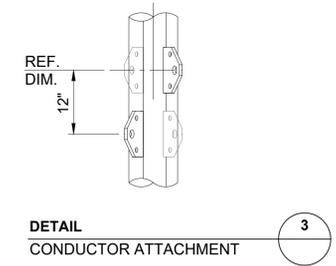
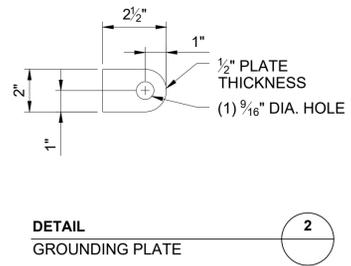
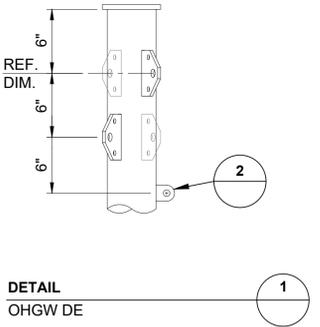
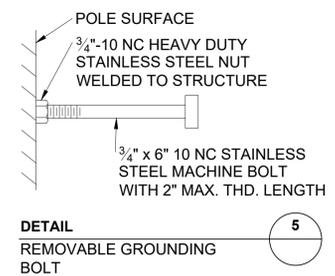
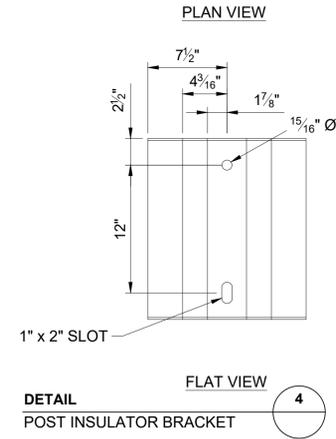
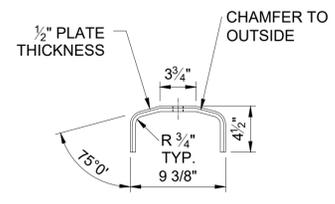
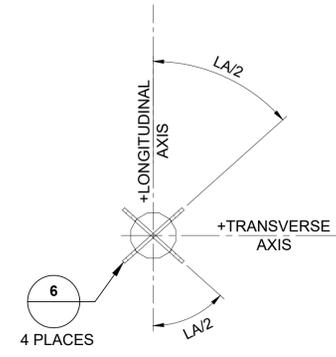
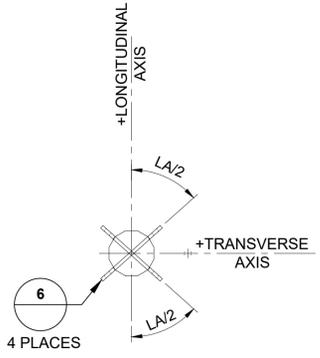


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DETAIL OHGW DE 1

DETAIL GROUNDING PLATE 2

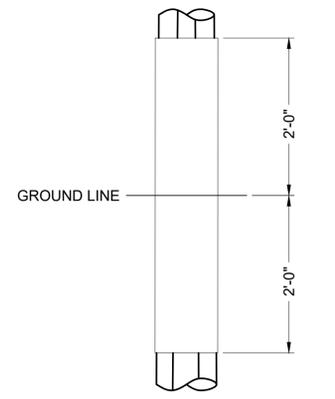
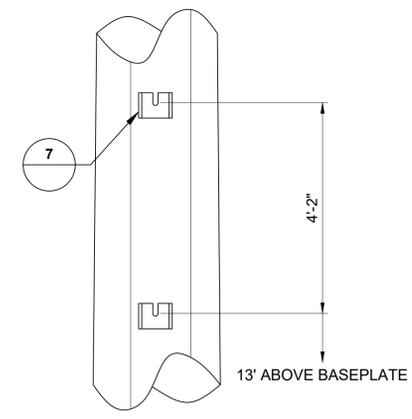
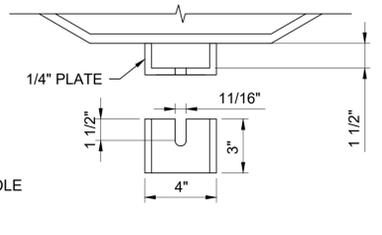
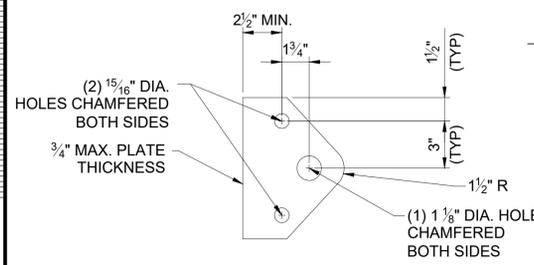
DETAIL CONDUCTOR ATTACHMENT 3

