AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**146 ft Monopole**
ATC Site Name	:	**CT Chaplin South CT, CT**
ATC Asset Number	:	**411216**
Engineering Number	:	**OAA752302_C3_02**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**Chaplin Palmer Road**
Carrier Site Number	:	**CTL01153**
Site Location	:	**123 Palmer Road** **Chaplin, CT 06235-2416** **41.784500,-72.135700**
County	:	**Windham**
Date	:	**December 2, 2019**
Max Usage	:	**80%**
Result	:	**Pass**

Prepared By:
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Reviewed By:

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PROFESSIONAL ENGINEER

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Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 146 ft monopole to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	EEI Project #12120 Rev. 2, dated November 21, 2003
Foundation Drawing	EEI Project #12120 Rev. 3, dated December 18, 2003
Geotechnical Report	GEOServices Project #31-151287M, dated September 8, 2015
Mount Analysis	Infinigy Job #1106-A0001-B, dated October 8, 2019

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:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.17, S_1 = 0.06
Site Class:	D - Stiff Soil

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 contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
148.0	6	Andrew SBNHH-1D65B	Low Profile Platform	(18) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	2	Antel LPA-80063/4CF			
	4	Antel LPA-80080/4CF ___			
	3	Amphenol Antel QUAD656C0000X			
147.0	3	Nokia B5 RRH4x40-850			
	3	Alcatel-Lucent RRH2x60 700			
	3	Alcatel-Lucent AWS4 (B66) 4x45 RRH			
	2	Raycap RC3DC-3315-PF-48			
137.0	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield	Platform with Handrails	(4) 1 1/4" Hybriflex Cable (7) 1 5/8" Coax	SPRINT NEXTEL
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	6	Alcatel-Lucent RRH2x50-08			
	3	RFS APXVTM14-ALU-I20			
	3	Commscope NNVV-65B-R4			
128.0	6	Powerwave Allgon LGP21901	-	(1) 0.40" (10.3mm) Fiber (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax	AT&T MOBILITY
	3	Generic 6" x 6" Junction Box			
	6	Powerwave Allgon LGP21401			
	1	Raycap DC6-48-60-18-8F			
	3	Allgon 7770.00			
116.0	3	Ericsson KRY 112 144/1	Platform with Handrails	(1) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax	T-MOBILE
	3	Ericsson KRY 112 489/2			
	3	Ericsson Radio 4449 B12,B71			
	3	RFS APXV18-206517			
	3	RFS APXVAARR24_43-U-NA20			
75.0	1	Generic GPS	Stand-Off	-	SPRINT NEXTEL

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
128.0	6	Ericsson RRUS-11 1900 MHz	Low Profile Platform	-	AT&T MOBILITY
	3	KMW AM-X-CD-17-65-00T-RET (96" Height)			
	3	Allgon 7770.00			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
128.0	2	Raycap DC6-48-60-18-8F	SitePro1F3P-12W Low Profile Platform	(1) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6	AT&T MOBILITY
	3	Ericsson Radio 8843 - B2 + B66A			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 4449 B5, B12			
	6	CCI DMP65R-BU8D			
63.0	1	Generic GPS	Stand-Off	(1) 1/2" Coax	

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	57%	Pass
Shaft	68%	Pass
Base Plate	80%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,157.8	4,263.0	3,067.9	72%
Shear (Kips)	30.5	41.2	27.4	67%
* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1				

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
128.0	Raycap DC6-48-60-18-8F	AT&T MOBILITY	1.125	1.002
	Ericsson Radio 8843 - B2 + B66A			
	Ericsson RRUS 4478 B14			
	Ericsson RRUS 4449 B5, B12			
	CCI DMP65R-BU8D			
63.0	Generic GPS		0.257	0.486

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC 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 A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC 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 A.T. Engineering Service, PLLC, 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. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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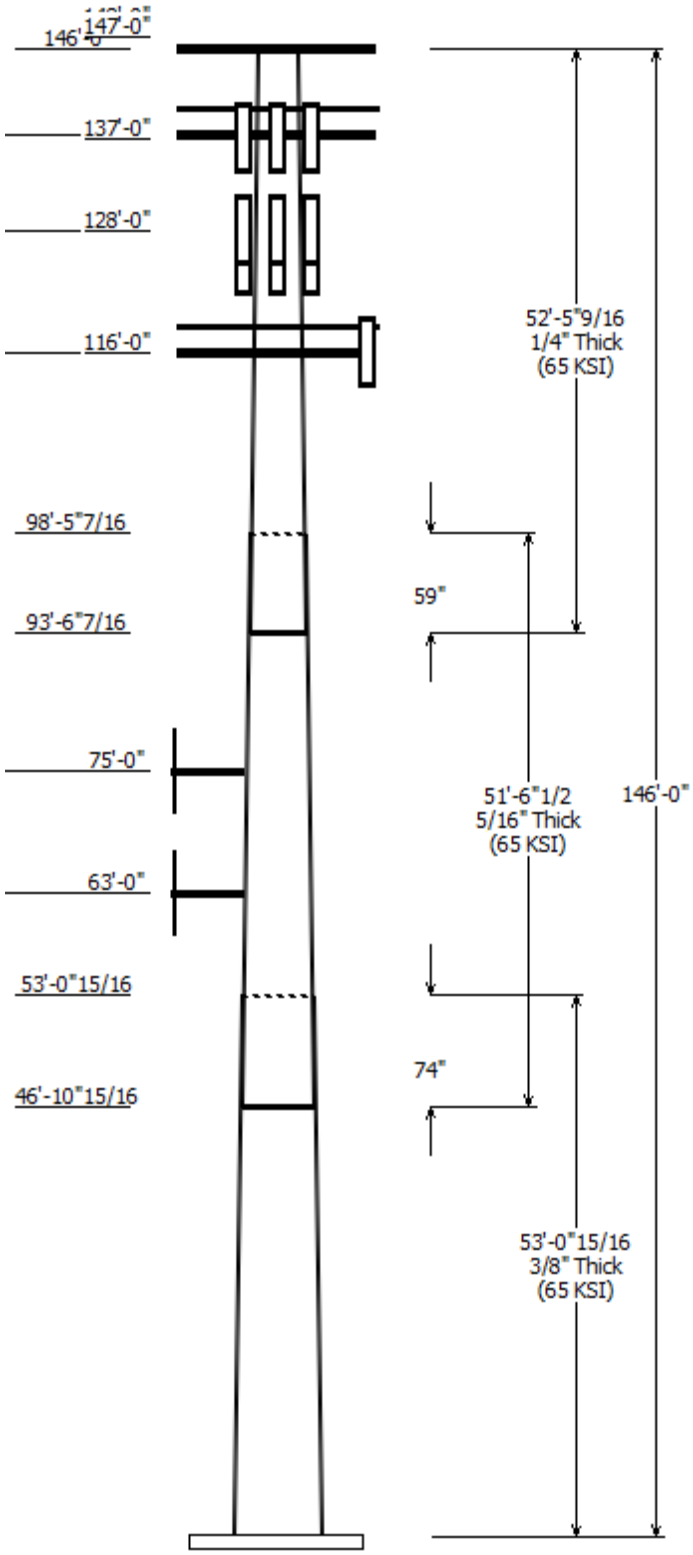


Job Information

Client : AT&T MOBILITY
Pole : 411216 Code: ANSI/TIA-222-G
Location : CT Chaplin South CT, CT
Description : 146 ft EEI Monopole Struct Class : II
Shape : 18 Sides Exposure : B
Height : 146.00 (ft) Topo : 1
Base Elev (ft): 0.00
Taper: 0.220039 (in/ft)

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.080	42.82	54.50	0.375		0.000	18 Sides	65
2	51.540	33.46	44.80	0.313	Slip Joint	74.000	18 Sides	65
3	52.463	23.49	35.04	0.250	Slip Joint	59.000	18 Sides	65

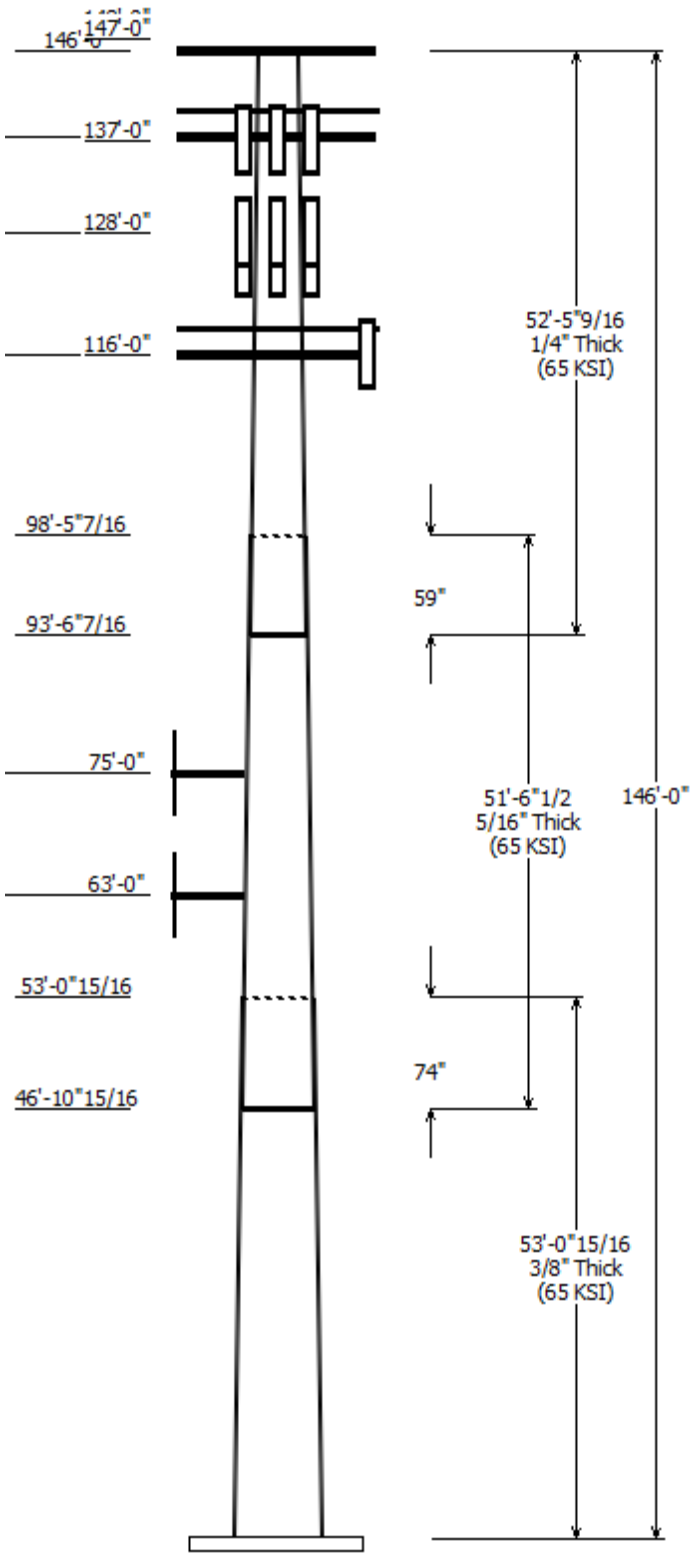
Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
148.000	148.000	3	Amphenol Antel
148.000	148.000	6	Andrew SBNHH-1D65B
148.000	148.000	2	Antel LPA-80063/4CF
148.000	148.000	4	Antel LPA-80080/4CF ___
147.000	147.000	2	Raycap RC3DC-3315-PF-48
147.000	147.000	3	Alcatel-Lucent AWS4 (B66)
147.000	147.000	3	Alcatel-Lucent RRH2x60 700
147.000	147.000	3	Nokia B5 RRH4x40-850
146.000	146.000	1	Flat Low Profile Platform
137.500	137.500	1	Site Pro RMQP-496-HK
137.000	137.000	3	Commscope NNVV-65B-R4
137.000	137.000	3	RFS APXVTM14-ALU-I20
137.000	137.000	3	Alcatel-Lucent TD-RRH8x20-25
137.000	137.000	3	Alcatel-Lucent 1900 MHz 4X45
137.000	137.000	6	Alcatel-Lucent RRH2x50-08
128.000	128.000	1	Site Pro 1 F3P-12W
128.000	128.000	6	CCI DMP65R-BU8D
128.000	126.000	3	Allgon 7770.00
128.000	128.000	3	Ericsson RRUS 4449 B5, B12
128.000	128.000	3	Ericsson RRUS 4478 B14
128.000	128.000	3	Ericsson Radio 8843 - B2 + B66
128.000	126.000	3	Raycap DC6-48-60-18-8F
128.000	126.000	6	Powerwave Allgon LGP21401
128.000	126.000	3	Generic 6" x 6" Junction Box
128.000	126.000	6	Powerwave Allgon LGP21901
116.000	116.000	3	RFS APXVAARR24_43-U-NA20
116.000	116.000	3	RFS APXV18-206517
116.000	116.000	3	Ericsson Radio 4449 B12,B71
116.000	116.000	3	Ericsson KRY 112 489/2
116.000	116.000	3	Ericsson KRY 112 144/1
116.000	116.000	1	Round Platform w/ Handrails
75.000	75.000	1	Generic GPS
75.000	75.000	1	Stand-Off
63.000	63.000	1	Generic GPS
63.000	63.000	1	Stand-Off

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	63.000	1/2" Coax	No
0.000	116.0	1 5/8" (1.63"-	No
0.000	116.0	1 5/8" Coax	No
0.000	116.0	1 5/8" Coax	Yes

0.000	128.0	0.39" (10mm)	No
0.000	128.0	0.40" (10.3mm)	No
0.000	128.0	0.78" (19.7mm) 8	No
0.000	128.0	1 5/8" Coax	No
0.000	137.0	1 1/4" Hybriflex	No
0.000	137.0	1 5/8" Coax	No
0.000	147.0	1 5/8" Hybriflex	No
0.000	148.0	1 5/8" Coax	No
0.000	148.0	1 5/8" Coax	No



