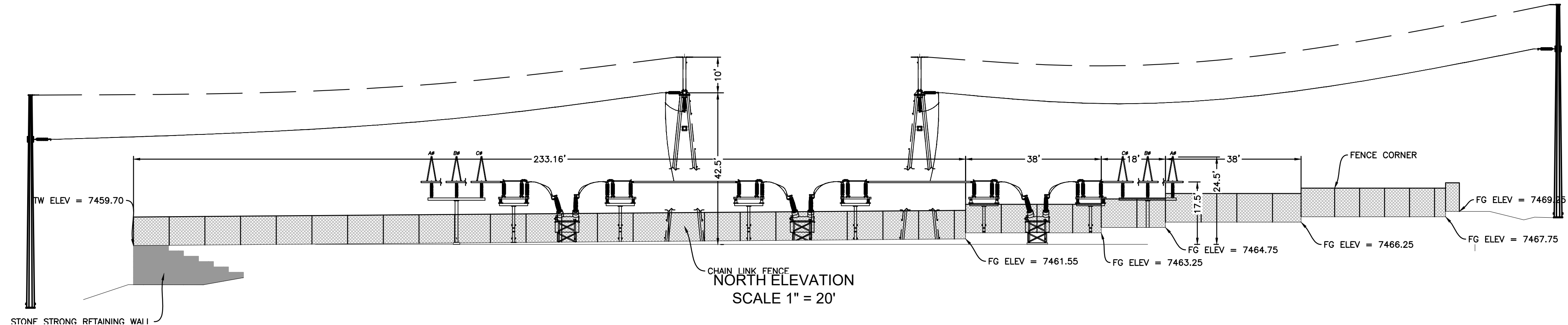
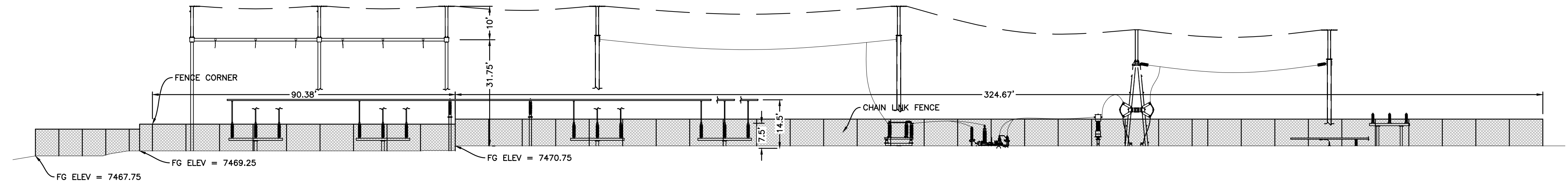


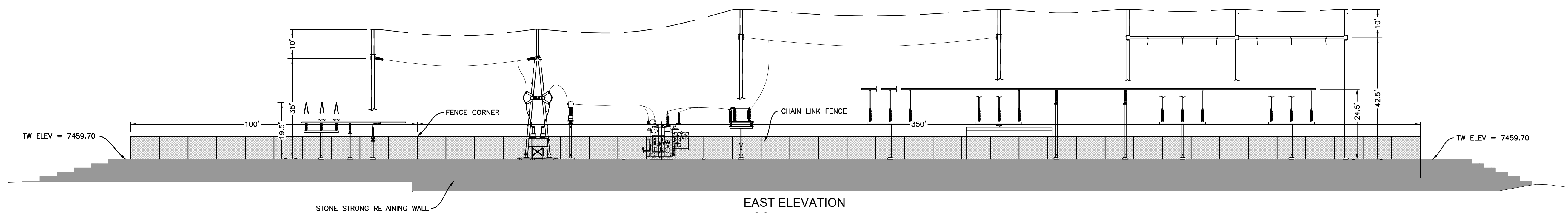
SOUTH ELEVATION
SCALE 1" = 20'



NORTH ELEVATION
SCALE 1" = 20'



WEST ELEVATION
SCALE 1" = 20'



EAST ELEVATION
SCALE 1" = 20'

Reference Drawings		Drawing Title	
Dwg. No.	Mfr.	Dwg. No.	Mfr.
Revision		Revision	
No.	Date	Dwn.	Appd.
7			
6			
5			
4			
3			
2			
1			
<p>FOX RUN SUBSTATION</p> <p>ELEVATION VIEWS</p> <p>TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED</p> <p>1100 W. 116th Ave. P.O. Box 33695 Denver, Colorado 80233 303-452-6111</p> <p>UPDATED BY: KENUTL 5/17/2022 4:56 PM Contract: .</p> <p>PATH: T:\Projects\Fox Run Substation\EL_Pano County\Dea\21036C_Elevations.dwg</p>			
<p>TRI-STATE Generation and Transmission Association, Inc. A Toulonville Energy Cooperative</p>		<p>1100 W. 116th Ave. P.O. Box 33695 Denver, Colorado 80233 303-452-6111</p>	
Dwn:	TMC	Date:	04/27/22
Appd:		Date:	
ELEVATIONS			

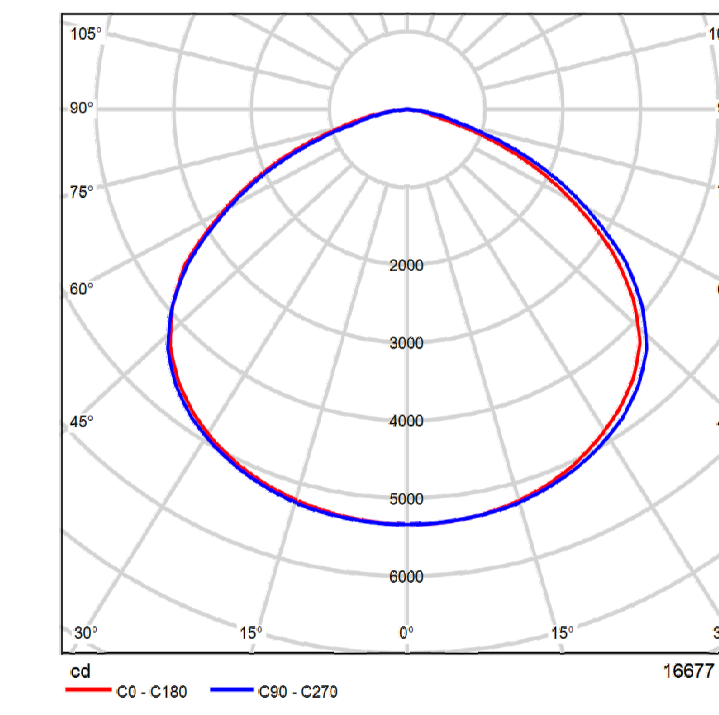
Luminaire list

Φ_{total} 333540 lm	P_{total} 3040.0 W	Luminous efficacy 109.7 lm/W
-----------------------------	-------------------------	---------------------------------

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
20	Appleton	I/AMLGL8W	AREAMASTER LED 19500 LUMENS NEMA 7X7 CLEAR GLASS	152.0 W	16677 lm	109.7 lm/W



Article No.	I/AMLGL8WG6
P	152.0 W
$\Phi_{luminaire}$	16677 lm
Luminous efficacy	109.7 lm/W
CCT	3114 K
CRI	83



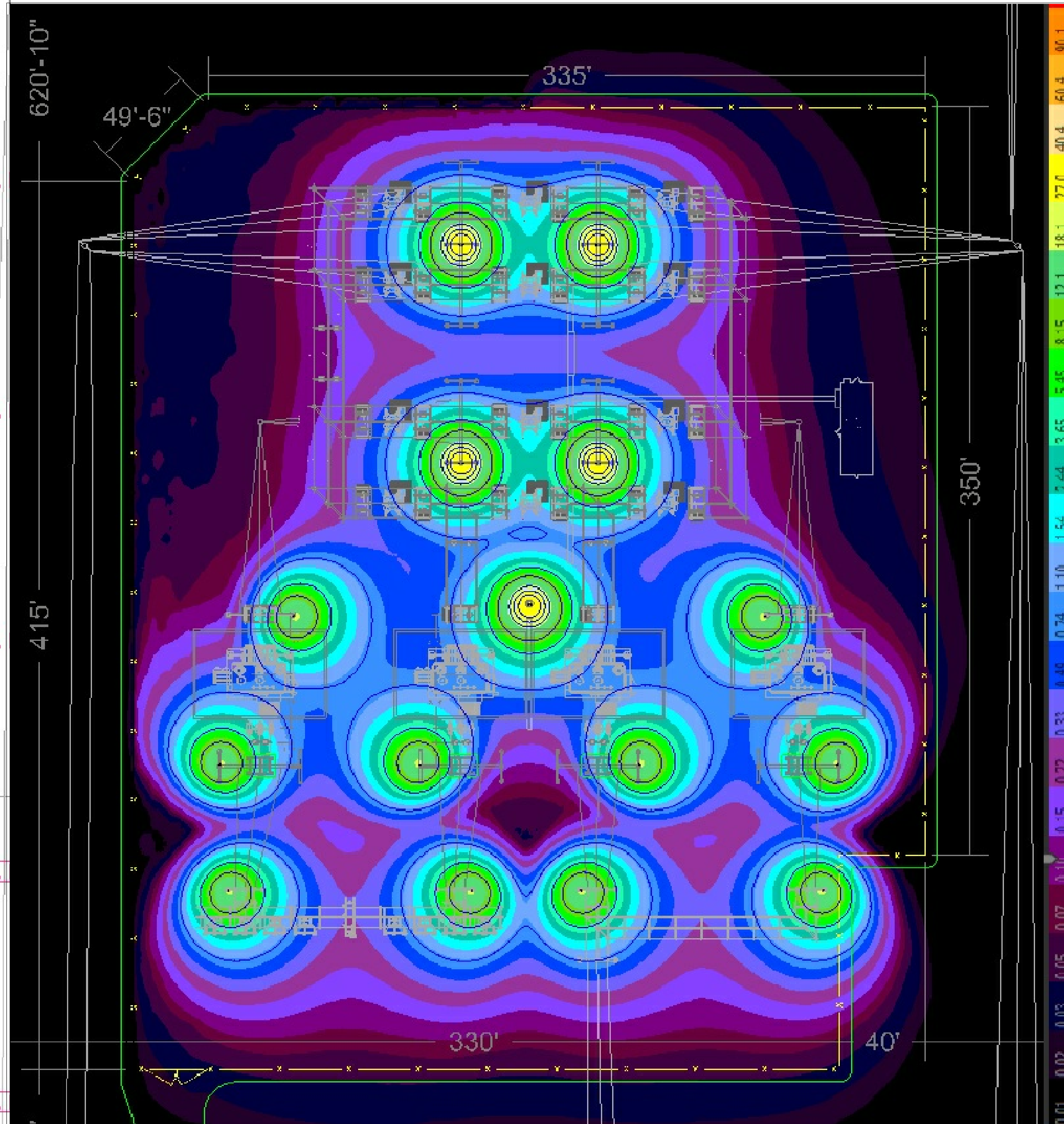
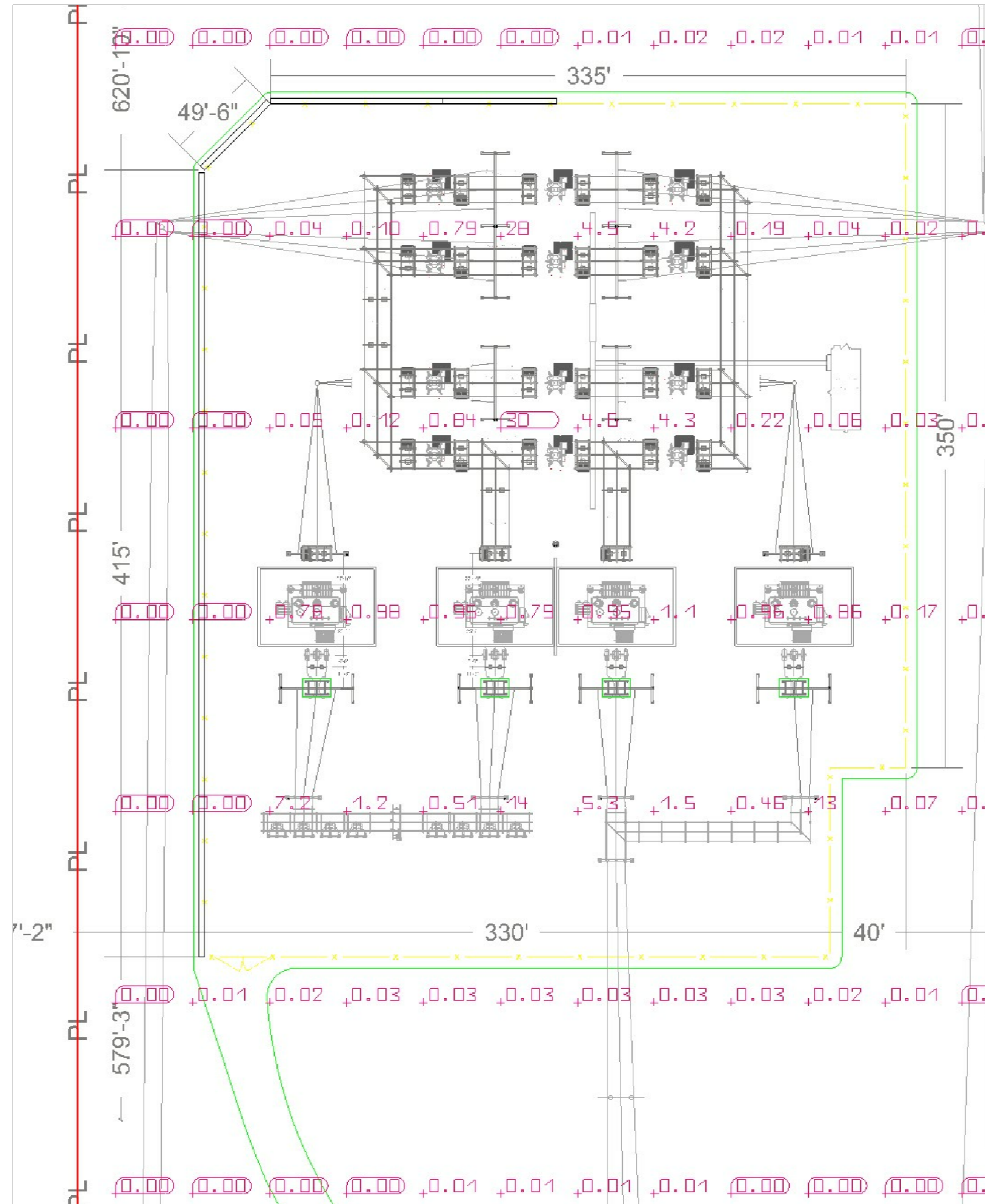
Polar LDC

Areamaster LED Gen2 Flood Light Series
 Pole Mount
 19500 LUMENS, 3000 K CCT, NEMA 7X7
 Yoke Mount
 BU-120-277 Vac, 50/60Hz,
 BH-347-480 Vac, 50/60Hz
 3/4" NPT Hub
 7 x7 OPTICS
 Warm White
 CLEAR GLASS

Class I, Division 2, Groups A, B, C, D
 Class I, Zone 2 GROUP IIC
 TYPE 3R, 4, 4X
 IP66/67
 Suitable for Use in Wet Locations
 Marine Outside (Salt Water)

NOTES:

1. THE TILT ANGLE OF THE LIGHTS SHALL BE AT 20-DEGREE ABOVE HORIZON PLANE ANGLED TOWARDS THE GROUND SURFACE.
2. LIGHTS SHALL BE MOUNTED 15- FEET ABOVE GRADE.
3. CALCULATIONS SHOWN ARE MAINTAINED HORIZONTAL FOOTCANDELES TAKEN AS SHOWN IN CALCULATIONS SUMMARY.
4. FIXTURE ORIENTATION IS SUCH THAT 0 IS TO THE RIGHT OF DRAWING AND 90 IS TO THE TOP OF THE DRAWING.
5. LUMINARY LUMENS EQUAL LUMENS LEAVING LUMINARY WITH EFFICIENCY CONSIDERED.



Drawing Title		Reference Drawings	
Mfr.		M.F.	
Dwg. No.		Revision	
No.	Date	Dwn.	Appd.
7			
6			
5			
4			
3			
2			
1			

FOX RUN SUBSTATION
 1157/69712.47KV
LIGHTING PLAN
 TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED
 UPDATED BY: REVULT 4/27/22 9:38 AM Contact: D465

TRI-STATE
 Generation and Transmission Association, Inc.
 A Touchstone Energy Cooperative
 1100 W. 116th Ave.
 P.O. Box 33695
 Denver, Colorado 80233
 303-452-6111
 PATH: A:\Projects\Year_Run_Substation\Lighting_Plan.dwg

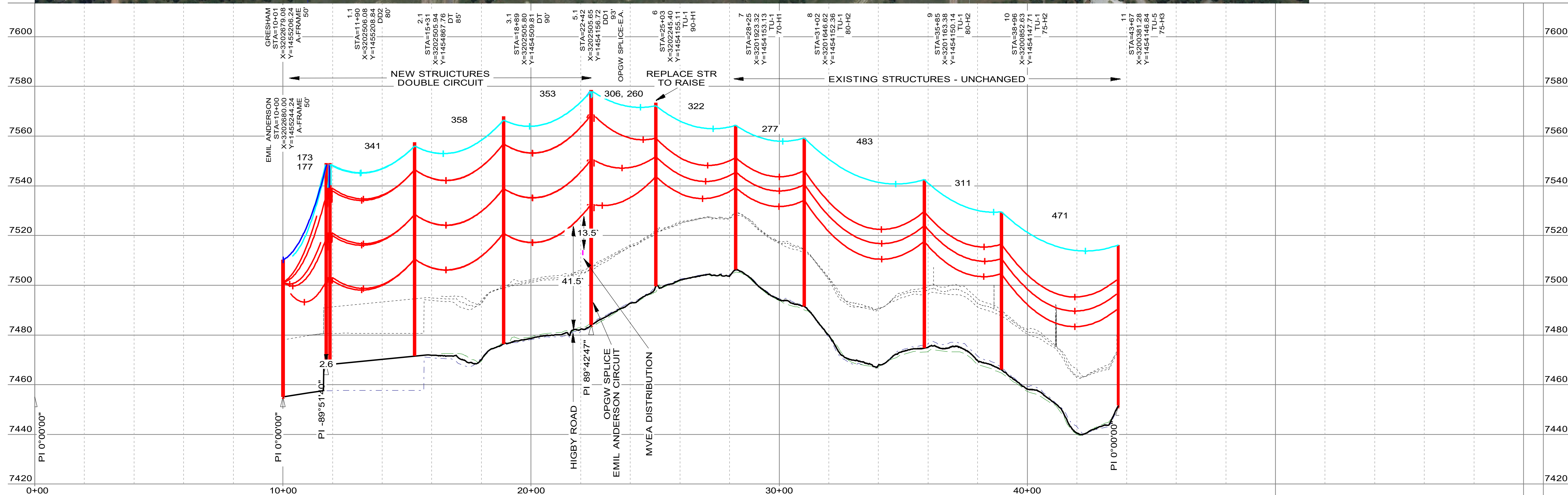
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KGU	01-13-22
Appd:	Date:
KGU	04-05-22

Light Plan



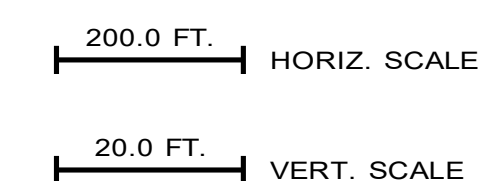
Preliminary

4/14/2022



- EMIL ANDERSON - 1.1, AFL OPGW DNO-7054 CC-37/47/547, RULING SPAN 179 (FT), TENSION 150 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F INITIAL 146 (LBS)
- EMIL ANDERSON - 1.1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 183 (FT), TENSION 350 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) INITIAL 318 (LBS)
- GRESHAM - 1.1, AFL OPGW DNO-7054 CC-37/47/547, RULING SPAN 167 (FT), TENSION 150 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120 DEG F MAX SAG 145 (LBS)
- GRESHAM - 1.1, 3/8 INCH HS 7 STRANDS STEEL, RULING SPAN 172 (FT), TENSION 150 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 144 (LBS)
- GRESHAM - 1.1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 163 (FT), TENSION 350 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) MAX SAG 311 (LBS)
- 1.1 - 5.1, AFL OPGW DNO-7054 CC-37/47/547, RULING SPAN 352 (FT), TENSION 1000 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 757 (LBS)
- 1.1 - 5.1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 348 (FT), TENSION 2200 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 212 DEG. F MAX SAG 1183 (LBS)
- 1.1 - 5.1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 353 (FT), TENSION 2200 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) INITIAL 1199 (LBS)
- 5.1 - 11, AFL OPGW DNO-7054 CC-37/47/547, RULING SPAN 388 (FT), TENSION 1930 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP FE
- 5.1 - G1, 3/8 INCH EHS 7 STRANDS STEEL, RULING SPAN 308 (FT), TENSION 975 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 721 (LBS)
- 5.1 - G1, AFL OPGW DNO-7054 CC-37/47/547, RULING SPAN 295 (FT), TENSION 975 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 695 (LBS)
- 5.1 - 11, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 387 (FT), TENSION 2505 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) MAX SAG FE
- 5.1 - G1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 295 (FT), TENSION 2086 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 1050 (LBS)

NOTES:
 CLEARANCE LINE SHOWN AT 23.0'
 COORDINATES IN CO CENTRAL NAD83
 COORDINATES IN US-SURVEY FOOT.



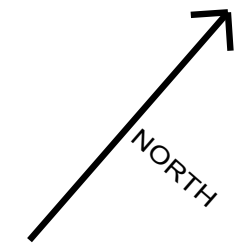
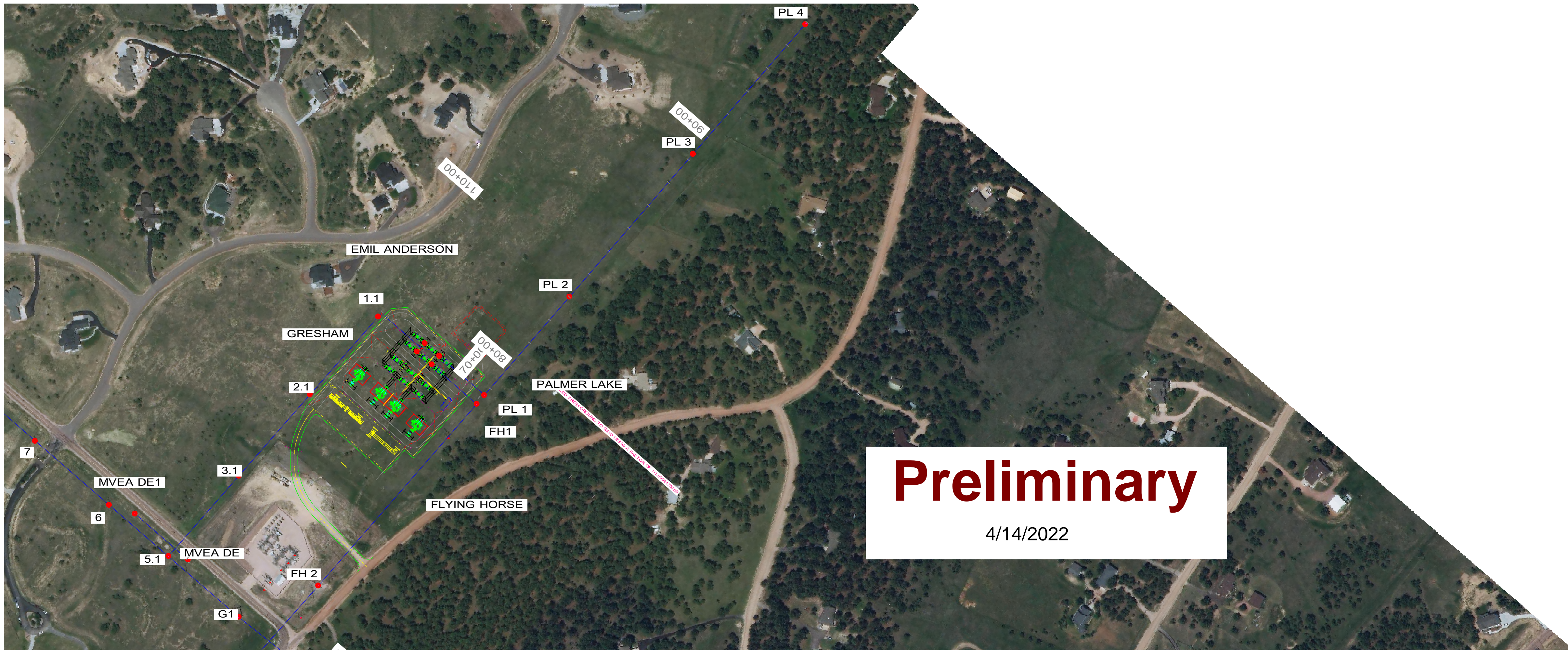
FOX RUN - FOX RUN TAP
 115 KV

PLAN AND PROFILE
 WO: 50002438/50032556
 TRI-STATE GENERATION & TRANSMISSION
 ASSOCIATION, INCORPORATED

DWN: JTL	DATE: 3/24/22
APPD:	DATE:

T2301-G-01-001

NO.	DATE	DWN.	APPD.	REVISION	M.F.	DWG. NO.	M.FGR.	DRAWING TITLE	REFERENCE DRAWINGS
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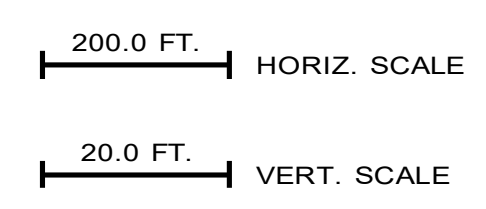


Preliminary
4/14/2022

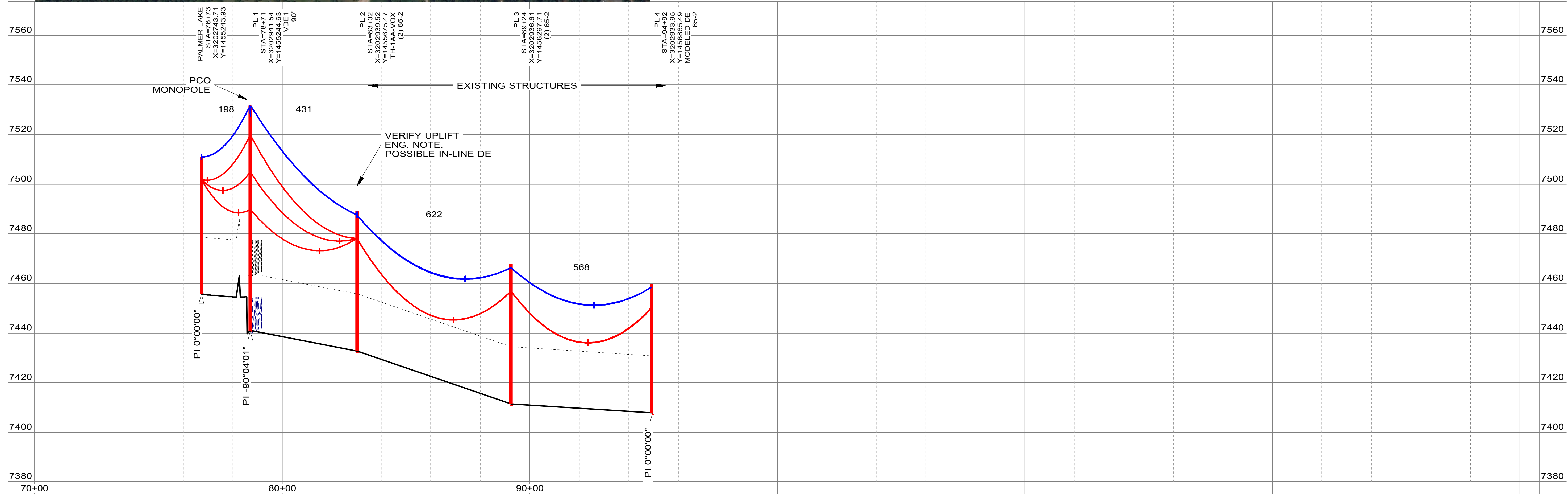
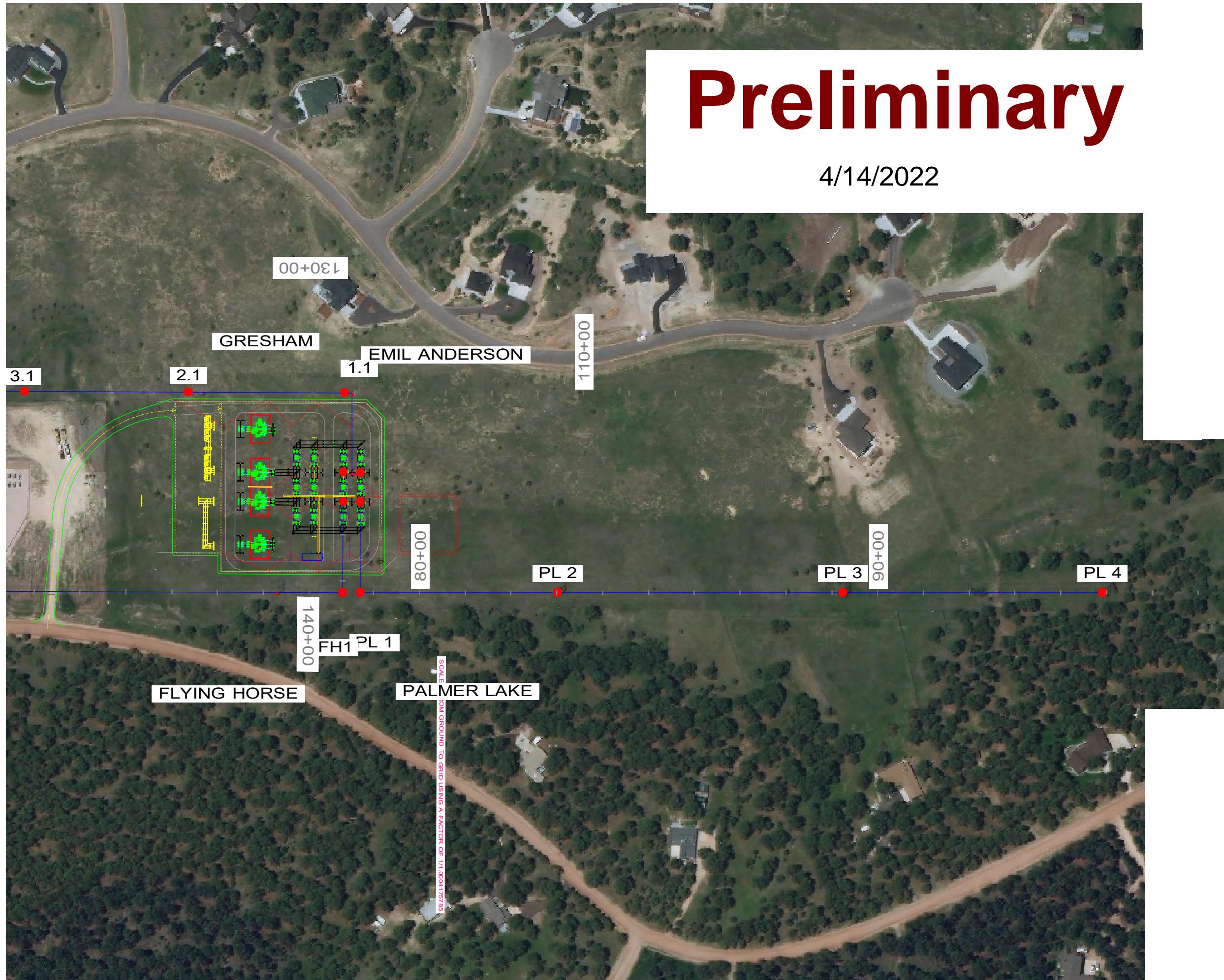


- 5.1 - G1, 3/8 INCH EHS 7 STRANDS STEEL, RULING SPAN 308 (FT), TENSION 975 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 721 (LBS)
- 5.1 - G1, AFL OPGW DNO-7054 CC-37/47/547, RULING SPAN 295 (FT), TENSION 975 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 695 (LBS)
- 5.1 - G1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 295 (FT), TENSION 2086 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 1050 (LBS)
- G1 - P2, 3/8 INCH HS 7 STRANDS STEEL, RULING SPAN 368 (FT), TENSION 1057 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120 DEG F CREEP 811 (LBS)
- G1 - P2, AFL OPGW 8 FIBER ALUMACORE AC-53/449, RULING SPAN 380 (FT), TENSION 1189 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120 DEG F CREEP 849 (LBS)
- G1 - P2, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 374 (FT), TENSION 2234 (LBS) AT 60 (DEG F) CREEP, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 1336 (LBS)

NOTES:
 CLEARANCE LINE SHOWN AT 23.0'
 COORDINATES IN CO CENTRAL NAD83
 COORDINATES IN US-SURVEY FOOT.

