sabre

Structural Design Report

120' Monopole

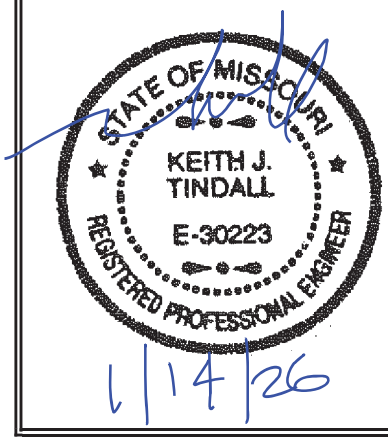
Site: Lee's Summit JOF, MO

Prepared for: MOTOROLA ISPO

by: Sabre Industries ™

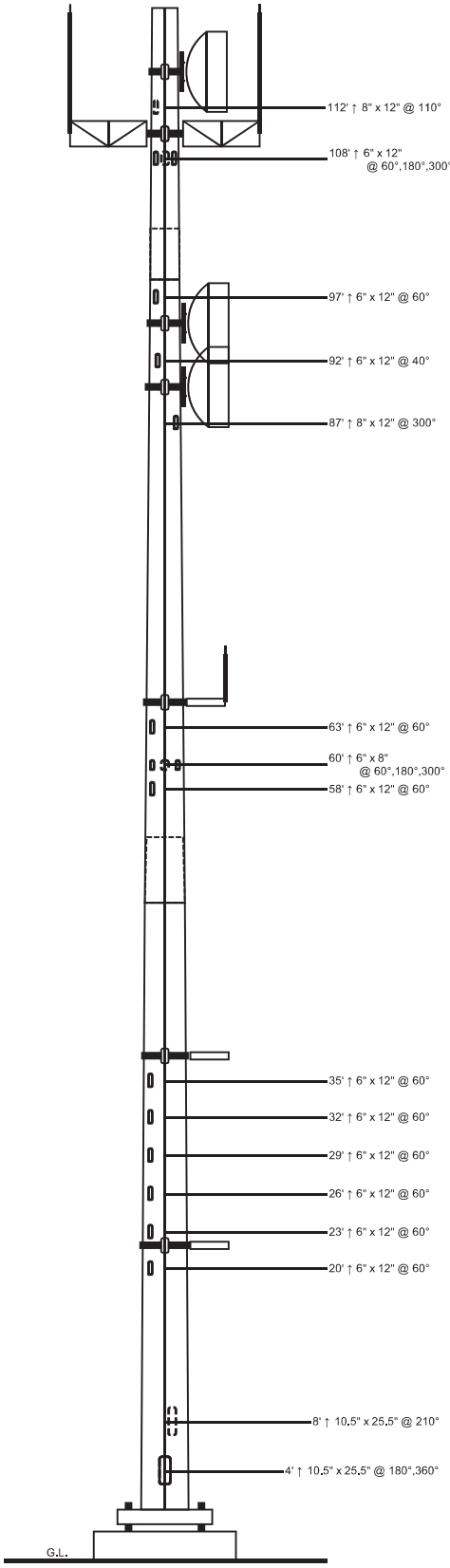
Job Number: 26-2169-RSS-R2 Opt. 2

January 14, 2026



Digitally Signed By Keith Tindall
DN: C=US,SERIALNUMBER=MAS20250205984405,ST=Texas,L=Alvarado,2.5.4.97=NTRUS\+DE-4349737,O=SABRE INDUSTRIES\, INC.,CN=Keith Tindall Date: 2026.01.14 10:28:50

Length (ft)	21'-6"	53'-6"								53'-3"
Number Of Sides		18								
Thickness (in)			1/4"							5/16"
Lap Splice (ft)				4' - 0"						5' - 3"
Top Diameter (in)					24.25"	27.04"				35.61"
Bottom Diameter (in)					28.29"	37.1"				45.62"
Taper (in/ft)							0.188			
Grade								A572-65		
Weight (lbs)									5117	8612
Overall Steel Height (ft)									1730	119



Design Criteria - ANSI/TIA-222-H

Wind Speed (No Ice)	117 mph
Wind Speed (Ice)	40 mph
Design Ice Thickness	1.50 in
Risk Category	III
Exposure Category	C
Topographic Factor Procedure	Method 1 (Simplified)
Topographic Category	1
Ground Elevation	1017 ft
Seismic Importance Factor, Ie	1.25
0.2-sec Spectral Response, Ss	0.099 g
1-sec Spectral Response, S1	0.068 g
Site Class	B
Seismic Design Category	A
Basic Seismic Force-Resisting System	Telecommunication Tower (Pole: Steel)

Limit State Load Combination Reactions

Load Combination	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
1.2 D + 1.0 Wo	22.6	19.03	1527.9	4.1	3.2
0.9 D + 1.0 Wo	16.96	19.13	1528.91	4.1	3.2
1.2 D + 1.0 Di + 1.0 Wi	39.94	4.43	333	0.87	0.68
1.2 D + 1.0 Ev + 1.0 Eh	24.23	0.6	55.59	0.16	0.12
0.9 D - 1.0 Ev + 1.0 Eh	17.76	0.6	55.58	0.16	0.12
1.0 D + 1.0 Wo (Service @ 60 mph)	18.83	4.48	357.93	0.96	0.75

Base Plate Dimensions

Shape	Diameter	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Round	53.5"	1.25"	50.25"	18	1.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
63"	1.25"	1.5"	487.8	F1554-105	Galv

Notes

1) Antenna Feed Lines Run Inside Pole
2) All dimensions are above ground level, unless otherwise specified.
3) Weights shown are estimates. Final weights may vary.
4) This tower design and, if applicable, the foundation design(s) shown on the following page(s) also meet or exceed the requirements of the 2018 International Building Code.
5) Full Height Step Bolts
6) Tower Rating: 84.6%
7) This structure has been designed with a 50% increase in antenna and line loading.

sabre

Sabre Industries
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	**26-2169-RSS-R2 Opt. 2**
Customer:	MOTOROLA ISPO
Site Name:	Lee's Summit JOF, MO
Description:	120' Monopole
Date:	1/14/2026 By: KJT

Designed Appurtenance Loading

Elev	Description	Tx-Line
115	(1) Dish Mount (Monopole Only) - Pipe Mount (8'-10' Dish)	
115	(1) VHLP6-6W-4GR/A	(1) EW63
114.76	(2) CC807-08	(2) 7/8"
110	(2) 6ft Sidearms	
110	Flush Mount (Monopole Only)	
110	(1) TTA (16" x 8" x 6")	(1) 1/2"
104.76	(2) CC807-08	(2) 7/8"
95	(1) Dish Mount (Monopole Only) - Pipe Mount (8'-10' Dish)	
95	(1) VHLPX6-6W-6WH	(2) EW63
90	(1) Dish Mount (Monopole Only) - Pipe Mount (8'-10' Dish)	
90	(1) VHLP6-6W-4GR/A	(1) EW63

Elev	Description	Tx-Line
66.9	(1) DS1X00CS36UN	(1) 7/8"
65	3ft Standoff	
60	(1) Y1505	(1) 1/2"
37	3ft Standoff	
37	(1) Y8066	(1) 1/2"
34	(1) Y8066	(1) 1/2"
31	(1) Y8066	(1) 1/2"
28	(1) Y8066	(1) 1/2"
25	(1) Y8066	(1) 1/2"
22	3ft Standoff	
22	(1) Y8066	(1) 1/2"

