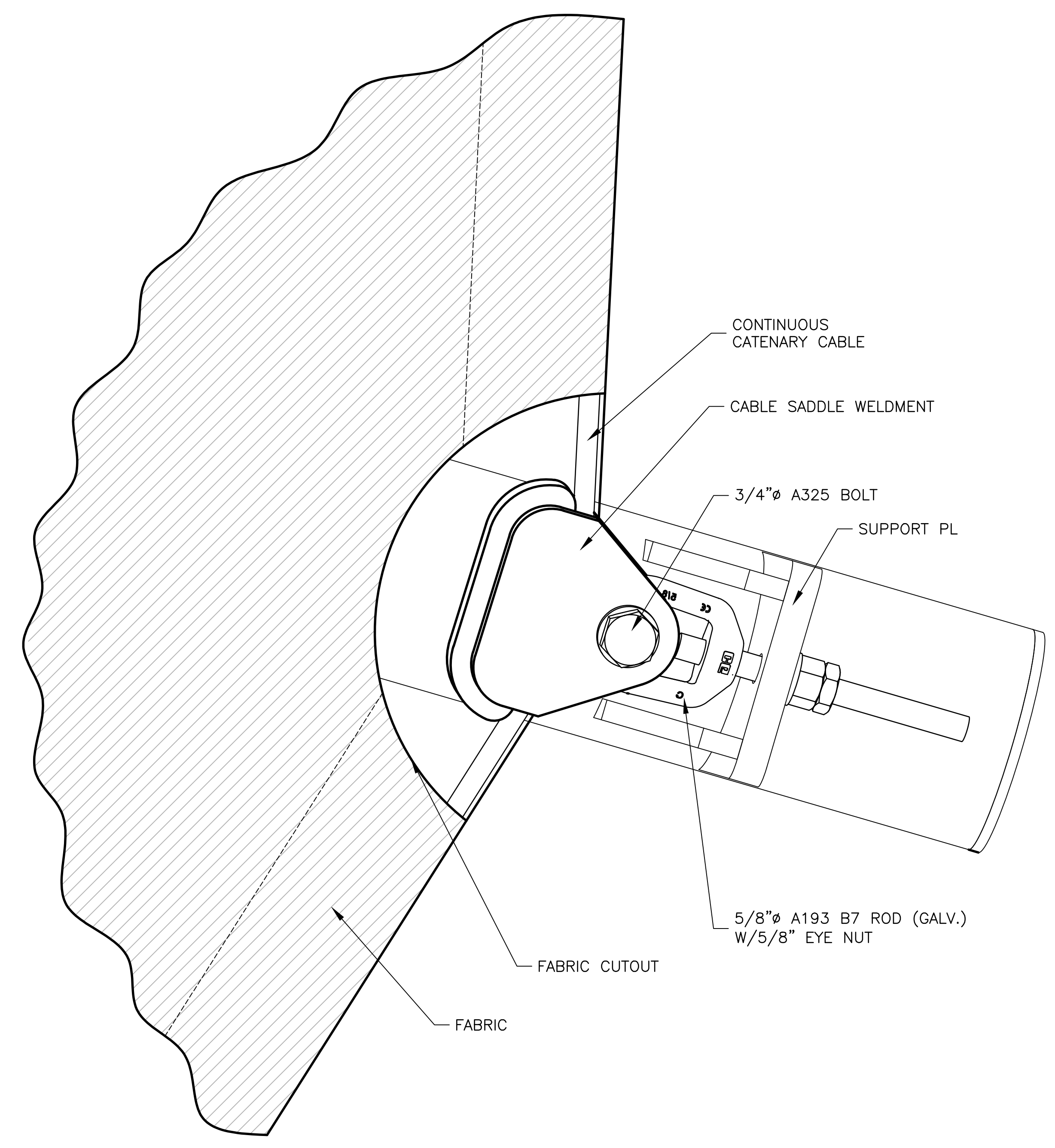
DWG. NO. **23008 - 1110** REV **A**

SCALE AS NOTED DRAWING SIZE AS NOTED





CABLE CORNER DETAIL <CD-1>
 CORNER MEMBRANE PLATE DETAIL
 SCALE 6" = 1'-0"



CABLE INTERMEDIATE DETAIL <CD-2>
 CABLE SADDLE PLATE DETAIL
 SCALE 6" = 1'-0"

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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
REVISIONS					
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NAME	DATE	BIRDAIR 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234			
DRAWN BY	MI	10/13/23	TITLE INTERFACE FABRIC CLAMPING DETAIL WASHINGTON STATE FAIRGROUNDS		
CHECKED BY	MI	10/13/23			
ENGINEER	MI	10/13/23			
FINAL REVIEW					
SCALE	DRAWING SIZE	DWG. NO.	REV		
AS NOTED		23008 - 1120			

STEEL SPECIFICATIONS

1.0 GENERAL

- 1.1 ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING AMERICAN STANDARD SPECIFICATIONS AND CODES WITH MODIFICATIONS AS SPECIFIED HEREIN:

 AMERICAN INSTITUTE OF STEEL CONSTRUCTION – "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES."

 AMERICAN INSTITUTE OF STEEL CONSTRUCTION – "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."

 AMERICAN INSTITUTE OF STEEL CONSTRUCTION – "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS."

 AMERICAN WELDING SOCIETY – "STRUCTURAL WELDING CODE" AWS D1.1 & AWS A2.4.

 AMERICAN SOCIETY FOR TESTING AND MATERIALS – AS REFERENCED HEREIN.
- 1.2 IN THE EVENT OF CONFLICT BETWEEN PERTINENT CODES AND REGULATIONS AND THE REQUIREMENTS OF THE REFERENCED STANDARDS OR THESE SPECIFICATIONS, PROVISIONS OF THE MORE STRINGENT SHALL GOVERN.

2.0 MATERIALS

- 2.1 MEMBERS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS NOTED OTHERWISE.
 - 2.1.1 PIPE SHALL CONFORM TO ASTM A 53, GRADE B, TYPE E OR S.
 - 2.1.2 STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500, GRADE B.
 - 2.1.3 PLATES AND BARS SHALL CONFORM TO ASTM A 572, GRADE 50 THROUGHOUT.
 - 2.1.4 PINS SHALL CONFORM TO ASTM A36, ASTM A 572 GRADE 50 TO 4 INCHES IN DIAMETER, OR ASTM A588, GRADE 50 TO 4 INCHES DIAMETER, AS NOTED ON THE DRAWINGS. HIGH STRENGTH PINS LARGER THAN 4 INCHES IN DIAMETER SHALL CONFORM TO ASTM A 572 GRADE 42. ALL PINS SHALL BE GALVANIZED UNLESS NOTED OTHERWISE.
 - 2.1.5 PINS 3 INCHES (75 mm) OR LARGER IN DIAMETER SHALL CONTAIN A 1/4 INCH (6 mm) CHAMFER UNLESS NOTED OTHERWISE.
- 2.2 BOLTS AND WELDS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS NOTED OTHERWISE.
 - 2.2.1 HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM A 325, TYPE 1, HEAVY HEX. NUTS SUITED FOR HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A 563, GRADE DH, HEAVY HEX. HARDENED STEEL WASHERS SHALL CONFORM TO ASTM F 436, TYPE 1, CIRCULAR.
 - 2.2.2 COMMON BOLTS SHALL CONFORM TO ASTM A 307. NUTS SUITED FOR COMMON BOLTS SHALL CONFORM TO ASTM A 563, GRADE A, HEX. COMMON FLAT WASHERS SHALL CONFORM TO ASTM F 844, OR ANSI B18.22.1 (USS).
 - 2.2.3 THREADS FOR BOLTS, STUDS AND NUTS SHALL CONFORM TO ANSI/ASME B1.1, RIGHT HAND, UNIFIED COARSE THREAD SERIES (UNC), AND SHALL HAVE CLASS 2A TOLERANCE UNLESS NOTED OTHERWISE.
 - 2.2.4 DIMENSIONS OF FASTENERS SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASME B 18.2.1, "SQUARE AND HEX BOLTS AND SCREWS", UNLESS NOTED OTHERWISE.
 - 2.2.5 WHERE NOTED, ALL HOT DIP GALVANIZED, "GALVANIZED" FASTENERS SHALL CONFORM TO ASTM A153, CLASS C.
 - 2.2.6 WHERE NOTED, ALL MECHANICALLY DEPOSITED, "PLATED" FASTENERS SHALL CONFORM TO ASTM B695, CLASS 50.
 - 2.2.7 ELECTRODES SHALL BE E70XX, 70 KSI YIELD STRENGTH.
- 2.3 BIRDAIR SHALL BE SUPPLIED WITH MILL CERTIFICATES INDICATING ALL MATERIALS MEET OR EXCEED THEIR SPECIFIED YIELD STRENGTHS.
- 2.4 FABRICATED PIECES DESIGNATED AS GALVANIZED SHALL BE HOT DIP GALVANIZED PER ASTM A 123. NO PAINT SHALL BE APPLIED TO THESE PIECES, UNLESS NOTED OTHERWISE.

3.0 EXECUTION

- 3.1 INSPECTION AND QUALITY CONTROL
 - 3.1.1 STEEL FABRICATOR SHALL PROVIDE EFFECTIVE, FULL TIME QUALITY CONTROL OVER ALL FABRICATION ACTIVITIES. BIRDAIR OR ITS TESTING AGENCY MAY VISIT THE PLANT AT ANY TIME TO VERIFY THAT A QUALITY CONTROL PROGRAM IS IN PLACE, AND TO SPOT CHECK WELDMENTS AND WELDING PROCEDURES. THIS INSPECTION DOES NOT RELIEVE THE STEEL FABRICATOR FROM MEETING THE QUALITY AND WORKMANSHIP REQUIREMENTS OF THIS SPECIFICATION.
 - 3.1.2 STEEL FABRICATOR SHALL PROVIDE VISUAL INSPECTION TO ENSURE ALL WELDS CONFORM TO AWS STANDARDS. IN ADDITION, STEEL FABRICATOR SHALL PROVIDE NON-DESTRUCTIVE TESTING INCLUDING ULTRASONIC, MAGNETIC PARTICLE, DYE-PENETRANT, OR X-RAY AS NOTED ON DRAWINGS OR PROJECT SPECIFICATION.
 - 3.1.3 STEEL FABRICATOR SHALL TEST FIT AND MATCH MARK ALL MEMBERS, WELDMENTS AND CONNECTIONS AS NOTED ON THE DRAWINGS.
- 3.2 SHOP DRAWINGS
 - 3.2.1 STEEL FABRICATOR SHALL SUBMIT SHOP DRAWINGS BASED UPON DESIGN DRAWINGS PROVIDED BY BIRDAIR.
 - 3.2.2 SHOP DRAWINGS SHALL SHOW ALL SHOP AND ERECTION DETAILS OF THE STRUCTURAL STEEL MEMBERS AND COMPONENTS INCLUDING BUT NOT LIMITED TO: OVERALL ERECTION PLAN(S) INDICATING WHERE ALL PIECES ARE LOCATED, IDENTIFICATION MARKS, CUTS, COPE, HOLES, FASTENERS, HOLE SPACINGS, AND WELDS, BOTH SHOP AND FIELD, USING WELDING SYMBOLS AS RECOMMENDED BY AWS.
 - 3.2.3 IF REQUIRED THE STEEL FABRICATOR SHALL SUBMIT A MINIMUM OF TWO (2) PRINTS OF ALL SHOP DRAWINGS TO BIRDAIR.
- 3.3 WORKMANSHIP
 - 3.3.1 GRIND ALL SHARP EDGES AND CORNERS.
 - 3.3.2 STAMP ALL ASSEMBLIES WITH THE APPROPRIATE PART NUMBER.
 - 3.3.3 ALL WORK SHALL BE FREE OF OIL, GREASE, AND MACHINING CHIPS.
 - 3.3.4 WELDED CONNECTIONS
 - 3.3.4.1 ALL WELDED JOINTS SHALL CONFORM TO AWS PREQUALIFIED WELDED JOINTS AS DESIGNATED BY THE STANDARD WELD SYMBOLS AND TERMS AS SHOWN ON THE DRAWINGS.
 - 3.3.4.2 WELDS SHALL BE MADE ONLY BY OPERATORS WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TESTS, AS PRESCRIBED IN THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY, D1.1, "STRUCTURAL WELDING CODE", TO PERFORM THE TYPE OF WORK REQUIRED. SUBMIT WELDERS CERTIFICATION TO BIRDAIR FOR RECORD PURPOSES.
 - 3.3.4.3 NO MEMBERS SHALL BE SPLICED WITHOUT PRIOR APPROVAL OF BIRDAIR.
 - 3.3.5 BOLTED CONNECTIONS
 - 3.3.5.1 ALL BOLTED JOINTS SHALL BE SHEAR/BEARING CONNECTIONS AND SHALL BE INSTALLED AND TIGHTENED TO A SNUG TIGHT CONDITION.
 - 3.3.5.2 NO OXYGEN-CUT HOLES FOR BOLTED CONNECTIONS SHALL BE PERMITTED.

(NOTE)
 (1) MINIMUM YIELD STRENGTH OF STEEL TUBE IS 42KSI.
 (2) MINIMUM YIELD STRENGTH OF STEEL PLATE AND PIN IS 50KSI.
 (3) ALL FILLET WELD ARE $\frac{3}{8}$ " UNLESS NOTED.

TWO-PART PAINT SYSTEM SPECIFICATIONS

1.0 SURFACE PREPARATION AND PRIME COAT

- 1.1 SURFACE PREPARATION SHALL BE COMMERCIAL BLAST CLEANING SSPC-SP-6, AFTER ALL FABRICATION OPERATIONS SUCH AS MACHINING AND WELDING ARE COMPLETE. THERE SHALL BE A MAXIMUM OF EIGHT HOURS ELAPSED TIME BETWEEN SURFACE PREPARATION AND APPLICATION OF THE PRIME COAT.
- 1.2 PROTECT ALL DRILLED AND TAPPED HOLES AND/OR THREADED STUDS PRIOR TO PAINTING SUCH THAT ALL BOLTED CONNECTIONS CAN BE MADE BY SUBCONTRACTOR OR MEMBRANE STRUCTURE ERECTOR WITHOUT FIRST CLEANING THREADS.
- 1.3 PRIMER SHALL BE TNEPEC SERIES N68 (FORMERLY 68-1255) (BEIGE) POXIPRIME II PRIMER OR APPROVED EQUAL, AND SHALL CONFORM TO SSPC PAINT SPECIFICATION NO. 22.
- 1.4 THE PRIMER SHALL BE MIXED AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SHALL MEET THE REQUIREMENTS OF SSPC PAINT SPECIFICATION NO. 22. THE MINIMUM DRY FILM THICKNESS SHALL BE 3-5 MILS.

2.0 FINISH COAT

- 2.1 FINISH COAT SHALL BE TNEPEC SERIES 1075 (FORMERLY 75) COLOR ENDURA-SHIELD OR APPROVED EQUAL, AND SHALL CONFORM TO SSPC-PS GUIDE 17.00.
- 2.2 FINISH COAT SHALL BE MIXED AND APPLIED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND MINIMUM DRY FILM THICKNESS SHALL BE 3-5 MILS.
- 2.3 MINIMUM SYSTEM THICKNESS SHALL BE 8 MILS.

3.0 COLOR

- 3.1 FINISH PAINT COLOR SHALL BE AS SPECIFIED ON THE DRAWINGS OR PURCHASE ORDER.

4.0 QUALITY

- 4.1 DRY PAINT SHALL BE UNIFORM AND CONTINUOUS WITH NO VOIDS OR PUDDLES AND SHALL NOT BE BROKEN BY SCRATCHES OR NICKS. ALTHOUGH BIRDAIR OR THE STEEL FABRICATOR MAY WITNESS THE PAINTING OPERATION, THIS DOES NOT RELIEVE THE PAINTING SUBCONTRACTOR OF THE RESPONSIBILITY FOR MEETING THE QUALITY AND WORKMANSHIP REQUIREMENTS OF THIS SPECIFICATION.


5.0 CARE AND HANDLING

- 5.1 PAINTING SUBCONTRACTOR SHALL MAKE EVERY REASONABLE EFFORT TO ENSURE THE PAINTED STEEL IS THOROUGHLY DRY AND IT IS HANDLED CAREFULLY TO PREVENT AESTHETIC OR STRUCTURAL DAMAGE. NYLON SLINGS SHALL BE USED WHEN HANDLING PAINTED STEEL.

6.0 CERTIFICATION

- 6.1 PAINTING SUBCONTRACTOR SHALL CERTIFY THE PAINT MANUFACTURER'S NAME, PAINT IDENTIFICATION, CONFORMANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND THE PAINT DRY MIL THICKNESS.

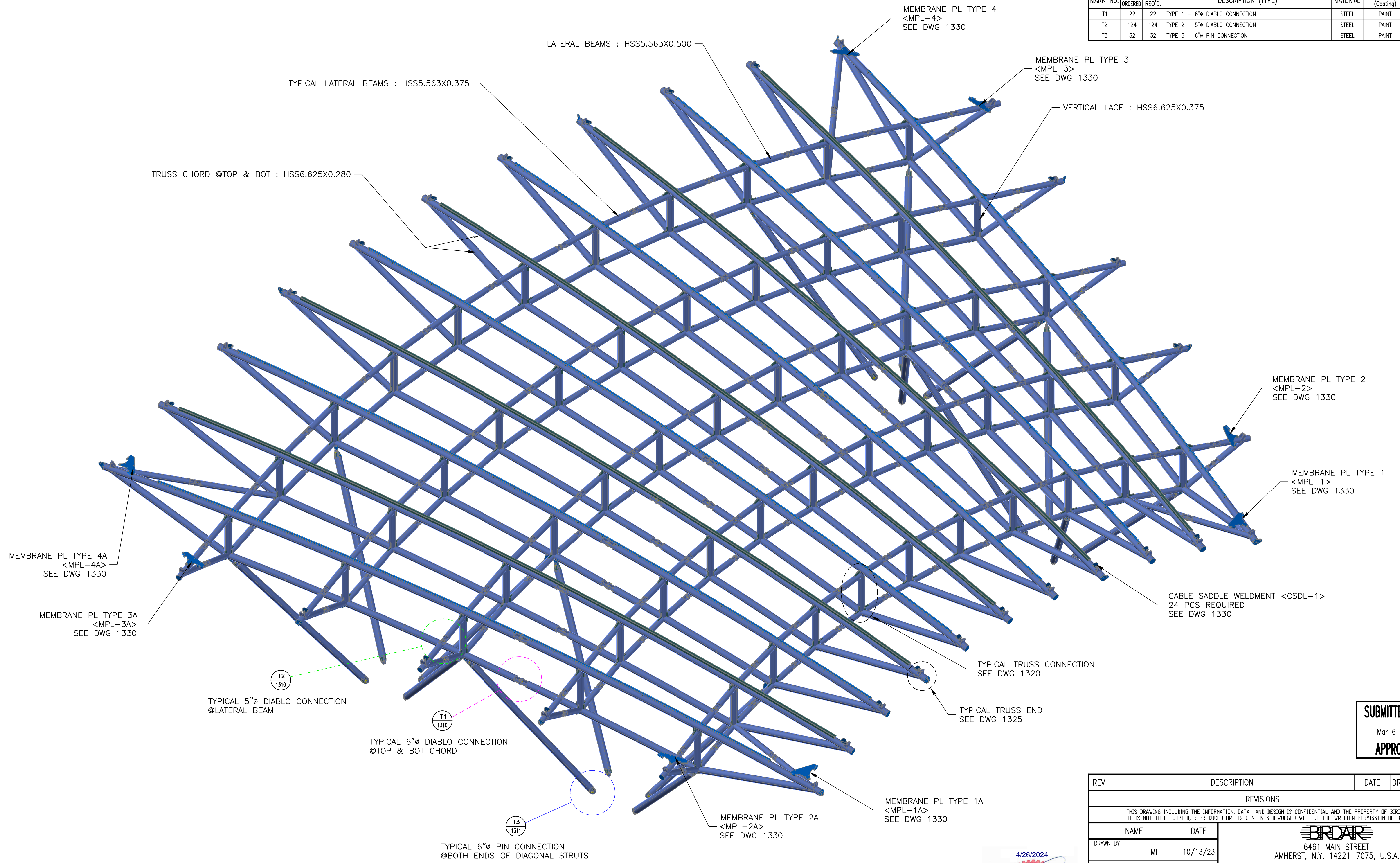
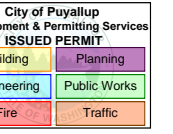
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 Mar 6 2024
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NAME		DATE		 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234 INTERFACE STEEL SPECIFICATION WASHINGTON STATE FAIRGROUNDS	
DRAWN BY		10/13/23			
CHECKED BY		10/13/23			
ENGINEER		10/13/23			
FINAL REVIEW					
SCALE		DRAWING SIZE AS NOTED		DWG. NO. 23008 - 1300	
REV					



BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
T1	22	22	TYPE 1 - 6" DIABLO CONNECTION	STEEL	PAINT	55#	1310
T2	124	124	TYPE 2 - 5" DIABLO CONNECTION	STEEL	PAINT	35#	1310
T3	32	32	TYPE 3 - 6" PIN CONNECTION	STEEL	PAINT	25#	1311