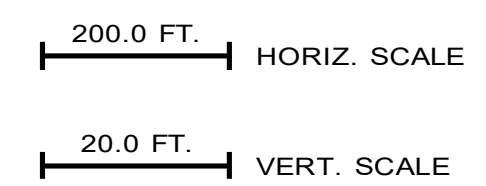


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APPD.	APPD.	APPD.	APPD.	APPD.	APPD.	APPD.	DATE
M.F.	M.F.	M.F.	M.F.	M.F.	M.F.	M.F.	DATE
M.FGR.	M.FGR.	M.FGR.	M.FGR.	M.FGR.	M.FGR.	M.FGR.	DATE
DWG. NO.	DWG. NO.	DWG. NO.	DWG. NO.	DWG. NO.	DWG. NO.	DWG. NO.	DATE
DRAWING TITLE	DRAWING TITLE	DRAWING TITLE	DRAWING TITLE	DRAWING TITLE	DRAWING TITLE	DRAWING TITLE	DATE
FOX RUN - FOX RUN TAP 115 KV PLAN AND PROFILE WO: 50002438/50032556 TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED							
UPDATED BY: _____ CONTRACT: _____							
T2301-G-01-002							



PALMER LAKE - PL 1, 3/8 INCH HS 7 STRANDS STEEL, RULING SPAN 197 (FT), TENSION 300 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F MAX SAG 256 (LBS)
 PALMER LAKE - PL 1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 198 (FT), TENSION 750 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) MAX SAG 547 (LBS)
 PL 1 - PL 4, 1/2 INCH EHS 7 STRANDS STEEL, RULING SPAN 557 (FT), TENSION 2319 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 1934 (LBS)
 PL 1 - PL 4, 1/2 INCH EHS 7 STRANDS STEEL, RULING SPAN 557 (FT), TENSION 2275 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 1904 (LBS)
 PL 1 - PL 4, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 557 (FT), TENSION 2253 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 1525 (LBS)

NOTES:
 CLEARANCE LINE SHOWN AT 23.0'
 COORDINATES IN CO CENTRAL NAD83
 COORDINATES IN US-SURVEY FOOT.



REFERENCE DRAWINGS		REVISION		CONTRACT	
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		6		JTL	
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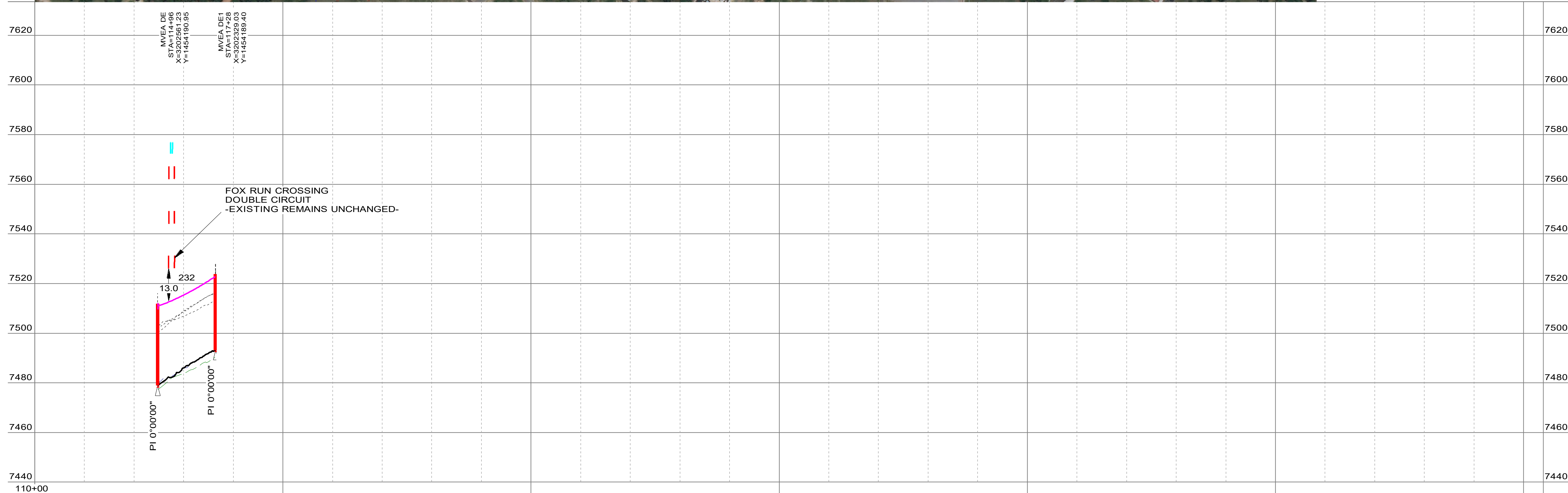
ISSUE PER: CPN-0449 AND CPN-0458
 FOX RUN - FOX RUN TAP
 115 KV
 PLAN AND PROFILE
 WO: 50002438/50032556
 TRI-STATE GENERATION & TRANSMISSION
 ASSOCIATION, INCORPORATED

DWN: JTL DATE: 3/24/22
 APPD: DATE:

T2301-G-01-003



Preliminary
4/14/2022



MVEA DE - MVEA DE1, 266.8 KCMIL 26/7 STRANDS PARTRIDGE ACSR - ADAPTED FROM 1970'S PUBLICLY AVAILABLE DATA, RULING SPAN 232 (FT), TENSION 4000 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 60 DEG. F MAX SAG 2684 (LBS)

NOTES:
CLEARANCE LINE SHOWN AT 23.0'
COORDINATES IN CO CENTRAL NAD83
COORDINATES IN US-SURVEY FOOT.

200.0 FT. HORIZ. SCALE

20.0 FT. VERT. SCALE

NO.	DATE	DWN.	APPD.	REVISION	M.F.	DWG. NO.	M.FGR.	DRAWING TITLE	REFERENCE DRAWINGS
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1	4/14/22	JTL	JTL						

FOX RUN - FOX RUN TAP
115 KV

PLAN AND PROFILE
WO: 50002438/50032556
TRI-STATE GENERATION & TRANSMISSION
ASSOCIATION, INCORPORATED

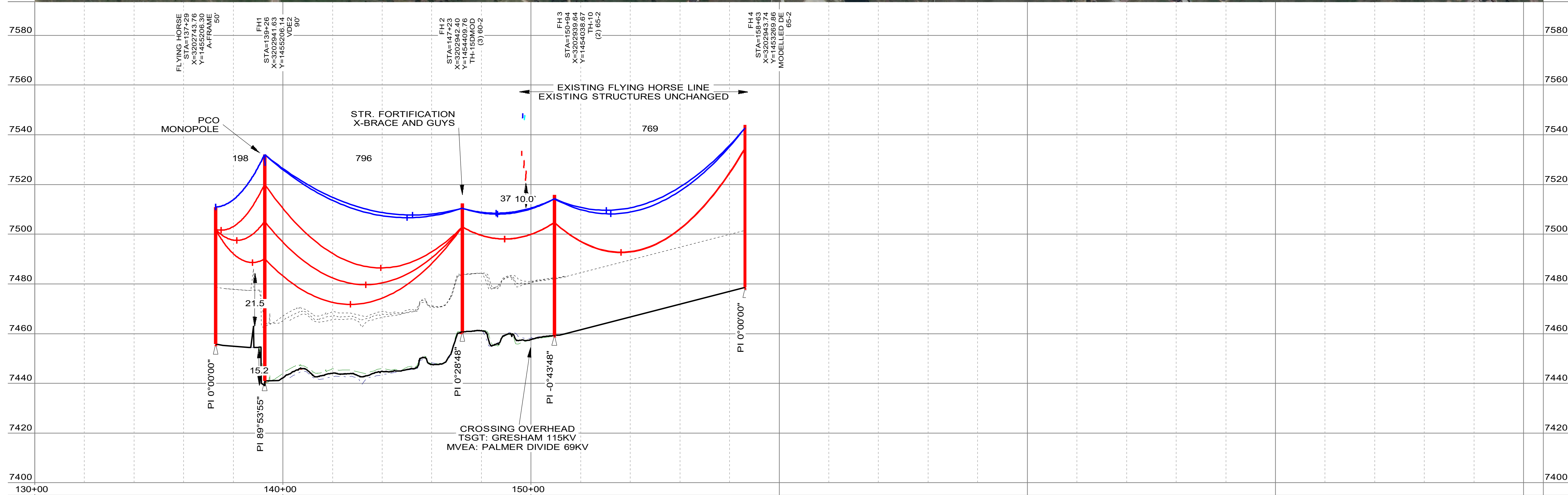
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DWN: JTL	DATE: 3/24/22
APPD: JTL	DATE:

T2301-G-01-004

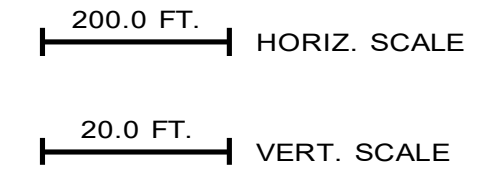


Preliminary
4/14/2022



- FLYING HORSE - FH1, 3/8 INCH HS 7 STRANDS STEEL, RULING SPAN 197 (FT), TENSION 300 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 266 (LBS)
- FLYING HORSE - FH1, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 197 (FT), TENSION 750 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 548 (LBS)
- FH1 - FH 2, 1/2 INCH EHS 7 STRANDS STEEL, RULING SPAN 796 (FT), TENSION 4058 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 3356 (LBS)
- FH1 - FH 2, 1/2 INCH EHS 7 STRANDS STEEL, RULING SPAN 796 (FT), TENSION 4616 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 3781 (LBS)
- FH1 - FH 2, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 795 (FT), TENSION 3267 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 2140 (LBS)
- FH 2 - FH 4, 5/8 INCH EHS 7 STRANDS STEEL, RULING SPAN 666 (FT), TENSION 4616 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 3843 (LBS)
- FH 2 - FH 4, 5/8 INCH EHS 7 STRANDS STEEL, RULING SPAN 666 (FT), TENSION 4058 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED 120 DEG F CREEP 3454 (LBS)
- FH 2 - FH 4, 477 KCMIL 26/7 STRANDS HAWK ACSR, RULING SPAN 666 (FT), TENSION 3267 (LBS) AT 60 (DEG F) INITIAL, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 1966 (LBS)

NOTES:
CLEANANCE LINE SHOWN AT 23.0'
COORDINATES IN CO CENTRAL NAD83
COORDINATES IN US-SURVEY FOOT.



NO.	DATE	DWN.	APPD.	REVISION	M.F.	DWG. NO.	M.FGR.	DRAWING TITLE	REFERENCE DRAWINGS
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6									
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FOX RUN - FOX RUN TAP
115 KV

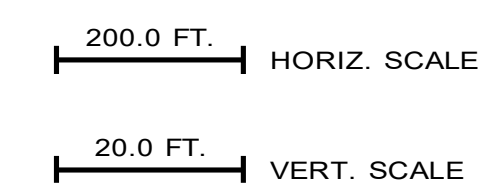
PLAN AND PROFILE
WO: 50002438/50032556
TRI-STATE GENERATION & TRANSMISSION
ASSOCIATION, INCORPORATED

UPDATED BY: _____ CONTRACT: _____



G1 - P2, 3/8 INCH HS 7 STRANDS STEEL, RULING SPAN 368 (FT), TENSION 1057 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120 DEG F CREEP 811 (LBS)
 G1 - P2, AFL OPGW 8 FIBER ALUMACORE AC-53/449, RULING SPAN 380 (FT), TENSION 1189 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120 DEG F CREEP 849 (LBS)
 G1 - P2, 477 KCMIL 267 STRANDS HAWK ACSR, RULING SPAN 374 (FT), TENSION 2234 (LBS) AT 60 (DEG F) CREEP, DISPLAYED MAXIMUM OPERATING TEMP (212°F) CREEP 1336 (LBS)

NOTES:
 CLEARANCE LINE SHOWN AT 23.0'
 COORDINATES IN CO CENTRAL NAD83
 COORDINATES IN US-SURVEY FOOT.



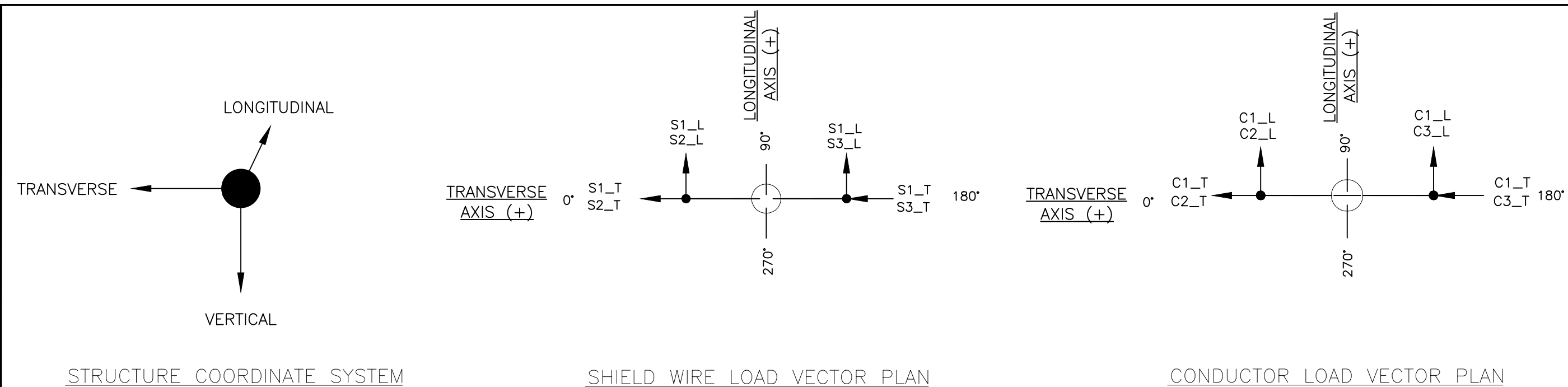
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				7				7	

ISSUE PER CON-049 AND CON-048

FOX RUN - FOX RUN TAP
 115 KV
 PLAN AND PROFILE
 WO: 50002438/50032556
 TRI-STATE GENERATION & TRANSMISSION
 ASSOCIATION, INCORPORATED

UPDATED BY: JTL DATE: 3/24/22
 APPD: JTL DATE:

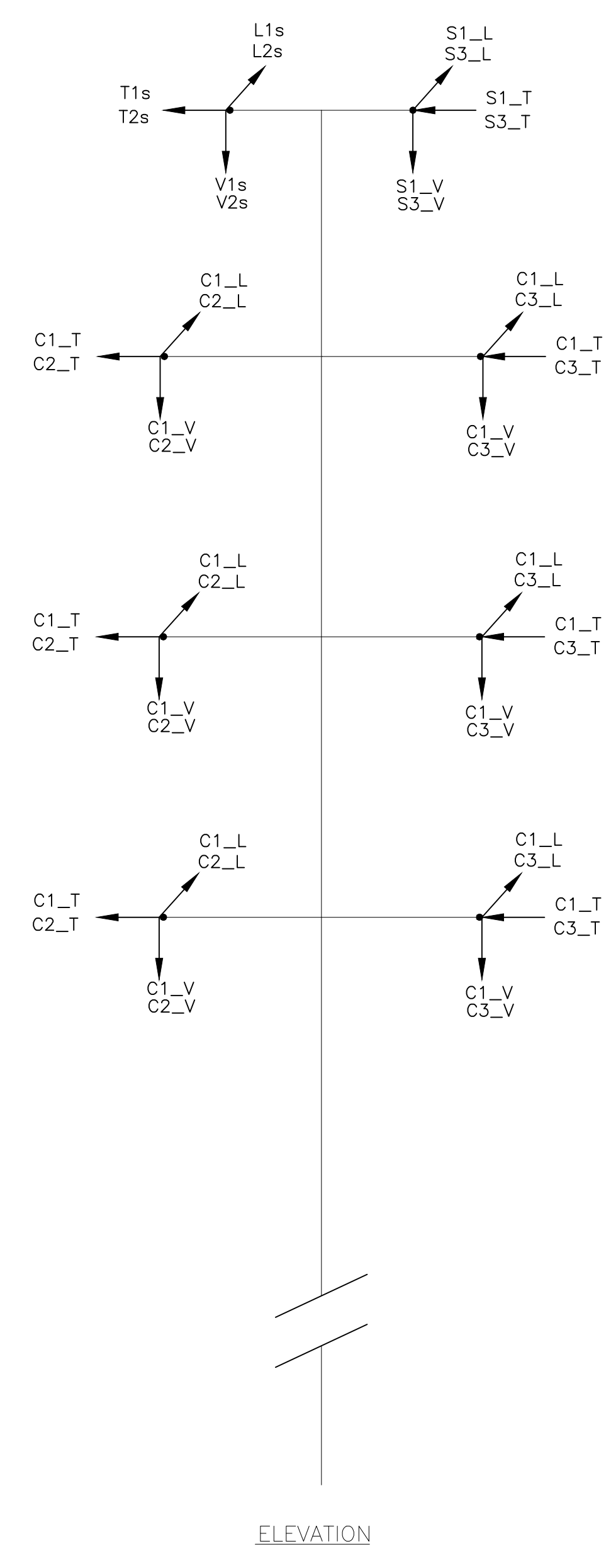
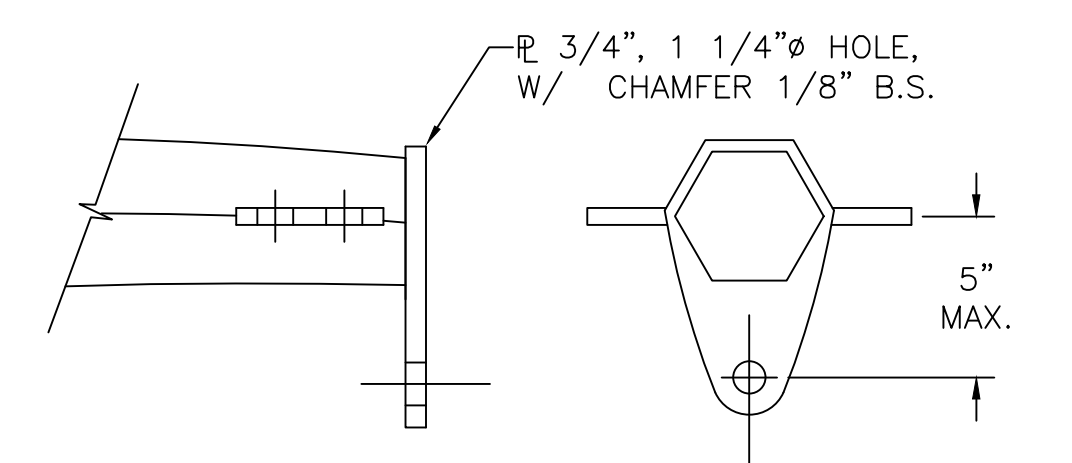
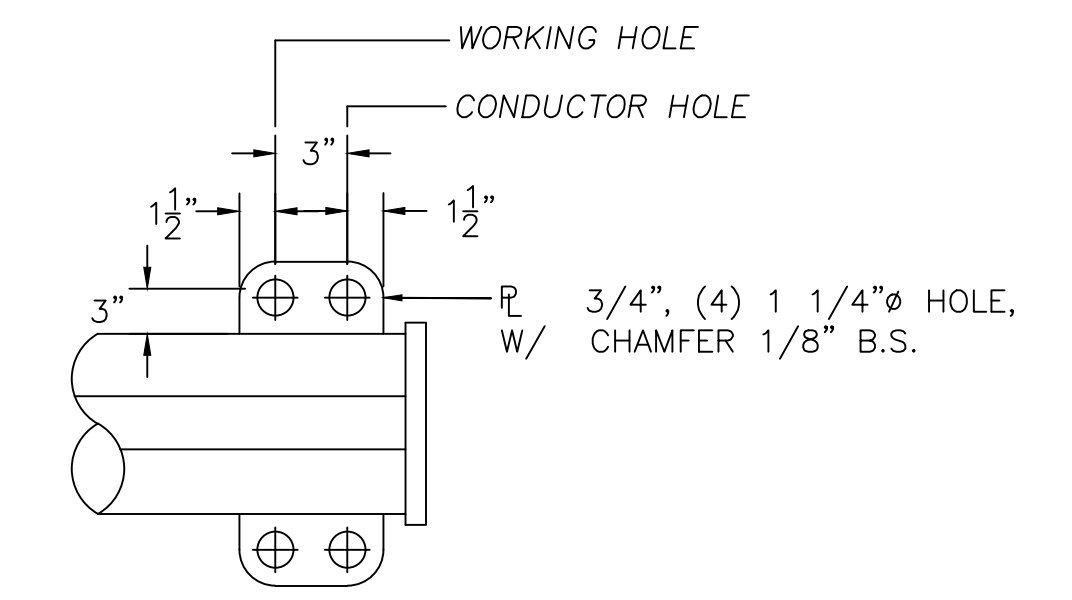
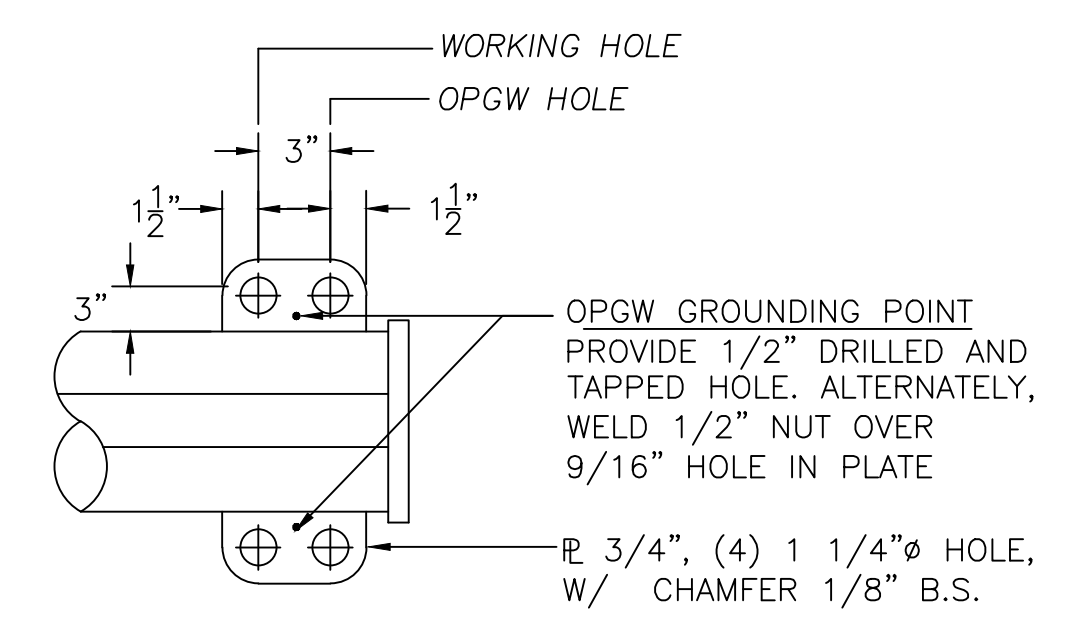
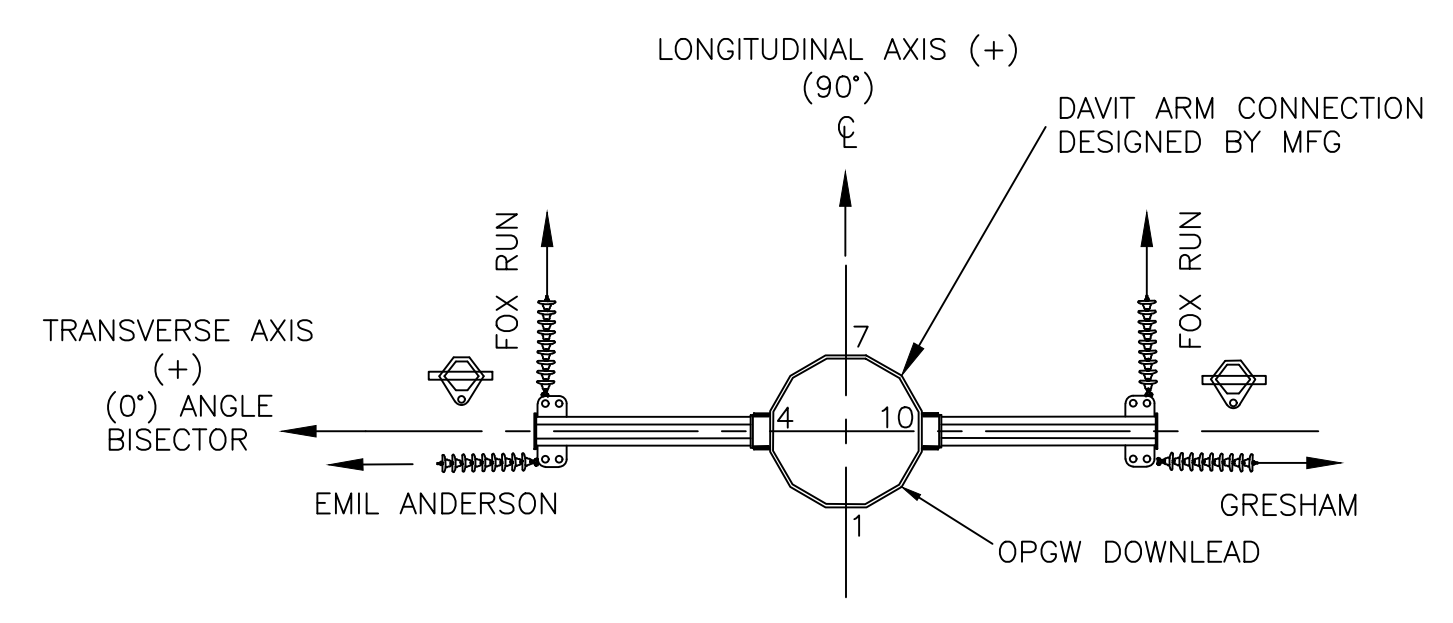
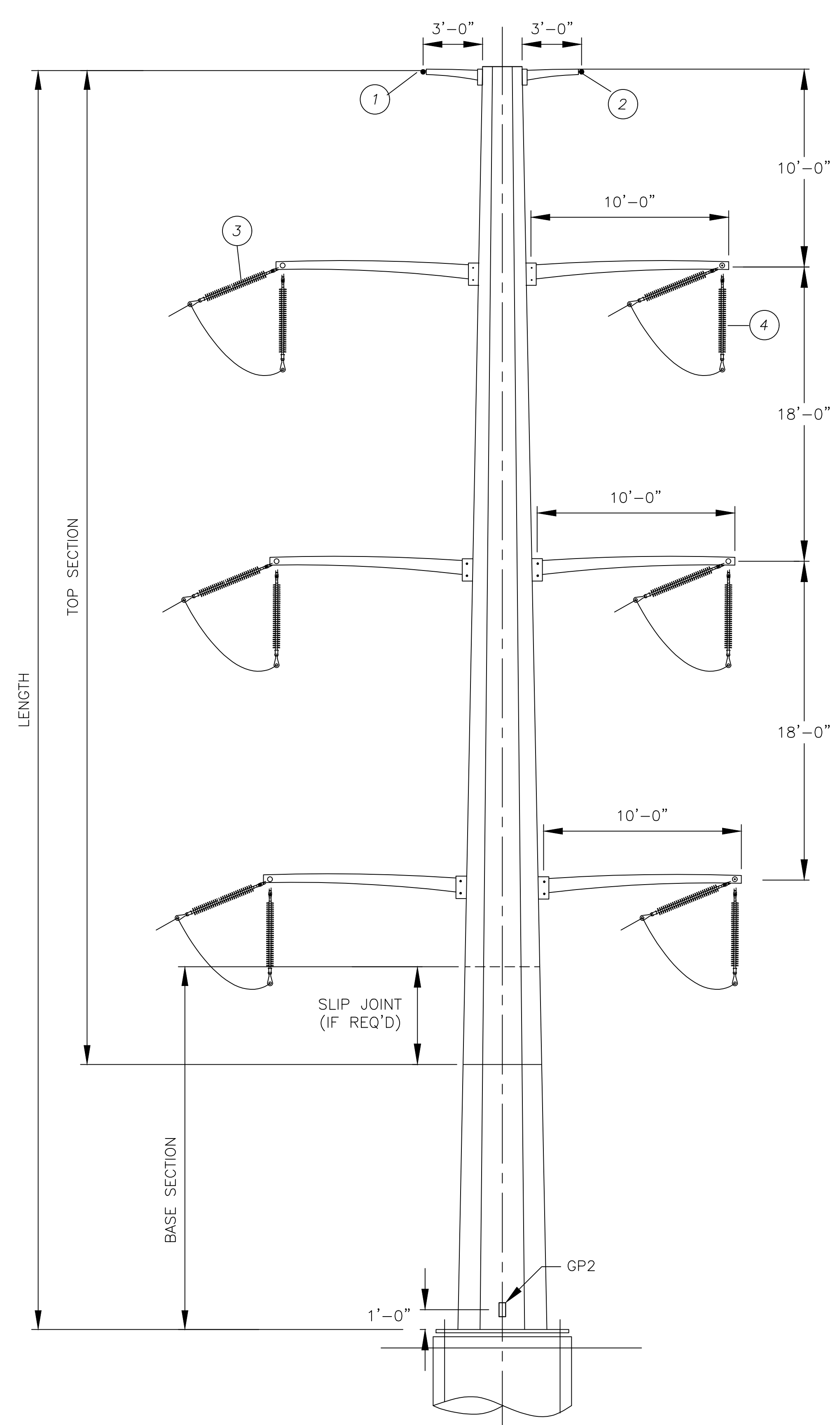
T2301-G-01-006