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No.: 26-2169-RSS-R2 Opt. 2
Date: 01/14/26
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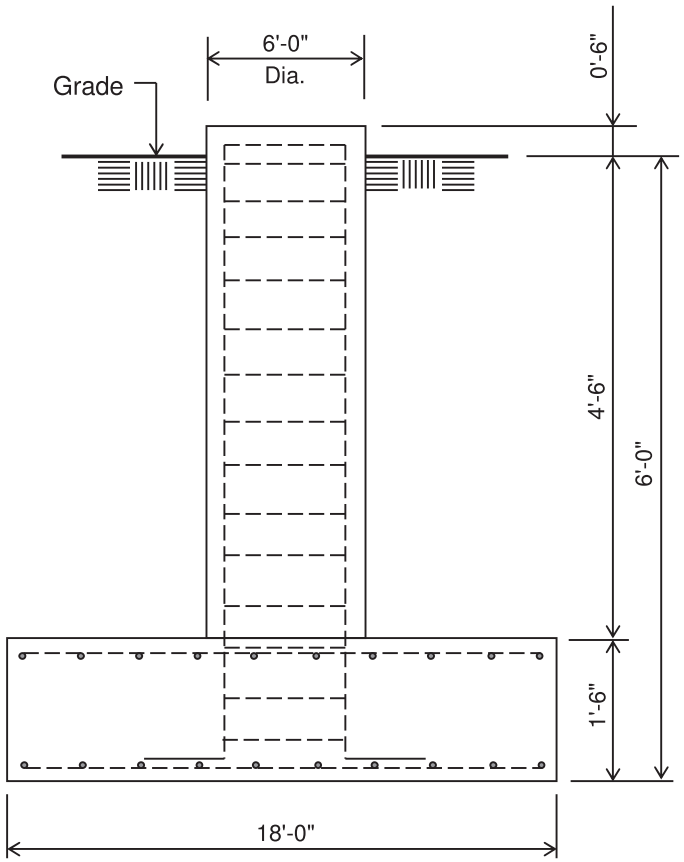
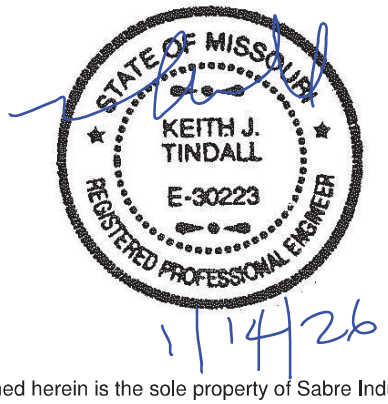
Customer: MOTOROLA ISPO
Site: Lee's Summit JOF, MO
120' Monopole



ELEVATION VIEW
(23.24 Cu. Yds.)
(1 REQUIRED; NOT TO SCALE)

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-14.
2) Rebar to conform to ASTM specification A615 Grade 60.
3) All rebar to have a minimum of 3" concrete cover.
4) All exposed concrete corners to be chamfered 3/4".
5) The foundation design is based on the geotechnical report by UES, Project No. J045326.01, dated May 21, 2024.
6) See the geotechnical report for compaction requirements, if specified.
7) 4.5 ft of soil cover is required over the entire area of the foundation slab.
8) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.



Rebar Schedule for Pad and Pier	
Pier	(34) #7 vertical rebar w/ hooks at bottom w/ #5 ties, (2) within top 5" of pier, then 4" C/C
Pad	(19) #8 horizontal rebar evenly spaced each way top and bottom (76 total)

7101 Southbridge Drive - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.279.0814

120' Monopole / Lee's Summit JOF, MO

* All pole diameters shown on the following pages are across corners.
See profile drawing for widths across flats.

POLE GEOMETRY

ELEV ft	SECTION NAME	No. SIDE	OUTSIDE DIAM in	THICK -NESS in	RESISTANCES ϕ*Pn kip	ϕ*Mn ft-kip	SPLICE TYPE	...OVERLAP... LENGTH ft	RATIO	w/t
119.0										
			24.62	0.250	1414.9	696.7				
	A	18								15.9
			27.96	0.250	1558.9	873.7				
101.5										
			27.96	0.250	1558.9	873.7				
	A/B	18					SLIP	4.00	1.73	
			28.23	0.250	1569.8	888.5				
97.5										
			28.23	0.250	1569.8	888.5				
	B	18								18.4
			36.66	0.250	1866.6	1377.7				
53.2										
			36.66	0.250	1866.6	1377.7				
	B/C	18					SLIP	5.25	1.72	
			37.17	0.312	2538.4	1893.6				
48.0										
			37.17	0.312	2538.4	1893.6				
	C	18								19.6
			46.33	0.312	2927.0	2730.5				
0.0										

POLE ASSEMBLY

SECTION NAME	BASE ELEV ft	.....BOLTS AT BASE OF SECTION..... NUMBER	TYPE	DIAM in	STRENGTH ksi	THREADS IN SHEAR PLANE	CALC BASE ELEV ft
A	97.500	0	A325	0.00	92.0	0	97.500
B	48.000	0	A325	0.00	92.0	0	48.000
C	0.000	0	A325	0.00	92.0	0	0.000

POLE SECTIONS

SECTION NAME	No.of SIDES	LENGTH ft	OUTSIDE.DIAMETER BOT * in	TOP * in	BEND RAD in	MAT-ERIAL ID	FLANGE.ID BOT	TOP	FLANGE.WELD ..GROUP.ID.. BOT	TOP
A	18	21.50	28.73	24.62	0.625	1	0	0	0	0
B	18	53.50	37.67	27.46	0.625	2	0	0	0	0
C	18	53.25	46.33	36.16	0.625	3	0	0	0	0

* - Diameter of circumscribed circle

MATERIAL TYPES
==============

TYPE OF SHAPE	TYPE NO	NO OF ELEM.	ORIENT & deg	HEIGHT in	WIDTH in	.THICKNESS. WEB in	FLANGE in	IRREGULARITY .PROJECTION. % OF AREA	ORIENT deg
PL	1	1	0.0	28.73	0.25	0.250	0.250	0.00	0.0
PL	2	1	0.0	37.67	0.25	0.250	0.250	0.00	0.0
PL	3	1	0.0	46.33	0.31	0.312	0.312	0.00	0.0

& - With respect to vertical

MATERIAL PROPERTIES
==================

MATERIAL TYPE NO.	ELASTIC MODULUS ksi	UNIT WEIGHT pcf	.. STRENGTH .. Fu ksi	Fy ksi	THERMAL COEFFICIENT /deg
1	29000.0	490.0	80.0	65.0	0.00001170
2	29000.0	490.0	80.0	65.0	0.00001170
3	29000.0	490.0	80.0	65.0	0.00001170

* Only 5 condition(s) shown in full
* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

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LOADING CONDITION A ==========

117 mph wind with no ice. Wind Azimuth: 0° (1.2 D + 1.0 Wo)

LOADS ON POLE
=============

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	114.500	0.00	0.0	0.0	0.0302	0.0151	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0000	0.1047	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.3978	0.0900	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0000	0.2211	0.0000	0.0000
C	109.000	0.00	0.0	0.0	1.7047	1.4287	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.1343	0.3078	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0000	0.0785	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0329	0.0168	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0000	0.2017	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.3902	0.0900	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0323	0.0168	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0000	0.1726	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0000	0.0817	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0315	0.0168	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0307	0.0168	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0461	0.0198	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0000	0.0641	0.0000	0.0000

C	65.000	0.00	0.0	0.0	0.0298	0.0168	0.0000	0.0000
C	64.000	0.00	0.0	0.0	0.3125	0.4622	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.1918	0.0546	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0000	0.0425	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0288	0.0168	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0276	0.0168	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.2938	0.4658	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0000	0.0259	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0261	0.0168	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0794	0.0402	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0000	0.0238	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0000	0.0216	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0779	0.0402	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0000	0.0194	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0762	0.0402	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0244	0.0168	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0000	0.0173	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0744	0.0402	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.1592	0.6100	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0000	0.0151	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0219	0.0168	0.0000	0.0000
D	119.000	0.00	180.0	0.0	0.0612	0.0797	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0649	0.0865	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0666	0.1777	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0666	0.1777	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0673	0.0913	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0757	0.1142	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0758	0.2628	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0758	0.2628	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0764	0.1494	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0704	0.1720	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0703	0.1766	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0721	0.1811	0.0000	0.0000

ANTENNA LOADING
==========

.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
HP	89.0	217.0	1.9	217.0	-1.96	0.44	0.54	1.18
HP	94.0	310.0	1.9	310.0	2.20	0.61	0.54	-0.51
HP	114.0	24.0	1.8	24.0	2.71	-0.44	0.54	0.82

