AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**140 ft Monopole**
ATC Site Name	:	**Canton CT, CT**
ATC Site Number	:	**411256**
Engineering Number	:	**64457821**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Canton SE**
Carrier Site Number	:	**CTL01022/FA#10035260**
Site Location	:	**14 Canton Spring Road** **Canton, CT 06019-2401** **41.823611,-72.895278**
County	:	**Hartford**
Date	:	**November 11, 2015**
Max Usage	:	**96%**
Result	:	**Pass**

Reviewed by:
Scott Wirgau, PE
Structural Team Leader

STATE OF CONNECTICUT
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Prepared By:
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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 140 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	EEI Project #4960, dated May 20, 1999
Foundation Drawing	EEI Project #4960, dated May 21, 1999
Geotechnical Report	Clarence Welti Project #Banm Tower Site, dated November 23, 1998

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/EIA-222.

Basic Wind Speed:	80 mph (Fastest Mile)
Basic Wind Speed w/ Ice:	69 mph (Fastest Mile)w/ 1/2" radial ice concurrent
Code:	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (5) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

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

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
138.0	146.0	1	16' Omni	Stand-Off	-	--
130.0	130.0	1	Andrew ABT-DMDF-ADBH	Platform w/ Handrails	(12) 7/8" Coax	AT&T Mobility
		3	Kathrein Smart Bias Tee			
		3	Kathrein 782 10250			
		3	CSS DiPlexer DBC-750			
		1	Raycap DC6-48-60-0-8F			
		6	ADC CG-1900/800-DB-FB-DIN			
		6	Ericsson RRUS-11 (50 lbs.)			
		3	Kathrein 800-10121			
		1	KMW AM-X-CD-14-65-00T-RET			
		3	CSS DUO1417- 8686			
		1	Andrew SBNH-1D6565C (60.8 lbs)			
120.0	120.0	1	VZW Unused Reserve: 21,111 sq in	Flush	-	Verizon
118.0		6	Antel LPA-171063/8CF	Platform w/ Handrails	(18) 1 5/8" Coax	
		2	Antel LPA-80080/4CF ___			
		2	Antel LPA-80063/4CF ___			
		2	48" x 16" Panel			
		3	Antel BXA-70063-6CF-EDIN-2			
100.0	100.0	9	EMS RR65-18-02DP	Low Profile Platform	(6) 1 5/8" Coax	T-Mobile
90.0	90.0	1	PCTEL GPS-TMG-HR-26N	Low Profile Platform	(21) 1 5/8" Coax (3) 1 5/8" Hybriflex (1) 1/2" Coax	Sprint Nextel
		3	Alcatel-Lucent 800MHz RRH			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		6	Andrew DB980F65E-M			
		3	RFS APXVSPP18-C-A20			
83.0	83.0	3	Kathrein 742 213	Low Profile Platform	-	Metro PCS

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
130.0	130.0	3	CSS DUO1417- 8686	-	(7) 7/8" Coax	AT&T Mobility
		1	Powerwave P65-17-XLH-RR			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
130.0	130.0	1	Raycap DC6-48-60-0-8F	Platform w/ Handrails	(4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3" Conduit	AT&T Mobility
		3	Ericsson RRUS 32			
		1	Andrew SBNHH-1D65A (33.5 lbs)			
		1	KMW AM-X-CD-17-65-00T-RET			
		2	CCI HPA-65R-BUU-H8			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	66%	Pass
Shaft	77%	Pass
Base Plate	96%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,921.8	3,139.4	80%
Shear (Kips)	38.7	30.4	79%

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) (°)
130.0	Raycap DC6-48-60-0-8F	AT&T Mobility	2.292	1.940
	Ericsson RRUS 32			
	Andrew SBNHH-1D65A (33.5 lbs)			
	KMW AM-X-CD-17-65-00T-RET			
	CCI HPA-65R-BUU-H8			

***Deflection and Sway was evaluated considering a design wind speed of 50 mph (Fastest Mile) per ANSI/TIA/EIA-222-F.**

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Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

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. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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 we supply.

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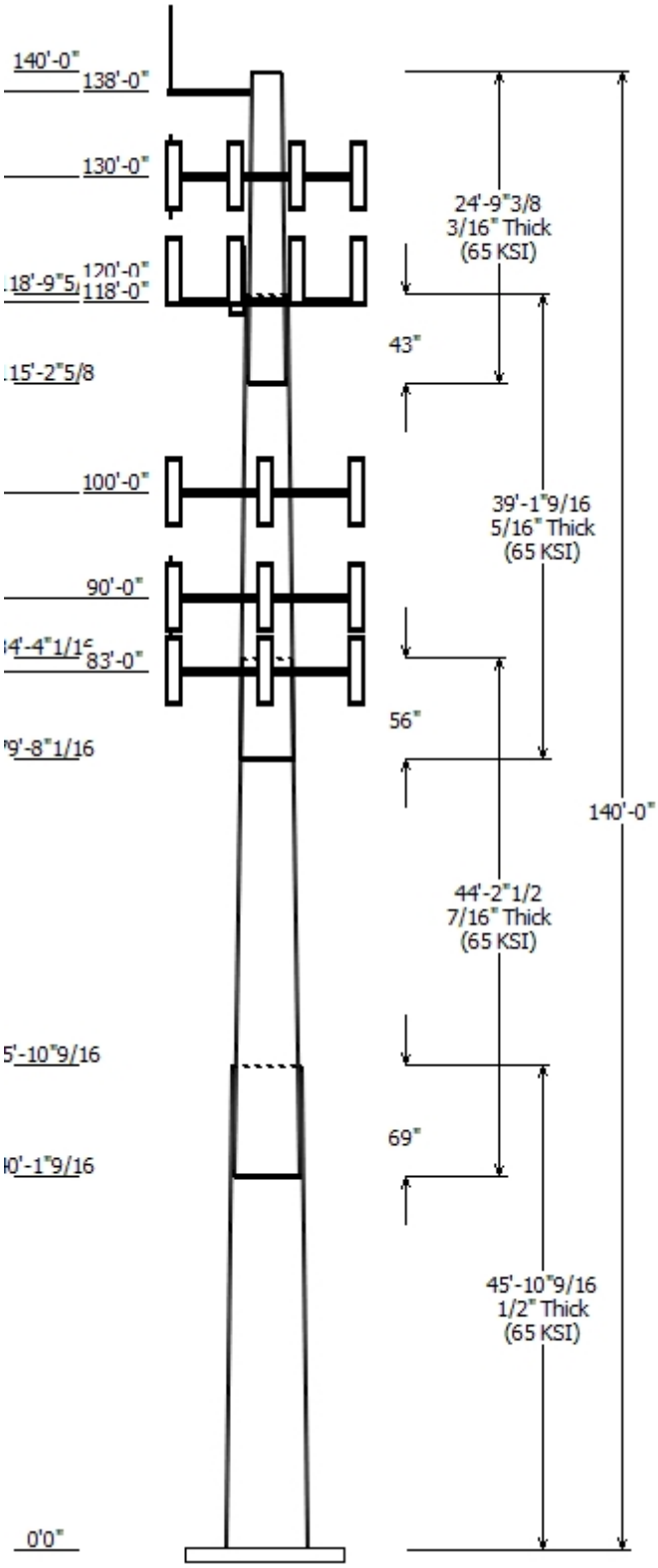


Job Information

Pole :	411256	Code:	TIA/EIA-222-F
Description :	140 ft Monopole		
Client :	AT&T Mobility		
Location :	Canton CT, CT		
Shape :	18 Sides		
Height :	140.00 (ft)		
Base Elev (ft):	0.00		
Taper:	0.249085 (in/ft)		

