



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 77 ft Monopole
ATC Asset Name : PPIR CO
ATC Asset Number : 411241
Engineering Number : 14912246_C3_01
Proposed Carrier : VERIZON WIRELESS
Carrier Site Name : PPIR
Carrier Site Number : 5000268092
Site Location : 17610 Midway Ranch Road
Fountain, CO 80817-3738
38.5773° N, 104.6633° W
County : El Paso
Date : November 19, 2024
Max Usage : 64%
Analysis Result : Pass

Created By:

Nathan Lyle
Structural Engineer I

Nathan Lyle





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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 77 ft Monopole tower to reflect the change in loading by VERIZON WIRELESS.

Supporting Documents

Tower:	Mapping by GeoStructural Site #411241, dated September 3, 2015
Foundation:	Mapping by Telesite Report #TLC-CO241, dated September 17, 2015
Geotechnical:	Geotel Engineering Report #E15-296, dated August 21, 2015

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	101 mph (3-second gust, Vasd) / 130 mph (3-second gust, Vult)
Basic Wind Speed w/ Ice:	No Ice Considered
Code(s):	ANSI/TIA-222-G / 2015 IBC
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	S _s = 0.18, S ₁ = 0.06
Site Class:	D - Stiff Soil - Default

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact Engineering@americantower.com. Please include the American Tower asset name, asset number, and engineering number in the subject line for any questions.

Structure Usages

Structural Component	Usage	Control	Result
Pole Shaft	63.3%	1.2D + 1.6W	Pass
Serviceability Usage	37.2%	1.0D + 1.0W	Pass
Base Plate @ 0.0 ft	63.5%	Rods	Pass

Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Shear (k)
Monopole Base	644.6	12.2	10.2

**Reactions shown reflect the results from the Load Case with maximum Moment*

Foundation usages were calculated by comparing the maximum reactions from this analysis to the reactions from the original design drawings, factored by 1.35 per ANSI/TIA-222-G, Section 15.5.1

VERIZON WIRELESS Final Loading

Elev (ft)	Qty	Equipment	Lines
78.8	2	Ericsson AIR 6419 B77D/ C-Band	-
76.0	1	Raycap RCMD-6627-PF-48	(2) 1 5/8" Hybriflex (6) 7/8" Coax
	1	Unused Reserve (10114.390 sqin)	
	2	Ericsson Radio 4449 - B13&B5	
	2	Ericsson Radio 4890HP 48B2 48B66 S	
	4	Commscope NHH-65C-HG-R2B	
75.0	2	T-Arm	-

Install proposed lines inside the pole shaft.

Other Existing/Reserved Loading

Elev (ft)	Qty	Equipment	Lines
62.0	1	Commscope RDIDC-9181-PF-48	(1) 1.41" (35.8mm) Hybrid
	1	Platform with Handrails	
	3	Fujitsu TA08025-B604	
	3	Fujitsu TA08025-B605	
	3	JMA Wireless MX08FRO665-21	

(If table breaks across pages, please see previous page for data in merged cells)



Standard Conditions

All engineering services performed by ATC Tower Services LLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of ATC Tower Services LLC

It is the responsibility of the client to ensure that the information provided to ATC Tower Services LLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and ATC Tower Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

ANALYSIS PARAMETERS

Design Wind: 90 mph Ice Wind: 50 mph w/ 0.0" ice Service Wind: 60 mph
 Structure Class: II Exposure: C S_g: 0.185 S_i: 0.059
 Structure Height: 76.8 ft Base Elevation: 0.00 ft Topo Category: 1 Structure Type: Taper
 Base Diameter: 30.25 in Base Rotation: 0.00° Taper: 0.2030 (in/ft)

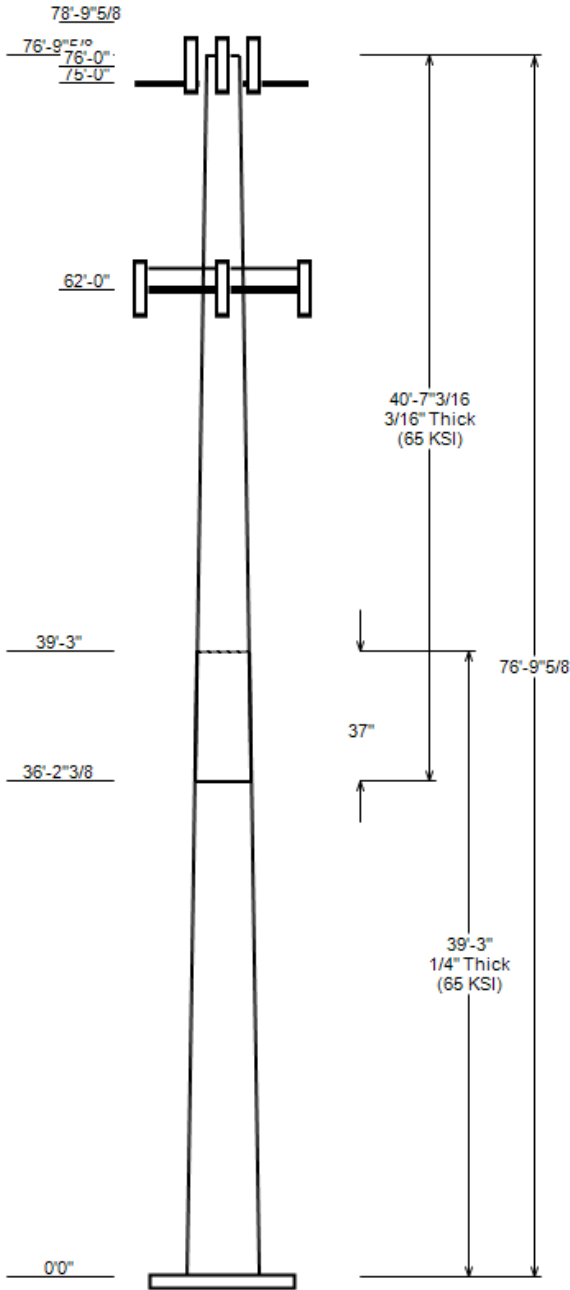
POLE SECTION PROPERTIES

Section	Length (ft)	Flat Diameter (in)		Thick (in)	Joint Type	Joint Length (in)	Pole Shape	Yield Strength (ksi)
		Top	Bottom					
1	39.250	22.26	30.25	0.250		0.00	18 Sides	65
2	40.601	15.00	23.26	0.188	Slip Joint	36.61	18 Sides	65