Load Cases

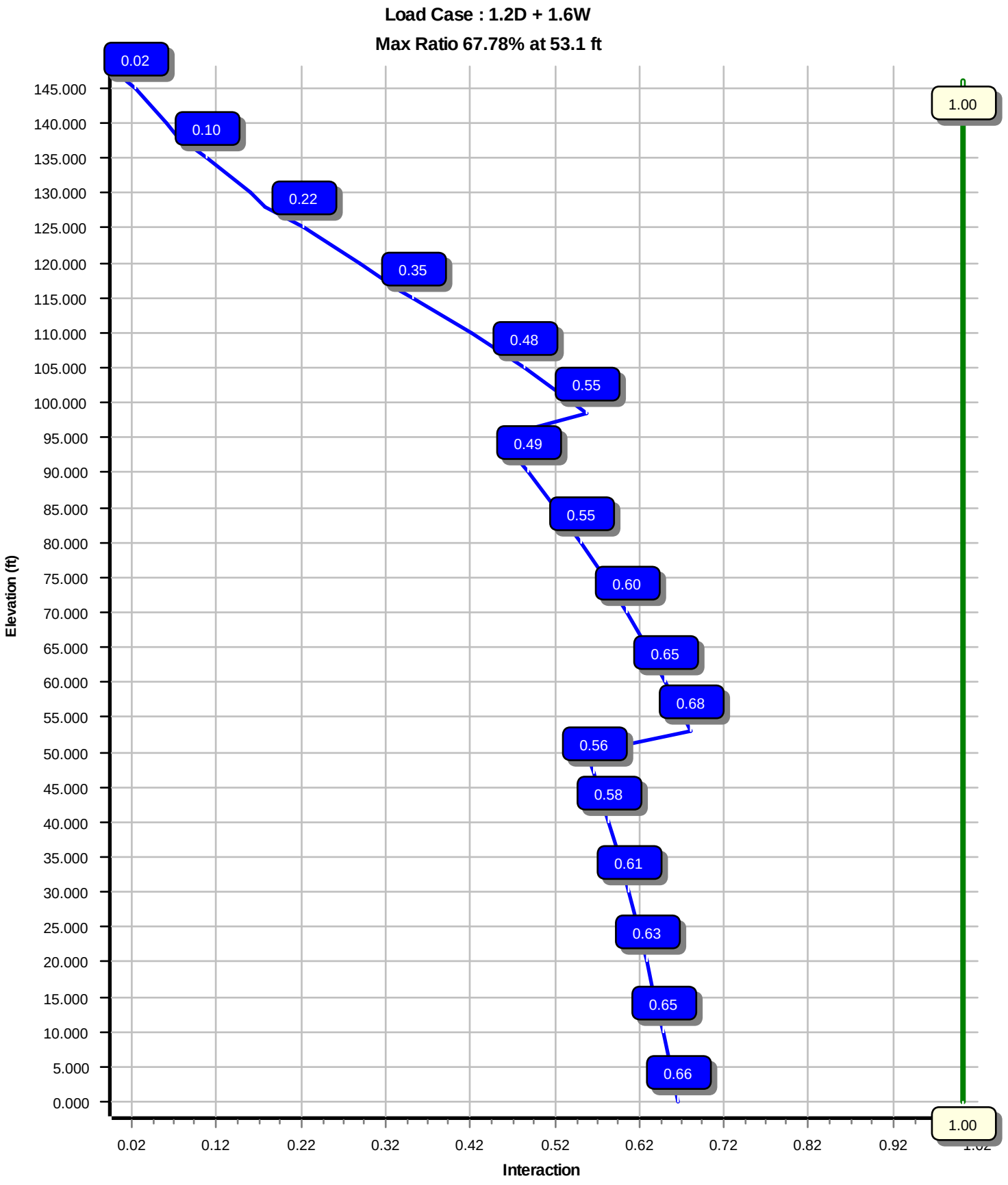
1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3067.93	27.39	48.61
0.9D + 1.6W	3028.02	27.37	36.45
1.2D + 1.0Di + 1.0Wi	832.55	7.43	89.59
(1.2 + 0.2Sds) * DL + E ELFM	151.95	1.22	48.48
(1.2 + 0.2Sds) * DL + E EMAM	257.57	2.09	48.48
(0.9 - 0.2Sds) * DL + E ELFM	149.56	1.22	33.83
(0.9 - 0.2Sds) * DL + E EMAM	253.26	2.09	33.83
1.0D + 1.0W	600.90	5.40	40.54

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


Load Case : 1.2D + 1.6W
Max Ratio 67.78% at 53.1 ft
0.02
0.10
0.22
0.35
0.48
0.55
0.49
0.55
0.60
0.65
0.68
0.56
0.58
0.61
0.63
0.65
0.66
1.00
1.00
Elevation (ft)
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 411216	**Code: ANSI/TIA-222-G**	© 2007 - 2019 by ATC IP LLC. All rights reserved.
Site Name: CT Chaplin South CT, CT	**Engineering Number:OAA752302_C3_02**	**12/2/2019 11:14:16 AM**
Customer: AT&T MOBILITY		

Analysis Parameters

Location :	**Windham County, CT**	**Height (ft) :**	**146**
Code :	**ANSI/TIA-222-G**	**Base Diameter (in) :**	**54.50**
Shape :	**18 Sides**	**Top Diameter (in) :**	**23.50**
Pole Type :	**Taper**	**Taper (in/ft) :**	**0.220**
Pole Manfacturer :	**EEI**	**Rotation (deg) :**	**0.00**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**101 mph**
Exposure Category:	**B**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Category:	**1**	**Operational Wind Speed:**	**60 mph**
Crest Height:	**0 ft**	**Design Ice Thickness:**	**0.75 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**
Site Class:	**D - Stiff Soil**
Period Based on Rayleigh Method (sec):	**2.47**

T_L (sec):	**6**	**p:**	**1**	**C_s:**	**0.030**
S_s:	**0.173**	**S_1:**	**0.062**	**C_s Max:**	**0.030**
F_a:	**1.600**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.185**	**S_{d1}:**	**0.099**		

Load Cases

1.2D + 1.6W	**101 mph with No Ice**
0.9D + 1.6W	**101 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 0.75 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

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Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in 2)	Bottom Ix (in 4)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in 2)	Top Ix (in 4)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	53.080	0.3750	65		0.00	10,380	54.50	0.00	64.42	23843.5	24.22	145.33	42.82	53.08	50.52	11499.1	18.72	114.19	0.220039
2-18	51.540	0.3125	65	Slip	74.00	6,753	44.80	46.91	44.13	11035.0	23.87	143.37	33.46	98.45	32.88	4564.6	17.47	107.08	0.220039
3-18	52.463	0.2500	65	Slip	59.00	4,111	35.04	93.54	27.61	4222.5	23.31	140.17	23.49	146.00	18.45	1259.8	15.16	94.00	0.220039
				Shaft Weight		21,244													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
148.00	Antel LPA-80080/4CF ___	4	0.80	0.000	12.00	5.399	0.62	146.95	3.460	0.62
148.00	Antel LPA-80063/4CF	2	0.80	0.000	20.00	6.142	0.82	225.55	7.179	0.82
148.00	Andrew SBNHH-1D65B	6	0.80	0.000	50.70	8.173	0.69	226.00	11.000	0.69
148.00	Amphenol Antel	3	0.80	0.000	54.00	13.242	0.62	314.67	16.136	0.62
147.00	Nokia B5 RRH4x40-850	3	0.80	0.000	48.50	1.322	0.50	89.71	2.082	0.50
147.00	Alcatel-Lucent RRH2x60 700	3	0.80	0.000	56.70	2.150	0.67	124.69	3.151	0.67
147.00	Alcatel-Lucent AWS4 (B66) 4x45	3	0.80	0.000	64.00	2.660	0.67	134.82	3.808	0.67
147.00	Raycap RC3DC-3315-PF-48	2	0.80	0.000	32.00	3.781	0.77	141.28	5.105	0.77
146.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,147.25	45.173	1.00
137.50	Site Pro RMQP-496-HK	1	1.00	0.000	2,448.70	27.200	1.00	4,024.39	51.478	1.00
137.00	Alcatel-Lucent RRH2x50-08	6	0.75	0.000	52.90	1.701	0.50	111.70	2.557	0.50
137.00	Alcatel-Lucent 1900 MHz 4X45	3	0.75	0.000	60.00	2.322	0.67	139.97	3.394	0.67
137.00	Alcatel-Lucent TD-RRH8x20-25	3	0.75	0.000	70.00	4.046	0.61	163.78	5.363	0.61
137.00	RFS APXVTM14-ALU-I20	3	0.75	0.000	56.20	6.342	0.66	192.84	8.503	0.66
137.00	Commscope NNVV-65B-R4	3	0.75	0.000	77.40	12.271	0.64	326.73	15.053	0.64
128.00	Powerwave Allgon LGP21901	6	0.80	-2.000	5.50	0.200	0.50	13.06	0.515	0.50
128.00	Generic 6" x 6" Junction Box	3	0.80	-2.000	10.00	0.300	0.50	19.79	0.672	0.50
128.00	Powerwave Allgon LGP21401	6	0.80	-2.000	14.10	1.104	0.50	38.68	1.807	0.50
128.00	Raycap DC6-48-60-18-8F	3	0.80	-2.000	20.00	1.260	1.00	71.87	1.909	1.00
128.00	Ericsson Radio 8843 - B2 + B66A	3	0.80	0.000	71.90	1.650	0.50	132.59	2.485	0.50
128.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.90	1.842	0.50	114.37	2.726	0.50
128.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	134.49	2.888	0.50
128.00	Allgon 7770.00	3	0.80	-2.000	35.00	5.508	0.65	167.38	6.546	0.65
128.00	CCI DMP65R-BU8D	6	0.80	0.000	95.70	17.871	0.63	430.53	21.501	0.63
128.00	Site Pro 1 F3P-12W	1	0.75	0.000	1,750.00	30.000	0.75	2,951.01	50.589	0.75
116.00	Ericsson KRY 112 144/1	3	0.75	0.000	11.00	0.351	0.50	21.50	0.747	0.50
116.00	Ericsson KRY 112 489/2	3	0.75	0.000	15.40	0.559	0.50	32.64	1.071	0.50
116.00	Ericsson Radio 4449 B12,B71	3	0.75	0.000	74.00	1.639	0.50	128.65	2.463	0.50
116.00	RFS APXV18-206517	3	0.75	0.000	26.40	5.050	0.68	115.61	7.358	0.68
116.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.243	0.63	511.14	23.864	0.63
116.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,264.94	51.063	1.00
75.00	Generic GPS	1	1.00	0.000	10.00	0.900	1.00	37.26	1.496	1.00
75.00	Stand-Off	1	1.00	0.000	75.00	2.500	1.00	123.68	4.123	1.00
63.00	Generic GPS	1	1.00	0.000	10.00	0.900	1.00	36.82	1.486	1.00
63.00	Stand-Off	1	1.00	0.000	75.00	2.500	1.00	122.89	4.096	1.00
Totals	Num Loadings:35	103			12,362.00			27,761.25		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 90

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	148.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	148.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	147.00	2	1 5/8" Hybriflex	1.98	1.30	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS

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0.00	137.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL
0.00	137.00	7	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL
0.00	128.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	128.00	1	0.40" (10.3mm) Fiber	0.40	0.09	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	128.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	128.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	116.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	116.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	116.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	0	0.00	Y	T-MOBILE
0.00	63.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY

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Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	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		0.3750	54.500	64.420	23,843.5	24.22	145.33	72.9	861.7	0.0	0.0
5.00		0.3750	53.400	63.110	22,418.8	23.70	142.40	73.5	826.9	0.0	1,084.9
10.00		0.3750	52.300	61.801	21,052.1	23.18	139.47	74.1	792.8	0.0	1,062.6
15.00		0.3750	51.199	60.492	19,742.1	22.66	136.53	74.7	759.5	0.0	1,040.3
20.00		0.3750	50.099	59.182	18,487.6	22.15	133.60	75.4	726.8	0.0	1,018.1
25.00		0.3750	48.999	57.873	17,287.3	21.63	130.66	76.0	694.9	0.0	995.8
30.00		0.3750	47.899	56.563	16,140.2	21.11	127.73	76.6	663.7	0.0	973.5
35.00		0.3750	46.799	55.254	15,045.0	20.59	124.80	77.2	633.2	0.0	951.2
40.00		0.3750	45.698	53.944	14,000.5	20.08	121.86	77.8	603.4	0.0	928.9
45.00		0.3750	44.598	52.635	13,005.5	19.56	118.93	78.4	574.4	0.0	906.7
46.91	Bot - Section 2	0.3750	44.177	52.134	12,637.6	19.36	117.81	78.6	563.4	0.0	341.1
50.00		0.3750	43.498	51.325	12,058.8	19.04	115.99	79.0	546.0	0.0	1,003.3
53.08	Top - Section 1	0.3125	43.445	42.781	10,055.8	23.10	139.03	74.2	455.9	0.0	985.6
55.00		0.3125	43.023	42.362	9,763.2	22.86	137.67	74.5	447.0	0.0	278.1
60.00		0.3125	41.923	41.271	9,028.0	22.24	134.15	75.2	424.2	0.0	711.5
63.00		0.3125	41.263	40.616	8,605.1	21.87	132.04	75.7	410.8	0.0	418.0
65.00		0.3125	40.822	40.179	8,330.7	21.62	130.63	76.0	401.9	0.0	274.9
70.00		0.3125	39.722	39.088	7,670.2	21.00	127.11	76.7	380.3	0.0	674.3
75.00		0.3125	38.622	37.997	7,045.6	20.38	123.59	77.4	359.3	0.0	655.8
80.00		0.3125	37.522	36.906	6,455.8	19.76	120.07	78.2	338.9	0.0	637.2
85.00		0.3125	36.422	35.815	5,899.9	19.14	116.55	78.9	319.1	0.0	618.6
90.00		0.3125	35.321	34.723	5,376.9	18.52	113.03	79.6	299.8	0.0	600.1
93.54	Bot - Section 3	0.3125	34.543	33.951	5,026.3	18.08	110.54	80.1	286.6	0.0	413.2
95.00		0.3125	34.221	33.632	4,885.8	17.90	109.51	80.3	281.2	0.0	305.1
98.45	Top - Section 2	0.2500	33.961	26.749	3,840.7	22.54	135.85	74.9	222.7	0.0	708.6
100.0		0.2500	33.621	26.479	3,725.6	22.30	134.48	75.2	218.3	0.0	140.1
105.0		0.2500	32.521	25.606	3,369.1	21.53	130.08	76.1	204.0	0.0	443.1
110.0		0.2500	31.421	24.733	3,036.2	20.75	125.68	77.0	190.3	0.0	428.2
115.0		0.2500	30.321	23.860	2,725.9	19.97	121.28	77.9	177.1	0.0	413.4
116.0		0.2500	30.100	23.685	2,666.5	19.82	120.40	78.1	174.5	0.0	80.9
120.0		0.2500	29.220	22.987	2,437.5	19.20	116.88	78.8	164.3	0.0	317.6
125.0		0.2500	28.120	22.114	2,170.2	18.42	112.48	79.7	152.0	0.0	383.7
128.0		0.2500	27.460	21.590	2,019.6	17.96	109.84	80.3	144.9	0.0	223.1
130.0		0.2500	27.020	21.241	1,923.2	17.65	108.08	80.6	140.2	0.0	145.7
135.0		0.2500	25.920	20.368	1,695.7	16.87	103.68	81.6	128.9	0.0	354.0
137.0		0.2500	25.480	20.019	1,610.0	16.56	101.92	81.9	124.5	0.0	137.4
137.5		0.2500	25.370	19.932	1,589.0	16.48	101.48	82.0	123.4	0.0	34.0
140.0		0.2500	24.820	19.495	1,486.9	16.09	99.28	82.5	118.0	0.0	167.7
145.0		0.2500	23.719	18.622	1,295.9	15.32	94.88	82.6	107.6	0.0	324.3
146.0		0.2500	23.499	18.448	1,259.8	15.16	94.00	82.6	105.6	0.0	63.1
											21,243.5

