AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**119 ft Monopole with Proposed 20 ft Extension**
ATC Site Name	:	**SUFFIELD SW CT CT, CT**
ATC Asset Number	:	**416862**
Engineering Number	:	**OAA760209_C3_03**
Proposed Carrier	:	**AT&T MOBILITY**
Carrier Site Name	:	**SUFFIELD SOUTH GRAND STREET**
Carrier Site Number	:	**CT2388**
Site Location	:	**106 South Grand St.** **West Suffield, CT 06093-3412** **41.987000,-72.702100**
County	:	**Hartford**
Date	:	**October 22, 2020**
Max Usage	:	**47%**
Result	:	**Pass**

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Prepared By:
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Reviewed By:

COA: PEC.0001553

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 119 ft monopole with 20 ft proposed extension to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	EEI Job #16937, dated August 31, 2012
Foundation Drawing	EEI Job #16937, dated March 18, 2013
Geotechnical Report	DET Job #2011.01, dated July 21, 2012

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:	93 mph (3-Second Gust, Vasd) / 120 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" 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:	$Ss = 0.18$, $S_1 = 0.06$
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.

- Extension to be designed in subsequent service

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
121.0	3	Alcatel-Lucent RRH2x40-AWS	Low Profile Platform	(2) 1 1/4" Hybriflex Cable	VERIZON WIRELESS
	2	RFS DB-T1-6Z-8AB-0Z			
	3	Alcatel-Lucent RRH2x40-07-U			
120.0	6	Antel BXA-70063/6CF_			
	6	Amphenol Antel LPA-171063-12CF-EDIN-X			
	1	VZW Unused Reserve (19060.68 sqin)			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
135.0	1	Raycap DC6-48-60-0-8F	SitePro VFA 12-M3-WLL Sector Frame	(1) 0.40" (10.3mm) Fiber (2) 0.82" (20.8mm) 8 AWG 6 (2) 0.92" (23.4mm) Cable (2) 2" conduit	AT&T MOBILITY
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4415 B30			
	3	Ericsson RRUS 4449 B5, B12			
	3	Ericsson RRUS 4478 B14			
	1	Raycap DC9-48-60-24-8C-EV			
	3	CCI DMP65R-BU8D			
	3	CCI TPA65R-BU8D			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	36%	Pass
Shaft	47%	Pass
Base Plate	17%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,013.2	35%
Axial (Kips)	37.9	3%
Shear (Kips)	19.7	3%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
135.0	Raycap DC6-48-60-0-8F	AT&T MOBILITY	0.870	0.687
	Ericsson RRUS 8843 B2, B66A			
	Ericsson RRUS 4415 B30			
	Ericsson RRUS 4449 B5, B12			
	Ericsson RRUS 4478 B14			
	Raycap DC9-48-60-24-8C-EV			
	CCI DMP65R-BU8D			
	CCI TPA65R-BU8D			

***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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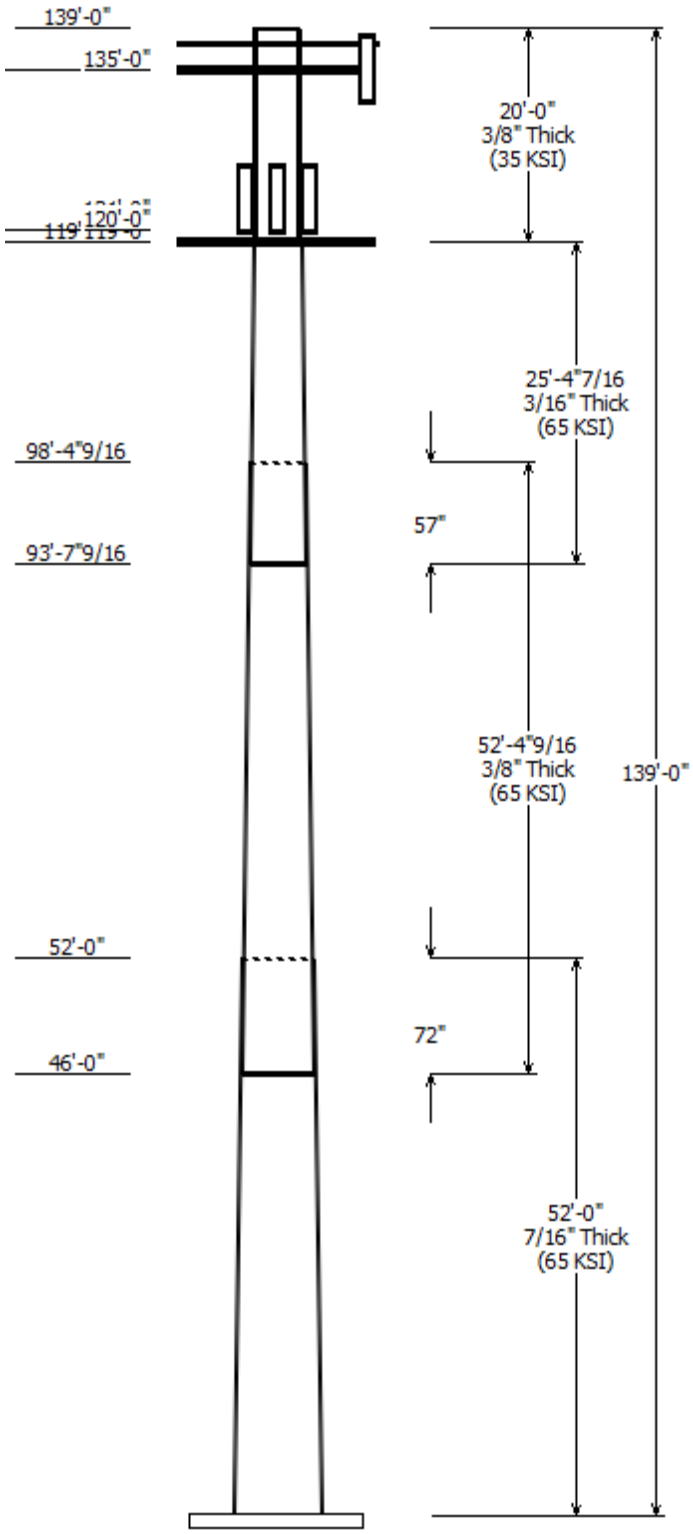


Job Information

Client : AT&T MOBILITY
Pole : 416862 Code: ANSI/TIA-222-G
Location : SUFFIELD SW CT CT, CT
Description : 119 ft EEI MP w/ Proposed 20 ft Extension Struct Class : II
Shape : 18 Sides Exposure : B
Height : 139.00 (ft) Topo : 1
Base Elev (ft): 0.00
Taper: 0.221218 (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	52.000	41.49	53.00	0.438		0.000	18 Sides	65
2	52.380	31.98	43.57	0.375	Slip Joint	72.000	18 Sides	65
3	25.370	27.80	33.41	0.188	Slip Joint	57.000	18 Sides	65
4	20.000	26.00	26.00	0.375	Butt Joint	0.000	Round	35

Discrete Appurtenance

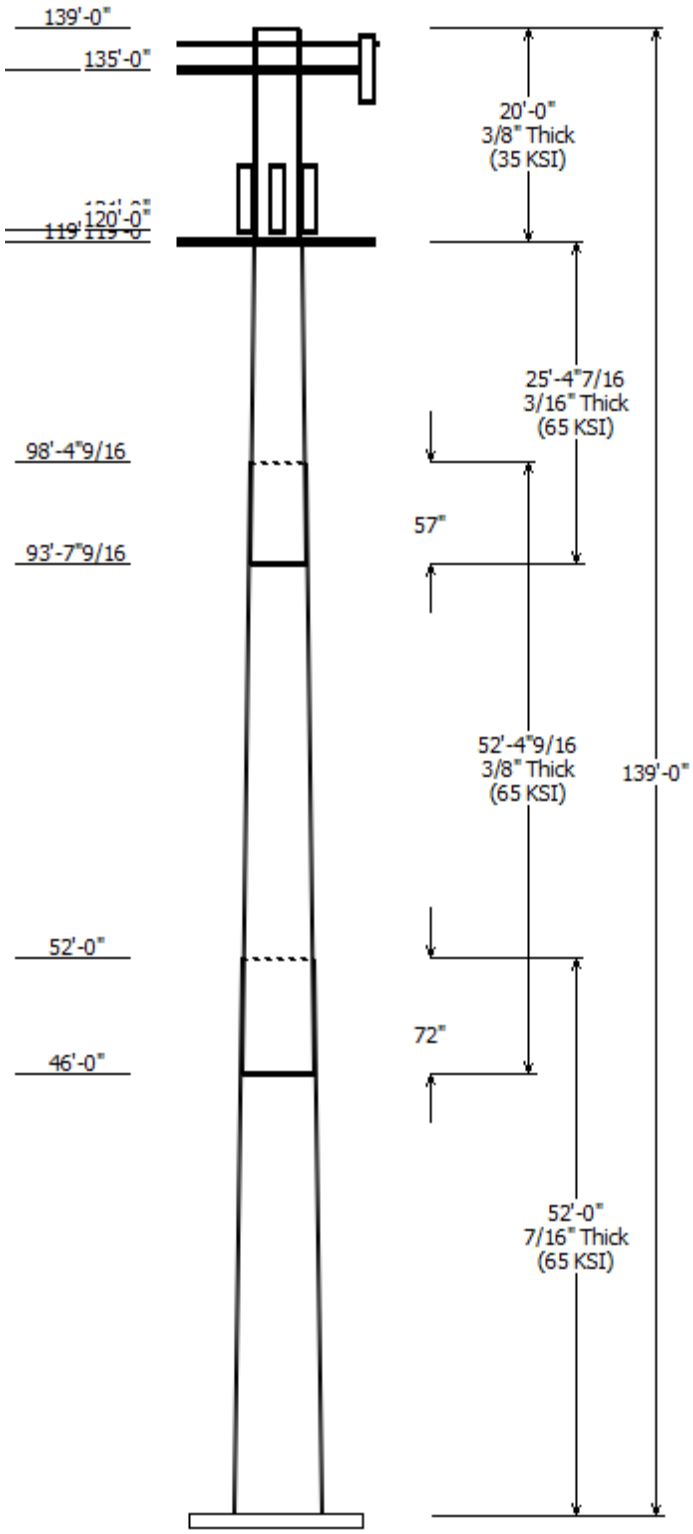
Attach Elev (ft)	Force Elev (ft)	Qty	Description
135.000	135.000	3	Generic Flat Light Sector Fram
135.000	135.000	3	CCI TPA65R-BU8D
135.000	135.000	3	CCI DMP65R-BU8D
135.000	135.000	1	Raycap DC9-48-60-24-8C-EV
135.000	135.000	3	Ericsson RRUS 4478 B14
135.000	135.000	3	Ericsson RRUS 4449 B5, B12
135.000	135.000	3	Ericsson RRUS 4415 B30
135.000	135.000	3	Ericsson RRUS 8843 B2, B66A
135.000	135.000	1	Raycap DC6-48-60-0-8F
121.000	122.000	2	RFS DB-T1-6Z-8AB-0Z
121.000	122.000	3	Alcatel-Lucent RRH2x40-AWS
121.000	122.000	3	Alcatel-Lucent RRH2x40-07-U
120.000	122.000	6	Antel BXA-70063/6CF_
120.000	122.000	6	Amphenol Antel LPA-171063-
120.000	120.000	1	VZW Unused Reserve
119.000	119.000	1	Generic Flat Low Profile Platf