DETAIL POST INSULATOR BRACKET 4

DETAIL REMOVABLE GROUNDING BOLT 5

Millimeters
Scale For Microminim

Inches



DETAIL DEADEND VANG 6

DETAIL OPGW DOWNLEAD CLAMP AND SPLICE CAN MOUNTING BRACKET (SEE NOTE 4) 7

DETAIL OPGW SPLICE CAN MOUNTING 8

DETAIL GROUND COLLAR (SEE NOTE 3) 9

- NOTES:
- VANG AND VANG CONNECTION TO POLE SHALL BE DESIGNED TO WITHSTAND THE RESULTANT LOAD 10 DEGREES EITHER SIDE OF INDICATED LINE ANGLES.
 - VANGS SHALL BE ORIENTED TO BE WITHIN 5 DEGREES OF LINE DEPARTURE ANGLE.
 - A GROUND COLLAR, MINIMUM 3/16 INCH THICK AND MADE FROM A572-65 STEEL, SHALL EXTEND 2 FEET ABOVE AND 2 FEET BELOW THE GROUND LINE. PLATE SHALL NOT BE INCLUDED IN DESIGN STRENGTH CALCULATIONS. CORROCOAT II OR SIMILAR SHALL BE APPLIED ON THE POLE SHAFT FROM 3 INCHES BELOW THE GROUND SLEEVE TO 3 INCHES ABOVE THE GROUND SLEEVE.
 - INSTALL AT APPROXIMATELY 5'-0" SPACING FROM TOP OF POLE TO OPGW SPLICE CAN MOUNTING BRACKETS.

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BURNS & MCDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. E-65

date	DECEMBER 12, 2025	detailed	J. HUTTON
designed	N. ZLATANOVA	checked	J. SEBOLT

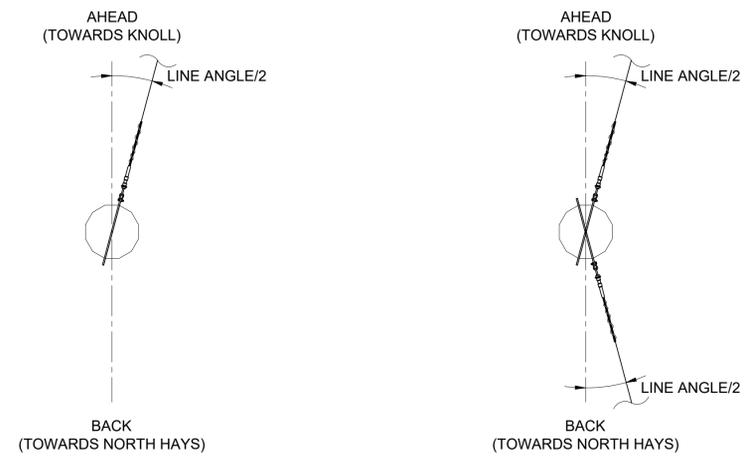
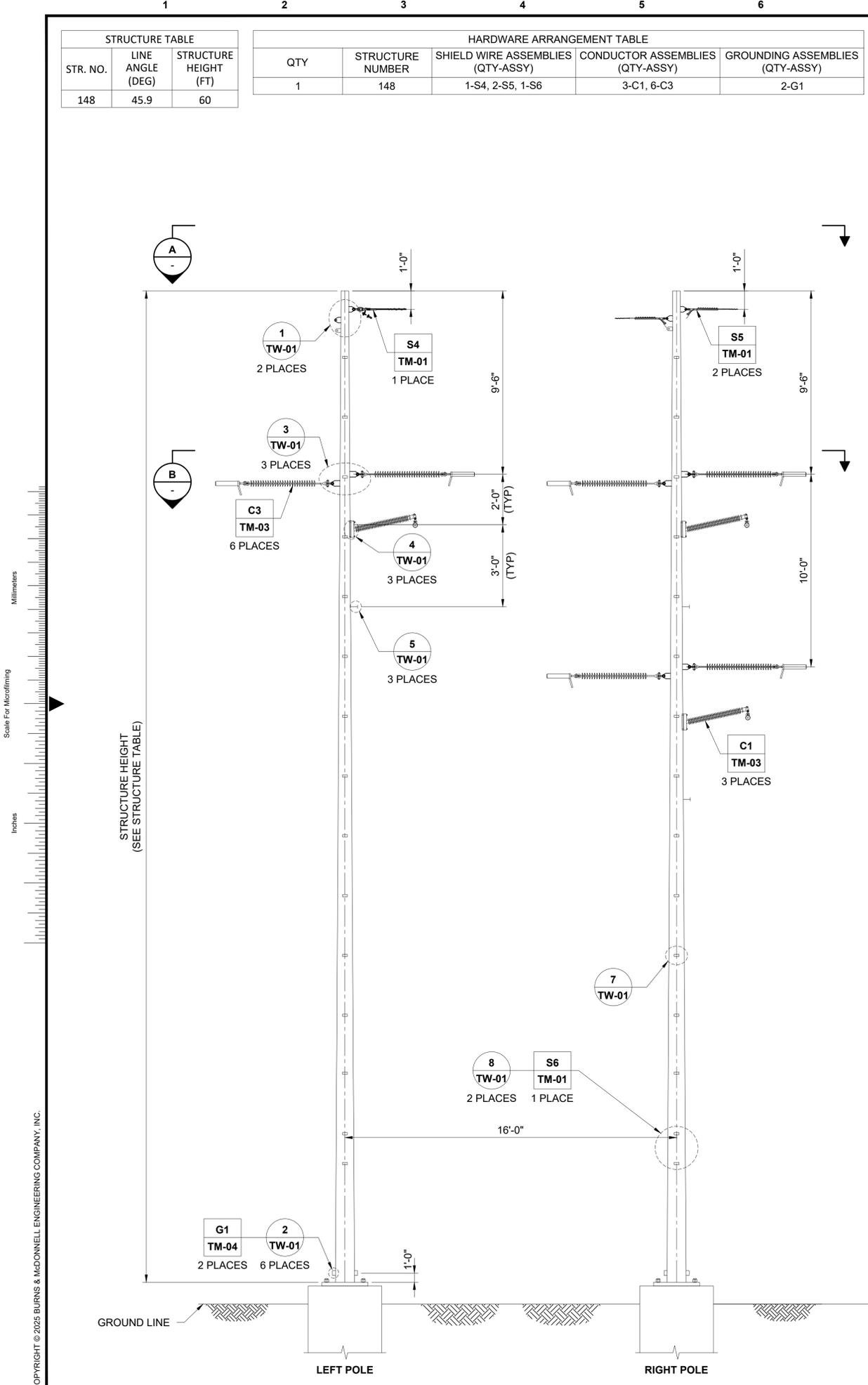
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project		contract	
177862			
drawing		rev.	
TW-01		A	
sheet	1	of	1
file		TW-01.dwg	