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Load Case: 1.2D + 1.6W 101 mph with No Ice 24 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		226.7	0.0					0.0	0.0	226.7	0.0	0.0	0.0
5.00		448.9	1,301.9					0.0	313.4	448.9	1,615.3	0.0	0.0
10.00		439.6	1,275.1					0.0	313.4	439.6	1,588.5	0.0	0.0
15.00		430.4	1,248.4					0.0	313.4	430.4	1,561.8	0.0	0.0
20.00		421.1	1,221.7					0.0	313.4	421.1	1,535.0	0.0	0.0
25.00		411.9	1,194.9					0.0	313.4	411.9	1,508.3	0.0	0.0
30.00		407.4	1,168.2					0.0	313.4	407.4	1,481.6	0.0	0.0
35.00		411.1	1,141.5					0.0	313.4	411.1	1,454.8	0.0	0.0
40.00		417.1	1,114.7					0.0	313.4	417.1	1,428.1	0.0	0.0
45.00		290.5	1,088.0					0.0	313.4	290.5	1,401.4	0.0	0.0
46.91	Bot - Section 2	213.1	409.3					0.0	119.9	213.1	529.2	0.0	0.0
50.00		264.8	1,203.9					0.0	193.5	264.8	1,397.4	0.0	0.0
53.08	Top - Section 1	215.0	1,182.7					0.0	193.0	215.0	1,375.7	0.0	0.0
55.00		297.8	333.8					0.0	120.3	297.8	454.1	0.0	0.0
60.00		344.0	853.7					0.0	313.4	344.0	1,167.1	0.0	0.0
63.00	Appurtenance(s)	214.6	501.6	128.6	0.0	0.0	102.0	0.0	188.0	343.2	791.6	0.0	0.0
65.00		299.3	329.9					0.0	125.0	299.3	454.9	0.0	0.0
70.00		425.6	809.2					0.0	312.5	425.6	1,121.7	0.0	0.0
75.00	Appurtenance(s)	422.0	786.9	135.1	0.0	0.0	102.0	0.0	312.5	557.2	1,201.4	0.0	0.0
80.00		417.7	764.6					0.0	312.5	417.7	1,077.1	0.0	0.0
85.00		412.5	742.4					0.0	312.5	412.5	1,054.8	0.0	0.0
90.00		347.9	720.1					0.0	312.5	347.9	1,032.6	0.0	0.0
93.54	Bot - Section 3	202.6	495.9					0.0	221.0	202.6	716.9	0.0	0.0
95.00		199.0	366.1					0.0	91.5	199.0	457.6	0.0	0.0
98.45	Top - Section 2	201.3	850.4					0.0	215.8	201.3	1,066.2	0.0	0.0
100.00		259.5	168.1					0.0	96.7	259.5	264.7	0.0	0.0
105.00		391.3	531.7					0.0	312.5	391.3	844.2	0.0	0.0
110.00		383.1	513.9					0.0	312.5	383.1	826.4	0.0	0.0
115.00		226.8	496.1					0.0	312.5	226.8	808.5	0.0	0.0
116.00	Appurtenance(s)	185.0	97.1	2,993.2	0.0	0.0	3,316.9	0.0	62.5	3,178.2	3,476.5	0.0	0.0
120.00		327.9	381.2					0.0	195.0	327.9	576.2	0.0	0.0
125.00		286.1	460.4					0.0	243.8	286.1	704.2	0.0	0.0
128.00	Appurtenance(s)	175.3	267.7	4,283.4	0.0	-1,392.6	3,894.2	0.0	146.3	4,458.7	4,308.2	0.0	0.0
130.00		239.7	174.9					0.0	65.0	239.7	239.9	0.0	0.0
135.00		236.8	424.8					0.0	162.6	236.8	587.4	0.0	0.0
137.00	Appurtenance(s)	83.1	164.9	1,887.0	0.0	0.0	1,329.8	0.0	65.0	1,970.1	1,559.8	0.0	0.0
137.50	Appurtenance(s)	98.3	40.8	1,285.5	0.0	0.0	2,938.4	0.0	10.4	1,383.7	2,989.6	0.0	0.0
140.00		241.1	201.2					0.0	52.1	241.1	253.3	0.0	0.0
145.00		190.5	389.1					0.0	104.2	190.5	493.3	0.0	0.0
146.00	Appurtenance(s)	31.2	75.7	1,254.8	0.0	0.0	1,800.0	0.0	20.8	1,286.0	1,896.5	0.0	0.0
									Totals:	23,705.0	47,301.7	0.00	0.00

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Load Case: 1.2D + 1.6W 101 mph with No Ice 24 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

Calculated Forces

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	-48.61	-27.39	0.00	-3,067.93	0.00	3,067.93	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.663
5.00	-46.91	-27.09	0.00	-2,930.97	0.00	2,930.97	4,176.31	2,088.16	9,106.46	4,560.00	0.10	-0.18	0.654
10.00	-45.24	-26.79	0.00	-2,795.53	0.00	2,795.53	4,123.50	2,061.75	8,803.44	4,408.26	0.38	-0.36	0.645
15.00	-43.59	-26.48	0.00	-2,661.60	0.00	2,661.60	4,069.26	2,034.63	8,502.24	4,257.44	0.86	-0.54	0.636
20.00	-41.98	-26.18	0.00	-2,529.18	0.00	2,529.18	4,013.58	2,006.79	8,203.04	4,107.62	1.53	-0.73	0.626
25.00	-40.39	-25.89	0.00	-2,398.26	0.00	2,398.26	3,956.46	1,978.23	7,906.06	3,958.90	2.40	-0.92	0.616
30.00	-38.83	-25.58	0.00	-2,268.84	0.00	2,268.84	3,897.92	1,948.96	7,611.48	3,811.39	3.47	-1.11	0.605
35.00	-37.30	-25.27	0.00	-2,140.92	0.00	2,140.92	3,837.94	1,918.97	7,319.49	3,665.19	4.74	-1.31	0.594
40.00	-35.79	-24.94	0.00	-2,014.58	0.00	2,014.58	3,776.52	1,888.26	7,030.31	3,520.38	6.21	-1.50	0.582
45.00	-34.34	-24.69	0.00	-1,889.89	0.00	1,889.89	3,713.67	1,856.84	6,744.12	3,377.07	7.89	-1.70	0.569
46.91	-33.78	-24.52	0.00	-1,842.64	0.00	1,842.64	3,689.24	1,844.62	6,635.43	3,322.65	8.59	-1.78	0.564
50.00	-32.34	-24.29	0.00	-1,766.95	0.00	1,766.95	3,649.39	1,824.69	6,461.11	3,235.36	9.79	-1.91	0.555
53.08	-30.92	-24.08	0.00	-1,692.15	0.00	1,692.15	2,857.95	1,428.97	5,068.34	2,537.94	11.06	-2.03	0.678
55.00	-30.42	-23.85	0.00	-1,645.92	0.00	1,645.92	2,840.65	1,420.32	4,987.96	2,497.68	11.89	-2.11	0.670
60.00	-29.19	-23.55	0.00	-1,526.69	0.00	1,526.69	2,794.59	1,397.30	4,779.77	2,393.44	14.23	-2.34	0.649
63.00	-28.36	-23.23	0.00	-1,456.03	0.00	1,456.03	2,766.27	1,383.14	4,655.71	2,331.31	15.74	-2.48	0.635
65.00	-27.86	-23.00	0.00	-1,409.56	0.00	1,409.56	2,747.10	1,373.55	4,573.39	2,290.09	16.80	-2.58	0.626
70.00	-26.67	-22.63	0.00	-1,294.59	0.00	1,294.59	2,698.18	1,349.09	4,369.01	2,187.75	19.63	-2.81	0.602
75.00	-25.41	-22.11	0.00	-1,181.46	0.00	1,181.46	2,647.83	1,323.91	4,166.84	2,086.52	22.69	-3.04	0.576
80.00	-24.27	-21.73	0.00	-1,070.92	0.00	1,070.92	2,596.04	1,298.02	3,967.06	1,986.48	26.00	-3.27	0.549
85.00	-23.16	-21.34	0.00	-962.28	0.00	962.28	2,542.81	1,271.41	3,769.88	1,887.74	29.54	-3.49	0.519
90.00	-22.08	-21.00	0.00	-855.56	0.00	855.56	2,488.15	1,244.08	3,575.49	1,790.40	33.31	-3.71	0.487
93.54	-21.34	-20.79	0.00	-781.28	0.00	781.28	2,448.63	1,224.31	3,439.78	1,722.45	36.11	-3.86	0.463
95.00	-20.86	-20.60	0.00	-750.85	0.00	750.85	2,432.06	1,216.03	3,384.08	1,694.56	37.30	-3.93	0.452
98.45	-19.77	-20.36	0.00	-679.71	0.00	679.71	1,802.83	901.41	2,498.39	1,251.05	40.20	-4.07	0.555
100.00	-19.48	-20.14	0.00	-648.21	0.00	648.21	1,791.36	895.68	2,457.25	1,230.45	41.52	-4.13	0.538
105.00	-18.59	-19.75	0.00	-547.54	0.00	547.54	1,753.33	876.67	2,325.21	1,164.33	45.98	-4.36	0.481
110.00	-17.73	-19.37	0.00	-448.76	0.00	448.76	1,713.87	856.94	2,194.79	1,099.03	50.66	-4.57	0.419
115.00	-16.90	-19.11	0.00	-351.92	0.00	351.92	1,672.98	836.49	2,066.21	1,034.64	55.54	-4.76	0.351
116.00	-13.68	-15.67	0.00	-332.81	0.00	332.81	1,664.63	832.31	2,040.72	1,021.88	56.54	-4.80	0.334
120.00	-13.10	-15.33	0.00	-270.11	0.00	270.11	1,630.65	815.32	1,939.64	971.26	60.61	-4.92	0.286
125.00	-12.40	-15.00	0.00	-193.47	0.00	193.47	1,586.89	793.44	1,815.29	908.99	65.84	-5.06	0.221
128.00	-8.49	-10.19	0.00	-148.46	0.00	148.46	1,559.94	779.97	1,741.82	872.20	69.04	-5.13	0.176
130.00	-8.26	-9.94	0.00	-128.09	0.00	128.09	1,541.69	770.85	1,693.35	847.93	71.19	-5.17	0.157
135.00	-7.69	-9.65	0.00	-78.41	0.00	78.41	1,495.06	747.53	1,574.02	788.18	76.64	-5.24	0.105
137.00	-6.32	-7.55	0.00	-59.10	0.00	59.10	1,476.01	738.00	1,527.06	764.66	78.84	-5.27	0.082
137.50	-3.47	-5.90	0.00	-55.33	0.00	55.33	1,471.21	735.60	1,515.39	758.82	79.39	-5.27	0.075
140.00	-3.23	-5.64	0.00	-40.58	0.00	40.58	1,447.00	723.50	1,457.49	729.83	82.15	-5.29	0.058
145.00	-2.76	-5.40	0.00	-12.40	0.00	12.40	1,383.54	691.77	1,330.54	666.26	87.70	-5.32	0.021
146.00	0.00	-5.12	0.00	-7.00	0.00	7.00	1,370.57	685.28	1,305.58	653.76	88.81	-5.32	0.011

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Load Case: 0.9D + 1.6W 101 mph with No Ice (Reduced DL) 24 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00
Dead Load Factor :0.90
Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		226.7	0.0					0.0	0.0	226.7	0.0	0.0	0.0
5.00		448.9	976.4					0.0	235.0	448.9	1,211.4	0.0	0.0
10.00		439.6	956.4					0.0	235.0	439.6	1,191.4	0.0	0.0
15.00		430.4	936.3					0.0	235.0	430.4	1,171.3	0.0	0.0
20.00		421.1	916.3					0.0	235.0	421.1	1,151.3	0.0	0.0
25.00		411.9	896.2					0.0	235.0	411.9	1,131.2	0.0	0.0
30.00		407.4	876.1					0.0	235.0	407.4	1,111.2	0.0	0.0
35.00		411.1	856.1					0.0	235.0	411.1	1,091.1	0.0	0.0
40.00		417.1	836.0					0.0	235.0	417.1	1,071.1	0.0	0.0
45.00		290.5	816.0					0.0	235.0	290.5	1,051.0	0.0	0.0
46.91	Bot - Section 2	213.1	307.0					0.0	89.9	213.1	396.9	0.0	0.0
50.00		264.8	902.9					0.0	145.1	264.8	1,048.0	0.0	0.0
53.08	Top - Section 1	215.0	887.0					0.0	144.8	215.0	1,031.8	0.0	0.0
55.00		297.8	250.3					0.0	90.3	297.8	340.6	0.0	0.0
60.00		344.0	640.3					0.0	235.0	344.0	875.3	0.0	0.0
63.00	Appurtenance(s)	214.6	376.2	128.6	0.0	0.0	76.5	0.0	141.0	343.2	593.7	0.0	0.0
65.00		299.3	247.4					0.0	93.7	299.3	341.2	0.0	0.0
70.00		425.6	606.9					0.0	234.4	425.6	841.3	0.0	0.0
75.00	Appurtenance(s)	422.0	590.2	135.1	0.0	0.0	76.5	0.0	234.4	557.2	901.0	0.0	0.0
80.00		417.7	573.5					0.0	234.4	417.7	807.8	0.0	0.0
85.00		412.5	556.8					0.0	234.4	412.5	791.1	0.0	0.0
90.00		347.9	540.1					0.0	234.4	347.9	774.4	0.0	0.0
93.54	Bot - Section 3	202.6	371.9					0.0	165.8	202.6	537.7	0.0	0.0
95.00		199.0	274.6					0.0	68.6	199.0	343.2	0.0	0.0
98.45	Top - Section 2	201.3	637.8					0.0	161.9	201.3	799.6	0.0	0.0
100.00		259.5	126.1					0.0	72.5	259.5	198.6	0.0	0.0
105.00		391.3	398.8					0.0	234.4	391.3	633.1	0.0	0.0
110.00		383.1	385.4					0.0	234.4	383.1	619.8	0.0	0.0
115.00		226.8	372.0					0.0	234.4	226.8	606.4	0.0	0.0
116.00	Appurtenance(s)	185.0	72.8	2,993.2	0.0	0.0	2,487.7	0.0	46.9	3,178.2	2,607.4	0.0	0.0
120.00		327.9	285.9					0.0	146.3	327.9	432.1	0.0	0.0
125.00		286.1	345.3					0.0	182.8	286.1	528.1	0.0	0.0
128.00	Appurtenance(s)	175.3	200.8	4,283.4	0.0	-1,392.6	2,920.7	0.0	109.7	4,458.7	3,231.1	0.0	0.0
130.00		239.7	131.2					0.0	48.8	239.7	180.0	0.0	0.0
135.00		236.8	318.6					0.0	121.9	236.8	440.5	0.0	0.0
137.00	Appurtenance(s)	83.1	123.7	1,887.0	0.0	0.0	997.4	0.0	48.8	1,970.1	1,169.8	0.0	0.0
137.50	Appurtenance(s)	98.3	30.6	1,285.5	0.0	0.0	2,203.8	0.0	7.8	1,383.7	2,242.2	0.0	0.0
140.00		241.1	150.9					0.0	39.1	241.1	190.0	0.0	0.0
145.00		190.5	291.8					0.0	78.1	190.5	370.0	0.0	0.0
146.00	Appurtenance(s)	31.2	56.8	1,254.8	0.0	0.0	1,350.0	0.0	15.6	1,286.0	1,422.4	0.0	0.0
									Totals:	23,705.0	35,476.3	0.00	0.00

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Load Case: 0.9D + 1.6W 101 mph with No Ice (Reduced DL) 24 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :0.90
Wind Load Factor :1.60