Sections Properties

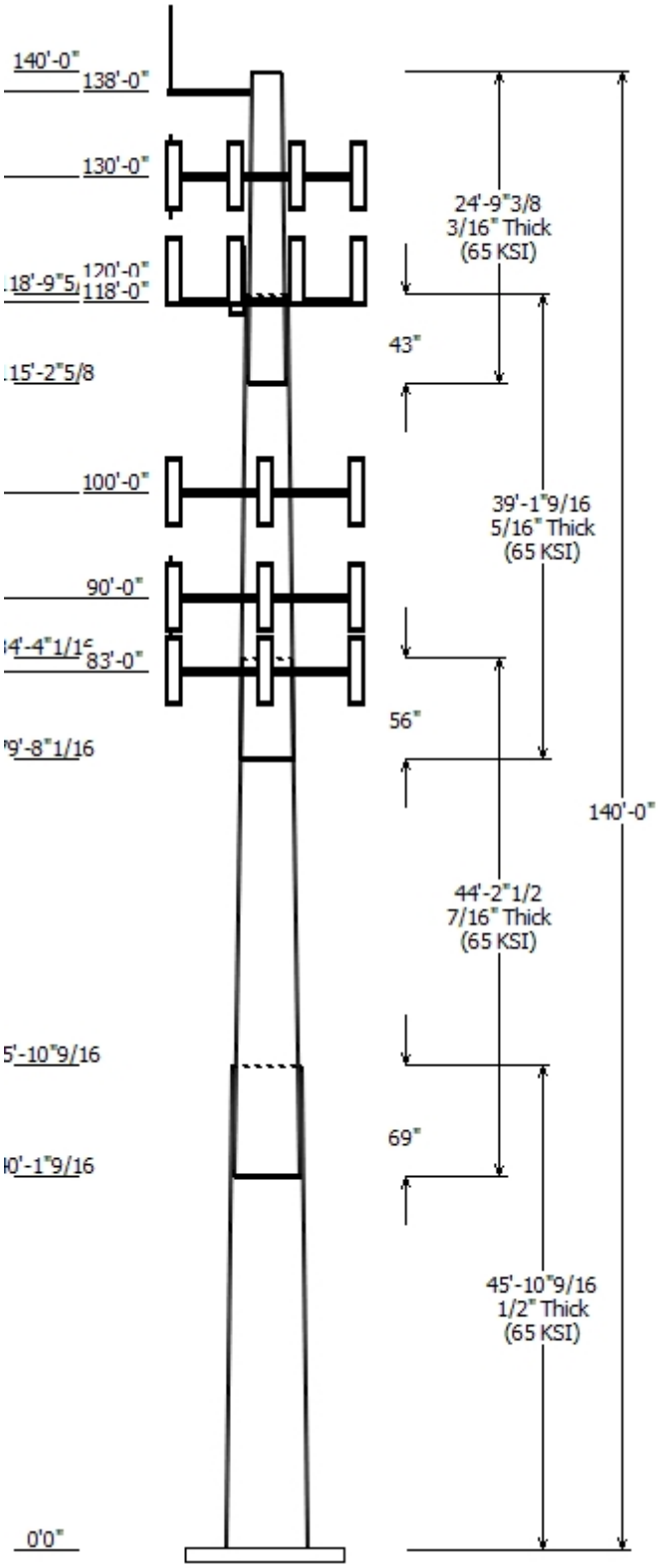
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	45.880	39.57	51.00	0.500		0.000	0.249100	65
2	44.210	30.86	41.87	0.438	Slip Joint	69.000	0.249100	65
3	39.130	22.90	32.65	0.313	Slip Joint	56.000	0.249100	65
4	24.780	18.00	24.17	0.188	Slip Joint	43.000	0.249100	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
138.000	138.000	1	Stand-Off
138.000	146.000	1	16' Omni
130.000	130.000	2	CCI HPA-65R-BUU-H8
130.000	130.000	1	KMW AM-X-CD-17-65-00T-RET
130.000	130.000	1	Andrew SBNHH-1D65A (33.5
130.000	130.000	3	Ericsson RRUS 32
130.000	130.000	1	Raycap DC6-48-60-0-8F
130.000	130.000	1	Flat Platform w/ Handrails
130.000	130.000	3	Kathrein Scala 800-10121
130.000	130.000	1	KMW AM-X-CD-14-65-00T-RET
130.000	130.000	1	Andrew SBNH-1D6565C (60.8
130.000	130.000	3	CSS DUO1417- 8686
130.000	130.000	6	ADC CG-1900/800-DB-FB-DIN
130.000	130.000	3	CSS DiPlexer DBC-750
130.000	130.000	1	Andrew ABT-DMDF-ADBH
130.000	130.000	3	Kathrein Scala 782 10250
130.000	130.000	3	Kathrein Scala Smart Bias Tee
130.000	130.000	6	Ericsson RRUS-11 (50 lbs.)
130.000	130.000	1	Raycap DC6-48-60-0-8F
120.000	120.000	1	VZW Unused Reserve: 21,111
118.000	120.000	3	Amphenol Antel BXA-70063-
118.000	120.000	2	48" x 16" Panel
118.000	120.000	2	Antel LPA-80080/4CF ___
118.000	120.000	2	Antel LPA-80063/4CF ___
118.000	118.000	1	Flat Platform w/ Handrails
118.000	120.000	6	Amphenol Antel LPA-
100.000	100.000	1	Flat Low Profile Platform
100.000	100.000	9	EMS RR65-18-02DP
90.000	90.000	1	Flat Low Profile Platform
90.000	90.000	3	RFS APXVSPP18-C-A20
90.000	90.000	6	Andrew DB980F65E-M
90.000	90.000	3	Alcatel-Lucent 800 MHz RRH
90.000	90.000	3	Alcatel-Lucent 1900 MHz 4X45
90.000	90.000	1	PCTEL GPS-TMG-HR-26N
83.000	83.000	1	Flat Low Profile Platform
83.000	83.000	3	Kathrein Scala 742 213

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	90.000	1 5/8" Coax	No
0.000	90.000	1 5/8" Hybriflex	No



0.000	90.000	1/2" Coax	No
0.000	100.0	1 5/8" Coax	Yes
0.000	118.0	1 5/8" Coax	No
0.000	130.0	0.39" Fiber Trunk	No
0.000	130.0	0.78" 8 AWG 6	No
0.000	130.0	3" Conduit	No
0.000	130.0	7/8" Coax	No

Load Cases

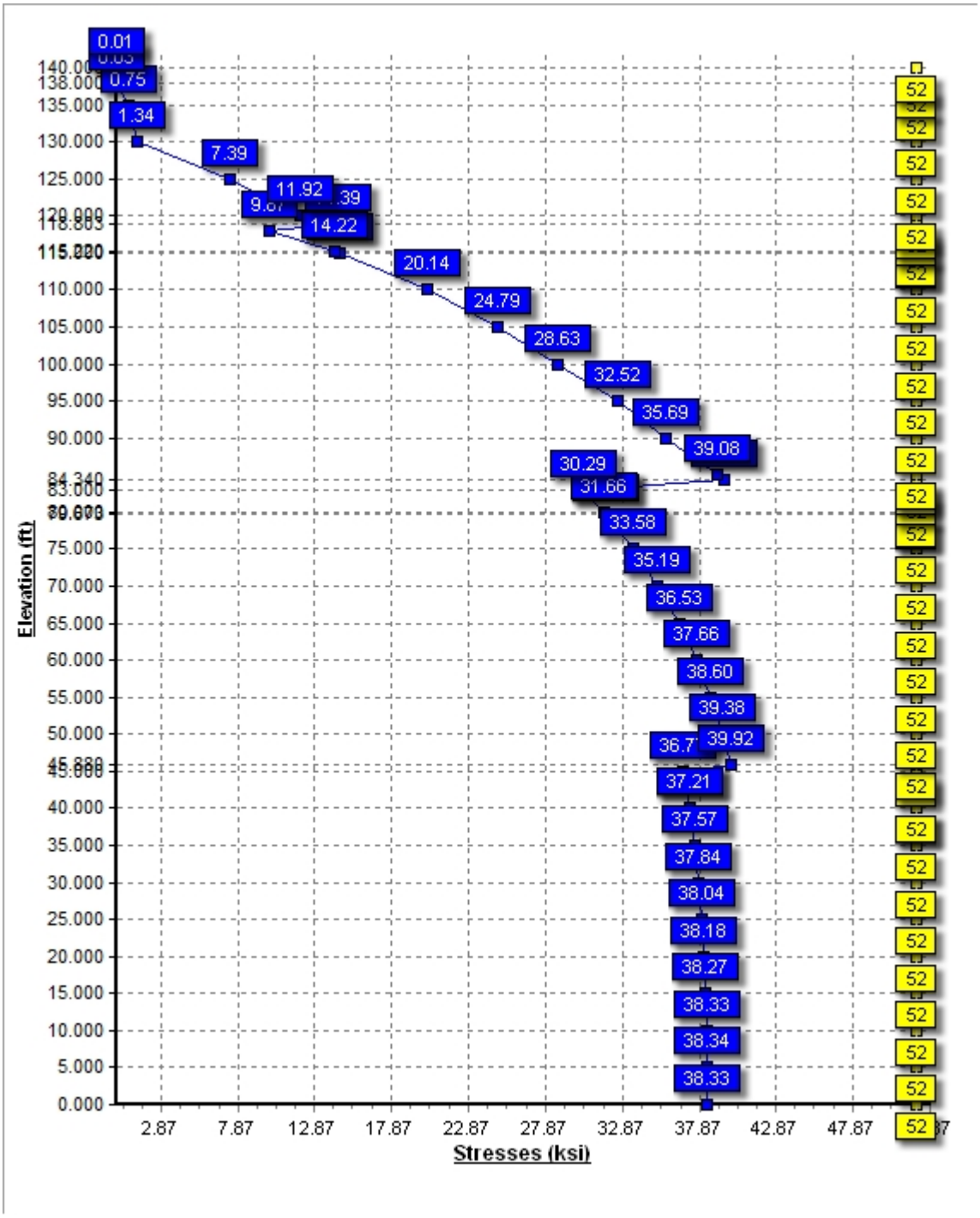
No Ice	80.00 mph Wind with No Ice
Ice	69.28 mph Wind with Ice
Twist/Sway	50.00 mph Wind with No Ice