==========

LOADING CONDITION M ==========

117 mph wind with no ice. Wind Azimuth: 0° (0.9 D + 1.0 Wo)

LOADS ON POLE
==========

LOAD	ELEV	APPLY..LOAD..AT		LOAD	......FORCES......		......MOMENTS.....	
TYPE		RADIUS	AZI	AZI	HORIZ	DOWN	VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip
C	114.500	0.00	0.0	0.0	0.0302	0.0113	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0000	0.0785	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.3978	0.0675	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0000	0.1659	0.0000	0.0000
C	109.000	0.00	0.0	0.0	1.7047	1.0715	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.1343	0.2308	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0000	0.0589	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0329	0.0126	0.0000	0.0000

C	103.760	0.00	0.0	0.0	0.0000	0.1513	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.3902	0.0675	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0323	0.0126	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0000	0.1294	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0000	0.0613	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0315	0.0126	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0307	0.0126	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0461	0.0148	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0000	0.0480	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0298	0.0126	0.0000	0.0000
C	64.000	0.00	0.0	0.0	0.3125	0.3467	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.1918	0.0410	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0000	0.0319	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0288	0.0126	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0276	0.0126	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.2938	0.3494	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0000	0.0194	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0261	0.0126	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0794	0.0302	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0000	0.0178	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0000	0.0162	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0779	0.0302	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0000	0.0146	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0762	0.0302	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0244	0.0126	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0000	0.0130	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0744	0.0302	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.1592	0.4575	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0000	0.0113	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0219	0.0126	0.0000	0.0000
D	119.000	0.00	180.0	0.0	0.0612	0.0598	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0649	0.0649	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0666	0.1333	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0666	0.1333	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0673	0.0684	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0757	0.0856	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0758	0.1971	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0758	0.1971	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0764	0.1120	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0704	0.1290	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0703	0.1324	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0721	0.1358	0.0000	0.0000

ANTENNA LOADING

.....ANTENNA.....			ATTACHMENT		..........ANTENNA FORCES.....			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
HP	89.0	217.0	1.9	217.0	-1.96	0.44	0.40	1.18
HP	94.0	310.0	1.9	310.0	2.20	0.61	0.40	-0.51
HP	114.0	24.0	1.8	24.0	2.71	-0.44	0.40	0.82

==========

LOADING CONDITION Y ==========

40 mph wind with 1.5 ice. Wind Azimuth: 0° (1.2 D + 1.0 Di + 1.0 Wi)

LOADS ON POLE

LOAD	ELEV	APPLY..LOAD..AT		LOAD	......FORCES......		......MOMENTS.....	
TYPE		RADIUS	AZI	AZI	HORIZ	DOWN	VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip

C	114.500	0.00	0.0	0.0	0.0307	0.0271	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0000	0.1047	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.1081	0.2365	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0000	0.2211	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.4188	2.5961	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0433	0.3662	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0000	0.0785	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0333	0.0288	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0000	0.2017	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.1055	0.2352	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0323	0.0288	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0000	0.1726	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0000	0.0817	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0312	0.0288	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0301	0.0288	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0150	0.0503	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0000	0.0641	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0288	0.0288	0.0000	0.0000
C	64.000	0.00	0.0	0.0	0.0938	0.4899	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.2419	0.2744	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0000	0.0425	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0274	0.0288	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0258	0.0288	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.1157	0.4972	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0000	0.0259	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0240	0.0288	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0529	0.0454	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0000	0.0238	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0000	0.0216	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0515	0.0453	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0000	0.0194	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0500	0.0453	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0217	0.0288	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0000	0.0173	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0483	0.0452	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0708	0.6398	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0000	0.0151	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0187	0.0288	0.0000	0.0000
D	119.000	0.00	180.0	0.0	0.0144	0.1448	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0151	0.1559	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0154	0.2491	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0154	0.2491	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0156	0.1635	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0170	0.1989	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0170	0.3487	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0170	0.3487	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0171	0.2362	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0154	0.2612	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0153	0.2629	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0156	0.2616	0.0000	0.0000

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
HP	89.0	217.0	1.9	217.0	-0.25	0.06	2.44	0.16
HP	94.0	310.0	1.9	310.0	0.28	0.08	2.45	-0.07
HP	114.0	24.0	1.8	24.0	0.34	-0.05	2.49	0.11

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LOADING CONDITION AK ==========

Seismic - Azimuth: 0° (1.2 D + 1.0 Ev + 1.0 Eh)

LOADS ON POLE
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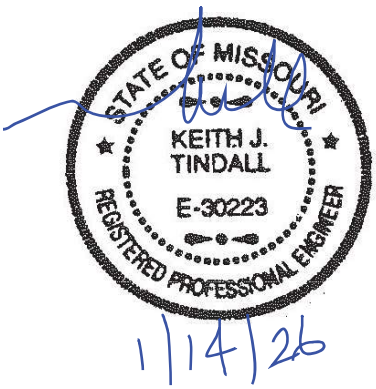
LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	114.500	0.00	0.0	0.0	0.0009	0.0152	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0061	0.1056	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0675	1.1692	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0052	0.0909	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0128	0.2234	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0769	1.4427	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0042	0.0793	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0166	0.3108	0.0000	0.0000
C	108.250	0.00	0.0	0.0	0.0962	1.8264	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0008	0.0170	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0100	0.2037	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0044	0.0909	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0007	0.0170	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0072	0.1743	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0304	0.7410	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0031	0.0825	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0436	1.1692	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0006	0.0170	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0005	0.0170	0.0000	0.0000
C	74.750	0.00	0.0	0.0	0.1522	5.5566	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0004	0.0200	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0014	0.0647	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0004	0.0170	0.0000	0.0000
C	64.000	0.00	0.0	0.0	0.0097	0.4667	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0010	0.0551	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0008	0.0429	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0003	0.0170	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0002	0.0170	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0002	0.0262	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0035	0.4704	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0001	0.0170	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0003	0.0406	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0002	0.0240	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0001	0.0218	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0002	0.0406	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0002	0.0406	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0001	0.0196	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0387	8.7536	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0001	0.0170	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0001	0.0406	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0001	0.0175	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0000	0.0152	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0018	0.6160	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0000	0.0170	0.0000	0.0000
D	119.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000



ANTENNA LOADING
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.....ANTENNA..... TYPE	ELEV ft	AZI	ATTACHMENT RAD ft	AZI	.....ANTENNA FORCES..... AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	89.0	217.0	1.9	217.0	0.00	0.00	0.00	0.00
HP	94.0	310.0	1.9	310.0	0.00	0.00	0.00	0.00
HP	114.0	24.0	1.8	24.0	0.00	0.00	0.00	0.00

LOADING CONDITION AL

Seismic - Azimuth: 0° (0.9 D - 1.0 Ev + 1.0 Eh)

LOADS ON POLE

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	114.500	0.00	0.0	0.0	0.0009	0.0112	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0061	0.0775	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0675	0.8569	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0052	0.0666	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0128	0.1637	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0769	1.0575	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0042	0.0581	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0166	0.2278	0.0000	0.0000
C	108.250	0.00	0.0	0.0	0.0962	1.3387	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0008	0.0124	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0100	0.1493	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0044	0.0666	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0007	0.0124	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0072	0.1277	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0304	0.5432	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0031	0.0605	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0436	0.8569	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0006	0.0124	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0005	0.0124	0.0000	0.0000
C	74.750	0.00	0.0	0.0	0.1522	4.0728	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0004	0.0146	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0014	0.0475	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0004	0.0124	0.0000	0.0000
C	64.000	0.00	0.0	0.0	0.0097	0.3422	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0010	0.0404	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0008	0.0315	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0003	0.0124	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0002	0.0124	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0002	0.0191	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0035	0.3448	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0001	0.0124	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0003	0.0298	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0002	0.0176	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0001	0.0160	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0002	0.0298	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0002	0.0298	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0001	0.0144	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0387	6.4161	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0001	0.0124	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0001	0.0298	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0001	0.0128	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0000	0.0112	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0018	0.4515	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0000	0.0124	0.0000	0.0000
D	119.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000