Calculated Forces

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	-36.45	-27.37	0.00	-3,028.02	0.00	3,028.02	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.651
5.00	-35.15	-27.03	0.00	-2,891.16	0.00	2,891.16	4,176.31	2,088.16	9,106.46	4,560.00	0.09	-0.18	0.643
10.00	-33.88	-26.69	0.00	-2,756.01	0.00	2,756.01	4,123.50	2,061.75	8,803.44	4,408.26	0.38	-0.36	0.634
15.00	-32.63	-26.36	0.00	-2,622.55	0.00	2,622.55	4,069.26	2,034.63	8,502.24	4,257.44	0.85	-0.54	0.624
20.00	-31.40	-26.03	0.00	-2,490.77	0.00	2,490.77	4,013.58	2,006.79	8,203.04	4,107.62	1.51	-0.72	0.614
25.00	-30.19	-25.70	0.00	-2,360.65	0.00	2,360.65	3,956.46	1,978.23	7,906.06	3,958.90	2.36	-0.91	0.604
30.00	-29.00	-25.37	0.00	-2,232.17	0.00	2,232.17	3,897.92	1,948.96	7,611.48	3,811.39	3.42	-1.10	0.593
35.00	-27.83	-25.03	0.00	-2,105.34	0.00	2,105.34	3,837.94	1,918.97	7,319.49	3,665.19	4.67	-1.29	0.582
40.00	-26.69	-24.67	0.00	-1,980.22	0.00	1,980.22	3,776.52	1,888.26	7,030.31	3,520.38	6.12	-1.48	0.570
45.00	-25.59	-24.41	0.00	-1,856.86	0.00	1,856.86	3,713.67	1,856.84	6,744.12	3,377.07	7.78	-1.68	0.557
46.91	-25.16	-24.23	0.00	-1,810.14	0.00	1,810.14	3,689.24	1,844.62	6,635.43	3,322.65	8.47	-1.75	0.552
50.00	-24.07	-23.99	0.00	-1,735.35	0.00	1,735.35	3,649.39	1,824.69	6,461.11	3,235.36	9.64	-1.88	0.543
53.08	-23.00	-23.78	0.00	-1,661.47	0.00	1,661.47	2,857.95	1,428.97	5,068.34	2,537.94	10.89	-2.00	0.663
55.00	-22.61	-23.53	0.00	-1,615.81	0.00	1,615.81	2,840.65	1,420.32	4,987.96	2,497.68	11.71	-2.08	0.655
60.00	-21.67	-23.22	0.00	-1,498.17	0.00	1,498.17	2,794.59	1,397.30	4,779.77	2,393.44	14.01	-2.30	0.634
63.00	-21.05	-22.90	0.00	-1,428.51	0.00	1,428.51	2,766.27	1,383.14	4,655.71	2,331.31	15.50	-2.44	0.621
65.00	-20.66	-22.64	0.00	-1,382.72	0.00	1,382.72	2,747.10	1,373.55	4,573.39	2,290.09	16.55	-2.54	0.612
70.00	-19.75	-22.25	0.00	-1,269.53	0.00	1,269.53	2,698.18	1,349.09	4,369.01	2,187.75	19.32	-2.76	0.588
75.00	-18.79	-21.73	0.00	-1,158.26	0.00	1,158.26	2,647.83	1,323.91	4,166.84	2,086.52	22.34	-2.99	0.562
80.00	-17.92	-21.33	0.00	-1,049.64	0.00	1,049.64	2,596.04	1,298.02	3,967.06	1,986.48	25.58	-3.21	0.536
85.00	-17.08	-20.94	0.00	-942.97	0.00	942.97	2,542.81	1,271.41	3,769.88	1,887.74	29.06	-3.43	0.507
90.00	-16.26	-20.60	0.00	-838.26	0.00	838.26	2,488.15	1,244.08	3,575.49	1,790.40	32.77	-3.64	0.475
93.54	-15.70	-20.39	0.00	-765.42	0.00	765.42	2,448.63	1,224.31	3,439.78	1,722.45	35.53	-3.79	0.451
95.00	-15.34	-20.20	0.00	-735.58	0.00	735.58	2,432.06	1,216.03	3,384.08	1,694.56	36.70	-3.86	0.441
98.45	-14.52	-19.97	0.00	-665.84	0.00	665.84	1,802.83	901.41	2,498.39	1,251.05	39.54	-4.00	0.541
100.00	-14.29	-19.73	0.00	-634.96	0.00	634.96	1,791.36	895.68	2,457.25	1,230.45	40.84	-4.06	0.524
105.00	-13.61	-19.34	0.00	-536.31	0.00	536.31	1,753.33	876.67	2,325.21	1,164.33	45.22	-4.28	0.469
110.00	-12.96	-18.96	0.00	-439.59	0.00	439.59	1,713.87	856.94	2,194.79	1,099.03	49.81	-4.49	0.408
115.00	-12.34	-18.71	0.00	-344.80	0.00	344.80	1,672.98	836.49	2,066.21	1,034.64	54.61	-4.67	0.341
116.00	-9.98	-15.34	0.00	-326.09	0.00	326.09	1,664.63	832.31	2,040.72	1,021.88	55.59	-4.71	0.325
120.00	-9.54	-15.00	0.00	-264.73	0.00	264.73	1,630.65	815.32	1,939.64	971.26	59.59	-4.83	0.279
125.00	-9.01	-14.69	0.00	-189.73	0.00	189.73	1,586.89	793.44	1,815.29	908.99	64.72	-4.97	0.215
128.00	-6.17	-9.97	0.00	-145.67	0.00	145.67	1,559.94	779.97	1,741.82	872.20	67.86	-5.03	0.171
130.00	-6.01	-9.72	0.00	-125.74	0.00	125.74	1,541.69	770.85	1,693.35	847.93	69.98	-5.07	0.152
135.00	-5.58	-9.45	0.00	-77.15	0.00	77.15	1,495.06	747.53	1,574.02	788.18	75.33	-5.15	0.102
137.00	-4.59	-7.38	0.00	-58.25	0.00	58.25	1,476.01	738.00	1,527.06	764.66	77.49	-5.17	0.079
137.50	-2.48	-5.80	0.00	-54.56	0.00	54.56	1,471.21	735.60	1,515.39	758.82	78.03	-5.17	0.074
140.00	-2.31	-5.55	0.00	-40.05	0.00	40.05	1,447.00	723.50	1,457.49	729.83	80.74	-5.20	0.057
145.00	-1.96	-5.32	0.00	-12.32	0.00	12.32	1,383.54	691.77	1,330.54	666.26	86.19	-5.22	0.020
146.00	0.00	-5.12	0.00	-7.00	0.00	7.00	1,370.57	685.28	1,305.58	653.76	87.28	-5.22	0.011

Site Number: 411216 | Code: ANSI/TIA-222-G | © 2007 - 2019 by ATC IP LLC. All rights reserved.

Site Name: CT Chaplin South CT, CT | Engineering Number:OAA752302_C3_02 | 12/2/2019 11:14:25 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi | 50 mph with 0.75 in Radial Ice | 24 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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		66.8	0.0					0.0	0.0	66.8	0.0	0.0	0.0
5.00		132.7	1,698.0					12.6	379.4	145.2	2,077.3	0.0	0.0
10.00		130.5	1,709.4					13.4	385.5	143.9	2,094.8	0.0	0.0
15.00		128.2	1,696.6					13.8	388.6	141.9	2,085.2	0.0	0.0
20.00		125.8	1,675.9					14.0	390.7	139.8	2,066.6	0.0	0.0
25.00		123.3	1,651.1					14.2	392.4	137.5	2,043.5	0.0	0.0
30.00		122.2	1,623.7					14.4	393.8	136.7	2,017.5	0.0	0.0
35.00		123.6	1,594.5					14.9	395.0	138.5	1,989.5	0.0	0.0
40.00		125.7	1,564.1					15.7	396.0	141.4	1,960.0	0.0	0.0
45.00		87.7	1,532.6					16.4	396.9	104.1	1,929.5	0.0	0.0
46.91	Bot - Section 2	64.4	579.2					6.4	152.1	70.9	731.3	0.0	0.0
50.00		80.1	1,479.2					10.6	245.6	90.7	1,724.8	0.0	0.0
53.08	Top - Section 1	65.1	1,455.1					10.8	245.4	75.9	1,700.4	0.0	0.0
55.00		90.4	502.8					6.8	153.1	97.2	655.9	0.0	0.0
60.00		104.5	1,285.8					18.2	399.1	122.7	1,685.0	0.0	0.0
63.00	Appurtenance(s)	65.3	758.7	32.3	0.0	0.0	261.7	11.2	239.8	108.8	1,260.2	0.0	0.0
65.00		91.3	500.3					7.5	159.6	98.8	659.9	0.0	0.0
70.00		130.0	1,226.3					19.2	399.5	149.2	1,625.8	0.0	0.0
75.00	Appurtenance(s)	129.3	1,195.9	34.2	0.0	0.0	262.9	19.7	400.0	183.2	1,858.9	0.0	0.0
80.00		128.3	1,165.2					20.2	400.6	148.4	1,565.8	0.0	0.0
85.00		127.0	1,134.2					20.6	401.1	147.6	1,535.3	0.0	0.0
90.00		107.4	1,103.0					21.0	401.5	128.5	1,504.5	0.0	0.0
93.54	Bot - Section 3	62.7	762.3					15.1	284.3	77.8	1,046.6	0.0	0.0
95.00		61.6	477.2					6.3	117.7	67.9	594.9	0.0	0.0
98.45	Top - Section 2	62.4	1,107.8					15.0	277.9	77.4	1,385.7	0.0	0.0
100.00		80.7	282.6					6.8	124.5	87.5	407.1	0.0	0.0
105.00		121.9	891.5					22.2	402.8	144.1	1,294.3	0.0	0.0
110.00		119.8	863.8					22.6	403.2	142.4	1,267.0	0.0	0.0
115.00		71.1	836.0					22.9	403.6	94.0	1,239.6	0.0	0.0
116.00	Appurtenance(s)	58.2	164.8	696.2	0.0	0.0	9,010.5	4.6	80.8	759.0	9,256.1	0.0	0.0
120.00		103.4	645.1					0.0	195.0	103.4	840.1	0.0	0.0
125.00		90.5	779.8					0.0	243.8	90.5	1,023.6	0.0	0.0
128.00	Appurtenance(s)	55.7	455.7	881.4	0.0	-298.9	11,555.3	0.0	146.3	937.0	12,157.3	0.0	0.0
130.00		76.4	298.6					0.0	65.0	76.4	363.7	0.0	0.0
135.00		75.6	723.1					0.0	162.6	75.6	885.7	0.0	0.0
137.00	Appurtenance(s)	26.6	282.7	379.9	0.0	0.0	4,470.0	0.0	65.0	406.5	4,817.7	0.0	0.0
137.50	Appurtenance(s)	31.6	70.1	372.6	0.0	0.0	6,962.8	0.0	10.4	404.2	7,043.4	0.0	0.0
140.00		77.7	345.2					0.0	52.1	77.7	397.2	0.0	0.0
145.00		61.5	665.8					0.0	104.2	61.5	770.0	0.0	0.0
146.00	Appurtenance(s)	10.1	130.7	332.7	0.0	0.0	3,947.2	0.0	20.8	342.8	4,098.7	0.0	0.0
									Totals:	6,743.54	83,660.4	0.00	0.00

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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 24 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

Calculated Forces

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	-89.59	-7.43	0.00	-832.55	0.00	832.55	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.198
5.00	-87.51	-7.36	0.00	-795.40	0.00	795.40	4,176.31	2,088.16	9,106.46	4,560.00	0.03	-0.05	0.195
10.00	-85.40	-7.29	0.00	-758.61	0.00	758.61	4,123.50	2,061.75	8,803.44	4,408.26	0.10	-0.10	0.193
15.00	-83.31	-7.21	0.00	-722.18	0.00	722.18	4,069.26	2,034.63	8,502.24	4,257.44	0.23	-0.15	0.190
20.00	-81.24	-7.14	0.00	-686.12	0.00	686.12	4,013.58	2,006.79	8,203.04	4,107.62	0.41	-0.20	0.187
25.00	-79.19	-7.07	0.00	-650.42	0.00	650.42	3,956.46	1,978.23	7,906.06	3,958.90	0.65	-0.25	0.184
30.00	-77.17	-6.99	0.00	-615.10	0.00	615.10	3,897.92	1,948.96	7,611.48	3,811.39	0.94	-0.30	0.181
35.00	-75.17	-6.91	0.00	-580.15	0.00	580.15	3,837.94	1,918.97	7,319.49	3,665.19	1.29	-0.35	0.178
40.00	-73.21	-6.82	0.00	-545.61	0.00	545.61	3,776.52	1,888.26	7,030.31	3,520.38	1.69	-0.41	0.174
45.00	-71.28	-6.75	0.00	-511.50	0.00	511.50	3,713.67	1,856.84	6,744.12	3,377.07	2.14	-0.46	0.171
46.91	-70.54	-6.71	0.00	-498.58	0.00	498.58	3,689.24	1,844.62	6,635.43	3,322.65	2.33	-0.48	0.169
50.00	-68.81	-6.64	0.00	-477.88	0.00	477.88	3,649.39	1,824.69	6,461.11	3,235.36	2.65	-0.52	0.167
53.08	-67.11	-6.58	0.00	-457.42	0.00	457.42	2,857.95	1,428.97	5,068.34	2,537.94	3.00	-0.55	0.204
55.00	-66.45	-6.53	0.00	-444.78	0.00	444.78	2,840.65	1,420.32	4,987.96	2,497.68	3.23	-0.57	0.201
60.00	-64.76	-6.44	0.00	-412.14	0.00	412.14	2,794.59	1,397.30	4,779.77	2,393.44	3.86	-0.63	0.195
63.00	-63.50	-6.36	0.00	-392.81	0.00	392.81	2,766.27	1,383.14	4,655.71	2,331.31	4.27	-0.67	0.191
65.00	-62.84	-6.30	0.00	-380.09	0.00	380.09	2,747.10	1,373.55	4,573.39	2,290.09	4.56	-0.70	0.189
70.00	-61.21	-6.19	0.00	-348.60	0.00	348.60	2,698.18	1,349.09	4,369.01	2,187.75	5.32	-0.76	0.182
75.00	-59.34	-6.05	0.00	-317.63	0.00	317.63	2,647.83	1,323.91	4,166.84	2,086.52	6.15	-0.82	0.175
80.00	-57.77	-5.94	0.00	-287.38	0.00	287.38	2,596.04	1,298.02	3,967.06	1,986.48	7.05	-0.88	0.167
85.00	-56.23	-5.83	0.00	-257.69	0.00	257.69	2,542.81	1,271.41	3,769.88	1,887.74	8.00	-0.94	0.159
90.00	-54.73	-5.72	0.00	-228.56	0.00	228.56	2,488.15	1,244.08	3,575.49	1,790.40	9.02	-1.00	0.150
93.54	-53.68	-5.65	0.00	-208.34	0.00	208.34	2,448.63	1,224.31	3,439.78	1,722.45	9.78	-1.04	0.143
95.00	-53.08	-5.60	0.00	-200.07	0.00	200.07	2,432.06	1,216.03	3,384.08	1,694.56	10.10	-1.06	0.140
98.45	-51.70	-5.52	0.00	-180.75	0.00	180.75	1,802.83	901.41	2,498.39	1,251.05	10.88	-1.10	0.173
100.00	-51.29	-5.46	0.00	-172.22	0.00	172.22	1,791.36	895.68	2,457.25	1,230.45	11.24	-1.12	0.169
105.00	-49.99	-5.34	0.00	-144.93	0.00	144.93	1,753.33	876.67	2,325.21	1,164.33	12.44	-1.18	0.153
110.00	-48.72	-5.21	0.00	-118.24	0.00	118.24	1,713.87	856.94	2,194.79	1,099.03	13.71	-1.23	0.136
115.00	-47.48	-5.12	0.00	-92.18	0.00	92.18	1,672.98	836.49	2,066.21	1,034.64	15.02	-1.28	0.118
116.00	-38.24	-4.16	0.00	-87.06	0.00	87.06	1,664.63	832.31	2,040.72	1,021.88	15.29	-1.29	0.108
120.00	-37.40	-4.06	0.00	-70.41	0.00	70.41	1,630.65	815.32	1,939.64	971.26	16.39	-1.32	0.095
125.00	-36.38	-3.97	0.00	-50.09	0.00	50.09	1,586.89	793.44	1,815.29	908.99	17.79	-1.36	0.078
128.00	-24.25	-2.74	0.00	-38.19	0.00	38.19	1,559.94	779.97	1,741.82	872.20	18.65	-1.38	0.059
130.00	-23.89	-2.67	0.00	-32.70	0.00	32.70	1,541.69	770.85	1,693.35	847.93	19.23	-1.39	0.054
135.00	-23.00	-2.57	0.00	-19.37	0.00	19.37	1,495.06	747.53	1,574.02	788.18	20.69	-1.41	0.040
137.00	-18.20	-2.05	0.00	-14.23	0.00	14.23	1,476.01	738.00	1,527.06	764.66	21.28	-1.41	0.031
137.50	-11.17	-1.47	0.00	-13.20	0.00	13.20	1,471.21	735.60	1,515.39	758.82	21.43	-1.41	0.025
140.00	-10.77	-1.39	0.00	-9.52	0.00	9.52	1,447.00	723.50	1,457.49	729.83	22.17	-1.42	0.020
145.00	-10.00	-1.31	0.00	-2.59	0.00	2.59	1,383.54	691.77	1,330.54	666.26	23.66	-1.42	0.011
146.00	0.00	-1.06	0.00	-1.28	0.00	1.28	1,370.57	685.28	1,305.58	653.76	23.96	-1.42	0.002