SHIELD WIRE STRUCTURE LOADS WITH OLF (KIPS)															
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			S1 (Fox Run Sub)			S2 (Emil Anderson)			S3 (Gresham)		
				WIND	TENS.	VERT.	V	T	L	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.0	0.8	7.0	0.7	8.0	0.5	1.5	-10.4	-0.8
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.4	0.4	3.1	0.5	3.8	0.5	1.4	-10.5	-0.6
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.4	0.3	3.5	0.4	4.0	0.5	0.6	-4.7	-0.4
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.0	-0.1	5.3	0.8	6.0	0.1	1.5	-8.3	0.3
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.5	0.5	3.9	0.5	4.3	0.6	0.7	-5.3	-0.6
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.4	0.2	1.9	0.4	2.7	0.4	0.5	-3.4	0.3
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.5	0.4	5.3	0.5	6.0	0.4	0.9	-7.5	-0.4
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.5	-0.2	3.8	0.4	3.7	0.2	0.7	-4.2	0.3
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.4	-0.3	3.0	0.5	4.0	0.3	0.9	-5.5	0.5
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0.0	0.0	0.0	0.7	8.0	0.5	1.5	-10.4	-0.8
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0.7	0.5	7.0	0.0	0.0	0.0	1.5	-10.4	-0.8
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.4	-0.4	4.3	0.5	5.8	0.3	0.9	-5.6	0.4

CONDUCTOR STRUCTURE LOADS WITH OLF (KIPS)															
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			C1 (Fox Run Sub)			C2 (Emil Anderson)			C3 (Gresham)		
				WIND	TENS.	VERT.	V	T	L	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.5	0.8	10.2	1.4	10.3	0.8	1.3	-9.5	-0.8
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.7	0.6	5.0	0.7	4.6	0.7	0.8	-4.2	-0.4
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.6	0.4	5.0	0.6	5.0	0.8	0.7	-4.3	-0.6
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.3	-0.4	7.3	1.3	7.6	0.6	1.5	-6.8	0.7
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.7	0.7	5.5	0.6	5.5	1.0	0.8	-4.8	-0.5
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.6	0.2	3.1	0.6	3.2	0.4	0.6	-2.9	0.3
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.8	0.3	7.7	0.7	7.9	0.7	0.9	-7.1	-0.6
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.8	-0.3	5.5	0.6	4.7	0.4	0.6	-4.3	0.5
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.6	-0.4	4.7	0.8	5.5	0.5	0.9	-4.9	0.5
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0.0	0.0	0.0	1.4	10.3	0.8	1.3	-9.5	-0.8
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.2	0.6	10.2	0.0	0.0	0.0	1.3	-9.5	-0.8
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.8	-0.5	7.5	0.8	7.5	0.7	1.0	-6.9	0.7

STRUCTURE #	HEIGHT (FT)	ACTUAL LINE ANGLE
5.1	95'-0"	0°



Preliminary

4/14/2022

DESIGN DATA:

477 KCMIL ACSR 26/7 HAWK CONDUCTOR (ALL CONDUCTOR)
 DNO-7054 OPGW (ALL OPGW)
 WIND SPAN = - (AHEAD); WIND SPAN = - (BACK);
 WEIGHT SPAN = -DESIGN LINE ANGLE
 (80-95 DEGREE LEFT, 80-90 DEGREE RIGHT)
 SOLID ICE DENSITY OF 57 LBS/FT³

NOTES:

- ALL DESIGN AND FABRICATION SHALL BE IN ACCORDANCE WITH TRI-STATE "TRANSMISSION LINE TAPERED TUBULAR STEEL POLE STRUCTURES" SPECIFICATION.
- LOADS ARE ULTIMATE VALUES AND INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- STRUCTURE AND ATTACHMENTS SHALL BE DESIGNED FOR THE SIMULTANEOUS APPLICATION OF DEAD LOAD OF THE STRUCTURE INCLUDING THE APPROPRIATE LOAD FACTOR, WIND ON THE STRUCTURE, AND WIRE LOADS FOR EACH LOAD CASE.
- WIND PRESSURES SHOWN ON LOAD CASE TABLE ARE IN PSF AND BASED ON A SHAPE FACTOR OF 1.0 FOR 12-SIDED SECTIONS. WIND PRESSURES INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- LIMIT POLE DEFLECTION TO 2% OF STRUCTURE HEIGHT FOR DEFLECTION LOAD CASE. ALL WIRES INTACT. CAMBER MAY BE UTILIZED TO COMPLY WITH THIS REQUIREMENT.
- APPLY WIND ON STRUCTURE WHICH RESULTS IN THE MOST SEVERE EFFECT.
- STRUCTURE TO BE DESIGNED FOR INTACT AND FULL DEADEND LOADING CONDITIONS FOR LOAD CASES 1 - 5.
- MATERIAL SHALL BE WEATHERING STEEL.
- DAVIT ARMS SHALL ATTACH TO THE POLE WITH A BOLTED CONNECTION TO WELDED THROUGH ARM BRACKETS AND DESIGNED BY THE MANUFACTURER.
- OPGW SPLICE LOCATED ON THIS POLE. PROVIDE DOWNLEAD CLAMP BRACKETS AND SPLICE CASE MOUNTING BRACKETS.
- NAME PLATE SHALL BE WELDED ON ALL STRUCTURES. TEXT MUST BE PERMANENTLY LEGIBLE, AND MUST INCLUDE MANUFACTURER'S NAME, DATE OF FABRICATION, STRUCTURE NUMBER, COMPLETE STRUCTURE LENGTH, COMPLETE STRUCTURE WEIGHT, AND GROUND LINE MOMENT CAPACITY IN KIP-FEET.
- SEE DWG. T2301-G-13-0XX FOR STEEL DETAILS.
- LOCATE DETAIL 2 GROUNDING PADS ON BOTH SIDES OF ALL CONNECTIONS AND SPLICES.
- POLE SECTIONS SHALL HAVE BOLTED FLANGE CONNECTIONS ON THIS POLE ONLY.
- ANCHOR BOLTS SHALL BE EQUALLY SPACED AROUND THE BASE PLATE WITH 2.5" MINIMUM SPACE BETWEEN BOLTS.
- ANCHOR BOLT TEMPLATE AND EACH POLE SECTION SHALL BE MARKED ON THE ANGLE BISECTOR WITH AN OBVIOUS MARKING METHOD AIDING CONSTRUCTION.
- PROVIDE LADDER CLIPS FOR FULL LENGTH OF POLE AND AND WORKING CLIPS FOR THE TOP 55' OF THE POLE.
- AERIAL NUMBER SIGN REQUIRED, SEE DETAIL.
- TOP DIAMETER: 12" MINIMUM; ANCHOR BOLT DIAMETER: 86" MAX; TAPER: 0.45 INCH PER FT MAXIMUM. (ALTERNATIVES MAY BE PROPOSED.)

FOX RUN - FOX RUN TAP

115KV DD1

OUTLINE AND DESIGN DOUBLE CIRCUIT AND DEADEND TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED

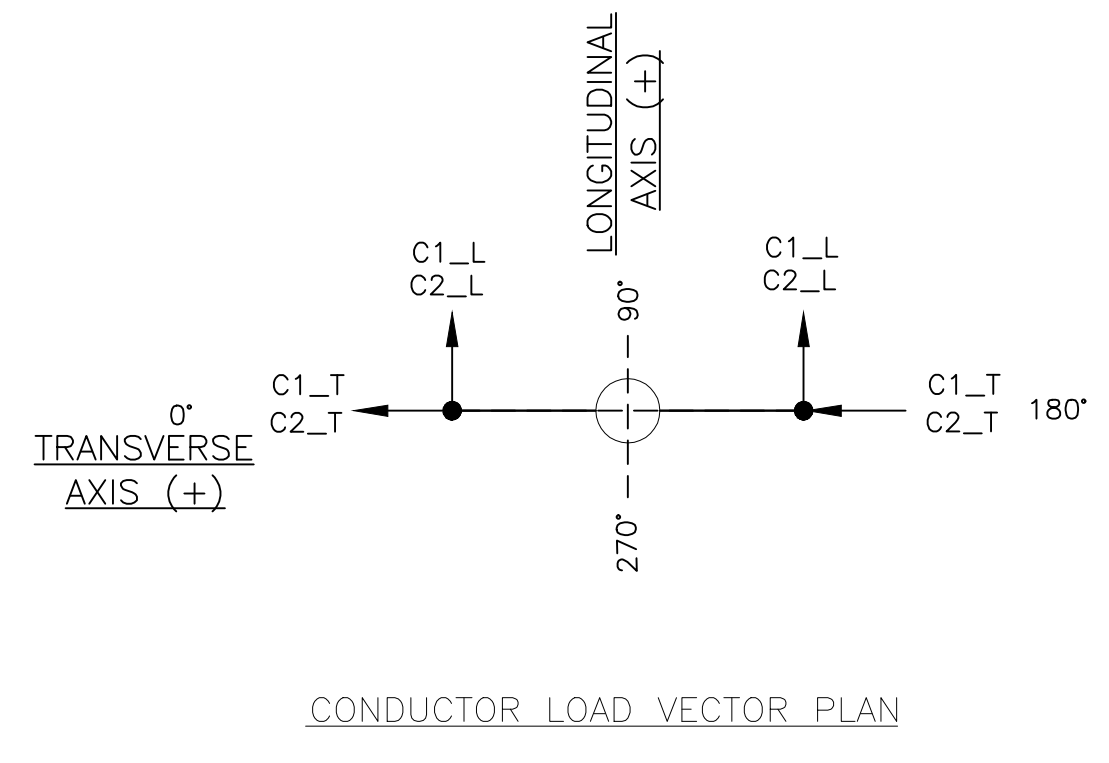
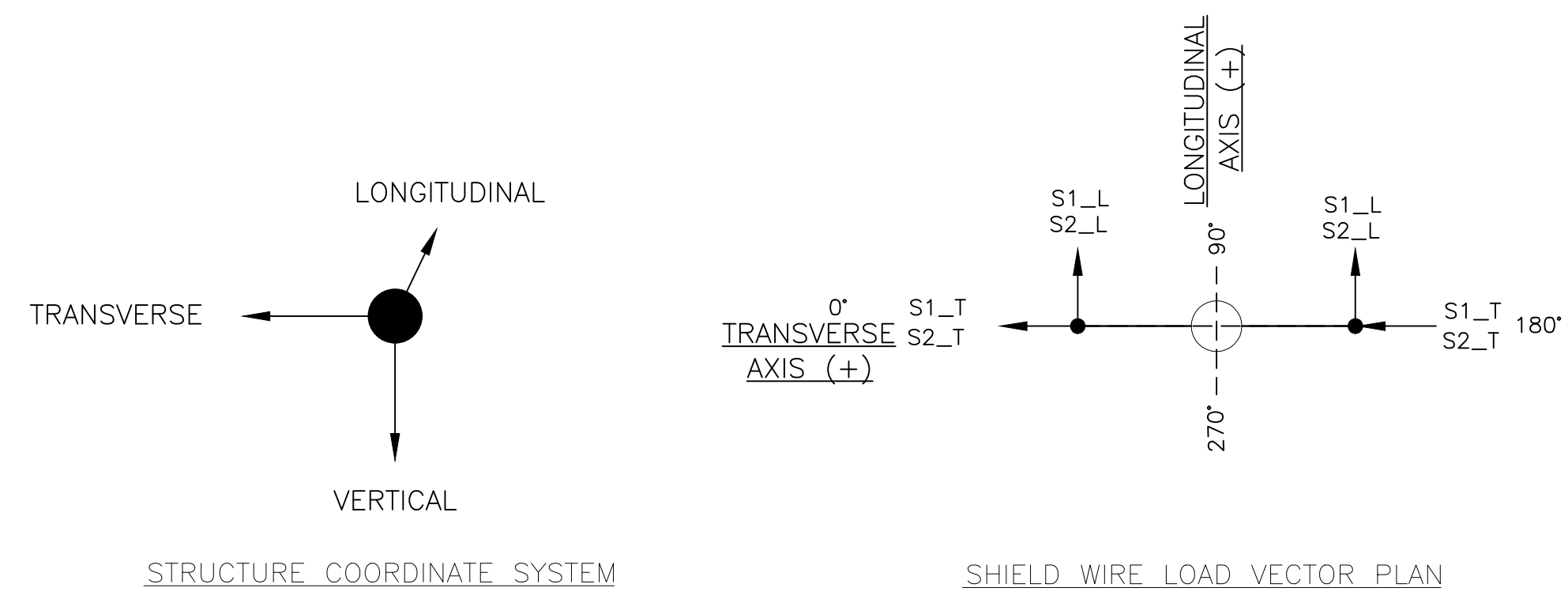
1100 W. 116th Ave.
 P.O. Box 35695
 Denver, Colorado 80233
 303-452-0111

UPDATED BY: ADAOU 4/12/2022 8:09 AM

Tri-State Generation and Transmission Association, Inc. A Touchstone Energy Cooperative

Dwn: ARO Date: 04-12-22
 Appd: JTL Date: 04-12-22

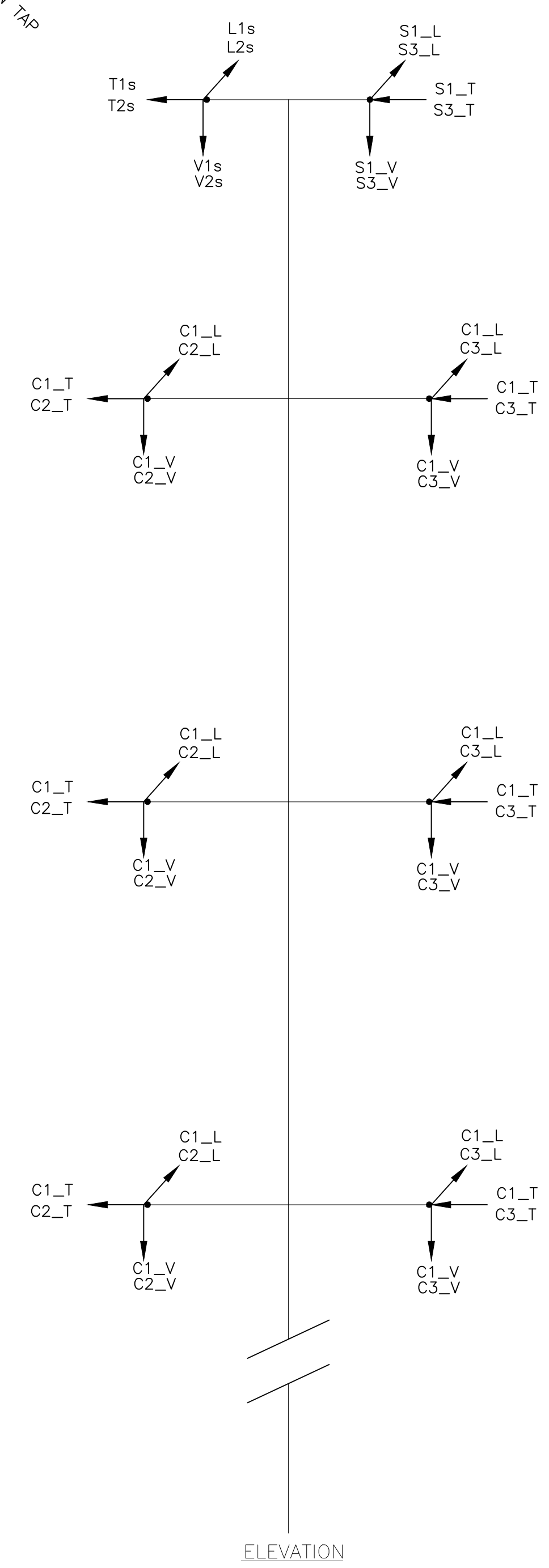
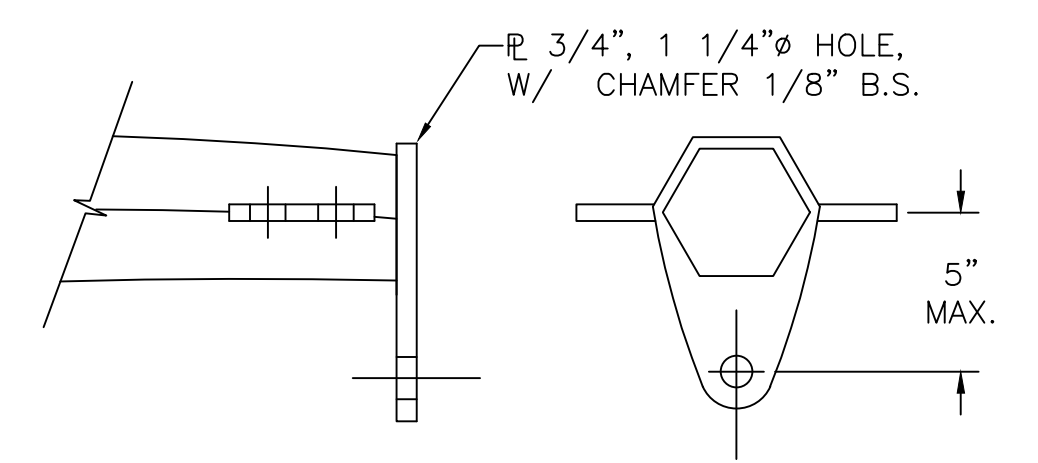
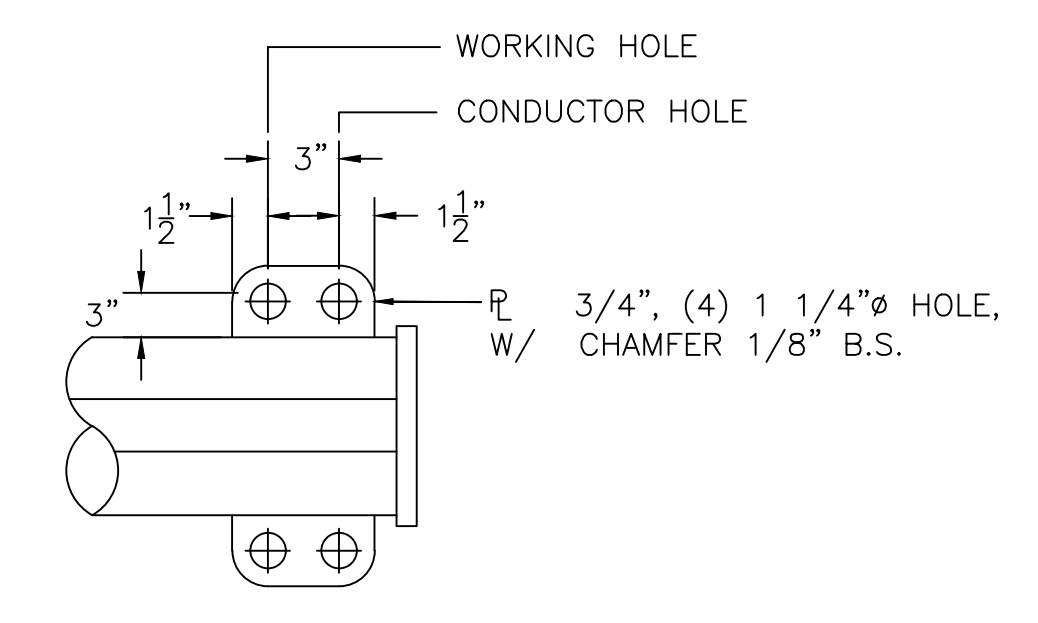
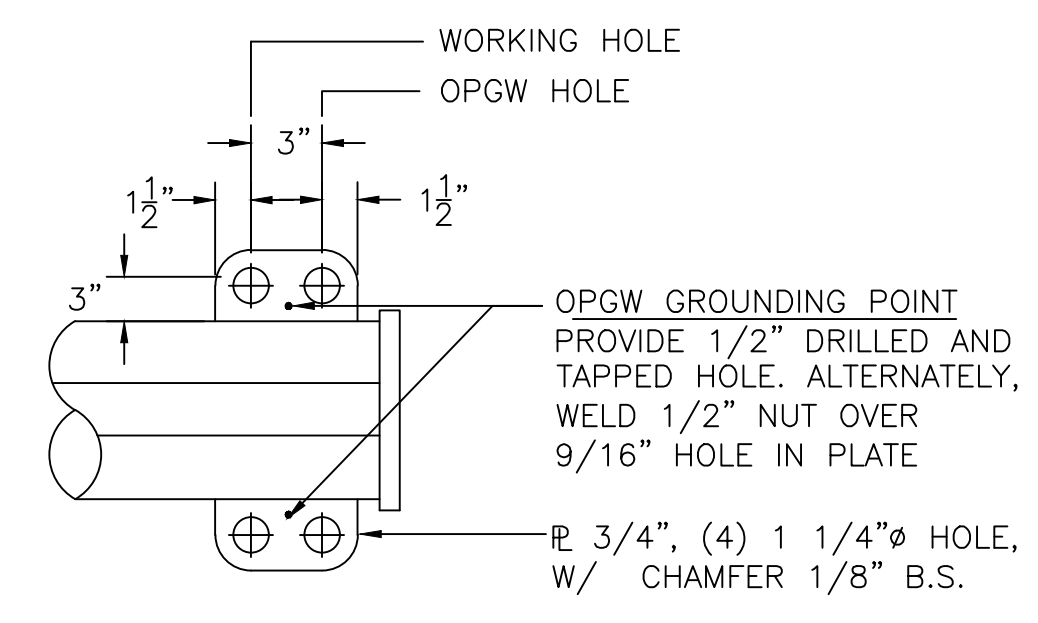
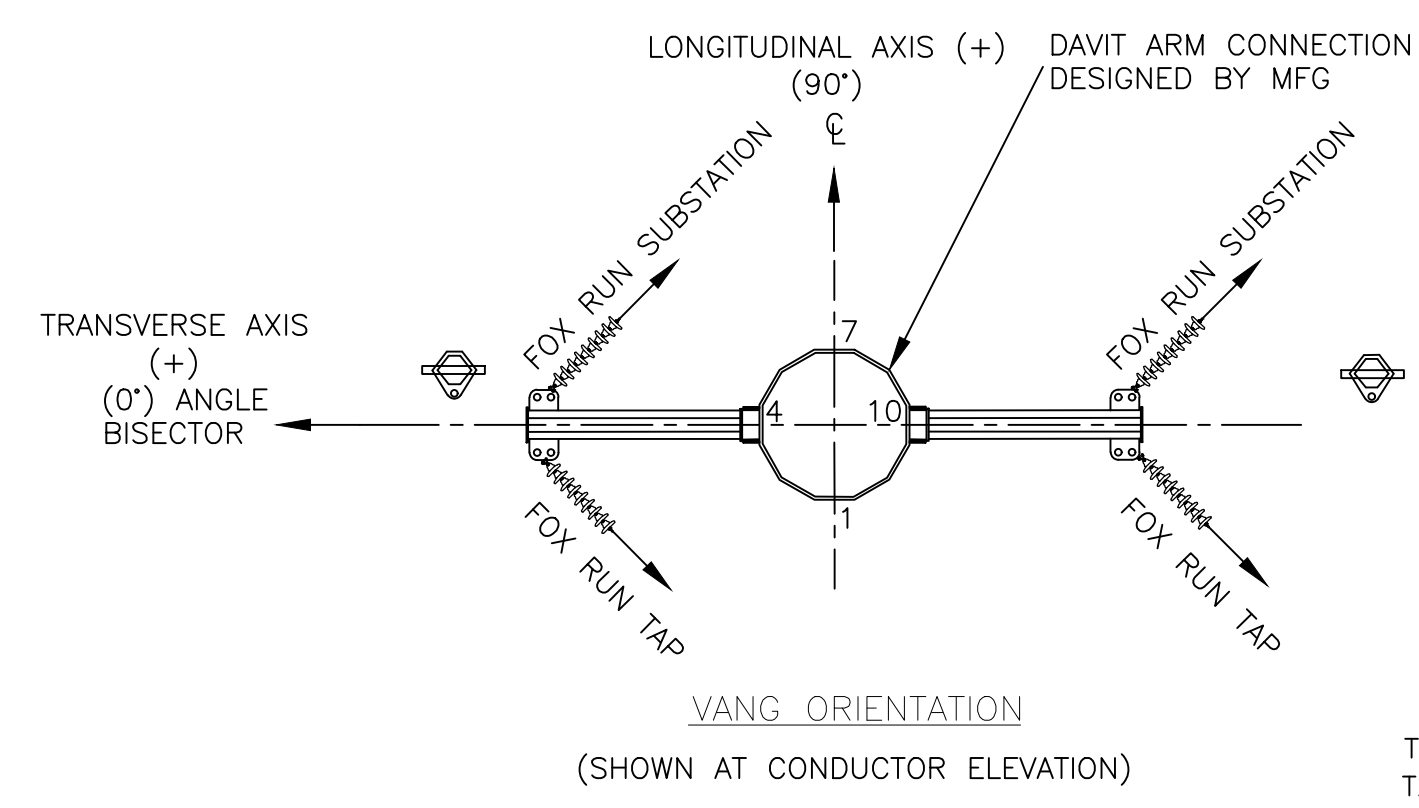
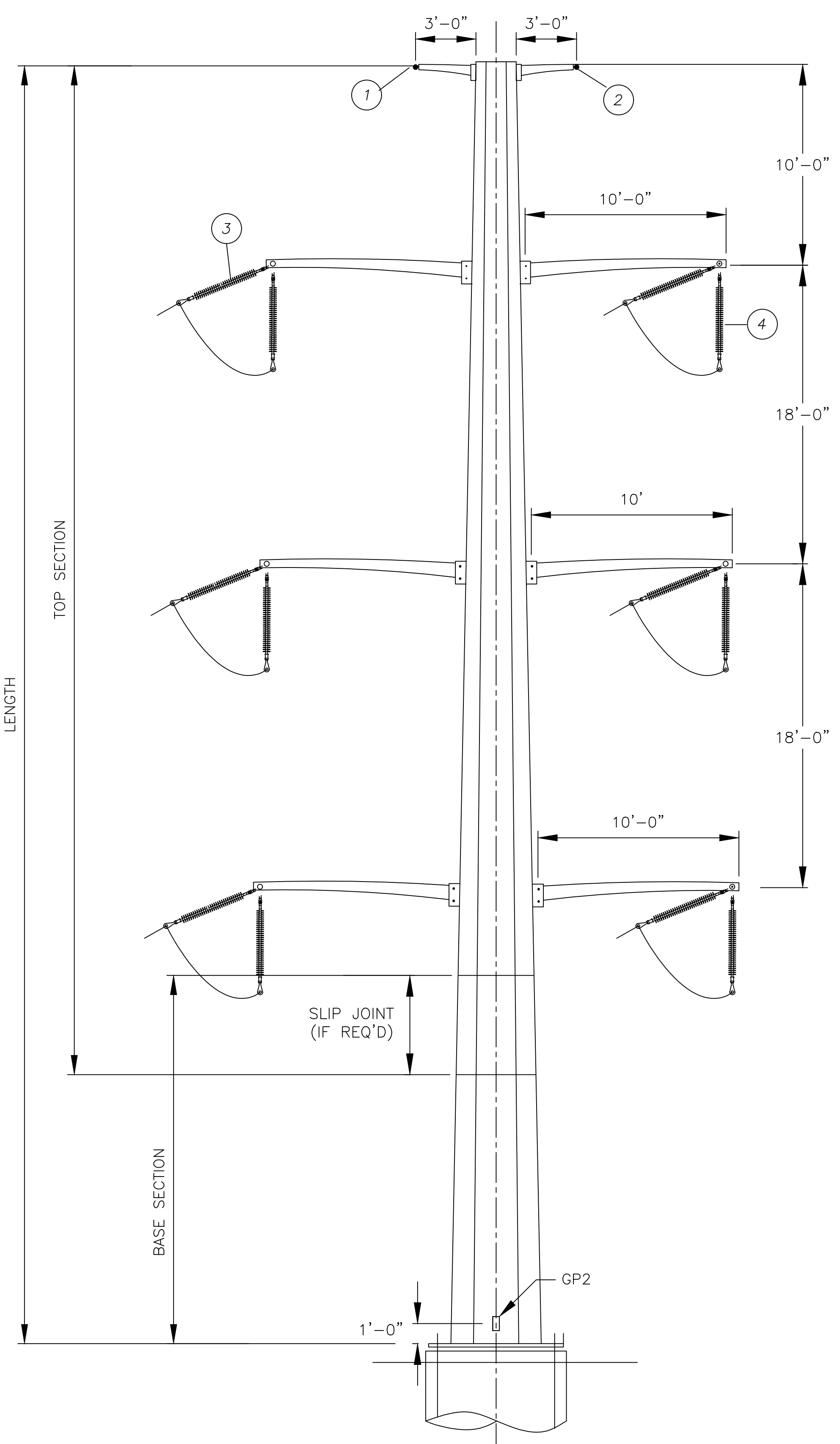
T2301-G-13-001