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	121.0	1 1/4" Hybriflex	No
0.000	135.0	0.40" (10.3mm)	No
0.000	135.0	0.82" (20.8mm) 8	No
0.000	135.0	0.92" (23.4mm)	No
0.000	135.0	2" conduit	No

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 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

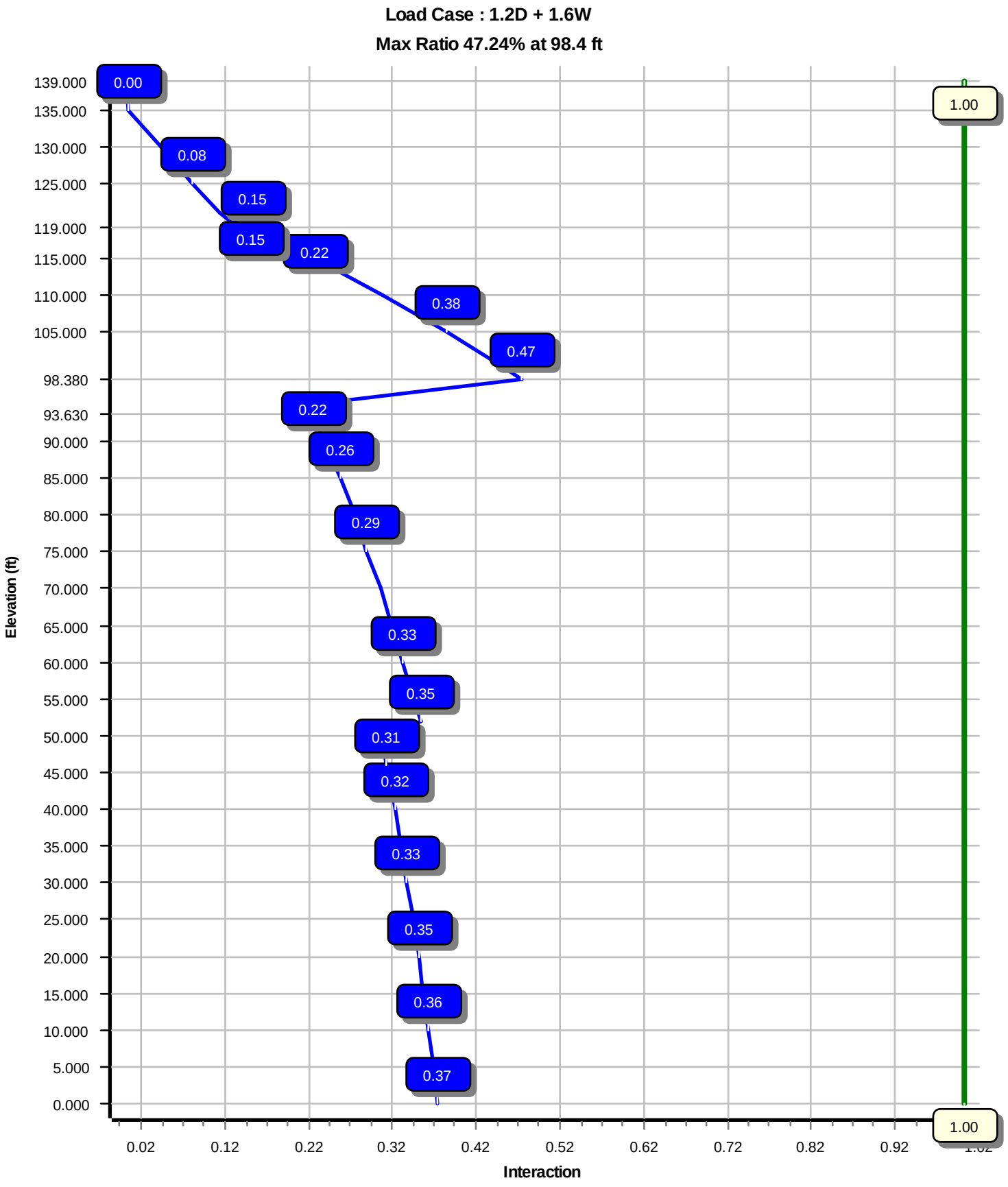


Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2013.24	19.75	37.91
0.9D + 1.6W	1998.85	19.74	28.43
1.2D + 1.0Di + 1.0Wi	684.75	6.70	62.06
(1.2 + 0.2Sds) * DL + E ELFM	174.10	1.60	37.51
(1.2 + 0.2Sds) * DL + E EMAM	218.07	2.01	37.51
(0.9 - 0.2Sds) * DL + E ELFM	172.53	1.60	26.14
(0.9 - 0.2Sds) * DL + E EMAM	216.12	2.01	26.14
1.0D + 1.0W	466.46	4.59	31.60

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 47.24% at 98.4 ft
Elevation (ft)
Interaction
139.000
135.000
130.000
125.000
119.000
115.000
110.000
105.000
98.380
93.630
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
0.00
0.08
0.15
0.15
0.22
0.38
0.47
0.22
0.26
0.29
0.33
0.35
0.31
0.32
0.33
0.35
0.36
0.37
1.00
1.00

Site Number: 416862	Code: ANSI/TIA-222-G	© 2007 - 2020 by ATC IP LLC. All rights reserved.	
Site Name: SUFFIELD SW CT CT, CT	Engineering Number:OAA760209_C3_03	10/22/2020 9:08:22 PM	
Customer: AT&T MOBILITY			

Analysis Parameters

Location :	Hartford County, CT	Height (ft) :	139
Code :	ANSI/TIA-222-G	Base Diameter (in) :	53.00
Shape :	18 Sides. Sect 4: Round	Top Diameter (in) :	26.00
Pole Type :	Custom	Taper (in/ft) :	0.221
Pole Manfacturer :	EEI	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	93 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:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods
Site Class:	D - Stiff Soil
Period Based on Rayleigh Method (sec):	1.79

T_L (sec):	6	p:	1.3	C_s:	0.039
S_s:	0.176	S_1:	0.065	C_s Max:	0.039
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.188	S_{d1}:	0.104		

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 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 (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	52.000	0.4375	65		0.00	11,501	53.00	0.00	72.99	25477.1	19.95	121.14	41.49	52.00	57.01	12143.7	15.31	94.85	0.221218
2-18	52.380	0.3750	65	Slip	72.00	7,935	43.57	46.00	51.42	12122.6	19.08	116.20	31.98	98.38	37.62	4750.2	13.63	85.30	0.221218
3-18	25.370	0.1875	65	Slip	57.00	1,563	33.41	93.63	19.77	2757.6	30.01	178.20	27.80	119.00	16.43	1582.9	24.73	148.27	0.221218
4-R	20.000	0.3750	35	Butt	0.00	2,055	26.00	119.00	30.19	2479.8	0.00	69.33	26.00	139.00	30.19	2479.8	0.00	69.33	0.000000
				Shaft Weight		23,054													

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
135.00	Raycap DC6-48-60-0-8F	1	0.80	0.000	32.80	1.360	0.50	109.51	2.235	0.50
135.00	Ericsson RRUS 8843 B2, B66A	3	0.80	0.000	72.00	1.639	0.50	152.88	2.754	0.50
135.00	Ericsson RRUS 4415 B30	3	0.80	0.000	46.00	1.842	0.50	110.70	3.026	0.50
135.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	156.05	3.200	0.50
135.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.021	0.67	140.38	3.266	0.67
135.00	Raycap DC9-48-60-24-8C-EV	1	0.80	0.000	16.00	4.788	0.67	186.36	6.729	0.67
135.00	CCI DMP65R-BU8D	3	0.80	0.000	95.70	17.871	0.63	544.21	22.734	0.63
135.00	Generic Flat Light Sector Frame	3	0.75	0.000	400.00	17.900	0.75	797.14	37.811	0.75
135.00	CCI TPA65R-BU8D	3	0.80	0.000	82.50	18.089	0.63	537.48	22.961	0.63
121.00	Alcatel-Lucent RRH2x40-07-U	3	0.80	1.000	50.70	1.925	0.50	127.39	3.121	0.50
121.00	Alcatel-Lucent RRH2x40-AWS	3	0.80	1.000	44.00	2.155	0.67	123.21	3.519	0.67
121.00	RFS DB-T1-6Z-8AB-0Z	2	0.80	1.000	44.00	4.800	0.72	208.52	6.658	0.72
120.00	Amphenol Antel LPA-171063-	6	0.80	2.000	11.50	6.050	0.78	207.44	9.259	0.78
120.00	Antel BXA-70063/6CF_	6	0.80	2.000	17.00	7.569	0.65	201.70	11.171	0.65
120.00	VZW Unused Reserve (19060.68	1	0.80	0.000	1,956.90	132.366	0.90	3,737.41	252.801	0.90
119.00	Generic Flat Low Profile Platform	1	1.00	0.000	1,875.00	26.100	1.00	2,930.48	50.982	1.00
Totals	Num Loadings:16	45			6,903.60			17,903.94		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