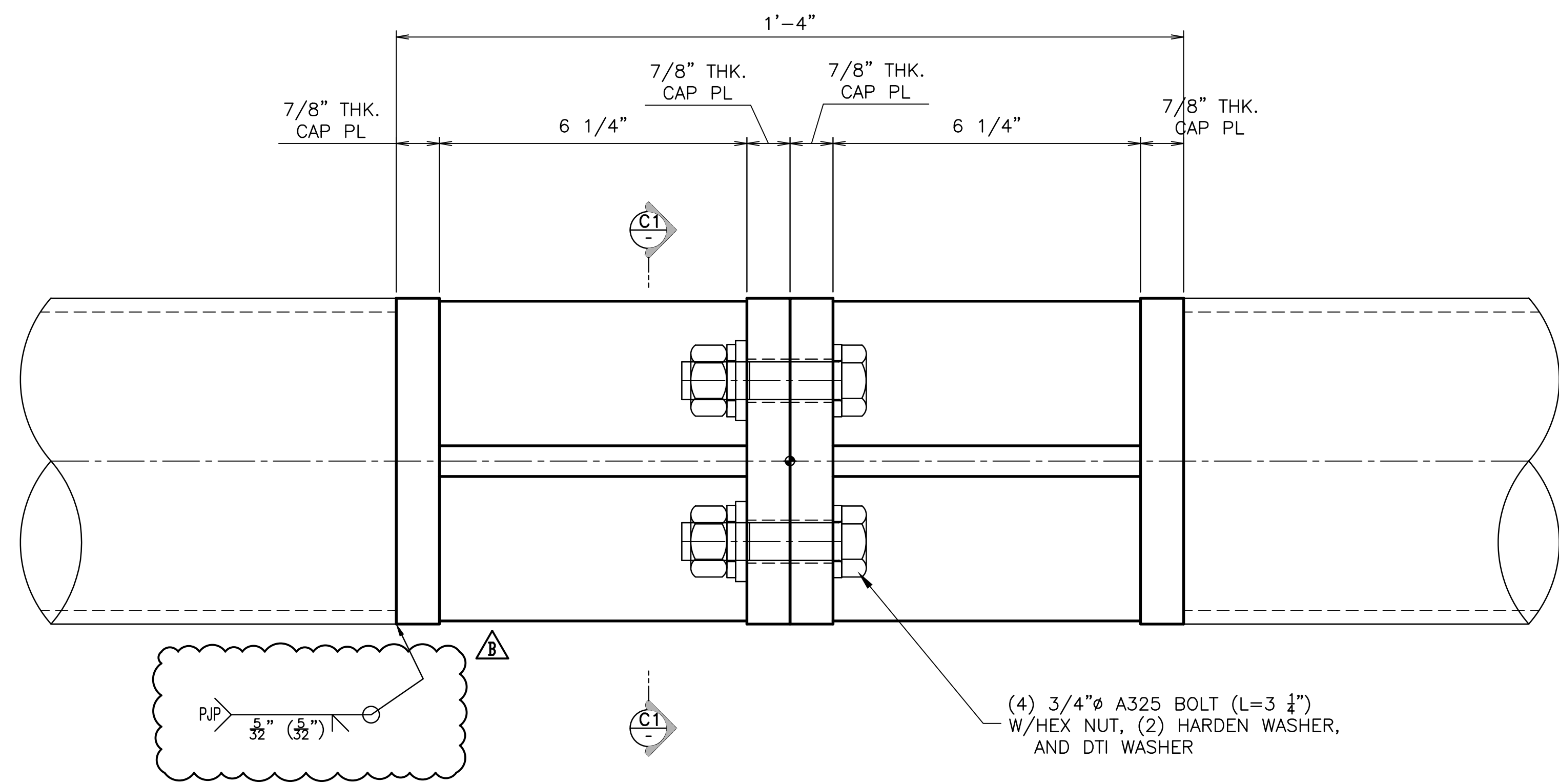


STEEL KEY PLAN
NTS

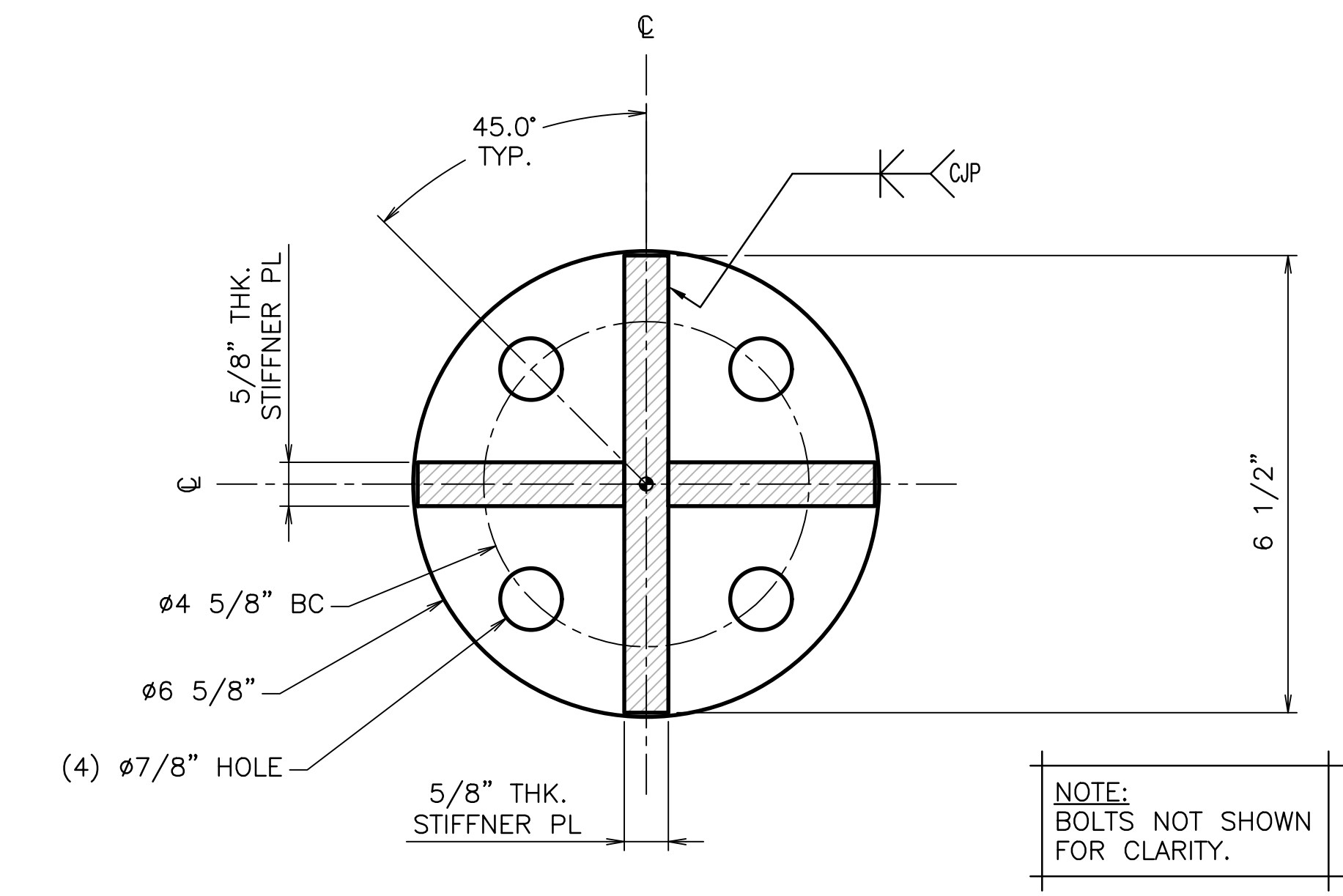
SUBMITTED FOR
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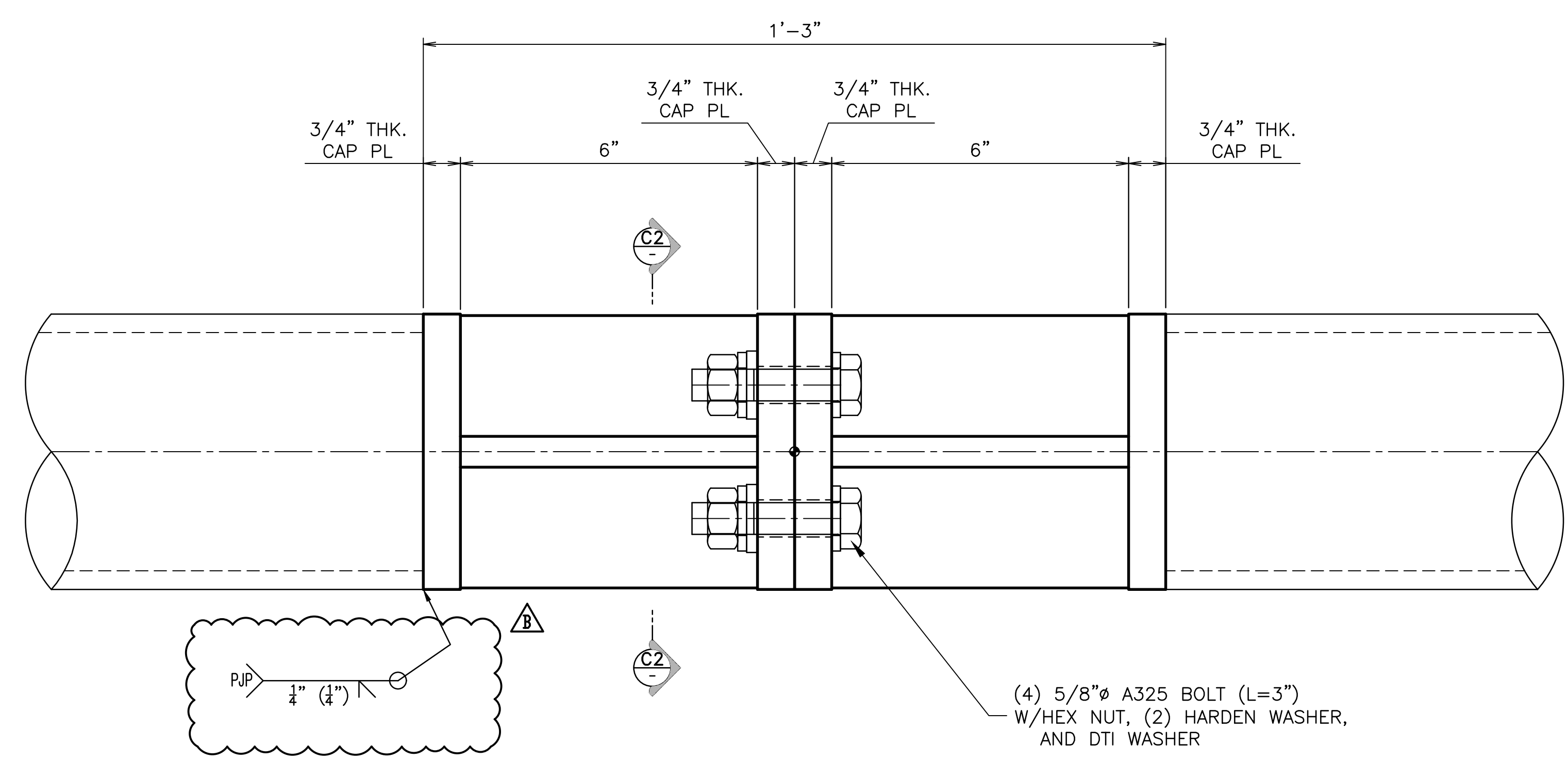
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR	
REVISIONS						
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DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW			TITLE INTERFACE STEEL KEY PLAN WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE	DWG. NO.		REV		
AS NOTED		23008 - 1301				



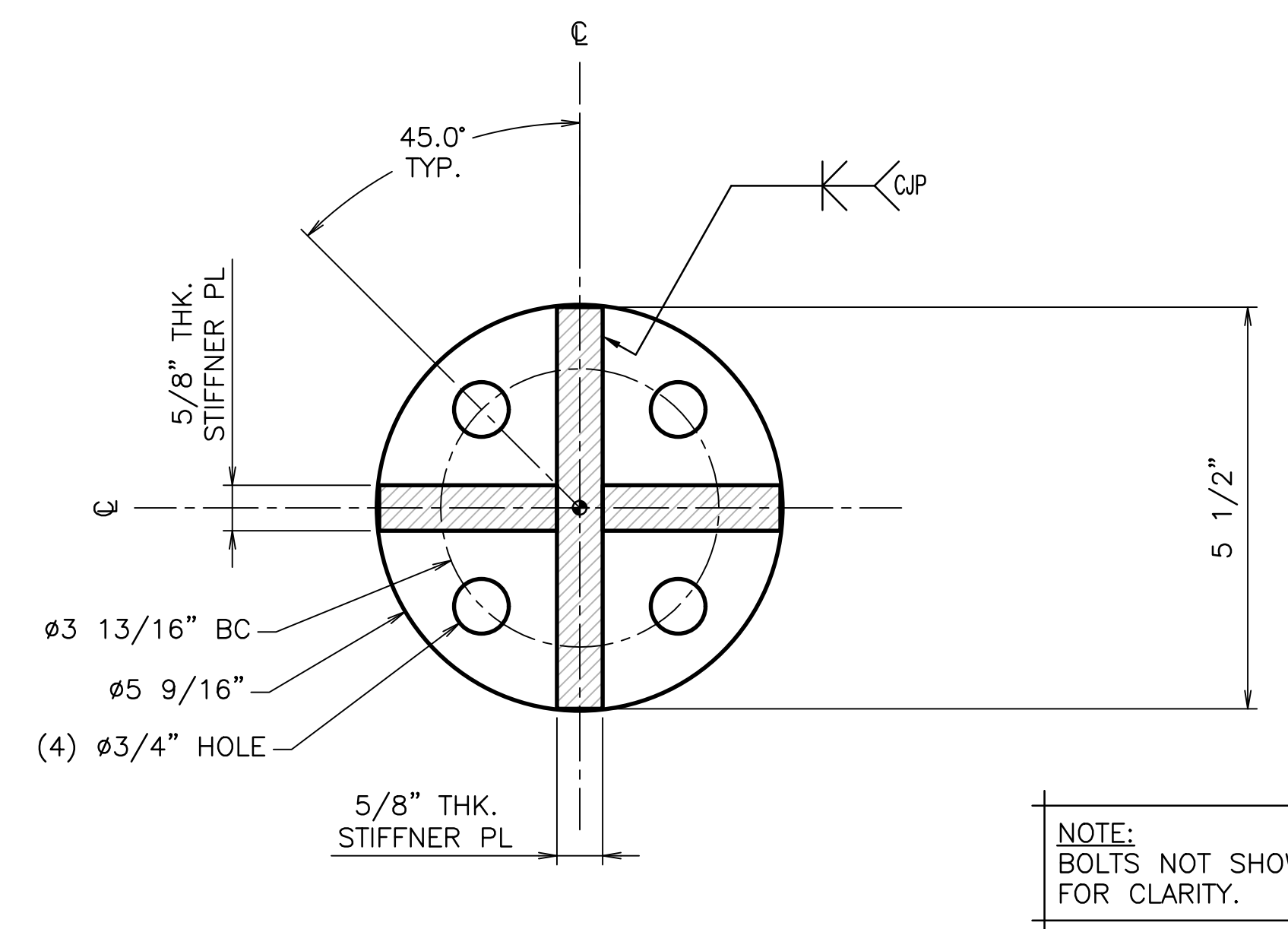
DETAIL T1 — TYPE 1 DIABLO CONNECTION
6"Ø PIPE @TRUSS CHORD
SCALE 6" = 1'-0"



VIEW C1 — C1
DIABLO CONNECTION
SCALE 6" = 1'-0"



DETAIL T2 — TYPE 2 DIABLO CONNECTION
5"Ø PIPE @TRUSS CHORD
SCALE 6" = 1'-0"



VIEW C2 — C2
DIABLO CONNECTION
SCALE 6" = 1'-0"

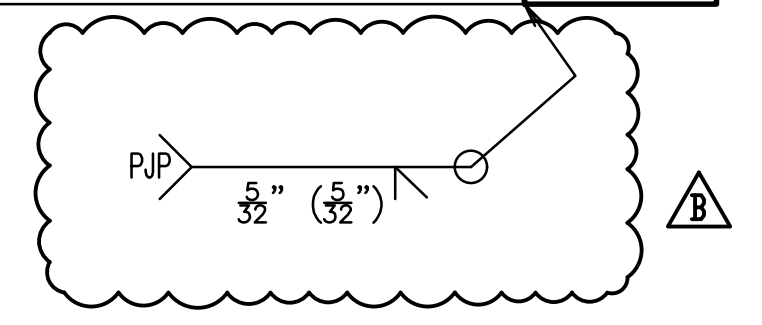
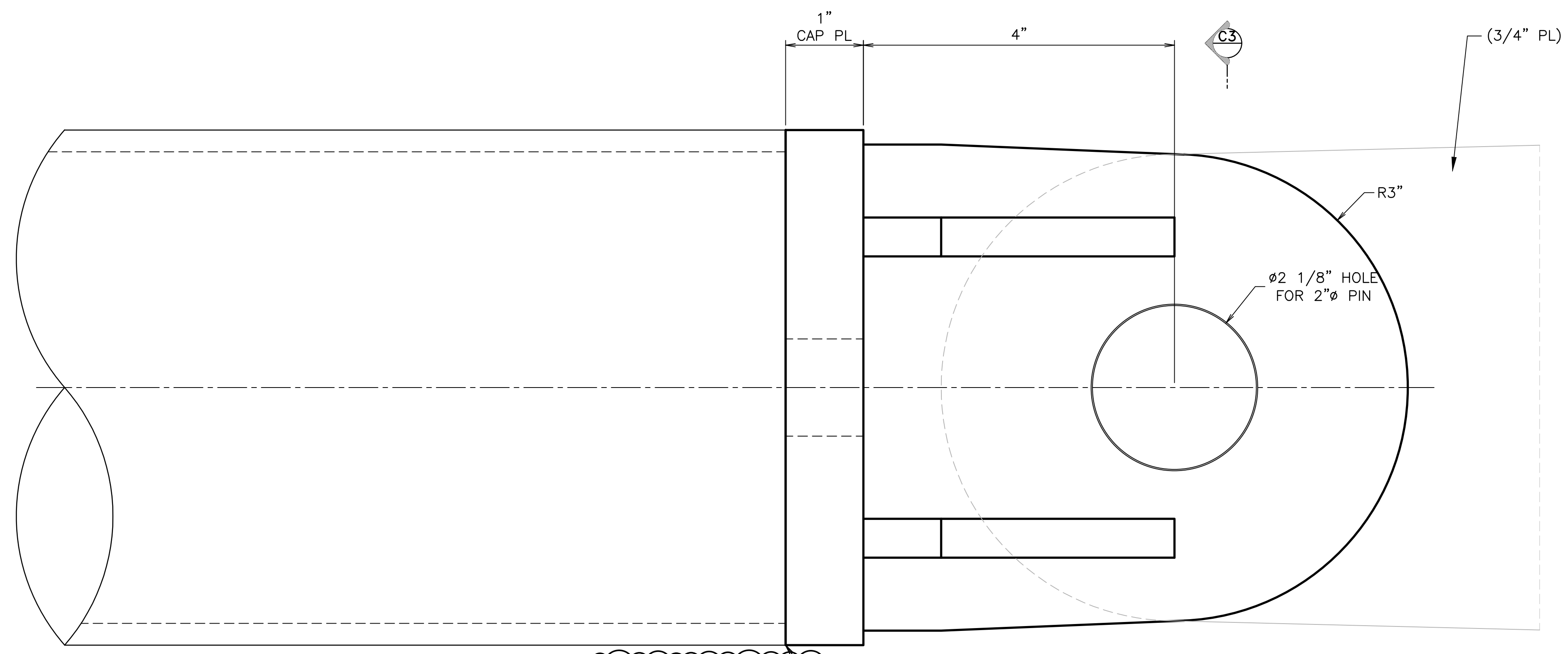
SUBMITTED FOR
Mar 6 2024
APPROVAL

REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
B	ADD PJP DETAIL	3/6/24	MI	MI	MI
A	REVISE DETAIL OF DIABLO	12/21/23	MI	MI	MI

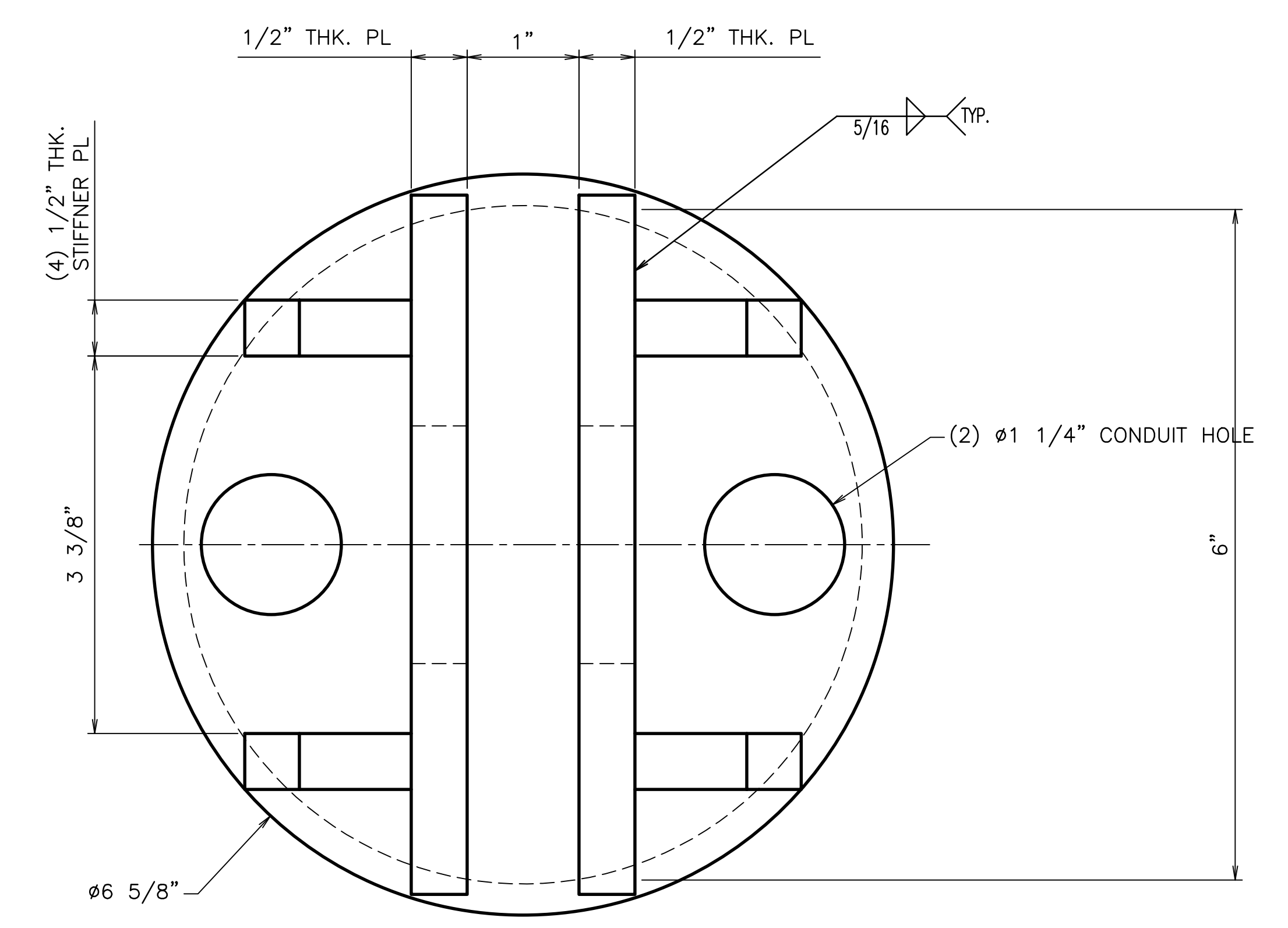
NAME		DATE
DRAWN BY	MI	10/13/23
CHECKED BY	MI	10/13/23
ENGINEER	MI	10/13/23
FINAL REVIEW		

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INTERFACE STEEL CONNECTION DETAIL WASHINGTON STATE FAIRGROUNDS	
SCALE	DRAWING SIZE AS NOTED
DWG. NO. 23008 - 1310	
REV B	