ANTENNA LOADING

.....ANTENNA..... TYPE	ELEV ft	AZI	ATTACHMENT RAD ft	AZI	.....ANTENNA FORCES..... AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip

HP	89.0	217.0	1.9	217.0	0.00	0.00	0.00	0.00
HP	94.0	310.0	1.9	310.0	0.00	0.00	0.00	0.00
HP	114.0	24.0	1.8	24.0	0.00	0.00	0.00	0.00

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120' Monopole / Lee's Summit JOF, MO

MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

MAST ELEV ft	.....DEFLECTIONS (ft)..... HORIZONTAL ALONG	ACROSS	DOWN	.....ROTATIONS (deg)..... TILT ALONG	ACROSS	TWIST
119.0	4.10A	-0.58L	0.18A	3.20A	-0.49L	-0.04J
111.5	3.68A	-0.52L	0.16A	3.20A	-0.49L	-0.04I
106.5	3.40A	-0.48L	0.14A	3.19A	-0.49L	-0.03H
101.5	3.13A	-0.43L	0.13A	3.15A	-0.48L	-0.03H
97.5	2.91A	-0.40L	0.11A	3.11A	-0.47L	-0.03H
91.2	2.57A	-0.35L	0.10A	3.02A	-0.45L	-0.03H
84.9	2.25A	-0.30L	0.08A	2.90A	-0.42L	-0.03H
78.5	1.93A	-0.26L	0.06A	2.74A	-0.39L	-0.02H
72.2	1.64A	-0.22L	0.05A	2.56A	-0.36L	-0.02H
65.9	1.37A	-0.18L	0.04A	2.35A	-0.33L	-0.02H
59.6	1.13A	-0.15L	0.03A	2.13A	-0.29L	-0.01H
53.2	0.90A	-0.12L	0.02A	1.90A	-0.25L	-0.01H
48.0	0.74A	-0.09L	0.02A	1.73A	-0.23L	-0.01H
42.0	0.57M	-0.07L	0.01A	1.53A	-0.20L	-0.01H
36.0	0.42M	-0.05L	0.01A	1.32A	-0.17L	-0.01H
30.0	0.29M	-0.04L	0.00A	1.11A	-0.14L	-0.01H
24.0	0.19M	-0.02L	0.00A	0.89M	-0.11L	0.00H
18.0	0.11M	-0.01L	0.00A	0.67M	-0.08L	0.00H
12.0	0.05M	-0.01L	0.00A	0.45M	-0.05L	0.00H
6.0	0.01M	0.00L	0.00Y	0.22M	-0.03L	0.00H

```
   0.0        0.00A        0.00A    0.00A         0.00A        0.00A    0.00A
       ....................................................................
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MAXIMUM ANTENNA AND REFLECTOR ROTATIONS

ELEV ft	ANT AZI deg	ANT TYPE	.... BEAM DEFLECTIONS (deg) .... ROLL	YAW	PITCH	TOTAL
114.0	24.0	HP	-2.781 K	0.100 C	3.177 B	3.178 B
94.0	310.0	HP	2.973 B	0.075 B	2.663 K	2.664 K
89.0	217.0	HP	2.615 K	0.073 C	-2.918 B	2.918 B

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR ALONG kip	ACROSS kip	MOMENT.w.r.t.WIND.DIR ALONG ft-kip	ACROSS ft-kip	TORSION ft-kip
119.0	.....					
	0.00 F	0.00 S	0.00 E	-0.02 M	0.01 E	0.00 E
	4.18 AA	3.65 N	-1.40 L	-9.39 H	4.47 AC	4.13 E
111.5	.....					
	4.18 AE	3.67 B	-1.41 X	-9.40 H	4.47 AC	4.13 E
	7.98 AE	5.82 B	-1.41 X	-33.26 B	10.06 X	4.06 Q
106.5	.....					
	7.98 AD	5.81 B	-1.44 X	-33.31 B	10.02 X	4.06 Q
	9.22 AD	6.56 B	-1.44 X	-65.22 B	17.35 X	4.00 Q
101.5	.....					
	9.22 Y	6.59 B	-1.45 X	-65.18 B	17.31 X	4.00 Q
	10.21 Y	6.85 B	-1.45 X	-93.04 B	23.20 X	3.97 Q
97.5	.....					
	10.21 AB	6.89 B	-1.44 X	-93.07 B	23.19 X	3.97 Q
	13.92 AB	9.13 M	-0.90 X	-143.25 B	31.25 X	4.64 Q
91.2	.....					
	13.92 AB	9.14 M	-0.91 L	-143.25 B	31.25 X	4.64 Q
	17.55 AB	11.44 M	-1.68 R	-211.01 B	41.11 L	-4.48 H
84.9	.....					
	17.55 AB	11.44 M	-1.66 R	-211.01 B	41.13 L	-4.48 H
	18.67 AB	11.88 M	-1.66 R	-286.01 A	51.80 L	-4.48 H
78.5	.....					
	18.67 AB	11.89 M	-1.66 R	-286.02 A	51.81 L	-4.48 H
	19.84 AB	12.37 M	-1.66 R	-364.57 A	62.48 L	-4.49 H
72.2	.....					
	19.84 AB	12.34 M	-1.66 R	-364.58 A	62.48 L	-4.49 H
	21.13 AB	12.85 M	-1.66 R	-445.98 A	73.13 L	-4.50 H
65.9	.....					
	21.13 AB	12.86 M	-1.66 R	-445.97 A	73.12 L	-4.50 H
	22.86 AB	13.67 M	-1.66 R	-532.30 A	83.81 L	-4.51 H
59.6	.....					

	22.86 AB	13.67 M	-1.66 R	-532.30 A	83.82 L	-4.51 H
	24.45 AB	14.36 M	-1.66 R	-623.22 A	94.43 L	-4.53 H
53.2						
	24.45 AB	14.37 M	-1.66 R	-623.23 A	94.44 L	-4.53 H
	26.28 AB	14.76 M	-1.66 R	-701.12 A	103.33 L	-4.54 H
48.0						
	26.28 AB	14.75 M	-1.66 R	-701.17 A	103.33 L	-4.54 H
	27.74 AB	15.23 M	-1.66 R	-792.78 A	113.47 L	-4.55 H
42.0						
	27.74 AG	15.26 M	-1.66 R	-792.79 A	113.46 L	-4.55 H
	29.19 AG	15.71 M	-1.66 R	-887.20 A	123.56 L	-4.57 H
36.0						
	29.72 AB	15.99 M	-1.66 R	-887.20 A	123.56 L	-4.57 H
	31.29 AB	16.54 M	-1.66 R	-986.33 A	133.56 L	-4.58 H
30.0						
	31.36 AG	16.62 M	-1.65 R	-986.34 A	133.56 L	-4.58 H
	32.96 AG	17.16 M	-1.65 R	-1088.80 A	143.55 L	-4.60 H
24.0						
	33.02 AB	17.24 M	-1.65 R	-1088.81 A	143.55 L	-4.60 H
	35.21 AB	17.83 M	-1.65 R	-1194.89 A	153.52 L	-4.61 H
18.0						
	35.21 AB	17.83 M	-1.66 R	-1194.89 A	153.52 L	-4.61 H
	36.79 AB	18.28 M	-1.66 R	-1303.75 M	163.44 L	-4.62 H
12.0						
	36.79 AB	18.28 M	-1.66 R	-1303.75 M	163.44 L	-4.62 H
	38.36 AB	18.70 M	-1.66 R	-1415.22 M	173.32 L	-4.63 H
6.0						
	38.36 AB	18.70 M	-1.66 R	-1415.22 M	173.32 L	-4.63 H
	39.94 AB	19.13 M	-1.66 R	-1528.91 M	183.14 L	-4.63 H
base reaction	39.94 AB	-19.13 M	1.66 R	1528.91 M	-183.14 L	4.63 H

COMPLIANCE WITH 4.8.2 & 4.5.4

ELEV ft	AXIAL	BENDING	SHEAR + TORSIONAL	TOTAL	SATISFIED	D/t(w/t)	MAX ALLOWED
119.00							
	0.00F	0.00M	0.00S	0.00M	YES	15.87A	45.2
	0.00AA	0.01H	0.00N	0.01H	YES	16.86A	45.2
111.50							
	0.00AE	0.01H	0.00B	0.01H	YES	16.86A	45.2
	0.01AE	0.04B	0.01B	0.04B	YES	17.53A	45.2
106.50							
	0.01AD	0.04B	0.01B	0.04B	YES	17.53A	45.2
	0.01AD	0.07B	0.01B	0.08B	YES	18.19A	45.2
101.50							
	0.01Y	0.07B	0.01B	0.08B	YES	18.19A	45.2
	0.01Y	0.10B	0.01B	0.10B	YES	18.72A	45.2
97.50							

	0.01AB	0.10B	0.01B	0.11B	YES	18.37A	45.2
	0.01AB	0.15B	0.01M	0.15B	YES	19.21A	45.2
91.18	.....						
	0.01AB	0.15B	0.01M	0.15B	YES	19.21A	45.2
	0.01AB	0.21B	0.01M	0.21B	YES	20.04A	45.2
84.86	.....						
	0.01AB	0.21B	0.01M	0.21B	YES	20.04A	45.2
	0.01AB	0.26A	0.01M	0.27A	YES	20.88A	45.2
78.54	.....						
	0.01AB	0.26A	0.01M	0.27A	YES	20.88A	45.2
	0.01AB	0.31A	0.01M	0.32A	YES	21.72A	45.2
72.21	.....						
	0.01AB	0.31A	0.01M	0.32A	YES	21.72A	45.2
	0.01AB	0.36A	0.01M	0.37A	YES	22.56A	45.2
65.89	.....						
	0.01AB	0.36A	0.01M	0.37A	YES	22.56A	45.2
	0.01AB	0.41A	0.01M	0.41A	YES	23.40A	45.2
59.57	.....						
	0.01AB	0.41A	0.01M	0.41A	YES	23.40A	45.2
	0.01AB	0.45A	0.02M	0.46A	YES	24.24A	45.2
