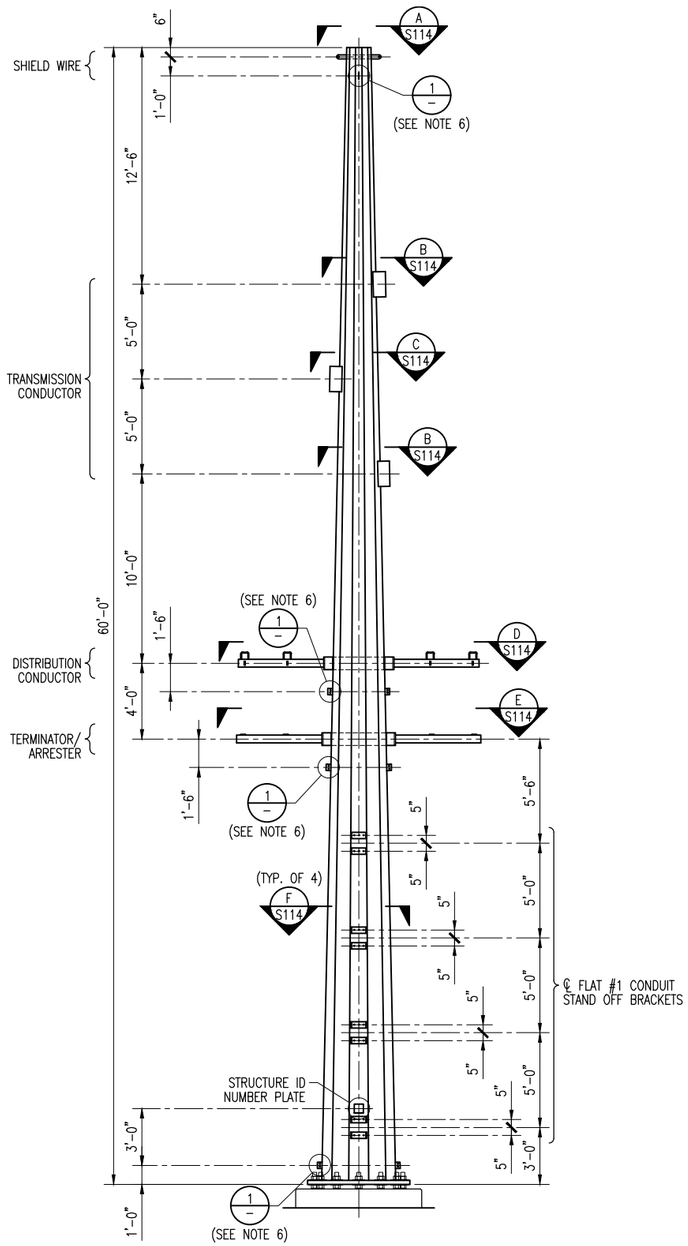
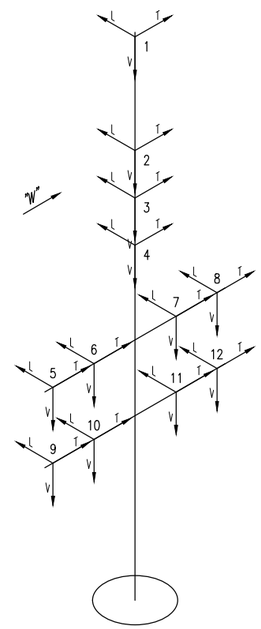
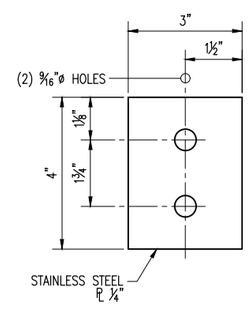