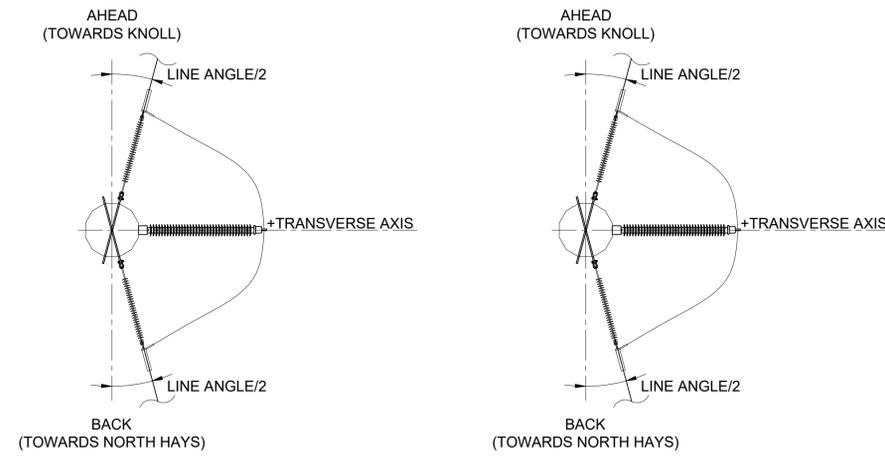
STRUCTURE TABLE		
STR. NO.	LINE ANGLE (DEG)	STRUCTURE HEIGHT (FT)
148	45.9	60

HARDWARE ARRANGEMENT TABLE				
QTY	STRUCTURE NUMBER	SHIELD WIRE ASSEMBLIES (QTY-ASSY)	CONDUCTOR ASSEMBLIES (QTY-ASSY)	GROUNDING ASSEMBLIES (QTY-ASSY)
1	148	1-S4, 2-S5, 1-S6	3-C1, 6-C3	2-G1

no.	date	by	ckd	description
A	2/18/26	NHZ	SEB	ISSUED FOR BID



SECTION A-A
SHIELD WIRE PLAN VIEW



SECTION B-B
CONDUCTOR PLAN VIEW

- NOTES:
- SEE DRAWING ST-01 FOR STAKING COORDINATES.
 - LOOKING "AHEAD" REFERS TO LOOKING IN THE DIRECTION OF INCREASING STRUCTURE NUMBER.
 - SEE DRAWING TW-01 FOR STEEL POLE DETAILS.