SHIELD WIRE STRUCTURE LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			S1 (FOX RUN SUB)			S2 (FOX RUN TAP)		
				WIND	TENS.	VERT.	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.2	-2.2	3.1	0.6	-5.2	-5.5
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.6	-0.8	1.5	0.5	-2.7	-2.9
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.7	-0.6	0.8	-0.2	-2.4	-2.5
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	2	-2.1	2.3	0.7	-4.2	-4.2
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.6	-0.8	1.5	-0.3	-2.2	-2.8
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.4	-0.6	0.6	0.4	-1.3	-1.4
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.8	-1.3	1.6	0.3	-3	-3.1
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.5	-0.9	0.8	0.5	-2.2	-2.6
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.8	-1.3	1.2	0.3	-2.2	-2.2
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0	0	0	0.6	-5.2	-5.5
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.2	-2.2	3.1	0	0	0
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.8	-0.9	1.1	0.5	-3.3	-3.5

CONDUCTOR STRUCTURE LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			C1 (FOX RUN SUB)			C2 (FOX RUN TAP)		
				WIND	TENS.	VERT.	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.2	-2.5	2.6	1.1	-7.5	-7.9
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.7	-0.7	1.2	0.6	-3.5	-4
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.7	-0.5	0.8	0.6	-3.6	-3.8
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.5	-2.5	2.3	1.2	-5.5	-5.5
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.7	-1.1	1.4	0.6	-3.8	-4.5
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.6	-1.2	1.2	0.6	-2.4	-2.5
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.7	-1.4	1.4	0.6	-5.6	-5.9
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.5	-0.9	0.9	0.6	-4.1	-4.1
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.7	-0.9	1.1	0.6	-3.1	-3.1
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0	0	0	1.1	-7.5	-7.9
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.2	-2.5	2.6	0	0	0
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.8	-1.1	1.1	4.2	-5.6	-5.9

STRUCTURE #	HEIGHT (FT)	ACTUAL LINE ANGLE
1.1	80'-0"	+90° RIGHT



Preliminary

4/14/2022

DESIGN DATA:

477 KCMIL ACSR 26/7 HAWK CONDUCTOR (ALL CONDUCTOR)
 DNO-7054 OPGW (ALL SHIELD WIRE)
 WIND SPAN = - (AHEAD); WIND SPAN = - (BACK); WEIGHT SPAN = -
 DESIGN LINE ANGLE (80 - 100 DEGREE RIGHT)
 SOLID ICE DENSITY OF 57 LBS/FT³

NOTES:

- ALL DESIGN AND FABRICATION SHALL BE IN ACCORDANCE WITH TRI-STATE "TRANSMISSION LINE TAPERED TUBULAR STEEL POLE STRUCTURES" SPECIFICATION.
- LOADS ARE ULTIMATE VALUES AND INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- STRUCTURE AND ATTACHMENTS SHALL BE DESIGNED FOR THE SIMULTANEOUS APPLICATION OF DEAD LOAD OF THE STRUCTURE INCLUDING THE APPROPRIATE LOAD FACTOR, WIND ON THE STRUCTURE, AND WIRE LOADS FOR EACH LOAD CASE.
- WIND PRESSURES SHOWN ON LOAD CASE TABLE ARE IN PSF AND BASED ON A SHAPE FACTOR OF 1.0 FOR 12-SIDED SECTIONS. WIND PRESSURES INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- LIMIT POLE DEFLECTION TO 2% OF STRUCTURE HEIGHT FOR DEFLECTION LOAD CASE. ALL WIRES INTACT. CAMBER MAY BE UTILIZED TO COMPLY.
- APPLY WIND ON STRUCTURE WHICH RESULTS IN THE MOST SEVERE EFFECT.
- STRUCTURE TO BE DESIGNED FOR INTACT AND FULL DEADEND LOADING CONDITIONS FOR LOAD CASES 1 - 5.
- MATERIAL SHALL BE WEATHERING STEEL.
- DAVIT ARMS SHALL ATTACH TO THE POLE WITH A BOLTED CONNECTION TO WELDED THROUGH ARM BRACKETS AND DESIGNED BY THE MANUFACTURER.
- NAME PLATE SHALL BE WELDED ON ALL STRUCTURES. TEXT MUST BE PERMANENTLY LEGIBLE, AND MUST INCLUDE MANUFACTURER'S NAME, DATE OF FABRICATION, STRUCTURE NUMBER, COMPLETE STRUCTURE LENGTH, COMPLETE STRUCTURE WEIGHT, AND GROUND LINE MOMENT CAPACITY IN KIP-FEET.
- SEE DWG. T2301-G-13-0XX FOR STEEL DETAILS.
- LOCATE DETAIL 2 GROUNDING PADS ON BOTH SIDES OF ALL CONNECTIONS AND SPLICES.
- ANCHOR BOLTS SHALL BE EQUALLY SPACED AROUND THE BASE PLATE WITH 2.5" MINIMUM SPACE BETWEEN BOLTS.
- ANCHOR BOLT TEMPLATE AND EACH POLE SECTION SHALL BE MARKED ON THE ANGLE BISECTOR WITH AN OBVIOUS MARKING METHOD AIDING CONSTRUCTION.
- PROVIDE LADDER CLIPS FOR FULL LENGTH OF POLE AND WORKING CLIPS FOR THE TOP 55' OF THE POLE.
- AERIAL NUMBER SIGNS REQUIRED, SEE DETAIL.
- TOP DIAMETER: 12" MINIMUM; ANCHOR BOLT CIRCLE: 72" MAXIMUM; TAPER: 0.45 INCH PER FOOT MAXIMUM. (ALTERNATIVES MAY BE PROPOSED.)

FOX RUN - FOX RUN TAP

115KV DD2
 OUTLINE AND DESIGN
 DOUBLE CIRCUIT DEADEND
 TRI-STATE GENERATION & TRANSMISSION
 ASSOCIATION, INCORPORATED

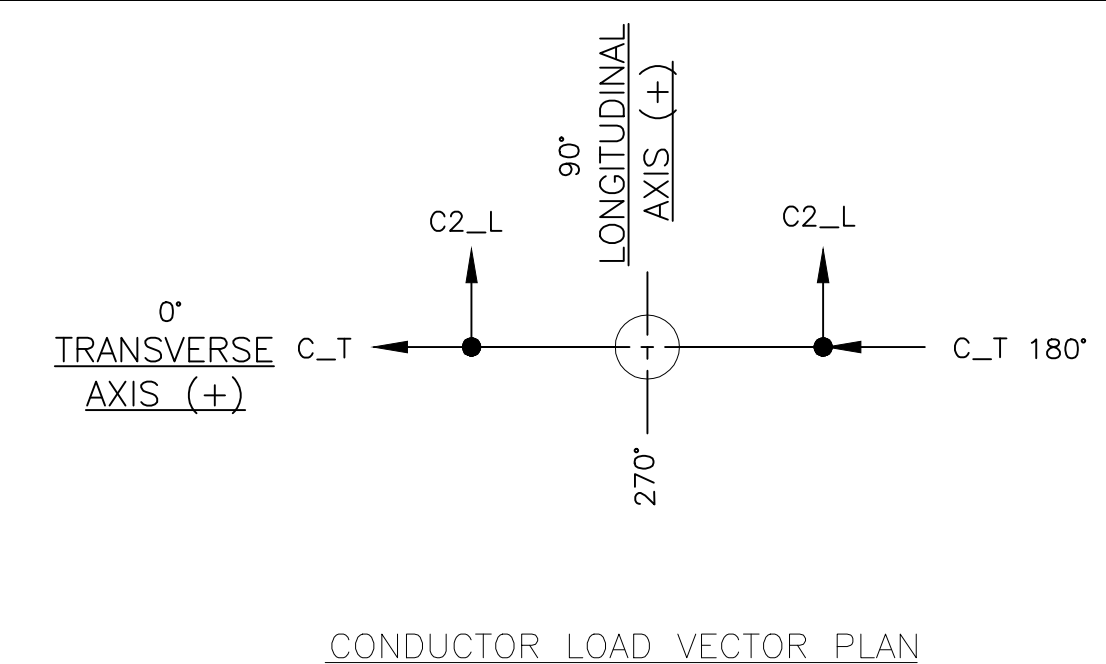
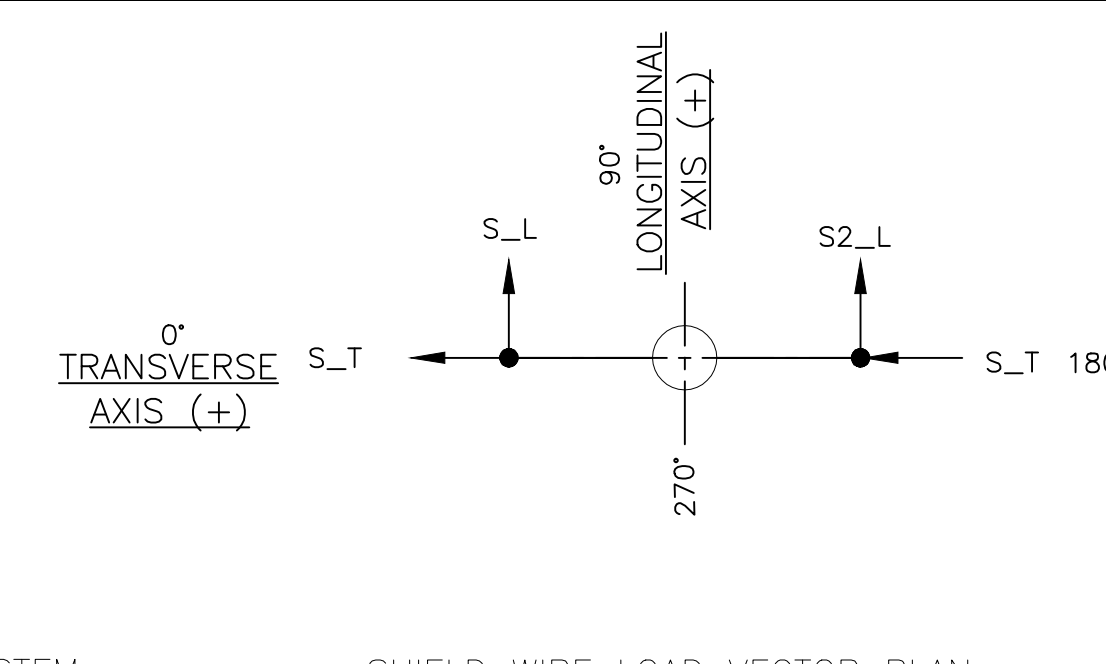
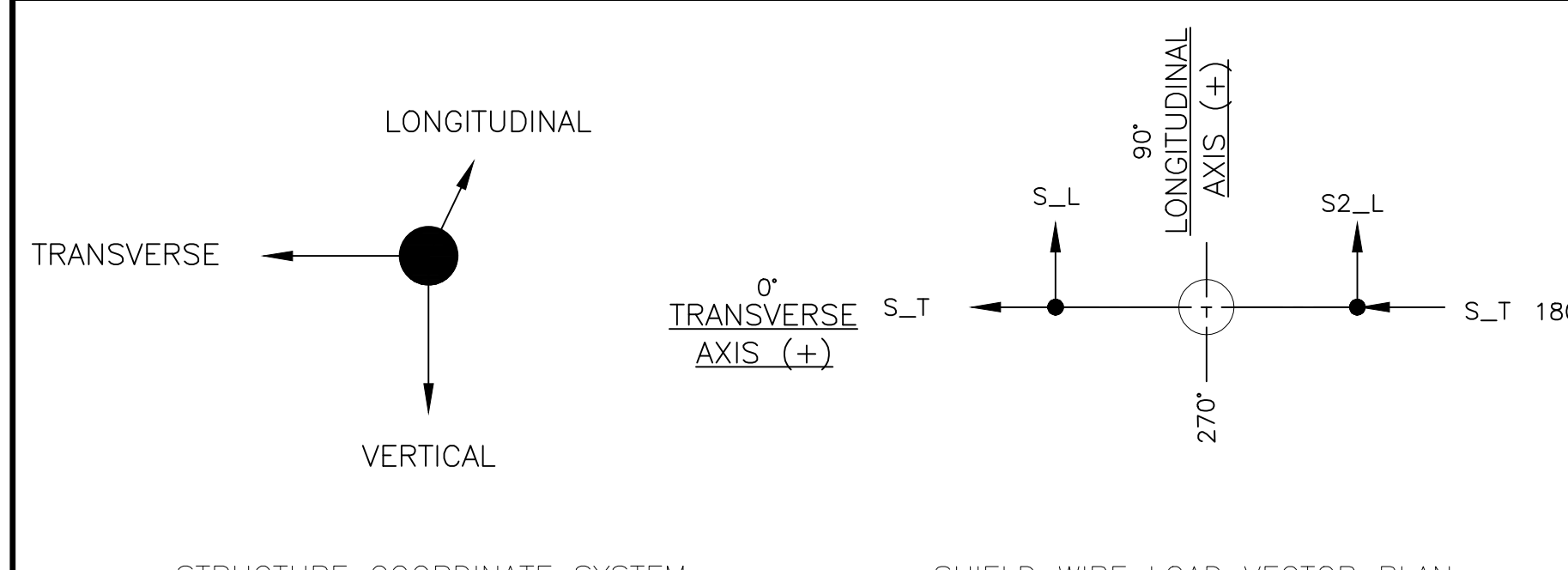
1100 W. 116th Ave.
 P.O. Box 33695
 Denver, Colorado 80233
 303-452-6111

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NO. 1
 DATE 4/12/22
 APPD. JTL
 DWN. ARO

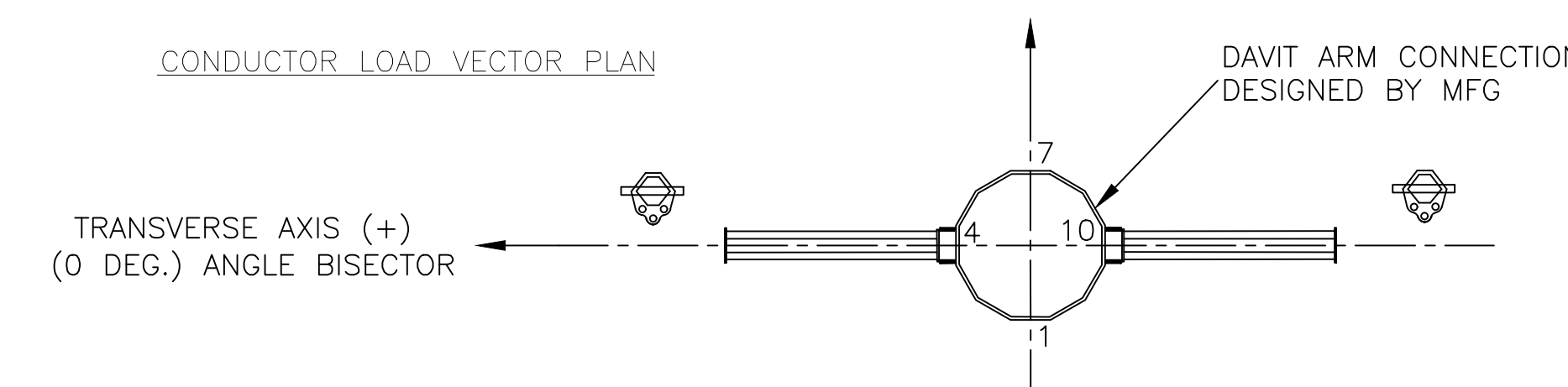
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T2301-G-13-002



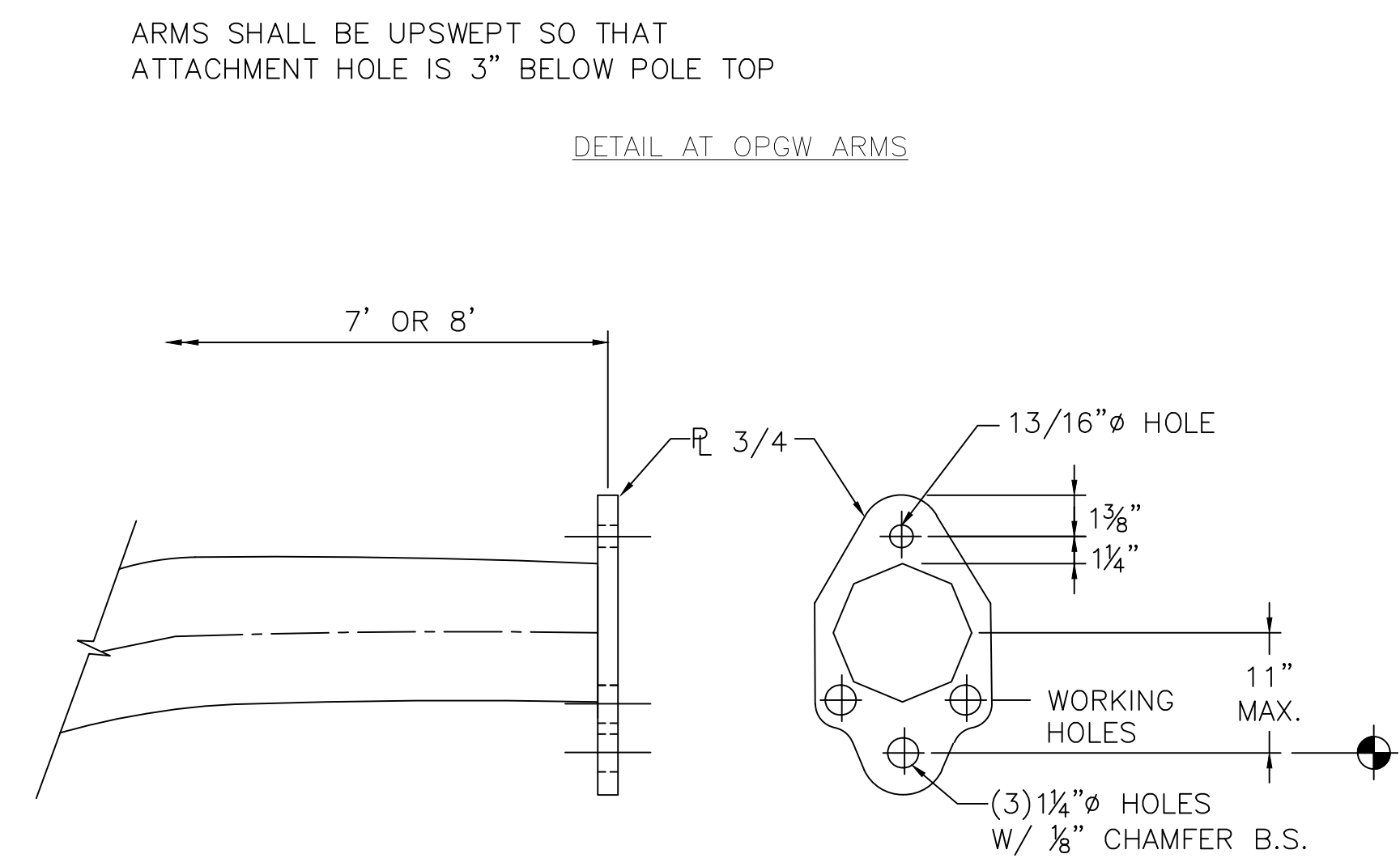
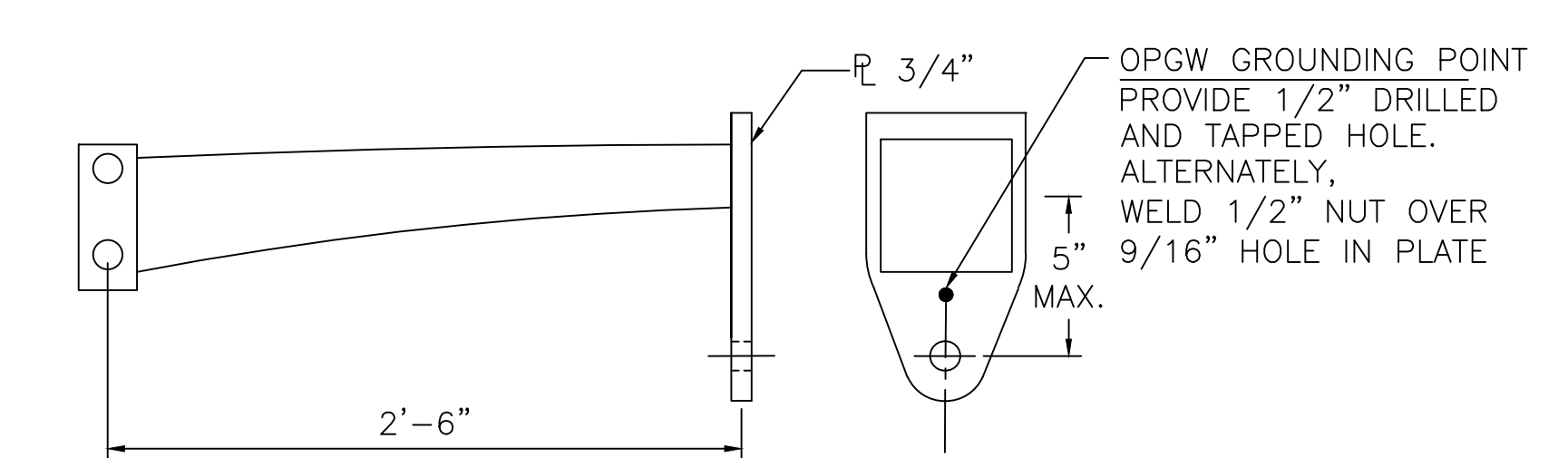
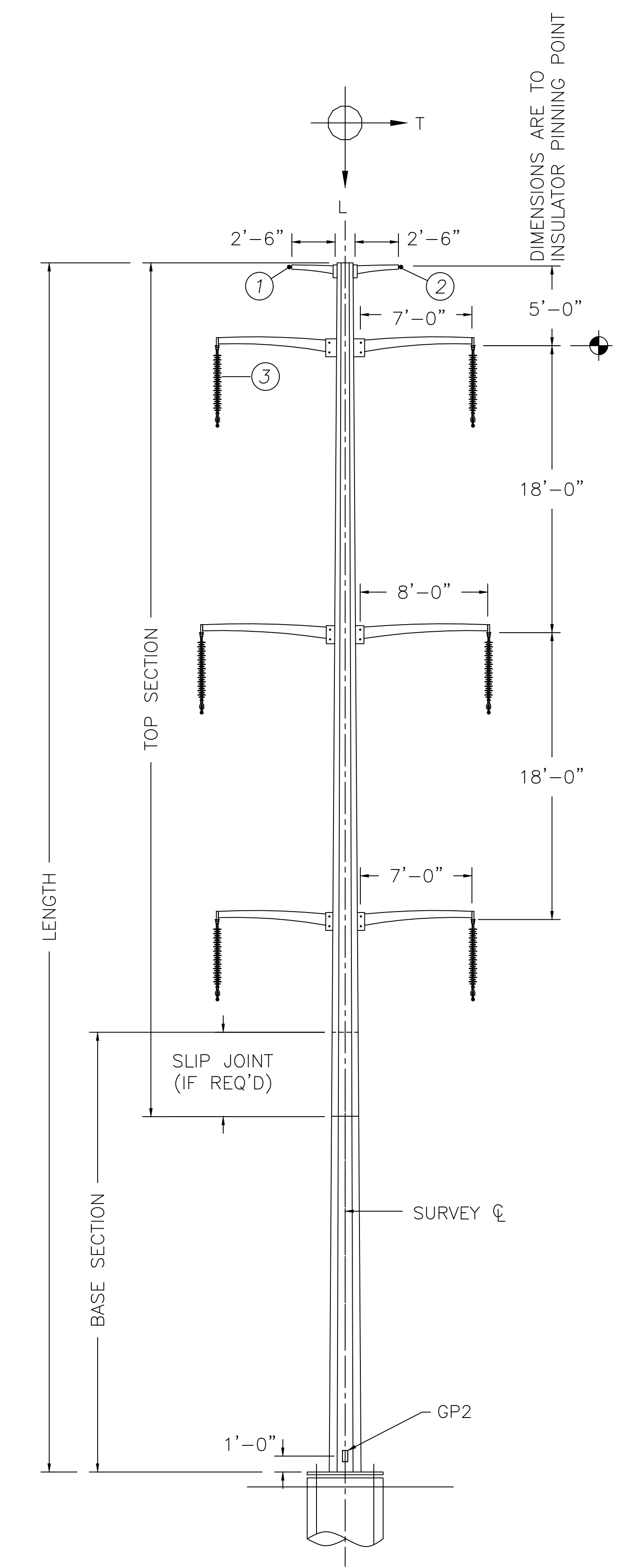
TANGENT STRUCTURE LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			S			C		
				WIND	TENSION	VERTICAL	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.2	1.4	0.2	1.8	2.1	0.2
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.10	1.00	1.00	1.0	1.5	0.2	1.4	2.7	0.2
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.10	1.00	1.00	1.0	1.2	0.2	1.0	1.5	0.2
4 TRI-STATE EXTREME ICE (1")	32	0.0	1.0	1.00	1.00	1.10	2.0	0.5	0.2	2.3	0.5	0.2
5 TRI-STATE EXTR. WIND (100 mph)	60	25.6	0.0	1.10	1.00	1.00	0.6	1.4	0.2	1.0	3.2	0.2
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.3	0.1	0.1	0.5	0.3	0.1

STRUCTURE #	HEIGHT (FT)	ACTUAL LINE ANGLE
2.1	85'-0"	0°
3.1	90'-0"	0°

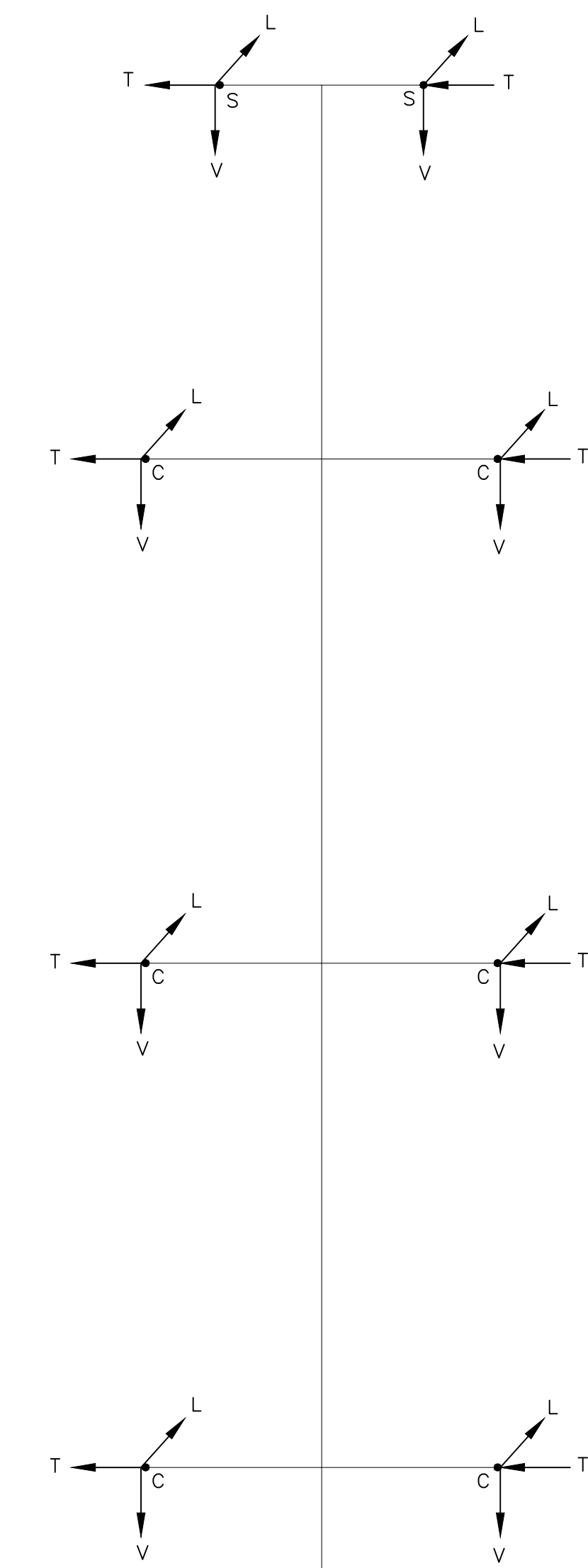


Preliminary

4/14/2022



END PLATE DETAIL TO FIT AB CHANCE HOT-LINE TOOL. FINAL DIMENSIONS TO BE VERIFIED.