DISCRETE APPURTENANCE

LINEAR APPURTENANCE

Elev (ft)	Description	Elev To (ft)	Description
78.8	(2) Ericsson AIR 6419 B77D/ C-Band	76.0	(2) 1 5/8" Hybriflex
76.0	(2) Ericsson Radio 4449 - B13&B5	76.0	(6) 7/8" Coax
76.0	(1) Unused Reserve (10114.390 sqin)	62.0	(1) 1.41" (35.8mm) Hybrid
76.0	(4) Commscope NHH-65C-HG-R2B		
76.0	(1) Raycap RCMD-6627-PF-48		
76.0	(2) Ericsson Radio 4890HP 48B2 48B66		
75.0	(2) Generic Flat T-Arm		
62.0	(3) JMA Wireless MX08FRO665-21		
62.0	(1) Commscope RDIDC-9181-PF-48		
62.0	(3) Fujitsu TA08025-B605		
62.0	(3) Fujitsu TA08025-B604		
62.0	(1) Generic Round Platform with Handrail		



GLOBAL BASE REACTIONS

Load Case	Moment (kip-ft)	Axial (kip)	Shear (kip)
1.2D + 1.6W	644.59	12.23	10.18
0.9D + 1.6W	638.46	9.16	10.17
1.2D + 1.0Di + 1.0Wi	144.21	11.39	2.48
(1.2 + 0.2Sds) * DL + E ELFM	27.26	12.13	0.41
(1.2 + 0.2Sds) * DL + E EMAM	55.23	12.13	0.78
(0.9 - 0.2Sds) * DL + E ELFM	26.96	8.42	0.41
(0.9 - 0.2Sds) * DL + E EMAM	54.56	8.42	0.78
1.0D + 1.0W	159.32	10.21	2.53

ANALYSIS PARAMETERS

Location:	El Paso County,CO	Height:	76.8 ft
Type and Shape:	Taper, 18 Sides	Base Diameter:	30.25 in
Manufacturer:	EEl	Top Diameter:	15.00 in
		Taper:	0.2030 in/ft
		Rotation:	0.000°

ICE & WIND PARAMETERS

Structure Class:	II	Design Wind Speed:	90 mph
Exposure Category:	C	Design Wind Speed w/ Ice:	50 mph
Topographic Category:	1	Design Ice Thickness:	0.00 in
Crest Height:	0 ft	Service Wind Speed:	60 mph

SEISMIC PARAMETERS

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	1.56
T_L (sec):	6	P:	1
		C_s:	0.040
S_{ds}:	0.197	S_{d1}:	0.094
		C_s Max:	0.040
S_s:	0.185	S₁:	0.059
		C_s Min:	0.030
F_a:	1.600	F_v:	2.400

LOAD CASES

1.2D + 1.6W	90 mph Wind with No Ice
0.9D + 1.6W	90 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph Wind with 0" Radial Ice
(1.2 + 0.2Sds) * DL + E EMAM	Seismic
(1.2 + 0.2Sds) * DL + E ELFM	Seismic
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL)
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Section	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Bottom						Top								
						Weight (lb)	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)	
1-18	39.25	0.2500	65		0.00	2,756	30.25	0.000	23.80	2,706.8	19.92	121.00	22.26	39.25	17.47	1,069.6	14.29	89.06	0.2035	
2-18	40.60	0.1875	65	Slip	36.61	1,557	23.26	36.199	13.73	923.5	20.46	124.05	15.00	76.80	8.81	244.4	12.70	80.00	0.2035	
Total Shaft Weight						4,313														

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice			Ice		
					Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor
78.80	Ericsson AIR 6419 B77D/ C-Band	2	0.90	0.000	64.00	3.797	0.73	64.00	3.797	0.73
76.00	Unused Reserve (10114.390 sqin	1	0.90	0.000	749.30	70.239	0.90	749.30	70.239	0.90
76.00	Commscope NHH-65C-HG-R2B	4	0.90	0.000	57.30	11.389	0.70	57.30	11.389	0.70
76.00	Raycap RCMDC-6627-PF-48	1	0.90	0.000	32.00	4.056	1.00	32.00	4.056	1.00
76.00	Ericsson Radio 4890HP 48B2 48B	2	0.90	0.000	69.50	2.217	0.67	69.50	2.217	0.67
76.00	Ericsson Radio 4449 - B13&B5	2	0.90	0.000	70.00	1.650	0.50	70.00	1.650	0.50
75.00	Generic Flat T-Arm	2	0.90	0.000	450.00	12.900	0.90	450.00	12.900	0.90
62.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	64.50	12.489	0.64
62.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	63.90	1.962	0.50
62.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	75.00	1.962	0.50
62.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	21.90	1.867	1.00
62.00	Generic Round Platform with Ha	1	1.00	0.000	2500.00	27.200	1.00	2500.00	27.200	1.00
Totals		Row Count: 12	25		5,449.60			5,449.60		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg): 0.00

Elev From (ft)	Elev To (ft)	Qty	Description	Diameter (in)	Weight (lb/ft)	Flat	Max/Row	Distance Between Rows (in)	Distance Between Cols (in)	Azimuth (deg)	Distance From Face (in)	Exposed To Wind	Carrier
0.00	76.00	6	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	VERIZON WIRELESS
0.00	76.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIRELESS
0.00	62.00	1	1.41" (35.8mm) Hybrid	1.41	1.66	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.