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
No Ice	3139.39	30.40	42.47
Ice	2039.79	20.46	46.12
Twist/Sway	1227.38	11.88	42.51

Dish Deflections

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


Elevation (ft)
Stresses (ksi)
0.01
0.75
1.34
7.39
11.92
14.22
20.14
24.79
28.63
32.52
35.69
39.08
30.29
31.66
33.58
35.19
36.53
37.66
38.60
39.38
39.92
37.21
37.57
37.84
38.04
38.18
38.27
38.33
38.34
38.33
52

Site Number:	**411256**	**Code: TIA/EIA-222-F**	*© 2007 - 2015 by ATC IP LLC. All rights reserved.*
Site Name:	**Canton CT, CT**	**Engineering Number: 64457821**	**11/12/2015 4:27:19 PM**
Customer:	**AT&T Mobility**		

Analysis Parameters

Location:	**Hartford County, CT**		
Code:	**TIA/EIA-222-F**	**Height (ft):**	**140**
Shape:	**18 Sides**	**Base Diameter (in):**	**51.00**
Pole Type:	**Taper**	**Top Diameter (in):**	**18.00**
Pole Manfacturer:	**EEI**	**Taper (in/ft) :**	**0.249**

Load Cases

No Ice	**80.00 mph Wind with No Ice**
Ice	**69.28 mph Wind with Ice**
Twist/Sway	**50.00 mph Wind with No Ice**

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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 (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	45.880	0.5000	65		0.00	11,096	51.00	0.00	80.14	25821.9	16.57	102.00	39.57	45.88	62.00	11959.3	12.54	79.14	0.249089
2-18	44.210	0.4375	65	Slip	69.00	7,507	41.87	40.13	57.54	12486.2	15.47	95.72	30.86	84.34	42.25	4943.1	11.03	70.55	0.249089
3-18	39.130	0.3125	65	Slip	56.00	3,628	32.65	79.67	32.08	4239.2	17.01	104.49	22.90	118.80	22.41	1445.5	11.51	73.30	0.249089
4-18	24.780	0.1875	65	Slip	43.00	1,049	24.17	115.22	14.28	1037.8	21.32	128.93	18.00	140.00	10.60	425.1	15.52	96.01	0.249089
				Shaft Weight		23,279													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
138.00	16' Omni	1	55.00	4.800	1.00	89.60	6.430	1.00	0.000	8.000
138.00	Stand-Off	1	75.00	2.500	1.00	218.70	5.900	1.00	0.000	0.000
130.00	ADC CG-1900/800-DB-FB-DIN	6	28.70	1.540	0.50	39.60	1.800	0.50	0.000	0.000
130.00	Andrew ABT-DMDF-ADBH	1	1.10	0.050	0.50	1.80	0.110	0.50	0.000	0.000
130.00	Andrew SBNH-1D6565C (60.8	1	60.80	11.440	0.70	126.70	12.370	0.70	0.000	0.000
130.00	Andrew SBNHH-1D65A (33.5	1	33.50	6.360	0.67	86.60	7.780	0.67	0.000	0.000
130.00	CCI HPA-65R-BUU-H8	2	68.00	13.290	0.66	69.00	13.990	0.66	0.000	0.000
130.00	CSS DiPlexer DBC-750	3	7.00	0.720	0.50	11.10	0.900	0.50	0.000	0.000
130.00	CSS DUO1417- 8686	3	20.30	6.530	0.68	0.00	7.150	0.68	0.000	0.000
130.00	Ericsson RRUS 32	3	50.80	3.140	0.50	33.60	3.640	0.50	0.000	0.000
130.00	Ericsson RRUS-11 (50 lbs.)	6	50.00	2.990	0.50	69.50	3.340	0.50	0.000	0.000
130.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	2,450.00	48.400	1.00	0.000	0.000
130.00	Kathrein Scala 782 10250	3	6.40	0.520	0.50	10.00	0.690	0.50	0.000	0.000
130.00	Kathrein Scala 800-10121	3	44.10	5.450	0.67	77.00	6.090	0.67	0.000	0.000
130.00	Kathrein Scala Smart Bias	3	3.30	0.090	0.50	4.30	0.160	0.50	0.000	0.000
130.00	KMW AM-X-CD-14-65-00T-	1	36.40	5.500	0.65	68.30	6.100	0.65	0.000	0.000
130.00	KMW AM-X-CD-17-65-00T-	1	59.50	11.310	0.68	120.90	12.230	0.68	0.000	0.000
130.00	Raycap DC6-48-60-0-8F	1	32.80	1.360	1.00	49.50	1.550	1.00	0.000	0.000
130.00	Raycap DC6-48-60-0-8F	1	32.80	1.360	1.00	49.50	1.550	1.00	0.000	0.000
120.00	VZW Unused Reserve:	1	2256.00	146.70	1.00	0.00	0.000	1.00	0.000	0.000
118.00	48" x 16" Panel	2	30.00	7.470	0.64	73.80	8.100	0.64	0.000	2.000
118.00	Amphenol Antel BXA-70063-	3	17.00	7.730	0.66	59.50	8.540	0.66	0.000	2.000
118.00	Amphenol Antel LPA-	6	11.50	3.690	0.79	40.20	4.240	0.79	0.000	2.000
118.00	Antel LPA-80063/4CF___	2	20.00	7.000	0.75	0.00	7.620	0.75	0.000	2.000
118.00	Antel LPA-80080/4CF___	2	12.00	6.060	0.62	0.00	6.650	0.62	0.000	2.000
118.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	2,450.00	48.400	1.00	0.000	0.000
100.00	EMS RR65-18-02DP	9	18.00	4.360	0.64	0.00	4.990	0.64	0.000	0.000
100.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	1,700.00	31.600	1.00	0.000	0.000
90.00	Alcatel-Lucent 1900 MHz	3	60.00	2.710	0.50	83.10	3.070	0.50	0.000	0.000
90.00	Alcatel-Lucent 800 MHz RRH	3	53.00	2.490	0.50	74.10	2.820	0.50	0.000	0.000
90.00	Andrew DB980F65E-M	6	8.50	3.750	0.68	0.00	4.320	0.68	0.000	0.000
90.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	1,700.00	31.600	1.00	0.000	0.000
90.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	0.50	1.90	0.140	0.50	0.000	0.000
90.00	RFS APXVSPP18-C-A20	3	57.00	8.260	0.68	106.50	9.080	0.68	0.000	0.000
83.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	1,700.00	31.600	1.00	0.000	0.000
83.00	Kathrein Scala 742 213	3	22.00	5.140	0.67	0.00	5.850	0.67	0.000	0.000
	Totals	90	13180.40			13,372.50			Number of Loadings :	36

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	No Ice Weight (lb/ft)	No Ice CaAa (sf/ft)	Ice Weight (lb/ft)	Ice CaAa (sf/ft)	Exposed To Wind
0.00	130.00	2	0.39" Fiber Trunk	0.12	0.00	0.00	0.00	N
0.00	130.00	4	0.78" 8 AWG 6	2.36	0.00	0.00	0.00	N

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0.00	130.00	1	3" Conduit	7.58	0.00	0.00	0.00	N
0.00	130.00	12	7/8" Coax	4.62	0.00	0.00	0.00	N
0.00	118.00	18	1 5/8" Coax	14.76	0.00	0.00	0.00	N
0.00	100.00	6	1 5/8" Coax	4.92	0.20	9.46	0.25	Y
0.00	90.00	21	1 5/8" Coax	17.22	0.00	0.00	0.00	N
0.00	90.00	3	1 5/8" Hybriflex	3.90	0.00	0.00	0.00	N
0.00	90.00	1	1/2" Coax	0.15	0.00	0.00	0.00	N
			Total Weight	6,056.38 (lb)		946.00 (lb)		