DESIGN DATA:

477 KCMIL ACSR 26/7 HAWK CONDUCTOR (ALL CONDUCTORS)
 DNO-7054 OPGW (ALL OPGW SHIELD WIRE)
 WIND SPAN = - ; WEIGHT SPAN = -
 DESIGN LINE ANGLE (-5 to +5 DEGREE)
 SOLID ICE DENSITY OF 57 LBS/FT³

NOTES:

- ALL DESIGN AND FABRICATION SHALL BE IN ACCORDANCE WITH TRI-STATE "TRANSMISSION LINE TAPERED TUBULAR STEEL POLE STRUCTURES" SPECIFICATION.
- LOADS ARE ULTIMATE VALUES AND INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- STRUCTURE AND ATTACHMENTS SHALL BE DESIGNED FOR THE SIMULTANEOUS APPLICATION OF DEAD LOAD OF THE STRUCTURE INCLUDING THE APPROPRIATE LOAD FACTOR, WIND ON THE STRUCTURE, AND WIRE LOADS FOR EACH LOAD CASE.
- WIND PRESSURES SHOWN ON LOAD CASE TABLE ARE IN PSF AND BASED ON A SHAPE FACTOR OF 1.0 FOR 12-SIDED SECTIONS. WIND PRESSURES INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- LIMIT POLE DEFLECTION TO 2% OF STRUCTURE HEIGHT FOR DEFLECTION LOAD CASE. ALL WIRES INTACT. CAMBER MAY BE UTILIZED TO COMPLY.
- APPLY WIND ON STRUCTURE WHICH RESULTS IN THE MOST SEVERE EFFECT.
- STRUCTURE TO BE DESIGNED FOR INTACT AND FULL DEADEND LOADING CONDITIONS FOR LOAD CASES 1 - 5.
- MATERIAL SHALL BE WEATHERING STEEL.
- DAVIT ARMS SHALL ATTACH TO THE POLE WITH A BOLTED CONNECTION TO A WELDED THROUGH ARM BRACKETED AND DESIGNED BY THE MANUFACTURER.
- NAME PLATE SHALL BE WELDED ON ALL STRUCTURES. TEXT MUST BE PERMANENTLY LEGIBLE, AND MUST INCLUDE MANUFACTURER'S NAME, DATE OF FABRICATION, STRUCTURE NUMBER, COMPLETE STRUCTURE LENGTH, COMPLETE STRUCTURE WEIGHT, AND GROUND LINE MOMENT CAPACITY IN KIP-Feet.
- SEE DWG. T2301-G-13-0XX FOR STEEL DETAILS.
- LOCATE DETAIL 2 GROUNDING PADS ON BOTH SIDES OF ALL CONNECTIONS AND SPLICES.
- ANCHOR BOLTS SHALL BE EQUALLY SPACED AROUND THE BASE PLATE WITH 2.5" MINIMUM SPACE BETWEEN BOLTS.
- ANCHOR BOLT TEMPLATE AND EACH POLE SECTION SHALL BE MARKED ON THE ANGLE BISECTOR USING OBVIOUS MARKINGS AIDING CONSTRUCTION.
- TOP DIAMETER: 12" MINIMUM; ANCHOR BOLT CIRCLE: 46" MAXIMUM; TAPER: 0.30 INCH PER FT. MAXIMUM. (ALTERNATIVES MAY BE PROPOSED.)

FOX RUN - FOX RUN TAP

115KV DT

OUTLINE AND DESIGN

TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED

1100 W. 116th Ave.
 P.O. Box 33695
 Denver, Colorado 80233
 303-452-6111

4/19/2022 3:35 PM

4/12/22

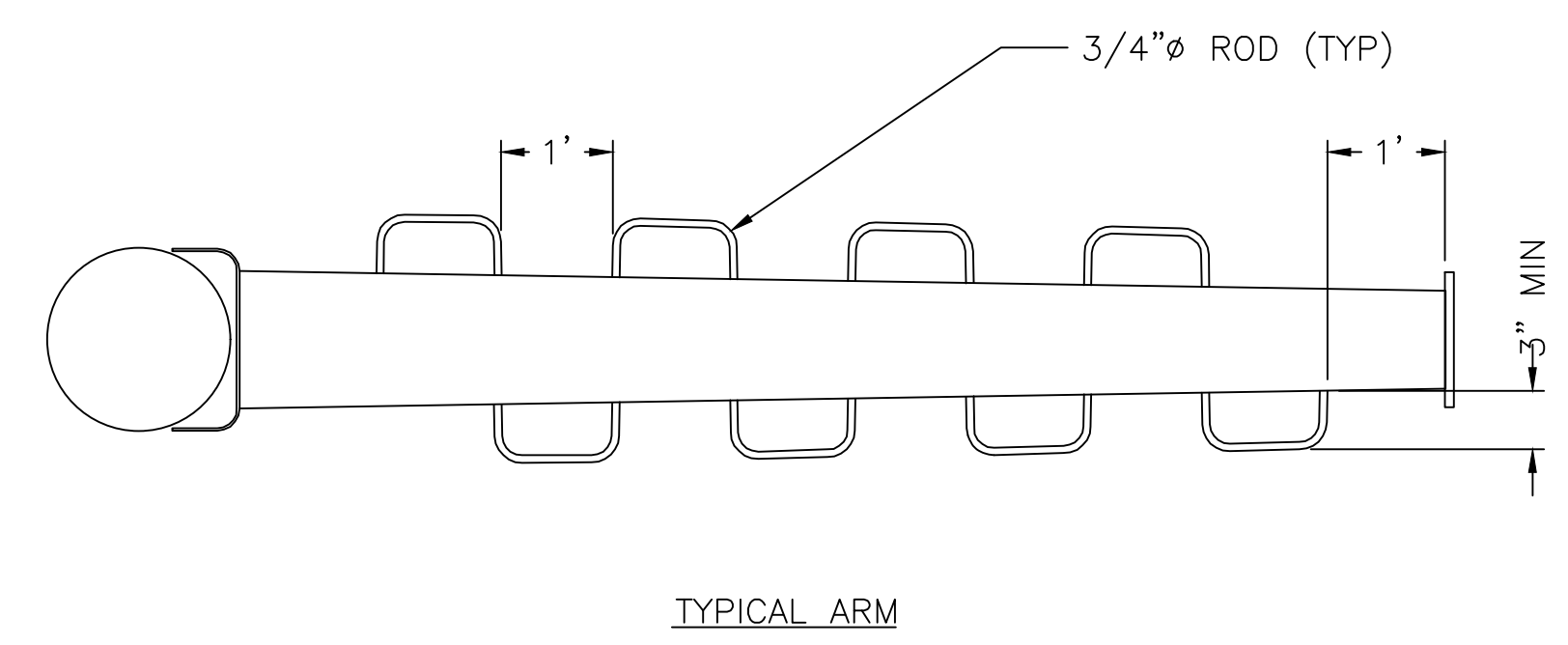
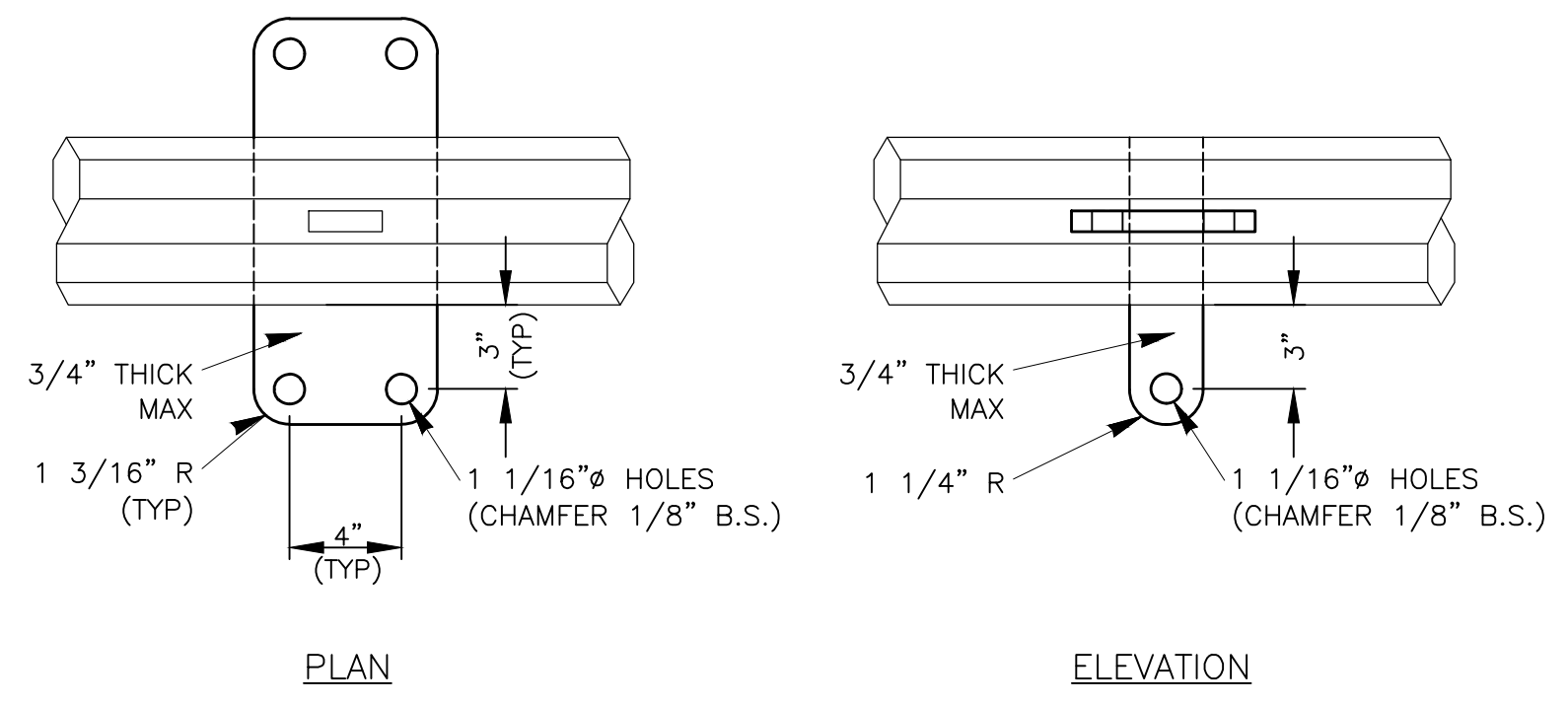
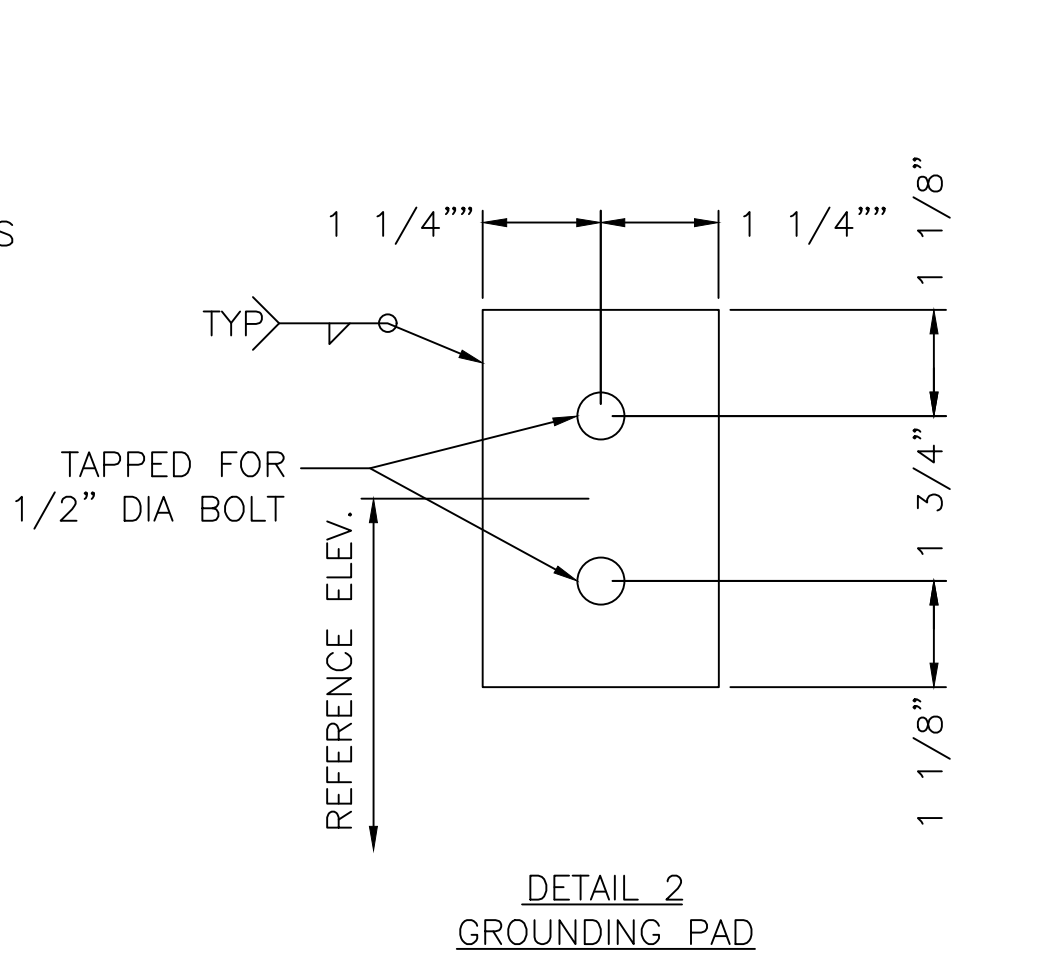
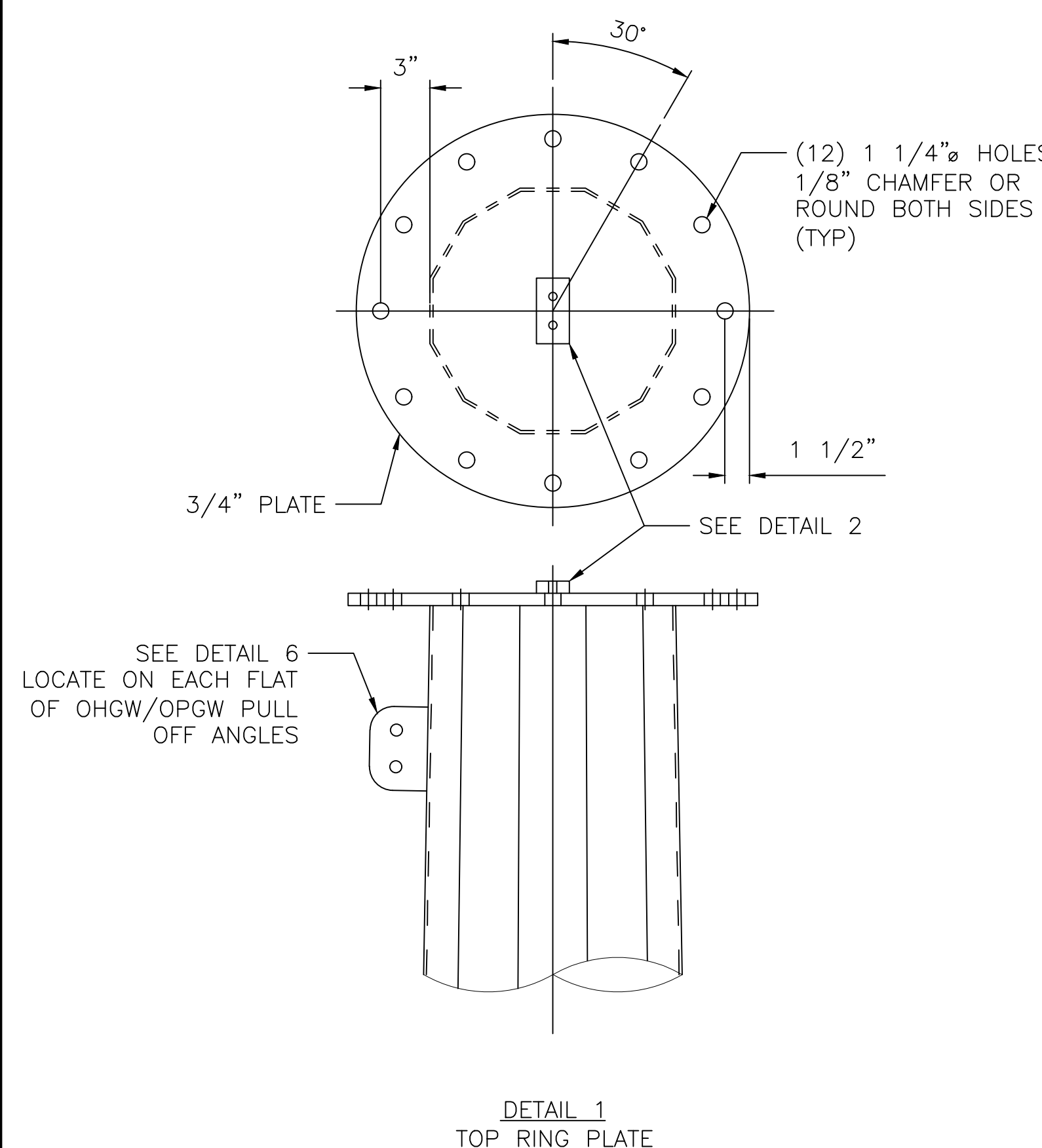
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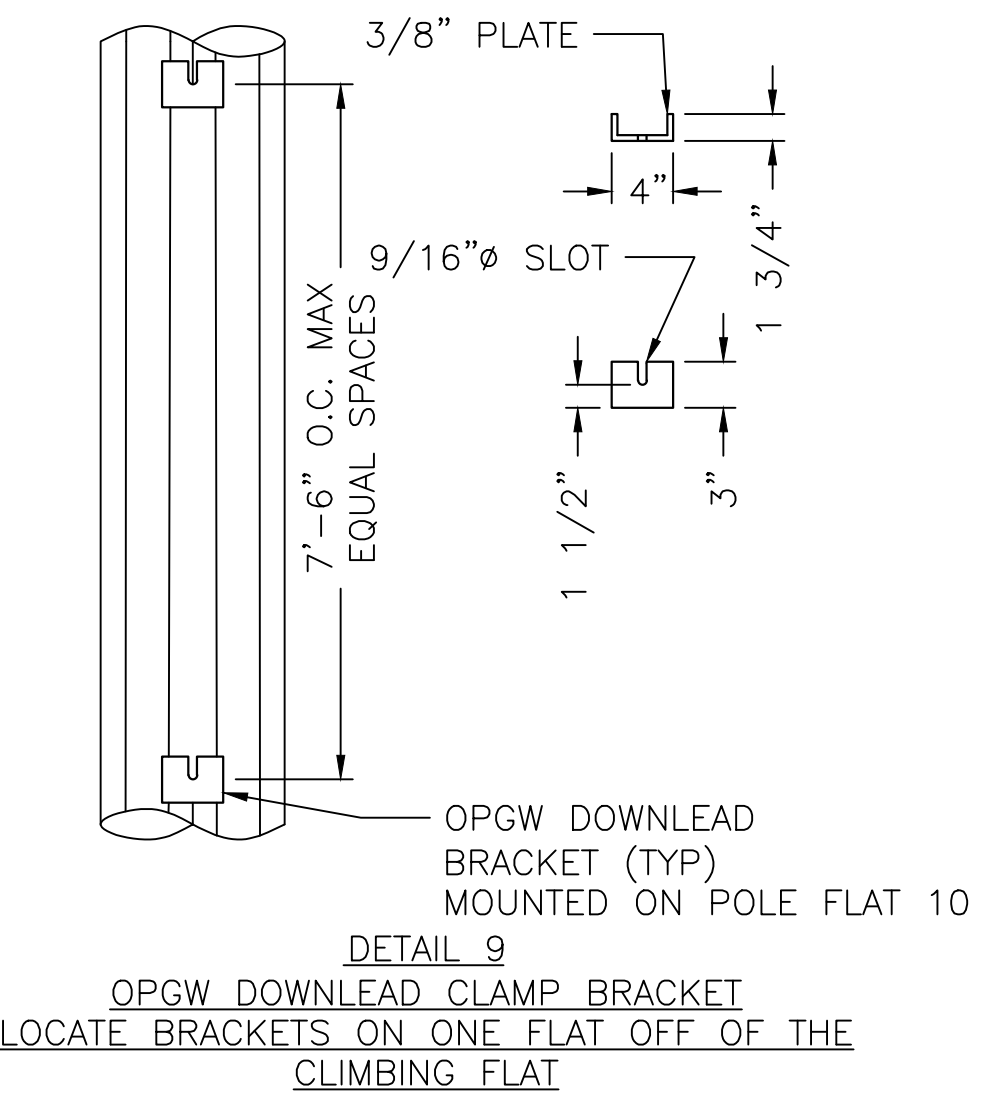
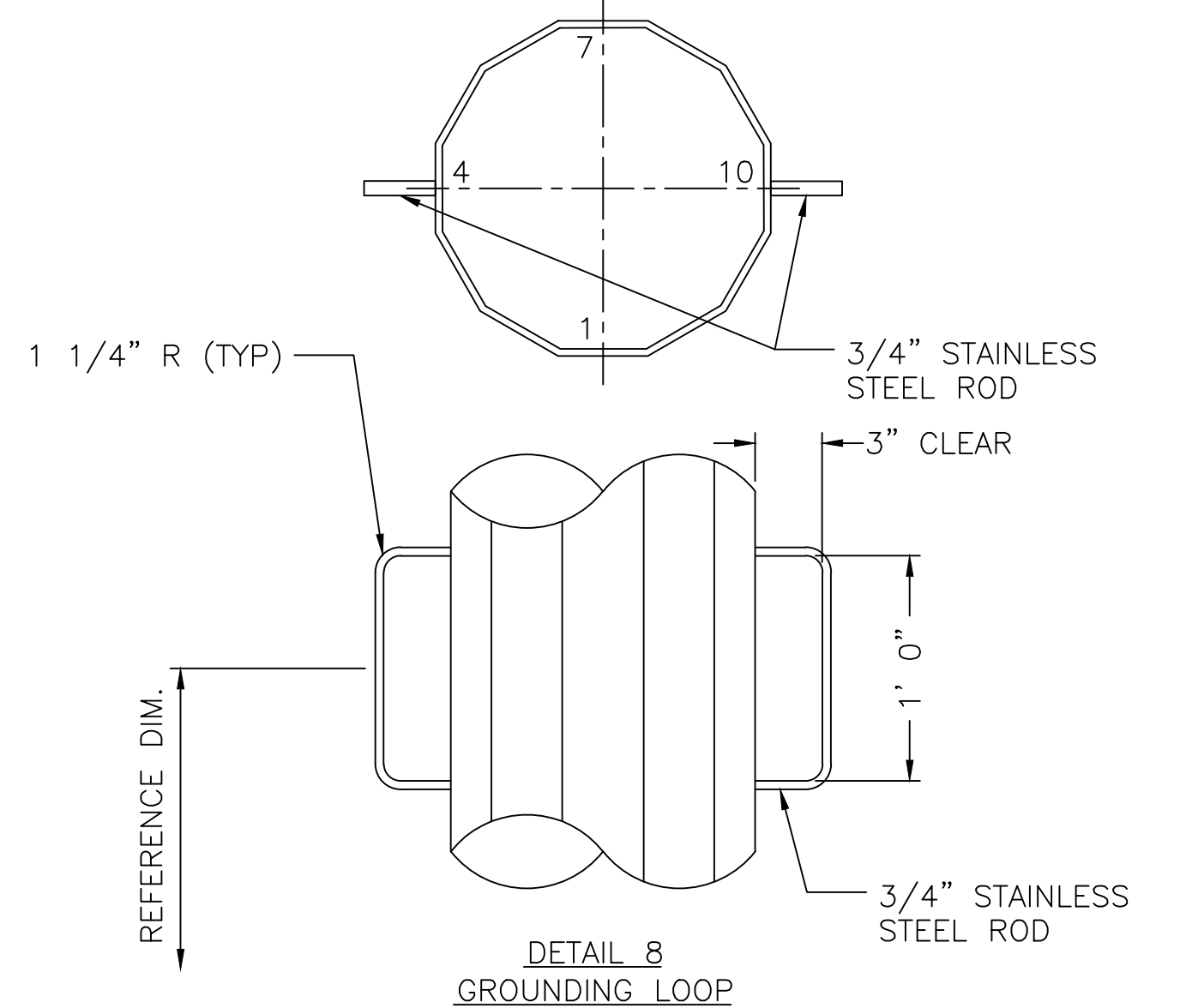
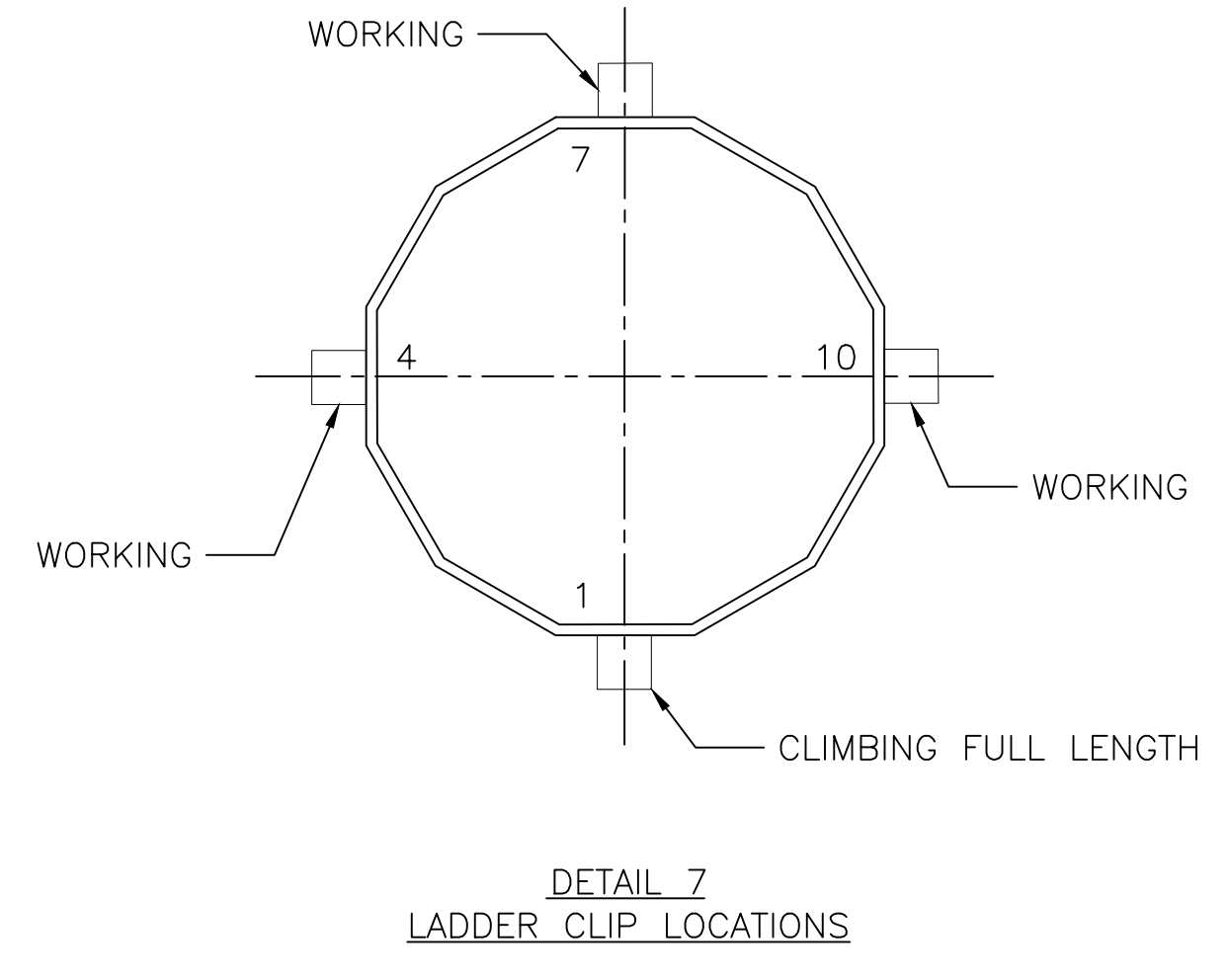
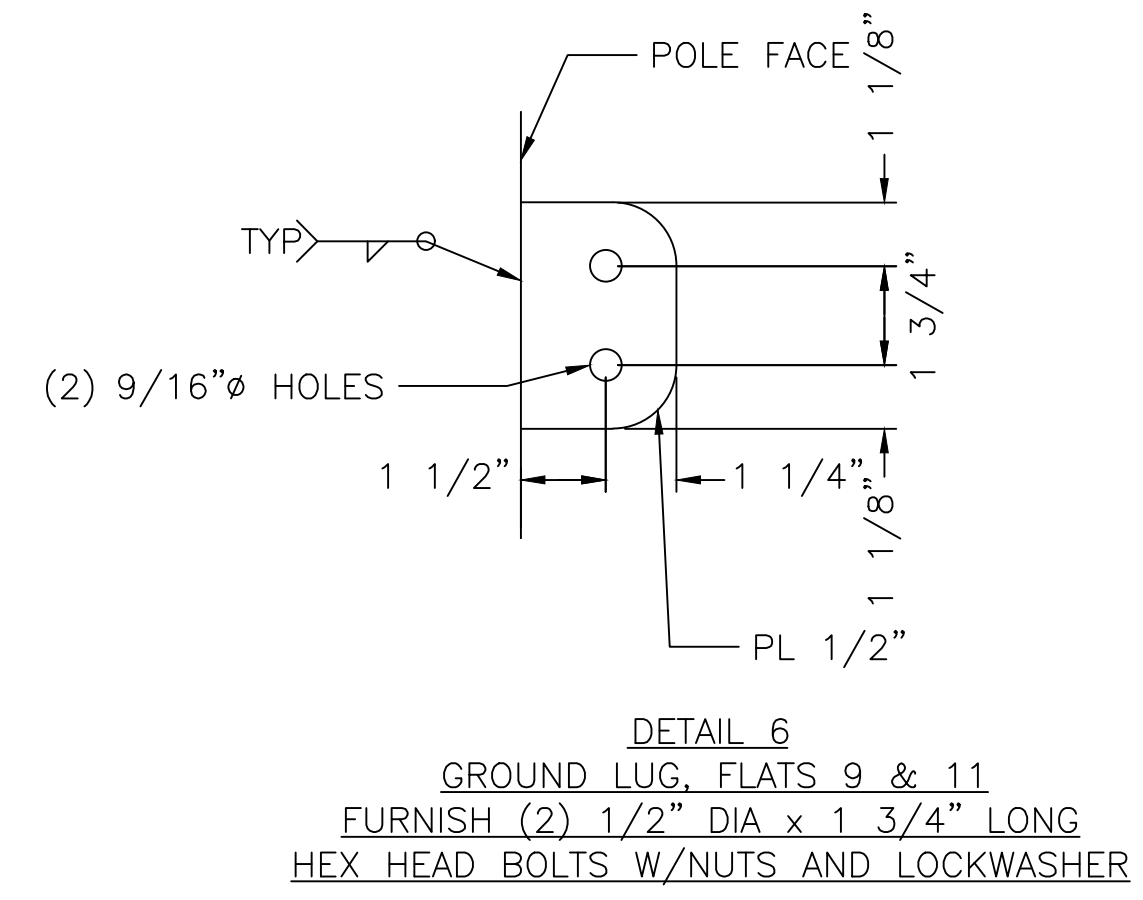
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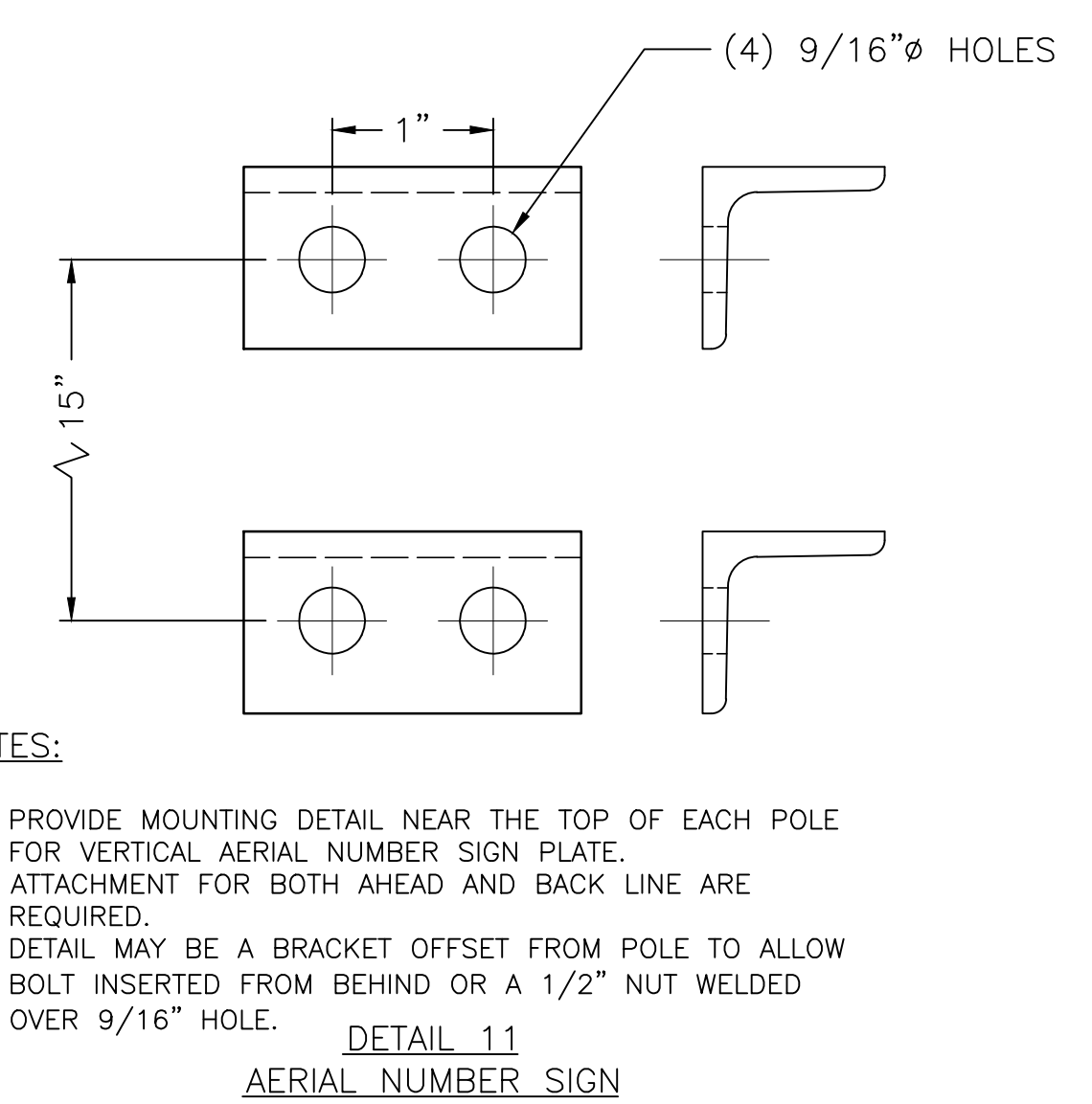
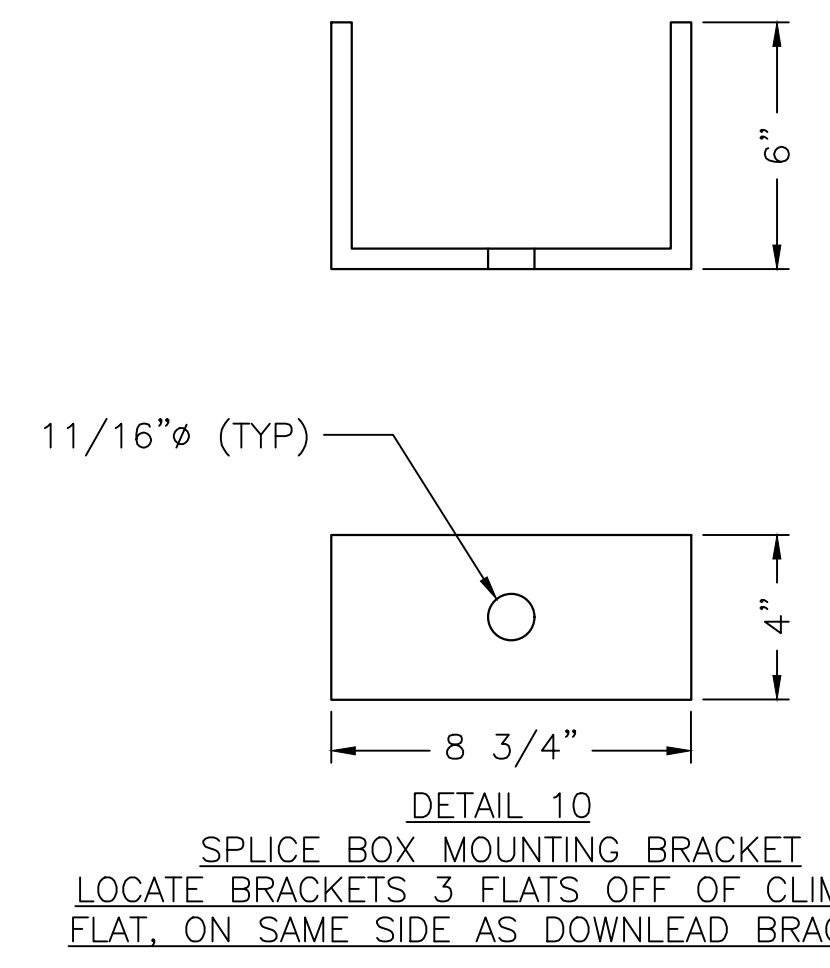