SEGMENT PROPERTIES

Seg Top Elev (ft)	Description	(Max Length: 5 ft)	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F _y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00			0.2500	30.250	23.804	2,706.80	19.92	121.00	78	176.2	0.0	0.0
5.00			0.2500	29.233	22.997	2,440.60	19.21	116.93	78.8	164.4	0.0	398.1
10.00			0.2500	28.216	22.190	2,192.60	18.49	112.86	79.7	153.1	0.0	384.4
15.00			0.2500	27.198	21.383	1,961.90	17.77	108.79	80.5	142.1	0.0	370.7
20.00			0.2500	26.181	20.576	1,748.00	17.06	104.72	81.3	131.5	0.0	356.9
25.00			0.2500	25.164	19.768	1,550.20	16.34	100.66	82.2	121.3	0.0	343.2
30.00			0.2500	24.147	18.961	1,368.00	15.62	96.59	82.6	111.6	0.0	329.5
35.00			0.2500	23.129	18.154	1,200.60	14.90	92.52	82.6	102.2	0.0	315.7
36.20	Bot - Section 2		0.2500	22.885	17.960	1,162.60	14.73	91.54	82.6	100.1	0.0	73.7
39.25	Top - Section 1		0.1875	22.640	13.361	851.00	19.88	120.74	78	74.0	0.0	324.5
40.00			0.1875	22.487	13.271	833.70	19.74	119.93	78.2	73.0	0.0	34.0
45.00			0.1875	21.470	12.665	724.80	18.78	114.51	79.3	66.5	0.0	220.6
50.00			0.1875	20.453	12.060	625.70	17.82	109.08	80.4	60.3	0.0	210.3
55.00			0.1875	19.435	11.454	536.10	16.87	103.65	81.6	54.3	0.0	200.0
60.00			0.1875	18.418	10.849	455.60	15.91	98.23	82.6	48.7	0.0	189.7
62.00			0.1875	18.011	10.607	425.70	15.53	96.06	82.6	46.6	0.0	73.0
65.00			0.1875	17.401	10.244	383.50	14.95	92.80	82.6	43.4	0.0	106.4
70.00			0.1875	16.384	9.638	319.40	14.00	87.38	82.6	38.4	0.0	169.1
75.00			0.1875	15.366	9.033	262.90	13.04	81.95	82.6	33.7	0.0	158.8
76.00			0.1875	15.163	8.912	252.50	12.85	80.87	82.6	32.8	0.0	30.5
76.80			0.1875	15.000	8.815	244.40	12.70	80.00	82.6	32.1	0.0	24.1
Total:												4,313.2

CALCULATED FORCES

Load Case: 1.2D + 1.6W		90 mph Wind with No Ice										22 Iterations	
Gust Response Factor: 1.10												Wind Importance Factor 1.00	
Dead load Factor: 1.20													
Wind Load Factor: 1.60													
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-12.23	-10.18	0	-644.59	0.00	644.59	1,670.31	835.15	2,058.03	1,030.55	0	0	0.633
5.00	-11.66	-10.01	0	-593.69	0.00	593.69	1,631.14	815.57	1,941.06	971.97	0.17	-0.33	0.618
10.00	-11.10	-9.84	0	-543.66	0.00	543.66	1,590.74	795.37	1,825.97	914.34	0.69	-0.66	0.602
15.00	-10.57	-9.67	0	-494.46	0.00	494.46	1,549.11	774.56	1,712.94	857.74	1.56	-0.99	0.583
20.00	-10.05	-9.50	0	-446.11	0.00	446.11	1,506.26	753.13	1,602.11	802.24	2.79	-1.33	0.563
25.00	-9.55	-9.32	0	-398.62	0.00	398.62	1,462.19	731.09	1,493.63	747.93	4.37	-1.68	0.540
30.00	-9.07	-9.13	0	-352.04	0.00	352.04	1,408.72	704.36	1,379.68	690.86	6.31	-2.02	0.516
35.00	-8.63	-9.01	0	-306.39	0.00	306.39	1,348.75	674.38	1,264.13	633.01	8.61	-2.37	0.491
36.20	-8.51	-8.93	0	-295.59	0.00	295.59	1,334.37	667.19	1,237.17	619.51	9.22	-2.45	0.484
39.25	-8.08	-8.84	0	-268.34	0.00	268.34	938.18	469.09	865.11	433.20	10.85	-2.66	0.628
40.00	-8.00	-8.75	0	-261.71	0.00	261.71	933.82	466.91	855.19	428.23	11.28	-2.71	0.620
45.00	-7.65	-8.57	0	-217.97	0.00	217.97	904.05	452.03	789.84	395.51	14.34	-3.12	0.560
50.00	-7.32	-8.39	0	-175.13	0.00	175.13	873.05	436.53	725.98	363.53	17.82	-3.51	0.491
55.00	-7.01	-8.20	0	-133.20	0.00	133.20	840.83	420.41	663.76	332.38	21.69	-3.86	0.409
60.00	-6.73	-8.06	0	-92.20	0.00	92.20	806.03	403.01	602.34	301.62	25.9	-4.16	0.314
62.00	-3.02	-5.67	0	-76.07	0.00	76.07	788.04	394.02	575.62	288.24	27.66	-4.26	0.268
65.00	-2.88	-5.52	0	-59.05	0.00	59.05	761.05	380.53	536.67	268.74	30.38	-4.4	0.224
70.00	-2.65	-5.32	0	-31.47	0.00	31.47	716.08	358.04	474.80	237.75	35.08	-4.57	0.136
75.00	-1.43	-4.25	0	-4.86	0.00	4.86	671.10	335.55	416.71	208.66	39.91	-4.65	0.026
76.00	-0.16	-0.24	0	-0.61	0.00	0.61	662.11	331.05	405.54	203.07	40.89	-4.65	0.003
76.80	0.00	-0.22	0	-0.42	0.00	0.42	654.91	327.46	396.72	198.66	41.67	-4.65	0.002