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 KANSAS CITY, MO 64114
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date	DECEMBER 12, 2025	detailed	J. HUTTON
designed	N. ZLATANOVA	checked	J. SEBOLT

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NORTH HAYS-KNOLL
 115-kV LINE 115.77
 2-POLE DEADEND 40-50° STEEL STRUCTURE
 LOAD AND DESIGN DRAWING

project	177862	contract	
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drawing **TW-02** - rev. **A**

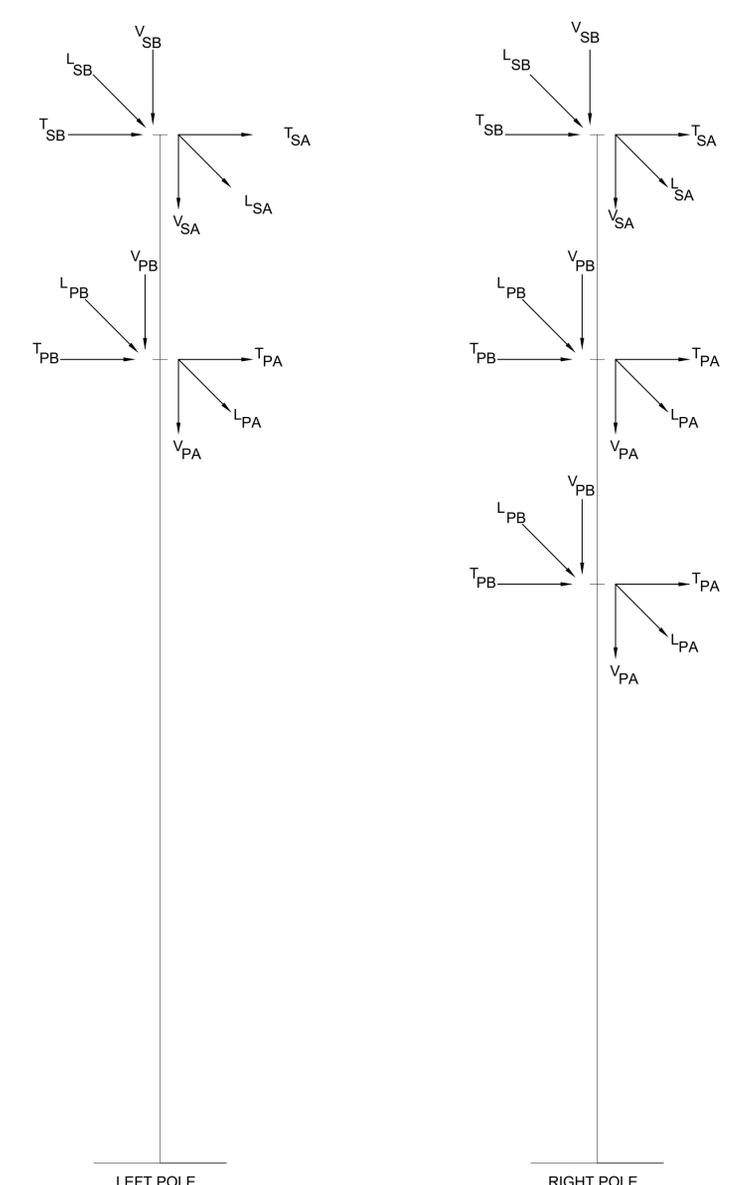
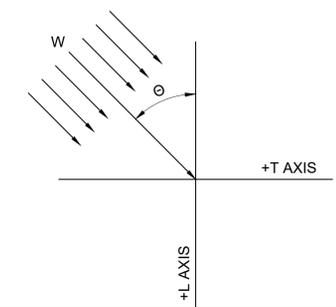
sheet	1	of	2	sheets
file	TW-02.dwg			

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LOAD TABLE STR. 148

CONDUCTOR: 1-1192.5KCMIL 45/7 "BUNTING" ACSR PER PHASE (TENSION LIMIT: 10,000 LBS @ 250B INITIAL)
 SHIELD WIRE: DNO-5651 (TENSION LIMIT: 6,000 LBS @ 250B INITIAL) OR 3/8" EHS STEEL (TENSION LIMIT: 4,500 LBS @ 250B INITIAL)
 WIND SPAN: 250 FT AHEAD AND BACK
 WEIGHT SPAN: 350 FT AHEAD AND BACK
 RULING SPAN: 50-750 FT AHEAD AND BACK
 LINE ANGLE: 40-50 DEGREES