- NOTES:
- CLIMBING ASSIST ROD TO BE WELDED TO ALL ARMS ON BOTH SIDES AS SHOWN.
 - ROD SHALL EXTEND TO WITHIN 1'-0" TO 1'-6" OF ARM CONNECTION.
 - EACH ROD TO SUPPORT 5,000 LB. VERTICAL LOAD AT ANY LOCATION.



Preliminary

4/14/2022



- NOTES:
- INSTALL ONE GROUND LOOP PER PHASE WIRE AT 1'-6" ABOVE:
 - EACH DAVIT ARM ATTACHMENT.
 - EACH PHASE WIRE POLE VANG (RUNNING ANGLE)
 - EACH PAIR OF PHASE WIRE POLE VANGS (DEADEND), ON THE BISECTOR ANGLE
 - ALSO INSTALL ONE GROUND LOOP AT MINIMUM 5- FEET BELOW THE LOWEST PHASE WIRE ELEVATION (INCLUDING DEADEND JUMPER STRUT INSULATORS) ON SAME FLATS CONDUCTOR PULLOFF ATTACHMENTS. OKAY TO RELOCATE THIS GROUND LOOP FURTHER DOWN THE POLE AS NECESSARY TO AVOID CONFLICTS. NO GROUND LOOPS ALLOWED BETWEEN JACKING NUTS AND WITHIN 1-FOOT OF OUTERMOST JACKING NUTS. NO GROUND LOOPS ALLOWED WITHIN 1-FOOT BELOW MALE ENDS MAXIMUM SLIP JOINT LAP.
 - DIMENSIONS ARE TO BEND LINE.
 - WELDS TO ATTACH MAINTENANCE PROVISIONS TO STRUCTURES SHALL DEVELOP THE ULTIMATE TENSILE STRENGTH OF THE ATTACHED PART.
 - FABRICATOR SHALL COORDINATE LOCATION OF MAINTENANCE PROVISIONS SUCH THAT THEY DO NOT INTERFERE WITH OTHER STRUCTURE PROVISIONS OR ATTACHMENTS.

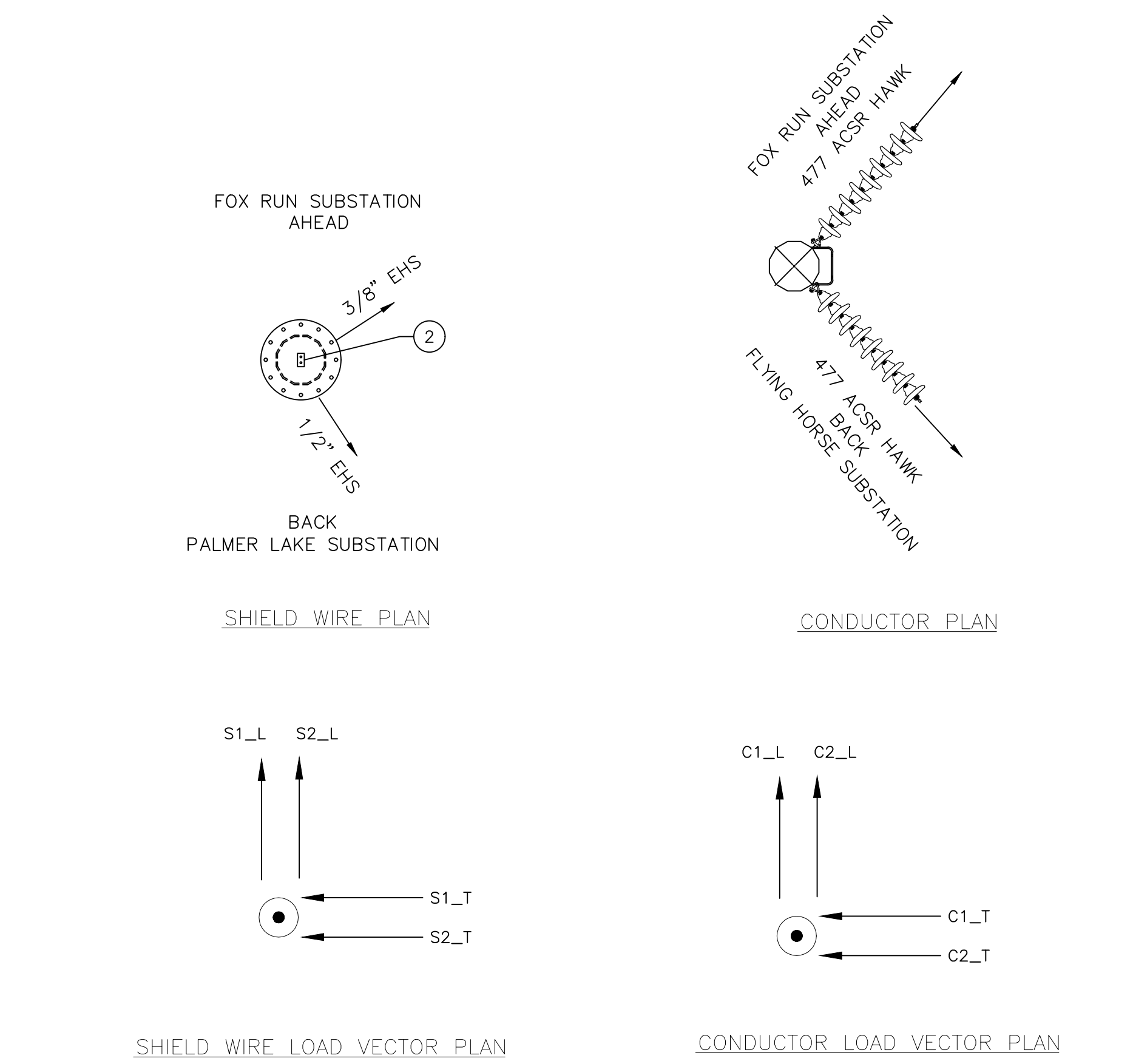
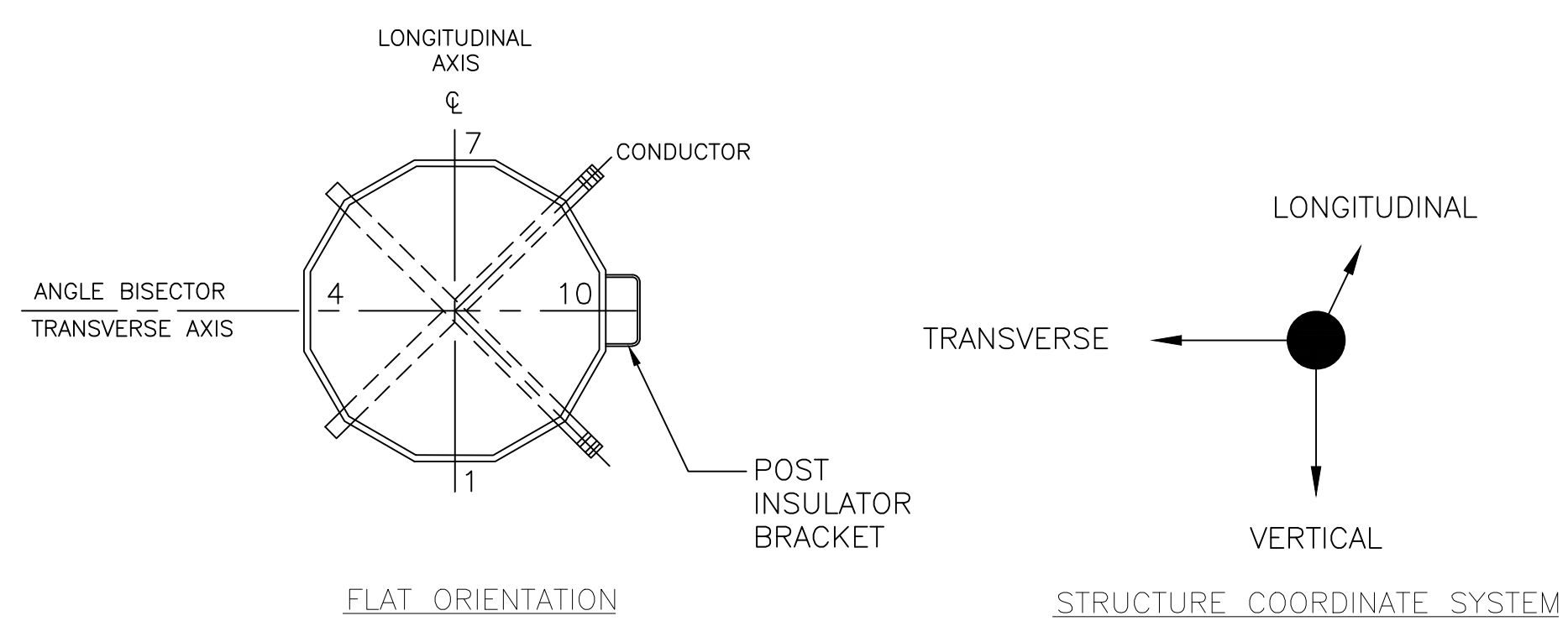
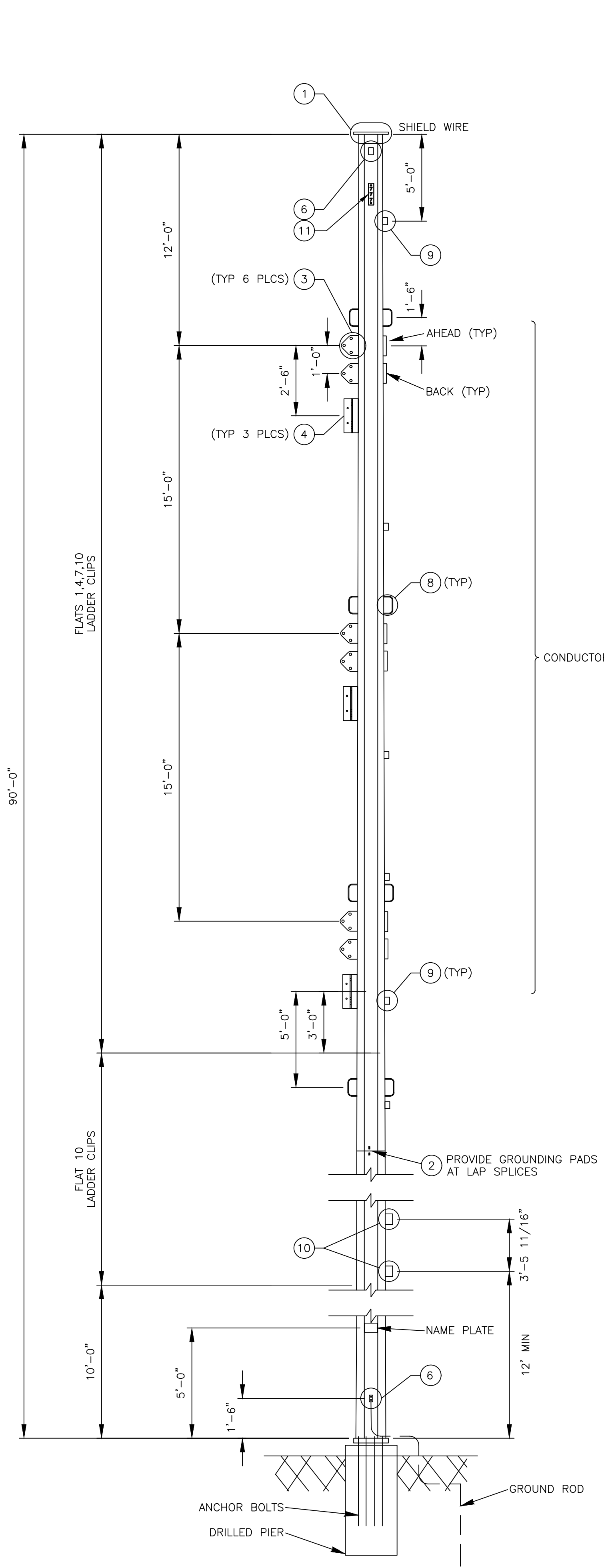
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FOX RUN - FOX RUN TAP
115KV
VERTICAL DEADEND
OUTLINE AND DESIGN
TRI-STATE GENERATION & TRANSMISSION
ASSOCIATION, INCORPORATED
UPDATED BY: ADAOLU

TRI-STATE
Generation and Transmission
Association, Inc.
A Touchstone Energy Cooperative
1100 W. 116th Ave.
P.O. Box 33695
Denver, Colorado 80233
303-452-0111

Dwn: ARO Date: 04-12-22
Appd: JTL Date: 04-12-22

T2301-G-13-004

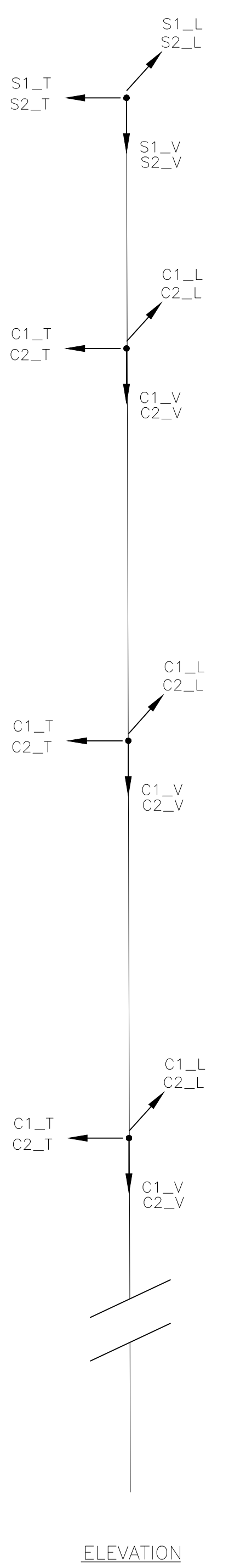


Preliminary
4/14/2022

SHIELD WIRE LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			S1 (Fox Run Sub)			S2 (Palmer Lake Sub)		
				WIND	TENS.	VERT.	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	2.2	6.5	-6.5	3	13.5	13
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.8	2.5	-2.5	1.5	6	5.5
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.6	1.9	-1.6	1.3	5	5
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.1	4	-4	3	10	10
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.6	2.8	-2.8	1.3	6.3	5.8
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.5	1.3	-1.3	1	3.6	3.6
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.6	3.5	-3.5	1.6	9	9
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.9	2.6	-2.6	1.5	5	5
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.6	1.9	-1.9	1.5	6.5	6.5
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0	0	0	3	13.5	13
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	2	6	-5.5	0	0	0
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.8	3.1	-3.1	1.8	7.8	7.8

CONDUCTOR LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			C1 (Fox Run Sub)			C2 (Palmer Lake Sub)		
				WIND	TENS.	VERT.	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.5	4	-4	2.2	8	7.5
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.8	2.2	-2.2	1.1	3.8	3.3
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.8	1.3	-1.3	1.2	3	3
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.3	2.9	-2.9	2	5.8	5.8
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.7	2.4	-2.4	1	4.1	3.5
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.5	0.8	-0.8	0.7	1.8	1.8
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.8	2.4	-2.4	1.3	5.5	5.5
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.8	1.8	-1.8	1.2	3	3
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.6	1.5	-1.5	1.5	3.9	3.9
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0	0	0	2.2	8	7.5
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.1	4	-4	0	0	0
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	4.2	1.6	-1.6	1.5	4.2	4.2

STRUCTURE #	HEIGHT (FT)	ACTUAL LINE ANGLE
PL1	90'-0"	90° (LEFT)



DESIGN DATA:

477 KCMIL ACSR 26/7 HAWK CONDUCTOR
1/2" EHS 7-STRAND STEEL OPGW
WIND SPAN = - (AHEAD); WIND SPAN = - (BACK)
DESIGN LINE ANGLE (-80° - -95°)
SOLID ICE DENSITY OF 57 LBS/FT³

NOTES:

- ALL DESIGN AND FABRICATION SHALL BE IN ACCORDANCE WITH TRI-STATE "TRANSMISSION LINE TAPERED TUBULAR STEEL POLE STRUCTURES" SPECIFICATION.
- LOADS ARE ULTIMATE VALUES AND INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- STRUCTURE AND ATTACHMENTS SHALL BE DESIGNED FOR THE SIMULTANEOUS APPLICATION OF DEAD LOAD OF THE STRUCTURE INCLUDING THE APPROPRIATE LOAD FACTOR, WIND ON THE STRUCTURE, AND WIRE LOADS FOR EACH LOAD CASE.
- WIND PRESSURES SHOWN ON LOAD CASE TABLE ARE IN PSF AND ARE BASED ON A SHAPE FACTOR OF 1.0 FOR 12-SIDED SECTIONS. WIND PRESSURES INCLUDE LOAD FACTORS FOR EACH LOAD CASE.
- LIMIT POLE DEFLECTION TO 2% OF STRUCTURE HEIGHT FOR DEFLECTION LOAD CASE. ALL WIRES INTACT.
- APPLY WIND ON STRUCTURE WHICH RESULTS IN THE MOST SEVERE EFFECT.
- STRUCTURE TO BE DESIGNED FOR INTACT AND FULL DEADEND LOADING CONDITIONS FOR LOAD CASES 1-5.
- MATERIAL SHALL BE WEATHERING STEEL
- NAME PLATE SHALL BE WELDED ON ALL STRUCTURES. TEXT MUST BE PERMANENTLY LEGIBLE, AND MUST INCLUDE MANUFACTURER'S NAME, DATE OF FABRICATION, STRUCTURE NUMBER, COMPLETE STRUCTURE LENGTH, COMPLETE STRUCTURE WEIGHT, AND GROUND LINE MOMENT CAPACITY IN KIP-FEET.
- SEE DWG. T1005-G-13-016 FOR STEEL DETAILS.
- LOCATE DETAIL 2 GROUNDING PADS ON BOTH SIDES OF ALL CONNECTIONS AND SPLICES.
- ANCHOR BOLTS SHALL BE EQUALLY SPACED AROUND THE POLE DIAMETER, WITH A MINIMUM 2.5" CLEAR SPACE BETWEEN THE BOLTS.
- TOP DIAMETER: 12" MINIMUM; ANCHOR BOLT DIAMETER: 62" MAXIMUM; TAPER: 0.4 INCH PER FOOT MAXIMUM. (ALTERNATIVES MAY BE PROPOSED.)
- LADDER CLIPS SHALL BE INCLUDED TO CLIMB THE ENTIRE POLE, AND WORKING CLIPS SHALL BE INCLUDED ON THE TOP 50' OF THE POLE.
- POLES MAY BE SINGLE PIECE OR MAY INCLUDE A SINGLE SLIP JOINT.

FOX RUN - FOX RUN TAP

115KV VDEZ

OUTLINE AND DESIGN

VERTICAL DEADEND

TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED

UPDATED BY: ADAOU 4/20/2022 9:32 AM

Revision

Dwg. No.

Mgr.