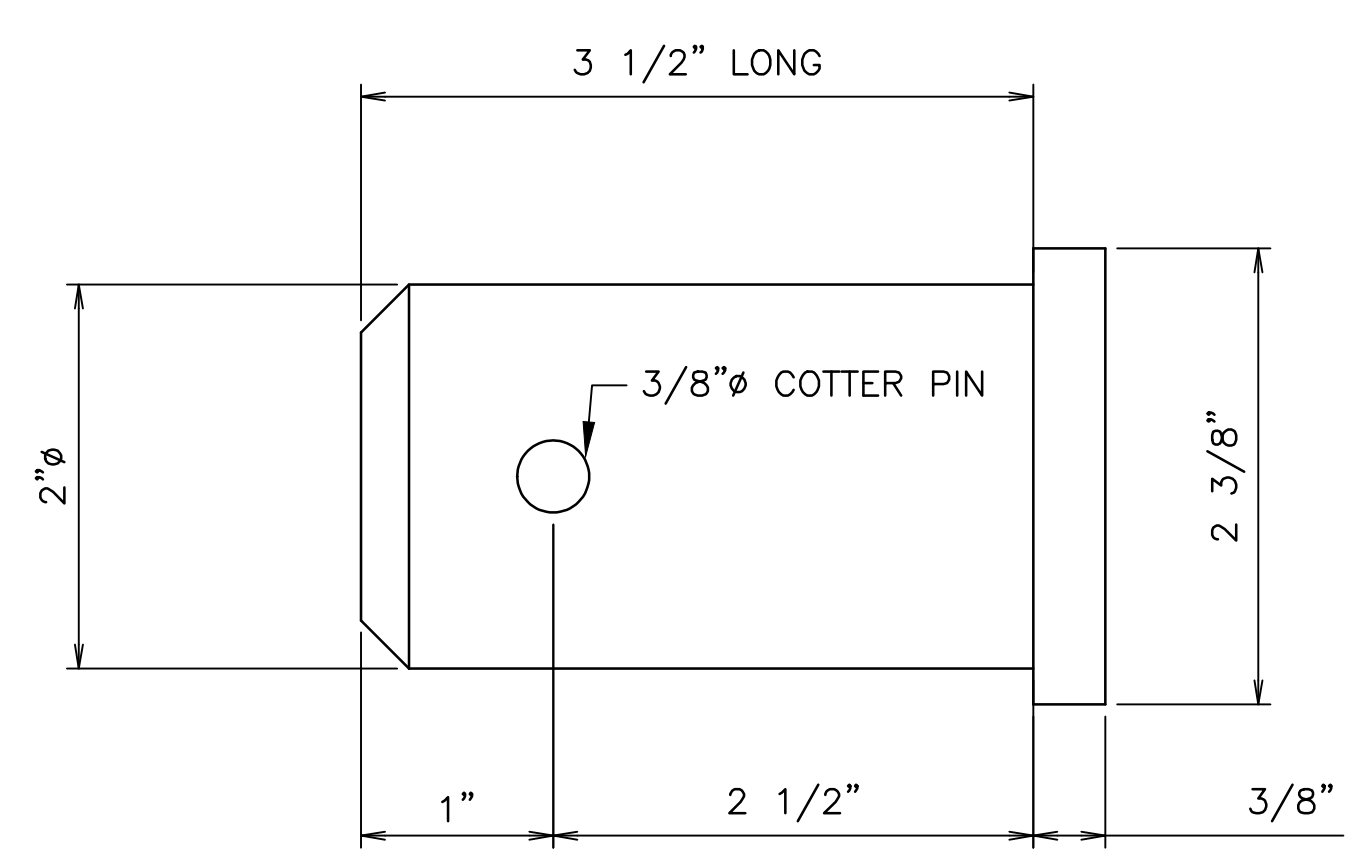




DETAIL T3 – TYPE 2 STRUT PIN CONNECTION
 6" ϕ PIPE @ ENDS OF STRUT
 SCALE FULL



VIEW C3 – C3
 PIN CONNECTION
 SCALE FULL



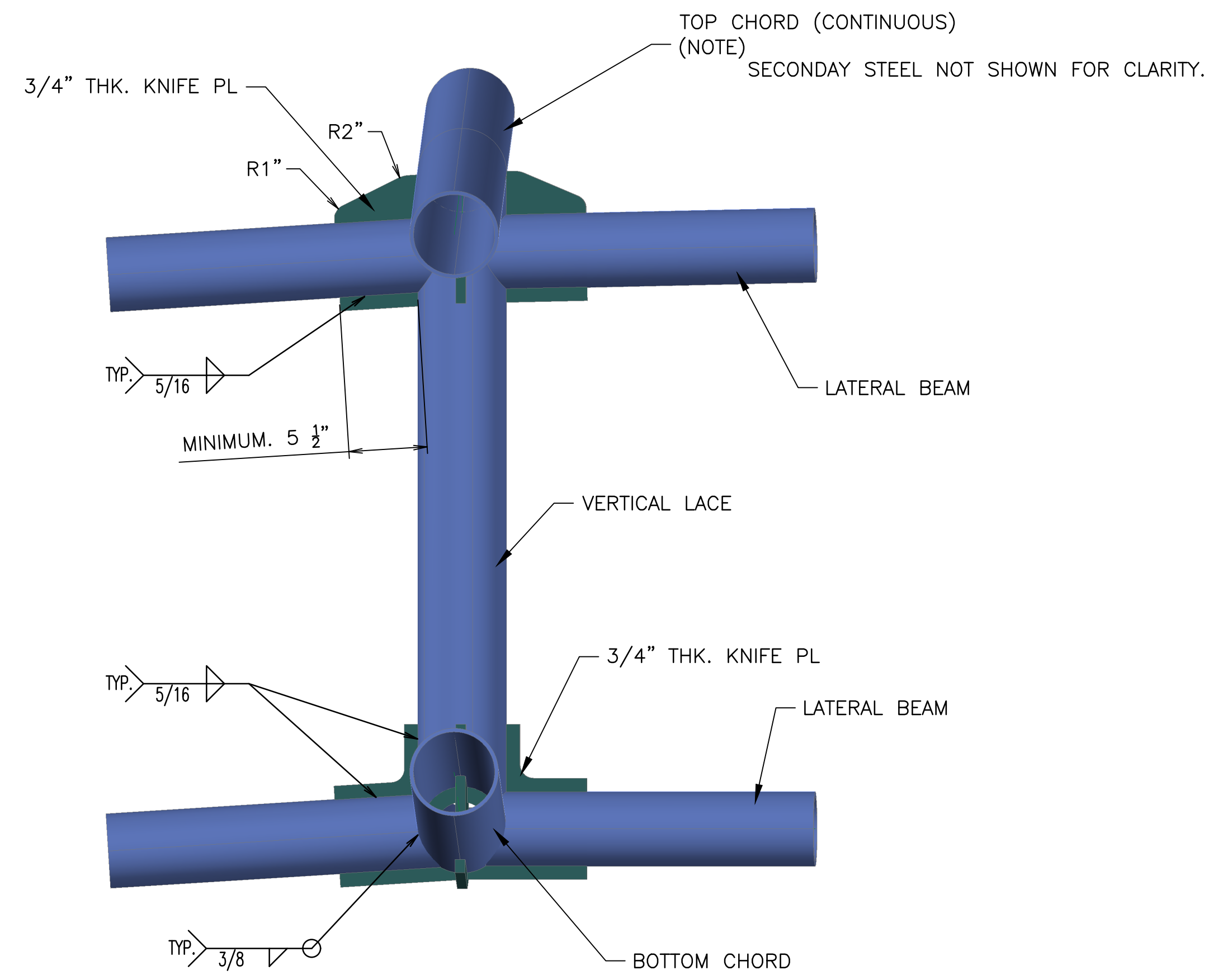
PIN DETAIL
 PIN CONNECTION
 SCALE FULL

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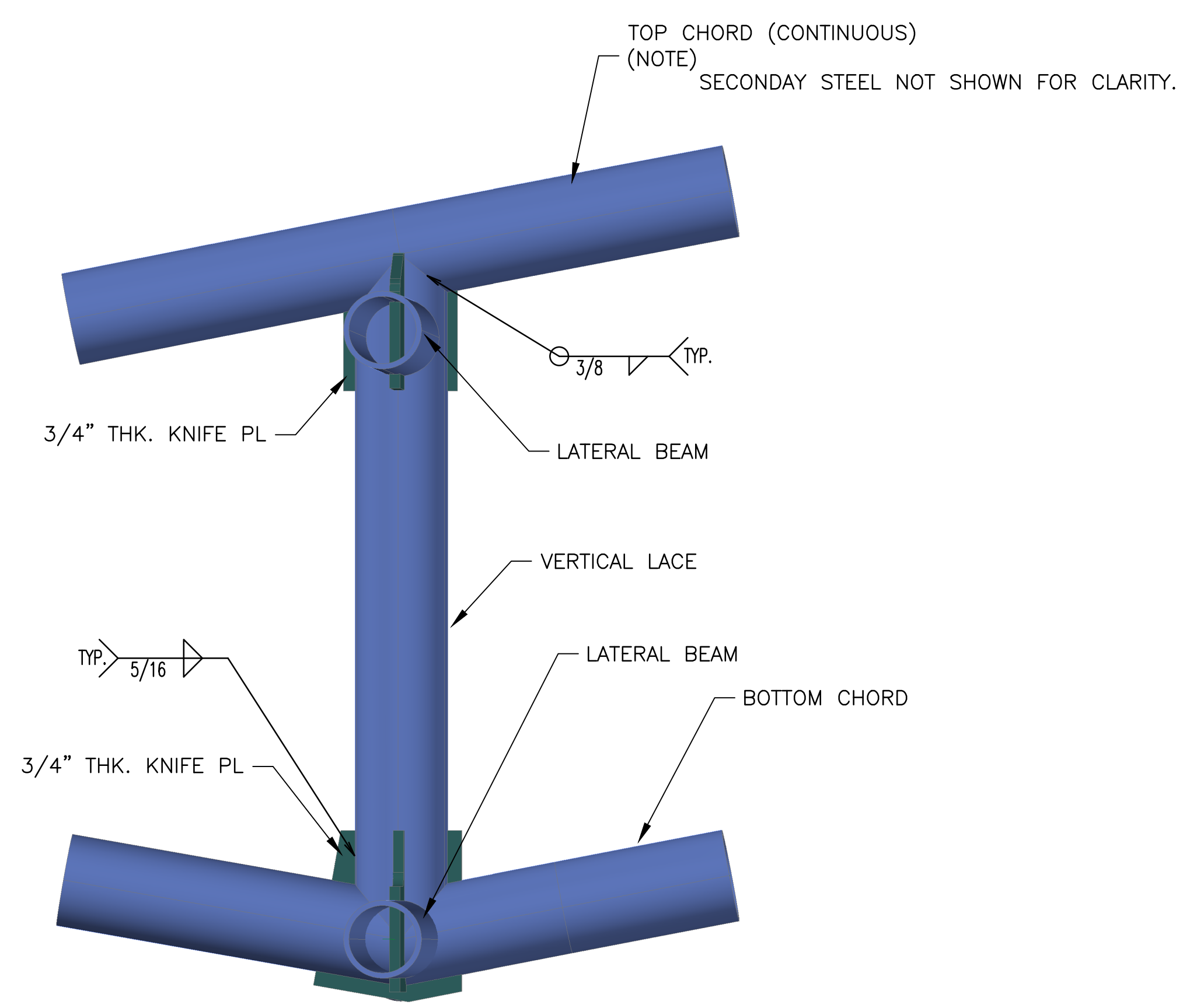
REV	DATE	DESCRIPTION	DRWN	CHKD	ENGR
B	3/6/24	ADD PJP DETAIL	MI	MI	MI
A	1/31/24	ADD CONDUIT HOLE	MI	MI	MI

REVISIONS						
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234 INTERFACE STEEL CONNECTION DETAIL WASHINGTON STATE FAIRGROUNDS				
DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW			DWG. NO. 23008 - 1311			
SCALE	DRAWING SIZE AS NOTED	REV B				

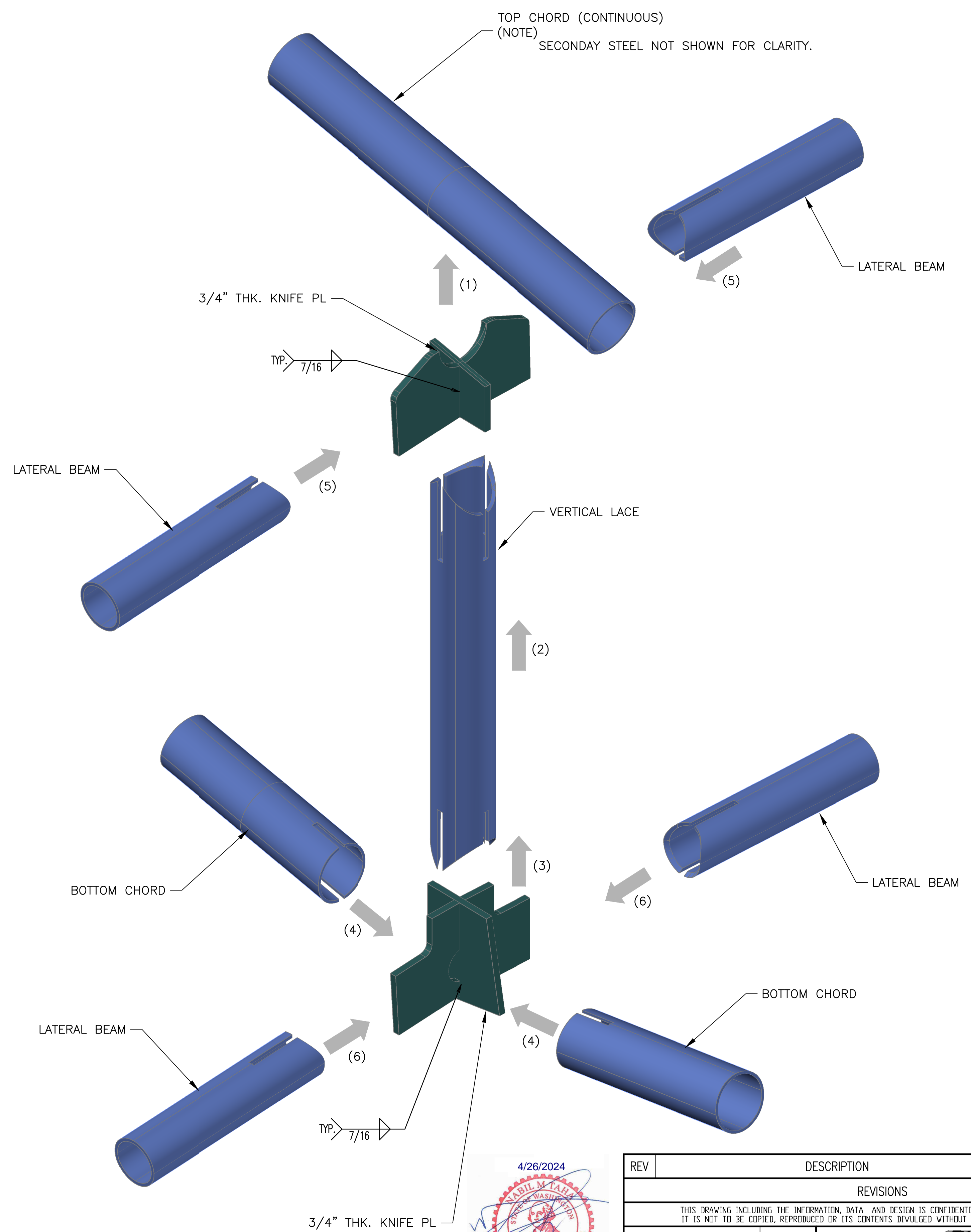




TYPICAL TRUSS CONNECTION – FRONT VIEW
SCALE 1 1/2" = 1'-0"



TYPICAL TRUSS CONNECTION – SIDE VIEW
SCALE 1 1/2" = 1'-0"



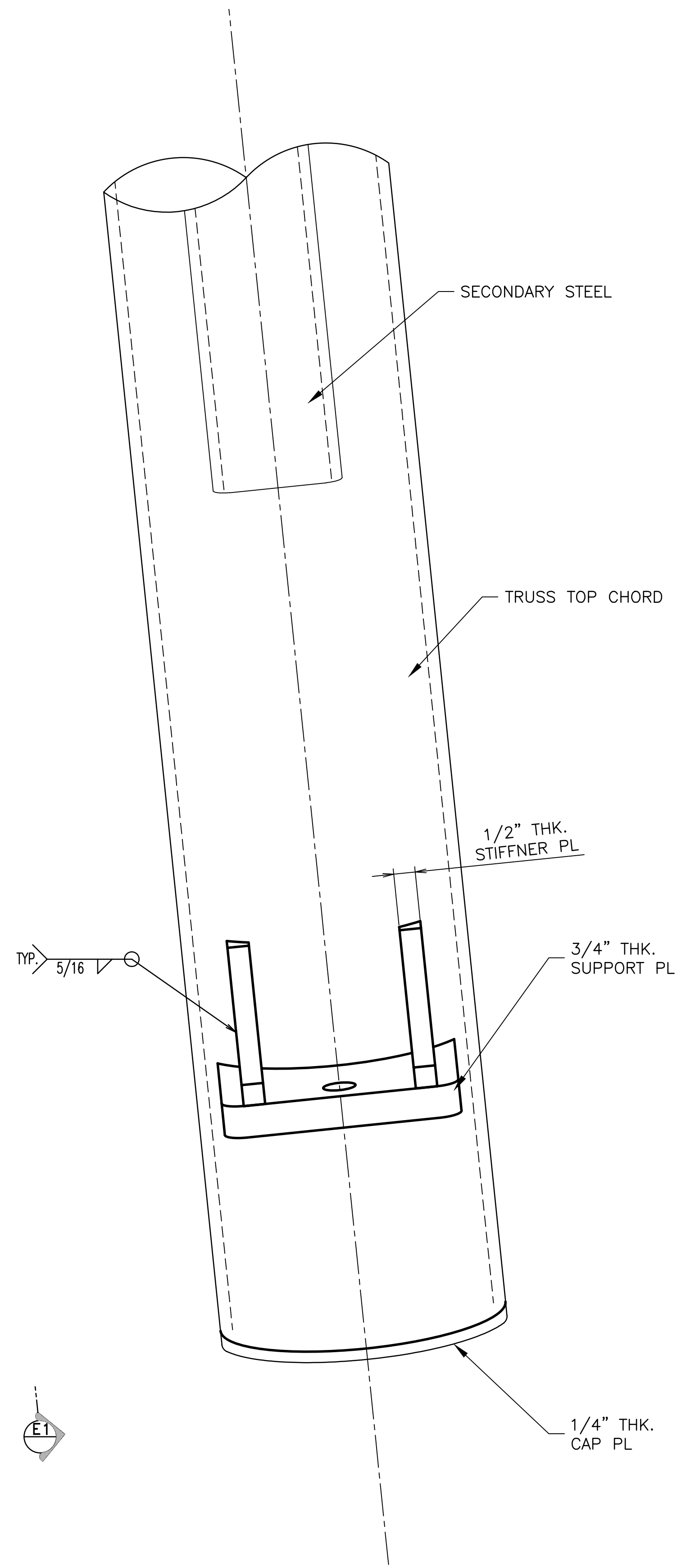
ASSEMBLY DIAGRAM – PERSPECTIVE VIEW
NTS



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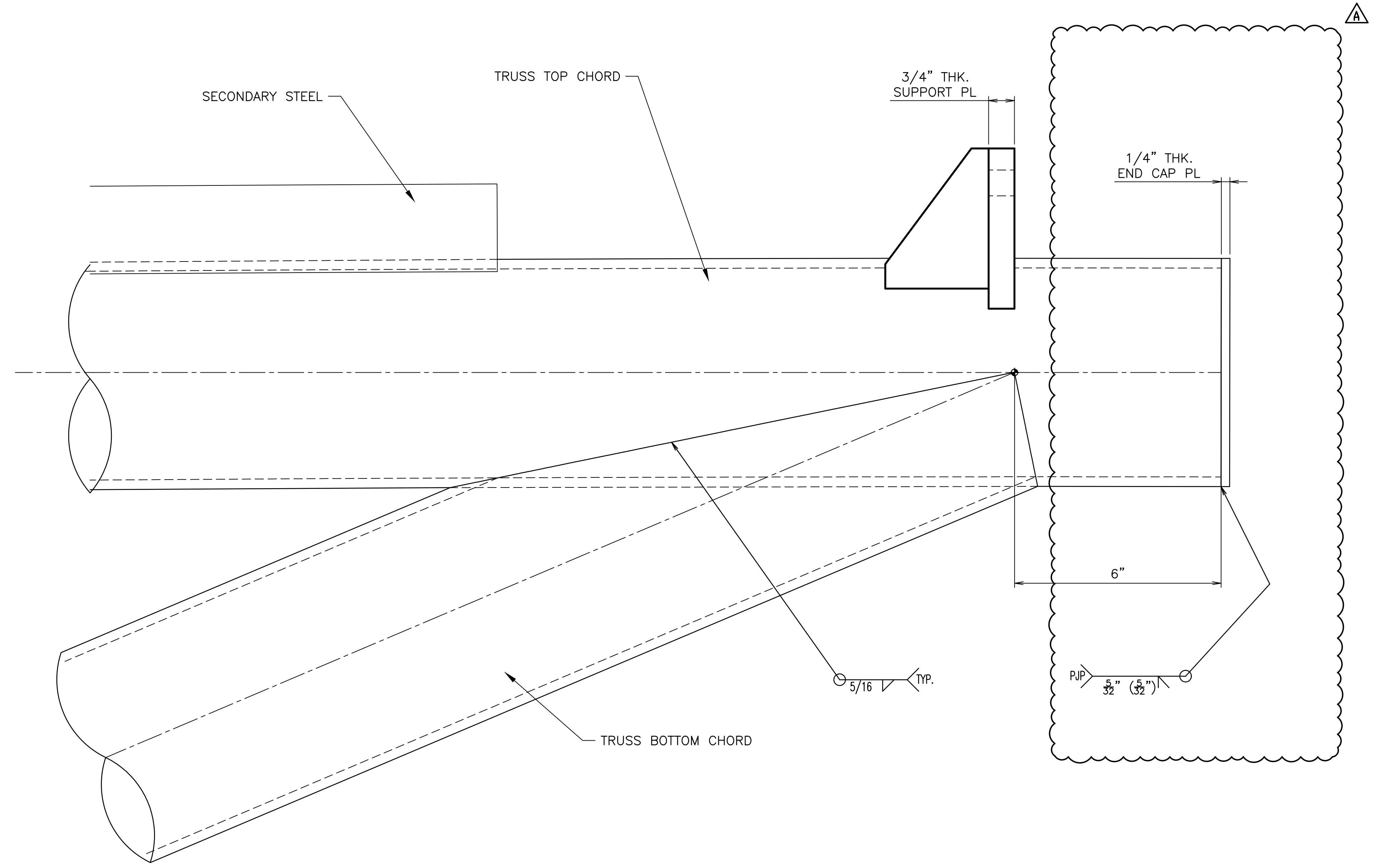
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR	
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DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW						
TITLE		INTERFACE TYPICAL TRUSS CONNECTION WASHINGTON STATE FAIRGROUNDS				
SCALE	DRAWING SIZE AS NOTED	DWG. NO.		REV		
		23008 - 1320				

E1



TYPICAL TRUSS END
 SCALE 6" = 1'-0"

E1



VIEW E1 - E1
 TYPICAL TRUSS END
 SCALE 6" = 1'-0"

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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
A	REMOVE LIFTING LUG	3/6/24	MI	MI	MI