CALCULATED FORCES

Load Case: 0.9D + 1.6W		90 mph Wind with No Ice (Reduced DL)										21 Iterations	
Gust Response Factor: 1.10												Wind Importance Factor 1.00	
Dead load Factor: 0.90													
Wind Load Factor: 1.60													
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-9.16	-10.17	0	-638.46	0.00	638.46	1,670.31	835.15	2,058.03	1,030.55	0	0	0.625
5.00	-8.72	-9.98	0	-587.62	0.00	587.62	1,631.14	815.57	1,941.06	971.97	0.17	-0.32	0.610
10.00	-8.29	-9.80	0	-537.72	0.00	537.72	1,590.74	795.37	1,825.97	914.34	0.69	-0.65	0.593
15.00	-7.88	-9.61	0	-488.74	0.00	488.74	1,549.11	774.56	1,712.94	857.74	1.55	-0.98	0.575
20.00	-7.48	-9.43	0	-440.67	0.00	440.67	1,506.26	753.13	1,602.11	802.24	2.76	-1.32	0.554
25.00	-7.09	-9.23	0	-393.54	0.00	393.54	1,462.19	731.09	1,493.63	747.93	4.32	-1.66	0.531
30.00	-6.72	-9.04	0	-347.37	0.00	347.37	1,408.72	704.36	1,379.68	690.86	6.24	-2	0.508
35.00	-6.38	-8.91	0	-302.19	0.00	302.19	1,348.75	674.38	1,264.13	633.01	8.52	-2.34	0.482
36.20	-6.29	-8.83	0	-291.50	0.00	291.50	1,334.37	667.19	1,237.17	619.51	9.12	-2.42	0.475
39.25	-5.97	-8.74	0	-264.57	0.00	264.57	938.18	469.09	865.11	433.20	10.73	-2.63	0.617
40.00	-5.90	-8.64	0	-258.02	0.00	258.02	933.82	466.91	855.19	428.23	11.15	-2.68	0.609
45.00	-5.63	-8.45	0	-214.83	0.00	214.83	904.05	452.03	789.84	395.51	14.18	-3.08	0.550
50.00	-5.37	-8.25	0	-172.61	0.00	172.61	873.05	436.53	725.98	363.53	17.61	-3.46	0.481
55.00	-5.13	-8.06	0	-131.34	0.00	131.34	840.83	420.41	663.76	332.38	21.43	-3.81	0.402
60.00	-4.92	-7.93	0	-91.02	0.00	91.02	806.03	403.01	602.34	301.62	25.58	-4.11	0.308
62.00	-2.17	-5.60	0	-75.17	0.00	75.17	788.04	394.02	575.62	288.24	27.33	-4.21	0.264
65.00	-2.06	-5.45	0	-58.36	0.00	58.36	761.05	380.53	536.67	268.74	30.01	-4.34	0.220
70.00	-1.89	-5.26	0	-31.11	0.00	31.11	716.08	358.04	474.80	237.75	34.65	-4.51	0.134
75.00	-0.99	-4.21	0	-4.82	0.00	4.82	671.10	335.55	416.71	208.66	39.43	-4.59	0.025
76.00	-0.12	-0.23	0	-0.60	0.00	0.60	662.11	331.05	405.54	203.07	40.39	-4.59	0.003
76.80	0.00	-0.22	0	-0.42	0.00	0.42	654.91	327.46	396.72	198.66	41.16	-4.59	0.002

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi			50 mph Wind with 0" Radial Ice								20 Iterations		
Gust Response Factor:		1.10	Ice Dead Load Factor		1.00			Wind Importance Factor		1.00			
Dead Load Factor:		1.20						Ice Importance Factor		1.00			
Wind Load Factor:		1.00											
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-11.39	-2.48	0	-144.21	0.00	144.21	1,670.31	835.15	2,058.03	1,030.55	0	0	0.147
5.00	-10.87	-2.41	0	-131.80	0.00	131.80	1,631.14	815.57	1,941.06	971.97	0.04	-0.07	0.142
10.00	-10.37	-2.34	0	-119.74	0.00	119.74	1,590.74	795.37	1,825.97	914.34	0.15	-0.15	0.137
15.00	-9.88	-2.27	0	-108.03	0.00	108.03	1,549.11	774.56	1,712.94	857.74	0.35	-0.22	0.132
20.00	-9.41	-2.20	0	-96.66	0.00	96.66	1,506.26	753.13	1,602.11	802.24	0.62	-0.29	0.127
25.00	-8.96	-2.13	0	-85.64	0.00	85.64	1,462.19	731.09	1,493.63	747.93	0.96	-0.37	0.121
30.00	-8.53	-2.06	0	-74.97	0.00	74.97	1,408.72	704.36	1,379.68	690.86	1.39	-0.44	0.115
35.00	-8.11	-2.01	0	-64.68	0.00	64.68	1,348.75	674.38	1,264.13	633.01	1.89	-0.51	0.108
36.20	-8.01	-1.98	0	-62.26	0.00	62.26	1,334.37	667.19	1,237.17	619.51	2.02	-0.53	0.107
39.25	-7.60	-1.95	0	-56.21	0.00	56.21	938.18	469.09	865.11	433.20	2.38	-0.58	0.138
40.00	-7.55	-1.91	0	-54.75	0.00	54.75	933.82	466.91	855.19	428.23	2.47	-0.59	0.136
45.00	-7.25	-1.84	0	-45.19	0.00	45.19	904.05	452.03	789.84	395.51	3.13	-0.67	0.122
50.00	-6.96	-1.77	0	-35.98	0.00	35.98	873.05	436.53	725.98	363.53	3.88	-0.75	0.107
55.00	-6.68	-1.70	0	-27.13	0.00	27.13	840.83	420.41	663.76	332.38	4.71	-0.82	0.090
60.00	-6.41	-1.65	0	-18.62	0.00	18.62	806.03	403.01	602.34	301.62	5.61	-0.89	0.070
62.00	-2.96	-1.17	0	-15.32	0.00	15.32	788.04	394.02	575.62	288.24	5.98	-0.91	0.057
65.00	-2.82	-1.12	0	-11.80	0.00	11.80	761.05	380.53	536.67	268.74	6.56	-0.93	0.048
70.00	-2.59	-1.05	0	-6.20	0.00	6.20	716.08	358.04	474.80	237.75	7.56	-0.97	0.030
75.00	-1.47	-0.83	0	-0.95	0.00	0.95	671.10	335.55	416.71	208.66	8.58	-0.98	0.007
76.00	-0.15	-0.05	0	-0.12	0.00	0.12	662.11	331.05	405.54	203.07	8.79	-0.98	0.001
76.80	0.00	-0.04	0	-0.08	0.00	0.08	654.91	327.46	396.72	198.66	8.95	-0.98	0.000