LOAD CASES	WIND (MPH)	ICE (IN)	TEMP (°F)	VSA (K)	TSA (K)	LSA (K)	VSB (K)	TSB (K)	LSB (K)	VPA (K)	TPA (K)	LPA (K)	VPB (K)	TPB (K)	LPB (K)	W	θ	K
1 NESC HEAVY (250B)	39.5	0.50	0	1.01	4.50	-9.29	1.01	4.50	9.29	2.26	7.44	-15.48	2.26	7.44	15.48	10.0	90	1.5
2 NESC EXTREME WIND (250C)	95.0	0.00	60	0.45	2.31	-4.57	0.50	2.31	4.57	1.02	4.35	-8.29	1.22	4.35	8.29	23.1	90	1.0
3 MWE EXTREME WIND	100.0	0.00	60	0.45	2.38	-4.66	0.50	2.38	4.66	1.02	4.67	-8.83	1.22	4.67	8.83	25.6	90	1.0
4 COMBINED ICE/WIND (250D)	50.0	0.75	15	0.86	3.13	-6.35	0.86	3.13	6.35	1.83	5.14	-10.60	1.83	5.14	10.60	6.4	90	1.0
5 EXTREME ICE	0.0	1.00	32	1.10	3.07	-6.83	1.10	3.07	6.83	2.20	5.19	-11.55	2.20	5.19	11.55	0.0	90	1.0
6 DEFLECTION	0.0	0.00	60	0.45	1.45	-3.23	0.45	1.45	3.23	1.02	1.82	-4.04	1.02	1.82	4.04	0.0	90	1.0
7 CONSTRUCTION	35.0	0.00	15	3.24	3.49	-7.64	0.68	3.49	7.64	5.43	5.35	-11.61	1.53	5.35	11.61	4.7	90	1.5



LOADING DIAGRAM
NOT TO SCALE



- NOTES:
- ALL INDICATED LOADS ARE ULTIMATE LOADS AND INCLUDE ALL OVERLOAD FACTORS. STRUCTURES SHALL BE DESIGNED WITH A MATERIAL STRENGTH FACTOR OF 1.0.
 - V, T, & L ARE IN KIPS AND ARE THE LOADS IN THE DIRECTION OF THE STRUCTURE VERTICAL, TRANSVERSE, AND LONGITUDINAL AXIS RESPECTIVELY.
 - W IS THE WIND LOAD (INCLUSIVE OF ALL OVERLOAD FACTORS) TO BE APPLIED TO THE STRUCTURE IN PSF. A STRUCTURE WIND FACTOR OF 1.0 HAS BEEN APPLIED TO "W".
 - THETA (θ) IS THE ANGLE IN DEGREES BETWEEN THE LONGITUDINAL CENTERLINE OF THE STRUCTURE AND THE WIND DIRECTION AS SHOWN ON THE LOADING TREE DIAGRAM.
 - THE DEAD LOAD OF THE STRUCTURE SHALL BE MULTIPLIED BY K.
 - STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING LOADING SITUATIONS:
 - ALL WIRES INSTALLED.
 - AHEAD SPANS ONLY INSTALLED.
 - BACK SPANS ONLY INSTALLED.
 - STRUCTURE SHALL BE DESIGNED TO WITHSTAND A WIND LOAD ON STRUCTURE ONLY (NO WIRES INSTALLED) OF 25.6 PSF APPLIED IN THE MOST CONSERVATIVE DIRECTION PER NESC RULE 261. A.1.C.
 - DEFLECTION SHALL BE LIMITED TO 1% OF STRUCTURE HEIGHT UNDER LOAD CASE 6 AND 10% OF STRUCTURE HEIGHT UNDER LOAD CASES 1 THROUGH 4 FOR ALL LOADING CONDITIONS PER NOTE 6. LIMITS SHALL BE MET WITHOUT CAMBERING OF STRUCTURE.
 - POLE DESIGN SHALL ACCOUNT FOR ECCENTRIC LOADING DUE TO DEFLECTED SHAPE OF STRUCTURE PLUS A FOUNDATION ROTATION OF 1.5 DEGREES.

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no.	date	by	ckd	description
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 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 LICENSEE NO. E-65

date	DECEMBER 12, 2025	detailed	M. PEPICH
designed	N. ZLATANOVA	checked	J. SEBOLT

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 1330 Canterbury Rd.
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 (785) 625-3437