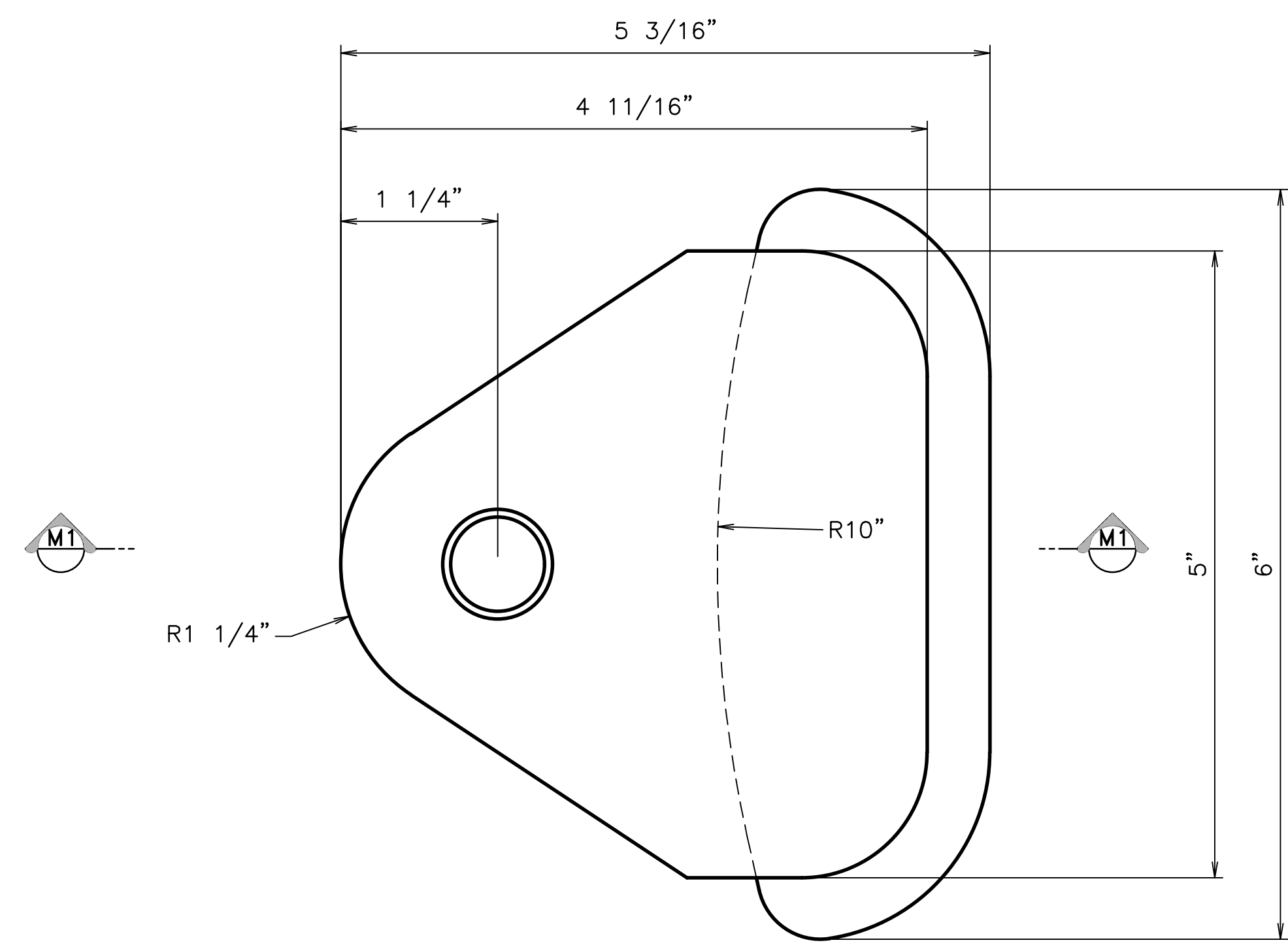
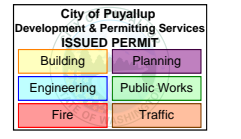
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NAME	DATE
DRAWN BY MI	10/13/23
CHECKED BY MI	10/13/23
ENGINEER MI	10/13/23
FINAL REVIEW	
SCALE	DRAWING SIZE AS NOTED

 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234	
INTERFACE STEEL CONNECTION DETAIL WASHINGTON STATE FAIRGROUNDS	
DWG. NO.	REV
23008 - 1325	A

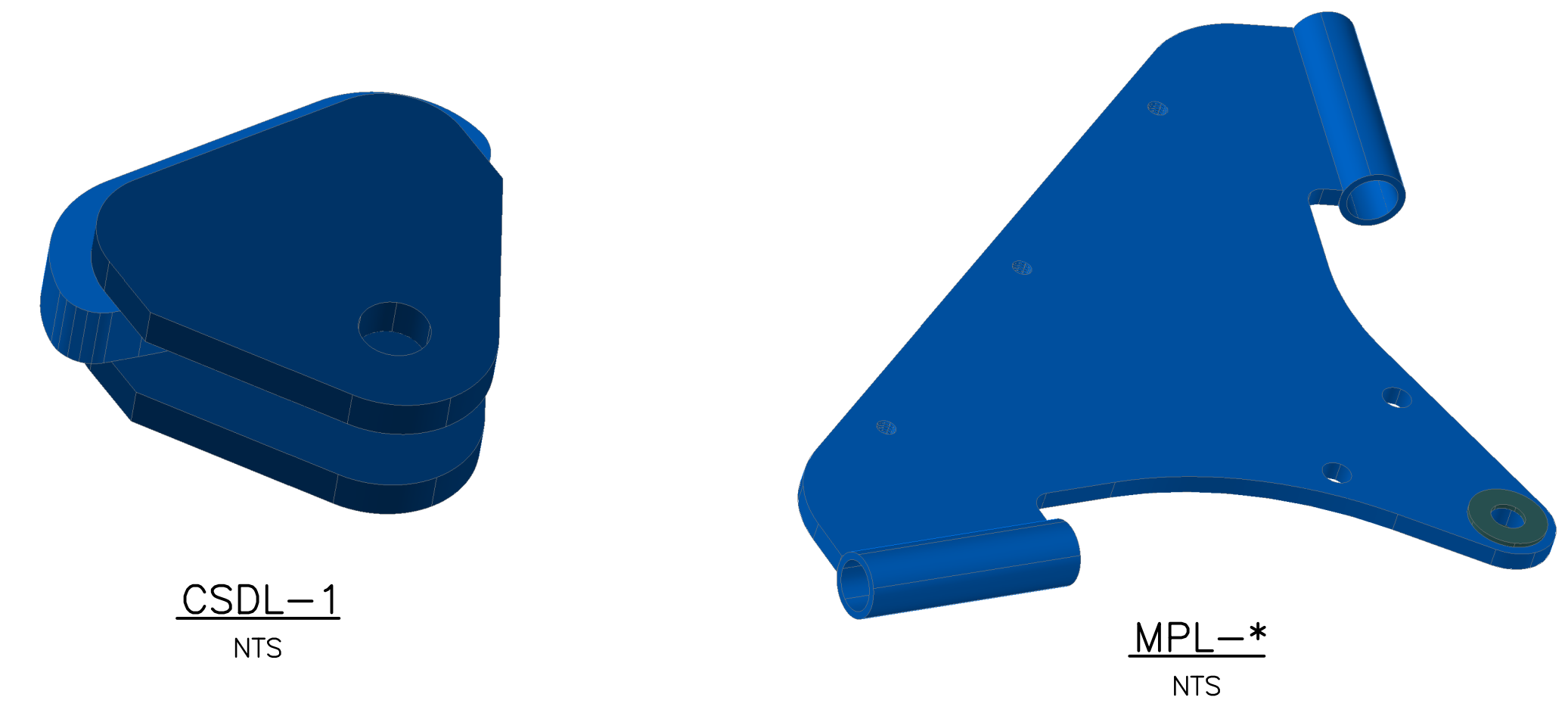


BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
CSDL-1	24	24	CABLE SADDLE WELDMENT	STEEL	PAINT	#6	1120
MPL-1	1	1	MEMBRANE PLATE	STEEL	PAINT	#30	1120
MPL-1A	1	1	MEMBRANE PLATE	STEEL	PAINT	#30	1120
MPL-2	1	1	MEMBRANE PLATE	STEEL	PAINT	#25	1120
MPL-2A	1	1	MEMBRANE PLATE	STEEL	PAINT	#25	1120
MPL-3	1	1	MEMBRANE PLATE	STEEL	PAINT	#25	1120
MPL-3A	1	1	MEMBRANE PLATE	STEEL	PAINT	#25	1120
MPL-4	1	1	MEMBRANE PLATE	STEEL	PAINT	#28	1120
MPL-4A	1	1	MEMBRANE PLATE	STEEL	PAINT	#28	1120

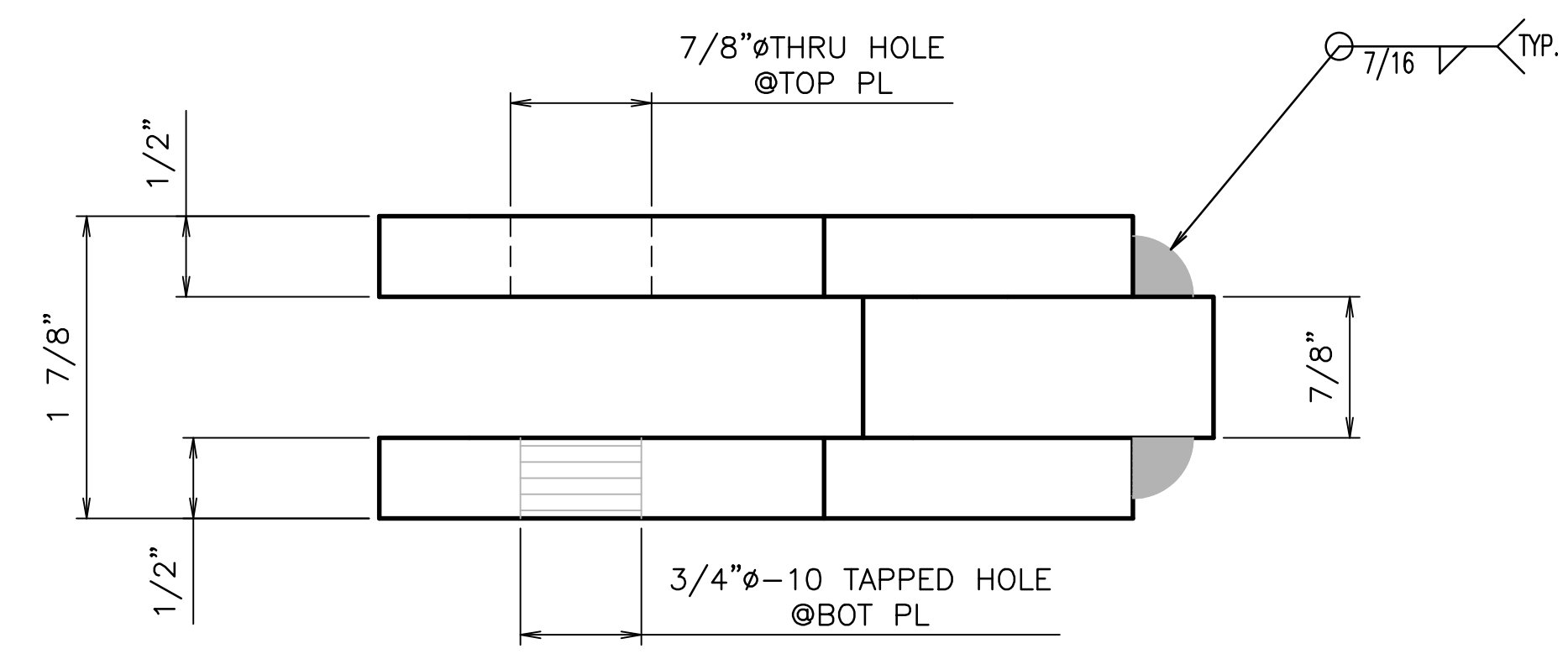


CABLE SADDLE WELDMENT <CSDL-1>
SCALE FULL

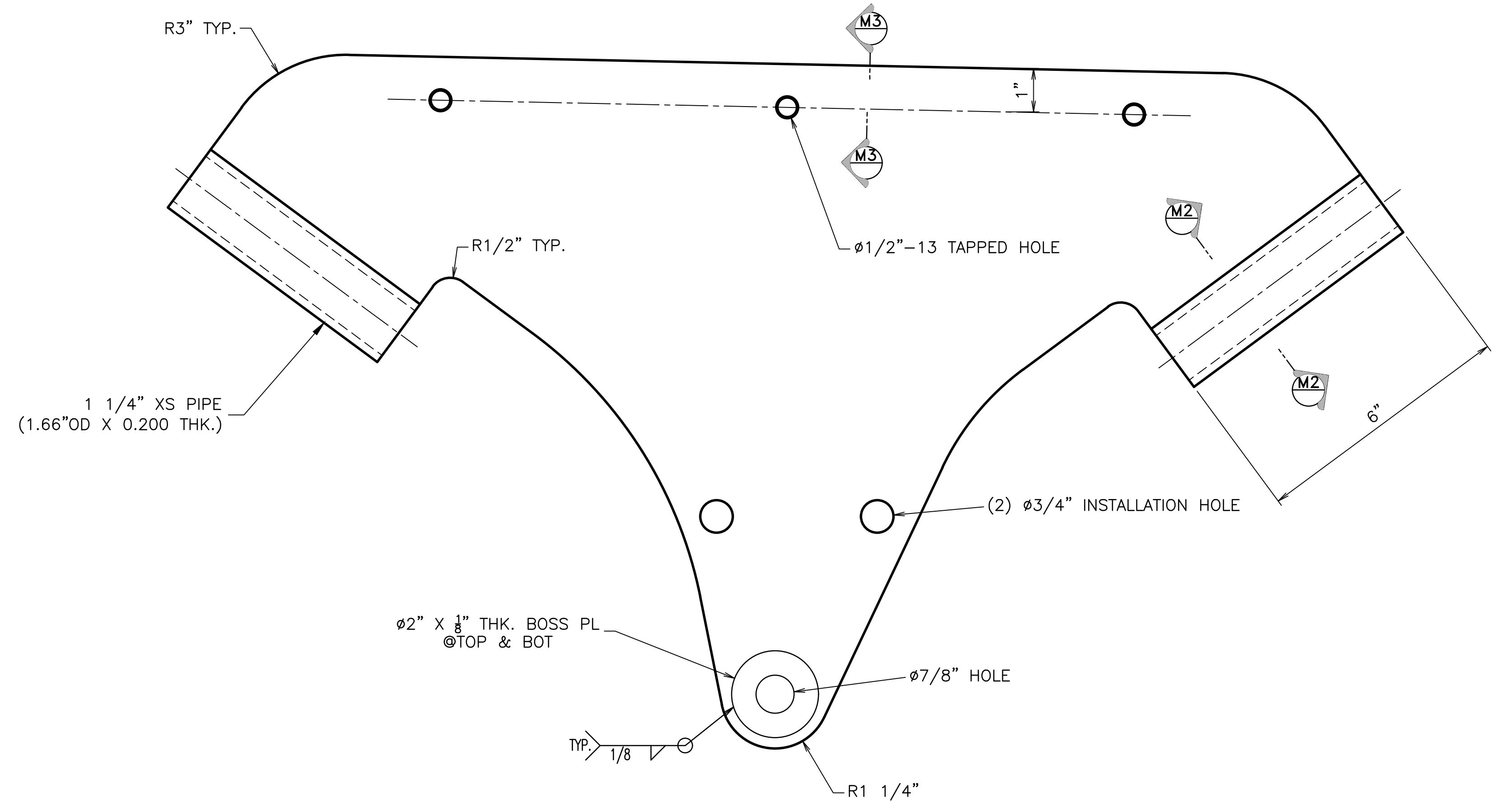


CSDL-1
NTS

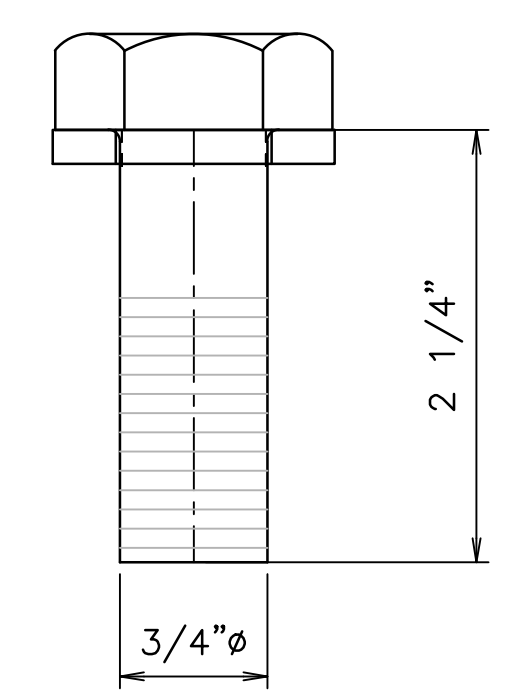
MPL-*
NTS



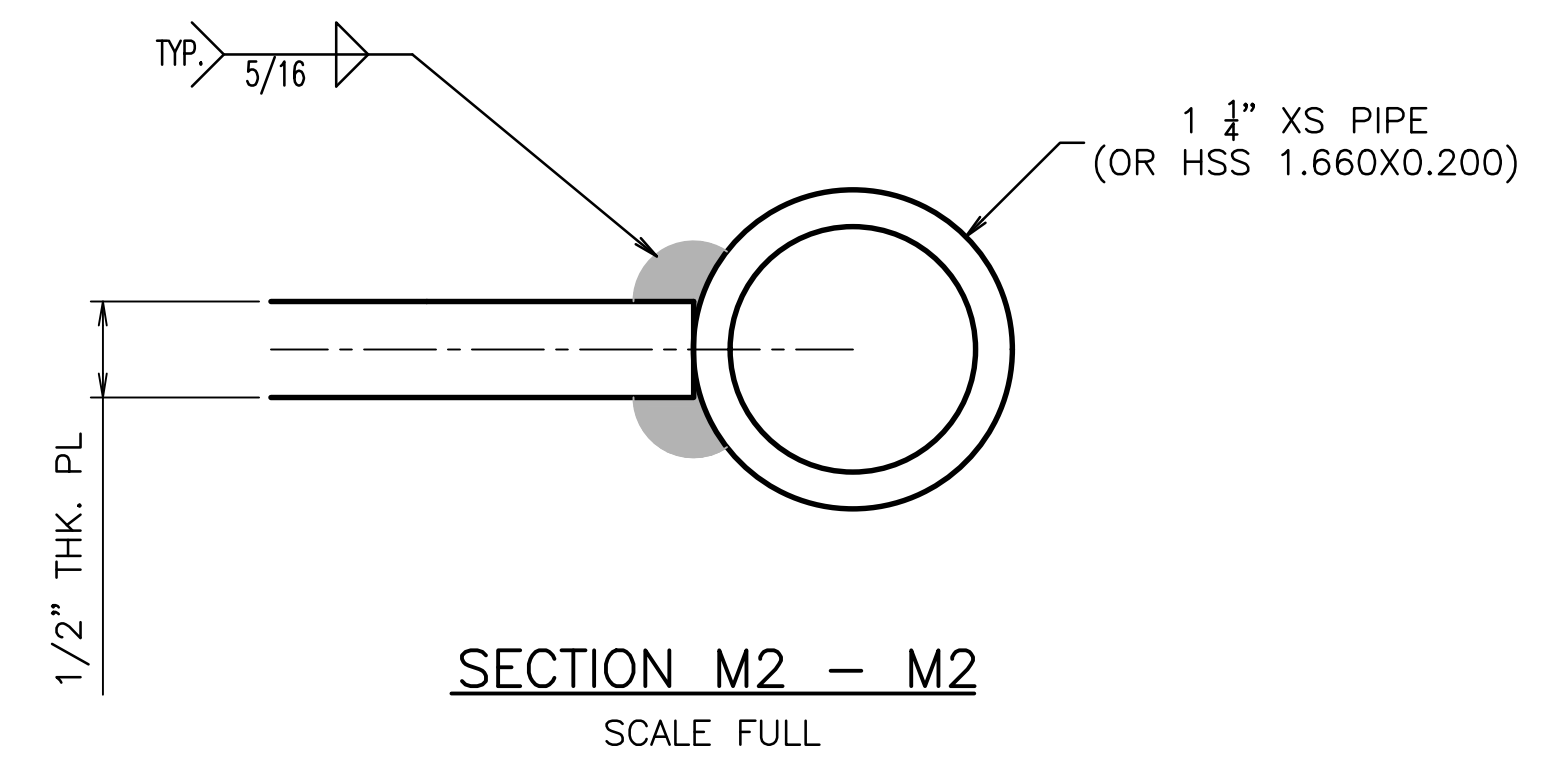
SECTION M1 - M1
SCALE FULL



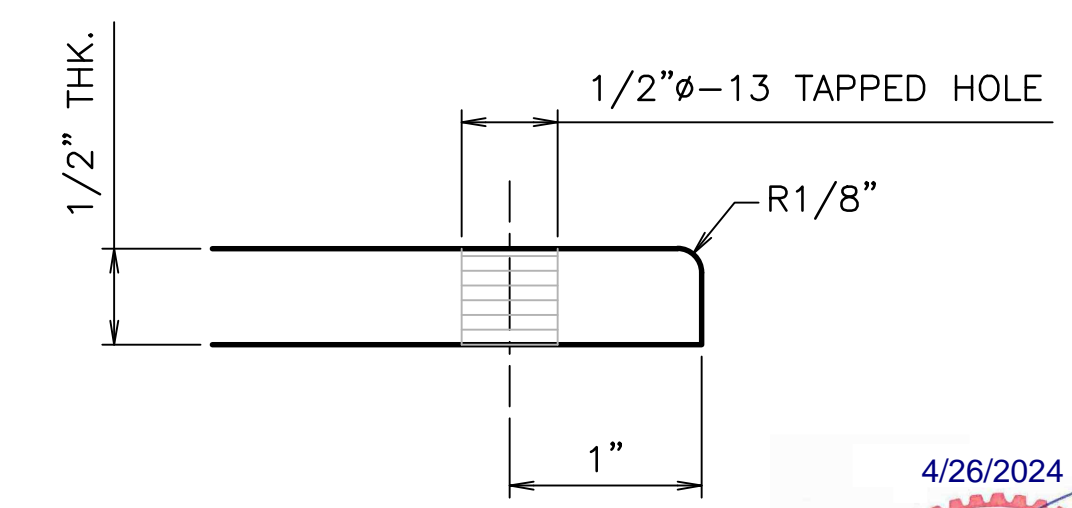
TYPICAL MEMBRANE PL
MPL-1 THRU 4 & 1A THRU 4A
SCALE 6" = 1'-0"



3/4"Ø A325 BOLT W/HARDEN WASHER (GALV.)
@EACH CABLE SADDLE LOCATION
SCALE FULL



SECTION M2 - M2
SCALE FULL



SECTION M3 - M3
SCALE FULL



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DRAWN BY	MI	10/13/23	TITLE INTERFACE STEEL MEMBRANE PLATE DETAIL WASHINGTON STATE FAIRGROUNDS		
CHECKED BY	MI	10/13/23			
ENGINEER	MI	10/13/23			
FINAL REVIEW					
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1330		REV

CABLE SPECS

1. GENERAL

- 1.1 ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING AMERICAN STANDARD SPECIFICATIONS:
- AMERICAN SOCIETY OF CIVIL ENGINEERS – ASCE 19, "STRUCTURAL APPLICATIONS OF STEEL CABLES FOR BUILDINGS".
- AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) – AS REFERENCED.
- 1.2 FULL CERTIFICATION FOR ALL CABLES IS REQUIRED, AND SHALL INCLUDE AS A MINIMUM:
 1. CABLE PHYSICAL PROPERTIES, 2. MILL TEST REPORTS, 3. TEST REPORTS FOR CABLE PRESTRETCHING WHERE NOTED, AND 4. TESTING OF FITTINGS WHERE NOTED.