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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	Fy (ksi)	Fb (ksi)	Fa (ksi)	Weight (lb)
0.00		0.5000	51.000	80.141	25,821.9	16.57	102.00	65	52	0	0.0
5.00		0.5000	49.755	78.164	23,958.2	16.14	99.51	65	52	0	1,346.7
10.00		0.5000	48.509	76.188	22,186.3	15.70	97.02	65	52	0	1,313.1
15.00		0.5000	47.264	74.211	20,504.1	15.26	94.53	65	52	0	1,279.4
20.00		0.5000	46.018	72.235	18,909.1	14.82	92.04	65	52	0	1,245.8
25.00		0.5000	44.773	70.258	17,399.0	14.38	89.55	65	52	0	1,212.2
30.00		0.5000	43.527	68.282	15,971.6	13.94	87.05	65	52	0	1,178.6
35.00		0.5000	42.282	66.305	14,624.4	13.50	84.56	65	52	0	1,144.9
40.00		0.5000	41.036	64.329	13,355.2	13.06	82.07	65	52	0	1,111.3
40.13	Bot - Section 2	0.5000	41.004	64.278	13,323.2	13.05	82.01	65	52	0	28.4
45.00		0.5000	39.791	62.353	12,161.7	12.62	79.58	65	52	0	1,988.9
45.88	Top - Section 1	0.4375	40.447	55.556	11,235.8	14.89	92.45	65	52	0	353.0
50.00		0.4375	39.421	54.131	10,393.2	14.48	90.10	65	52	0	768.9
55.00		0.4375	38.175	52.401	9,428.6	13.98	87.26	65	52	0	906.3
60.00		0.4375	36.930	50.672	8,525.5	13.47	84.41	65	52	0	876.8
65.00		0.4375	35.684	48.943	7,682.1	12.97	81.56	65	52	0	847.4
70.00		0.4375	34.439	47.213	6,896.2	12.47	78.72	65	52	0	818.0
75.00		0.4375	33.193	45.484	6,165.8	11.97	75.87	65	52	0	788.6
79.67	Bot - Section 3	0.4375	32.029	43.867	5,531.5	11.50	73.21	65	52	0	710.4
80.00		0.4375	31.948	43.754	5,488.9	11.47	73.02	65	52	0	84.3
83.00		0.4375	31.201	42.717	5,107.5	11.16	71.32	65	52	0	764.2
84.34	Top - Section 2	0.3125	31.492	30.925	3,798.3	16.36	100.77	65	52	0	335.5
85.00		0.3125	31.327	30.762	3,738.6	16.27	100.25	65	52	0	69.3
90.00		0.3125	30.082	29.527	3,306.0	15.56	96.26	65	52	0	512.9
95.00		0.3125	28.837	28.291	2,908.2	14.86	92.28	65	52	0	491.9
100.0		0.3125	27.591	27.056	2,543.7	14.16	88.29	65	52	0	470.8
105.0		0.3125	26.346	25.821	2,210.9	13.45	84.31	65	52	0	449.8
110.0		0.3125	25.100	24.585	1,908.5	12.75	80.32	65	52	0	428.8
115.0		0.3125	23.855	23.350	1,635.1	12.05	76.34	65	52	0	407.8
115.2	Bot - Section 4	0.3125	23.800	23.296	1,623.7	12.02	76.16	65	52	0	17.5
118.0		0.3125	23.107	22.609	1,484.3	11.63	73.94	65	52	0	350.2
118.8	Top - Section 3	0.1875	23.282	13.744	926.2	20.48	124.17	65	52	0	99.3
120.0		0.1875	22.984	13.566	890.8	20.20	122.58	65	52	0	55.6
125.0		0.1875	21.739	12.825	752.6	19.03	115.94	65	52	0	224.5
130.0		0.1875	20.493	12.084	629.5	17.86	109.30	65	52	0	211.9
135.0		0.1875	19.248	11.343	520.6	16.69	102.66	65	52	0	199.3
138.0		0.1875	18.501	10.898	461.8	15.99	98.67	65	52	0	113.5
140.0		0.1875	18.003	10.602	425.1	15.52	96.01	65	52	0	73.2
											23,278.9

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
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		188.9	0.0					0.0	0.0	188.9	0.0	0.0	0.0
5.00		373.1	1,346.7					27.7	278.2	400.8	1,624.8	0.0	0.0
10.00		363.8	1,313.1					27.7	278.2	391.5	1,591.2	0.0	0.0
15.00		354.4	1,279.4					27.7	278.2	382.1	1,557.6	0.0	0.0
20.00		345.1	1,245.8					27.7	278.2	372.8	1,524.0	0.0	0.0
25.00		335.8	1,212.2					27.7	278.2	363.4	1,490.3	0.0	0.0
30.00		326.4	1,178.6					27.7	278.2	354.1	1,456.7	0.0	0.0
35.00		322.9	1,144.9					27.7	278.2	350.6	1,423.1	0.0	0.0
40.00		166.2	1,111.3					28.7	278.2	195.0	1,389.4	0.0	0.0
40.13	Bot - Section 2	166.3	28.4					0.8	7.2	167.1	35.7	0.0	0.0
45.00		191.4	1,988.9					29.0	270.9	220.4	2,259.8	0.0	0.0
45.88	Top - Section 1	166.6	353.0					5.3	49.0	171.9	402.0	0.0	0.0
50.00		303.4	768.9					25.4	229.2	328.8	998.1	0.0	0.0
55.00		331.1	906.3					31.6	278.2	362.7	1,184.4	0.0	0.0
60.00		328.4	876.8					32.4	278.2	360.8	1,155.0	0.0	0.0
65.00		324.7	847.4					33.2	278.2	357.9	1,125.6	0.0	0.0
70.00		320.1	818.0					34.0	278.2	354.0	1,096.1	0.0	0.0
75.00		304.5	788.6					34.7	278.2	339.2	1,066.7	0.0	0.0
79.67	Bot - Section 3	156.1	710.4					33.0	260.0	189.1	970.4	0.0	0.0
80.00		104.1	84.3					2.3	18.2	106.4	102.5	0.0	0.0
83.00	Appertunance(s)	135.3	764.2	1,312.9	0.0	0.0	1,566.0	21.5	166.9	1,469.7	2,497.1	0.0	0.0
84.34	Top - Section 2	61.8	335.5					9.7	74.5	71.5	410.0	0.0	0.0
85.00		172.5	69.3					4.8	36.7	177.3	106.0	0.0	0.0
90.00	Appertunance(s)	300.4	512.9	2,437.7	0.0	0.0	2,061.6	36.6	278.2	2,774.6	2,852.6	0.0	0.0
95.00		292.5	491.9					37.2	171.8	329.6	663.7	0.0	0.0
100.00	Appertunance(s)	284.0	470.8	1,946.5	0.0	0.0	1,662.0	37.7	171.8	2,268.2	2,304.6	0.0	0.0
105.00		274.9	449.8					0.0	147.2	274.9	597.0	0.0	0.0
110.00		265.5	428.8					0.0	147.2	265.5	576.0	0.0	0.0
115.00		135.9	407.8					0.0	147.2	135.9	555.0	0.0	0.0
115.22	Bot - Section 4	76.9	17.5					0.0	6.5	76.9	23.9	0.0	0.0
118.00	Appertunance(s)	91.5	350.2	4,106.9	0.0	4,834.6	2,244.0	0.0	81.8	4,198.4	2,676.1	0.0	0.0
118.80	Top - Section 3	50.3	99.3					0.0	11.8	50.3	111.1	0.0	0.0
120.00	Appertunance(s)	151.9	55.6	5,873.9	0.0	0.0	2,256.0	0.0	17.6	6,025.9	2,329.2	0.0	0.0
125.00		238.5	224.5					0.0	73.4	238.5	297.9	0.0	0.0
130.00	Appertunance(s)	227.3	211.9	5,358.1	0.0	0.0	3,260.8	0.0	73.4	5,585.5	3,546.1	0.0	0.0
135.00		174.5	199.3					0.0	0.0	174.5	199.3	0.0	0.0
138.00	Appertunance(s)	105.0	113.5	307.4	0.0	1,626.2	130.0	0.0	0.0	412.4	243.5	0.0	0.0
140.00		41.3	73.2					0.0	0.0	41.3	73.2	0.0	0.0
								Totals:		30,528.4	42,515.6	0.00	0.00