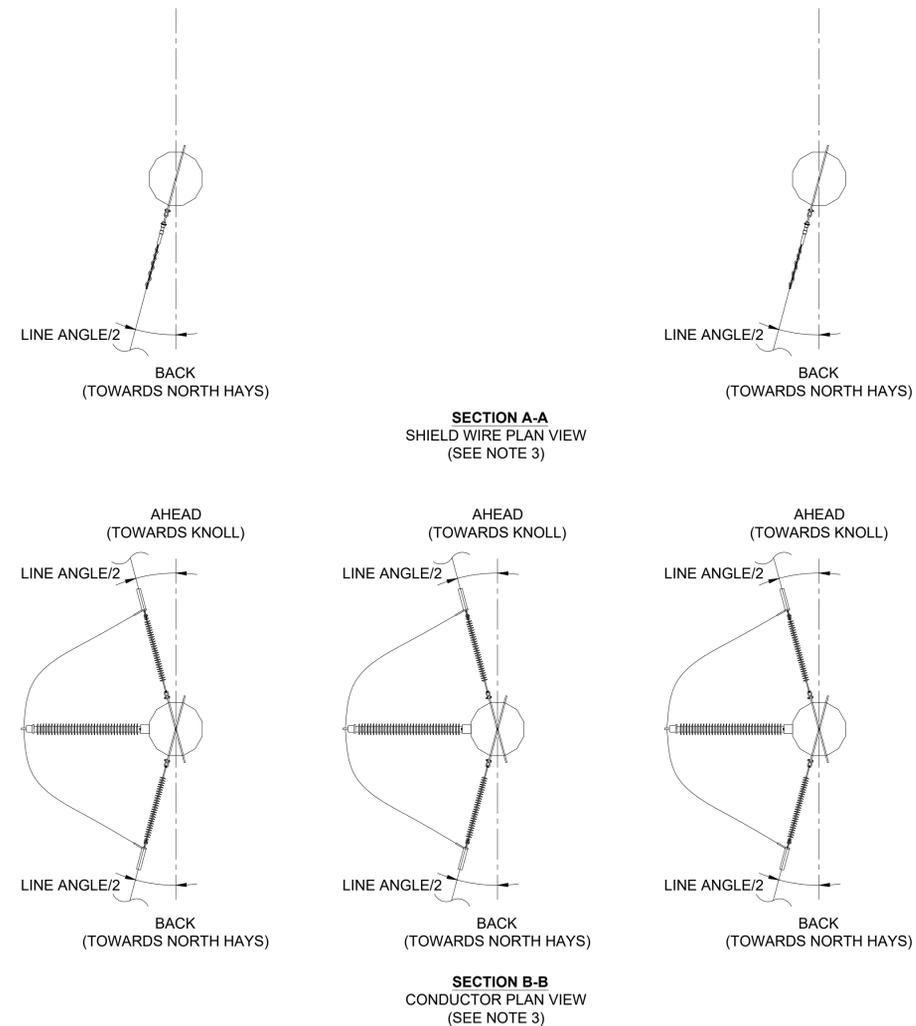
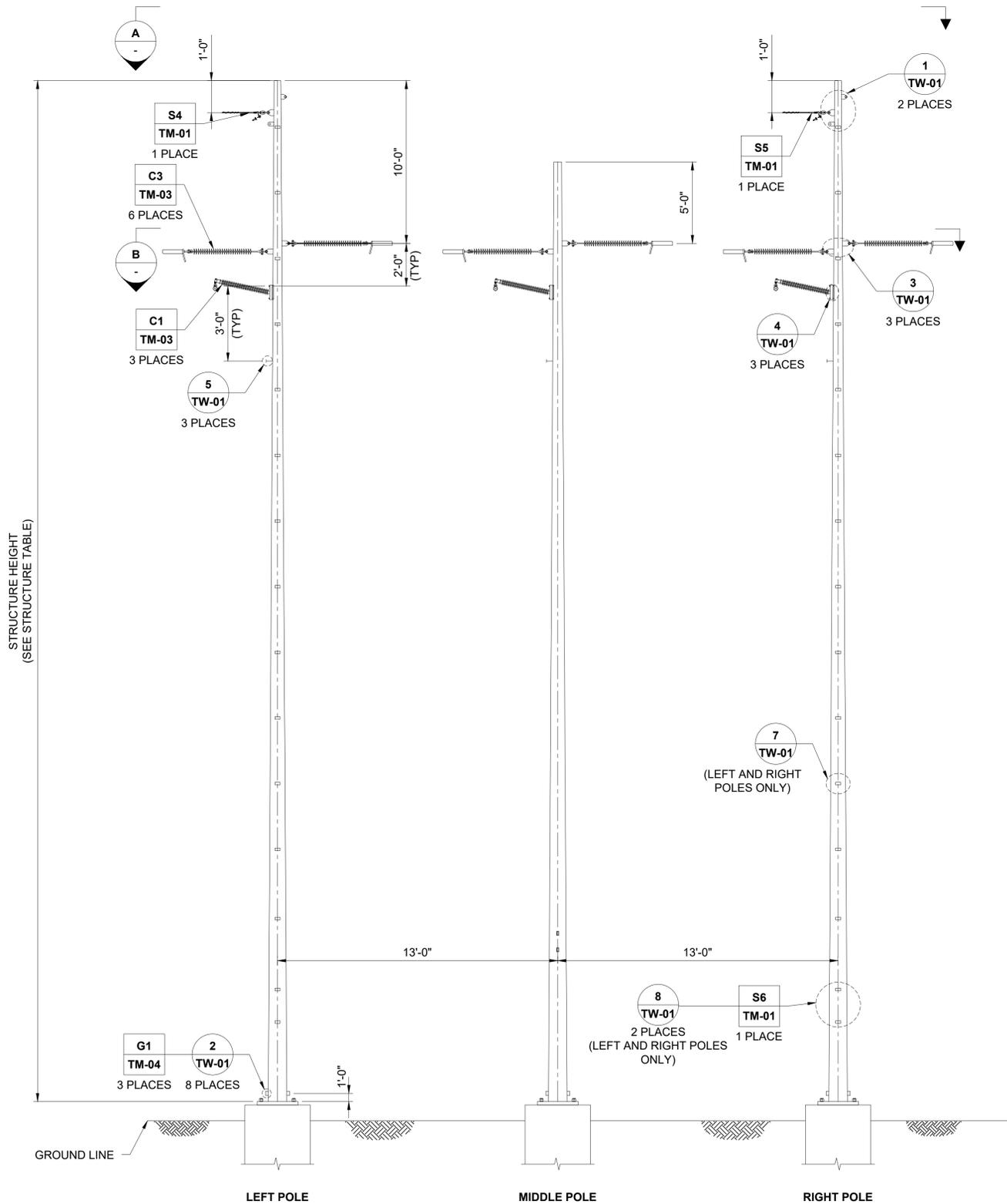
NORTH HAYS-KNOLL
 115-KV LINE 115.77
 2-POLE DEADEND 40-50° STEEL STRUCTURE
 LOAD AND DESIGN DRAWING