2.0 MATERIALS

2.1 CABLE MATERIALS

- 2.1.1 STRUCTURAL WIRE ROPE CABLES SHALL CONFORM TO THE LATEST REVISION OF ASTM A 603, "STANDARD SPECIFICATION FOR ZINC-COATED STEEL STRUCTURAL WIRE ROPE".
- 2.1.2 STRUCTURAL STRAND CABLES SHALL CONFORM TO THE LATEST REVISION OF ASTM A 586, "STANDARD SPECIFICATION FOR ZINC-COATED PARALLEL AND HELICAL STEEL WIRE STRUCTURAL STRAND".
- 2.1.3 SEVEN WIRE PRE-STRESSING STRAND SHALL CONFORM TO THE LATEST REVISION OF ASTM A 416, "STANDARD SPECIFICATION FOR UNCOATED SEVEN WIRE STRESS RELIEVED STRAND FOR PRESTRESSED CONCRETE", AND SHALL BE GRADE 270.
- 2.1.4 STRUCTURAL WIRE ROPE AND STRAND CABLES SHALL BE PVC COATED WHERE NOTED (WHITE IN COLOR UNLESS NOTED OR APPROVED OTHERWISE).

2.2 FITTINGS

- 2.2.1 ALL THREADED STUDS SHALL BE SUPPLIED USING MUNCY MACHINE & TOOL CO. FITTINGS UNLESS NOTED OR APPROVED OTHERWISE. ALL THREADED STUDS SHALL BE RIGHT HAND THREADS AND SHALL INCLUDE A NUT, JAM NUT, AND WASHER UNLESS NOTED OTHERWISE. WRENCH GRIPS SHALL BE PROVIDED UNLESS NOTED OTHERWISE.
- 2.2.2 ALL CABLE FITTINGS, OTHER THAN THREADED STUDS, SHALL BE CROSBY USING PART NUMBERS LISTED BELOW, UNLESS NOTED OR APPROVED OTHERWISE. THE FITTING SIZES SHALL MATCH THE CABLE DIAMETER ON EACH ASSEMBLY UNLESS NOTED OTHERWISE.

FITTING	CROSBY PART NO.
OPEN SWAGE SOCKET	S-501
CLOSED SWAGE SOCKET	S-502
OPEN SPELTER SOCKET	G-416
CLOSED SPELTER SOCKET	G-417
STEEL SLEEVE	S-505
EXTRA HEAVY WIRE ROPE THIMBLE	G-414

- 2.2.3 ALL OPEN SOCKETS AND CLEVISES SHALL INCLUDE A PIN AND STAINLESS STEEL COTTER PIN UNLESS NOTED OTHERWISE.
- 2.2.4 PINS 3 INCHES (75 mm) OR LARGER IN DIAMETER SHALL CONTAIN A 1/4" (6 mm) CHAMFER UNLESS NOTED OTHERWISE.

3.0 EXECUTION

3.1 INSPECTION AND QUALITY CONTROL

CABLE MANUFACTURER SHALL PROVIDE EFFECTIVE QUALITY CONTROL OVER ALL FABRICATION ACTIVITIES. BIRDAIR OR ITS TESTING AGENCY MAY VISIT THE PLANT AT ANY TIME TO VERIFY THAT A QUALITY CONTROL PROGRAM IS IN PLACE. THIS INSPECTION DOES NOT RELIEVE THE FABRICATOR FROM MEETING THE QUALITY AND WORKMANSHIP REQUIREMENTS OF THIS SPECIFICATION.

3.2 WORKMANSHIP

3.2.1 CABLES

- 3.2.1.1 ALL CABLES SHALL BE THOROUGHLY COATED TO "CLASS A" ZINC COATING THROUGHOUT.
- 3.2.1.2 ALL CABLES SHALL BE PRESTRETCHED PER ASTM A 586 FOR STRUCTURAL STRAND, AND ASTM A 603 FOR STRUCTURAL WIRE ROPE PRIOR TO FABRICATION. THE SAME CABLE TYPES SHALL HAVE THE SAME MODULUS OF ELASTICITY UNLESS NOTED OTHERWISE.
- 3.2.1.3 ALL CABLES SHALL BE MANUFACTURED TO A LENGTH TOLERANCE AS FOLLOWS:
- | | |
|---|---|
| LENGTH < 70 FEET
(21.336 METERS) | TOLERANCE = 0.25 INCH
(6.35 MILLIMETERS) |
| LENGTH 70 FEET TO 270 FEET
(LENGTH 21.336 < L < 82.296 METERS) | TOLERANCE = 0.03% OF LENGTH |
| LENGTH > 270 FEET
(82.296 METERS) | TOLERANCE = 1 INCH
(25.4 MILLIMETERS) |
- ALL LENGTHS SHALL BE MEASURED AT 70 DEGREES F.
- 3.2.1.4 ALL CABLES SHALL HAVE A CONTINUOUS LONGITUDINAL PAINT STRIPE, 1/4 INCH WIDE (NOMINAL 6 MILLIMETERS) MAXIMUM ALONG THEIR TOP SURFACE, AND BLACK IN COLOR UNLESS NOTED OTHERWISE.
- 3.2.1.5 ALL MARKINGS, WHERE NOTED, SHALL BE A CIRCUMFERENTIAL PAINT STRIPE 1/4 INCH WIDE (NOMINAL 6 MILLIMETERS) MAXIMUM. THE COLOR SHALL BE BLACK UNLESS NOTED OTHERWISE.
- 3.2.1.6 ALL CABLES SHALL BE FREE OF OIL, GREASE AND FOREIGN MATERIALS, AND SHALL BE CLEAN AND DRY TO THE TOUCH BY USE OF ONE OF THE FOLLOWING METHODS:
- DRAW CABLE DRY.
 - DRAW CABLE WITH A CLEAR WATER SOLUABLE LUBRICANT.
 - ULTRASONIC CLEANING.
- 3.2.1.7 TOUCH UP ALL DAMAGE TO ZINC COATING WITH GRAY ZINC-RICH PAINT.

3.2.2 FITTINGS

- 3.2.2.1 ALL END FITTINGS SHALL BE DESIGNED TO DEVELOP 110 PERCENT OF THE NOMINAL BREAKING STRENGTH OF EACH CABLE, AND AS ATTACHED AND INSTALLED, SHALL DEVELOP 100 PERCENT OF THE NOMINAL BREAKING STRENGTH OF EACH CABLE. CLEVIS AND PIN ASSEMBLIES SHALL BE DESIGNED TO DEVELOP THE AVAILABLE STRENGTH AS LISTED IN THE AISC STEEL CONSTRUCTION MANUAL, 14th EDITION, TABLE 15-4.
- 3.2.2.2 SWAGED END FITTINGS, CLEVISES, PINS, NUTS AND WASHERS SHALL BE HOT DIP GALVANIZED PER ASTM A 153. ANY DAMAGE TO ZINC COATING SHALL BE CLEANED PER SSPC-SP3 AND PAINTED WITH GRAY ZINC-RICH PAINT PER ASTM A 780.
- 3.2.2.3 SPALTERED END FITTINGS SHALL BE HOT DIP GALVANIZED PER ASTM A 153. ANY DAMAGE TO ZINC COATING SHALL BE CLEANED PER SSPC-SP3 AND PAINTED WITH GRAY ZINC-RICH PAINT PER ASTM A 780.
- 3.2.2.4 MARK ALL END FITTINGS WITH THE MARK NUMBER AND "X" OR "Y" END DESIGNATION. MARKING SHALL BE OF A PERMANENT NATURE.
- 3.2.2.5 ATTACH A METAL TAG INDICATING MARK NUMBER, DIAMETER, AND LENGTH FOR EACH CABLE ASSEMBLY.
- 3.2.2.6 "FABRICATION LOAD" IS A LOAD WHICH "FABRICATION LENGTH" SHOWN IS TO BE MEASURED FOR CABLE ASSEMBLY.
- 3.2.2.7 "DESIGN LOAD", WHERE NOTED, IS A LOAD IN EACH CABLE UNDER DESIGN PRESTRESS CONDITION. THESE VALUES SHALL NOT BE USED FOR CABLE FABRICATION.

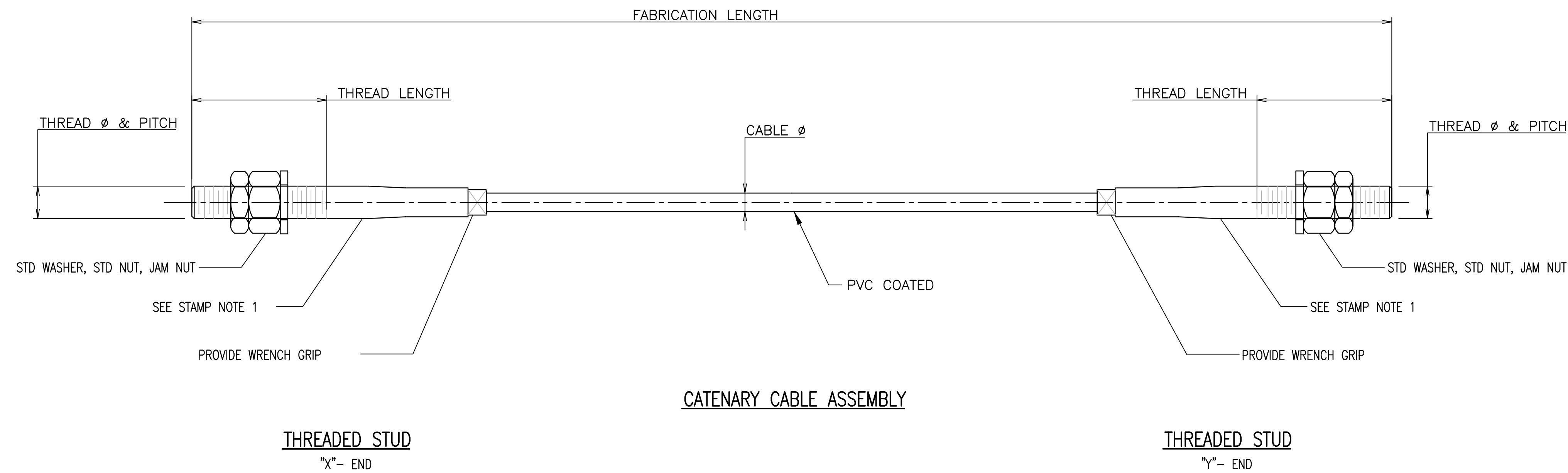
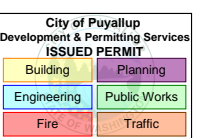
SUBMITTED FOR
 Mar 6 2024
APPROVAL



REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
REVISIONS					
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. <small>TELEPHONE: 716-633-9500 FAX: 716-204-1234</small>			
DRAWN BY	MI 10/13/23				
CHECKED BY	MI 10/13/23				
ENGINEER	MI 10/13/23				
FINAL REVIEW		INTERFACE CABLE SPECIFICATION WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1400		REV

BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
C1	1	1	1/2" WIRE ROPE CABLE W/STUD ENS	A603	PVC		
C2	2	2	1/2" WIRE ROPE CABLE W/STUD ENS	A603	PVC		
C3	2	2	1/2" WIRE ROPE CABLE W/STUD ENS	A603	PVC		
C4	2	2	1/2" WIRE ROPE CABLE W/STUD ENS	A603	PVC		
C5	1	1	1/2" WIRE ROPE CABLE W/STUD ENS	A603	PVC		



STAMP NOTES:

- 1. STAMP FITTINGS WITH MARK NO.

PROVIDE EACH STUD END WITH:

- 1 - STANDARD HEX NUT
- 1 - JAM NUT
- 1 - STANDARD HARDEN WASHER

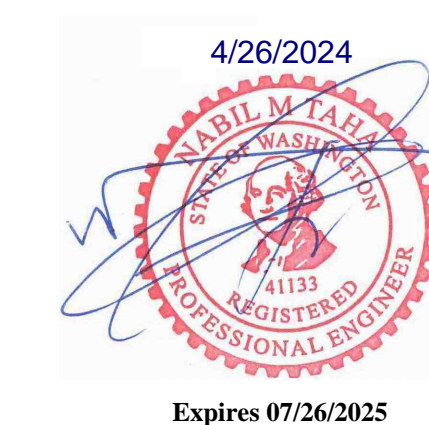
NOTES:

- 1. SEE DRAWING 4000 FOR CABLE SPECIFICATIONS.
- 2. ALL CABLES SUPPLIED COMPLETE WITH FITTINGS, NUTS, JAM NUTS, & WASHERS.
- 3. ALL END FITTINGS & HARDWARE TO BE HOT-DIP GALVANIZED.
- 4. ALL CABLES ON THIS DRAWING SHALL BE PRESTRETCHED, SEE 3.2.1.2 (DWG. 4000).

CABLE CHART				THREADED STUD		
MARK NO.	CABLE Ø (IN)	FABRICATION LENGTH (FT.)	FABRICATION LOAD (KIPS)	MANUFAC. PART NO.	THREAD Ø & PITCH (IN.)	THREAD LENGTH (IN.)
C1	1/2"	79.979	3.5	TTS-16A	1-8	6
C2	1/2"	11.163	3.5	TTS-16A	1-8	6
C3	1/2"	41.978	3.5	TTS-16A	1-8	6
C4	1/2"	9.650	3.5	TTS-16A	1-8	6
C5	1/2"	47.608	3.5	TTS-16A	1-8	6

(NOTE) FABRICATION LENGTH IS PRELIMINARY. FINAL LENGTH TO BE PROVIDED AFTER PATTERNING.

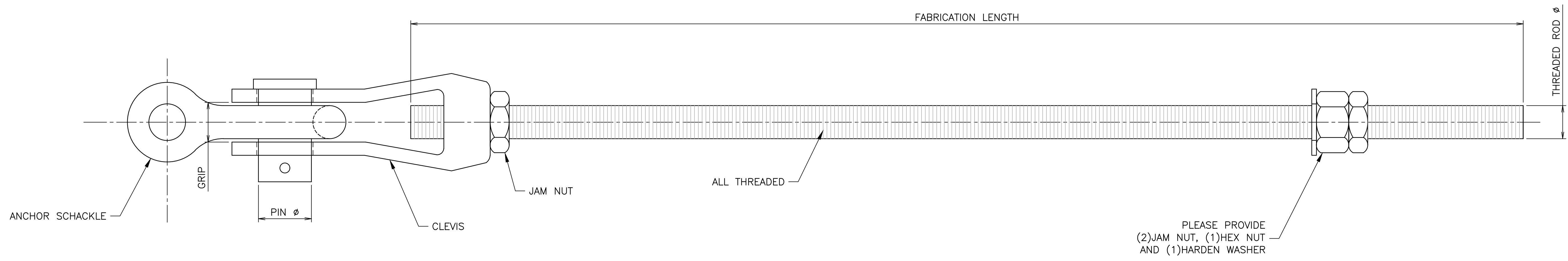
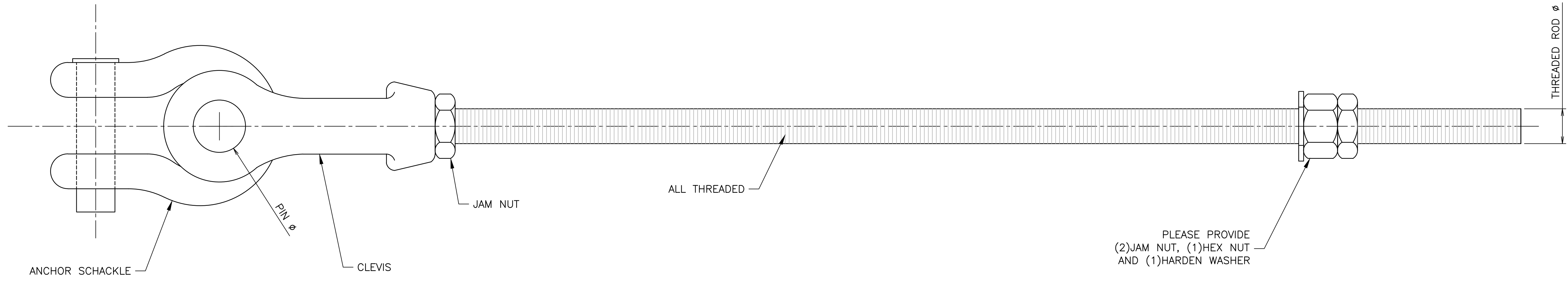
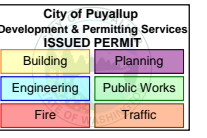
SUBMITTED FOR
Mar 6 2024
APPROVAL



REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
REVISIONS					
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234 INTERFACE CABLE W/STUD ENDS WASHINGTON STATE FAIRGROUNDS			
DRAWN BY	MI 10/13/23				
CHECKED BY	MI 10/13/23				
ENGINEER	MI 10/13/23				
FINAL REVIEW					
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1401		REV

BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
TR-1	8	8	5/8" THREADED ROD ASSEMBLY	A193 B7	GALV.		



THREADED ROD ASSEMBLY <TR-1>
NTS

(NOTE) ALL ITEMS INCLUDING FASTENERS ARE GALVANIZED.

THREADED ROD CHART				SWAGE CLEVIS				ANCHOR SHACKLE				
MARK NO.	THREADED ROD Ø (IN.)	FABRICATION LENGTH (FT.)	MATERIAL	CLEVIS SIZE	PIN Ø (IN.)	GRIP (IN.)	TAP SIZE (IN.)	SHACKLE SIZE (IN-TON)	MANUFAC. PART NO.	PIN Ø (IN.)	THROAT DEPTH (IN.)	A (IN.)
TR-1	5/8"	2.0	A193 GR. B7	No. 2	3/4	0.875	5/8	5/8"-3 1/4"	G-2130	0.77	2.38	1.06

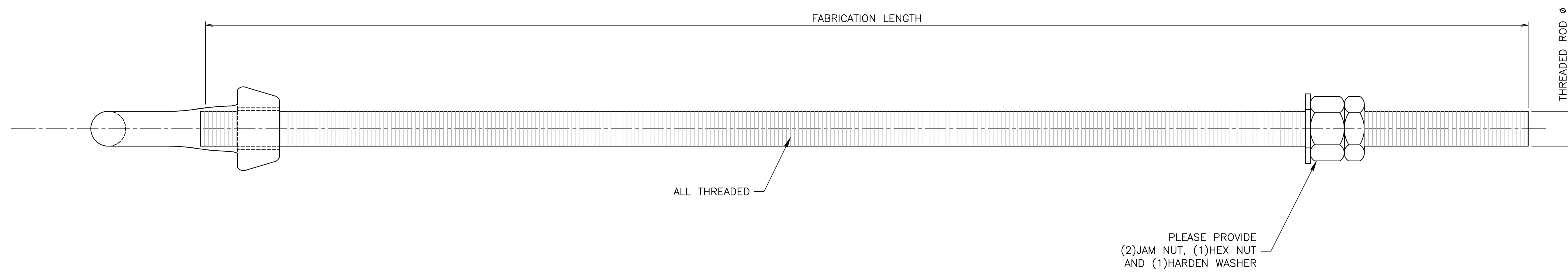
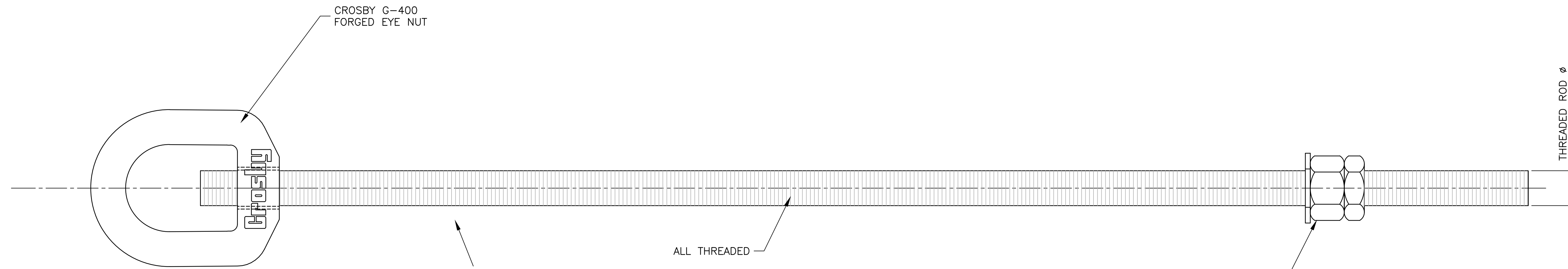
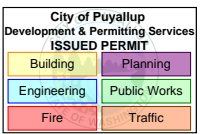
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234 INTERFACE CABLE ACCESSORIES WASHINGTON STATE FAIRGROUNDS				
DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW						
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1402		REV	



BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
TR-2	24	24	5/8" THREADED ROD ASSEMBLY	A193 B7	GALV.		



THREADED ROD ASSEMBLY <TR-2>
NTS

(NOTE) ALL ITEMS INCLUDING FASTENERS ARE GALVANIZED.

THREADED ROD CHART				FORGED EYE NUT		
MARK NO.	THREADED ROD Ø (IN.)	FABRICATION LENGTH (FT.)	MATERIAL	SIZE NO.	G-400 STOCK NO.	TAP SIZE (IN.)
TR-2	5/8"	2.0	A193 GR. B7	No. 4	1090535	0.625

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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR	
REVISIONS						
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234				
DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW			TITLE INTERFACE CABLE ACCESSORIES WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE AS NOTED	DWG. NO.		REV		
		23008 - 1403				

ALUMINUM SPECIFICATIONS

1.0 GENERAL

- 1.1 ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING AMERICAN STANDARD SPECIFICATIONS AND CODES WITH MODIFICATIONS AS SPECIFIED HEREIN:

ALUMINUM ASSOCIATION, INC. "SPECIFICATIONS FOR ALUMINUM STRUCTURES".

AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE" – ALUMINUM, AWS D1.2.

2.0 MATERIALS

- 2.1 ALL EXTRUDED STRUCTURAL ALUMINUM SECTIONS SHALL CONFORM TO ALLOY 6061-T6 WITH A MINIMUM TENSILE YIELD STRENGTH OF 35 KSI AND MINIMUM SHEAR YIELD STRENGTH OF 20 KSI, UNLESS NOTED OTHERWISE.
- 2.2 BENT PLATES SHALL BE FORMED FROM ALLOY 6061, THEN HEAT TREATED TO T6 REQUIREMENTS, UNLESS NOTED OTHERWISE.
- 2.3 SHEET ALUMINUM SHALL BE ALLOY 5052-H32 UNLESS NOTED OTHERWISE.
- 2.4 NON-STRUCTURAL ALUMINUM SHEET SHALL CONFORM TO 1100 SERIES ALLOY UNLESS NOTED OTHERWISE.
- 2.5 BIRDAIR SHALL BE SUPPLIED WITH CERTIFICATION OF ALLOY TYPE AND HEAT TREATMENT.