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	135.00	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	135.00	2	0.82" (20.8mm) 8 AWG	0.82	0.62	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	135.00	2	0.92" (23.4mm) Cable	0.92	0.89	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	135.00	2	2" conduit	2.38	3.65	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	121.00	2	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS

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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		0.4375	53.000	72.987	25,477.1	19.95	121.14	77.9	946.8	0.0	0.0
5.00		0.4375	51.894	71.451	23,902.4	19.50	118.61	78.5	907.2	0.0	1,228.7
10.00		0.4375	50.788	69.915	22,393.9	19.06	116.09	79.0	868.5	0.0	1,202.6
15.00		0.4375	49.682	68.379	20,950.2	18.61	113.56	79.5	830.6	0.0	1,176.5
20.00		0.4375	48.576	66.843	19,570.0	18.17	111.03	80.0	793.5	0.0	1,150.3
25.00		0.4375	47.470	65.308	18,251.7	17.72	108.50	80.6	757.3	0.0	1,124.2
30.00		0.4375	46.363	63.772	16,994.0	17.28	105.97	81.1	721.9	0.0	1,098.1
35.00		0.4375	45.257	62.236	15,795.5	16.83	103.45	81.6	687.4	0.0	1,071.9
40.00		0.4375	44.151	60.700	14,654.7	16.38	100.92	82.1	653.8	0.0	1,045.8
45.00		0.4375	43.045	59.164	13,570.2	15.94	98.39	82.6	620.9	0.0	1,019.7
46.00	Bot - Section 2	0.4375	42.824	58.857	13,359.9	15.85	97.88	82.6	614.5	0.0	200.8
50.00		0.4375	41.939	57.628	12,540.5	15.49	95.86	82.6	589.0	0.0	1,485.4
52.00	Top - Section 1	0.3750	42.247	49.836	11,039.2	18.45	112.66	79.7	514.7	0.0	731.1
55.00		0.3750	41.583	49.046	10,522.5	18.14	110.89	80.1	498.4	0.0	504.7
60.00		0.3750	40.477	47.730	9,697.7	17.62	107.94	80.7	471.9	0.0	823.3
65.00		0.3750	39.371	46.413	8,917.2	17.10	104.99	81.3	446.1	0.0	800.9
70.00		0.3750	38.265	45.097	8,179.7	16.58	102.04	81.9	421.0	0.0	778.5
75.00		0.3750	37.159	43.780	7,484.1	16.06	99.09	82.5	396.7	0.0	756.1
80.00		0.3750	36.053	42.464	6,829.0	15.54	96.14	82.6	373.1	0.0	733.7
85.00		0.3750	34.946	41.147	6,213.4	15.02	93.19	82.6	350.2	0.0	711.3
90.00		0.3750	33.840	39.831	5,635.9	14.50	90.24	82.6	328.0	0.0	688.9
93.63	Bot - Section 3	0.3750	33.037	38.875	5,239.8	14.12	88.10	82.6	312.4	0.0	486.1
95.00		0.3750	32.734	38.514	5,095.3	13.98	87.29	82.6	306.6	0.0	272.1
98.38	Top - Section 2	0.1875	32.362	19.147	2,504.2	29.02	172.59	67.3	152.4	0.0	660.6
100.0		0.1875	32.003	18.934	2,421.4	28.69	170.68	67.7	149.0	0.0	105.0
105.0		0.1875	30.897	18.275	2,177.5	27.65	164.78	68.9	138.8	0.0	316.5
110.0		0.1875	29.791	17.617	1,950.6	26.61	158.89	70.1	129.0	0.0	305.3
115.0		0.1875	28.685	16.959	1,740.0	25.56	152.99	71.3	119.5	0.0	294.1
119.0	Top - Section 3	0.1875	27.800	16.432	1,582.9	24.73	148.27	72.3	112.2	0.0	227.2
119.0	Bot - Section 4	0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	
120.0		0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	102.7
121.0		0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	102.7
125.0		0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	410.9
130.0		0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	513.6
135.0		0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	513.6
139.0		0.3750	26.000	30.189	2,479.8	0.00	69.33	35.0	190.8	246.3	410.9
											23,053.8

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Load Case: 1.2D + 1.6W — 93 mph with No Ice — 21 Iterations

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

Wind Importance 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		186.9	0.0					0.0	0.0	186.9	0.0	0.0	0.0
5.00		369.8	1,474.5					0.0	74.5	369.8	1,548.9	0.0	0.0
10.00		362.0	1,443.1					0.0	74.5	362.0	1,517.6	0.0	0.0
15.00		354.1	1,411.8					0.0	74.5	354.1	1,486.2	0.0	0.0
20.00		346.2	1,380.4					0.0	74.5	346.2	1,454.9	0.0	0.0
25.00		338.3	1,349.0					0.0	74.5	338.3	1,423.5	0.0	0.0
30.00		334.3	1,317.7					0.0	74.5	334.3	1,392.1	0.0	0.0
35.00		337.1	1,286.3					0.0	74.5	337.1	1,360.8	0.0	0.0
40.00		341.7	1,255.0					0.0	74.5	341.7	1,329.4	0.0	0.0
45.00		206.3	1,223.6					0.0	74.5	206.3	1,298.1	0.0	0.0
46.00	Bot - Section 2	175.2	241.0					0.0	14.9	175.2	255.9	0.0	0.0
50.00		211.2	1,782.5					0.0	59.6	211.2	1,842.0	0.0	0.0
52.00	Top - Section 1	176.3	877.3					0.0	29.8	176.3	907.0	0.0	0.0
55.00		282.0	605.7					0.0	44.7	282.0	650.3	0.0	0.0
60.00		351.8	987.9					0.0	74.5	351.8	1,062.4	0.0	0.0
65.00		350.1	961.0					0.0	74.5	350.1	1,035.5	0.0	0.0
70.00		347.6	934.2					0.0	74.5	347.6	1,008.6	0.0	0.0
75.00		344.3	907.3					0.0	74.5	344.3	981.7	0.0	0.0
80.00		340.2	880.4					0.0	74.5	340.2	954.9	0.0	0.0
85.00		335.6	853.5					0.0	74.5	335.6	928.0	0.0	0.0
90.00		285.7	826.6					0.0	74.5	285.7	901.1	0.0	0.0
93.63	Bot - Section 3	164.3	583.3					0.0	54.1	164.3	637.4	0.0	0.0
95.00		155.3	326.6					0.0	20.4	155.3	347.0	0.0	0.0
98.38	Top - Section 2	162.6	792.7					0.0	50.3	162.6	843.1	0.0	0.0
100.00		211.7	126.0					0.0	24.1	211.7	150.1	0.0	0.0
105.00		315.2	379.8					0.0	74.5	315.2	454.3	0.0	0.0
110.00		308.0	366.4					0.0	74.5	308.0	440.9	0.0	0.0
115.00		271.0	353.0					0.0	74.5	271.0	427.4	0.0	0.0
119.00	Top - Section 3	143.9	272.7					0.0	59.6	143.9	332.3	0.0	0.0
120.00	Appurtenance(s)	50.1	123.3	5,464.7	0.0	3,583.2	2,553.5	0.0	14.9	5,514.8	2,691.6	0.0	0.0
121.00	Appurtenance(s)	126.0	123.3	437.8	0.0	437.8	446.5	0.0	14.9	563.8	584.7	0.0	0.0
125.00		228.4	493.1					0.0	50.0	228.4	543.1	0.0	0.0
130.00		256.3	616.4					0.0	62.5	256.3	678.8	0.0	0.0
135.00	Appurtenance(s)	232.9	616.4	3,885.5	0.0	0.0	3,034.3	0.0	62.5	4,118.4	3,713.1	0.0	0.0
139.00		104.1	493.1					0.0	0.0	104.1	493.1	0.0	0.0
									Totals:	18,894.4	35,675.7	0.00	0.00