project	177862	contract	
drawing	TW-02	rev.	A
sheet	2	of	2 sheets
file TW-02.dwg			

STRUCTURE TABLE				
STR. NO.	LINE ANGLE (DEG)	STRUCTURE HEIGHT (FT)		
		LEFT POLE	MIDDLE POLE	RIGHT POLE
164	-33.2	45	40	45

HARDWARE ARRANGEMENT TABLE				
QTY	STRUCTURE NUMBER	SHIELD WIRE ASSEMBLIES (QTY-ASSY)	CONDUCTOR ASSEMBLIES (QTY-ASSY)	GROUNDING ASSEMBLIES (QTY-ASSY)
1	164	1-S4, 1-S5, 1-S6	3-C1,6-C3	3-G1

no.	date	by	ckd	description
A	2/18/26	NHZ	SEB	ISSUED FOR BID



- NOTES:
- SEE DRAWING ST-01 FOR STAKING COORDINATES.
 - SEE DRAWING TW-01 FOR STEEL POLE DETAILS.
 - NEGATIVE LINE ANGLE IS DEPICTED. SHIELD WIRES WILL ONLY BE INSTALLED ON BACK SPANS, BUT POLE IS DESIGNED FOR SHIELD WIRES ON AHEAD AND BACK SPANS, TO ALLOW FOR FUTURE SHIELD WIRES ON AHEAD SPAN.

Scale For Microfitting
Millimeters
Inches

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KANSAS CITY, MO 64114
816-333-9400
LICENSEE NO. E-65

date	DECEMBER 12, 2025	detailed	J. HUTTON
designed	N. ZLATANOVA	checked	J. SEBOLT