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-30.403	-42.470	0.000	0.000	0.000	-3,139.385	0.000	0.000	0.000	0.000
5.00	-30.122	-40.756	0.000	0.000	0.000	-2,987.372	-0.091	0.000	0.091	-0.169
10.00	-29.843	-39.075	0.000	0.000	0.000	-2,836.767	-0.360	0.000	0.360	-0.342
15.00	-29.566	-37.428	0.000	0.000	0.000	-2,687.557	-0.813	0.000	0.813	-0.519
20.00	-29.292	-35.815	0.000	0.000	0.000	-2,539.729	-1.454	0.000	1.454	-0.700
25.00	-29.020	-34.235	0.000	0.000	0.000	-2,393.273	-2.287	0.000	2.287	-0.886
30.00	-28.751	-32.688	0.000	0.000	0.000	-2,248.175	-3.316	0.000	3.316	-1.075
35.00	-28.478	-31.176	0.000	0.000	0.000	-2,104.424	-4.547	0.000	4.547	-1.269
40.00	-28.302	-29.742	0.000	0.000	0.000	-1,962.038	-5.982	0.000	5.982	-1.467
40.13	-28.187	-29.660	0.000	0.000	0.000	-1,958.359	-6.022	0.000	6.022	-1.472
45.00	-27.960	-27.351	0.000	0.000	0.000	-1,821.091	-7.627	0.000	7.627	-1.669
45.88	-27.825	-26.903	0.000	0.000	0.000	-1,796.487	-7.938	0.000	7.938	-1.706
50.00	-27.554	-25.821	0.000	0.000	0.000	-1,681.849	-9.486	0.000	9.486	-1.877
55.00	-27.246	-24.545	0.000	0.000	0.000	-1,544.081	-11.570	0.000	11.570	-2.097
60.00	-26.932	-23.300	0.000	0.000	0.000	-1,407.855	-13.887	0.000	13.887	-2.320
65.00	-26.613	-22.087	0.000	0.000	0.000	-1,273.199	-16.437	0.000	16.437	-2.544
70.00	-26.290	-20.906	0.000	0.000	0.000	-1,140.138	-19.221	0.000	19.221	-2.767
75.00	-25.971	-19.762	0.000	0.000	0.000	-1,008.692	-22.238	0.000	22.238	-2.989
79.67	-25.765	-18.755	0.000	0.000	0.000	-887.323	-25.266	0.000	25.266	-3.193
80.00	-25.677	-18.625	0.000	0.000	0.000	-878.907	-25.485	0.000	25.485	-3.208
83.00	-24.093	-16.177	0.000	0.000	0.000	-801.877	-27.543	0.000	27.543	-3.339
84.34	-24.010	-15.753	0.000	0.000	0.000	-769.592	-28.488	0.000	28.488	-3.397
85.00	-23.868	-15.595	0.000	0.000	0.000	-753.746	-28.960	0.000	28.960	-3.426
90.00	-20.979	-12.827	0.000	0.000	0.000	-634.409	-32.691	0.000	32.691	-3.690
95.00	-20.657	-12.099	0.000	0.000	0.000	-529.515	-36.691	0.000	36.691	-3.941
100.0	-18.270	-9.890	0.000	0.000	0.000	-426.230	-40.944	0.000	40.944	-4.175
105.0	-17.984	-9.252	0.000	0.000	0.000	-334.880	-45.430	0.000	45.430	-4.387
110.0	-17.700	-8.647	0.000	0.000	0.000	-244.963	-50.125	0.000	50.125	-4.574
115.0	-17.529	-8.082	0.000	0.000	0.000	-156.465	-54.997	0.000	54.997	-4.724
115.2	-17.456	-8.054	0.000	0.000	0.000	-152.609	-55.214	0.000	55.214	-4.729
118.0	-13.053	-5.728	0.000	0.000	0.000	-99.247	-57.986	0.000	57.986	-4.792
118.8	-12.996	-5.617	0.000	0.000	0.000	-88.761	-58.793	0.000	58.793	-4.806
120.0	-6.799	-3.796	0.000	0.000	0.000	-73.210	-59.999	0.000	59.999	-4.826
125.0	-6.541	-3.511	0.000	0.000	0.000	-39.214	-65.100	0.000	65.100	-4.915
130.0	-0.670	-0.460	0.000	0.000	0.000	-6.511	-70.271	0.000	70.271	-4.959
135.0	-0.479	-0.276	0.000	0.000	0.000	-3.159	-75.463	0.000	75.463	-4.969
138.0	-0.047	-0.069	0.000	0.000	0.000	-0.095	-78.583	0.000	78.583	-4.973
140.0	-0.041	0.000	0.000	0.000	0.000	0.000	-80.664	0.000	80.664	-4.974

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Load Case: No Ice 80.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)	Allowable Stress (Fa) (ksi)	Stress Ratio
0.00	0.53	0.76	0.00	0.00	0.00	37.78	38.33	52.0	0.0	0.737
5.00	0.52	0.78	0.00	0.00	0.00	37.80	38.34	52.0	0.0	0.738
10.00	0.51	0.79	0.00	0.00	0.00	37.79	38.33	52.0	0.0	0.737
15.00	0.50	0.80	0.00	0.00	0.00	37.74	38.27	52.0	0.0	0.736
20.00	0.50	0.82	0.00	0.00	0.00	37.66	38.18	52.0	0.0	0.734
25.00	0.49	0.83	0.00	0.00	0.00	37.52	38.04	52.0	0.0	0.732
30.00	0.48	0.85	0.00	0.00	0.00	37.33	37.84	52.0	0.0	0.728
35.00	0.47	0.87	0.00	0.00	0.00	37.07	37.57	52.0	0.0	0.723
40.00	0.46	0.89	0.00	0.00	0.00	36.73	37.22	52.0	0.0	0.716
40.13	0.46	0.88	0.00	0.00	0.00	36.72	37.21	52.0	0.0	0.716
45.00	0.44	0.90	0.00	0.00	0.00	36.30	36.77	52.0	0.0	0.707
45.88	0.48	1.01	0.00	0.00	0.00	39.40	39.92	52.0	0.0	0.768
50.00	0.48	1.03	0.00	0.00	0.00	38.87	39.38	52.0	0.0	0.758
55.00	0.47	1.05	0.00	0.00	0.00	38.09	38.60	52.0	0.0	0.743
60.00	0.46	1.07	0.00	0.00	0.00	37.15	37.66	52.0	0.0	0.725
65.00	0.45	1.10	0.00	0.00	0.00	36.03	36.53	52.0	0.0	0.703
70.00	0.44	1.12	0.00	0.00	0.00	34.69	35.19	52.0	0.0	0.677
75.00	0.43	1.15	0.00	0.00	0.00	33.08	33.58	52.0	0.0	0.646
79.67	0.43	1.18	0.00	0.00	0.00	31.30	31.80	52.0	0.0	0.612
80.00	0.43	1.18	0.00	0.00	0.00	31.17	31.66	52.0	0.0	0.609
83.00	0.38	1.14	0.00	0.00	0.00	29.84	30.29	52.0	0.0	0.583
84.34	0.51	1.56	0.00	0.00	0.00	38.87	39.48	52.0	0.0	0.759
85.00	0.51	1.56	0.00	0.00	0.00	38.48	39.08	52.0	0.0	0.752
90.00	0.43	1.43	0.00	0.00	0.00	35.17	35.69	52.0	0.0	0.687
95.00	0.43	1.47	0.00	0.00	0.00	31.99	32.52	52.0	0.0	0.626
100.00	0.37	1.36	0.00	0.00	0.00	28.17	28.63	52.0	0.0	0.551
105.00	0.36	1.40	0.00	0.00	0.00	24.31	24.79	52.0	0.0	0.477
110.00	0.35	1.45	0.00	0.00	0.00	19.63	20.14	52.0	0.0	0.387
115.00	0.35	1.51	0.00	0.00	0.00	13.91	14.49	52.0	0.0	0.279
115.22	0.35	1.51	0.00	0.00	0.00	13.63	14.22	52.0	0.0	0.274
118.00	0.25	1.16	0.00	0.00	0.00	9.41	9.87	52.0	0.0	0.190
118.80	0.41	1.91	0.00	0.00	0.00	13.59	14.39	52.0	0.0	0.277
120.00	0.28	1.01	0.00	0.00	0.00	11.51	11.92	52.0	0.0	0.229
125.00	0.27	1.03	0.00	0.00	0.00	6.90	7.39	52.0	0.0	0.142
130.00	0.04	0.11	0.00	0.00	0.00	1.29	1.34	52.0	0.0	0.026
135.00	0.02	0.09	0.00	0.00	0.00	0.71	0.75	52.0	0.0	0.014
138.00	0.01	0.01	0.00	0.00	0.00	0.02	0.03	52.0	0.0	0.001
140.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	52.0	0.0	0.000

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Load Case: Ice 69.28 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