CALCULATED FORCES

Load Case: 1.0D + 1.0W		60 mph Wind with No Ice										20 Iterations	
Gust Response Factor: 1.10												Wind Importance Factor 1.00	
Dead load Factor: 1.00													
Wind Load Factor: 1.00													
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-10.21	-2.53	0	-159.32	0.00	159.32	1,670.31	835.15	2,058.03	1,030.55	0	0	0.161
5.00	-9.78	-2.48	0	-146.68	0.00	146.68	1,631.14	815.57	1,941.06	971.97	0.04	-0.08	0.157
10.00	-9.36	-2.44	0	-134.27	0.00	134.27	1,590.74	795.37	1,825.97	914.34	0.17	-0.16	0.153
15.00	-8.96	-2.39	0	-122.08	0.00	122.08	1,549.11	774.56	1,712.94	857.74	0.39	-0.25	0.148
20.00	-8.56	-2.35	0	-110.11	0.00	110.11	1,506.26	753.13	1,602.11	802.24	0.69	-0.33	0.143
25.00	-8.19	-2.30	0	-98.37	0.00	98.37	1,462.19	731.09	1,493.63	747.93	1.08	-0.41	0.137
30.00	-7.82	-2.25	0	-86.85	0.00	86.85	1,408.72	704.36	1,379.68	690.86	1.56	-0.5	0.131
35.00	-7.47	-2.22	0	-75.58	0.00	75.58	1,348.75	674.38	1,264.13	633.01	2.13	-0.58	0.125
36.20	-7.39	-2.20	0	-72.91	0.00	72.91	1,334.37	667.19	1,237.17	619.51	2.28	-0.6	0.123
39.25	-7.05	-2.18	0	-66.19	0.00	66.19	938.18	469.09	865.11	433.20	2.68	-0.66	0.160
40.00	-7.01	-2.16	0	-64.55	0.00	64.55	933.82	466.91	855.19	428.23	2.79	-0.67	0.158
45.00	-6.75	-2.11	0	-53.76	0.00	53.76	904.05	452.03	789.84	395.51	3.54	-0.77	0.143
50.00	-6.51	-2.07	0	-43.20	0.00	43.20	873.05	436.53	725.98	363.53	4.4	-0.87	0.126
55.00	-6.28	-2.02	0	-32.88	0.00	32.88	840.83	420.41	663.76	332.38	5.36	-0.95	0.106
60.00	-6.05	-1.99	0	-22.78	0.00	22.78	806.03	403.01	602.34	301.62	6.4	-1.03	0.083
62.00	-2.84	-1.40	0	-18.81	0.00	18.81	788.04	394.02	575.62	288.24	6.83	-1.05	0.069
65.00	-2.72	-1.36	0	-14.60	0.00	14.60	761.05	380.53	536.67	268.74	7.5	-1.09	0.058
70.00	-2.53	-1.32	0	-7.78	0.00	7.78	716.08	358.04	474.80	237.75	8.67	-1.13	0.036
75.00	-1.46	-1.05	0	-1.20	0.00	1.20	671.10	335.55	416.71	208.66	9.86	-1.15	0.008
76.00	-0.15	-0.06	0	-0.15	0.00	0.15	662.11	331.05	405.54	203.07	10.1	-1.15	0.001
76.80	0.00	-0.06	0	-0.10	0.00	0.10	654.91	327.46	396.72	198.66	10.29	-1.15	0.001

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-10 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_s):	0.185
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.059
Long-Period Transition Period (T_L - Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a :	1.600
Site Coefficient F_v :	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.197
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.094
Seismic Response Coefficient (C_s):	0.040
Upper Limit C_s :	0.040
Lower Limit C_s :	0.030
Period based on Rayleigh Method (sec):	1.560
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.530
Total Unfactored Dead Load:	10.210 k
Seismic Base Shear (E):	0.410 k

SEISMIC FORCES

(1.2 + 0.2S_{ds}) * DL + E ELFM

Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
20	76.4	24	18	0.004	2	30
19	75.5	35	26	0.006	2	44
18	72.5	182	127	0.028	11	225
17	67.5	192	120	0.026	11	238
16	63.5	120	68	0.015	6	149
15	61	85	46	0.010	4	106
14	57.5	221	108	0.024	10	274
13	52.5	231	98	0.022	9	287
12	47.5	242	88	0.019	8	299
11	42.5	252	78	0.017	7	312
10	39.625	39	11	0.002	1	48
9	37.7246	344	88	0.019	8	426
8	35.5996	81	19	0.004	2	101
7	32.5	347	71	0.016	6	430
6	27.5	361	57	0.012	5	447
5	22.5	374	44	0.010	4	464
4	17.5	388	31	0.007	3	481
3	12.5	402	19	0.004	2	498
2	7.5	416	9	0.002	1	515
1	2.5	429	2	0.000	0	532
Ericsson AIR 6419 B77D/ C-Band	76.8	128	98	0.021	9	159
Ericsson Radio 4449 - B13&B5	76	140	105	0.023	9	174
Ericsson Radio 4890HP 48B2 48B66 S	76	139	104	0.023	9	172
Raycap RCMDC-6627-PF-48	76	32	24	0.005	2	40
Commscope NHH-65C-HG-R2B	76	229	172	0.038	16	284
Unused Reserve (10114.390 sqin)	76	749	562	0.123	51	929
Generic Flat T-Arm	75	900	661	0.145	60	1,116
Commscope RDIDC-9181-PF-48	62	22	12	0.003	1	27
Fujitsu TA08025-B605	62	225	124	0.027	11	279
Fujitsu TA08025-B604	62	192	105	0.023	10	238
JMA Wireless MX08FRO665-21	62	194	106	0.023	10	240
Generic Round Platform with Handrails	62	2,500	1,373	0.300	124	3,099
Totals:		10,214	4,574	1.000	413	12,660