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Load Case: 1.0D + 1.0W Serviceability 60 mph 23 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		44.7	0.0					0.0	0.0	44.7	0.0	0.0	0.0
5.00		88.6	1,084.9					0.0	261.2	88.6	1,346.0	0.0	0.0
10.00		86.8	1,062.6					0.0	261.2	86.8	1,323.8	0.0	0.0
15.00		84.9	1,040.3					0.0	261.2	84.9	1,301.5	0.0	0.0
20.00		83.1	1,018.1					0.0	261.2	83.1	1,279.2	0.0	0.0
25.00		81.3	995.8					0.0	261.2	81.3	1,256.9	0.0	0.0
30.00		80.4	973.5					0.0	261.2	80.4	1,234.6	0.0	0.0
35.00		81.1	951.2					0.0	261.2	81.1	1,212.4	0.0	0.0
40.00		82.3	928.9					0.0	261.2	82.3	1,190.1	0.0	0.0
45.00		57.3	906.7					0.0	261.2	57.3	1,167.8	0.0	0.0
46.91	Bot - Section 2	42.1	341.1					0.0	99.9	42.1	441.0	0.0	0.0
50.00		52.3	1,003.3					0.0	161.2	52.3	1,164.5	0.0	0.0
53.08	Top - Section 1	42.4	985.6					0.0	160.9	42.4	1,146.4	0.0	0.0
55.00		58.8	278.1					0.0	100.3	58.8	378.4	0.0	0.0
60.00		67.9	711.5					0.0	261.2	67.9	972.6	0.0	0.0
63.00	Appurtenance(s)	42.4	418.0	25.4	0.0	0.0	85.0	0.0	156.7	67.7	659.7	0.0	0.0
65.00		59.1	274.9					0.0	104.2	59.1	379.1	0.0	0.0
70.00		84.0	674.3					0.0	260.4	84.0	934.7	0.0	0.0
75.00	Appurtenance(s)	83.3	655.8	26.7	0.0	0.0	85.0	0.0	260.4	110.0	1,001.2	0.0	0.0
80.00		82.4	637.2					0.0	260.4	82.4	897.6	0.0	0.0
85.00		81.4	618.6					0.0	260.4	81.4	879.0	0.0	0.0
90.00		68.7	600.1					0.0	260.4	68.7	860.5	0.0	0.0
93.54	Bot - Section 3	40.0	413.2					0.0	184.2	40.0	597.4	0.0	0.0
95.00		39.3	305.1					0.0	76.2	39.3	381.3	0.0	0.0
98.45	Top - Section 2	39.7	708.6					0.0	179.8	39.7	888.5	0.0	0.0
100.00		51.2	140.1					0.0	80.6	51.2	220.6	0.0	0.0
105.00		77.2	443.1					0.0	260.4	77.2	703.5	0.0	0.0
110.00		75.6	428.2					0.0	260.4	75.6	688.6	0.0	0.0
115.00		44.8	413.4					0.0	260.4	44.8	673.8	0.0	0.0
116.00	Appurtenance(s)	36.5	80.9	590.7	0.0	0.0	2,764.1	0.0	52.1	627.2	2,897.1	0.0	0.0
120.00		64.7	317.6					0.0	162.5	64.7	480.2	0.0	0.0
125.00		56.5	383.7					0.0	203.1	56.5	586.8	0.0	0.0
128.00	Appurtenance(s)	34.6	223.1	845.3	0.0	-274.8	3,245.2	0.0	121.9	879.9	3,590.2	0.0	0.0
130.00		47.3	145.7					0.0	54.2	47.3	199.9	0.0	0.0
135.00		46.7	354.0					0.0	135.5	46.7	489.5	0.0	0.0
137.00	Appurtenance(s)	16.4	137.4	372.4	0.0	0.0	1,108.2	0.0	54.2	388.8	1,299.8	0.0	0.0
137.50	Appurtenance(s)	19.4	34.0	253.7	0.0	0.0	2,448.7	0.0	8.7	273.1	2,491.4	0.0	0.0
140.00		47.6	167.7					0.0	43.4	47.6	211.1	0.0	0.0
145.00		37.6	324.3					0.0	86.8	37.6	411.1	0.0	0.0
146.00	Appurtenance(s)	6.2	63.1	247.6	0.0	0.0	1,500.0	0.0	17.4	253.8	1,580.4	0.0	0.0
									Totals:	4,678.17	39,418.1	0.00	0.00

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Load Case: 1.0D + 1.0W Serviceability 60 mph 23 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Calculated Forces

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	-40.54	-5.40	0.00	-600.90	0.00	600.90	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.137
5.00	-39.19	-5.34	0.00	-573.88	0.00	573.88	4,176.31	2,088.16	9,106.46	4,560.00	0.02	-0.04	0.135
10.00	-37.87	-5.27	0.00	-547.19	0.00	547.19	4,123.50	2,061.75	8,803.44	4,408.26	0.07	-0.07	0.133
15.00	-36.56	-5.21	0.00	-520.83	0.00	520.83	4,069.26	2,034.63	8,502.24	4,257.44	0.17	-0.11	0.131
20.00	-35.28	-5.15	0.00	-494.78	0.00	494.78	4,013.58	2,006.79	8,203.04	4,107.62	0.30	-0.14	0.129
25.00	-34.02	-5.08	0.00	-469.04	0.00	469.04	3,956.46	1,978.23	7,906.06	3,958.90	0.47	-0.18	0.127
30.00	-32.78	-5.02	0.00	-443.62	0.00	443.62	3,897.92	1,948.96	7,611.48	3,811.39	0.68	-0.22	0.125
35.00	-31.57	-4.96	0.00	-418.52	0.00	418.52	3,837.94	1,918.97	7,319.49	3,665.19	0.93	-0.26	0.122
40.00	-30.37	-4.89	0.00	-393.74	0.00	393.74	3,776.52	1,888.26	7,030.31	3,520.38	1.22	-0.29	0.120
45.00	-29.20	-4.84	0.00	-369.30	0.00	369.30	3,713.67	1,856.84	6,744.12	3,377.07	1.54	-0.33	0.117
46.91	-28.76	-4.80	0.00	-360.04	0.00	360.04	3,689.24	1,844.62	6,635.43	3,322.65	1.68	-0.35	0.116
50.00	-27.59	-4.76	0.00	-345.22	0.00	345.22	3,649.39	1,824.69	6,461.11	3,235.36	1.91	-0.37	0.114
53.08	-26.45	-4.71	0.00	-330.57	0.00	330.57	2,857.95	1,428.97	5,068.34	2,537.94	2.16	-0.40	0.140
55.00	-26.07	-4.67	0.00	-321.52	0.00	321.52	2,840.65	1,420.32	4,987.96	2,497.68	2.33	-0.41	0.138
60.00	-25.09	-4.61	0.00	-298.18	0.00	298.18	2,794.59	1,397.30	4,779.77	2,393.44	2.78	-0.46	0.134
63.00	-24.43	-4.54	0.00	-284.36	0.00	284.36	2,766.27	1,383.14	4,655.71	2,331.31	3.08	-0.49	0.131
65.00	-24.05	-4.50	0.00	-275.27	0.00	275.27	2,747.10	1,373.55	4,573.39	2,290.09	3.29	-0.50	0.129
70.00	-23.11	-4.42	0.00	-252.79	0.00	252.79	2,698.18	1,349.09	4,369.01	2,187.75	3.84	-0.55	0.124
75.00	-22.11	-4.32	0.00	-230.69	0.00	230.69	2,647.83	1,323.91	4,166.84	2,086.52	4.44	-0.59	0.119
80.00	-21.21	-4.24	0.00	-209.09	0.00	209.09	2,596.04	1,298.02	3,967.06	1,986.48	5.09	-0.64	0.113
85.00	-20.33	-4.17	0.00	-187.88	0.00	187.88	2,542.81	1,271.41	3,769.88	1,887.74	5.78	-0.68	0.108
90.00	-19.47	-4.10	0.00	-167.05	0.00	167.05	2,488.15	1,244.08	3,575.49	1,790.40	6.52	-0.72	0.101
93.54	-18.87	-4.06	0.00	-152.55	0.00	152.55	2,448.63	1,224.31	3,439.78	1,722.45	7.06	-0.75	0.096
95.00	-18.49	-4.02	0.00	-146.61	0.00	146.61	2,432.06	1,216.03	3,384.08	1,694.56	7.30	-0.77	0.094
98.45	-17.60	-3.98	0.00	-132.72	0.00	132.72	1,802.83	901.41	2,498.39	1,251.05	7.86	-0.80	0.116
100.00	-17.37	-3.93	0.00	-126.58	0.00	126.58	1,791.36	895.68	2,457.25	1,230.45	8.12	-0.81	0.113
105.00	-16.67	-3.86	0.00	-106.93	0.00	106.93	1,753.33	876.67	2,325.21	1,164.33	8.99	-0.85	0.101
110.00	-15.98	-3.78	0.00	-87.65	0.00	87.65	1,713.87	856.94	2,194.79	1,099.03	9.91	-0.89	0.089
115.00	-15.30	-3.73	0.00	-68.75	0.00	68.75	1,672.98	836.49	2,066.21	1,034.64	10.86	-0.93	0.076
116.00	-12.42	-3.06	0.00	-65.02	0.00	65.02	1,664.63	832.31	2,040.72	1,021.88	11.06	-0.94	0.071
120.00	-11.94	-2.99	0.00	-52.78	0.00	52.78	1,630.65	815.32	1,939.64	971.26	11.86	-0.96	0.062
125.00	-11.35	-2.93	0.00	-37.82	0.00	37.82	1,586.89	793.44	1,815.29	908.99	12.88	-0.99	0.049
128.00	-7.78	-1.99	0.00	-29.04	0.00	29.04	1,559.94	779.97	1,741.82	872.20	13.50	-1.00	0.038
130.00	-7.58	-1.94	0.00	-25.06	0.00	25.06	1,541.69	770.85	1,693.35	847.93	13.93	-1.01	0.034
135.00	-7.09	-1.89	0.00	-15.36	0.00	15.36	1,495.06	747.53	1,574.02	788.18	14.99	-1.02	0.024
137.00	-5.79	-1.47	0.00	-11.59	0.00	11.59	1,476.01	738.00	1,527.06	764.66	15.42	-1.03	0.019
137.50	-3.31	-1.16	0.00	-10.85	0.00	10.85	1,471.21	735.60	1,515.39	758.82	15.53	-1.03	0.017
140.00	-3.10	-1.10	0.00	-7.97	0.00	7.97	1,447.00	723.50	1,457.49	729.83	16.07	-1.03	0.013
145.00	-2.69	-1.06	0.00	-2.44	0.00	2.44	1,383.54	691.77	1,330.54	666.26	17.16	-1.04	0.006
146.00	0.00	-1.01	0.00	-1.38	0.00	1.38	1,370.57	685.28	1,305.58	653.76	17.37	-1.04	0.002

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Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.17	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.18	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.47	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	1.99	
Total Unfactored Dead Load:	40.54	k
Seismic Base Shear (E):	1.22	k

Load Case (1.2 + 0.2Sds) * DL + E ELFM **Seismic Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	145.50	80	1,583	0.005	6	99
38	142.50	411	7,763	0.023	28	508
37	138.75	211	3,781	0.011	14	261
36	137.25	43	748	0.002	3	53
35	136.00	192	3,299	0.010	12	237
34	132.50	489	8,000	0.024	29	605
33	129.00	200	3,099	0.009	11	247
32	126.50	345	5,143	0.015	19	427
31	122.50	587	8,208	0.024	30	726
30	118.00	480	6,235	0.019	23	594
29	115.50	133	1,655	0.005	6	164
28	112.50	674	7,958	0.024	29	833
27	107.50	689	7,432	0.022	27	852
26	102.50	703	6,907	0.021	25	870
25	99.23	221	2,031	0.006	7	273
24	96.73	888	7,775	0.023	28	1,099
23	94.27	381	3,170	0.009	12	472
22	91.77	597	4,709	0.014	17	739
21	87.50	860	6,171	0.018	22	1,064
20	82.50	879	5,609	0.017	20	1,087
19	77.50	898	5,059	0.015	18	1,110
18	72.50	916	4,523	0.013	16	1,133
17	67.50	935	4,004	0.012	15	1,156

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16	64.00	379	1,461	0.004	5	469
15	61.50	575	2,046	0.006	7	711
14	57.50	973	3,031	0.009	11	1,203
13	54.04	378	1,042	0.003	4	468
12	51.54	1,146	2,875	0.009	10	1,418
11	48.46	1,164	2,583	0.008	9	1,440
10	45.96	441	881	0.003	3	545
9	42.50	1,168	1,997	0.006	7	1,444
8	37.50	1,190	1,587	0.005	6	1,472
7	32.50	1,212	1,217	0.004	4	1,500
6	27.50	1,235	890	0.003	3	1,527
5	22.50	1,257	608	0.002	2	1,555
4	17.50	1,279	376	0.001	1	1,582
3	12.50	1,301	196	0.001	1	1,610
2	7.50	1,324	72	0.000	0	1,637
1	2.50	1,346	8	0.000	0	1,665
Antel LPA-80080/4CF	146.00	48	951	0.003	3	59
Antel LPA-80063/4CF	146.00	40	793	0.002	3	49
Andrew SBNHH-1D65B	146.00	304	6,028	0.018	22	376
Amphenol Antel QUAD6	146.00	162	3,210	0.010	12	200
Nokia B5 RRH4x40-850	146.00	146	2,883	0.009	10	180
Alcatel-Lucent RRH2x	146.00	170	3,371	0.010	12	210
Alcatel-Lucent AWS4	146.00	192	3,805	0.011	14	237
Raycap RC3DC-3315-PF	146.00	64	1,268	0.004	5	79
Flat Low Profile Pla	146.00	1,500	29,726	0.089	108	1,855
Site Pro RMQP-496-HK	137.50	2,449	43,079	0.129	156	3,029
Alcatel-Lucent RRH2x	137.00	317	5,544	0.017	20	393
Alcatel-Lucent 1900	137.00	180	3,144	0.009	11	223
Alcatel-Lucent TD-RR	137.00	210	3,668	0.011	13	260
RFS APXVTM14-ALU-I20	137.00	169	2,945	0.009	11	209
Commscope NNVV-65B-R	137.00	232	4,056	0.012	15	287
Powerwave Allgon LGP	128.00	33	504	0.002	2	41
Generic 6" x 6" Junc	128.00	30	458	0.001	2	37
Powerwave Allgon LGP	128.00	85	1,291	0.004	5	105
Raycap DC6-48-60-18-	128.00	60	916	0.003	3	74
Ericsson Radio 8843	128.00	216	3,292	0.010	12	267
Ericsson RRUS 4478 B	128.00	180	2,743	0.008	10	222
Ericsson RRUS 4449 B	128.00	213	3,251	0.010	12	263
Allgon 7770.00	128.00	105	1,602	0.005	6	130
CCI DMP65R-BU8D	128.00	574	8,763	0.026	32	710
Site Pro 1 F3P-12W	128.00	1,750	26,708	0.080	97	2,165
Ericsson KRY 112 144	116.00	33	414	0.001	2	41
Ericsson KRY 112 489	116.00	46	580	0.002	2	57
Ericsson Radio 4449	116.00	222	2,787	0.008	10	275
RFS APXV18-206517	116.00	79	994	0.003	4	98
RFS APXVAARR24_43-U-	116.00	384	4,816	0.014	17	475
Round Platform w/ Ha	116.00	2,000	25,104	0.075	91	2,474
Generic GPS	75.00	10	53	0.000	0	12
Stand-Off	75.00	75	396	0.001	1	93
Generic GPS	63.00	10	37	0.000	0	12
Stand-Off	63.00	75	280	0.001	1	93
		40,544	335,194	1.000	1,216	50,149