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Load Case: 1.2D + 1.6W 93 mph with No Ice 21 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	-37.91	-19.75	0.00	-2,013.24	0.00	2,013.24	5,119.46	2,559.73	11,051.9	5,534.19	0.00	0.00	0.371
5.00	-36.32	-19.45	0.00	-1,914.50	0.00	1,914.50	5,045.45	2,522.72	10,661.0	5,338.45	0.06	-0.11	0.366
10.00	-34.77	-19.15	0.00	-1,817.28	0.00	1,817.28	4,969.98	2,484.99	10,273.9	5,144.62	0.23	-0.22	0.360
15.00	-33.24	-18.85	0.00	-1,721.54	0.00	1,721.54	4,893.07	2,446.54	9,890.85	4,952.78	0.53	-0.33	0.354
20.00	-31.76	-18.56	0.00	-1,627.28	0.00	1,627.28	4,814.71	2,407.35	9,511.92	4,763.03	0.94	-0.45	0.348
25.00	-30.30	-18.27	0.00	-1,534.49	0.00	1,534.49	4,734.90	2,367.45	9,137.37	4,575.48	1.47	-0.56	0.342
30.00	-28.87	-17.98	0.00	-1,443.15	0.00	1,443.15	4,653.63	2,326.82	8,767.40	4,390.22	2.12	-0.68	0.335
35.00	-27.48	-17.68	0.00	-1,353.25	0.00	1,353.25	4,570.92	2,285.46	8,402.22	4,207.35	2.89	-0.79	0.328
40.00	-26.12	-17.37	0.00	-1,264.85	0.00	1,264.85	4,486.76	2,243.38	8,042.01	4,026.98	3.78	-0.91	0.320
45.00	-24.81	-17.18	0.00	-1,177.99	0.00	1,177.99	4,395.58	2,197.79	7,677.26	3,844.33	4.80	-1.03	0.312
46.00	-24.53	-17.02	0.00	-1,160.82	0.00	1,160.82	4,372.76	2,186.38	7,597.34	3,804.32	5.02	-1.06	0.311
50.00	-22.68	-16.80	0.00	-1,092.73	0.00	1,092.73	4,281.48	2,140.74	7,281.86	3,646.34	5.95	-1.15	0.305
52.00	-21.75	-16.63	0.00	-1,059.13	0.00	1,059.13	3,574.52	1,787.26	6,143.34	3,076.23	6.44	-1.20	0.350
55.00	-21.08	-16.37	0.00	-1,009.23	0.00	1,009.23	3,534.07	1,767.03	5,976.69	2,992.79	7.22	-1.27	0.343
60.00	-19.99	-16.04	0.00	-927.37	0.00	927.37	3,465.49	1,732.74	5,701.97	2,855.22	8.62	-1.40	0.331
65.00	-18.93	-15.71	0.00	-847.16	0.00	847.16	3,395.45	1,697.73	5,431.22	2,719.65	10.16	-1.53	0.317
70.00	-17.90	-15.37	0.00	-768.61	0.00	768.61	3,323.97	1,661.99	5,164.63	2,586.16	11.84	-1.66	0.303
75.00	-16.89	-15.04	0.00	-691.75	0.00	691.75	3,251.04	1,625.52	4,902.41	2,454.85	13.65	-1.79	0.287
80.00	-15.92	-14.70	0.00	-616.57	0.00	616.57	3,154.84	1,577.42	4,612.84	2,309.85	15.59	-1.91	0.272
85.00	-14.97	-14.36	0.00	-543.07	0.00	543.07	3,057.03	1,528.51	4,329.82	2,168.13	17.66	-2.04	0.255
90.00	-14.06	-14.07	0.00	-471.26	0.00	471.26	2,959.22	1,479.61	4,055.75	2,030.89	19.86	-2.15	0.237
93.63	-13.41	-13.89	0.00	-420.19	0.00	420.19	2,888.21	1,444.11	3,862.39	1,934.07	21.53	-2.23	0.222
95.00	-13.06	-13.74	0.00	-401.16	0.00	401.16	2,861.41	1,430.71	3,790.65	1,898.14	22.17	-2.26	0.216
98.38	-12.21	-13.55	0.00	-354.73	0.00	354.73	1,159.13	579.56	1,535.51	768.89	23.80	-2.33	0.472
100.00	-12.05	-13.36	0.00	-332.77	0.00	332.77	1,152.97	576.49	1,510.24	756.24	24.60	-2.37	0.451
105.00	-11.57	-13.06	0.00	-265.99	0.00	265.99	1,133.01	566.50	1,432.19	717.16	27.18	-2.54	0.382
110.00	-11.11	-12.75	0.00	-200.72	0.00	200.72	1,111.60	555.80	1,354.21	678.11	29.93	-2.70	0.307
115.00	-10.68	-12.48	0.00	-136.95	0.00	136.95	1,088.74	544.37	1,276.49	639.20	32.82	-2.82	0.225
119.00	-8.15	-11.21	0.00	-87.02	0.00	87.02	1,069.41	534.70	1,214.64	608.22	35.22	-2.89	0.151
119.00	-8.15	-11.21	0.00	-87.02	0.00	87.02	950.95	475.47	1,000.09	624.60	35.22	-2.89	0.148
120.00	-5.74	-5.57	0.00	-72.23	0.00	72.23	950.95	475.47	1,000.09	624.60	35.82	-2.91	0.122
121.00	-5.18	-4.98	0.00	-66.22	0.00	66.22	950.95	475.47	1,000.09	624.60	36.43	-2.92	0.112
125.00	-4.65	-4.72	0.00	-46.31	0.00	46.31	950.95	475.47	1,000.09	624.60	38.89	-2.94	0.079
130.00	-3.98	-4.43	0.00	-22.69	0.00	22.69	950.95	475.47	1,000.09	624.60	41.98	-2.96	0.041
135.00	-0.49	-0.13	0.00	-0.52	0.00	0.52	950.95	475.47	1,000.09	624.60	45.08	-2.97	0.001
139.00	0.00	-0.10	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	47.57	-2.97	0.000

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Load Case: 0.9D + 1.6W — 93 mph with No Ice (Reduced DL) — 21 Iterations

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

Wind Importance 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		186.9	0.0					0.0	0.0	186.9	0.0	0.0	0.0
5.00		369.8	1,105.9					0.0	55.8	369.8	1,161.7	0.0	0.0
10.00		362.0	1,082.3					0.0	55.8	362.0	1,138.2	0.0	0.0
15.00		354.1	1,058.8					0.0	55.8	354.1	1,114.7	0.0	0.0
20.00		346.2	1,035.3					0.0	55.8	346.2	1,091.1	0.0	0.0
25.00		338.3	1,011.8					0.0	55.8	338.3	1,067.6	0.0	0.0
30.00		334.3	988.3					0.0	55.8	334.3	1,044.1	0.0	0.0
35.00		337.1	964.7					0.0	55.8	337.1	1,020.6	0.0	0.0
40.00		341.7	941.2					0.0	55.8	341.7	997.1	0.0	0.0
45.00		206.3	917.7					0.0	55.8	206.3	973.6	0.0	0.0
46.00	Bot - Section 2	175.2	180.7					0.0	11.2	175.2	191.9	0.0	0.0
50.00		211.2	1,336.9					0.0	44.7	211.2	1,381.5	0.0	0.0
52.00	Top - Section 1	176.3	657.9					0.0	22.3	176.3	680.3	0.0	0.0
55.00		282.0	454.2					0.0	33.5	282.0	487.7	0.0	0.0
60.00		351.8	740.9					0.0	55.8	351.8	796.8	0.0	0.0
65.00		350.1	720.8					0.0	55.8	350.1	776.6	0.0	0.0
70.00		347.6	700.6					0.0	55.8	347.6	756.5	0.0	0.0
75.00		344.3	680.5					0.0	55.8	344.3	736.3	0.0	0.0
80.00		340.2	660.3					0.0	55.8	340.2	716.1	0.0	0.0
85.00		335.6	640.1					0.0	55.8	335.6	696.0	0.0	0.0
90.00		285.7	620.0					0.0	55.8	285.7	675.8	0.0	0.0
93.63	Bot - Section 3	164.3	437.5					0.0	40.5	164.3	478.0	0.0	0.0
95.00		155.3	244.9					0.0	15.3	155.3	260.2	0.0	0.0
98.38	Top - Section 2	162.6	594.6					0.0	37.8	162.6	632.3	0.0	0.0
100.00		211.7	94.5					0.0	18.1	211.7	112.6	0.0	0.0
105.00		315.2	284.9					0.0	55.8	315.2	340.7	0.0	0.0
110.00		308.0	274.8					0.0	55.8	308.0	330.6	0.0	0.0
115.00		271.0	264.7					0.0	55.8	271.0	320.6	0.0	0.0
119.00	Top - Section 3	143.9	204.5					0.0	44.7	143.9	249.2	0.0	0.0
120.00	Appurtenance(s)	50.1	92.5	5,464.7	0.0	3,583.2	1,915.1	0.0	11.2	5,514.8	2,018.7	0.0	0.0
121.00	Appurtenance(s)	126.0	92.5	437.8	0.0	437.8	334.9	0.0	11.2	563.8	438.5	0.0	0.0
125.00		228.4	369.8					0.0	37.5	228.4	407.3	0.0	0.0
130.00		256.3	462.3					0.0	46.8	256.3	509.1	0.0	0.0
135.00	Appurtenance(s)	232.9	462.3	3,885.5	0.0	0.0	2,275.7	0.0	46.8	4,118.4	2,784.9	0.0	0.0
139.00		104.1	369.8					0.0	0.0	104.1	369.8	0.0	0.0
									Totals:	18,894.4	26,756.8	0.00	0.00

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Load Case: 0.9D + 1.6W 93 mph with No Ice (Reduced DL) 21 Iterations