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		144.5	0.0					0.0	0.0	144.5	0.0	0.0	0.0
5.00		285.4	1,501.8					26.0	300.8	311.4	1,802.6	0.0	0.0
10.00		278.4	1,464.3					26.0	300.8	304.4	1,765.1	0.0	0.0
15.00		271.4	1,426.8					26.0	300.8	297.4	1,727.7	0.0	0.0
20.00		264.4	1,389.4					26.0	300.8	290.4	1,690.2	0.0	0.0
25.00		257.4	1,351.9					26.0	300.8	283.4	1,652.7	0.0	0.0
30.00		250.4	1,314.4					26.0	300.8	276.4	1,615.3	0.0	0.0
35.00		247.9	1,276.9					26.0	300.8	273.8	1,577.8	0.0	0.0
40.00		127.7	1,239.5					26.9	300.8	154.6	1,540.3	0.0	0.0
40.13	Bot - Section 2	127.8	31.8					0.7	7.8	128.5	39.6	0.0	0.0
45.00		147.0	2,112.6					27.2	293.0	174.2	2,405.6	0.0	0.0
45.88	Top - Section 1	128.1	375.2					5.0	52.9	133.1	428.2	0.0	0.0
50.00		233.3	870.4					23.8	247.9	257.1	1,118.3	0.0	0.0
55.00		254.8	1,025.6					29.6	300.8	284.5	1,326.5	0.0	0.0
60.00		253.0	992.3					30.4	300.8	283.4	1,293.2	0.0	0.0
65.00		250.3	959.1					31.2	300.8	281.5	1,259.9	0.0	0.0
70.00		247.0	925.8					31.8	300.8	278.8	1,226.7	0.0	0.0
75.00		235.3	892.5					32.5	300.8	267.8	1,193.4	0.0	0.0
79.67	Bot - Section 3	120.6	804.3					30.9	281.2	151.6	1,085.5	0.0	0.0
80.00		80.5	91.0					2.2	19.7	82.7	110.6	0.0	0.0
83.00	Appertunance(s)	104.6	824.1	1,171.8	0.0	0.0	1,700.0	20.2	180.5	1,296.6	2,704.6	0.0	0.0
84.34	Top - Section 2	47.9	361.9					9.1	80.6	56.9	442.6	0.0	0.0
85.00		133.5	82.2					4.5	39.7	138.0	121.9	0.0	0.0
90.00	Appertunance(s)	232.8	607.2	2,120.2	0.0	0.0	2,493.0	34.3	300.8	2,387.2	3,401.1	0.0	0.0
95.00		226.9	582.4					34.8	194.5	261.8	776.9	0.0	0.0
100.00	Appertunance(s)	220.7	557.5	1,720.0	0.0	0.0	1,700.0	35.4	194.5	1,976.1	2,452.0	0.0	0.0
105.00		214.0	532.7					0.0	147.2	214.0	679.9	0.0	0.0
110.00		207.0	507.8					0.0	147.2	207.0	655.0	0.0	0.0
115.00		106.1	482.9					0.0	147.2	106.1	630.1	0.0	0.0
115.22	Bot - Section 4	60.1	20.8					0.0	6.5	60.1	27.2	0.0	0.0
118.00	Appertunance(s)	71.5	391.4	3,459.8	0.0	4,026.9	3,017.3	0.0	81.8	3,531.4	3,490.5	0.0	0.0
118.80	Top - Section 3	39.3	111.1					0.0	11.8	39.3	122.8	0.0	0.0
120.00	Appertunance(s)	119.0	72.9					0.0	17.6	119.0	90.5	0.0	0.0
125.00		187.1	293.1					0.0	73.4	187.1	366.5	0.0	0.0
130.00	Appertunance(s)	178.8	276.7	4,501.1	0.0	0.0	4,153.9	0.0	73.4	4,679.9	4,504.0	0.0	0.0
135.00		137.6	260.2					0.0	0.0	137.6	260.2	0.0	0.0
138.00	Appertunance(s)	83.0	148.7	388.6	0.0	1,633.7	308.3	0.0	0.0	471.6	457.0	0.0	0.0
140.00		32.7	96.0					0.0	0.0	32.7	96.0	0.0	0.0
									Totals:	20,561.7	46,138.0	0.00	0.00

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Load Case: Ice 69.28 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-20.462	-46.118	0.000	0.000	0.000	-2,039.793	0.000	0.000	0.000	0.000
5.00	-20.235	-44.277	0.000	0.000	0.000	-1,937.485	-0.059	0.000	0.059	-0.110
10.00	-20.009	-42.473	0.000	0.000	0.000	-1,836.313	-0.234	0.000	0.234	-0.222
15.00	-19.786	-40.707	0.000	0.000	0.000	-1,736.269	-0.528	0.000	0.528	-0.336
20.00	-19.564	-38.978	0.000	0.000	0.000	-1,637.343	-0.942	0.000	0.942	-0.453
25.00	-19.345	-37.287	0.000	0.000	0.000	-1,539.524	-1.481	0.000	1.481	-0.573
30.00	-19.127	-35.634	0.000	0.000	0.000	-1,442.803	-2.147	0.000	2.147	-0.695
35.00	-18.907	-34.019	0.000	0.000	0.000	-1,347.170	-2.941	0.000	2.941	-0.819
40.00	-18.765	-32.460	0.000	0.000	0.000	-1,252.638	-3.866	0.000	3.866	-0.945
40.13	-18.673	-32.402	0.000	0.000	0.000	-1,250.198	-3.892	0.000	3.892	-0.949
45.00	-18.494	-29.976	0.000	0.000	0.000	-1,159.265	-4.926	0.000	4.926	-1.074
45.88	-18.388	-29.529	0.000	0.000	0.000	-1,142.990	-5.126	0.000	5.126	-1.098
50.00	-18.170	-28.376	0.000	0.000	0.000	-1,067.234	-6.121	0.000	6.121	-1.206
55.00	-17.922	-27.013	0.000	0.000	0.000	-976.387	-7.460	0.000	7.460	-1.346
60.00	-17.670	-25.684	0.000	0.000	0.000	-886.779	-8.945	0.000	8.945	-1.486
65.00	-17.414	-24.389	0.000	0.000	0.000	-798.431	-10.578	0.000	10.578	-1.627
70.00	-17.155	-23.130	0.000	0.000	0.000	-711.362	-12.358	0.000	12.358	-1.767
75.00	-16.900	-21.907	0.000	0.000	0.000	-625.589	-14.283	0.000	14.283	-1.905
79.67	-16.735	-20.808	0.000	0.000	0.000	-546.612	-16.211	0.000	16.211	-2.031
80.00	-16.665	-20.687	0.000	0.000	0.000	-541.145	-16.351	0.000	16.351	-2.040
83.00	-15.289	-18.016	0.000	0.000	0.000	-491.152	-17.659	0.000	17.659	-2.120
84.34	-15.224	-17.569	0.000	0.000	0.000	-470.665	-18.259	0.000	18.259	-2.156
85.00	-15.109	-17.428	0.000	0.000	0.000	-460.617	-18.559	0.000	18.559	-2.174
90.00	-12.628	-14.089	0.000	0.000	0.000	-385.073	-20.923	0.000	20.923	-2.335
95.00	-12.368	-13.292	0.000	0.000	0.000	-321.933	-23.451	0.000	23.451	-2.487
100.0	-10.311	-10.906	0.000	0.000	0.000	-260.093	-26.134	0.000	26.134	-2.629
105.0	-10.087	-10.216	0.000	0.000	0.000	-208.541	-28.959	0.000	28.959	-2.760
110.0	-9.866	-9.553	0.000	0.000	0.000	-158.107	-31.915	0.000	31.915	-2.878
115.0	-9.736	-8.921	0.000	0.000	0.000	-108.776	-34.985	0.000	34.985	-2.978
115.2	-9.678	-8.892	0.000	0.000	0.000	-106.635	-35.122	0.000	35.122	-2.982
118.0	-5.971	-5.589	0.000	0.000	0.000	-75.703	-36.872	0.000	36.872	-3.027
118.8	-5.927	-5.467	0.000	0.000	0.000	-70.906	-37.382	0.000	37.382	-3.039
120.0	-5.808	-5.378	0.000	0.000	0.000	-63.813	-38.146	0.000	38.146	-3.055
125.0	-5.607	-5.016	0.000	0.000	0.000	-34.774	-41.390	0.000	41.390	-3.133
130.0	-0.686	-0.776	0.000	0.000	0.000	-6.741	-44.696	0.000	44.696	-3.172
135.0	-0.534	-0.524	0.000	0.000	0.000	-3.312	-48.024	0.000	48.024	-3.184
138.0	-0.038	-0.094	0.000	0.000	0.000	-0.076	-50.025	0.000	50.025	-3.188
140.0	-0.033	0.000	0.000	0.000	0.000	0.000	-51.359	0.000	51.359	-3.188