Load Case (0.9 - 0.2Sds) * DL + E ELFM **Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	145.50	80	1,583	0.005	6	69
38	142.50	411	7,763	0.023	28	355
37	138.75	211	3,781	0.011	14	182

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36	137.25	43	748	0.002	3	37
35	136.00	192	3,299	0.010	12	165
34	132.50	489	8,000	0.024	29	422
33	129.00	200	3,099	0.009	11	173
32	126.50	345	5,143	0.015	19	298
31	122.50	587	8,208	0.024	30	506
30	118.00	480	6,235	0.019	23	414
29	115.50	133	1,655	0.005	6	115
28	112.50	674	7,958	0.024	29	582
27	107.50	689	7,432	0.022	27	594
26	102.50	703	6,907	0.021	25	607
25	99.23	221	2,031	0.006	7	190
24	96.73	888	7,775	0.023	28	767
23	94.27	381	3,170	0.009	12	329
22	91.77	597	4,709	0.014	17	516
21	87.50	860	6,171	0.018	22	743
20	82.50	879	5,609	0.017	20	759
19	77.50	898	5,059	0.015	18	775
18	72.50	916	4,523	0.013	16	791
17	67.50	935	4,004	0.012	15	807
16	64.00	379	1,461	0.004	5	327
15	61.50	575	2,046	0.006	7	496
14	57.50	973	3,031	0.009	11	839
13	54.04	378	1,042	0.003	4	327
12	51.54	1,146	2,875	0.009	10	989
11	48.46	1,164	2,583	0.008	9	1,005
10	45.96	441	881	0.003	3	381
9	42.50	1,168	1,997	0.006	7	1,008
8	37.50	1,190	1,587	0.005	6	1,027
7	32.50	1,212	1,217	0.004	4	1,046
6	27.50	1,235	890	0.003	3	1,066
5	22.50	1,257	608	0.002	2	1,085
4	17.50	1,279	376	0.001	1	1,104
3	12.50	1,301	196	0.001	1	1,123
2	7.50	1,324	72	0.000	0	1,143
1	2.50	1,346	8	0.000	0	1,162
Antel LPA-80080/4CF	146.00	48	951	0.003	3	41
Antel LPA-80063/4CF	146.00	40	793	0.002	3	35
Andrew SBNHH-1D65B	146.00	304	6,028	0.018	22	263
Amphenol Antel QUAD6	146.00	162	3,210	0.010	12	140
Nokia B5 RRH4x40-850	146.00	146	2,883	0.009	10	126
Alcatel-Lucent RRH2x	146.00	170	3,371	0.010	12	147
Alcatel-Lucent AWS4	146.00	192	3,805	0.011	14	166
Raycap RC3DC-3315-PF	146.00	64	1,268	0.004	5	55
Flat Low Profile Pla	146.00	1,500	29,726	0.089	108	1,295
Site Pro RMQP-496-HK	137.50	2,449	43,079	0.129	156	2,113
Alcatel-Lucent RRH2x	137.00	317	5,544	0.017	20	274
Alcatel-Lucent 1900	137.00	180	3,144	0.009	11	155
Alcatel-Lucent TD-RR	137.00	210	3,668	0.011	13	181
RFS APXVTM14-ALU-I20	137.00	169	2,945	0.009	11	146
Commscope NNVV-65B-R	137.00	232	4,056	0.012	15	200
Powerwave Allgon LGP	128.00	33	504	0.002	2	28
Generic 6" x 6" Junc	128.00	30	458	0.001	2	26
Powerwave Allgon LGP	128.00	85	1,291	0.004	5	73
Raycap DC6-48-60-18-	128.00	60	916	0.003	3	52
Ericsson Radio 8843	128.00	216	3,292	0.010	12	186
Ericsson RRUS 4478 B	128.00	180	2,743	0.008	10	155
Ericsson RRUS 4449 B	128.00	213	3,251	0.010	12	184
Allgon 7770.00	128.00	105	1,602	0.005	6	91
CCI DMP65R-BU8D	128.00	574	8,763	0.026	32	496
Site Pro 1 F3P-12W	128.00	1,750	26,708	0.080	97	1,510
Ericsson KRY 112 144	116.00	33	414	0.001	2	28
Ericsson KRY 112 489	116.00	46	580	0.002	2	40
Ericsson Radio 4449	116.00	222	2,787	0.008	10	192

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RFS APXV18-206517	116.00	79	994	0.003	4	68
RFS APXVAARR24_43-U-	116.00	384	4,816	0.014	17	331
Round Platform w/ Ha	116.00	2,000	25,104	0.075	91	1,726
Generic GPS	75.00	10	53	0.000	0	9
Stand-Off	75.00	75	396	0.001	1	65
Generic GPS	63.00	10	37	0.000	0	9
Stand-Off	63.00	75	280	0.001	1	65
		40,544	335,194	1.000	1,216	34,993

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Load Case (1.2 + 0.2Sds) * DL + E ELFM **Seismic Equivalent Lateral Forces Method**

Calculated Forces

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	-48.48	-1.22	0.00	-151.95	0.00	151.95	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.044
5.00	-46.85	-1.23	0.00	-145.86	0.00	145.86	4,176.31	2,088.16	9,106.46	4,560.00	0.00	-0.01	0.043
10.00	-45.24	-1.23	0.00	-139.73	0.00	139.73	4,123.50	2,061.75	8,803.44	4,408.26	0.02	-0.02	0.043
15.00	-43.65	-1.24	0.00	-133.57	0.00	133.57	4,069.26	2,034.63	8,502.24	4,257.44	0.04	-0.03	0.042
20.00	-42.10	-1.24	0.00	-127.39	0.00	127.39	4,013.58	2,006.79	8,203.04	4,107.62	0.08	-0.04	0.042
25.00	-40.57	-1.24	0.00	-121.18	0.00	121.18	3,956.46	1,978.23	7,906.06	3,958.90	0.12	-0.05	0.041
30.00	-39.07	-1.24	0.00	-114.97	0.00	114.97	3,897.92	1,948.96	7,611.48	3,811.39	0.17	-0.06	0.040
35.00	-37.60	-1.24	0.00	-108.75	0.00	108.75	3,837.94	1,918.97	7,319.49	3,665.19	0.24	-0.07	0.039
40.00	-36.16	-1.24	0.00	-102.53	0.00	102.53	3,776.52	1,888.26	7,030.31	3,520.38	0.31	-0.08	0.039
45.00	-35.61	-1.24	0.00	-96.33	0.00	96.33	3,713.67	1,856.84	6,744.12	3,377.07	0.40	-0.09	0.038
46.91	-34.17	-1.23	0.00	-93.95	0.00	93.95	3,689.24	1,844.62	6,635.43	3,322.65	0.43	-0.09	0.038
50.00	-32.75	-1.22	0.00	-90.15	0.00	90.15	3,649.39	1,824.69	6,461.11	3,235.36	0.49	-0.10	0.037
53.08	-32.28	-1.22	0.00	-86.38	0.00	86.38	2,857.95	1,428.97	5,068.34	2,537.94	0.56	-0.10	0.045
55.00	-31.08	-1.21	0.00	-84.03	0.00	84.03	2,840.65	1,420.32	4,987.96	2,497.68	0.60	-0.11	0.045
60.00	-30.37	-1.21	0.00	-77.97	0.00	77.97	2,794.59	1,397.30	4,779.77	2,393.44	0.72	-0.12	0.043
63.00	-29.79	-1.20	0.00	-74.34	0.00	74.34	2,766.27	1,383.14	4,655.71	2,331.31	0.79	-0.13	0.043
65.00	-28.64	-1.19	0.00	-71.93	0.00	71.93	2,747.10	1,373.55	4,573.39	2,290.09	0.85	-0.13	0.042
70.00	-27.50	-1.18	0.00	-65.97	0.00	65.97	2,698.18	1,349.09	4,369.01	2,187.75	0.99	-0.14	0.040
75.00	-26.29	-1.16	0.00	-60.08	0.00	60.08	2,647.83	1,323.91	4,166.84	2,086.52	1.14	-0.15	0.039
80.00	-25.20	-1.14	0.00	-54.28	0.00	54.28	2,596.04	1,298.02	3,967.06	1,986.48	1.31	-0.17	0.037
85.00	-24.14	-1.12	0.00	-48.57	0.00	48.57	2,542.81	1,271.41	3,769.88	1,887.74	1.49	-0.18	0.035
90.00	-23.40	-1.11	0.00	-42.96	0.00	42.96	2,488.15	1,244.08	3,575.49	1,790.40	1.68	-0.19	0.033
93.54	-22.93	-1.10	0.00	-39.05	0.00	39.05	2,448.63	1,224.31	3,439.78	1,722.45	1.82	-0.20	0.032
95.00	-21.83	-1.07	0.00	-37.44	0.00	37.44	2,432.06	1,216.03	3,384.08	1,694.56	1.89	-0.20	0.031
98.45	-21.55	-1.06	0.00	-33.77	0.00	33.77	1,802.83	901.41	2,498.39	1,251.05	2.03	-0.21	0.039
100.00	-20.68	-1.03	0.00	-32.13	0.00	32.13	1,791.36	895.68	2,457.25	1,230.45	2.10	-0.21	0.038
105.00	-19.83	-1.01	0.00	-26.96	0.00	26.96	1,753.33	876.67	2,325.21	1,164.33	2.32	-0.22	0.034
110.00	-19.00	-0.98	0.00	-21.93	0.00	21.93	1,713.87	856.94	2,194.79	1,099.03	2.56	-0.23	0.031
115.00	-18.83	-0.97	0.00	-17.04	0.00	17.04	1,672.98	836.49	2,066.21	1,034.64	2.81	-0.24	0.028
116.00	-14.82	-0.81	0.00	-16.07	0.00	16.07	1,664.63	832.31	2,040.72	1,021.88	2.86	-0.24	0.025
120.00	-14.10	-0.78	0.00	-12.83	0.00	12.83	1,630.65	815.32	1,939.64	971.26	3.06	-0.25	0.022
125.00	-13.67	-0.76	0.00	-8.95	0.00	8.95	1,586.89	793.44	1,815.29	908.99	3.33	-0.25	0.018
128.00	-9.41	-0.55	0.00	-6.67	0.00	6.67	1,559.94	779.97	1,741.82	872.20	3.49	-0.26	0.014
130.00	-8.80	-0.52	0.00	-5.58	0.00	5.58	1,541.69	770.85	1,693.35	847.93	3.59	-0.26	0.012
135.00	-8.57	-0.50	0.00	-2.99	0.00	2.99	1,495.06	747.53	1,574.02	788.18	3.87	-0.26	0.010
137.00	-4.12	-0.26	0.00	-1.98	0.00	1.98	1,476.01	738.00	1,527.06	764.66	3.98	-0.26	0.005
137.50	-3.85	-0.24	0.00	-1.85	0.00	1.85	1,471.21	735.60	1,515.39	758.82	4.00	-0.26	0.005
140.00	-3.35	-0.21	0.00	-1.25	0.00	1.25	1,447.00	723.50	1,457.49	729.83	4.14	-0.26	0.004
145.00	-3.25	-0.20	0.00	-0.20	0.00	0.20	1,383.54	691.77	1,330.54	666.26	4.42	-0.26	0.003
146.00	0.00	-0.19	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	4.47	-0.26	0.000

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Load Case (0.9 - 0.2Sds) * DL + E ELFM **Seismic (Reduced DL) Equivalent Lateral Forces Method**

Calculated Forces

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	-33.83	-1.22	0.00	-149.56	0.00	149.56	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.040
5.00	-32.69	-1.22	0.00	-143.47	0.00	143.47	4,176.31	2,088.16	9,106.46	4,560.00	0.00	-0.01	0.039
10.00	-31.57	-1.23	0.00	-137.36	0.00	137.36	4,123.50	2,061.75	8,803.44	4,408.26	0.02	-0.02	0.039
15.00	-30.46	-1.23	0.00	-131.23	0.00	131.23	4,069.26	2,034.63	8,502.24	4,257.44	0.04	-0.03	0.038
20.00	-29.38	-1.23	0.00	-125.08	0.00	125.08	4,013.58	2,006.79	8,203.04	4,107.62	0.07	-0.04	0.038
25.00	-28.31	-1.23	0.00	-118.92	0.00	118.92	3,956.46	1,978.23	7,906.06	3,958.90	0.12	-0.05	0.037
30.00	-27.26	-1.23	0.00	-112.76	0.00	112.76	3,897.92	1,948.96	7,611.48	3,811.39	0.17	-0.05	0.037
35.00	-26.24	-1.23	0.00	-106.61	0.00	106.61	3,837.94	1,918.97	7,319.49	3,665.19	0.23	-0.06	0.036
40.00	-25.23	-1.22	0.00	-100.46	0.00	100.46	3,776.52	1,888.26	7,030.31	3,520.38	0.31	-0.07	0.035
45.00	-24.85	-1.22	0.00	-94.34	0.00	94.34	3,713.67	1,856.84	6,744.12	3,377.07	0.39	-0.08	0.035
46.91	-23.84	-1.22	0.00	-92.00	0.00	92.00	3,689.24	1,844.62	6,635.43	3,322.65	0.42	-0.09	0.034
50.00	-22.85	-1.21	0.00	-88.25	0.00	88.25	3,649.39	1,824.69	6,461.11	3,235.36	0.48	-0.09	0.034
53.08	-22.53	-1.20	0.00	-84.53	0.00	84.53	2,857.95	1,428.97	5,068.34	2,537.94	0.55	-0.10	0.041
55.00	-21.69	-1.19	0.00	-82.22	0.00	82.22	2,840.65	1,420.32	4,987.96	2,497.68	0.59	-0.10	0.041
60.00	-21.19	-1.19	0.00	-76.25	0.00	76.25	2,794.59	1,397.30	4,779.77	2,393.44	0.70	-0.12	0.039
63.00	-20.79	-1.18	0.00	-72.69	0.00	72.69	2,766.27	1,383.14	4,655.71	2,331.31	0.78	-0.12	0.039
65.00	-19.98	-1.17	0.00	-70.32	0.00	70.32	2,747.10	1,373.55	4,573.39	2,290.09	0.83	-0.13	0.038
70.00	-19.19	-1.16	0.00	-64.47	0.00	64.47	2,698.18	1,349.09	4,369.01	2,187.75	0.97	-0.14	0.037
75.00	-18.34	-1.14	0.00	-58.69	0.00	58.69	2,647.83	1,323.91	4,166.84	2,086.52	1.12	-0.15	0.035
80.00	-17.58	-1.12	0.00	-53.00	0.00	53.00	2,596.04	1,298.02	3,967.06	1,986.48	1.29	-0.16	0.033
85.00	-16.84	-1.10	0.00	-47.41	0.00	47.41	2,542.81	1,271.41	3,769.88	1,887.74	1.46	-0.17	0.032
90.00	-16.33	-1.08	0.00	-41.92	0.00	41.92	2,488.15	1,244.08	3,575.49	1,790.40	1.65	-0.18	0.030
93.54	-16.00	-1.07	0.00	-38.10	0.00	38.10	2,448.63	1,224.31	3,439.78	1,722.45	1.79	-0.19	0.029
95.00	-15.23	-1.04	0.00	-36.53	0.00	36.53	2,432.06	1,216.03	3,384.08	1,694.56	1.85	-0.19	0.028
98.45	-15.04	-1.03	0.00	-32.94	0.00	32.94	1,802.83	901.41	2,498.39	1,251.05	1.99	-0.20	0.035
100.00	-14.43	-1.01	0.00	-31.34	0.00	31.34	1,791.36	895.68	2,457.25	1,230.45	2.06	-0.20	0.034
105.00	-13.84	-0.98	0.00	-26.30	0.00	26.30	1,753.33	876.67	2,325.21	1,164.33	2.28	-0.22	0.030
110.00	-13.26	-0.95	0.00	-21.39	0.00	21.39	1,713.87	856.94	2,194.79	1,099.03	2.51	-0.23	0.027
115.00	-13.14	-0.95	0.00	-16.62	0.00	16.62	1,672.98	836.49	2,066.21	1,034.64	2.75	-0.23	0.024
116.00	-10.34	-0.79	0.00	-15.67	0.00	15.67	1,664.63	832.31	2,040.72	1,021.88	2.80	-0.24	0.022
120.00	-9.84	-0.76	0.00	-12.52	0.00	12.52	1,630.65	815.32	1,939.64	971.26	3.00	-0.24	0.019
125.00	-9.54	-0.74	0.00	-8.73	0.00	8.73	1,586.89	793.44	1,815.29	908.99	3.26	-0.25	0.016
128.00	-6.57	-0.54	0.00	-6.51	0.00	6.51	1,559.94	779.97	1,741.82	872.20	3.42	-0.25	0.012
130.00	-6.14	-0.50	0.00	-5.44	0.00	5.44	1,541.69	770.85	1,693.35	847.93	3.52	-0.25	0.010
135.00	-5.98	-0.49	0.00	-2.92	0.00	2.92	1,495.06	747.53	1,574.02	788.18	3.79	-0.26	0.008
137.00	-2.87	-0.25	0.00	-1.93	0.00	1.93	1,476.01	738.00	1,527.06	764.66	3.90	-0.26	0.004
137.50	-2.69	-0.23	0.00	-1.81	0.00	1.81	1,471.21	735.60	1,515.39	758.82	3.92	-0.26	0.004
140.00	-2.33	-0.20	0.00	-1.22	0.00	1.22	1,447.00	723.50	1,457.49	729.83	4.06	-0.26	0.003
145.00	-2.27	-0.20	0.00	-0.20	0.00	0.20	1,383.54	691.77	1,330.54	666.26	4.33	-0.26	0.002
146.00	0.00	-0.19	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	4.38	-0.26	0.000