53.25	.....						
	0.01AB	0.34A	0.01M	0.34A	YES	19.32A	45.2
	0.01AB	0.36A	0.01M	0.37A	YES	19.87A	45.2
48.00	.....						
	0.01AB	0.37A	0.01M	0.38A	YES	19.59A	45.2
	0.01AB	0.40A	0.01M	0.40A	YES	20.23A	45.2
42.00	.....						
	0.01AG	0.40A	0.01M	0.40A	YES	20.23A	45.2
	0.01AG	0.42A	0.01M	0.43A	YES	20.87A	45.2
36.00	.....						
	0.01AB	0.42A	0.01M	0.43A	YES	20.87A	45.2
	0.01AB	0.45A	0.01M	0.45A	YES	21.50A	45.2
30.00	.....						
	0.01AG	0.45A	0.01M	0.45A	YES	21.50A	45.2
	0.01AG	0.47A	0.01M	0.48A	YES	22.14A	45.2
24.00	.....						
	0.01AB	0.47A	0.01M	0.48A	YES	22.14A	45.2
	0.01AB	0.50A	0.01M	0.50A	YES	22.78A	45.2
18.00	.....						
	0.01AB	0.50A	0.01M	0.50A	YES	22.78A	45.2
	0.01AB	0.52A	0.01M	0.53A	YES	23.41A	45.2
12.00	.....						
	0.01AB	0.52A	0.01M	0.53A	YES	23.41A	45.2
	0.01AB	0.54M	0.01M	0.55A	YES	24.05A	45.2
6.00	.....						
	0.01AB	0.54M	0.01M	0.55A	YES	24.05A	45.2
	0.01AB	0.56M	0.01M	0.57A	YES	24.68A	45.2
0.00	.....						

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)

DOWN	SHEAR.w.r.t.WIND.DIR	MOMENT.w.r.t.WIND.DIR	TORSION

kip	ALONG kip	ACROSS kip	ALONG ft-kip	ACROSS ft-kip	ft-kip
39.94	19.13	-1.66	-1528.91	183.14	-4.63
AB	M	R	M	L	H

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120' Monopole / Lee's Summit JOF, MO

****
********** Service Load Condition **********
****

* Only 1 condition(s) shown in full
* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

LOADING CONDITION A ==========

60 mph wind with no ice. Wind Azimuth: 0° (1.0 D + 1.0 Wo)

LOADS ON POLE
==========

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	114.500	0.00	0.0	0.0	0.0071	0.0126	0.0000	0.0000
C	114.000	0.00	0.0	0.0	0.0000	0.0872	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0936	0.0750	0.0000	0.0000
C	113.760	0.00	0.0	0.0	0.0000	0.1843	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.4011	1.1906	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0316	0.2565	0.0000	0.0000
C	109.000	0.00	0.0	0.0	0.0000	0.0654	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0078	0.0140	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0000	0.1681	0.0000	0.0000
C	103.760	0.00	0.0	0.0	0.0918	0.0750	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0076	0.0140	0.0000	0.0000
C	94.000	0.00	0.0	0.0	0.0000	0.1438	0.0000	0.0000
C	89.000	0.00	0.0	0.0	0.0000	0.0681	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0074	0.0140	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0072	0.0140	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0108	0.0165	0.0000	0.0000
C	65.900	0.00	0.0	0.0	0.0000	0.0534	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0070	0.0140	0.0000	0.0000
C	64.000	0.00	0.0	0.0	0.0735	0.3852	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0451	0.0455	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0000	0.0354	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0068	0.0140	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0065	0.0140	0.0000	0.0000

C	36.000	0.00	0.0	0.0	0.0691	0.3882	0.0000	0.0000
C	36.000	0.00	0.0	0.0	0.0000	0.0216	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0062	0.0140	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0187	0.0335	0.0000	0.0000
C	33.000	0.00	0.0	0.0	0.0000	0.0198	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0000	0.0180	0.0000	0.0000
C	30.000	0.00	0.0	0.0	0.0183	0.0335	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0000	0.0162	0.0000	0.0000
C	27.000	0.00	0.0	0.0	0.0179	0.0335	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0057	0.0140	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0000	0.0144	0.0000	0.0000
C	24.000	0.00	0.0	0.0	0.0175	0.0335	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0375	0.5083	0.0000	0.0000
C	21.000	0.00	0.0	0.0	0.0000	0.0126	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0052	0.0140	0.0000	0.0000
D	119.000	0.00	180.0	0.0	0.0144	0.0664	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0153	0.0721	0.0000	0.0000
D	101.500	0.00	180.0	0.0	0.0157	0.1481	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0157	0.1481	0.0000	0.0000
D	97.500	0.00	180.0	0.0	0.0158	0.0761	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0178	0.0952	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0178	0.2190	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0178	0.2190	0.0000	0.0000
D	48.000	0.00	180.0	0.0	0.0180	0.1245	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0166	0.1434	0.0000	0.0000
D	12.000	0.00	180.0	0.0	0.0165	0.1471	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0170	0.1509	0.0000	0.0000

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	89.0	217.0	1.9	217.0	-0.46	0.10	0.45	0.28
HP	94.0	310.0	1.9	310.0	0.52	0.14	0.45	-0.12
HP	114.0	24.0	1.8	24.0	0.64	-0.10	0.45	0.19

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MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)
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MAST ELEV ft	.....DEFLECTIONS (ft)..... ..... HORIZONTAL ..... ALONG	ACROSS	DOWN	.....ROTATIONS (deg)..... ..... TILT ..... ALONG	ACROSS	TWIST
119.0	0.96A	-0.14L	0.01A	0.75A	-0.12L	-0.01J
111.5	0.86A	-0.12L	0.01A	0.75A	-0.12L	-0.01I
106.5	0.80A	-0.11L	0.01A	0.74A	-0.11L	-0.01I
101.5	0.73A	-0.10L	0.01A	0.73A	-0.11L	-0.01H
97.5	0.68A	-0.09L	0.01A	0.73A	-0.11L	-0.01H
91.2	0.60A	-0.08L	0.01A	0.70A	-0.11L	-0.01H
84.9	0.53A	-0.07L	0.01A	0.68A	-0.10L	-0.01H
78.5	0.45A	-0.06L	0.00A	0.64A	-0.09L	-0.01H
72.2	0.38A	-0.05L	0.00A	0.60A	-0.08L	0.00H
65.9	0.32A	-0.04L	0.00A	0.55A	-0.08L	0.00H

59.6	0.26A	-0.03L	0.00A	0.50A	-0.07L	0.00H
53.2	0.21A	-0.03L	0.00A	0.44A	-0.06L	0.00H
48.0	0.17A	-0.02L	0.00A	0.40A	-0.05L	0.00H
42.0	0.13A	-0.02L	0.00A	0.36A	-0.05L	0.00H