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Load Case: Ice 69.28 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)	Allowable Stress (Fa) (ksi)	Stress Ratio
0.00	0.58	0.51	0.00	0.00	0.00	24.55	25.14	52.0	0.0	0.484
5.00	0.57	0.52	0.00	0.00	0.00	24.51	25.10	52.0	0.0	0.483
10.00	0.56	0.53	0.00	0.00	0.00	24.46	25.04	52.0	0.0	0.482
15.00	0.55	0.54	0.00	0.00	0.00	24.38	24.95	52.0	0.0	0.480
20.00	0.54	0.55	0.00	0.00	0.00	24.28	24.83	52.0	0.0	0.478
25.00	0.53	0.55	0.00	0.00	0.00	24.14	24.69	52.0	0.0	0.475
30.00	0.52	0.56	0.00	0.00	0.00	23.96	24.50	52.0	0.0	0.471
35.00	0.51	0.57	0.00	0.00	0.00	23.73	24.26	52.0	0.0	0.467
40.00	0.50	0.59	0.00	0.00	0.00	23.45	23.98	52.0	0.0	0.461
40.13	0.50	0.59	0.00	0.00	0.00	23.44	23.97	52.0	0.0	0.461
45.00	0.48	0.60	0.00	0.00	0.00	23.11	23.61	52.0	0.0	0.454
45.88	0.53	0.67	0.00	0.00	0.00	25.07	25.63	52.0	0.0	0.493
50.00	0.52	0.68	0.00	0.00	0.00	24.66	25.21	52.0	0.0	0.485
55.00	0.52	0.69	0.00	0.00	0.00	24.09	24.63	52.0	0.0	0.474
60.00	0.51	0.70	0.00	0.00	0.00	23.40	23.94	52.0	0.0	0.461
65.00	0.50	0.72	0.00	0.00	0.00	22.60	23.13	52.0	0.0	0.445
70.00	0.49	0.73	0.00	0.00	0.00	21.64	22.17	52.0	0.0	0.427
75.00	0.48	0.75	0.00	0.00	0.00	20.52	21.04	52.0	0.0	0.405
79.67	0.47	0.77	0.00	0.00	0.00	19.28	19.80	52.0	0.0	0.381
80.00	0.47	0.77	0.00	0.00	0.00	19.19	19.71	52.0	0.0	0.379
83.00	0.42	0.72	0.00	0.00	0.00	18.28	18.74	52.0	0.0	0.361
84.34	0.57	0.99	0.00	0.00	0.00	23.77	24.40	52.0	0.0	0.469
85.00	0.57	0.99	0.00	0.00	0.00	23.52	24.14	52.0	0.0	0.464
90.00	0.48	0.86	0.00	0.00	0.00	21.35	21.88	52.0	0.0	0.421
95.00	0.47	0.88	0.00	0.00	0.00	19.45	19.98	52.0	0.0	0.384
100.00	0.40	0.77	0.00	0.00	0.00	17.19	17.64	52.0	0.0	0.339
105.00	0.40	0.79	0.00	0.00	0.00	15.14	15.60	52.0	0.0	0.300
110.00	0.39	0.81	0.00	0.00	0.00	12.67	13.13	52.0	0.0	0.253
115.00	0.38	0.84	0.00	0.00	0.00	9.67	10.16	52.0	0.0	0.195
115.22	0.38	0.84	0.00	0.00	0.00	9.52	10.01	52.0	0.0	0.193
118.00	0.25	0.53	0.00	0.00	0.00	7.18	7.48	52.0	0.0	0.144
118.80	0.40	0.87	0.00	0.00	0.00	10.86	11.36	52.0	0.0	0.218
120.00	0.40	0.86	0.00	0.00	0.00	10.03	10.53	52.0	0.0	0.203
125.00	0.39	0.88	0.00	0.00	0.00	6.12	6.69	52.0	0.0	0.129
130.00	0.06	0.11	0.00	0.00	0.00	1.34	1.42	52.0	0.0	0.027
135.00	0.05	0.09	0.00	0.00	0.00	0.75	0.81	52.0	0.0	0.016
138.00	0.01	0.01	0.00	0.00	0.00	0.02	0.03	52.0	0.0	0.001
140.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	52.0	0.0	0.000

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
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		73.8	0.0					0.0	0.0	73.8	0.0	0.0	0.0
5.00		145.7	1,346.7					10.8	278.2	156.6	1,624.8	0.0	0.0
10.00		142.1	1,313.1					10.8	278.2	152.9	1,591.2	0.0	0.0
15.00		138.5	1,279.4					10.8	278.2	149.3	1,557.6	0.0	0.0
20.00		134.8	1,245.8					10.8	278.2	145.6	1,524.0	0.0	0.0
25.00		131.2	1,212.2					10.8	278.2	142.0	1,490.3	0.0	0.0
30.00		127.5	1,178.6					10.8	278.2	138.3	1,456.7	0.0	0.0
35.00		126.1	1,144.9					10.8	278.2	136.9	1,423.1	0.0	0.0
40.00		64.9	1,111.3					11.2	278.2	76.2	1,389.4	0.0	0.0
40.13	Bot - Section 2	65.0	28.4					0.3	7.2	65.3	35.7	0.0	0.0
45.00		74.8	1,988.9					11.3	270.9	86.1	2,259.8	0.0	0.0
45.88	Top - Section 1	65.1	353.0					2.1	49.0	67.2	402.0	0.0	0.0
50.00		118.5	768.9					9.9	229.2	128.4	998.1	0.0	0.0
55.00		129.3	906.3					12.4	278.2	141.7	1,184.4	0.0	0.0
60.00		128.3	876.8					12.7	278.2	141.0	1,155.0	0.0	0.0
65.00		126.8	847.4					13.0	278.2	139.8	1,125.6	0.0	0.0
70.00		125.0	818.0					13.3	278.2	138.3	1,096.1	0.0	0.0
75.00		119.0	788.6					13.5	278.2	132.5	1,066.7	0.0	0.0
79.67	Bot - Section 3	61.0	710.4					12.9	260.0	73.9	970.4	0.0	0.0
80.00		40.7	84.3					0.9	18.2	41.6	102.5	0.0	0.0
83.00	Appertunance(s)	52.8	764.2	512.8	0.0	0.0	1,566.0	8.4	166.9	574.1	2,497.1	0.0	0.0
84.34	Top - Section 2	24.2	335.5					3.8	74.5	27.9	410.0	0.0	0.0
85.00		67.4	69.3					1.9	36.7	69.2	106.0	0.0	0.0
90.00	Appertunance(s)	117.3	512.9	952.2	0.0	0.0	2,061.6	14.3	278.2	1,083.8	2,852.6	0.0	0.0
95.00		114.2	491.9					14.5	171.8	128.8	663.7	0.0	0.0
100.00	Appertunance(s)	110.9	470.8	760.4	0.0	0.0	1,662.0	14.7	171.8	886.0	2,304.6	0.0	0.0
105.00		107.4	449.8					0.0	147.2	107.4	597.0	0.0	0.0
110.00		103.7	428.8					0.0	147.2	103.7	576.0	0.0	0.0
115.00		53.1	407.8					0.0	147.2	53.1	555.0	0.0	0.0
115.22	Bot - Section 4	30.0	17.5					0.0	6.5	30.0	23.9	0.0	0.0
118.00	Appertunance(s)	35.8	350.2	1,604.3	0.0	1,888.5	2,244.0	0.0	81.8	1,640.0	2,676.1	0.0	0.0
118.80	Top - Section 3	19.6	99.3					0.0	11.8	19.6	111.1	0.0	0.0
120.00	Appertunance(s)	59.4	55.6	2,294.5	0.0	0.0	2,256.0	0.0	17.6	2,353.8	2,329.2	0.0	0.0
125.00		93.1	224.5					0.0	73.4	93.1	297.9	0.0	0.0
130.00	Appertunance(s)	88.8	211.9	2,093.0	0.0	0.0	3,260.8	0.0	73.4	2,181.8	3,546.1	0.0	0.0
135.00		68.2	199.3					0.0	0.0	68.2	199.3	0.0	0.0
138.00	Appertunance(s)	41.0	113.5	120.1	0.0	635.2	130.0	0.0	0.0	161.1	243.5	0.0	0.0
140.00		16.1	73.2					0.0	0.0	16.1	73.2	0.0	0.0
									Totals:	11,925.1	42,515.6	0.00	0.00