Drawing Title

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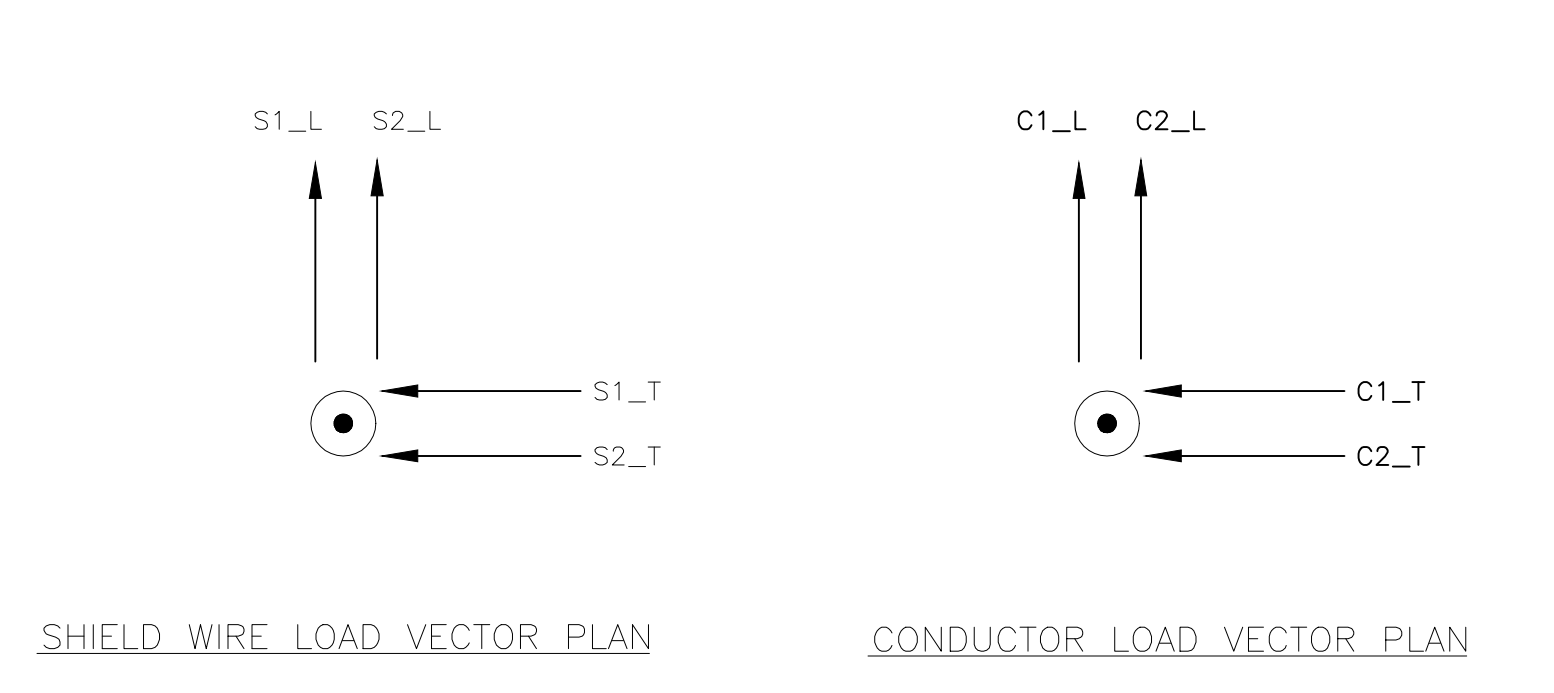
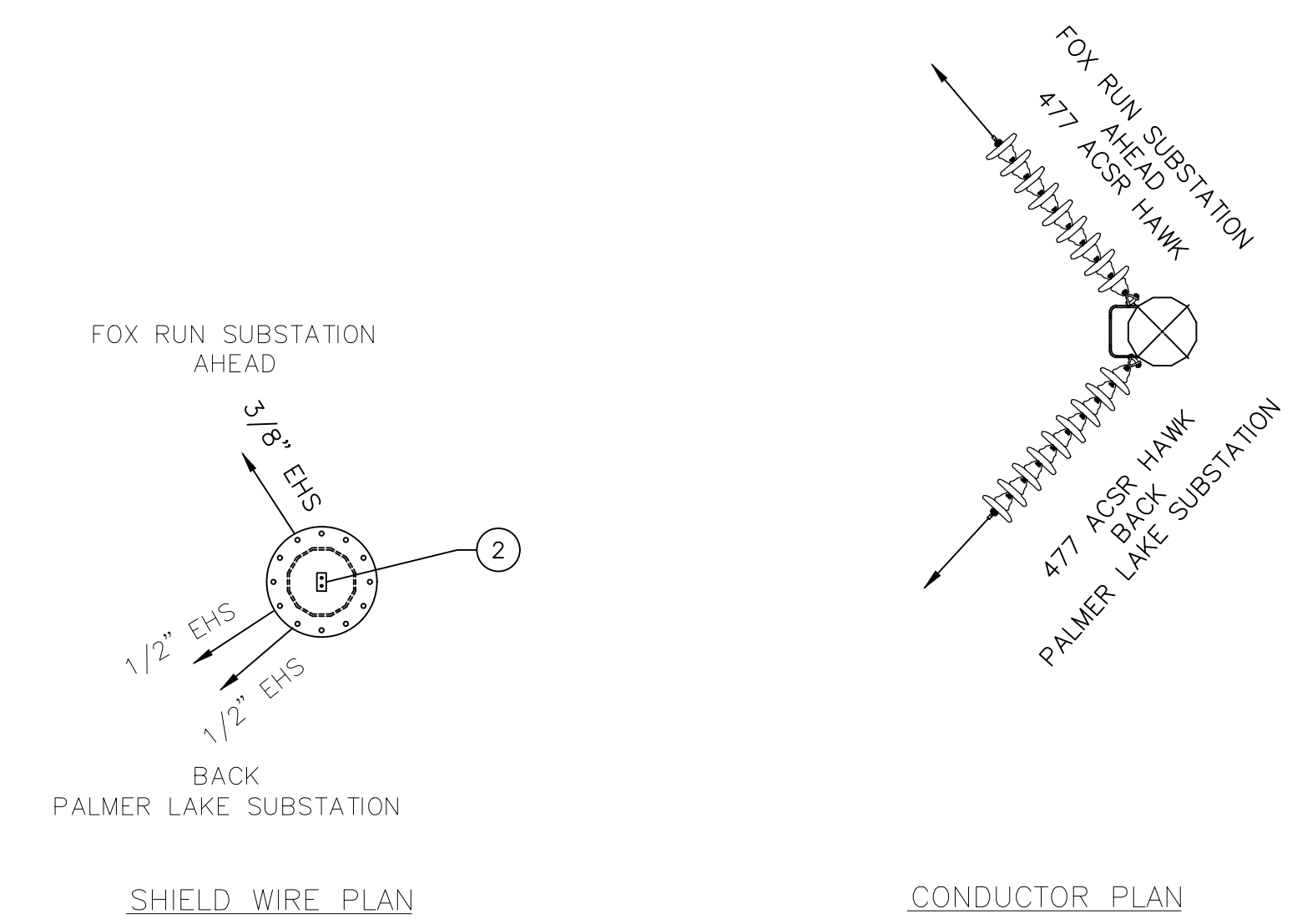
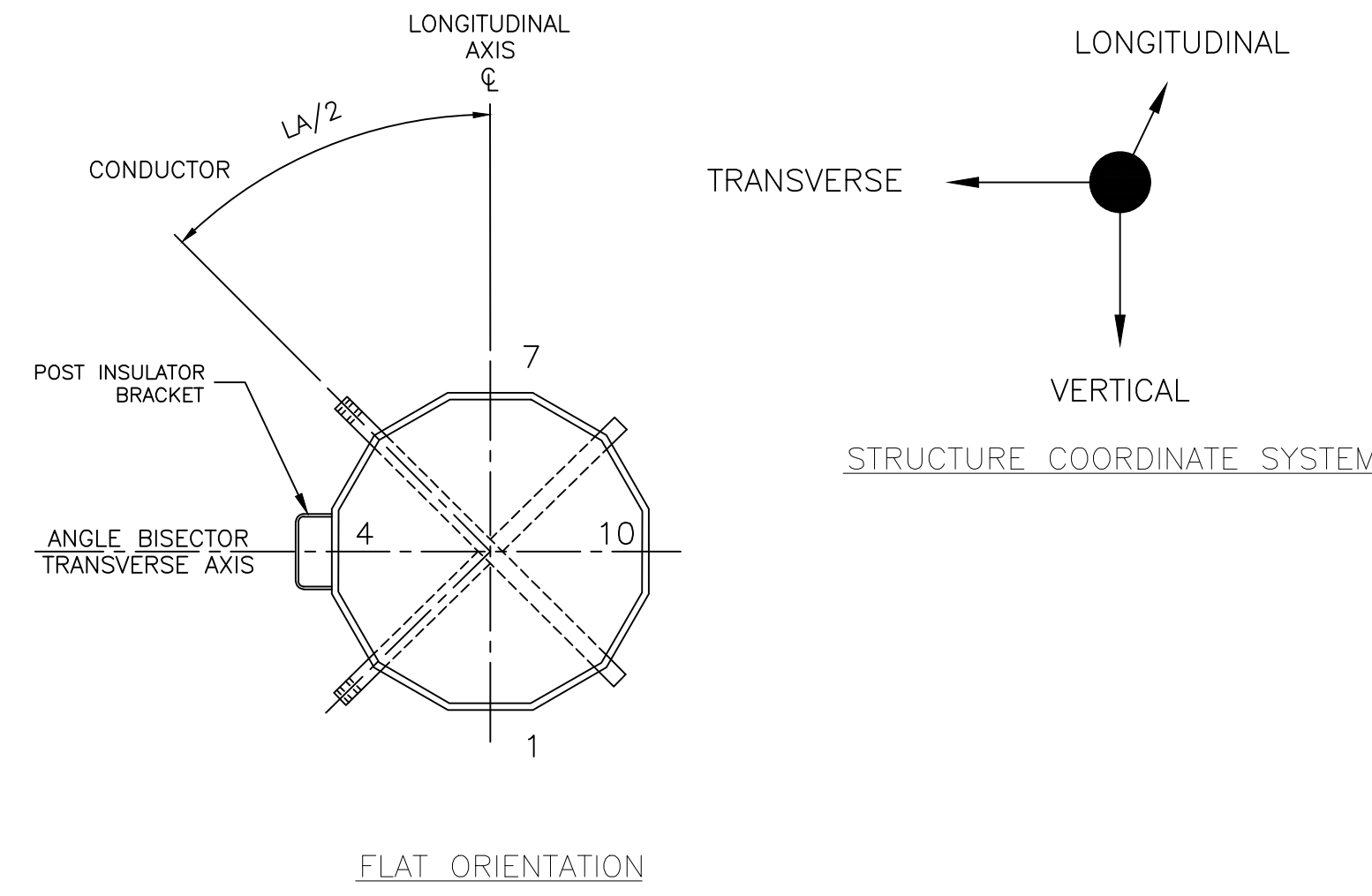
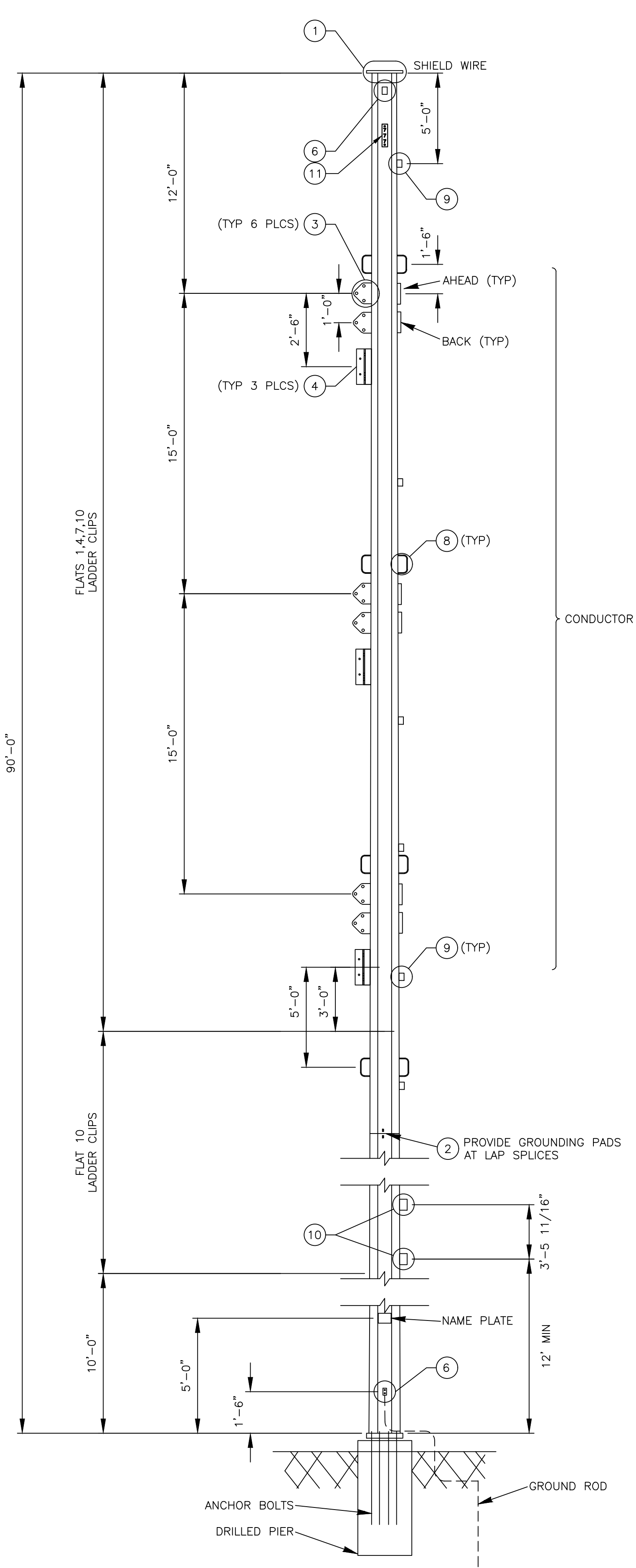
TRI-STATE
Generation and Transmission Association, Inc.
A Touchstone Energy Cooperative

1100 W. 116th Ave.
P.O. Box 33695
Denver, Colorado 80233
303-452-0111

Dwn: ARO Date: 04-12-22

Appd: JTL Date: 04-12-22

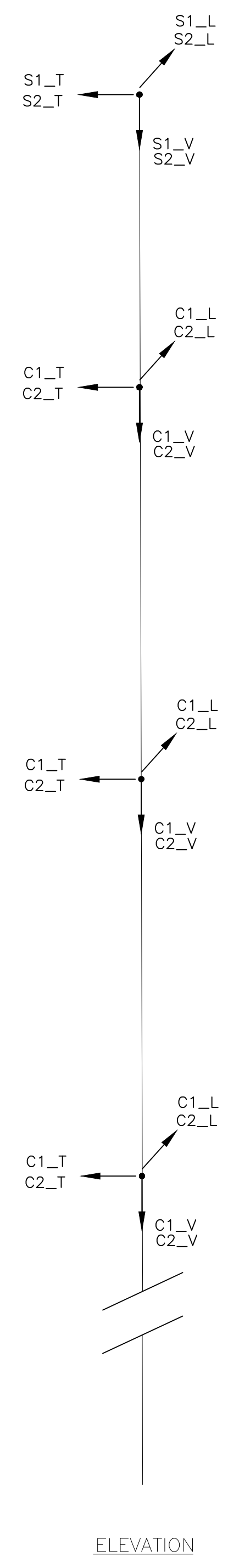
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SHIELD WIRE LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			S1 (Fox Run)			S2 (Flying Horse)		
				WIND	TENS.	VERT.	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.4	-3.8	-3.8	2.3	-20	19
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.8	-1.6	-1.6	1.3	-9	8
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.8	-1.1	-1.1	1.1	-7.9	7.9
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.3	-3.1	-3.1	3	-13.9	13.4
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.8	-1.3	-1.6	1.3	-9.3	8.1
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.2	-0.5	-0.5	0.7	-6.3	6.3
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.8	-2.3	-2.2	1.4	-14	13.8
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.8	-1.8	-1.8	1.3	-8.5	8.5
9 DIFFERENTIAL ICE (HALF AHEAD)	32	0.0	0.5	1.00	1.00	1.00	0.6	-1.1	-1.1	1.4	-9.5	9.8
10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0	0	0	2.3	-20	19
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.4	-3.8	-3.8	0	0	0
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.8	-1.3	-1.3	1.5	-13.2	13

CONDUCTOR LOADS WITH OLF (KIPS)												
LOAD CASES	TEMP (°F)	WIND (PSF)	ICE (IN)	LOAD FACTORS			C1 (Fox Run)			C2 (Flying Horse)		
				WIND	TENS.	VERT.	V	T	L	V	T	L
1 NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.4	-3.6	-3.3	1.8	-10.4	9.6
2 NESC 250C EXTREME WIND	60	20.7	0.0	1.00	1.00	1.00	0.8	-1.9	-1.6	1	-4.8	3.9
3 NESC 250D CONC. ICE & WIND	15	6.4	0.50	1.00	1.00	1.00	0.8	-1.4	-1.3	1.1	-3.8	3.3
4 TRI-STATE EXTREME ICE	32	0.0	1.0	1.00	1.00	1.10	1.3	-2.8	-2.8	2.2	-7.3	7.3
5 TRI-STATE EXTREME WIND	60	25.6	0.0	1.10	1.00	1.00	0.8	-2	-1.9	1.1	-5.2	4.4
6 DEFLECTION	60	2.0	0.0	1.00	1.00	1.00	0.3	-0.6	-0.6	0.8	-2.2	2.1
7 BROKEN SHIELD WIRE	0	4.0	0.5	1.00	1.30	1.00	0.7	-2.5	-2.5	1.3	-7	6.6
8 DIFFERENTIAL ICE (HALF BACK)	32	0.0	0.5	1.00	1.00	1.00	0.9	-1.8	-1.8	0.9	-3.9	3.9
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10 DE AHEAD - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	0	0	0	1.8	-10.4	9.6
11 DE BACK - NESC 250B HEAVY	0	4.0	0.5	2.50	1.65	1.50	1.4	-3.6	-3.3	0	0	0
12 CONSTRUCTION	60	4.0	0.0	1.65	1.65	1.65	0.8	-1.8	-1.8	4.6	-5.4	5.3

STRUCTURE #	HEIGHT (FT)	ACTUAL LINE ANGLE
FH1	90'-0"	-90' (LEFT)



DESIGN DATA:
 477 KCMIL ACSR 26/7 HAWK CONDUCTOR
 1/2" EHS 7-STRAND STEEL OPGW
 WIND SPAN = - (AHEAD); WIND SPAN = - (BACK)
 DESIGN LINE ANGLE (-80' - -95')
 SOLID ICE DENSITY OF 57 LBS/FT³

- NOTES:**
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 - LIMIT POLE DEFLECTION TO 2% OF STRUCTURE HEIGHT FOR DEFLECTION LOAD CASE. ALL WIRES INTACT.
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 - SEE DWG. T1005-G-13-016 FOR STEEL DETAILS.
 - LOCATE DETAIL 2 GROUNDING PADS ON BOTH SIDES OF ALL CONNECTIONS AND SPLICES.
 - ANCHOR BOLTS SHALL BE EQUALLY SPACED AROUND THE POLE DIAMETER, WITH A MINIMUM 2.5" CLEAR SPACE BETWEEN THE BOLTS.
 - TOP DIAMETER: 12" MINIMUM; ANCHOR BOLT DIAMETER: 62" MAXIMUM; TAPER: 0.4 INCH PER FOOT MAXIMUM. (ALTERNATIVES MAY BE PROPOSED.)
 - LADDER CLIPS SHALL BE INCLUDED TO CLIMB THE ENTIRE POLE, AND WORKING CLIPS SHALL BE INCLUDED ON THE TOP 50' OF THE POLE.
 - POLES MAY BE SINGLE PIECE OR MAY INCLUDE A SINGLE SLIP JOINT.

Preliminary

4/14/2022

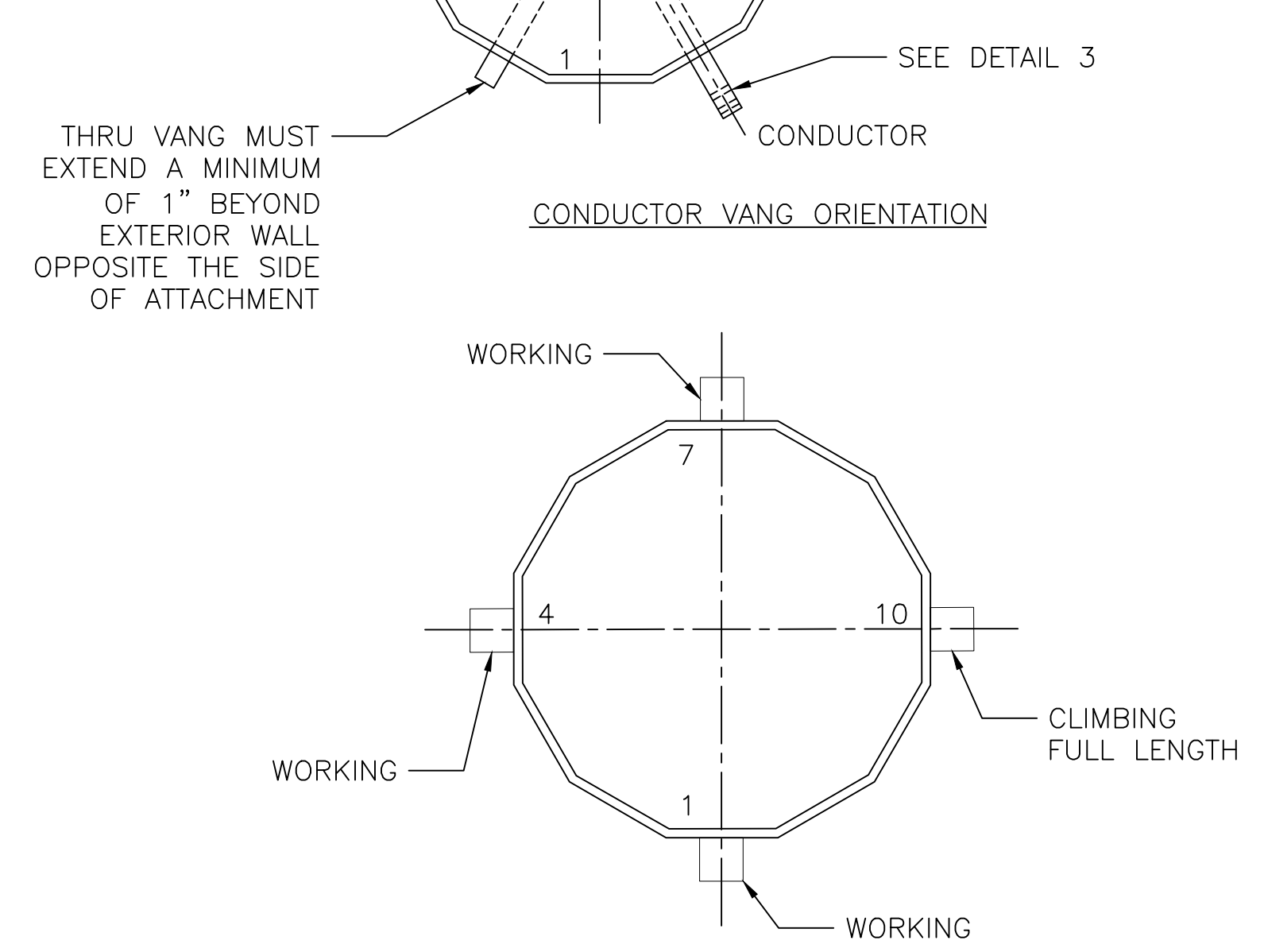
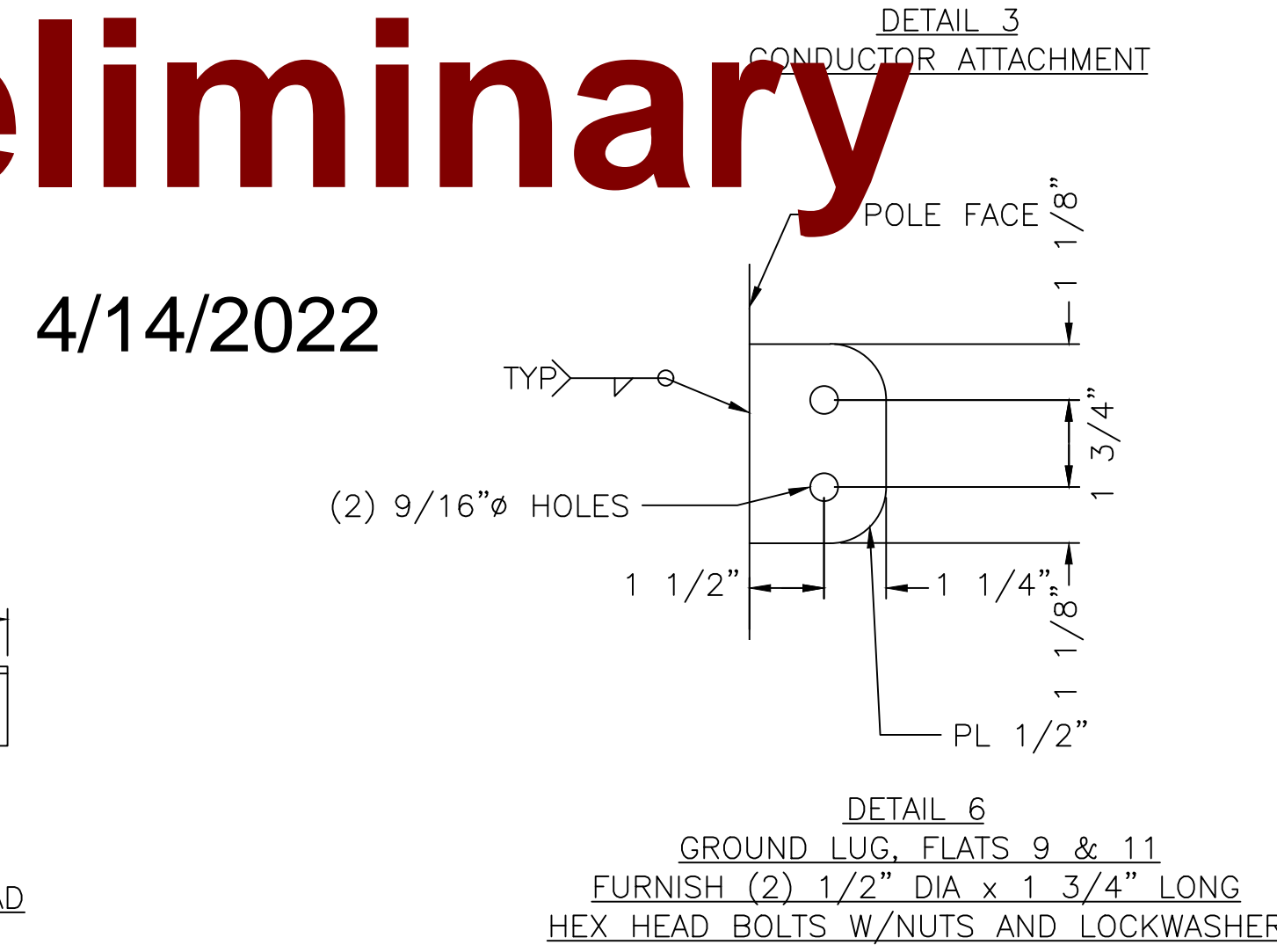
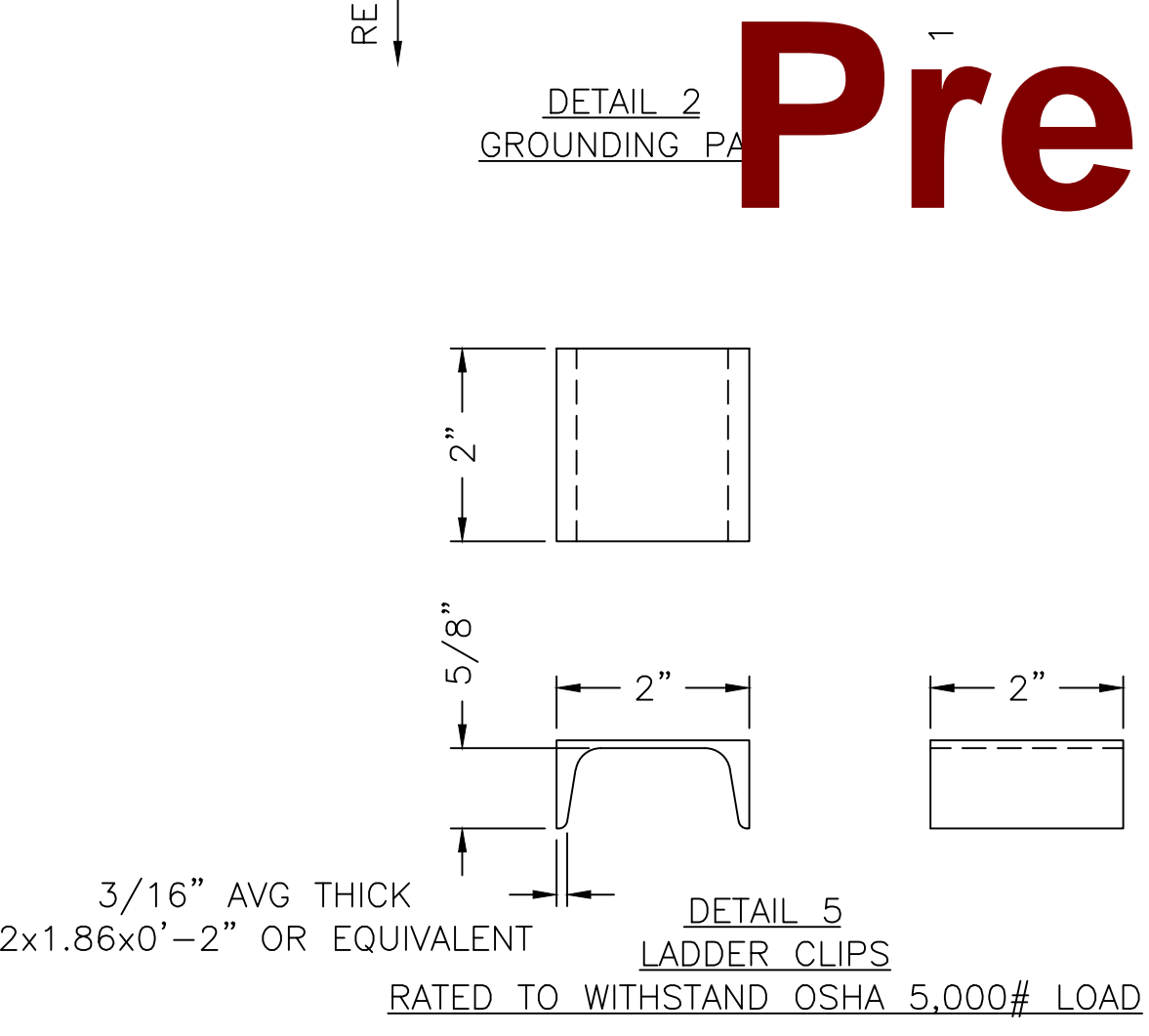
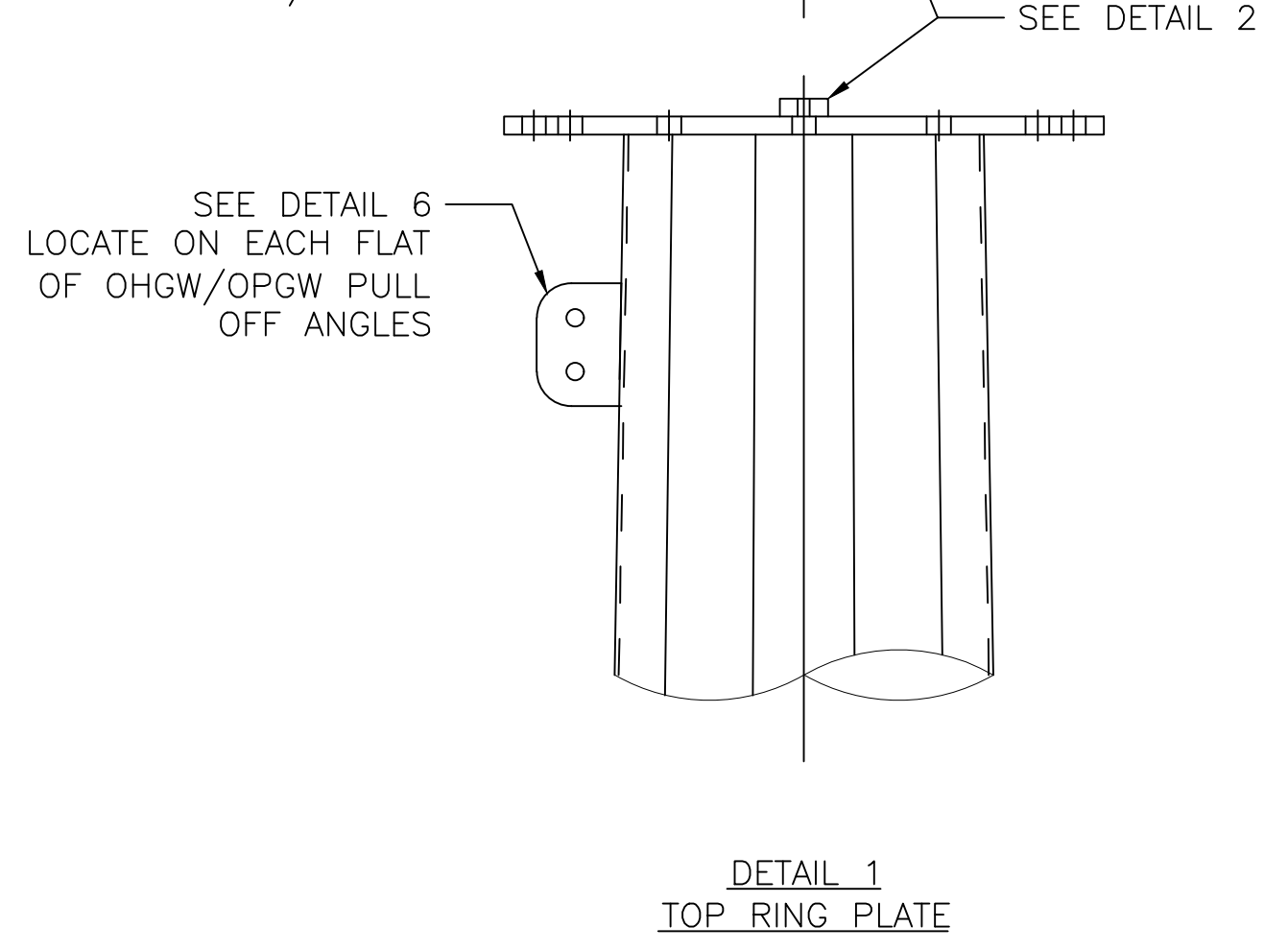
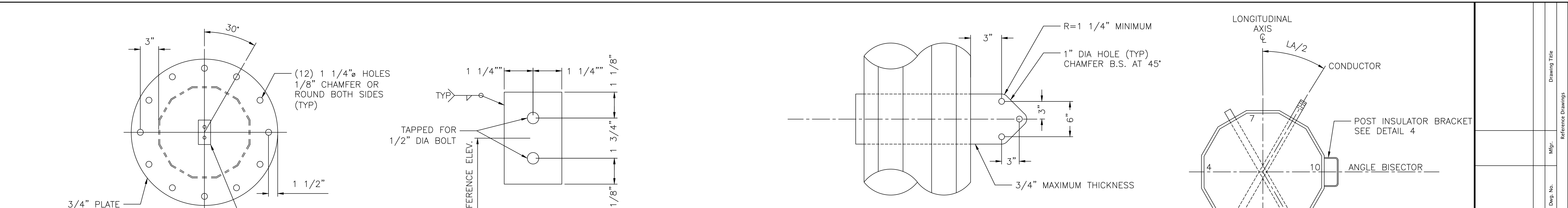
FOX RUN - FOX RUN TAP
 115KV VDE1
 OUTLINE AND DESIGN
 VERTICAL DEADEND
 TRI-STATE GENERATION & TRANSMISSION
 ASSOCIATION, INCORPORATED
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TRI-STATE
 Generation and Transmission
 Association, Inc.
 A Touchstone Energy Cooperative
 1100 W. 116th Ave.
 P.O. Box 33695
 Denver, Colorado 80233
 303-452-0111