36.0	0.10A	-0.01L	0.00A	0.31A	-0.04L	0.00H
30.0	0.07A	-0.01L	0.00A	0.26A	-0.03L	0.00H
24.0	0.04A	-0.01L	0.00A	0.21A	-0.03L	0.00H
18.0	0.02A	0.00L	0.00A	0.16A	-0.02L	0.00H
12.0	0.01A	0.00L	0.00A	0.10A	-0.01L	0.00H
6.0	0.00A	0.00L	0.00A	0.05A	-0.01L	0.00H
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS

ELEV ft	ANT AZI deg	ANT TYPE	.... BEAM DEFLECTIONS (deg) .... ROLL	YAW	PITCH	TOTAL
114.0	24.0	HP	-0.649 K	0.009 C	0.740 B	0.740 B
94.0	310.0	HP	0.695 B	0.009 B	0.622 K	0.622 K
89.0	217.0	HP	0.611 K	0.007 C	-0.682 B	0.682 B

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR ALONG kip	ACROSS kip	MOMENT.w.r.t.WIND.DIR ALONG ft-kip	ACROSS ft-kip	TORSION ft-kip
119.0						
	0.00 C	0.00 A	0.00 E	-0.01 A	0.00 E	0.00 E
	1.31 E	0.86 B	-0.33 L	-2.76 H	1.20 F	0.98 E
111.5						
	1.31 D	0.86 B	-0.33 L	-2.76 H	1.21 F	0.98 E
	3.17 D	1.37 B	-0.33 L	-7.81 H	2.33 F	0.97 E
106.5						
	3.17 C	1.37 B	-0.33 L	-7.79 H	2.34 F	0.97 E
	3.79 C	1.55 B	-0.33 L	-14.75 B	3.56 L	0.97 E
101.5						
	3.79 K	1.53 B	-0.33 L	-14.75 B	3.57 L	0.97 E
	4.38 K	1.60 B	-0.33 L	-21.22 B	4.91 L	0.97 E
97.5						
	4.38 D	1.61 B	-0.33 L	-21.24 B	4.92 L	0.97 E
	5.47 D	2.12 A	-0.20 L	-32.81 B	7.01 L	1.14 E
91.2						

	5.47 D	2.12 A	-0.21 L	-32.81 B	7.00 L	1.14 E	
	6.51 D	2.66 A	-0.39 F	-49.20 B	9.91 L	-1.05 H	
84.9	.....						
	6.51 E	2.66 A	-0.39 F	-49.20 B	9.92 L	-1.05 H	
	7.03 E	2.77 A	-0.39 F	-66.53 B	12.41 L	-1.05 H	
78.5	.....						
	7.03 E	2.77 A	-0.39 F	-66.53 B	12.40 L	-1.05 H	
	7.59 E	2.88 A	-0.39 F	-84.77 A	14.89 L	-1.05 H	
72.2	.....						
	7.59 E	2.88 A	-0.39 F	-84.76 A	14.89 L	-1.05 H	
	8.22 E	3.00 A	-0.39 F	-103.82 A	17.38 L	-1.05 H	
65.9	.....						
	8.22 K	3.00 A	-0.38 F	-103.81 A	17.38 L	-1.05 H	
	9.19 K	3.19 A	-0.38 F	-124.02 A	19.86 L	-1.05 H	
59.6	.....						
	9.19 K	3.19 A	-0.38 F	-124.01 A	19.87 L	-1.05 H	
	9.88 K	3.36 A	-0.38 F	-145.32 A	22.34 L	-1.05 H	
53.2	.....						
	9.88 K	3.36 A	-0.39 F	-145.32 A	22.34 L	-1.05 H	
	11.03 K	3.45 A	-0.39 F	-163.61 A	24.38 L	-1.05 H	
48.0	.....						
	11.03 E	3.45 A	-0.38 F	-163.62 A	24.38 L	-1.05 H	
	11.80 E	3.56 A	-0.38 F	-185.12 A	26.73 L	-1.05 H	
42.0	.....						
	11.80 K	3.57 A	-0.38 F	-185.12 A	26.73 L	-1.05 H	
	12.58 K	3.67 A	-0.38 F	-207.27 A	29.06 L	-1.05 H	
36.0	.....						
	12.99 E	3.74 A	-0.38 F	-207.27 A	29.06 L	-1.05 H	
	13.85 E	3.87 A	-0.38 F	-230.52 A	31.38 L	-1.05 H	
30.0	.....						
	13.90 E	3.89 A	-0.38 F	-230.52 A	31.38 L	-1.05 H	
	14.78 E	4.02 A	-0.38 F	-254.60 A	33.71 L	-1.05 H	
24.0	.....						
	14.82 K	4.04 A	-0.38 L	-254.60 A	33.71 L	-1.05 H	
	16.18 K	4.18 A	-0.38 L	-279.54 A	36.04 L	-1.05 H	
18.0	.....						
	16.18 K	4.18 A	-0.38 L	-279.54 A	36.03 L	-1.05 H	
	17.04 K	4.28 A	-0.38 L	-305.15 A	38.35 L	-1.05 H	
12.0	.....						
	17.04 K	4.28 A	-0.38 L	-305.15 A	38.35 L	-1.05 H	
	17.93 K	4.38 A	-0.38 L	-331.29 A	40.65 L	-1.05 H	
6.0	.....						
	17.93 K	4.38 A	-0.38 L	-331.29 A	40.65 L	-1.05 H	
	18.83 K	4.48 A	-0.38 L	-357.93 A	42.94 L	-1.05 H	
base reaction	18.83 K	-4.48 A	0.38 L	357.93 A	-42.94 L	1.05 H	

COMPLIANCE WITH 4.8.2 & 4.5.4

ELEV	AXIAL	BENDING	SHEAR +	TOTAL	SATISFIED	D/t(w/t)	MAX

ft			TORSIONAL			ALLOWED	
119.00							
	0.00C	0.00A	0.00A	0.00A	YES	15.87A	45.2
	0.00E	0.00H	0.00B	0.00H	YES	16.86A	45.2
111.50							
	0.00D	0.00H	0.00B	0.00H	YES	16.86A	45.2
	0.00D	0.01H	0.00B	0.01H	YES	17.53A	45.2
106.50							
	0.00C	0.01H	0.00B	0.01H	YES	17.53A	45.2
	0.00C	0.02B	0.00B	0.02B	YES	18.19A	45.2
101.50							
	0.00K	0.02B	0.00B	0.02B	YES	18.19A	45.2
	0.00K	0.02B	0.00B	0.03B	YES	18.72A	45.2
97.50							
	0.00D	0.02B	0.00B	0.03B	YES	18.37A	45.2
	0.00D	0.03B	0.00A	0.04B	YES	19.21A	45.2
91.18							
	0.00D	0.03B	0.00A	0.04B	YES	19.21A	45.2
	0.00D	0.05B	0.00A	0.05B	YES	20.04A	45.2
84.86							
	0.00E	0.05B	0.00A	0.05B	YES	20.04A	45.2
	0.00E	0.06A	0.00A	0.07A	YES	20.88A	45.2
78.54							
	0.00E	0.06A	0.00A	0.07A	YES	20.88A	45.2
	0.00E	0.07A	0.00A	0.08A	YES	21.72A	45.2
72.21							
	0.00E	0.07A	0.00A	0.08A	YES	21.72A	45.2
	0.00E	0.08A	0.00A	0.09A	YES	22.56A	45.2
65.89							
	0.00K	0.08A	0.00A	0.09A	YES	22.56A	45.2
	0.01K	0.10A	0.00A	0.10A	YES	23.40A	45.2
59.57							
	0.01K	0.10A	0.00A	0.10A	YES	23.40A	45.2
	0.01K	0.11A	0.00A	0.11A	YES	24.24A	45.2
53.25							
	0.00K	0.08A	0.00A	0.08A	YES	19.32A	45.2
	0.00K	0.08A	0.00A	0.09A	YES	19.87A	45.2
48.00							
	0.00E	0.09A	0.00A	0.09A	YES	19.59A	45.2
	0.00E	0.09A	0.00A	0.10A	YES	20.23A	45.2
42.00							
	0.00K	0.09A	0.00A	0.10A	YES	20.23A	45.2
	0.00K	0.10A	0.00A	0.10A	YES	20.87A	45.2
36.00							
	0.00E	0.10A	0.00A	0.10A	YES	20.87A	45.2
	0.01E	0.10A	0.00A	0.11A	YES	21.50A	45.2
30.00							
	0.01E	0.10A	0.00A	0.11A	YES	21.50A	45.2
	0.01E	0.11A	0.00A	0.12A	YES	22.14A	45.2
24.00							
	0.01K	0.11A	0.00A	0.12A	YES	22.14A	45.2

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```
          0.01K     0.12A     0.00A     0.12A     YES      22.78A       45.2
 18.00  ..........................................................................
          0.01K     0.12A     0.00A     0.12A     YES      22.78A       45.2

          0.01K     0.12A     0.00A     0.13A     YES      23.41A       45.2
 12.00  ..........................................................................
          0.01K     0.12A     0.00A     0.13A     YES      23.41A       45.2

          0.01K     0.13A     0.00A     0.13A     YES      24.05A       45.2
  6.00  ..........................................................................
          0.01K     0.13A     0.00A     0.13A     YES      24.05A       45.2

          0.01K     0.13A     0.00A     0.14A     YES      24.68A       45.2
  0.00  ..........................................................................
```