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Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.17
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.18
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.47
Redundancy Factor (p):	1.00

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
39	145.50	80	1.877	1.913	1.116	0.342	18	99
38	142.50	411	1.800	1.541	0.978	0.296	81	508
37	138.75	211	1.707	1.149	0.825	0.243	34	261
36	137.25	43	1.670	1.013	0.770	0.223	6	53
35	136.00	192	1.640	0.908	0.726	0.207	26	237
34	132.50	489	1.557	0.650	0.613	0.164	54	605
33	129.00	200	1.475	0.443	0.514	0.126	17	247
32	126.50	345	1.419	0.320	0.451	0.101	23	427
31	122.50	587	1.331	0.165	0.364	0.066	26	726
30	118.00	480	1.235	0.040	0.281	0.032	10	594
29	115.50	133	1.183	-0.011	0.242	0.015	1	164
28	112.50	674	1.122	-0.057	0.201	-0.001	-1	833
27	107.50	689	1.025	-0.103	0.144	-0.023	-11	852
26	102.50	703	0.932	-0.121	0.100	-0.037	-17	870
25	99.23	221	0.873	-0.121	0.077	-0.042	-6	273
24	96.73	888	0.830	-0.117	0.063	-0.043	-26	1,099
23	94.27	381	0.788	-0.110	0.050	-0.043	-11	472
22	91.77	597	0.747	-0.100	0.040	-0.040	-16	739
21	87.50	860	0.679	-0.080	0.026	-0.033	-19	1,064
20	82.50	879	0.603	-0.054	0.015	-0.019	-11	1,087
19	77.50	898	0.533	-0.028	0.009	-0.002	-1	1,110
18	72.50	916	0.466	-0.004	0.006	0.014	9	1,133
17	67.50	935	0.404	0.017	0.006	0.029	18	1,156
16	64.00	379	0.363	0.029	0.008	0.036	9	469
15	61.50	575	0.335	0.037	0.010	0.041	16	711
14	57.50	973	0.293	0.047	0.013	0.046	30	1,203
13	54.04	378	0.259	0.054	0.016	0.048	12	468
12	51.54	1,146	0.236	0.058	0.019	0.049	38	1,418
11	48.46	1,164	0.208	0.062	0.022	0.050	39	1,440
10	45.96	441	0.187	0.064	0.025	0.050	15	545
9	42.50	1,168	0.160	0.067	0.029	0.050	39	1,444
8	37.50	1,190	0.125	0.070	0.034	0.049	39	1,472
7	32.50	1,212	0.094	0.071	0.038	0.048	39	1,500
6	27.50	1,235	0.067	0.072	0.041	0.047	38	1,527

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5	22.50	1,257	0.045	0.071	0.042	0.045	38	1,555
4	17.50	1,279	0.027	0.067	0.040	0.043	36	1,582
3	12.50	1,301	0.014	0.059	0.035	0.039	34	1,610
2	7.50	1,324	0.005	0.045	0.025	0.031	27	1,637
1	2.50	1,346	0.001	0.019	0.010	0.014	13	1,665
Antel LPA-80080/4CF	146.00	48	1.890	1.980	1.140	0.350	11	59
Antel LPA-80063/4CF	146.00	40	1.890	1.980	1.140	0.350	9	49
Andrew SBNHH-1D65B	146.00	304	1.890	1.980	1.140	0.350	71	376
Amphenol Antel QUAD6	146.00	162	1.890	1.980	1.140	0.350	38	200
Nokia B5 RRH4x40-850	146.00	146	1.890	1.980	1.140	0.350	34	180
Alcatel-Lucent RRH2x	146.00	170	1.890	1.980	1.140	0.350	40	210
Alcatel-Lucent AWS4	146.00	192	1.890	1.980	1.140	0.350	45	237
Raycap RC3DC-3315-PF	146.00	64	1.890	1.980	1.140	0.350	15	79
Flat Low Profile Pla	146.00	1,500	1.890	1.980	1.140	0.350	350	1,855
Site Pro RMQP-496-HK	137.50	2,449	1.676	1.035	0.779	0.226	369	3,029
Alcatel-Lucent RRH2x	137.00	317	1.664	0.991	0.761	0.220	46	393
Alcatel-Lucent 1900	137.00	180	1.664	0.991	0.761	0.220	26	223
Alcatel-Lucent TD-RR	137.00	210	1.664	0.991	0.761	0.220	31	260
RFS APXVTM14-ALU-I20	137.00	169	1.664	0.991	0.761	0.220	25	209
Commscope NNVV-	137.00	232	1.664	0.991	0.761	0.220	34	287
Powerwave Allgon LGP	128.00	33	1.453	0.391	0.488	0.116	3	41
Generic 6" x 6" Junc	128.00	30	1.453	0.391	0.488	0.116	2	37
Powerwave Allgon LGP	128.00	85	1.453	0.391	0.488	0.116	7	105
Raycap DC6-48-60-18-	128.00	60	1.453	0.391	0.488	0.116	5	74
Ericsson Radio 8843	128.00	216	1.453	0.391	0.488	0.116	17	267
Ericsson RRUS 4478 B	128.00	180	1.453	0.391	0.488	0.116	14	222
Ericsson RRUS 4449 B	128.00	213	1.453	0.391	0.488	0.116	16	263
Allgon 7770.00	128.00	105	1.453	0.391	0.488	0.116	8	130
CCI DMP65R-BU8D	128.00	574	1.453	0.391	0.488	0.116	44	710
Site Pro 1 F3P-12W	128.00	1,750	1.453	0.391	0.488	0.116	135	2,165
Ericsson KRY 112 144	116.00	33	1.193	-0.002	0.250	0.019	0	41
Ericsson KRY 112 489	116.00	46	1.193	-0.002	0.250	0.019	1	57
Ericsson Radio 4449	116.00	222	1.193	-0.002	0.250	0.019	3	275
RFS APXV18-206517	116.00	79	1.193	-0.002	0.250	0.019	1	98
RFS APXVAARR24_43-U-	116.00	384	1.193	-0.002	0.250	0.019	5	475
Round Platform w/ Ha	116.00	2,000	1.193	-0.002	0.250	0.019	25	2,474
Generic GPS	75.00	10	0.499	-0.016	0.007	0.006	0	12
Stand-Off	75.00	75	0.499	-0.016	0.007	0.006	0	93
Generic GPS	63.00	10	0.352	0.032	0.009	0.038	0	12
Stand-Off	63.00	75	0.352	0.032	0.009	0.038	2	93
		40,544	78.707	35.888	29.277	8.100	2,099	50,149

Load Case (0.9 - 0.2Sds) * DL + E EMAM **Seismic (Reduced DL) Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
39	145.50	80	1.877	1.913	1.116	0.342	18	69
38	142.50	411	1.800	1.541	0.978	0.296	81	355
37	138.75	211	1.707	1.149	0.825	0.243	34	182
36	137.25	43	1.670	1.013	0.770	0.223	6	37
35	136.00	192	1.640	0.908	0.726	0.207	26	165
34	132.50	489	1.557	0.650	0.613	0.164	54	422
33	129.00	200	1.475	0.443	0.514	0.126	17	173
32	126.50	345	1.419	0.320	0.451	0.101	23	298
31	122.50	587	1.331	0.165	0.364	0.066	26	506
30	118.00	480	1.235	0.040	0.281	0.032	10	414
29	115.50	133	1.183	-0.011	0.242	0.015	1	115
28	112.50	674	1.122	-0.057	0.201	-0.001	-1	582
27	107.50	689	1.025	-0.103	0.144	-0.023	-11	594

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26	102.50	703	0.932	-0.121	0.100	-0.037	-17	607
25	99.23	221	0.873	-0.121	0.077	-0.042	-6	190
24	96.73	888	0.830	-0.117	0.063	-0.043	-26	767
23	94.27	381	0.788	-0.110	0.050	-0.043	-11	329
22	91.77	597	0.747	-0.100	0.040	-0.040	-16	516
21	87.50	860	0.679	-0.080	0.026	-0.033	-19	743
20	82.50	879	0.603	-0.054	0.015	-0.019	-11	759
19	77.50	898	0.533	-0.028	0.009	-0.002	-1	775
18	72.50	916	0.466	-0.004	0.006	0.014	9	791
17	67.50	935	0.404	0.017	0.006	0.029	18	807
16	64.00	379	0.363	0.029	0.008	0.036	9	327
15	61.50	575	0.335	0.037	0.010	0.041	16	496
14	57.50	973	0.293	0.047	0.013	0.046	30	839
13	54.04	378	0.259	0.054	0.016	0.048	12	327
12	51.54	1,146	0.236	0.058	0.019	0.049	38	989
11	48.46	1,164	0.208	0.062	0.022	0.050	39	1,005
10	45.96	441	0.187	0.064	0.025	0.050	15	381
9	42.50	1,168	0.160	0.067	0.029	0.050	39	1,008
8	37.50	1,190	0.125	0.070	0.034	0.049	39	1,027
7	32.50	1,212	0.094	0.071	0.038	0.048	39	1,046
6	27.50	1,235	0.067	0.072	0.041	0.047	38	1,066
5	22.50	1,257	0.045	0.071	0.042	0.045	38	1,085
4	17.50	1,279	0.027	0.067	0.040	0.043	36	1,104
3	12.50	1,301	0.014	0.059	0.035	0.039	34	1,123
2	7.50	1,324	0.005	0.045	0.025	0.031	27	1,143
1	2.50	1,346	0.001	0.019	0.010	0.014	13	1,162
Antel LPA-80080/4CF	146.00	48	1.890	1.980	1.140	0.350	11	41
Antel LPA-80063/4CF	146.00	40	1.890	1.980	1.140	0.350	9	35
Andrew SBNHH-1D65B	146.00	304	1.890	1.980	1.140	0.350	71	263
Amphenol Antel QUAD6	146.00	162	1.890	1.980	1.140	0.350	38	140
Nokia B5 RRH4x40-850	146.00	146	1.890	1.980	1.140	0.350	34	126
Alcatel-Lucent RRH2x	146.00	170	1.890	1.980	1.140	0.350	40	147
Alcatel-Lucent AWS4	146.00	192	1.890	1.980	1.140	0.350	45	166
Raycap RC3DC-3315-PF	146.00	64	1.890	1.980	1.140	0.350	15	55
Flat Low Profile Pla	146.00	1,500	1.890	1.980	1.140	0.350	350	1,295
Site Pro RMQP-496-HK	137.50	2,449	1.676	1.035	0.779	0.226	369	2,113
Alcatel-Lucent RRH2x	137.00	317	1.664	0.991	0.761	0.220	46	274
Alcatel-Lucent 1900	137.00	180	1.664	0.991	0.761	0.220	26	155
Alcatel-Lucent TD-RR	137.00	210	1.664	0.991	0.761	0.220	31	181
RFS APXVTM14-ALU-I20	137.00	169	1.664	0.991	0.761	0.220	25	146
Commscope NNVV-	137.00	232	1.664	0.991	0.761	0.220	34	200
Powerwave Allgon LGP	128.00	33	1.453	0.391	0.488	0.116	3	28
Generic 6" x 6" Junc	128.00	30	1.453	0.391	0.488	0.116	2	26
Powerwave Allgon LGP	128.00	85	1.453	0.391	0.488	0.116	7	73
Raycap DC6-48-60-18-	128.00	60	1.453	0.391	0.488	0.116	5	52
Ericsson Radio 8843	128.00	216	1.453	0.391	0.488	0.116	17	186
Ericsson RRUS 4478 B	128.00	180	1.453	0.391	0.488	0.116	14	155
Ericsson RRUS 4449 B	128.00	213	1.453	0.391	0.488	0.116	16	184
Allgon 7770.00	128.00	105	1.453	0.391	0.488	0.116	8	91
CCI DMP65R-BU8D	128.00	574	1.453	0.391	0.488	0.116	44	496
Site Pro 1 F3P-12W	128.00	1,750	1.453	0.391	0.488	0.116	135	1,510
Ericsson KRY 112 144	116.00	33	1.193	-0.002	0.250	0.019	0	28
Ericsson KRY 112 489	116.00	46	1.193	-0.002	0.250	0.019	1	40
Ericsson Radio 4449	116.00	222	1.193	-0.002	0.250	0.019	3	192
RFS APXV18-206517	116.00	79	1.193	-0.002	0.250	0.019	1	68
RFS APXVAARR24_43-U-	116.00	384	1.193	-0.002	0.250	0.019	5	331
Round Platform w/ Ha	116.00	2,000	1.193	-0.002	0.250	0.019	25	1,726
Generic GPS	75.00	10	0.499	-0.016	0.007	0.006	0	9
Stand-Off	75.00	75	0.499	-0.016	0.007	0.006	0	65
Generic GPS	63.00	10	0.352	0.032	0.009	0.038	0	9
Stand-Off	63.00	75	0.352	0.032	0.009	0.038	2	65
		40,544	78.707	35.888	29.277	8.100	2,099	34,993

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Load Case **(1.2 + 0.2Sds) * DL + E EMAM** **Seismic Equivalent Modal Analysis Method**