3.0 EXECUTION

- 3.1 INSPECTION AND QUALITY CONTROL

THE ALUMINUM FABRICATOR SHALL PROVIDE EFFECTIVE QUALITY CONTROL OVER ALL FABRICATION ACTIVITIES. BIRDAIR OR ITS TESTING AGENCY MAY VISIT THE PLANT AT ANY TIME TO VERIFY THAT A QUALITY CONTROL PROGRAM IS IN PLACE. THIS INSPECTION DOES NOT RELIEVE THE FABRICATOR FROM MEETING THE QUALITY AND WORKMANSHIP REQUIREMENTS OF THIS SPECIFICATION.

- 3.2 WORKMANSHIP

- 3.2.1 ALL STRUCTURAL ALUMINUM SHALL BE COATED USING THE FOLLOWING, AS NOTED:

"ANODIZED" AFTER MACHINING AND FABRICATION PER MIL-A-8625C TYPE 2, CLASS 1.

- 3.2.2 BREAK ALL EDGES AND REMOVE ALL BURRS UNLESS NOTED OTHERWISE. MINIMUM RADIUS OF BROKEN EDGES SHALL BE 1/16".

- 3.2.3 STAMP ALL PARTS WITH APPROPRIATE PART NUMBER.

- 3.2.4 ALL WORK SHALL BE FREE OF OIL, GREASE, AND MACHINING CHIPS.

- 3.2.5 TOLERANCES SHALL BE AS FOLLOWS:

CROSS SECTION DIMENSIONS SHALL HAVE A TOLERANCE OF PLUS OR MINUS 10% WITH A MAXIMUM OF 0.03 INCHES (0.8 MILLIMETERS) FROM THEORETICAL, UNLESS NOTED OTHERWISE.

ALL DIMENSIONS FOR LOCATING BOLT HOLES SHALL HAVE A TOLERANCE OF PLUS OR MINUS 0.03 INCH (0.8 MILLIMETERS) FROM THEORETICAL, UNLESS NOTED OTHERWISE.


OVERALL DIMENSIONS FOR PIECES SHALL HAVE A TOLERANCE OF PLUS OR MINUS 1/16 INCH (1.6 MILLIMETERS) FROM THEORETICAL, UNLESS NOTED OTHERWISE.

- 3.2.6 ALL WELDED JOINTS SHALL CONFORM TO AWS D1.2.

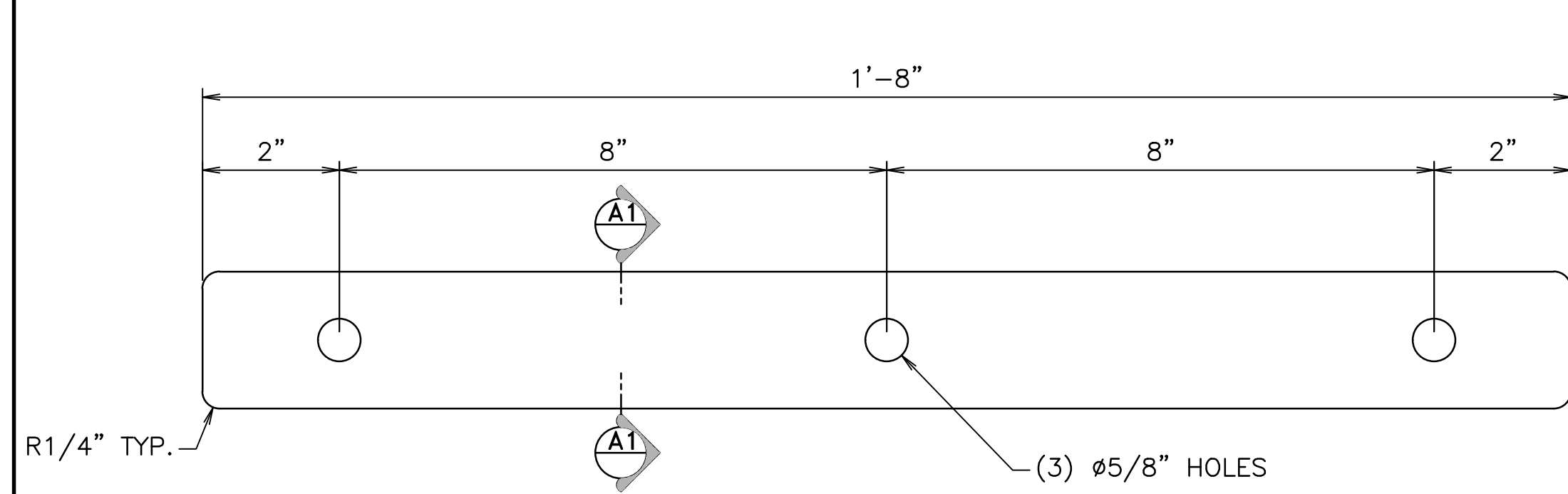
SUBMITTED FOR

Mar 6 2024

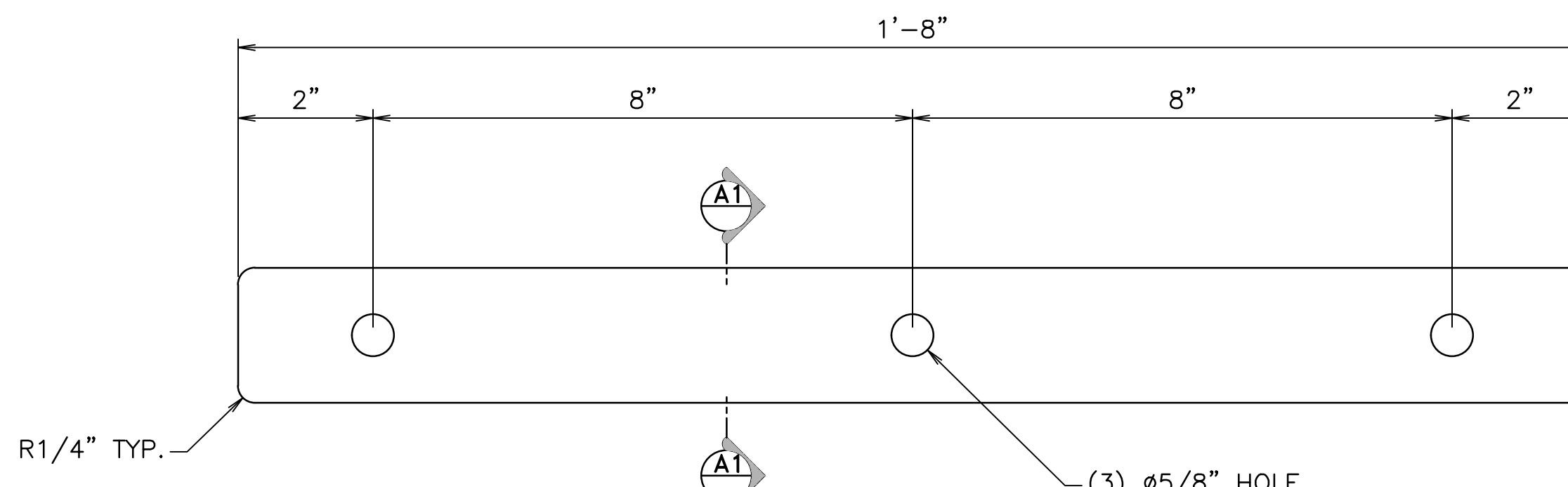
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REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR	
REVISIONS						
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NAME	DATE	 BIRDAIR 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. <small>TELEPHONE: 716-633-9500 FAX: 716-204-1234</small>				
DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW			INTERFACE ALUMINUM SPECIFICATION WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1500		REV	

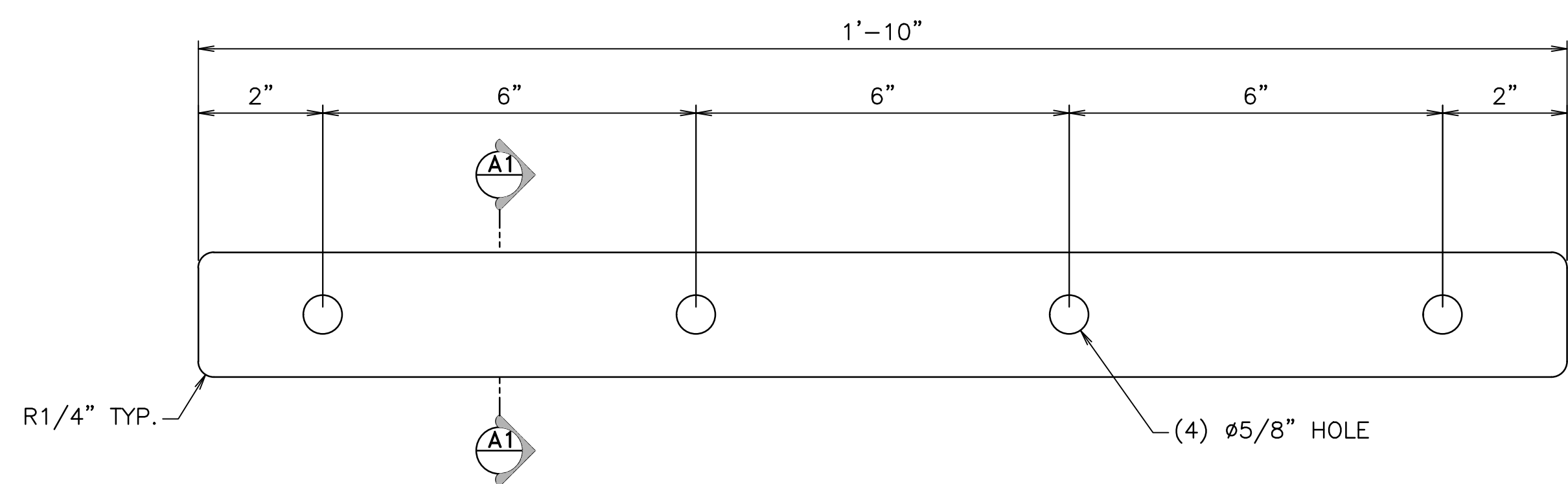




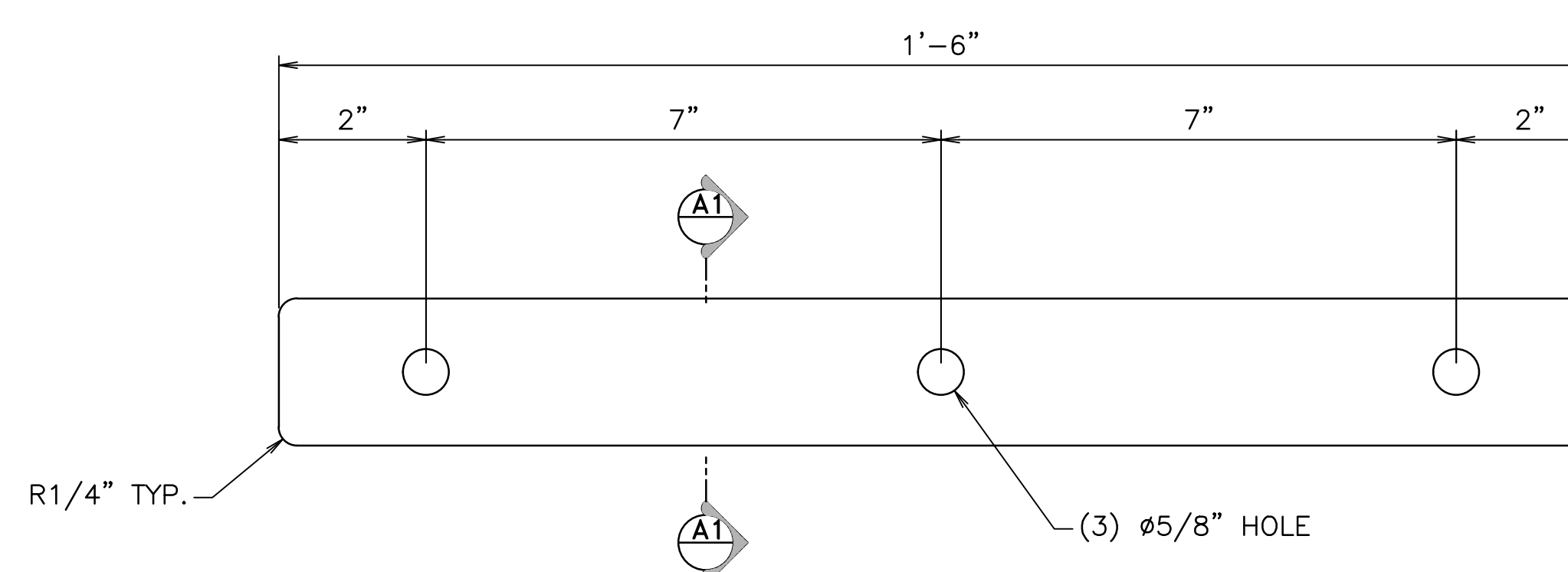
ALUMINUM CLAMP BAR <CB-10>
SCALE 6" = 1'-0"



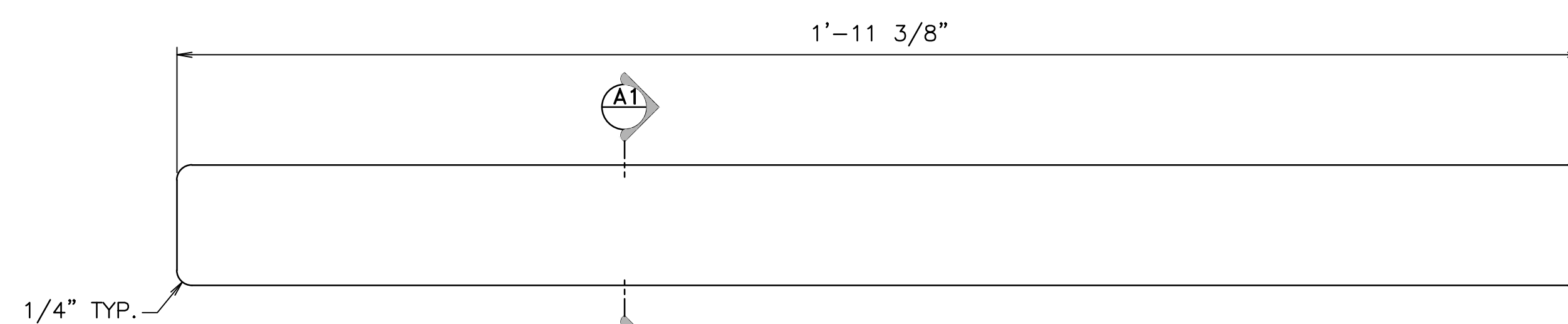
ALUMINUM CLAMP BAR <CB-30>
SCALE 6" = 1'-0"



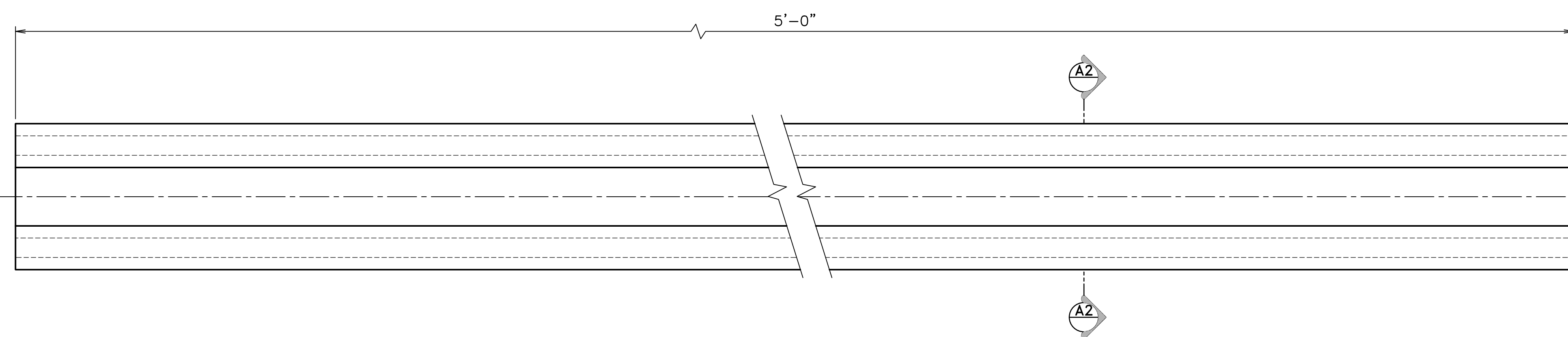
ALUMINUM CLAMP BAR <CB-20>
SCALE 6" = 1'-0"



ALUMINUM CLAMP BAR <CB-40>
SCALE 6" = 1'-0"

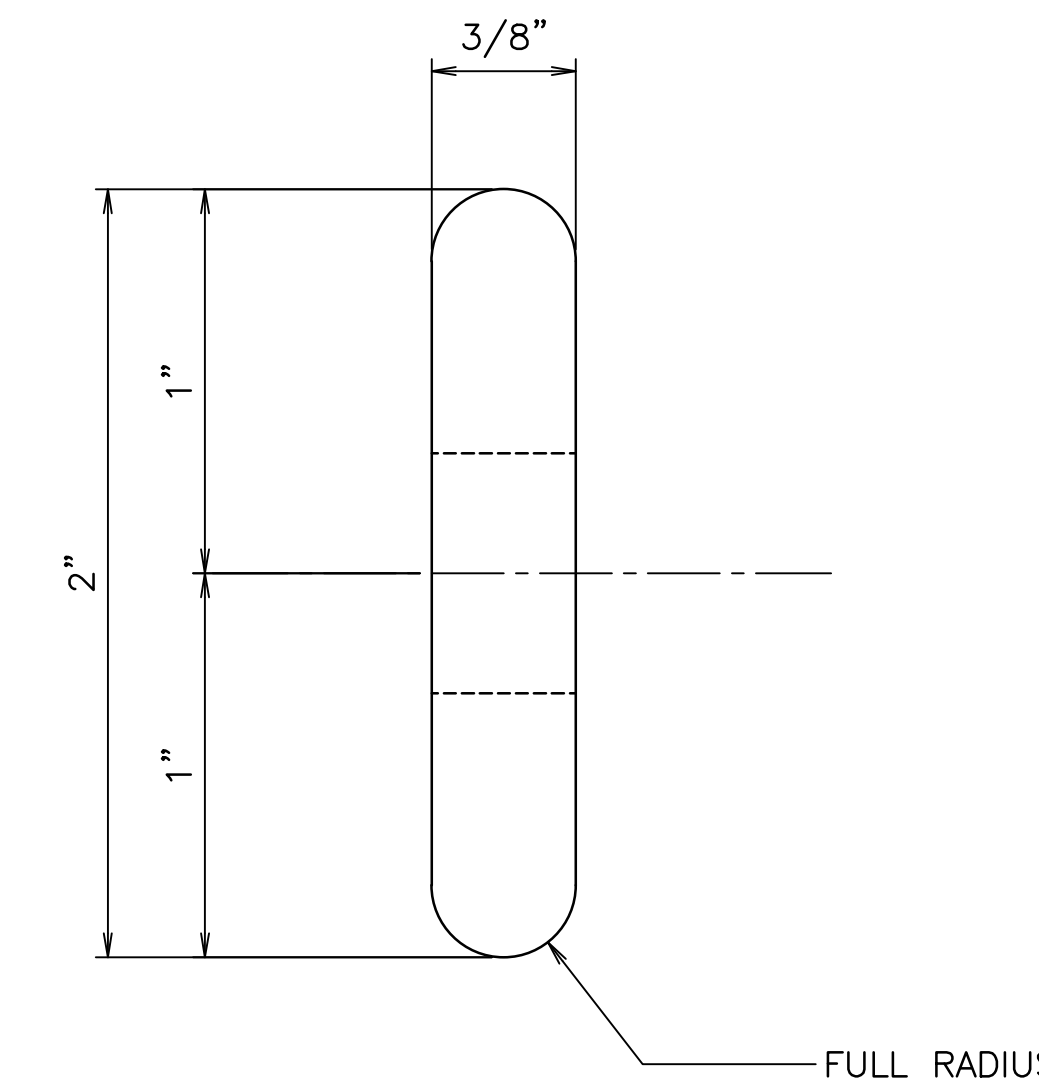
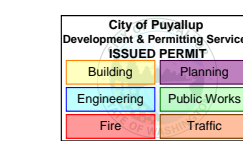


ALUMINUM CLAMP BAR <CB-100>
BLANK BAR
SCALE 6" = 1'-0"

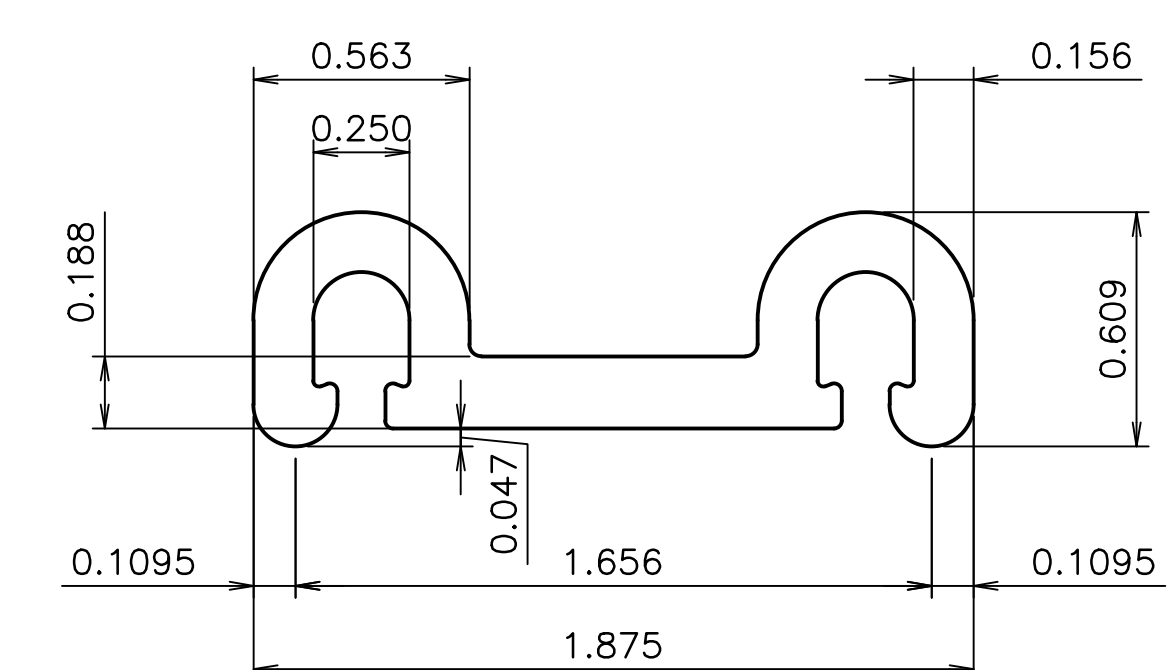


HALUMINUM HOLD-DOWN CLAMP BAR <HDB-1>
WITHOUT HOLES
SCALE 1 : 1

BILL OF MATERIAL							
MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
CB-10	2	2	ALUMINUM CLAMP BAR	ALUM.	ANNOIDIZED		
CB-20	2	2	ALUMINUM CLAMP BAR	ALUM.	ANNOIDIZED		
CB-30	2	2	ALUMINUM CLAMP BAR	ALUM.	ANNOIDIZED		
CB-40	2	2	ALUMINUM CLAMP BAR	ALUM.	ANNOIDIZED		
CB-100	4	4	ALUMINUM CLAMP BAR	ALUM.	ANNOIDIZED		
HDB-1	70	62	ALUMINUM CLAMP BAR	ALUM.	ANNOIDIZED		