SEISMIC FORCES

(0.9 - 0.2S_{ds}) * DL + E ELFM

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
20	76.4	24	18	0.004	2	21

19	75.5	35	26	0.006	2	30
18	72.5	182	127	0.028	11	156
17	67.5	192	120	0.026	11	165
16	63.5	120	68	0.015	6	103
15	61	85	46	0.010	4	74
14	57.5	221	108	0.024	10	190
13	52.5	231	98	0.022	9	199
12	47.5	242	88	0.019	8	208
11	42.5	252	78	0.017	7	217
10	39.625	39	11	0.002	1	33
9	37.7246	344	88	0.019	8	296
8	35.5996	81	19	0.004	2	70
7	32.5	347	71	0.016	6	299
6	27.5	361	57	0.012	5	310
5	22.5	374	44	0.010	4	322
4	17.5	388	31	0.007	3	334
3	12.5	402	19	0.004	2	346
2	7.5	416	9	0.002	1	358
1	2.5	429	2	0.000	0	369
Ericsson AIR 6419 B77D/ C-Band	76.8	128	98	0.021	9	110
Ericsson Radio 4449 - B13&B5	76	140	105	0.023	9	120
Ericsson Radio 4890HP 48B2 48B66 S	76	139	104	0.023	9	120
Raycap RCMD-6627-PF-48	76	32	24	0.005	2	28
Commscope NHH-65C-HG-R2B	76	229	172	0.038	16	197
Unused Reserve (10114.390 sqin)	76	749	562	0.123	51	645
Generic Flat T-Arm	75	900	661	0.145	60	774
Commscope RDIDC-9181-PF-48	62	22	12	0.003	1	19
Fujitsu TA08025-B605	62	225	124	0.027	11	194
Fujitsu TA08025-B604	62	192	105	0.023	10	165
JMA Wireless MX08FRO665-21	62	194	106	0.023	10	167
Generic Round Platform with Handrails	62	2,500	1,373	0.300	124	2,151
Totals:		10,214	4,574	1.000	413	8,790

(1.2 + 0.2Sds) * DL + E ELM Seismic

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-12.13	-0.41	0.00	-27.26	0.00	27.26	1,670.31	835.15	2,058	1,030.55	0.00	0.00	0.03
5.00	-11.61	-0.42	0.00	-25.19	0.00	25.19	1,631.14	815.57	1,941	971.97	0.01	-0.01	0.03
10.00	-11.11	-0.42	0.00	-23.12	0.00	23.12	1,590.74	795.37	1,826	914.34	0.03	-0.03	0.03
15.00	-10.63	-0.42	0.00	-21.03	0.00	21.03	1,549.11	774.56	1,713	857.74	0.07	-0.04	0.03
20.00	-10.17	-0.41	0.00	-18.95	0.00	18.95	1,506.26	753.13	1,602	802.24	0.12	-0.06	0.03
25.00	-9.72	-0.41	0.00	-16.88	0.00	16.88	1,462.19	731.09	1,494	747.93	0.19	-0.07	0.03
30.00	-9.29	-0.41	0.00	-14.83	0.00	14.83	1,408.72	704.36	1,380	690.86	0.27	-0.09	0.03
35.00	-9.19	-0.41	0.00	-12.79	0.00	12.79	1,348.75	674.38	1,264	633.01	0.37	-0.10	0.03
36.20	-8.77	-0.40	0.00	-12.31	0.00	12.31	1,334.37	667.19	1,237	619.51	0.39	-0.10	0.03
39.25	-8.72	-0.40	0.00	-11.09	0.00	11.09	938.18	469.09	865	433.20	0.46	-0.11	0.04
40.00	-8.41	-0.39	0.00	-10.79	0.00	10.79	933.82	466.91	855	428.23	0.48	-0.11	0.03
45.00	-8.11	-0.39	0.00	-8.83	0.00	8.83	904.05	452.03	790	395.51	0.61	-0.13	0.03
50.00	-7.82	-0.38	0.00	-6.91	0.00	6.91	873.05	436.53	726	363.53	0.75	-0.15	0.03
55.00	-7.55	-0.37	0.00	-5.02	0.00	5.02	840.83	420.41	664	332.38	0.92	-0.16	0.02
60.00	-7.44	-0.37	0.00	-3.17	0.00	3.17	806.03	403.01	602	301.62	1.09	-0.17	0.02
62.00	-3.41	-0.19	0.00	-2.44	0.00	2.44	788.04	394.02	576	288.24	1.16	-0.17	0.01
65.00	-3.17	-0.18	0.00	-1.86	0.00	1.86	761.05	380.53	537	268.74	1.27	-0.18	0.01
70.00	-2.95	-0.17	0.00	-0.96	0.00	0.96	716.08	358.04	475	237.75	1.46	-0.18	0.01
75.00	-1.79	-0.10	0.00	-0.11	0.00	0.11	671.10	335.55	417	208.66	1.66	-0.19	0.00
76.00	-0.16	-0.01	0.00	-0.01	0.00	0.01	662.11	331.05	406	203.07	1.70	-0.19	0.00
76.80	0.00	-0.01	0.00	0.00	0.00	0.00	654.91	327.46	397	198.66	1.73	-0.19	0.00

(1.2 + 0.2Sds) * DL + E EMAM Seismic

CALCULATED FORCES

Seg Elev	Pu	Vu	Tu	Mu	Mu	Resultant	Phi	Phi	Phi	Phi	Total	Rotation	Ratio
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CALCULATED FORCES