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

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	-28.43	-19.74	0.00	-1,998.85	0.00	1,998.85	5,119.46	2,559.73	11,051.9	5,534.19	0.00	0.00	0.367
5.00	-27.23	-19.42	0.00	-1,900.16	0.00	1,900.16	5,045.45	2,522.72	10,661.0	5,338.45	0.06	-0.11	0.361
10.00	-26.05	-19.10	0.00	-1,803.07	0.00	1,803.07	4,969.98	2,484.99	10,273.9	5,144.62	0.23	-0.22	0.356
15.00	-24.90	-18.79	0.00	-1,707.55	0.00	1,707.55	4,893.07	2,446.54	9,890.85	4,952.78	0.52	-0.33	0.350
20.00	-23.78	-18.49	0.00	-1,613.58	0.00	1,613.58	4,814.71	2,407.35	9,511.92	4,763.03	0.93	-0.44	0.344
25.00	-22.68	-18.18	0.00	-1,521.15	0.00	1,521.15	4,734.90	2,367.45	9,137.37	4,575.48	1.45	-0.56	0.337
30.00	-21.60	-17.88	0.00	-1,430.23	0.00	1,430.23	4,653.63	2,326.82	8,767.40	4,390.22	2.10	-0.67	0.330
35.00	-20.55	-17.57	0.00	-1,340.81	0.00	1,340.81	4,570.92	2,285.46	8,402.22	4,207.35	2.87	-0.79	0.323
40.00	-19.52	-17.26	0.00	-1,252.94	0.00	1,252.94	4,486.76	2,243.38	8,042.01	4,026.98	3.75	-0.91	0.316
45.00	-18.53	-17.06	0.00	-1,166.65	0.00	1,166.65	4,395.58	2,197.79	7,677.26	3,844.33	4.77	-1.02	0.308
46.00	-18.32	-16.90	0.00	-1,149.60	0.00	1,149.60	4,372.76	2,186.38	7,597.34	3,804.32	4.98	-1.05	0.306
50.00	-16.93	-16.68	0.00	-1,082.00	0.00	1,082.00	4,281.48	2,140.74	7,281.86	3,646.34	5.90	-1.14	0.301
52.00	-16.23	-16.51	0.00	-1,048.64	0.00	1,048.64	3,574.52	1,787.26	6,143.34	3,076.23	6.39	-1.19	0.346
55.00	-15.72	-16.24	0.00	-999.11	0.00	999.11	3,534.07	1,767.03	5,976.69	2,992.79	7.16	-1.26	0.338
60.00	-14.90	-15.91	0.00	-917.89	0.00	917.89	3,465.49	1,732.74	5,701.97	2,855.22	8.55	-1.39	0.326
65.00	-14.10	-15.57	0.00	-838.35	0.00	838.35	3,395.45	1,697.73	5,431.22	2,719.65	10.08	-1.52	0.312
70.00	-13.31	-15.23	0.00	-760.50	0.00	760.50	3,323.97	1,661.99	5,164.63	2,586.16	11.74	-1.65	0.298
75.00	-12.56	-14.89	0.00	-684.35	0.00	684.35	3,251.04	1,625.52	4,902.41	2,454.85	13.53	-1.77	0.283
80.00	-11.82	-14.55	0.00	-609.89	0.00	609.89	3,154.84	1,577.42	4,612.84	2,309.85	15.46	-1.90	0.268
85.00	-11.11	-14.22	0.00	-537.12	0.00	537.12	3,057.03	1,528.51	4,329.82	2,168.13	17.51	-2.02	0.251
90.00	-10.42	-13.93	0.00	-466.03	0.00	466.03	2,959.22	1,479.61	4,055.75	2,030.89	19.68	-2.13	0.233
93.63	-9.93	-13.75	0.00	-415.48	0.00	415.48	2,888.21	1,444.11	3,862.39	1,934.07	21.33	-2.21	0.218
95.00	-9.67	-13.60	0.00	-396.64	0.00	396.64	2,861.41	1,430.71	3,790.65	1,898.14	21.97	-2.24	0.212
98.38	-9.03	-13.42	0.00	-350.69	0.00	350.69	1,159.13	579.56	1,535.51	768.89	23.59	-2.31	0.464
100.00	-8.90	-13.22	0.00	-328.95	0.00	328.95	1,152.97	576.49	1,510.24	756.24	24.38	-2.35	0.443
105.00	-8.54	-12.91	0.00	-262.87	0.00	262.87	1,133.01	566.50	1,432.19	717.16	26.93	-2.52	0.375
110.00	-8.19	-12.61	0.00	-198.31	0.00	198.31	1,111.60	555.80	1,354.21	678.11	29.65	-2.67	0.300
115.00	-7.86	-12.34	0.00	-135.26	0.00	135.26	1,088.74	544.37	1,276.49	639.20	32.52	-2.79	0.219
119.00	-5.98	-11.10	0.00	-85.92	0.00	85.92	1,069.41	534.70	1,214.64	608.22	34.89	-2.86	0.147
119.00	-5.98	-11.10	0.00	-85.92	0.00	85.92	950.95	475.47	1,000.09	624.60	34.89	-2.86	0.144
120.00	-4.24	-5.49	0.00	-71.24	0.00	71.24	950.95	475.47	1,000.09	624.60	35.49	-2.88	0.119
121.00	-3.83	-4.91	0.00	-65.31	0.00	65.31	950.95	475.47	1,000.09	624.60	36.10	-2.89	0.109
125.00	-3.43	-4.66	0.00	-45.68	0.00	45.68	950.95	475.47	1,000.09	624.60	38.52	-2.91	0.077
130.00	-2.93	-4.38	0.00	-22.38	0.00	22.38	950.95	475.47	1,000.09	624.60	41.58	-2.93	0.039
135.00	-0.36	-0.12	0.00	-0.49	0.00	0.49	950.95	475.47	1,000.09	624.60	44.66	-2.94	0.001
139.00	0.00	-0.10	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	47.12	-2.94	0.000

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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 21 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		65.9	0.0					0.0	0.0	65.9	0.0	0.0	0.0
5.00		131.0	1,991.7					0.0	74.5	131.0	2,066.2	0.0	0.0
10.00		129.0	2,010.4					0.0	74.5	129.0	2,084.8	0.0	0.0
15.00		126.7	1,997.2					0.0	74.5	126.7	2,071.6	0.0	0.0
20.00		124.4	1,973.5					0.0	74.5	124.4	2,048.0	0.0	0.0
25.00		121.9	1,944.5					0.0	74.5	121.9	2,019.0	0.0	0.0
30.00		120.9	1,912.1					0.0	74.5	120.9	1,986.5	0.0	0.0
35.00		122.3	1,877.3					0.0	74.5	122.3	1,951.8	0.0	0.0
40.00		124.3	1,840.8					0.0	74.5	124.3	1,915.2	0.0	0.0
45.00		75.2	1,802.9					0.0	74.5	75.2	1,877.4	0.0	0.0
46.00	Bot - Section 2	64.0	357.1					0.0	14.9	64.0	372.0	0.0	0.0
50.00		77.2	2,248.1					0.0	59.6	77.2	2,307.7	0.0	0.0
52.00	Top - Section 1	64.6	1,109.3					0.0	29.8	64.6	1,139.0	0.0	0.0
55.00		103.5	950.1					0.0	44.7	103.5	994.8	0.0	0.0
60.00		129.5	1,551.8					0.0	74.5	129.5	1,626.2	0.0	0.0
65.00		129.3	1,515.1					0.0	74.5	129.3	1,589.5	0.0	0.0
70.00		128.8	1,477.8					0.0	74.5	128.8	1,552.3	0.0	0.0
75.00		128.0	1,440.0					0.0	74.5	128.0	1,514.5	0.0	0.0
80.00		127.0	1,401.8					0.0	74.5	127.0	1,476.3	0.0	0.0
85.00		125.8	1,363.2					0.0	74.5	125.8	1,437.7	0.0	0.0
90.00		107.5	1,324.2					0.0	74.5	107.5	1,398.7	0.0	0.0
93.63	Bot - Section 3	62.0	938.3					0.0	54.1	62.0	992.4	0.0	0.0
95.00		58.7	461.2					0.0	20.4	58.7	481.6	0.0	0.0
98.38	Top - Section 2	61.5	1,118.7					0.0	50.3	61.5	1,169.1	0.0	0.0
100.00		80.4	281.0					0.0	24.1	80.4	305.1	0.0	0.0
105.00		120.2	844.5					0.0	74.5	120.2	919.0	0.0	0.0
110.00		118.0	817.8					0.0	74.5	118.0	892.3	0.0	0.0
115.00		104.4	790.9					0.0	74.5	104.4	865.4	0.0	0.0
119.00	Top - Section 3	56.5	614.5					0.0	59.6	56.5	674.1	0.0	0.0
120.00	Appurtenance(s)	21.3	201.8	1,753.7	0.0	972.7	6,171.1	0.0	14.9	1,774.9	6,387.8	0.0	0.0
121.00	Appurtenance(s)	53.5	201.9	119.4	0.0	119.4	1,155.8	0.0	14.9	172.9	1,372.5	0.0	0.0
125.00		97.0	808.2					0.0	50.0	97.0	858.2	0.0	0.0
130.00		108.9	1,011.8					0.0	62.5	108.9	1,074.3	0.0	0.0
135.00	Appurtenance(s)	99.1	1,013.4	1,104.8	0.0	0.0	7,565.1	0.0	62.5	1,203.9	8,641.0	0.0	0.0
139.00		44.3	811.9					0.0	0.0	44.3	811.9	0.0	0.0
									Totals:	6,390.55	58,873.6	0.00	0.00