SECTION A1 - A1
ALUMINUM CLAMP BAR
SCALE 2 : 1

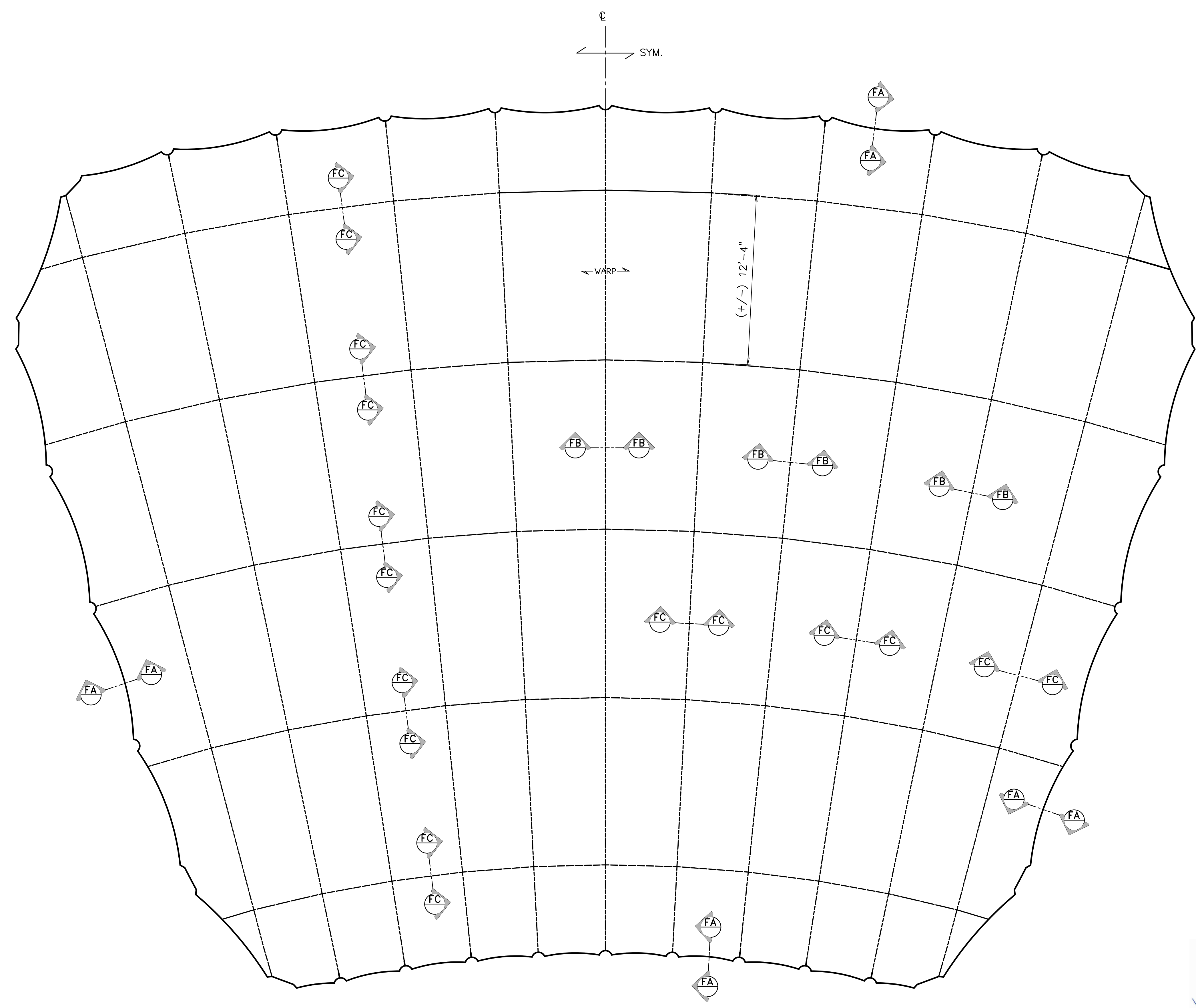


SECTION A2 - A2
TYPICAL SECTION HDB-1
BREAK ALL CORNERS WITH 0.015" RADIUS (MIN.)
SCALE 2 : 1

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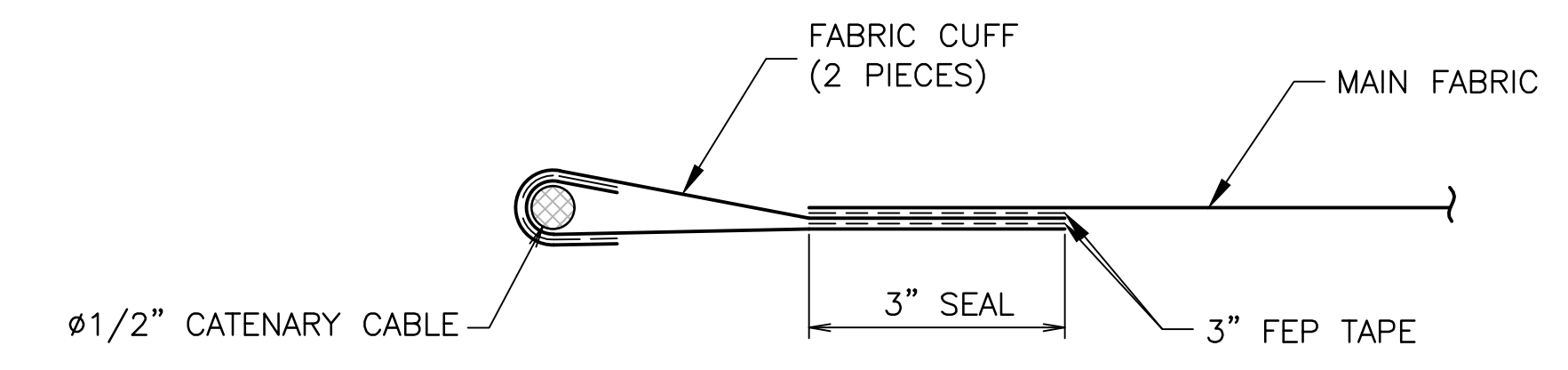
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR	
REVISIONS						
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234				
DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW			TITLE			
SCALE			DRAWING SIZE			
AS NOTED			DWG. NO.			
			23008 - 1501			
			REV			



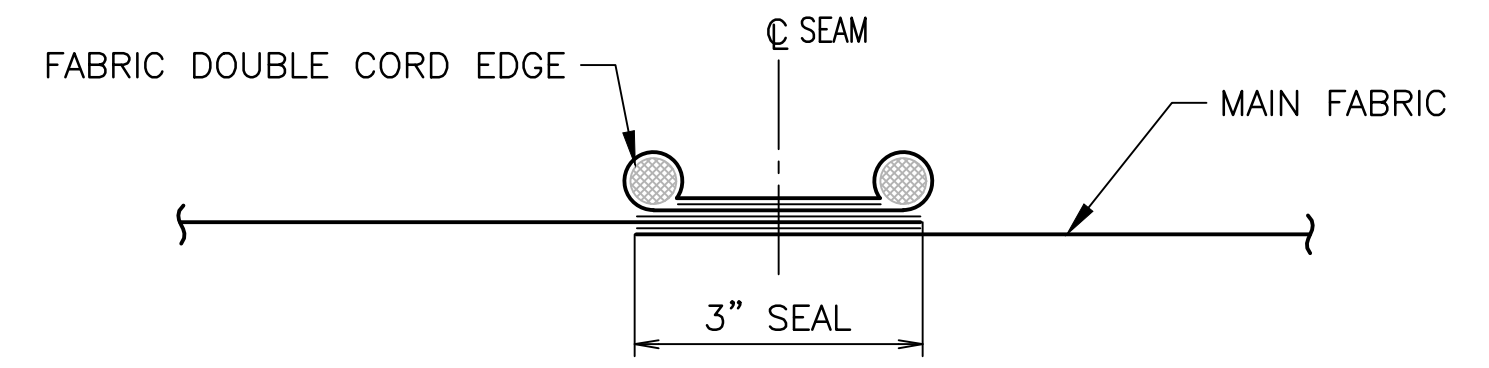


FABRIC SEAM LAYOUT
 SCALE 1/4" = 1'-0"

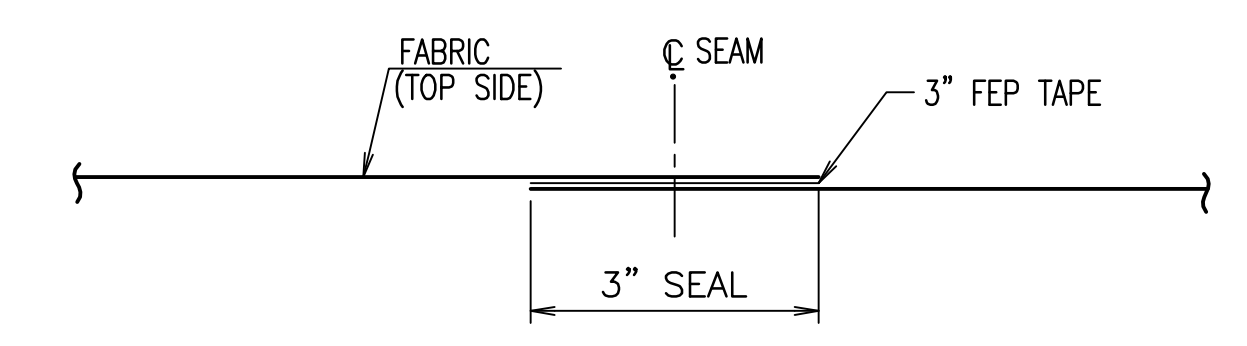
(NOTE) FABRIC SEAM LAYOUT IS CONCEPT ONLY.
 FINAL DIMENSION OF LAYOUT WILL VARY
 BY ACTUAL ROLLS FOR USE



SECTION FA - FA
 TYPICAL CATENARY CABLE CUFF
 SCALE 6" = 1'-0"



SECTION FB - FB
 TYPICAL SEAM W/ DOUBLE CORD EDGE
 SCALE 6" = 1'-0"



SECTION FC - FC
 TYPICAL SEAM
 SCALE 6" = 1'-0"

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REVISIONS						
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DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW						
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1600		REV	

INTERFACE
 FABRIC SEAM LAYOUT AND DETAILS
 WASHINGTON STATE FAIRGROUNDS

SPONGE NEOPRENE SPECIFICATIONS

1.0 GENERAL

ALL WORK MUST COMPLY WITH THE LATEST EDITION OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS AS REFERENCED.

2.0 MATERIAL

- 2.1 ALL SPONGE NEOPRENE SHALL BE OF A CELLULAR ELASTOMERIC COMPOUND OF A FIRM GRADE WHICH HAS BEEN MANUFACTURED IN PRE-FORMED SHAPES FOR USE AS GASKET AND SEALING MATERIAL, AS SPECIFIED IN ASTM SPECIFICATION C509.
- 2.2 CELLULAR ELASTOMERIC MATERIALS FURNISHED TO THIS SPECIFICATION SHALL BE MANUFACTURED FROM NATURAL OR SYNTHETIC RUBBER, OR MIXTURES OF THESE, WITH ADDED COMPOUNDS OF SUCH NATURE AND QUALITY THAT, WITH PROPER CURING, THE FINISHED PRODUCT WILL COMPLY WITH THIS SPECIFICATION.
- 2.3 THE CURED COMPOUNDS SHALL BE SUITABLE FOR USE WHERE RESISTANCE TO SUNLIGHT, WEATHERING OXIDATION, AND PERMANENT DEFORMATION UNDER LOAD ARE OF PRIME IMPORTANCE.
- 2.4 THE MANUFACTURING PROCESS SHALL BE SUCH AS WILL ENSURE A HOMOGENEOUS CELLULAR MATERIAL FREE OF DEFECTS THAT MAY AFFECT SERVICEABILITY.
- 2.5 THE PHYSICAL CHARACTERISTICS OF THE NEOPRENE MUST MEET OR EXCEED ASTM C509 - "STANDARD SPECIFICATION FOR ELASTOMERIC CELLULAR PRE FORMED GASKET AND SEALING MATERIALS"
- 2.6 CERTIFICATION OF MATERIAL SHALL BE PROVIDED THAT CONFORMS TO ASTM C509.

3.0 WORKMANSHIP

- 3.1 NEOPRENE SHALL BE CLEAN AND FREE OF FOREIGN MATTER.
- 3.2 TOLERANCES SHALL BE AS FOLLOWS:

THE THICKNESS SHALL BE PLUS OR MINUS 0.02" (0.50 mm) FROM THEORETICAL, UNLESS NOTED OTHERWISE.

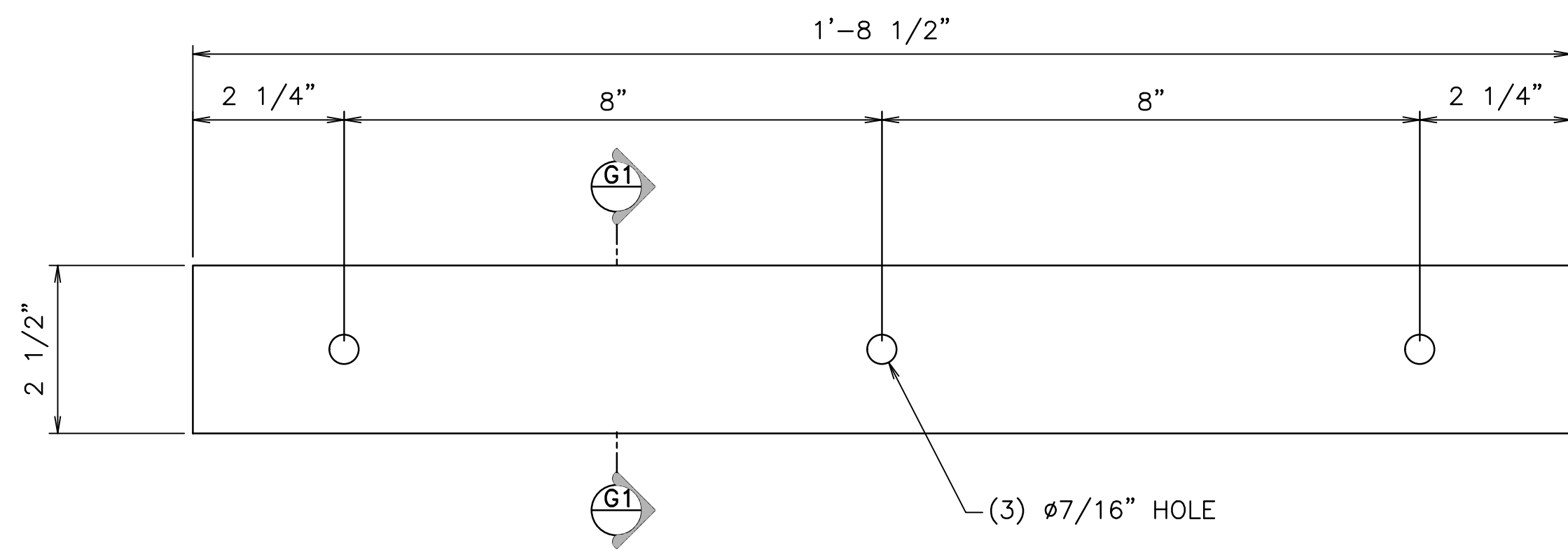
THE WIDTH SHALL BE PLUS OR MINUS 0.20" (5 mm) FROM THEORETICAL, UNLESS NOTED OTHERWISE.

THE HOLE SPACING SHALL BE PLUS OR MINUS 1% OF THE THEORETICAL, UNLESS NOTED OTHERWISE.

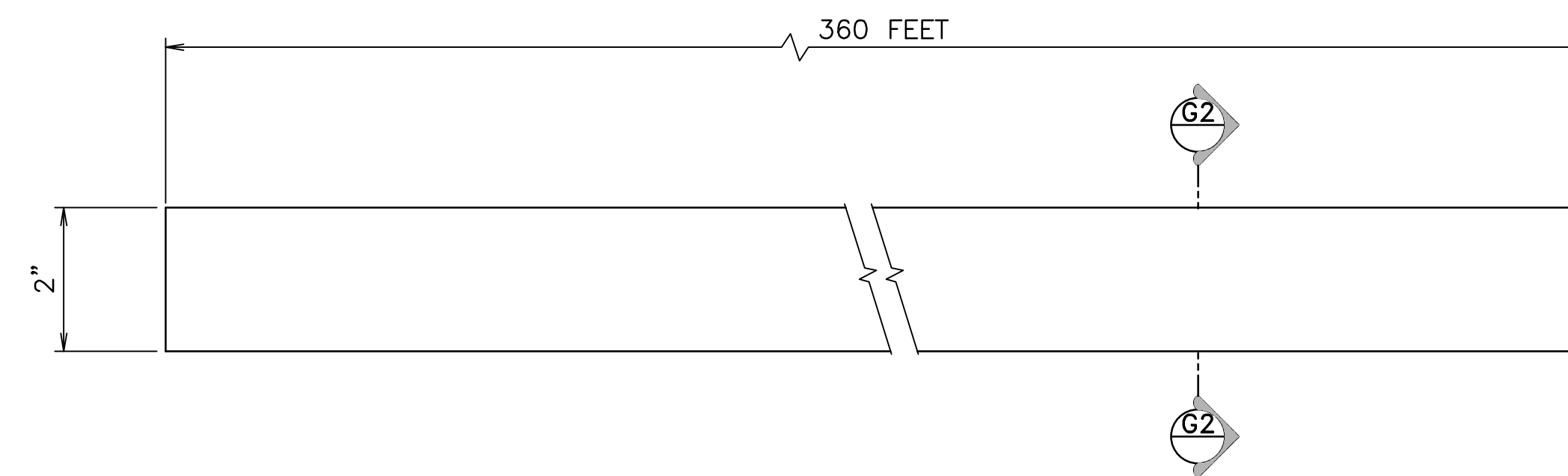
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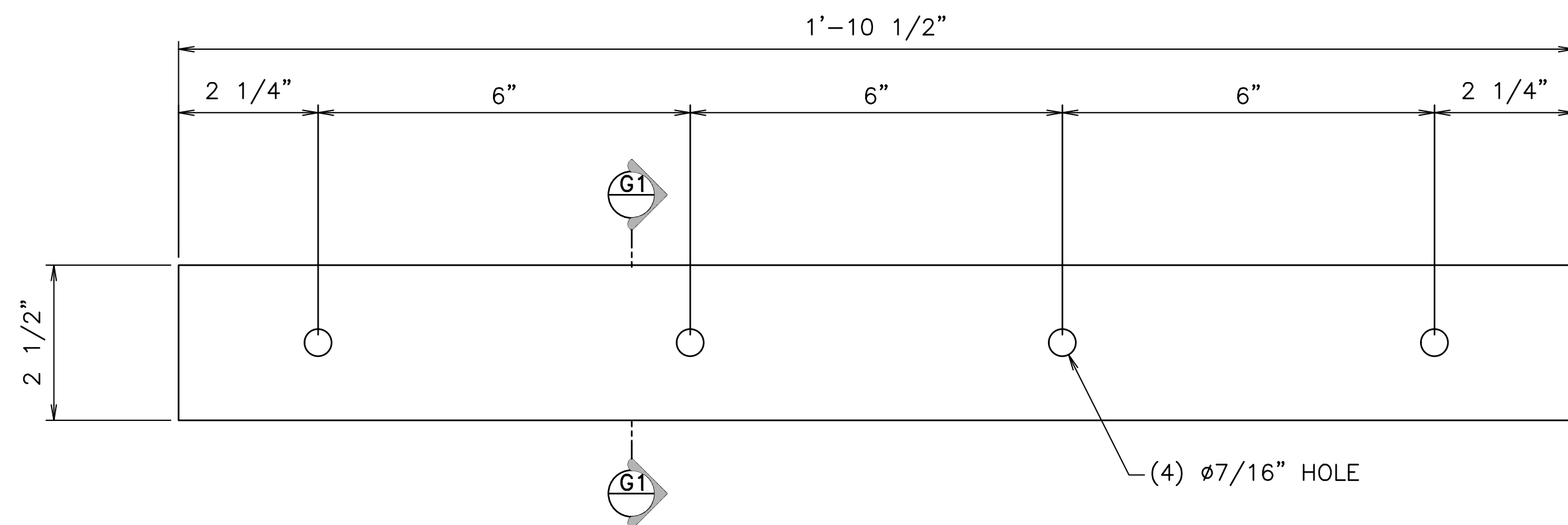
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
REVISIONS					
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DRAWN BY	MI 10/13/23				
CHECKED BY	MI 10/13/23				
ENGINEER	MI 10/13/23				
FINAL REVIEW		TITLE INTERFACE NEOPRENE GASKET SPECIFICATION WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1700		REV



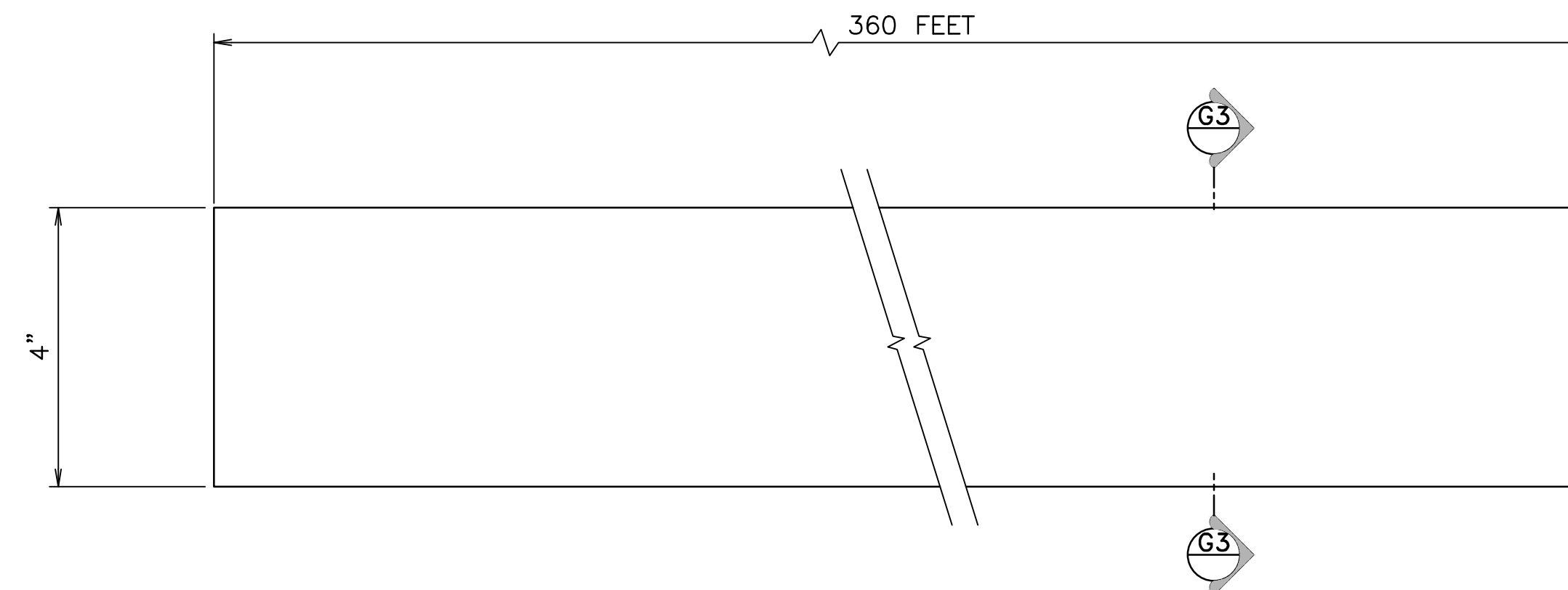
SPONGE NEOPRENE GASKET <GA-101>
SCALE 6" = 1'-0"