(ft)	FY (-) (kips)	FX (-) (kips)	MY (ft-kips)	MZ (fr-kips)	Mx (ft-kips)	Moment (ft-kips)	Pn (kips)	Vn (kips)	Tn (kips)	Mn (kips)	Deflect (in)	(deg)	
0.00	-12.13	-0.78	0.00	-55.23	0.00	55.23	1,670.31	835.15	2,058	1,030.55	0.00	0.00	0.06
5.00	-11.61	-0.78	0.00	-51.32	0.00	51.32	1,631.14	815.57	1,941	971.97	0.01	-0.03	0.06
10.00	-11.11	-0.77	0.00	-47.42	0.00	47.42	1,590.74	795.37	1,826	914.34	0.06	-0.06	0.06
15.00	-10.63	-0.77	0.00	-43.56	0.00	43.56	1,549.11	774.56	1,713	857.74	0.13	-0.09	0.06
20.00	-10.17	-0.76	0.00	-39.73	0.00	39.73	1,506.26	753.13	1,602	802.24	0.24	-0.12	0.06
25.00	-9.72	-0.75	0.00	-35.93	0.00	35.93	1,462.19	731.09	1,494	747.93	0.38	-0.15	0.06
30.00	-9.29	-0.75	0.00	-32.17	0.00	32.17	1,408.72	704.36	1,380	690.86	0.55	-0.18	0.05
35.00	-9.19	-0.75	0.00	-28.44	0.00	28.44	1,348.75	674.38	1,264	633.01	0.76	-0.21	0.05
36.20	-8.76	-0.74	0.00	-27.54	0.00	27.54	1,334.37	667.19	1,237	619.51	0.81	-0.22	0.05
39.25	-8.72	-0.74	0.00	-25.28	0.00	25.28	938.18	469.09	865	433.20	0.95	-0.24	0.07
40.00	-8.40	-0.74	0.00	-24.72	0.00	24.72	933.82	466.91	855	428.23	0.99	-0.24	0.07
45.00	-8.10	-0.75	0.00	-21.00	0.00	21.00	904.05	452.03	790	395.51	1.27	-0.28	0.06
50.00	-7.82	-0.76	0.00	-17.24	0.00	17.24	873.05	436.53	726	363.53	1.58	-0.32	0.06
55.00	-7.54	-0.76	0.00	-13.46	0.00	13.46	840.83	420.41	664	332.38	1.94	-0.35	0.05
60.00	-7.44	-0.76	0.00	-9.66	0.00	9.66	806.03	403.01	602	301.62	2.32	-0.38	0.04
62.00	-3.40	-0.62	0.00	-8.15	0.00	8.15	788.04	394.02	576	288.24	2.49	-0.40	0.03
65.00	-3.17	-0.60	0.00	-6.27	0.00	6.27	761.05	380.53	537	268.74	2.74	-0.41	0.03
70.00	-2.94	-0.57	0.00	-3.25	0.00	3.25	716.08	358.04	475	237.75	3.18	-0.43	0.02
75.00	-1.78	-0.36	0.00	-0.39	0.00	0.39	671.10	335.55	417	208.66	3.64	-0.44	0.01
76.00	-0.16	-0.03	0.00	-0.03	0.00	0.03	662.11	331.05	406	203.07	3.73	-0.44	0.00
76.80	0.00	-0.03	0.00	0.00	0.00	0.00	654.91	327.46	397	198.66	3.80	-0.44	0.00

(0.9 - 0.2Sds) * DL + E ELMF Seismic (Reduced DL)

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-8.42	-0.41	0.00	-26.96	0.00	26.96	1,670.31	835.15	2,058	1,030.55	0.00	0.00	0.03
5.00	-8.06	-0.41	0.00	-24.89	0.00	24.89	1,631.14	815.57	1,941	971.97	0.01	-0.01	0.03
10.00	-7.72	-0.41	0.00	-22.82	0.00	22.82	1,590.74	795.37	1,826	914.34	0.03	-0.03	0.03
15.00	-7.38	-0.41	0.00	-20.75	0.00	20.75	1,549.11	774.56	1,713	857.74	0.07	-0.04	0.03
20.00	-7.06	-0.41	0.00	-18.68	0.00	18.68	1,506.26	753.13	1,602	802.24	0.12	-0.06	0.03
25.00	-6.75	-0.41	0.00	-16.63	0.00	16.63	1,462.19	731.09	1,494	747.93	0.18	-0.07	0.03
30.00	-6.45	-0.40	0.00	-14.59	0.00	14.59	1,408.72	704.36	1,380	690.86	0.26	-0.08	0.03
35.00	-6.38	-0.40	0.00	-12.58	0.00	12.58	1,348.75	674.38	1,264	633.01	0.36	-0.10	0.03
36.20	-6.09	-0.39	0.00	-12.10	0.00	12.10	1,334.37	667.19	1,237	619.51	0.39	-0.10	0.02
39.25	-6.05	-0.39	0.00	-10.90	0.00	10.90	938.18	469.09	865	433.20	0.45	-0.11	0.03
40.00	-5.84	-0.39	0.00	-10.61	0.00	10.61	933.82	466.91	855	428.23	0.47	-0.11	0.03
45.00	-5.63	-0.38	0.00	-8.68	0.00	8.68	904.05	452.03	790	395.51	0.60	-0.13	0.03
50.00	-5.43	-0.37	0.00	-6.78	0.00	6.78	873.05	436.53	726	363.53	0.74	-0.14	0.03
55.00	-5.24	-0.36	0.00	-4.92	0.00	4.92	840.83	420.41	664	332.38	0.90	-0.16	0.02
60.00	-5.16	-0.36	0.00	-3.11	0.00	3.11	806.03	403.01	602	301.62	1.07	-0.17	0.02
62.00	-2.37	-0.19	0.00	-2.40	0.00	2.40	788.04	394.02	576	288.24	1.15	-0.17	0.01
65.00	-2.20	-0.18	0.00	-1.83	0.00	1.83	761.05	380.53	537	268.74	1.25	-0.18	0.01
70.00	-2.04	-0.17	0.00	-0.94	0.00	0.94	716.08	358.04	475	237.75	1.44	-0.18	0.01
75.00	-1.24	-0.10	0.00	-0.11	0.00	0.11	671.10	335.55	417	208.66	1.63	-0.18	0.00
76.00	-0.11	-0.01	0.00	-0.01	0.00	0.01	662.11	331.05	406	203.07	1.67	-0.18	0.00
76.80	0.00	-0.01	0.00	0.00	0.00	0.00	654.91	327.46	397	198.66	1.70	-0.18	0.00

(0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL)