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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 21 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	-62.06	-6.70	0.00	-684.75	0.00	684.75	5,119.46	2,559.73	11,051.9	5,534.19	0.00	0.00	0.136
5.00	-59.99	-6.61	0.00	-651.26	0.00	651.26	5,045.45	2,522.72	10,661.0	5,338.45	0.02	-0.04	0.134
10.00	-57.90	-6.51	0.00	-618.23	0.00	618.23	4,969.98	2,484.99	10,273.9	5,144.62	0.08	-0.08	0.132
15.00	-55.83	-6.42	0.00	-585.66	0.00	585.66	4,893.07	2,446.54	9,890.85	4,952.78	0.18	-0.11	0.130
20.00	-53.77	-6.33	0.00	-553.55	0.00	553.55	4,814.71	2,407.35	9,511.92	4,763.03	0.32	-0.15	0.127
25.00	-51.75	-6.24	0.00	-521.91	0.00	521.91	4,734.90	2,367.45	9,137.37	4,575.48	0.50	-0.19	0.125
30.00	-49.76	-6.14	0.00	-490.73	0.00	490.73	4,653.63	2,326.82	8,767.40	4,390.22	0.72	-0.23	0.122
35.00	-47.81	-6.04	0.00	-460.02	0.00	460.02	4,570.92	2,285.46	8,402.22	4,207.35	0.98	-0.27	0.120
40.00	-45.89	-5.94	0.00	-429.79	0.00	429.79	4,486.76	2,243.38	8,042.01	4,026.98	1.29	-0.31	0.117
45.00	-44.01	-5.88	0.00	-400.08	0.00	400.08	4,395.58	2,197.79	7,677.26	3,844.33	1.63	-0.35	0.114
46.00	-43.63	-5.82	0.00	-394.20	0.00	394.20	4,372.76	2,186.38	7,597.34	3,804.32	1.71	-0.36	0.114
50.00	-41.32	-5.75	0.00	-370.91	0.00	370.91	4,281.48	2,140.74	7,281.86	3,646.34	2.02	-0.39	0.111
52.00	-40.18	-5.69	0.00	-359.40	0.00	359.40	3,574.52	1,787.26	6,143.34	3,076.23	2.19	-0.41	0.128
55.00	-39.19	-5.61	0.00	-342.33	0.00	342.33	3,534.07	1,767.03	5,976.69	2,992.79	2.46	-0.43	0.125
60.00	-37.56	-5.49	0.00	-314.30	0.00	314.30	3,465.49	1,732.74	5,701.97	2,855.22	2.93	-0.48	0.121
65.00	-35.96	-5.38	0.00	-286.84	0.00	286.84	3,395.45	1,697.73	5,431.22	2,719.65	3.46	-0.52	0.116
70.00	-34.41	-5.26	0.00	-259.96	0.00	259.96	3,323.97	1,661.99	5,164.63	2,586.16	4.03	-0.56	0.111
75.00	-32.89	-5.14	0.00	-233.67	0.00	233.67	3,251.04	1,625.52	4,902.41	2,454.85	4.64	-0.61	0.105
80.00	-31.41	-5.02	0.00	-207.97	0.00	207.97	3,154.84	1,577.42	4,612.84	2,309.85	5.30	-0.65	0.100
85.00	-29.97	-4.90	0.00	-182.88	0.00	182.88	3,057.03	1,528.51	4,329.82	2,168.13	6.00	-0.69	0.094
90.00	-28.57	-4.79	0.00	-158.39	0.00	158.39	2,959.22	1,479.61	4,055.75	2,030.89	6.75	-0.73	0.088
93.63	-27.58	-4.72	0.00	-141.01	0.00	141.01	2,888.21	1,444.11	3,862.39	1,934.07	7.31	-0.76	0.082
95.00	-27.10	-4.67	0.00	-134.54	0.00	134.54	2,861.41	1,430.71	3,790.65	1,898.14	7.53	-0.77	0.080
98.38	-25.93	-4.60	0.00	-118.77	0.00	118.77	1,159.13	579.56	1,535.51	768.89	8.08	-0.79	0.177
100.00	-25.62	-4.53	0.00	-111.32	0.00	111.32	1,152.97	576.49	1,510.24	756.24	8.35	-0.80	0.169
105.00	-24.70	-4.42	0.00	-88.68	0.00	88.68	1,133.01	566.50	1,432.19	717.16	9.23	-0.86	0.146
110.00	-23.81	-4.31	0.00	-66.59	0.00	66.59	1,111.60	555.80	1,354.21	678.11	10.16	-0.91	0.120
115.00	-22.94	-4.20	0.00	-45.06	0.00	45.06	1,088.74	544.37	1,276.49	639.20	11.14	-0.95	0.092
119.00	-19.08	-3.73	0.00	-28.26	0.00	28.26	1,069.41	534.70	1,214.64	608.22	11.95	-0.98	0.064
119.00	-19.08	-3.73	0.00	-28.26	0.00	28.26	950.95	475.47	1,000.09	624.60	11.95	-0.98	0.065
120.00	-12.73	-1.85	0.00	-23.56	0.00	23.56	950.95	475.47	1,000.09	624.60	12.15	-0.98	0.051
121.00	-11.36	-1.65	0.00	-21.60	0.00	21.60	950.95	475.47	1,000.09	624.60	12.36	-0.98	0.047
125.00	-10.50	-1.54	0.00	-15.00	0.00	15.00	950.95	475.47	1,000.09	624.60	13.18	-0.99	0.035
130.00	-9.43	-1.41	0.00	-7.30	0.00	7.30	950.95	475.47	1,000.09	624.60	14.23	-1.00	0.022
135.00	-0.81	-0.06	0.00	-0.23	0.00	0.23	950.95	475.47	1,000.09	624.60	15.28	-1.00	0.001
139.00	0.00	-0.04	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	16.11	-1.00	0.000

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Load Case: 1.0D + 1.0W Serviceability 60 mph 20 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		43.5	0.0					0.0	0.0	43.5	0.0	0.0	0.0
5.00		86.1	1,228.7					0.0	62.0	86.1	1,290.8	0.0	0.0
10.00		84.2	1,202.6					0.0	62.0	84.2	1,264.6	0.0	0.0
15.00		82.4	1,176.5					0.0	62.0	82.4	1,238.5	0.0	0.0
20.00		80.6	1,150.3					0.0	62.0	80.6	1,212.4	0.0	0.0
25.00		78.7	1,124.2					0.0	62.0	78.7	1,186.3	0.0	0.0
30.00		77.8	1,098.1					0.0	62.0	77.8	1,160.1	0.0	0.0
35.00		78.5	1,071.9					0.0	62.0	78.5	1,134.0	0.0	0.0
40.00		79.5	1,045.8					0.0	62.0	79.5	1,107.9	0.0	0.0
45.00		48.0	1,019.7					0.0	62.0	48.0	1,081.7	0.0	0.0
46.00	Bot - Section 2	40.8	200.8					0.0	12.4	40.8	213.2	0.0	0.0
50.00		49.2	1,485.4					0.0	49.6	49.2	1,535.0	0.0	0.0
52.00	Top - Section 1	41.0	731.1					0.0	24.8	41.0	755.9	0.0	0.0
55.00		65.6	504.7					0.0	37.2	65.6	541.9	0.0	0.0
60.00		81.9	823.3					0.0	62.0	81.9	885.3	0.0	0.0
65.00		81.5	800.9					0.0	62.0	81.5	862.9	0.0	0.0
70.00		80.9	778.5					0.0	62.0	80.9	840.5	0.0	0.0
75.00		80.1	756.1					0.0	62.0	80.1	818.1	0.0	0.0
80.00		79.2	733.7					0.0	62.0	79.2	795.7	0.0	0.0
85.00		78.1	711.3					0.0	62.0	78.1	773.3	0.0	0.0
90.00		66.5	688.9					0.0	62.0	66.5	750.9	0.0	0.0
93.63	Bot - Section 3	38.2	486.1					0.0	45.0	38.2	531.1	0.0	0.0
95.00		36.2	272.1					0.0	17.0	36.2	289.1	0.0	0.0
98.38	Top - Section 2	37.8	660.6					0.0	41.9	37.8	702.6	0.0	0.0
100.00		49.3	105.0					0.0	20.1	49.3	125.1	0.0	0.0
105.00		73.4	316.5					0.0	62.0	73.4	378.6	0.0	0.0
110.00		71.7	305.3					0.0	62.0	71.7	367.4	0.0	0.0
115.00		63.1	294.1					0.0	62.0	63.1	356.2	0.0	0.0
119.00	Top - Section 3	33.5	227.2					0.0	49.6	33.5	276.9	0.0	0.0
120.00	Appurtenance(s)	11.7	102.7	1,272.0	0.0	834.0	2,127.9	0.0	12.4	1,283.6	2,243.0	0.0	0.0
121.00	Appurtenance(s)	29.3	102.7	101.9	0.0	101.9	372.1	0.0	12.4	131.2	487.2	0.0	0.0
125.00		53.2	410.9					0.0	41.6	53.2	452.5	0.0	0.0
130.00		59.7	513.6					0.0	52.0	59.7	565.7	0.0	0.0
135.00	Appurtenance(s)	54.2	513.6	904.4	0.0	0.0	2,528.6	0.0	52.0	958.6	3,094.3	0.0	0.0
139.00		24.2	410.9					0.0	0.0	24.2	410.9	0.0	0.0
									Totals:	4,397.90	29,729.7	0.00	0.00

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Load Case: 1.0D + 1.0W Serviceability 60 mph 20 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	-31.60	-4.59	0.00	-466.46	0.00	466.46	5,119.46	2,559.73	11,051.9	5,534.19	0.00	0.00	0.090
5.00	-30.31	-4.52	0.00	-443.49	0.00	443.49	5,045.45	2,522.72	10,661.0	5,338.45	0.01	-0.03	0.089
10.00	-29.04	-4.45	0.00	-420.89	0.00	420.89	4,969.98	2,484.99	10,273.9	5,144.62	0.05	-0.05	0.088
15.00	-27.80	-4.38	0.00	-398.64	0.00	398.64	4,893.07	2,446.54	9,890.85	4,952.78	0.12	-0.08	0.086
20.00	-26.59	-4.31	0.00	-376.75	0.00	376.75	4,814.71	2,407.35	9,511.92	4,763.03	0.22	-0.10	0.085
25.00	-25.40	-4.24	0.00	-355.21	0.00	355.21	4,734.90	2,367.45	9,137.37	4,575.48	0.34	-0.13	0.083
30.00	-24.24	-4.17	0.00	-334.02	0.00	334.02	4,653.63	2,326.82	8,767.40	4,390.22	0.49	-0.16	0.081
35.00	-23.10	-4.10	0.00	-313.17	0.00	313.17	4,570.92	2,285.46	8,402.22	4,207.35	0.67	-0.18	0.079
40.00	-21.99	-4.03	0.00	-292.68	0.00	292.68	4,486.76	2,243.38	8,042.01	4,026.98	0.88	-0.21	0.078
45.00	-20.91	-3.98	0.00	-272.55	0.00	272.55	4,395.58	2,197.79	7,677.26	3,844.33	1.11	-0.24	0.076
46.00	-20.70	-3.94	0.00	-268.57	0.00	268.57	4,372.76	2,186.38	7,597.34	3,804.32	1.16	-0.24	0.075
50.00	-19.16	-3.89	0.00	-252.80	0.00	252.80	4,281.48	2,140.74	7,281.86	3,646.34	1.38	-0.27	0.074
52.00	-18.41	-3.85	0.00	-245.01	0.00	245.01	3,574.52	1,787.26	6,143.34	3,076.23	1.49	-0.28	0.085
55.00	-17.86	-3.79	0.00	-233.46	0.00	233.46	3,534.07	1,767.03	5,976.69	2,992.79	1.67	-0.29	0.083
60.00	-16.98	-3.71	0.00	-214.50	0.00	214.50	3,465.49	1,732.74	5,701.97	2,855.22	2.00	-0.33	0.080
65.00	-16.11	-3.64	0.00	-195.93	0.00	195.93	3,395.45	1,697.73	5,431.22	2,719.65	2.35	-0.36	0.077
70.00	-15.27	-3.56	0.00	-177.75	0.00	177.75	3,323.97	1,661.99	5,164.63	2,586.16	2.74	-0.38	0.073
75.00	-14.45	-3.48	0.00	-159.97	0.00	159.97	3,251.04	1,625.52	4,902.41	2,454.85	3.16	-0.41	0.070
80.00	-13.65	-3.40	0.00	-142.58	0.00	142.58	3,154.84	1,577.42	4,612.84	2,309.85	3.61	-0.44	0.066
85.00	-12.88	-3.32	0.00	-125.58	0.00	125.58	3,057.03	1,528.51	4,329.82	2,168.13	4.09	-0.47	0.062
90.00	-12.13	-3.25	0.00	-108.97	0.00	108.97	2,959.22	1,479.61	4,055.75	2,030.89	4.60	-0.50	0.058
93.63	-11.60	-3.21	0.00	-97.15	0.00	97.15	2,888.21	1,444.11	3,862.39	1,934.07	4.98	-0.52	0.054
95.00	-11.31	-3.18	0.00	-92.75	0.00	92.75	2,861.41	1,430.71	3,790.65	1,898.14	5.13	-0.52	0.053
98.38	-10.60	-3.14	0.00	-82.01	0.00	82.01	1,159.13	579.56	1,535.51	768.89	5.51	-0.54	0.116
100.00	-10.48	-3.09	0.00	-76.93	0.00	76.93	1,152.97	576.49	1,510.24	756.24	5.69	-0.55	0.111
105.00	-10.10	-3.02	0.00	-61.49	0.00	61.49	1,133.01	566.50	1,432.19	717.16	6.29	-0.59	0.095
110.00	-9.73	-2.95	0.00	-46.39	0.00	46.39	1,111.60	555.80	1,354.21	678.11	6.93	-0.62	0.077
115.00	-9.37	-2.89	0.00	-31.65	0.00	31.65	1,088.74	544.37	1,276.49	639.20	7.60	-0.65	0.058
119.00	-7.22	-2.59	0.00	-20.10	0.00	20.10	1,069.41	534.70	1,214.64	608.22	8.15	-0.67	0.040
119.00	-7.22	-2.59	0.00	-20.10	0.00	20.10	950.95	475.47	1,000.09	624.60	8.15	-0.67	0.040
120.00	-5.00	-1.29	0.00	-16.68	0.00	16.68	950.95	475.47	1,000.09	624.60	8.29	-0.67	0.032
121.00	-4.51	-1.15	0.00	-15.29	0.00	15.29	950.95	475.47	1,000.09	624.60	8.43	-0.67	0.029
125.00	-4.06	-1.09	0.00	-10.69	0.00	10.69	950.95	475.47	1,000.09	624.60	9.00	-0.68	0.021
130.00	-3.49	-1.02	0.00	-5.24	0.00	5.24	950.95	475.47	1,000.09	624.60	9.72	-0.68	0.012
135.00	-0.41	-0.03	0.00	-0.12	0.00	0.12	950.95	475.47	1,000.09	624.60	10.43	-0.69	0.001
139.00	0.00	-0.02	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	11.01	-0.69	0.000