Calculated Forces

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	-48.48	-2.09	0.00	-257.57	0.00	257.57	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.066
5.00	-46.85	-2.08	0.00	-247.11	0.00	247.11	4,176.31	2,088.16	9,106.46	4,560.00	0.01	-0.02	0.065
10.00	-45.24	-2.05	0.00	-236.73	0.00	236.73	4,123.50	2,061.75	8,803.44	4,408.26	0.03	-0.03	0.065
15.00	-43.65	-2.03	0.00	-226.46	0.00	226.46	4,069.26	2,034.63	8,502.24	4,257.44	0.07	-0.05	0.064
20.00	-42.10	-2.00	0.00	-216.31	0.00	216.31	4,013.58	2,006.79	8,203.04	4,107.62	0.13	-0.06	0.063
25.00	-40.57	-1.97	0.00	-206.30	0.00	206.30	3,956.46	1,978.23	7,906.06	3,958.90	0.20	-0.08	0.062
30.00	-39.07	-1.94	0.00	-196.43	0.00	196.43	3,897.92	1,948.96	7,611.48	3,811.39	0.29	-0.09	0.062
35.00	-37.60	-1.91	0.00	-186.71	0.00	186.71	3,837.94	1,918.97	7,319.49	3,665.19	0.40	-0.11	0.061
40.00	-36.15	-1.88	0.00	-177.14	0.00	177.14	3,776.52	1,888.26	7,030.31	3,520.38	0.53	-0.13	0.060
45.00	-35.61	-1.87	0.00	-167.73	0.00	167.73	3,713.67	1,856.84	6,744.12	3,377.07	0.67	-0.15	0.059
46.91	-34.17	-1.84	0.00	-164.15	0.00	164.15	3,689.24	1,844.62	6,635.43	3,322.65	0.73	-0.15	0.059
50.00	-32.75	-1.80	0.00	-158.48	0.00	158.48	3,649.39	1,824.69	6,461.11	3,235.36	0.84	-0.16	0.058
53.08	-32.28	-1.79	0.00	-152.93	0.00	152.93	2,857.95	1,428.97	5,068.34	2,537.94	0.95	-0.18	0.072
55.00	-31.08	-1.77	0.00	-149.48	0.00	149.48	2,840.65	1,420.32	4,987.96	2,497.68	1.02	-0.18	0.071
60.00	-30.36	-1.76	0.00	-140.65	0.00	140.65	2,794.59	1,397.30	4,779.77	2,393.44	1.22	-0.20	0.070
63.00	-29.79	-1.75	0.00	-135.37	0.00	135.37	2,766.27	1,383.14	4,655.71	2,331.31	1.35	-0.22	0.069
65.00	-28.63	-1.74	0.00	-131.87	0.00	131.87	2,747.10	1,373.55	4,573.39	2,290.09	1.45	-0.23	0.068
70.00	-27.50	-1.73	0.00	-123.19	0.00	123.19	2,698.18	1,349.09	4,369.01	2,187.75	1.69	-0.25	0.067
75.00	-26.28	-1.74	0.00	-114.52	0.00	114.52	2,647.83	1,323.91	4,166.84	2,086.52	1.97	-0.27	0.065
80.00	-25.20	-1.75	0.00	-105.83	0.00	105.83	2,596.04	1,298.02	3,967.06	1,986.48	2.26	-0.29	0.063
85.00	-24.13	-1.78	0.00	-97.05	0.00	97.05	2,542.81	1,271.41	3,769.88	1,887.74	2.58	-0.31	0.061
90.00	-23.39	-1.80	0.00	-88.17	0.00	88.17	2,488.15	1,244.08	3,575.49	1,790.40	2.92	-0.34	0.059
93.54	-22.92	-1.81	0.00	-81.81	0.00	81.81	2,448.63	1,224.31	3,439.78	1,722.45	3.18	-0.35	0.057
95.00	-21.82	-1.83	0.00	-79.16	0.00	79.16	2,432.06	1,216.03	3,384.08	1,694.56	3.29	-0.36	0.056
98.45	-21.55	-1.84	0.00	-72.84	0.00	72.84	1,802.83	901.41	2,498.39	1,251.05	3.55	-0.37	0.070
100.00	-20.68	-1.86	0.00	-69.99	0.00	69.99	1,791.36	895.68	2,457.25	1,230.45	3.67	-0.38	0.068
105.00	-19.82	-1.87	0.00	-60.70	0.00	60.70	1,753.33	876.67	2,325.21	1,164.33	4.09	-0.41	0.063
110.00	-18.99	-1.87	0.00	-51.34	0.00	51.34	1,713.87	856.94	2,194.79	1,099.03	4.53	-0.43	0.058
115.00	-18.82	-1.88	0.00	-41.98	0.00	41.98	1,672.98	836.49	2,066.21	1,034.64	4.99	-0.45	0.052
116.00	-14.81	-1.80	0.00	-40.10	0.00	40.10	1,664.63	832.31	2,040.72	1,021.88	5.08	-0.46	0.048
120.00	-14.09	-1.77	0.00	-32.89	0.00	32.89	1,630.65	815.32	1,939.64	971.26	5.47	-0.47	0.043
125.00	-13.66	-1.75	0.00	-24.03	0.00	24.03	1,586.89	793.44	1,815.29	908.99	5.98	-0.49	0.035
128.00	-9.40	-1.45	0.00	-18.77	0.00	18.77	1,559.94	779.97	1,741.82	872.20	6.29	-0.50	0.028
130.00	-8.79	-1.39	0.00	-15.88	0.00	15.88	1,541.69	770.85	1,693.35	847.93	6.50	-0.50	0.024
135.00	-8.56	-1.36	0.00	-8.94	0.00	8.94	1,495.06	747.53	1,574.02	788.18	7.03	-0.51	0.017
137.00	-4.11	-0.78	0.00	-6.21	0.00	6.21	1,476.01	738.00	1,527.06	764.66	7.24	-0.51	0.011
137.50	-3.85	-0.75	0.00	-5.82	0.00	5.82	1,471.21	735.60	1,515.39	758.82	7.29	-0.51	0.010
140.00	-3.34	-0.66	0.00	-3.95	0.00	3.95	1,447.00	723.50	1,457.49	729.83	7.56	-0.52	0.008
145.00	-3.24	-0.64	0.00	-0.64	0.00	0.64	1,383.54	691.77	1,330.54	666.26	8.11	-0.52	0.003
146.00	0.00	-0.61	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	8.22	-0.52	0.000

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Load Case **(0.9 - 0.2Sds) * DL + E EMAM** **Seismic (Reduced DL) Equivalent Modal Analysis Method**

Calculated Forces

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	-33.83	-2.09	0.00	-253.26	0.00	253.26	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.062
5.00	-32.69	-2.07	0.00	-242.81	0.00	242.81	4,176.31	2,088.16	9,106.46	4,560.00	0.01	-0.01	0.061
10.00	-31.56	-2.05	0.00	-232.46	0.00	232.46	4,123.50	2,061.75	8,803.44	4,408.26	0.03	-0.03	0.060
15.00	-30.46	-2.02	0.00	-222.23	0.00	222.23	4,069.26	2,034.63	8,502.24	4,257.44	0.07	-0.05	0.060
20.00	-29.37	-1.99	0.00	-212.15	0.00	212.15	4,013.58	2,006.79	8,203.04	4,107.62	0.13	-0.06	0.059
25.00	-28.31	-1.95	0.00	-202.22	0.00	202.22	3,956.46	1,978.23	7,906.06	3,958.90	0.20	-0.08	0.058
30.00	-27.26	-1.92	0.00	-192.45	0.00	192.45	3,897.92	1,948.96	7,611.48	3,811.39	0.29	-0.09	0.057
35.00	-26.23	-1.89	0.00	-182.84	0.00	182.84	3,837.94	1,918.97	7,319.49	3,665.19	0.39	-0.11	0.057
40.00	-25.23	-1.86	0.00	-173.40	0.00	173.40	3,776.52	1,888.26	7,030.31	3,520.38	0.52	-0.13	0.056
45.00	-24.84	-1.84	0.00	-164.12	0.00	164.12	3,713.67	1,856.84	6,744.12	3,377.07	0.66	-0.14	0.055
46.91	-23.84	-1.81	0.00	-160.59	0.00	160.59	3,689.24	1,844.62	6,635.43	3,322.65	0.72	-0.15	0.055
50.00	-22.85	-1.77	0.00	-155.01	0.00	155.01	3,649.39	1,824.69	6,461.11	3,235.36	0.82	-0.16	0.054
53.08	-22.52	-1.76	0.00	-149.56	0.00	149.56	2,857.95	1,428.97	5,068.34	2,537.94	0.93	-0.17	0.067
55.00	-21.68	-1.73	0.00	-146.18	0.00	146.18	2,840.65	1,420.32	4,987.96	2,497.68	1.00	-0.18	0.066
60.00	-21.19	-1.72	0.00	-137.51	0.00	137.51	2,794.59	1,397.30	4,779.77	2,393.44	1.20	-0.20	0.065
63.00	-20.79	-1.71	0.00	-132.34	0.00	132.34	2,766.27	1,383.14	4,655.71	2,331.31	1.33	-0.21	0.064
65.00	-19.98	-1.70	0.00	-128.91	0.00	128.91	2,747.10	1,373.55	4,573.39	2,290.09	1.42	-0.22	0.064
70.00	-19.19	-1.69	0.00	-120.41	0.00	120.41	2,698.18	1,349.09	4,369.01	2,187.75	1.66	-0.24	0.062
75.00	-18.34	-1.70	0.00	-111.94	0.00	111.94	2,647.83	1,323.91	4,166.84	2,086.52	1.93	-0.26	0.061
80.00	-17.58	-1.71	0.00	-103.45	0.00	103.45	2,596.04	1,298.02	3,967.06	1,986.48	2.22	-0.29	0.059
85.00	-16.84	-1.73	0.00	-94.89	0.00	94.89	2,542.81	1,271.41	3,769.88	1,887.74	2.53	-0.31	0.057
90.00	-16.32	-1.75	0.00	-86.22	0.00	86.22	2,488.15	1,244.08	3,575.49	1,790.40	2.86	-0.33	0.055
93.54	-15.99	-1.76	0.00	-80.03	0.00	80.03	2,448.63	1,224.31	3,439.78	1,722.45	3.11	-0.35	0.053
95.00	-15.22	-1.79	0.00	-77.44	0.00	77.44	2,432.06	1,216.03	3,384.08	1,694.56	3.22	-0.35	0.052
98.45	-15.03	-1.80	0.00	-71.27	0.00	71.27	1,802.83	901.41	2,498.39	1,251.05	3.48	-0.37	0.065
100.00	-14.42	-1.81	0.00	-68.49	0.00	68.49	1,791.36	895.68	2,457.25	1,230.45	3.60	-0.37	0.064
105.00	-13.83	-1.83	0.00	-59.43	0.00	59.43	1,753.33	876.67	2,325.21	1,164.33	4.00	-0.40	0.059
110.00	-13.25	-1.83	0.00	-50.30	0.00	50.30	1,713.87	856.94	2,194.79	1,099.03	4.43	-0.42	0.054
115.00	-13.13	-1.83	0.00	-41.16	0.00	41.16	1,672.98	836.49	2,066.21	1,034.64	4.89	-0.44	0.048
116.00	-10.33	-1.76	0.00	-39.34	0.00	39.34	1,664.63	832.31	2,040.72	1,021.88	4.98	-0.45	0.045
120.00	-9.82	-1.74	0.00	-32.28	0.00	32.28	1,630.65	815.32	1,939.64	971.26	5.36	-0.46	0.039
125.00	-9.53	-1.71	0.00	-23.60	0.00	23.60	1,586.89	793.44	1,815.29	908.99	5.85	-0.48	0.032
128.00	-6.56	-1.42	0.00	-18.46	0.00	18.46	1,559.94	779.97	1,741.82	872.20	6.16	-0.49	0.025
130.00	-6.13	-1.36	0.00	-15.62	0.00	15.62	1,541.69	770.85	1,693.35	847.93	6.36	-0.49	0.022
135.00	-5.97	-1.34	0.00	-8.80	0.00	8.80	1,495.06	747.53	1,574.02	788.18	6.88	-0.50	0.015
137.00	-2.87	-0.77	0.00	-6.12	0.00	6.12	1,476.01	738.00	1,527.06	764.66	7.09	-0.50	0.010
137.50	-2.68	-0.74	0.00	-5.74	0.00	5.74	1,471.21	735.60	1,515.39	758.82	7.14	-0.50	0.009
140.00	-2.33	-0.65	0.00	-3.90	0.00	3.90	1,447.00	723.50	1,457.49	729.83	7.41	-0.51	0.007
145.00	-2.26	-0.63	0.00	-0.63	0.00	0.63	1,383.54	691.77	1,330.54	666.26	7.94	-0.51	0.003
146.00	0.00	-0.61	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	8.05	-0.51	0.000

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Analysis Summary

	Reactions						Max Usage	
Load Case	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	27.39	0.00	48.61	0.00	0.00	3067.93	53.08	0.68
0.9D + 1.6W	27.37	0.00	36.45	0.00	0.00	3028.02	53.08	0.66
1.2D + 1.0Di + 1.0Wi	7.43	0.00	89.59	0.00	0.00	832.55	53.08	0.20
(1.2 + 0.2Sds) * DL + E ELFM	1.22	0.00	48.48	0.00	0.00	151.95	53.08	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.09	0.00	48.48	0.00	0.00	257.57	53.08	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.22	0.00	33.83	0.00	0.00	149.56	53.08	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.09	0.00	33.83	0.00	0.00	253.26	53.08	0.07
1.0D + 1.0W	5.40	0.00	40.54	0.00	0.00	600.90	53.08	0.14

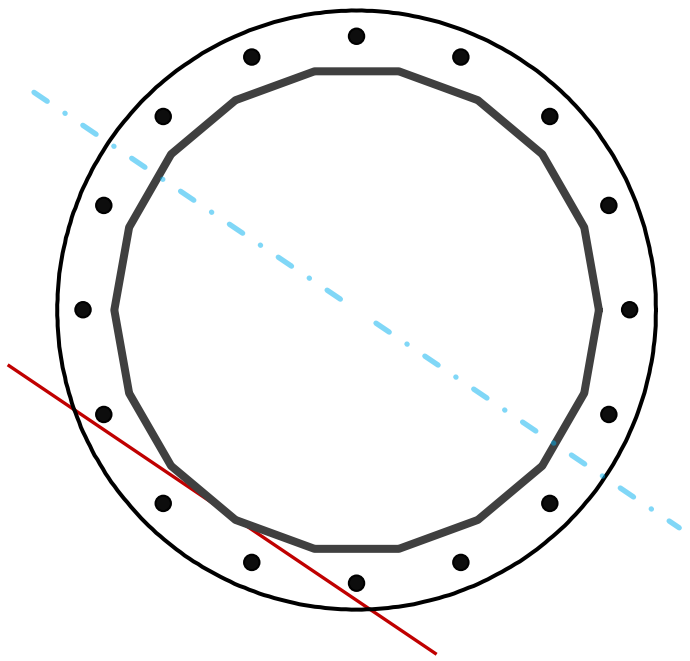
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	54.5	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	3067.9	k-ft
Axial, Pu	48.6	k
Shear, Vu	27.4	k
Neutral Axis	146	°

Report Capacities		
Component	Capacity	Result
Base Plate	80%	Pass
Anchor Rods	57%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	69	in
Thickness	1 3/4	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	992.9	k
Bending Stress, ϕMn	1240.5	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	63	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.4	in
Orientation Offset	0	°
Applied Force, Pu	146.4	k
Anchor Rods, ϕPn	259.8	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	27.4	3067.9	1.00
Anchor Rod Forces	27.4	3067.9	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	63.4413	3.5245	0.1658		23234.51
Bolt	3.9761	3.2477	0.8393	4.5	25793.59
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	69	in
Thickness, t	1.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	42.317	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	63	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	146.4	k
Applied Shear, Vu	0.5	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.563	OK
Interaction Capacity	0.567	OK

External Base Plate		
Chord Length AA	35.570	in
Additional AA	3.500	in
Section Modulus, Z	29.913	in^3
Applied Moment, Mu	992.9	k-ft
Bending Capacity, ϕMn	1615.3	k-ft
Capacity, Mu/ϕMn	0.615	OK
Chord Length AB	34.223	in
Additional AB	3.500	in
Section Modulus, Z	28.882	in^3
Applied Moment, Mu	868.8	k-ft
Bending Capacity, ϕMn	1559.6	k-ft
Capacity, Mu/ϕMn	0.557	OK
Bend Line Length	30.005	in
Additional Bend Line	0.000	in
Section Modulus, Z	22.972	in^3
Applied Moment, Mu	992.9	k-ft
Bending Capacity, ϕMn	1240.5	k-ft
Capacity, Mu/ϕMn	0.800	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		