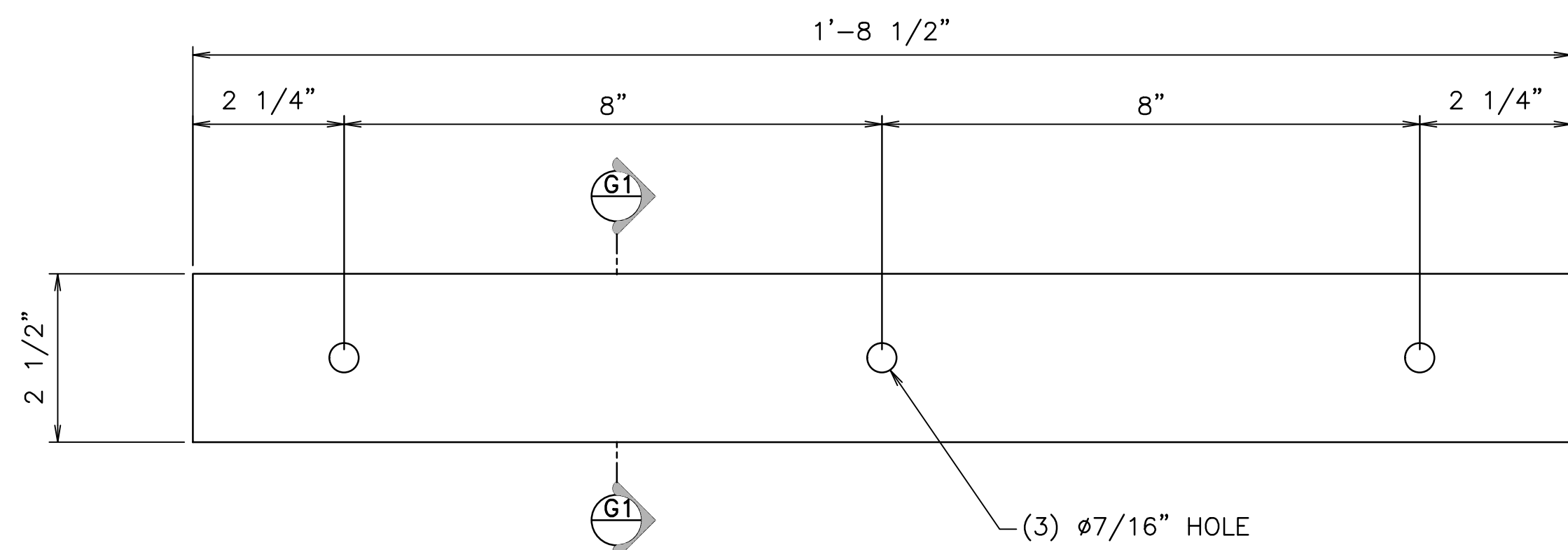
SPONGE NEOPRENE GASKET <GA-50>
WITHOUT HOLES
SCALE 6" = 1'-0"



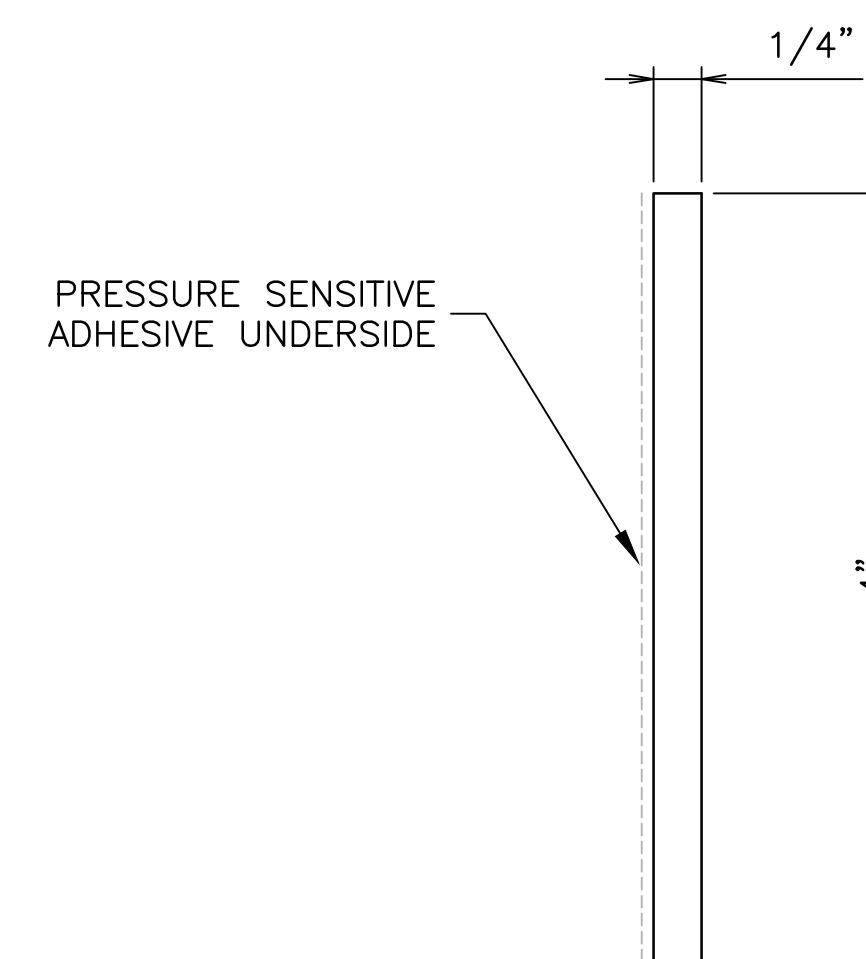
SPONGE NEOPRENE GASKET <GA-102>
SCALE 6" = 1'-0"



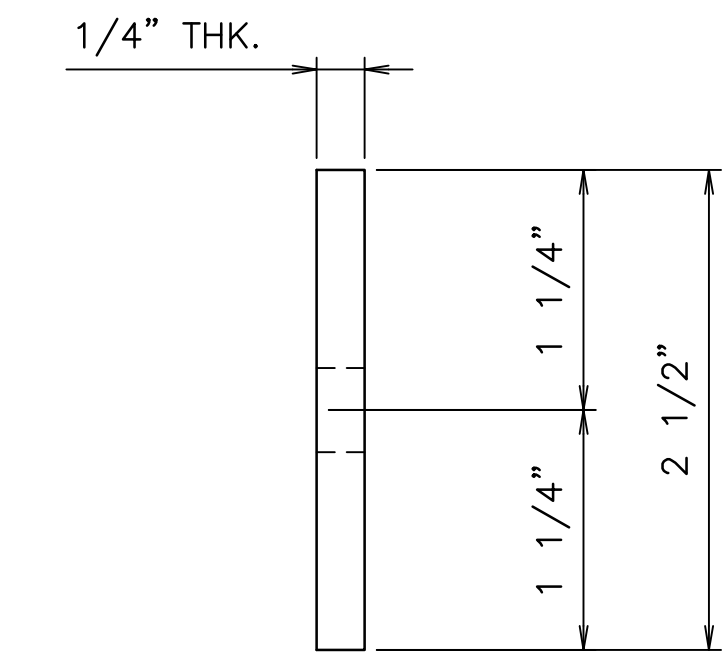
SPONGE NEOPRENE GASKET <GA-60>
WITHOUT HOLES
SCALE 6" = 1'-0"



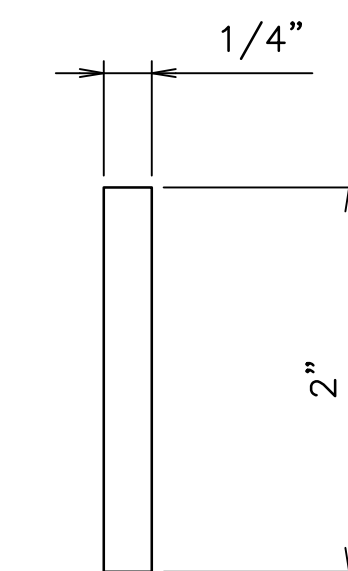
SPONGE NEOPRENE GASKET <GA-103>
SCALE 6" = 1'-0"



SECTION G3 - G3
SPONGE NEOPRENE GASKET W/O HOLES
SCALE FULL



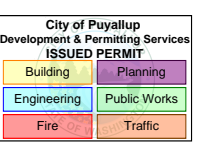
SECTION G1 - G1
TYPICAL SPONGE NEOPRENE GASKET
SCALE FULL



SECTION G2 - G2
TYPICAL SPONGE NEOPRENE GASKET W/O HOLES
SCALE FULL

BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
GA-50	360 ft	320 ft	SPONGE NEOPRENE GASKET W/O HOLES	NEOPRENE			
GA-60	360 ft	320 ft	SPONGE NEOPRENE GASKET W/O HOLES	NEOPRENE			
GA-101	6	4	SPONGE NEOPRENE GASKET W/HOLES	NEOPRENE			
GA-102	6	4	SPONGE NEOPRENE GASKET W/HOLES	NEOPRENE			
GA-103	6	4	SPONGE NEOPRENE GASKET W/HOLES	NEOPRENE			
GA-104	6	4	SPONGE NEOPRENE GASKET W/HOLES	NEOPRENE			



SUBMITTED FOR
Mar 6 2024
APPROVAL

REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR	
REVISIONS						
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NAME	DATE	 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. TELEPHONE: 716-633-9500 FAX: 716-204-1234				
DRAWN BY	MI					10/13/23
CHECKED BY	MI					10/13/23
ENGINEER	MI					10/13/23
FINAL REVIEW			INTERFACE NEOPRENE GASKET WASHINGTON STATE FAIRGROUNDS			
SCALE	DRAWING SIZE AS NOTED	DWG. NO.	23008 - 1701		REV	



IMPERIAL FASTENER SPECIFICATIONS

1.0 GENERAL

- 1.1 ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING AMERICAN STANDARD SPECIFICATIONS:
 - AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) – AS REFERENCED.
 - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) – AS REFERENCED.

2.0 MATERIALS

- 2.1 STAINLESS STEEL STUDS SHALL CONFORM TO ASTM F 593, TYPE SS. THREADS SHALL BE ROLLED.
- 2.2 STAINLESS STEEL BOLTS SHALL CONFORM TO ASTM F 593, TYPE SS. THREADS SHALL BE ROLLED.
- 2.3 STAINLESS STEEL NUTS SHALL CONFORM TO ASTM F 594, TYPE SS, HEX.
- 2.4 STAINLESS STEEL WASHERS SHALL CONFORM TO TYPE SS.
- 2.5 STAINLESS STEEL LOCK WASHERS SHALL BE SPLIT-RING, TYPE SS.
- 2.6 STAINLESS STEEL SOCKET BUTTON HEAD CAP SCREW SHALL CONFORM TO ASTM F 879, TYPE SS.
- 2.7 HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM A 325, TYPE 1, HEAVY HEX UNLESS NOTED
- 2.8 NUTS AND ASSOCIATED JAM NUTS, SUITED FOR HIGH STRENGTH BOLTS, SHALL CONFORM TO ASTM A 563, GRADE DH, HEAVY HEX UNLESS NOTED OTHERWISE.
- 2.9 HIGH STRENGTH HARDENED STEEL WASHERS SHALL CONFORM TO ASTM F 436, TYPE 1, CIRCULAR.
- 2.10 THREADED ROD SHALL CONFORM TO ASTM A 36, ASTM A 572 GRADE 50, ASTM A 193 GRADE B7, OR ASTM F 1554 GRADE 36 OR 55, AS NOTED.
- 2.11 COMMON BOLTS SHALL CONFORM TO ASTM A 307, GRADE A, HEX UNLESS NOTED OTHERWISE.
- 2.12 COMMON NUTS AND ASSOCIATED JAM NUTS SUITED FOR ASTM A 307 BOLTS SHALL CONFORM TO ASTM A 563, GRADE A, HEX UNLESS NOTED OTHERWISE.
- 2.13 COMMON FLAT WASHERS SHALL CONFORM TO ASTM F 844, OR ANSI B18.22.1 TYPE A (USS).
- 2.14 COMMON SPRING LOCK WASHERS SHALL CONFORM TO ANSI B.18.21.1.
- 2.15 BIRDAIR SHALL BE SUPPLIED WITH CERTIFICATION THAT ALL FASTENERS COMPLY WITH THE ABOVE SPECIFICATIONS.

3.0 EXECUTION

- 3.1 INSPECTION AND QUALITY CONTROL

THE FASTENER FABRICATOR SHALL PROVIDE EFFECTIVE QUALITY CONTROL OVER ALL FABRICATION ACTIVITES. BIRDAIR OR ITS TESTING AGENCY MAY VISIT THE PLANT AT ANY TIME TO VERIFY THAT A QUALITY CONTROL PROGRAM IS IN PLACE. THIS INSPECTION DOES NOT RELIEVE THE FABRICATOR FROM MEETING THE QUALITY AND WORKMANSHIP REQUIREMENTS OF THIS SPECIFICATION.
- 3.2 WORKMANSHIP
 - 3.2.1 ALL WORK SHALL BE FREE OF OIL, GREASE AND MACHINING CHIPS.
 - 3.2.2 THREADS FOR BOLTS, STUDS, AND NUTS SHALL CONFORM TO ANSI/ASME B 1.1, RIGHT HAND, UNIFIED COARSE THREAD SERIES (UNC), AND SHALL HAVE CLASS 2A TOLERANCE UNLESS NOTED OTHERWISE.
 - 3.2.3 DIMENSIONS OF FASTENERS SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASME B 18.2.1, "SQUARE COARSE THREAD SERIES (UNC), AND SHALL HAVE CLASS 2A TOLERANCE UNLESS NOTED OTHERWISE.
 - 3.2.4 DIMENSIONS OF WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ANSI B18.22.1, "PLAIN WASHERS", TYPE A UNLESS NOTED OTHERWISE.
 - 3.2.5 DIMENSIONS OF HEX NUTS SHALL CONFORM TO THE REQUIREMENTS OF ANSI B 18.2.2, "HEX NUTS AND JAM NUTS" UNLESS NOTED OTHERWISE.
 - 3.2.6 DIMENSIONS OF LOCK WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ANSI B 18.21.1, "REGULAR HELICAL SPRING LOCK WASHERS" UNLESS NOTED OTHERWISE.
 - 3.2.7 WHERE NOTED, ALL HOT DIP GALVANIZED, "GALVANIZED" FASTENERS SHALL CONFORM TO ASTM A 153, CLASS C.
 - 3.2.8 WHERE NOTED, ALL MECHANICALLY DEPOSITED, "PLATED" FASTENERS SHALL CONFORM TO ASTM B 695, CLASS 50.

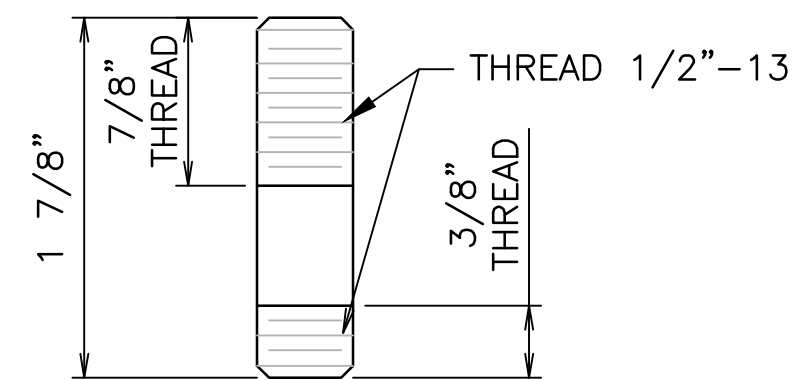
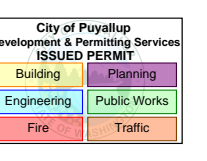
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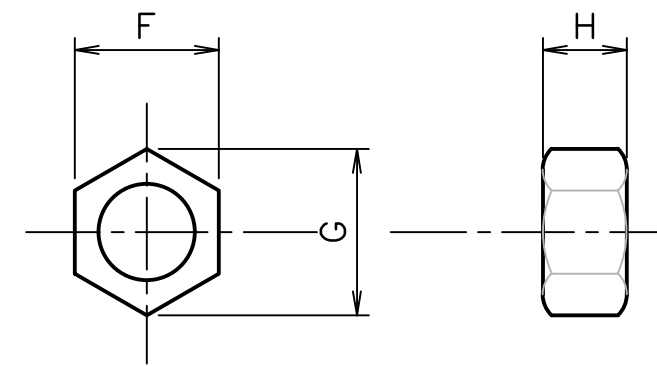
REV	DESCRIPTION	DATE	DRWN	CHKD	ENGR
REVISIONS					
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DRAWN BY	NAME	DATE	BIRDAIR 6461 MAIN STREET AMHERST, N.Y. 14221-7075, U.S.A. <small>TELEPHONE: 716-633-9500 FAX: 716-204-1234</small>		
CHECKED BY	MI	10/13/23			
ENGINEER	MI	10/13/23			
FINAL REVIEW	MI	10/13/23			
SCALE	DRAWING SIZE	DWG. NO.	INTERFACE FASTENERS SPECIFICATION WASHINGTON STATE FAIRGROUNDS		REV
	AS NOTED	23008 – 1800			

BILL OF MATERIAL

MARK No.	QTY. ORDERED	QTY. REQ'D.	DESCRIPTION (TYPE)	MATERIAL	FINISH (Coating)	WEIGHT (ea.)	REF. DWG.
S-2	40	26	STAINLESS 1/2" STUD	SS304	SS		
N-1	40	26	STAINLESS 1/2" HEX NUT	SS316	SS		
W-1	40	26	STAINLESS 1/2" FLAT WASHER	SS304	SS		
LW-1	40	40	STAINLESS 1/2" LOCK WASHER	SS304	SS		
SC-10	600	480	STAINLESS 1/4" SELF-DRILLING SCREW W/GASKET HEAD	SS304	SS		

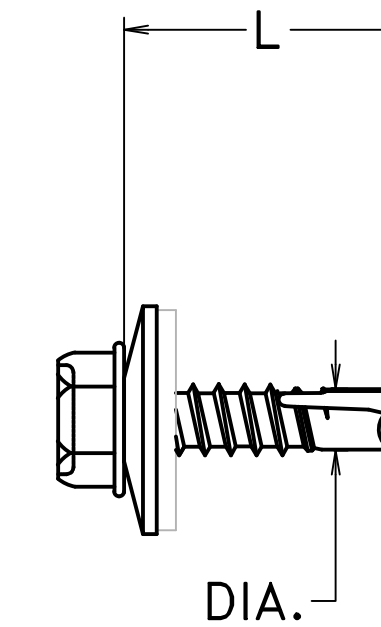


S-2
SCALE FULL



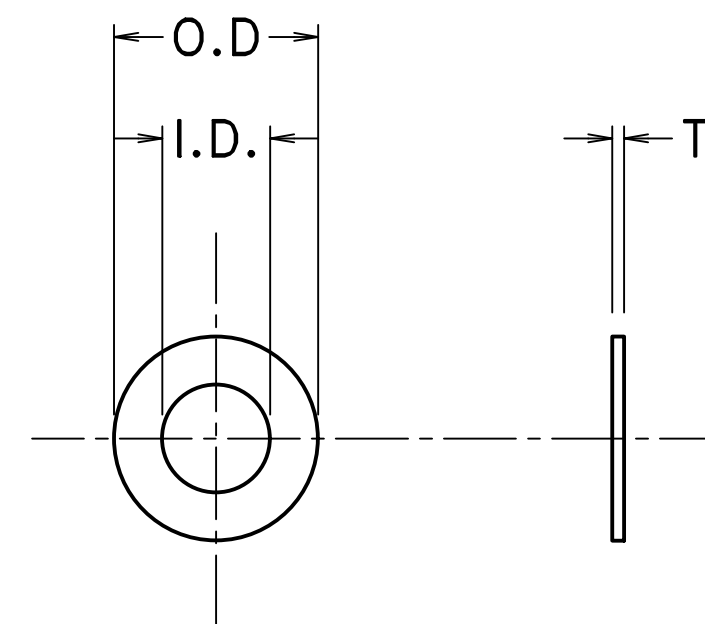
HEX NUT

MARK	DIA	F	G	H	THRD./IN.
N-1	1/2	3/4	7/8	7/16	1/2 - 13



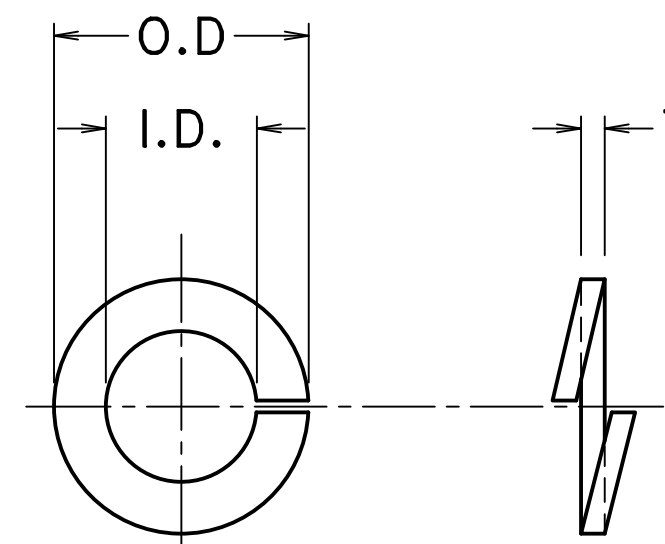
SELF-DRILLING SCREW W/BONDED SEALING WASHER
HEX WASHER HEAD

MARK	DIA	L	THRD./IN.
SC-10	1/4"	2	1/4-20



FLAT ROUND WASHER

MARK	DIA	I.D.	O.D.	T
W-1	1/2	9/16	1 1/16	1/8



SPLITLOCK WASHER

MARK	DIA	I.D.	O.D.	T
LW-1	1/2	1/2+	7/8	1/8

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