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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):	0.18	
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}):	0.19	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.04	
Upper Limit C_s	0.04	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	1.79	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.64	
Total Unfactored Dead Load:	31.60	k
Seismic Base Shear (E):	1.59	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)
34	137.00	411	1,332	0.032	50	509
33	132.50	566	1,736	0.041	65	700
32	127.50	566	1,629	0.039	61	700
31	123.00	453	1,229	0.029	46	560
30	120.50	115	302	0.007	11	142
29	119.50	115	298	0.007	11	142
28	117.00	277	693	0.016	26	343
27	112.50	356	835	0.020	32	441
26	107.50	367	800	0.019	30	455
25	102.50	379	762	0.018	29	469
24	99.19	125	238	0.006	9	155
23	96.69	703	1,285	0.030	48	869
22	94.32	289	508	0.012	19	358
21	91.82	531	892	0.021	34	657
20	87.50	751	1,165	0.028	44	929
19	82.50	773	1,089	0.026	41	957
18	77.50	796	1,012	0.024	38	985
17	72.50	818	932	0.022	35	1,012
16	67.50	841	852	0.020	32	1,040
15	62.50	863	770	0.018	29	1,068
14	57.50	885	689	0.016	26	1,096
13	53.50	542	375	0.009	14	671
12	51.00	756	483	0.011	18	935

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11	48.00	1,535	888	0.021	34	1,900
10	45.50	213	113	0.003	4	264
9	42.50	1,082	512	0.012	19	1,339
8	37.50	1,108	427	0.010	16	1,371
7	32.50	1,134	346	0.008	13	1,403
6	27.50	1,160	269	0.006	10	1,436
5	22.50	1,186	198	0.005	7	1,468
4	17.50	1,212	134	0.003	5	1,500
3	12.50	1,239	79	0.002	3	1,533
2	7.50	1,265	35	0.001	1	1,565
1	2.50	1,291	6	0.000	0	1,597
Raycap DC6-48-60-0-8	135.00	33	104	0.002	4	41
Ericsson RRUS 8843 B	135.00	216	683	0.016	26	267
Ericsson RRUS 4415 B	135.00	138	437	0.010	16	171
Ericsson RRUS 4449 B	135.00	213	674	0.016	25	264
Ericsson RRUS 4478 B	135.00	178	564	0.013	21	221
Raycap DC9-48-60-24-	135.00	16	51	0.001	2	20
CCI DMP65R-BU8D	135.00	287	908	0.021	34	355
Generic Flat Light S	135.00	1,200	3,797	0.090	143	1,485
CCI TPA65R-BU8D	135.00	248	783	0.019	30	306
Alcatel-Lucent RRH2x	121.00	152	402	0.010	15	188
Alcatel-Lucent RRH2x	121.00	132	349	0.008	13	163
RFS DB-T1-6Z-8AB-0Z	121.00	88	233	0.006	9	109
Amphenol Antel LPA-1	120.00	69	180	0.004	7	85
Antel BXA-70063/6CF_	120.00	102	266	0.006	10	126
VZW Unused Reserve (	120.00	1,957	5,103	0.121	193	2,422
Generic Flat Low Pro	119.00	1,875	4,822	0.114	182	2,320
		31,605	42,267	1.000	1,595	39,112

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)
34	137.00	411	1,332	0.032	50	354
33	132.50	566	1,736	0.041	65	488
32	127.50	566	1,629	0.039	61	488
31	123.00	453	1,229	0.029	46	390
30	120.50	115	302	0.007	11	99
29	119.50	115	298	0.007	11	99
28	117.00	277	693	0.016	26	239
27	112.50	356	835	0.020	32	307
26	107.50	367	800	0.019	30	317
25	102.50	379	762	0.018	29	327
24	99.19	125	238	0.006	9	108
23	96.69	703	1,285	0.030	48	606
22	94.32	289	508	0.012	19	249
21	91.82	531	892	0.021	34	458
20	87.50	751	1,165	0.028	44	648
19	82.50	773	1,089	0.026	41	667
18	77.50	796	1,012	0.024	38	686
17	72.50	818	932	0.022	35	706
16	67.50	841	852	0.020	32	725
15	62.50	863	770	0.018	29	744
14	57.50	885	689	0.016	26	764
13	53.50	542	375	0.009	14	467
12	51.00	756	483	0.011	18	652
11	48.00	1,535	888	0.021	34	1,324
10	45.50	213	113	0.003	4	184
9	42.50	1,082	512	0.012	19	933
8	37.50	1,108	427	0.010	16	955

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7	32.50	1,134	346	0.008	13	978
6	27.50	1,160	269	0.006	10	1,001
5	22.50	1,186	198	0.005	7	1,023
4	17.50	1,212	134	0.003	5	1,046
3	12.50	1,239	79	0.002	3	1,068
2	7.50	1,265	35	0.001	1	1,091
1	2.50	1,291	6	0.000	0	1,113
Raycap DC6-48-60-0-8	135.00	33	104	0.002	4	28
Ericsson RRUS 8843 B	135.00	216	683	0.016	26	186
Ericsson RRUS 4415 B	135.00	138	437	0.010	16	119
Ericsson RRUS 4449 B	135.00	213	674	0.016	25	184
Ericsson RRUS 4478 B	135.00	178	564	0.013	21	154
Raycap DC9-48-60-24-	135.00	16	51	0.001	2	14
CCI DMP65R-BU8D	135.00	287	908	0.021	34	248
Generic Flat Light S	135.00	1,200	3,797	0.090	143	1,035
CCI TPA65R-BU8D	135.00	248	783	0.019	30	213
Alcatel-Lucent RRH2x	121.00	152	402	0.010	15	131
Alcatel-Lucent RRH2x	121.00	132	349	0.008	13	114
RFS DB-T1-6Z-8AB-0Z	121.00	88	233	0.006	9	76
Amphenol Antel LPA-1	120.00	69	180	0.004	7	60
Antel BXA-70063/6CF_	120.00	102	266	0.006	10	88
VZW Unused Reserve (	120.00	1,957	5,103	0.121	193	1,688
Generic Flat Low Pro	119.00	1,875	4,822	0.114	182	1,617
		31,605	42,267	1.000	1,595	27,258