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)

DOWN	SHEAR.w.r.t.WIND.DIR ALONG	ACROSS	MOMENT.w.r.t.WIND.DIR ALONG	ACROSS	TORSION
kip	kip	kip	ft-kip	ft-kip	ft-kip
18.83	4.48	-0.38	-357.93	42.94	-1.05
K	A	L	A	L	H

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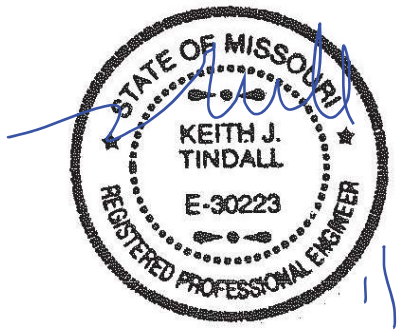
Seismic Load Effects
Equivalent Lateral Force Procedure
ANSI/TIA-222-H

Parameters	
Risk Category	III
R	1.500
S_S	0.099
S_1	0.068
Site Class	B
T_L (sec)	12.000
F_a	0.900
F_v	0.800
S_{MS}	0.089
S_{M1}	0.054
S_{DS}	0.059
S_{D1}	0.036
T_s	0.610
I_e	1.250
Ω	1.500
C_S	0.030
E (ksi)	29,000
I_{top} (in^4)	1,389
I_{bot} (in^4)	11,682
I_{avg} (in^4)	6,536
g (in/s^2)	386.4
W_t (kips)	19.993
W_u (kips)	4.138
W_L (kips)	15.855
L_p (in)	1428
f_1 (Hertz)	0.492
T (sec)	2.031
k_e	1.7655
V_s (kips)	0.600
Seismic Design Category	A

Vertical Distribution of Seismic Forces

Description	h_i (ft.)	w_i (kips)	W_u (kips)	$w_i h_i^{ke}$	F_{sz} or E_h (kips)	E_V (kips)	1.2 D + 1.0 E_V (kips)	0.9 D - 1.0 E_V (kips)
Step Bolts/Safety Climb Load	114.50	0.0126	0.0000	54.3490	0.0009	0.0001	0.0152	0.0112
Line Deadload	114.00	0.0872	0.0000	373.2347	0.0061	0.0010	0.1056	0.0775
Mount/Antenna Load	114.00	0.9648	0.9648	4,129.5508	0.0675	0.0114	1.1692	0.8569
Antenna Load	113.76	0.0750	0.0750	319.8239	0.0052	0.0009	0.0909	0.0666
Line Deadload	113.76	0.1843	0.0000	785.9139	0.0128	0.0022	0.2234	0.1637
Line Deadload	109.00	0.0654	0.0000	258.6153	0.0042	0.0008	0.0793	0.0581
Mount Load	109.00	1.1906	1.1906	4,708.0640	0.0769	0.0140	1.4427	1.0575
Mount/Antenna Load	109.00	0.2565	0.2565	1,014.2940	0.0166	0.0030	0.3108	0.2278
Structure - Section 1	108.25	1.5072	0.0000	5,887.8041	0.0962	0.0178	1.8264	1.3387
Step Bolts/Safety Climb Load	105.00	0.0140	0.0000	51.8248	0.0008	0.0002	0.0170	0.0124
Antenna Load	103.76	0.0750	0.0750	271.8705	0.0044	0.0009	0.0909	0.0666
Line Deadload	103.76	0.1681	0.0000	609.3525	0.0100	0.0020	0.2037	0.1493
Step Bolts/Safety Climb Load	95.00	0.0140	0.0000	43.4309	0.0007	0.0002	0.0170	0.0124
Line Deadload	94.00	0.1438	0.0000	437.8407	0.0072	0.0017	0.1743	0.1277
Mount/Antenna Load	94.00	0.6115	0.6115	1,861.8886	0.0304	0.0072	0.7410	0.5432
Line Deadload	89.00	0.0681	0.0000	188.2761	0.0031	0.0008	0.0825	0.0605
Mount/Antenna Load	89.00	0.9648	0.9648	2,667.3828	0.0436	0.0114	1.1692	0.8569
Step Bolts/Safety Climb Load	85.00	0.0140	0.0000	35.6876	0.0006	0.0002	0.0170	0.0124
Step Bolts/Safety Climb Load	75.00	0.0140	0.0000	28.6120	0.0005	0.0002	0.0170	0.0124
Structure - Section 2	74.75	4.5854	0.0000	9,316.1784	0.1522	0.0541	5.5566	4.0728
Antenna Load	65.90	0.0165	0.0000	26.8365	0.0004	0.0002	0.0200	0.0146
Line Deadload	65.90	0.0534	0.0000	86.8527	0.0014	0.0006	0.0647	0.0475
Step Bolts/Safety Climb Load	65.00	0.0140	0.0000	22.2242	0.0004	0.0002	0.0170	0.0124
Mount Load	64.00	0.3852	0.0000	594.9727	0.0097	0.0045	0.4667	0.3422
Antenna Load	59.00	0.0455	0.0000	60.8766	0.0010	0.0005	0.0551	0.0404
Line Deadload	59.00	0.0354	0.0000	47.3634	0.0008	0.0004	0.0429	0.0315
Step Bolts/Safety Climb Load	55.00	0.0140	0.0000	16.5477	0.0003	0.0002	0.0170	0.0124
Step Bolts/Safety Climb Load	45.00	0.0140	0.0000	11.6111	0.0002	0.0002	0.0170	0.0124
Line Deadload	36.00	0.0216	0.0000	12.0811	0.0002	0.0003	0.0262	0.0191
Mount/Antenna Load	36.00	0.3882	0.0000	217.1239	0.0035	0.0046	0.4704	0.3448
Step Bolts/Safety Climb Load	35.00	0.0140	0.0000	7.4504	0.0001	0.0002	0.0170	0.0124
Antenna Load	33.00	0.0335	0.0000	16.0687	0.0003	0.0004	0.0406	0.0298
Line Deadload	33.00	0.0198	0.0000	9.4973	0.0002	0.0002	0.0240	0.0176
Antenna Load	30.00	0.0335	0.0000	13.5801	0.0002	0.0004	0.0406	0.0298
Line Deadload	30.00	0.0180	0.0000	7.2968	0.0001	0.0002	0.0218	0.0160
Antenna Load	27.00	0.0335	0.0000	11.2750	0.0002	0.0004	0.0406	0.0298
Line Deadload	27.00	0.0162	0.0000	5.4524	0.0001	0.0002	0.0196	0.0144