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-8.42	-0.78	0.00	-54.56	0.00	54.56	1,670.31	835.15	2,058	1,030.55	0.00	0.00	0.06
5.00	-8.06	-0.78	0.00	-50.66	0.00	50.66	1,631.14	815.57	1,941	971.97	0.01	-0.03	0.06
10.00	-7.72	-0.77	0.00	-46.78	0.00	46.78	1,590.74	795.37	1,826	914.34	0.06	-0.06	0.06
15.00	-7.38	-0.76	0.00	-42.94	0.00	42.94	1,549.11	774.56	1,713	857.74	0.13	-0.09	0.06
20.00	-7.06	-0.75	0.00	-39.13	0.00	39.13	1,506.26	753.13	1,602	802.24	0.24	-0.11	0.05
25.00	-6.75	-0.74	0.00	-35.37	0.00	35.37	1,462.19	731.09	1,494	747.93	0.37	-0.15	0.05

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
30.00	-6.45	-0.74	0.00	-31.66	0.00	31.66	1,408.72	704.36	1,380	690.86	0.54	-0.18	0.05
35.00	-6.38	-0.74	0.00	-27.97	0.00	27.97	1,348.75	674.38	1,264	633.01	0.74	-0.21	0.05
36.20	-6.08	-0.73	0.00	-27.09	0.00	27.09	1,334.37	667.19	1,237	619.51	0.80	-0.21	0.05
39.25	-6.05	-0.73	0.00	-24.86	0.00	24.86	938.18	469.09	865	433.20	0.94	-0.23	0.06
40.00	-5.83	-0.73	0.00	-24.31	0.00	24.31	933.82	466.91	855	428.23	0.98	-0.24	0.06
45.00	-5.62	-0.74	0.00	-20.65	0.00	20.65	904.05	452.03	790	395.51	1.25	-0.28	0.06
50.00	-5.43	-0.74	0.00	-16.96	0.00	16.96	873.05	436.53	726	363.53	1.56	-0.31	0.05
55.00	-5.23	-0.74	0.00	-13.25	0.00	13.25	840.83	420.41	664	332.38	1.91	-0.35	0.05
60.00	-5.16	-0.74	0.00	-9.53	0.00	9.53	806.03	403.01	602	301.62	2.29	-0.38	0.04
62.00	-2.36	-0.62	0.00	-8.05	0.00	8.05	788.04	394.02	576	288.24	2.45	-0.39	0.03
65.00	-2.20	-0.60	0.00	-6.20	0.00	6.20	761.05	380.53	537	268.74	2.70	-0.40	0.03
70.00	-2.04	-0.57	0.00	-3.21	0.00	3.21	716.08	358.04	475	237.75	3.14	-0.42	0.02
75.00	-1.24	-0.36	0.00	-0.38	0.00	0.38	671.10	335.55	417	208.66	3.58	-0.43	0.00
76.00	-0.11	-0.03	0.00	-0.03	0.00	0.03	662.11	331.05	406	203.07	3.67	-0.43	0.00
76.80	0.00	-0.03	0.00	0.00	0.00	0.00	654.91	327.46	397	198.66	3.74	-0.43	0.00

ANALYSIS SUMMARY

Load Case	Base Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	10.18	0.00	12.23	0.00	0.00	644.59	0.00	0.63
0.9D + 1.6W	10.17	0.00	9.16	0.00	0.00	638.46	0.00	0.63
1.2D + 1.0Di + 1.0Wi	2.48	0.00	11.39	0.00	0.00	144.21	0.00	0.15
(1.2 + 0.2Sds) * DL + E ELFM	0.41	0.00	12.13	0.00	0.00	27.26	39.25	0.03
(1.2 + 0.2Sds) * DL + E EMAM	0.78	0.00	12.13	0.00	0.00	55.23	39.25	0.07
(0.9 - 0.2Sds) * DL + E ELFM	0.41	0.00	8.42	0.00	0.00	26.96	39.25	0.03
(0.9 - 0.2Sds) * DL + E EMAM	0.78	0.00	8.42	0.00	0.00	54.56	39.25	0.06
1.0D + 1.0W	2.53	0.00	10.21	0.00	0.00	159.32	0.00	0.16

BASE SUMMARY

Original Design Reactions			Analysis Reactions			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
			644.59	12.23	10.18	0.00

ASSET: 411241, PPIR CO
 CUSTOMER: VERIZON WIRELESS

CODE: ANSI/TIA-222-G
 PROJECT: 14912246

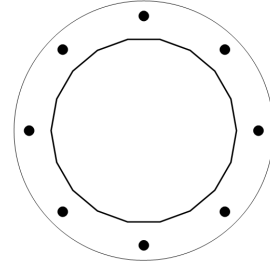
BASE PLATE ANALYSIS @ 0 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
644.59	12.23	10.18

PLATE PARAMETERS (ID# 31937)

Width:	43	in
Shape:	Round	
Thickness:	1.5	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Rod Detail Type:	d	
Clear Distance	3.25	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	0	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F _y (ksi)	F _u (ksi)	Spacing (in)	Offset (°)
Original [ID#32769]	Radial	8	1.75	38	A615-75	75	100	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in ²)	Net Area (in ²)	Individual Inertia (in ⁴)	Moment of Inertia (in ⁴)	Threads/in
Pole	30.25"ø x 0.25" (18 Sides)	23.4425	-	-	2637.77	-
Bolt Group	Original (8) 1.75"ø	2.4053	1.8995	0.2871	2455.46	5.0

REACTION DISTRIBUTION

Component	ID	Moment M _u (k-ft)	Axial Load P _u (k)	Shear V _u (k)	Moment Factor
Pole	30.25"ø x 0.25" (18 Sides)	644.6	12.23	10.18	1.000
Bolt Group	Original (8) 1.75"ø	644.6	-	10.18	1.000

BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	30.50	in
Point-to-Point Diameter:	30.97	in
Orientation Offset:	-	°

Flat Width:	5.378	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	0	°
Bend Line Limits:	1.047 to 2.094	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in ³)	Applied Moment M _u (k-in)	Moment Capacity ΦM _n (k-in)	Flexure Result M _u /ΦM _n
Flats	26.891	0.00	15.126	296.5	680.7	43.6%
Corners	26.348	0.00	14.821	270.8	666.9	40.6%
Circumferential	30.854	0.00	17.355	270.8	781.0	34.7%

PLASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load P _u (k)	Applied Shear Load V _u (k)	Compressive Capacity ΦP _n (k)	Interaction Result
Original	8	1.75	92.3	2.1	152.0	63.5%