No.	Date	Dwn.	Appd.	Revision
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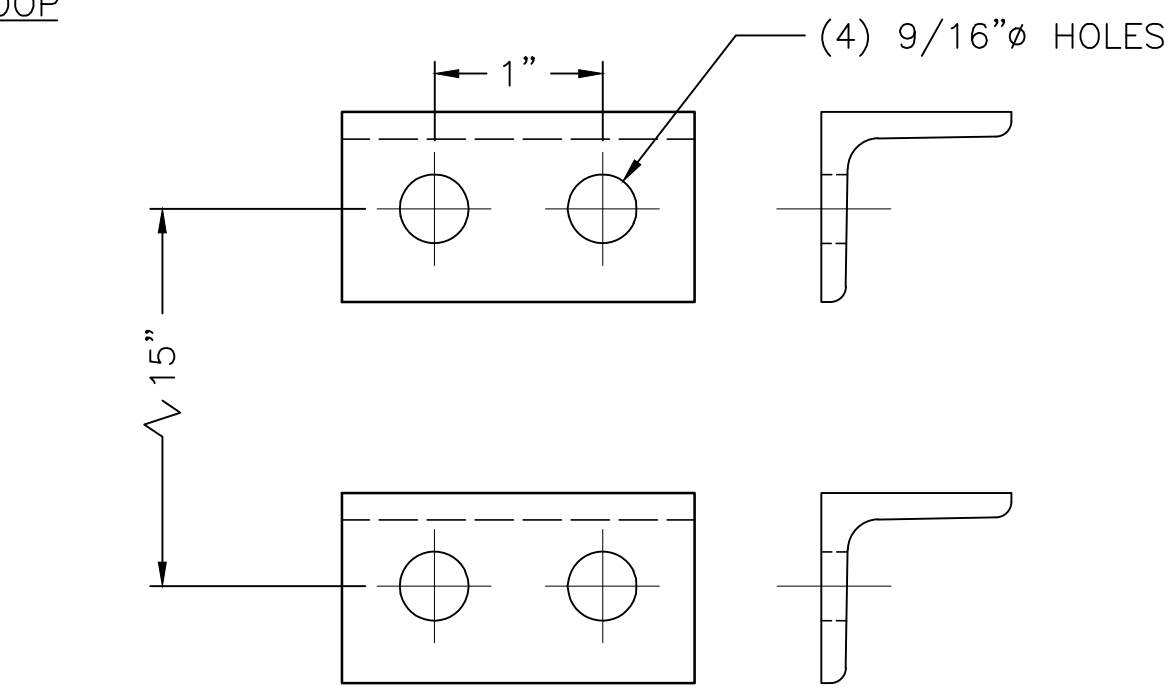
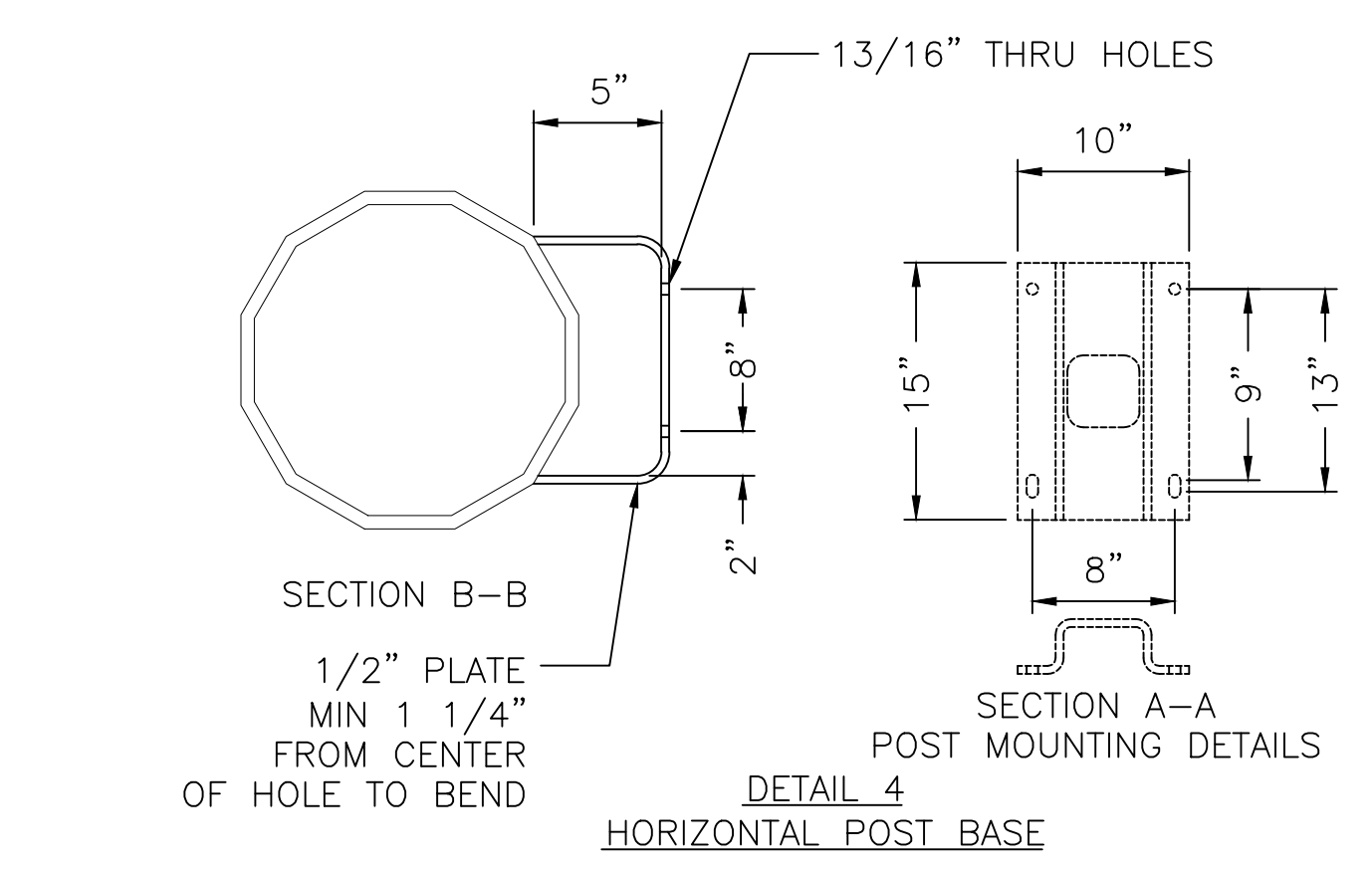
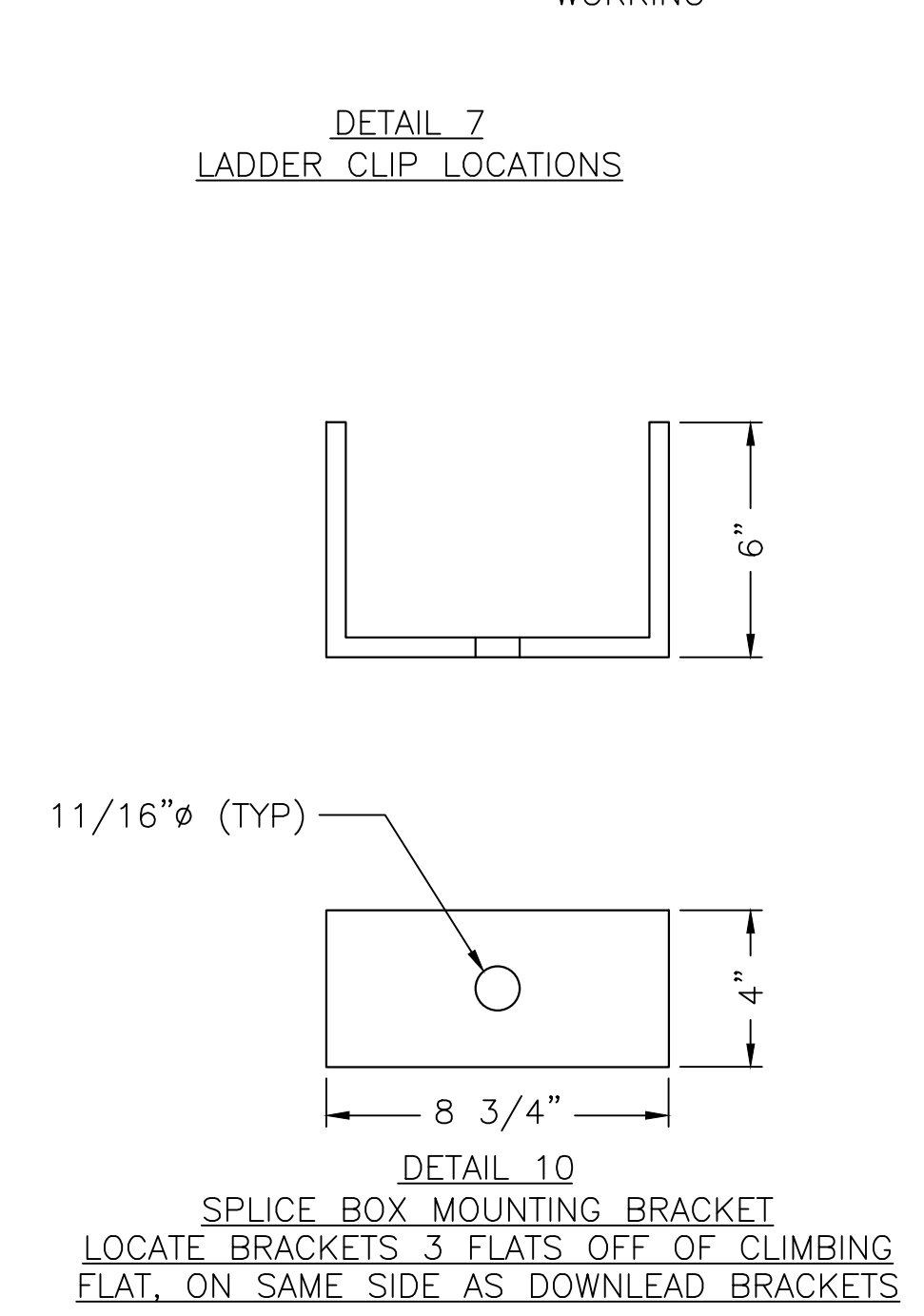
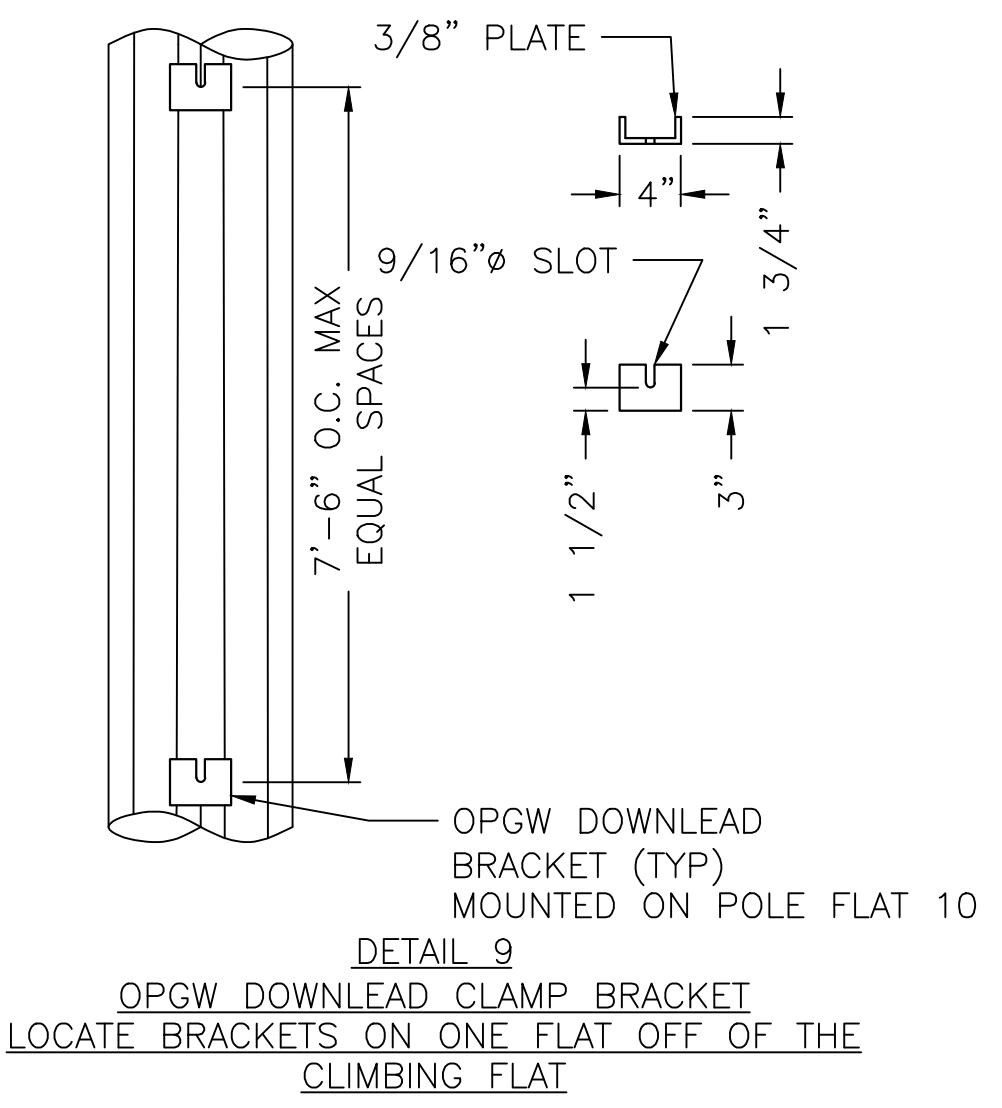
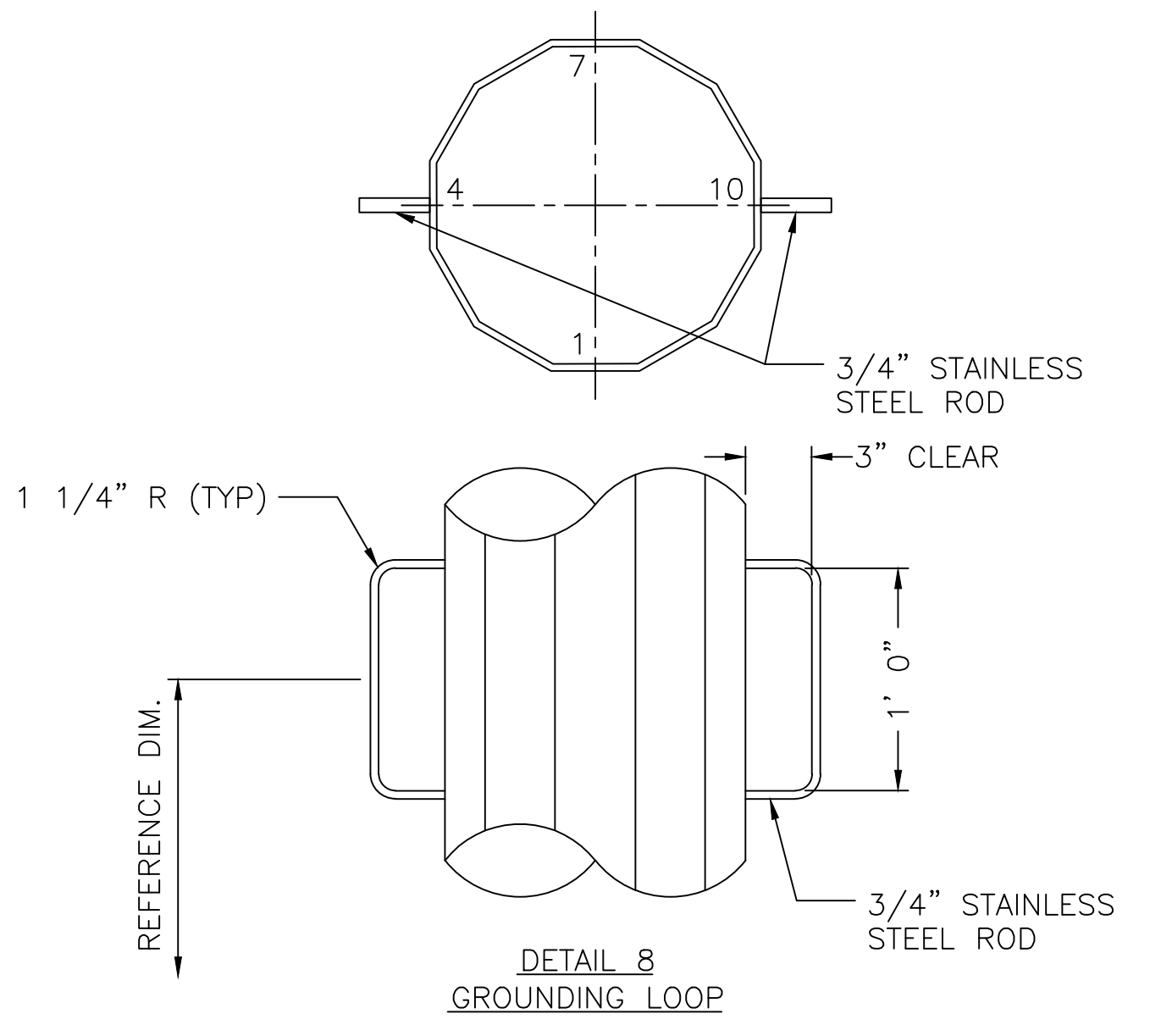
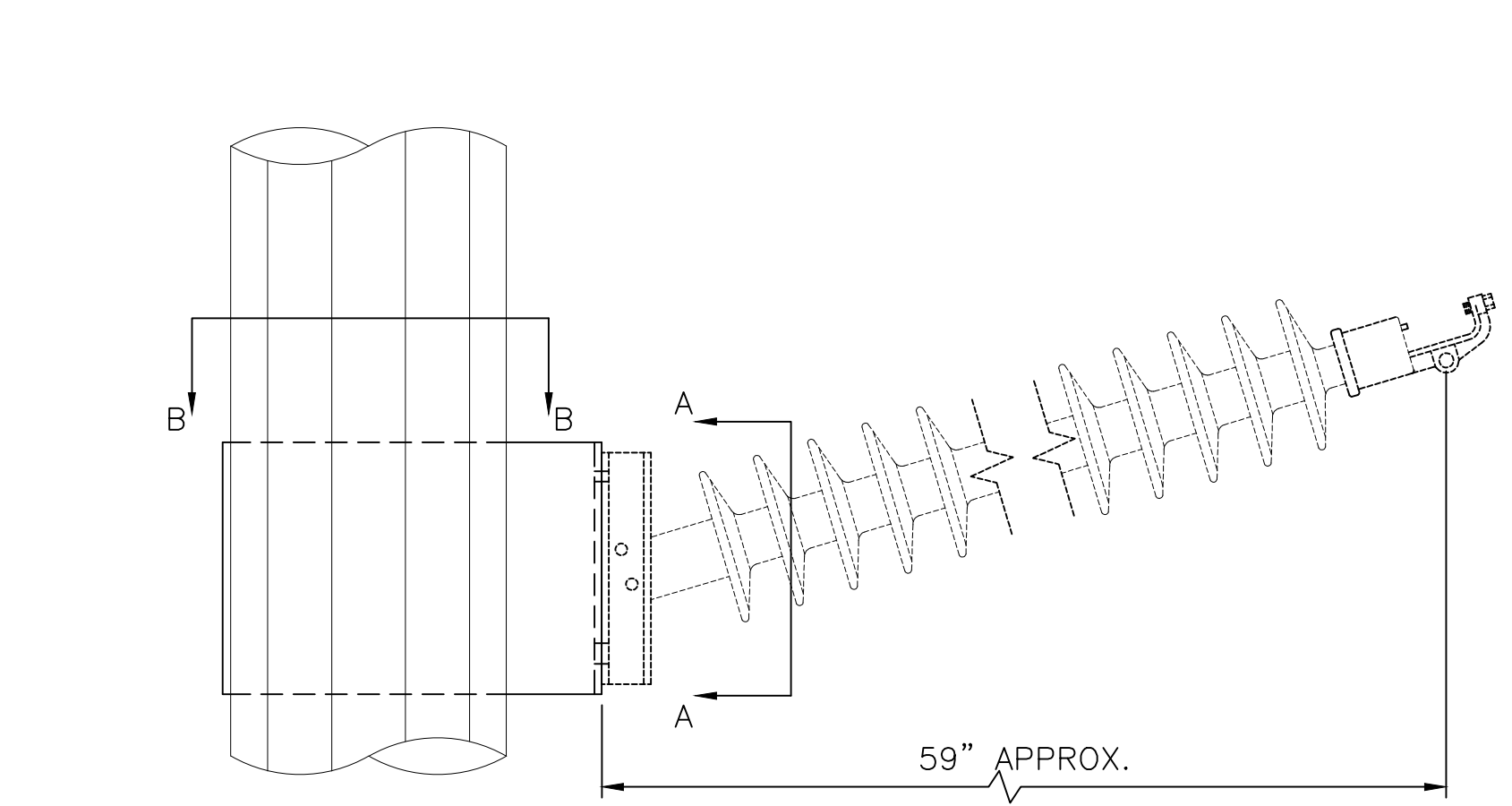
Dwg. No. Mgr. Reference Drawings

T2301-G-13-006



Preliminary

4/14/2022



NOTES:

1. PROVIDE MOUNTING DETAIL NEAR THE TOP OF EACH POLE FOR VERTICAL AERIAL NUMBER SIGN PLATE.
2. ATTACHMENT FOR BOTH AHEAD AND BACK LINE ARE REQUIRED.
3. DETAIL MAY BE A BRACKET OFFSET FROM POLE TO ALLOW BOLT INSERTED FROM BEHIND OR A 1/2" NUT WELDED OVER 9/16" HOLE.

NOTES:

1. INSTALL ONE GROUND LOOP PER PHASE WIRE AT 1'-6" ABOVE:
 - A. EACH DAVIT ARM ATTACHMENT.
 - B. EACH PHASE WIRE POLE VANG (RUNNING DEAD)
 - C. EACH PAIR OF PHASE WIRE POLE VANGS (DEADEND), ON THE BISECTOR ANGLE
2. ALSO INSTALL ONE GROUND LOOP AT MINIMUM 5- FEET BELOW THE LOWEST PHASE WIRE ELEVATION (INCLUDING DEADEND JUMPER STRUT INSULATORS) ON SAME FLATS AS CONDUCTOR PULLOFF ATTACHMENTS. OKAY TO RELOCATE THIS GROUND LOOP FURTHER DOWN THE POLE AS NECESSARY TO AVOID CONFLICTS. NO GROUND LOOPS ALLOWED BETWEEN JACKING NUTS AND WITHIN 1-FOOT OF OUTERMOST JACKING NUTS. NO GROUND LOOPS ALLOWED WITHIN 1-FOOT BELOW MALE ENDS MAXIMUM SLIP JOINT LAP.
3. DIMENSIONS ARE TO BEND LINE.
4. WELDS TO ATTACH MAINTENANCE PROVISIONS TO STRUCTURES SHALL DEVELOP THE ULTIMATE TENSILE STRENGTH OF THE ATTACHED PART.
5. FABRICATOR SHALL COORDINATE LOCATION OF MAINTENANCE PROVISIONS SUCH THAT THEY DO NOT INTERFERE WITH OTHER STRUCTURE PROVISIONS OR ATTACHMENTS.

Drawing Title		Reference Drawings	
Migr.		Dwg. No.	
N.F.		Revision	
JTL		ISSUE PER CPN 049 AND CPN 045B	
ARO		Date	
4/12/22		4/20/2022 9:33 AM	
No.		Contract	
1		FOX RUN - FOX RUN TAP	
2		VERTICAL DEADEND OUTLINE AND DESIGN	
3		TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED	
4		UPDATED BY: ADAOL	
5		115KV	
6		FOX RUN - FOX RUN TAP	
7		VERTICAL DEADEND OUTLINE AND DESIGN	
8		TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED	
9		UPDATED BY: ADAOL	
10		115KV	
11		FOX RUN - FOX RUN TAP	
12		VERTICAL DEADEND OUTLINE AND DESIGN	
13		TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED	
14		UPDATED BY: ADAOL	
15		115KV	
16		FOX RUN - FOX RUN TAP	
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18		TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INCORPORATED	
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100		115KV	

TRI-STATE
Generation and Transmission Association, Inc.
A Touchstone Energy Cooperative

1100 W. 116th Ave.
P.O. Box 33695
Denver, Colorado 80233
303-432-0111

Dwn: ARO Date: 04-12-22
Appd: JTL Date: 04-12-22

T2301-G-13-007

Site Development Plan_V2.pdf Markup Summary

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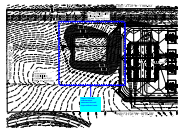
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Depict 15ft wide maintenance easement around impoundment area