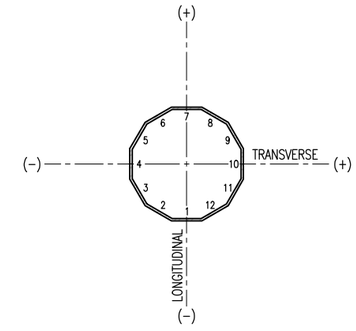
STRUCTURE #12 (C)
SCALE: NTS



LOADING DIAGRAM
SCALE: NTS



DETAIL (1)
SCALE: NTS
GROUND PLATE



ORIENTATION OF AXES
SCALE: NTS

STRUCTURE POINT LOADS

DESCRIPTION	POSITION	TRANSVERSE	LONGITUDINAL	VERTICAL
1: NESC MEDIUM				
SHIELD WIRE	1	−0.28	0.00	0.29
TRANSMISSION CONDUCTOR	2, 3, 4	−0.63	0.00	0.73
DISTRIBUTION CONDUCTOR	5, 6, 7, 8	−0.34	5.93	0.37
TERMINATOR/ARRESTER	9, 10, 11, 12	−0.40	0.38	0.43
2: HIGH WIND				
DESCRIPTION	POSITION	TRANSVERSE	LONGITUDINAL	VERTICAL
SHIELD WIRE	1	−0.27	0.00	0.18
TRANSMISSION CONDUCTOR	2, 3, 4	−0.65	0.00	0.58
DISTRIBUTION CONDUCTOR	5, 6, 7, 8	−0.38	3.10	0.34
TERMINATOR/ARRESTER	9, 10, 11, 12	−0.20	0.17	0.31
3: CAMBER				
DESCRIPTION	POSITION	TRANSVERSE	LONGITUDINAL	VERTICAL
SHIELD WIRE	1	−0.02	0.00	0.09
TRANSMISSION CONDUCTOR	2, 3, 4	−0.11	0.00	0.33
DISTRIBUTION CONDUCTOR	5, 6, 7, 8	−0.02	1.34	0.13
TERMINATOR/ARRESTER	9, 10, 11, 12	−0.15	0.15	0.28
4: STRINGING				
DESCRIPTION	POSITION	TRANSVERSE	LONGITUDINAL	VERTICAL
SHIELD WIRE	1	−0.05	0.00	0.10
TRANSMISSION CONDUCTOR	2, 3, 4	−0.18	0.00	0.37
DISTRIBUTION CONDUCTOR	5, 6, 7, 8	−0.05	1.97	2.13
TERMINATOR/ARRESTER	9, 10, 11, 12	−0.17	0.17	0.31

DESIGN APPLICATION

WIRE DATA

SHIELD WIRE: OPGW SX−29/61/512 (DNO−11127)
TRANSMISSION WIRE: 795 kcmil ACSR "DRAKE"
DISTRIBUTION WIRE/NEUTRAL WIRE: 477 kcmil ACSR "PELICAN"

MECHANICAL LOADING CRITERIA

CASE 1: NESC MEDIUM (RULE 250B):
4 psf WIND @ 15°F, 1/4" ICE ON WIRES, CONDUCTORS AND STRUCTURE.
OLF: VERTICAL 1.5, WIND 2.5, TENSION 1.65.

CASE 2: HIGH WIND − 90 MPH (RULE 250C):
21.4 psf @ 60°F, NO ICE ON SHIELD WIRE AND TRANSMISSION CONDUCTORS,
20.1 psf @ 60°F, NO ICE ON DISTRIBUTION CONDUCTORS,
21.2 psf @ 60°F, NO ICE ON STRUCTURE.
OLF: 1.1 − ALL LOADS.

CASE 3: 60°F CAMBER (FINAL TENSION):
NO WIND @ 60°F, NO ICE ON WIRES, CONDUCTORS AND STRUCTURE.
OLF: 1.0 − ALL LOADS.

CASE 4: STRINGING:
2.0 psf @ 60°F, NO ICE ON WIRES, CONDUCTORS AND STRUCTURE.
OLF: 1.1 − ALL LOADS

DESIGN DATA

DESIGN TENSIONS (lbs.)