NORTH HAYS-KNOLL
115-kV LINE 115.77
2-POLE DEADEND 40-50° STEEL STRUCTURE
LOAD AND DESIGN DRAWING

project	177862	contract	
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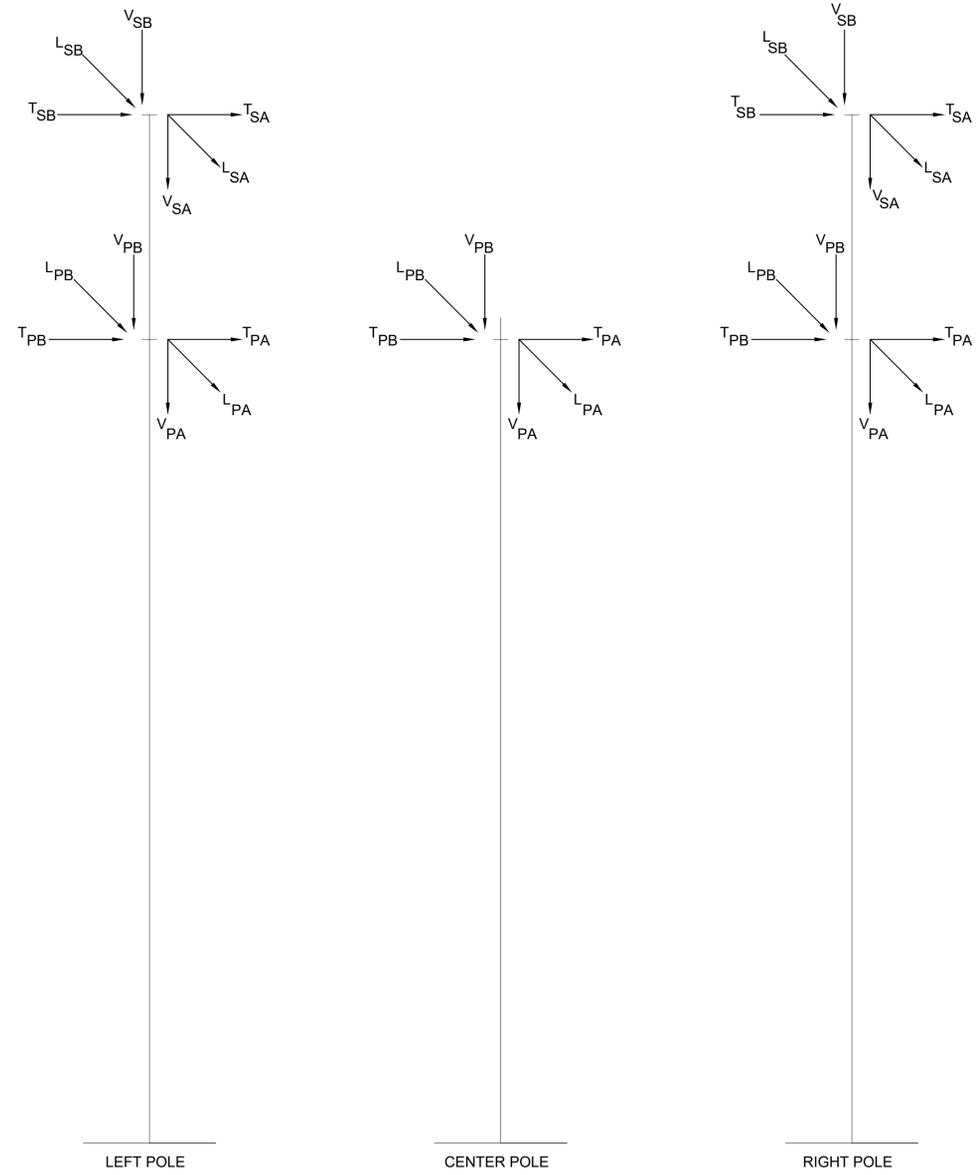
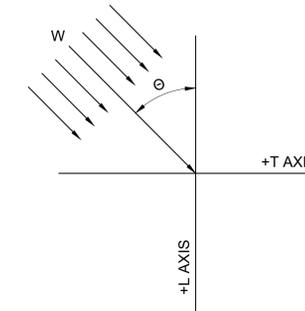
drawing	TW-03	rev.	A
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sheet	1	of	2	sheets
file	TW-03.dwg			

LOAD TABLE STR. 164

CONDUCTOR: 1-1192.5KCMIL 45/7 "BUNTING" ACSR PER PHASE (TENSION LIMIT: 10,000 LBS @ 250B INITIAL)
 SHIELD WIRE: DNO-5651 (TENSION LIMIT: 6,000 LBS @ 250B INITIAL) OR 3/8" EHS STEEL (TENSION LIMIT: 4,500 LBS @ 250B INITIAL)
 WIND SPAN: 250 FT AHEAD AND BACK
 WEIGHT SPAN: 300 FT AHEAD AND BACK
 RULING SPAN: 50-750 FT AHEAD AND BACK
 LINE ANGLE: 30-45 DEGREES

LOAD CASES	WIND (MPH)	ICE (IN)	TEMP (°F)	VSA (K)	TSA (K)	LSA (K)	VSB (K)	TSB (K)	LSB (K)	VPA (K)	TPA (K)	LPA (K)	VPB (K)	TPB (K)	LPB (K)	W	θ	K
1 NESC HEAVY (250B)	39.5	0.50	0	0.93	4.10	-9.55	0.93	4.10	9.55	2.07	6.78	-15.92	2.07	6.78	15.92	10.0	90	1.5
2 NESC EXTREME WIND (250C)	95.0	0.00	60	0.43	2.11	-4.69	0.43	2.11	4.69	0.95	4.00	-8.52	0.95	4.00	8.52	23.1	90	1.0
3 MWE EXTREME WIND	100.0	0.00	60	0.43	2.18	-4.79	0.43	2.18	4.79	0.95	4.29	-9.08	0.95	4.29	9.08	25.6	90	1.0
4 COMBINED ICE/WIND (250D)	50.0	0.75	15	0.78	2.86	-6.53	0.78	2.86	6.53	1.67	4.69	-10.90	1.67	4.69	10.90	6.4	90	1.0
5 EXTREME ICE	0.0	1.00	32	0.99	2.78	-7.02	0.99	2.78	7.02	2.00	4.70	-11.87	2.00	4.70	11.87	0.0	90	1.0
6 DEFLECTION	0.0	0.00	60	0.43	1.32	-3.32	0.43	1.32	3.32	0.95	1.64	-4.15	0.95	1.64	4.15	0.0	90	1.0
7 CONSTRUCTION	35.0	0.00	15	3.22	3.16	-7.85	0.65	3.16	7.85	5.33	4.86	-11.94	1.43	4.86	11.94	4.7	90	1.5



LOADING DIAGRAM
NOT TO SCALE

Scale For Microfitting
Millimeters
Inches

- NOTES:**
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designed	N. ZLATANOVA	checked	J. SEBOLT

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