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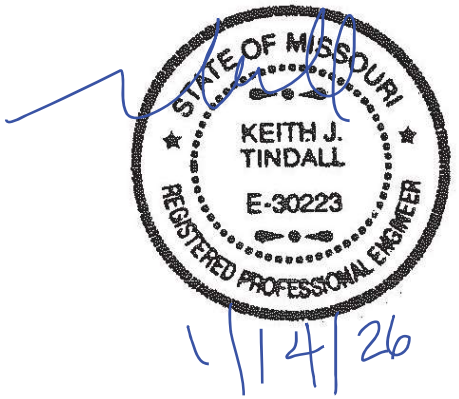
Seismic Load Effects
Equivalent Lateral Force Procedure
ANSI/TIA-222-H

Vertical Distribution of Seismic Forces

Description	h_i (ft.)	w_i (kips)	W_{ii} (kips)	$w_i h_i^{ke}$	F_{sz} or E_h (kips)	E_V (kips)	1.2 D + 1.0 E_V (kips)	0.9 D - 1.0 E_V (kips)
Structure - Section 3	26.62	7.2237	0.0000	2,371.1800	0.0387	0.0852	8.7536	6.4161
Step Bolts/Safety Climb Load	25.00	0.0140	0.0000	4.1133	0.0001	0.0002	0.0170	0.0124
Antenna Load	24.00	0.0335	0.0000	9.1582	0.0001	0.0004	0.0406	0.0298
Line Deadload	24.00	0.0144	0.0000	3.9366	0.0001	0.0002	0.0175	0.0128
Line Deadload	21.00	0.0126	0.0000	2.7211	0.0000	0.0001	0.0152	0.0112
Mount/Antenna Load	21.00	0.5083	0.0000	109.7737	0.0018	0.0060	0.6160	0.4515
Step Bolts/Safety Climb Load	15.00	0.0140	0.0000	1.6692	0.0000	0.0002	0.0170	0.0124
	Σ	19.99	4.1382	36,713.66	0.60	0.24	24.23	17.76



SO#: 26-2169-RSS-R2 Opt. 2
Site Name: Lee's Summit JOF, MO
Date: 1/14/2026

Round Base Plate and Anchor Rods, per ANSI/TIA 222-H

Pole Data

Diameter:	45.620	in (flat to flat)
Thickness:	0.3125	in
Yield (Fy):	65	ksi
# of Sides:	18	"0" IF Round
Strength (Fu):	80	ksi

Reactions

Moment, Mu:	1528.91	ft-kips
Axial, Pu:	16.96	kips
Shear, Vu:	19.13	kips

Anchor Rod Data

Quantity:	18		
Diameter:	1.25	in	
Rod Material:	F1554		
Strength (Fu):	125	ksi	
Yield (Fy):	105	ksi	
BC Diam. (in):	50.25	BC Override:	

Plate Data

Diameter (in):	53.5	Dia. Override:	
Thickness:	1.25	in	
Yield (Fy):	50	ksi	
Eff Width/Rod:	8.04	in	
Drain Hole:	2.625	in. diameter	
Drain Location:	20.75	in. center of pole to center of drain hole	
Center Hole:	33.5	in. diameter	

Anchor Rod Results

(per 4.9.9)

Maximum Put:	80.43	Kips
Φt*Rnt:	90.84	Kips
Vu:	1.06	Kips
Φv*Rnv:	57.52	Kips
Tension Interaction Ratio:	0.78	
Maximum Puc:	82.08	Kips
Φc*Rnc:	115.97	Kips
Vu:	1.06	Kips
Φc*Rnvc:	52.19	Kips
Compression Interaction Ratio:	0.71	
Maximum Interaction Ratio:	**78.4%**	**Pass**

Base Plate Results

Base Plate (Mu/Z):	38.1	ksi	
Allowable Φ*Fy:	45.0	ksi	(per AISC)
Base Plate Interaction Ratio:	**84.6%**	**Pass**	

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES

120' Monopole MOTOROLA ISPO Lee's Summit JOF, MO (26-2169-RSS-R2 Opt. 2) 01/14/26 KJT

Overall Loads:			
Factored Moment (ft-kips)	1528.91		
Factored Axial (kips)	16.96		
Factored Shear (kips)	19.13		
Bearing Design Strength (ksf)	4.5	Max. Net Bearing Press. (ksf)	3.37
Water Table Below Grade (ft)	10		
Width of Mat (ft)	18	Allowable Bearing Pressure (ksf)	3.00
Thickness of Mat (ft)	1.5	Safety Factor	2.00
Depth to Bottom of Slab (ft)	6	Ultimate Bearing Pressure (ksf)	6.00
Quantity of Bolts in Bolt Circle	18	Bearing Φs	0.75
Bolt Circle Diameter (in)	50.25		
Effective Anchor Bolt Embedment (in)	51.5		
Diameter of Pier (ft)	6	Minimum Pier Diameter (ft)	6.00
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	5.32
Ht. of Pier Below Ground (ft)	4.5	Square Pier? (Y/N)	N
Quantity of Bars in Mat	19		
Bar Diameter in Mat (in)	1		
Area of Bars in Mat (in^2)	14.92		
Spacing of Bars in Mat (in)	11.61	Recommended Spacing (in)	5 to 12
Quantity of Bars Pier	34		
Bar Diameter in Pier (in)	0.875		
Tie Bar Diameter in Pier (in)	0.625		
Spacing of Ties (in)	4		
Area of Bars in Pier (in^2)	20.44	Minimum Pier A_s (in^2)	20.36
Spacing of Bars in Pier (in)	5.90	Recommended Spacing (in)	5 to 12
f'c (ksi)	4.5		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.12		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	23.24		
Two-Way Shear Action:			
Average d (in)	14		
ϕv_c (ksi)	0.191	v_u (ksi)	0.072
$\phi v_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}$	0.302		
$\phi v_c = \phi(\alpha_s d/b_o+2)f'_c{}^{1/2}$	0.191	J (in^3)	4.432E+06
$\phi v_c = \phi 4f'_c{}^{1/2}$	0.201	c + d (in)	77.81
Shear perimeter, b_o (in)	311.23	$0.40M_{sc}$ (ft-kips)	649.8
β_c	1		
One-Way Shear:			
ϕV_c (kips)	304.3	V_u (kips)	163.7
Stability:			
Overturning Design Strength (ft-k)	2170.2	Total Applied M (ft-k)	1653.3

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Pier-Slab Transfer by Flexure:

b_{slab} (ft)	10.50		
ϕM_n (ft-kips)	1054.4	$0.60M_{sc}$ (ft-kips)	974.7

Pier Design:

ϕV_n (kips)	815.8	V_u (kips)	19.1
$\phi V_c=\phi 2(1+N_u/(2000A_g))f'_c{}^{1/2}b_wd$	418.2		
V_s (kips)	530.1	*** V_s max = 4 $f'_c{}^{1/2}b_wd$ (kips)	1112.8
Maximum Spacing (in)	10.16	(Only if Shear Ties are Required)	
Actual Hook Development (in)	13.00	Req'd Hook Development l_{dh} (in) - Tension	10.96
		Req'd Hook Development l_{dc} (in) - Compression	11.81

Flexure in Slab:

ϕM_n (ft-kips)	903.7	M_u (ft-kips)	689.6
a (in)	1.08		
Steel Ratio	0.00493		
β_1	0.825		
Maximum Steel Ratio (ρ_t)	0.0197		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	69.00	Required Development in Pad (in)	26.83

Condition	1 is OK, 0 Fails
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Interaction Diagram	1
Two-Way Shear Action	1
One-Way Shear Action	1
Overturning	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1
Anchor Bolt Pullout	1
Anchor Bolt Punching Shear	1

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