WIRE	NESC BACK	NESC AHEAD	HIGH WIND BACK	HIGH WIND AHEAD	CAMBER BACK	CAMBER AHEAD	STRINGING BACK	STRINGING AHEAD
SHIELD WIRE	1765	1765	1495	1495	710	710	780	780
TRANSMISSION CONDUCTOR	6000	6000	4735	4735	3055	3055	3585	3585
DISTRIBUTION CONDUCTOR	0	3595	0	2820	0	1340	0	1795

SPAN AND ANGLE DATA

DESCRIPTION	NESC BACK	NESC AHEAD	HIGH WIND BACK	HIGH WIND AHEAD	CAMBER BACK	CAMBER AHEAD	STRINGING BACK	STRINGING AHEAD
HORIZONTAL SPAN	110	105	110	105	110	105	110	105
VERTICAL SPAN SHIELD	30	160	−45	200	40	150	30	155
VERTICAL SPAN TRANSMISSION	35	180	15	200	50	165	40	175
VERTICAL SPAN DISTRIBUTION	0	170	0	205	0	150	0	170
LINE ANGLE	1	1	1	1	1	1	1	1

GENERAL NOTES

1. THE LOADS IN THE LOADING TABLE ARE ULTIMATE LOADS AND INCLUDE ALL OVERLOAD FACTORS. ALL LOADS IN KIPS EXCEPT WIND "W" IN psf.
2. THE VERTICAL LOADS (V) INCLUDE ONLY DEAD WEIGHT OF THE WIRE AND WEIGHT OF THE INSULATORS. THE DEAD WEIGHT OF THE STRUCTURE SHALL BE CALCULATED BY THE POLE MANUFACTURER AND USED IN THE DESIGN. THE OVERLOAD FACTOR APPLIED TO THE DEAD WEIGHT SHALL BE AS LISTED FOR EACH CASE.
3. FOR STRUCTURAL DESIGN, THE LONGITUDINAL, TRANSVERSE AND VERTICAL LOADS SHALL BE CONSIDERED TO ACT SIMULTANEOUSLY WITH THE WIND AND THE DEAD WEIGHT OF THE STRUCTURE.
4. APPLY STRUCTURE WIND "W" IN THE DIRECTION WHICH PRODUCES THE MAXIMUM STRESS.
5. STRUCTURE SHALL BE DESIGNED TO BE SELF SUPPORTING, GUYS ARE NOT PERMITTED.
6. ATTACH GROUNDING PLATES (DETAIL 1 ON THIS DRAWING) 1'−6" BELOW TOP OF POLE ON FLATS #1 AND #7, 1'−6" BELOW DISTRIBUTION ARMS ON FLATS #4 AND #10, 1'−6" BELOW TERMINATOR/ARRESTER ARMS ON FLATS #4 AND #10 AND 1'−0" ABOVE BASE PLATE ON FLATS #4 AND #10.
7. CLIMBING LADDER CLIPS (DETAIL 7 ON DRAWING S114) TO BE INSTALLED ON FLAT #7. WORKING LADDER CLIPS TO BE INSTALLED BELOW EACH SHIELD WIRE ATTACHMENT, BELOW EACH TRANSMISSION CONDUCTOR ATTACHMENT AND BELOW EACH DISTRIBUTION ARM.
8. FINISH SHALL BE SELF−WEATHERING STEEL (ASTM A871).

No.	DATE	BY	APP	REVISION	REFERENCE DRAWING	NUMBER
C	12/12/24	KAC	ML	90% REVIEW − REVISED POLE NUMBER		
B	11/27/24	KAC	ML	90% REVIEW		
A	08/23/24	BDP	ML	60% REVIEW		

Washington City
Feels Like Home

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Des By:	BDP	Date	08/23/24
Drawn By:	BDP	Date	08/23/24
Chk'd. By:	KAC	Date	08/23/24
ENGR.	BDP	Date	08/23/24
APPD.	–	Date	–
APPD.	–	Date	–

NOT FOR CONSTRUCTION

WASHINGTON CITY
GRAPEVINE SUBSTATION − PARKWAY TAP
138KV TRANSMISSION LINE
STRUCTURE #12 − DESIGN DATA

SCALE: NTS
Project No. 071−079
DRAWING No. 071−079−S113
REVISION C

PLOTTED ON 12/12/2024 BY KERRY CARLSON, DRAWING LOCATION: L:_DWGs\WAS071 Washington City\WAS071-079 Transmission Line to Grapevine Sub\201 Drawings\201.02 Structural Drawings\Steel\071-079-S113.dwg