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-11.876	-42.509	0.000	0.000	0.000	-1,227.385	0.000	0.000	0.000	0.000
5.00	-11.766	-40.870	0.000	0.000	0.000	-1,168.007	-0.035	0.000	0.035	-0.066
10.00	-11.657	-39.265	0.000	0.000	0.000	-1,109.179	-0.141	0.000	0.141	-0.134
15.00	-11.549	-37.694	0.000	0.000	0.000	-1,050.895	-0.318	0.000	0.318	-0.203
20.00	-11.443	-36.156	0.000	0.000	0.000	-993.149	-0.568	0.000	0.568	-0.274
25.00	-11.337	-34.652	0.000	0.000	0.000	-935.937	-0.894	0.000	0.894	-0.346
30.00	-11.232	-33.182	0.000	0.000	0.000	-879.253	-1.297	0.000	1.297	-0.421
35.00	-11.127	-31.745	0.000	0.000	0.000	-823.092	-1.778	0.000	1.778	-0.496
40.00	-11.058	-30.349	0.000	0.000	0.000	-767.461	-2.339	0.000	2.339	-0.574
40.13	-11.014	-30.306	0.000	0.000	0.000	-766.023	-2.355	0.000	2.355	-0.576
45.00	-10.926	-28.039	0.000	0.000	0.000	-712.388	-2.983	0.000	2.983	-0.653
45.88	-10.873	-27.630	0.000	0.000	0.000	-702.773	-3.104	0.000	3.104	-0.667
50.00	-10.769	-26.619	0.000	0.000	0.000	-657.975	-3.710	0.000	3.710	-0.734
55.00	-10.649	-25.421	0.000	0.000	0.000	-604.134	-4.525	0.000	4.525	-0.820
60.00	-10.528	-24.252	0.000	0.000	0.000	-550.888	-5.431	0.000	5.431	-0.907
65.00	-10.405	-23.113	0.000	0.000	0.000	-498.249	-6.429	0.000	6.429	-0.995
70.00	-10.280	-22.004	0.000	0.000	0.000	-446.226	-7.518	0.000	7.518	-1.082
75.00	-10.157	-20.925	0.000	0.000	0.000	-394.826	-8.699	0.000	8.699	-1.169
79.67	-10.078	-19.949	0.000	0.000	0.000	-347.359	-9.884	0.000	9.884	-1.249
80.00	-10.044	-19.843	0.000	0.000	0.000	-344.067	-9.969	0.000	9.969	-1.255
83.00	-9.425	-17.353	0.000	0.000	0.000	-313.936	-10.775	0.000	10.775	-1.306
84.34	-9.393	-16.941	0.000	0.000	0.000	-301.307	-11.145	0.000	11.145	-1.329
85.00	-9.338	-16.827	0.000	0.000	0.000	-295.108	-11.329	0.000	11.329	-1.340
90.00	-8.210	-13.987	0.000	0.000	0.000	-248.417	-12.790	0.000	12.790	-1.444
95.00	-8.086	-13.314	0.000	0.000	0.000	-207.367	-14.356	0.000	14.356	-1.542
100.0	-7.153	-11.024	0.000	0.000	0.000	-166.937	-16.021	0.000	16.021	-1.633
105.0	-7.043	-10.420	0.000	0.000	0.000	-131.170	-17.778	0.000	17.778	-1.717
110.0	-6.933	-9.840	0.000	0.000	0.000	-95.957	-19.617	0.000	19.617	-1.790
115.0	-6.867	-9.283	0.000	0.000	0.000	-61.292	-21.525	0.000	21.525	-1.848
115.2	-6.838	-9.259	0.000	0.000	0.000	-59.782	-21.610	0.000	21.610	-1.851
118.0	-5.114	-6.636	0.000	0.000	0.000	-38.883	-22.695	0.000	22.695	-1.875
118.8	-5.091	-6.525	0.000	0.000	0.000	-34.774	-23.012	0.000	23.012	-1.881
120.0	-2.664	-4.274	0.000	0.000	0.000	-28.682	-23.484	0.000	23.484	-1.888
125.0	-2.563	-3.978	0.000	0.000	0.000	-15.362	-25.482	0.000	25.482	-1.924
130.0	-0.263	-0.507	0.000	0.000	0.000	-2.549	-27.508	0.000	27.508	-1.940
135.0	-0.188	-0.310	0.000	0.000	0.000	-1.236	-29.542	0.000	29.542	-1.945
138.0	-0.019	-0.073	0.000	0.000	0.000	-0.037	-30.765	0.000	30.765	-1.946
140.0	-0.016	0.000	0.000	0.000	0.000	0.000	-31.580	0.000	31.580	-1.946

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)	Allowable Stress (Fb) (ksi)	Allowable Stress (Fa) (ksi)	Stress Ratio
0.00	0.53	0.30	0.00	0.00	0.00	14.77	15.31	52.0	0.0	0.295
5.00	0.52	0.30	0.00	0.00	0.00	14.78	15.31	52.0	0.0	0.295
10.00	0.52	0.31	0.00	0.00	0.00	14.78	15.30	52.0	0.0	0.294
15.00	0.51	0.31	0.00	0.00	0.00	14.76	15.28	52.0	0.0	0.294
20.00	0.50	0.32	0.00	0.00	0.00	14.73	15.24	52.0	0.0	0.293
25.00	0.49	0.33	0.00	0.00	0.00	14.67	15.18	52.0	0.0	0.292
30.00	0.49	0.33	0.00	0.00	0.00	14.60	15.10	52.0	0.0	0.290
35.00	0.48	0.34	0.00	0.00	0.00	14.50	14.99	52.0	0.0	0.288
40.00	0.47	0.35	0.00	0.00	0.00	14.37	14.85	52.0	0.0	0.286
40.13	0.47	0.35	0.00	0.00	0.00	14.36	14.85	52.0	0.0	0.286
45.00	0.45	0.35	0.00	0.00	0.00	14.20	14.66	52.0	0.0	0.282
45.88	0.50	0.39	0.00	0.00	0.00	15.41	15.93	52.0	0.0	0.306
50.00	0.49	0.40	0.00	0.00	0.00	15.20	15.71	52.0	0.0	0.302
55.00	0.49	0.41	0.00	0.00	0.00	14.90	15.40	52.0	0.0	0.296
60.00	0.48	0.42	0.00	0.00	0.00	14.54	15.03	52.0	0.0	0.289
65.00	0.47	0.43	0.00	0.00	0.00	14.10	14.59	52.0	0.0	0.281
70.00	0.47	0.44	0.00	0.00	0.00	13.58	14.06	52.0	0.0	0.271
75.00	0.46	0.45	0.00	0.00	0.00	12.95	13.43	52.0	0.0	0.258
79.67	0.45	0.46	0.00	0.00	0.00	12.25	12.73	52.0	0.0	0.245
80.00	0.45	0.46	0.00	0.00	0.00	12.20	12.68	52.0	0.0	0.244
83.00	0.41	0.44	0.00	0.00	0.00	11.68	12.11	52.0	0.0	0.233
84.34	0.55	0.61	0.00	0.00	0.00	15.22	15.80	52.0	0.0	0.304
85.00	0.55	0.61	0.00	0.00	0.00	15.07	15.65	52.0	0.0	0.301
90.00	0.47	0.56	0.00	0.00	0.00	13.77	14.28	52.0	0.0	0.275
95.00	0.47	0.58	0.00	0.00	0.00	12.53	13.04	52.0	0.0	0.251
100.00	0.41	0.53	0.00	0.00	0.00	11.03	11.48	52.0	0.0	0.221
105.00	0.40	0.55	0.00	0.00	0.00	9.52	9.97	52.0	0.0	0.192
110.00	0.40	0.57	0.00	0.00	0.00	7.69	8.15	52.0	0.0	0.157
115.00	0.40	0.59	0.00	0.00	0.00	5.45	5.94	52.0	0.0	0.114
115.22	0.40	0.59	0.00	0.00	0.00	5.34	5.83	52.0	0.0	0.112
118.00	0.29	0.46	0.00	0.00	0.00	3.69	4.06	52.0	0.0	0.078
118.80	0.47	0.75	0.00	0.00	0.00	5.33	5.94	52.0	0.0	0.114
120.00	0.32	0.40	0.00	0.00	0.00	4.51	4.87	52.0	0.0	0.094
125.00	0.31	0.40	0.00	0.00	0.00	2.70	3.09	52.0	0.0	0.060
130.00	0.04	0.04	0.00	0.00	0.00	0.51	0.55	52.0	0.0	0.011
135.00	0.03	0.03	0.00	0.00	0.00	0.28	0.31	52.0	0.0	0.006
138.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	52.0	0.0	0.000
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.0	0.000

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Analysis Summary

	Reactions						Max Stresses			
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
No Ice	30.4	0.00	42.47	0.00	0.00	3139.39	39.92	52.0	45.88	0.768
Ice	20.5	0.00	46.12	0.00	0.00	2039.79	25.63	52.0	45.88	0.493
Twist/Sway	11.9	0.00	42.51	0.00	0.00	1227.38	15.93	52.0	45.88	0.306

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Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
3,921.80	41.90	38.70	3,139.39	46.12	30.40	80.05

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Moment (kip-in)	Allow Stress (ksi)	Applied Stress (ksi)	Stress Ratio
60.0	2.250	66.000	Round	0	0.00	8.093	391.32	60.00	57.30	0.96

Anchor Bolts

									Compression			Tension		
Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
60.00	20	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	127.88	195.00	0.66	123.27	195.00	0.63