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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	-37.51	-1.60	0.00	-174.10	0.00	174.10	5,119.46	2,559.73	11,051.9	5,534.19	0.00	0.00	0.039
5.00	-35.95	-1.60	0.00	-166.11	0.00	166.11	5,045.45	2,522.72	10,661.0	5,338.45	0.01	-0.01	0.038
10.00	-34.42	-1.60	0.00	-158.10	0.00	158.10	4,969.98	2,484.99	10,273.9	5,144.62	0.02	-0.02	0.038
15.00	-32.92	-1.60	0.00	-150.08	0.00	150.08	4,893.07	2,446.54	9,890.85	4,952.78	0.05	-0.03	0.037
20.00	-31.45	-1.60	0.00	-142.06	0.00	142.06	4,814.71	2,407.35	9,511.92	4,763.03	0.08	-0.04	0.036
25.00	-30.01	-1.60	0.00	-134.05	0.00	134.05	4,734.90	2,367.45	9,137.37	4,575.48	0.13	-0.05	0.036
30.00	-28.61	-1.59	0.00	-126.07	0.00	126.07	4,653.63	2,326.82	8,767.40	4,390.22	0.18	-0.06	0.035
35.00	-27.24	-1.57	0.00	-118.14	0.00	118.14	4,570.92	2,285.46	8,402.22	4,207.35	0.25	-0.07	0.034
40.00	-25.90	-1.56	0.00	-110.27	0.00	110.27	4,486.76	2,243.38	8,042.01	4,026.98	0.33	-0.08	0.033
45.00	-25.63	-1.56	0.00	-102.48	0.00	102.48	4,395.58	2,197.79	7,677.26	3,844.33	0.42	-0.09	0.032
46.00	-23.73	-1.52	0.00	-100.93	0.00	100.93	4,372.76	2,186.38	7,597.34	3,804.32	0.44	-0.09	0.032
50.00	-22.80	-1.50	0.00	-94.84	0.00	94.84	4,281.48	2,140.74	7,281.86	3,646.34	0.52	-0.10	0.031
52.00	-22.13	-1.49	0.00	-91.84	0.00	91.84	3,574.52	1,787.26	6,143.34	3,076.23	0.56	-0.10	0.036
55.00	-21.03	-1.47	0.00	-87.36	0.00	87.36	3,534.07	1,767.03	5,976.69	2,992.79	0.63	-0.11	0.035
60.00	-19.96	-1.44	0.00	-80.04	0.00	80.04	3,465.49	1,732.74	5,701.97	2,855.22	0.75	-0.12	0.034
65.00	-18.92	-1.41	0.00	-72.85	0.00	72.85	3,395.45	1,697.73	5,431.22	2,719.65	0.88	-0.13	0.032
70.00	-17.91	-1.37	0.00	-65.81	0.00	65.81	3,323.97	1,661.99	5,164.63	2,586.16	1.03	-0.14	0.031
75.00	-16.93	-1.34	0.00	-58.94	0.00	58.94	3,251.04	1,625.52	4,902.41	2,454.85	1.19	-0.16	0.029
80.00	-15.97	-1.29	0.00	-52.26	0.00	52.26	3,154.84	1,577.42	4,612.84	2,309.85	1.36	-0.17	0.028
85.00	-15.04	-1.25	0.00	-45.79	0.00	45.79	3,057.03	1,528.51	4,329.82	2,168.13	1.54	-0.18	0.026
90.00	-14.38	-1.22	0.00	-39.54	0.00	39.54	2,959.22	1,479.61	4,055.75	2,030.89	1.73	-0.19	0.024
93.63	-14.02	-1.20	0.00	-35.12	0.00	35.12	2,888.21	1,444.11	3,862.39	1,934.07	1.87	-0.19	0.023
95.00	-13.15	-1.15	0.00	-33.48	0.00	33.48	2,861.41	1,430.71	3,790.65	1,898.14	1.92	-0.20	0.022
98.38	-13.00	-1.14	0.00	-29.60	0.00	29.60	1,159.13	579.56	1,535.51	768.89	2.07	-0.20	0.050
100.00	-12.53	-1.11	0.00	-27.75	0.00	27.75	1,152.97	576.49	1,510.24	756.24	2.13	-0.20	0.048
105.00	-12.08	-1.08	0.00	-22.20	0.00	22.20	1,133.01	566.50	1,432.19	717.16	2.36	-0.22	0.042
110.00	-11.64	-1.05	0.00	-16.79	0.00	16.79	1,111.60	555.80	1,354.21	678.11	2.59	-0.23	0.035
115.00	-11.29	-1.02	0.00	-11.54	0.00	11.54	1,088.74	544.37	1,276.49	639.20	2.84	-0.24	0.028
119.00	-8.83	-0.82	0.00	-7.44	0.00	7.44	1,069.41	534.70	1,214.64	608.22	3.05	-0.25	0.020
119.00	-8.83	-0.82	0.00	-7.44	0.00	7.44	950.95	475.47	1,000.09	624.60	3.05	-0.25	0.021
120.00	-6.06	-0.59	0.00	-6.62	0.00	6.62	950.95	475.47	1,000.09	624.60	3.10	-0.25	0.017
121.00	-5.04	-0.50	0.00	-6.03	0.00	6.03	950.95	475.47	1,000.09	624.60	3.15	-0.25	0.015
125.00	-4.34	-0.44	0.00	-4.02	0.00	4.02	950.95	475.47	1,000.09	624.60	3.36	-0.25	0.011
130.00	-3.64	-0.37	0.00	-1.84	0.00	1.84	950.95	475.47	1,000.09	624.60	3.63	-0.25	0.007
135.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	3.89	-0.25	0.000
139.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	4.11	-0.25	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	-26.14	-1.60	0.00	-172.53	0.00	172.53	5,119.46	2,559.73	11,051.9	5,534.19	0.00	0.00	0.036
5.00	-25.05	-1.60	0.00	-164.55	0.00	164.55	5,045.45	2,522.72	10,661.0	5,338.45	0.01	-0.01	0.036
10.00	-23.98	-1.60	0.00	-156.56	0.00	156.56	4,969.98	2,484.99	10,273.9	5,144.62	0.02	-0.02	0.035
15.00	-22.94	-1.60	0.00	-148.56	0.00	148.56	4,893.07	2,446.54	9,890.85	4,952.78	0.05	-0.03	0.035
20.00	-21.92	-1.59	0.00	-140.58	0.00	140.58	4,814.71	2,407.35	9,511.92	4,763.03	0.08	-0.04	0.034
25.00	-20.91	-1.59	0.00	-132.61	0.00	132.61	4,734.90	2,367.45	9,137.37	4,575.48	0.13	-0.05	0.033
30.00	-19.94	-1.58	0.00	-124.68	0.00	124.68	4,653.63	2,326.82	8,767.40	4,390.22	0.18	-0.06	0.033
35.00	-18.98	-1.56	0.00	-116.80	0.00	116.80	4,570.92	2,285.46	8,402.22	4,207.35	0.25	-0.07	0.032
40.00	-18.05	-1.54	0.00	-108.99	0.00	108.99	4,486.76	2,243.38	8,042.01	4,026.98	0.33	-0.08	0.031
45.00	-17.86	-1.54	0.00	-101.27	0.00	101.27	4,395.58	2,197.79	7,677.26	3,844.33	0.41	-0.09	0.030
46.00	-16.54	-1.51	0.00	-99.73	0.00	99.73	4,372.76	2,186.38	7,597.34	3,804.32	0.43	-0.09	0.030
50.00	-15.89	-1.49	0.00	-93.70	0.00	93.70	4,281.48	2,140.74	7,281.86	3,646.34	0.51	-0.10	0.029
52.00	-15.42	-1.48	0.00	-90.72	0.00	90.72	3,574.52	1,787.26	6,143.34	3,076.23	0.56	-0.10	0.034
55.00	-14.66	-1.45	0.00	-86.29	0.00	86.29	3,534.07	1,767.03	5,976.69	2,992.79	0.62	-0.11	0.033
60.00	-13.91	-1.42	0.00	-79.03	0.00	79.03	3,465.49	1,732.74	5,701.97	2,855.22	0.74	-0.12	0.032
65.00	-13.19	-1.39	0.00	-71.91	0.00	71.91	3,395.45	1,697.73	5,431.22	2,719.65	0.88	-0.13	0.030
70.00	-12.48	-1.36	0.00	-64.95	0.00	64.95	3,323.97	1,661.99	5,164.63	2,586.16	1.02	-0.14	0.029
75.00	-11.79	-1.32	0.00	-58.16	0.00	58.16	3,251.04	1,625.52	4,902.41	2,454.85	1.18	-0.15	0.027
80.00	-11.13	-1.28	0.00	-51.56	0.00	51.56	3,154.84	1,577.42	4,612.84	2,309.85	1.34	-0.16	0.026
85.00	-10.48	-1.24	0.00	-45.16	0.00	45.16	3,057.03	1,528.51	4,329.82	2,168.13	1.52	-0.17	0.024
90.00	-10.02	-1.20	0.00	-38.99	0.00	38.99	2,959.22	1,479.61	4,055.75	2,030.89	1.71	-0.18	0.023
93.63	-9.77	-1.18	0.00	-34.63	0.00	34.63	2,888.21	1,444.11	3,862.39	1,934.07	1.85	-0.19	0.021
95.00	-9.17	-1.13	0.00	-33.01	0.00	33.01	2,861.41	1,430.71	3,790.65	1,898.14	1.90	-0.19	0.021
98.38	-9.06	-1.12	0.00	-29.18	0.00	29.18	1,159.13	579.56	1,535.51	768.89	2.04	-0.20	0.046
100.00	-8.73	-1.10	0.00	-27.36	0.00	27.36	1,152.97	576.49	1,510.24	756.24	2.11	-0.20	0.044
105.00	-8.41	-1.07	0.00	-21.88	0.00	21.88	1,133.01	566.50	1,432.19	717.16	2.33	-0.22	0.038
110.00	-8.11	-1.04	0.00	-16.55	0.00	16.55	1,111.60	555.80	1,354.21	678.11	2.56	-0.23	0.032
115.00	-7.87	-1.01	0.00	-11.37	0.00	11.37	1,088.74	544.37	1,276.49	639.20	2.81	-0.24	0.025
119.00	-6.15	-0.81	0.00	-7.33	0.00	7.33	1,069.41	534.70	1,214.64	608.22	3.01	-0.24	0.018
119.00	-6.15	-0.81	0.00	-7.33	0.00	7.33	950.95	475.47	1,000.09	624.60	3.01	-0.24	0.018
120.00	-4.22	-0.58	0.00	-6.52	0.00	6.52	950.95	475.47	1,000.09	624.60	3.06	-0.25	0.015
121.00	-3.51	-0.49	0.00	-5.94	0.00	5.94	950.95	475.47	1,000.09	624.60	3.11	-0.25	0.013
125.00	-3.02	-0.43	0.00	-3.97	0.00	3.97	950.95	475.47	1,000.09	624.60	3.32	-0.25	0.010
130.00	-2.53	-0.36	0.00	-1.82	0.00	1.82	950.95	475.47	1,000.09	624.60	3.58	-0.25	0.006
135.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	3.85	-0.25	0.000
139.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	4.06	-0.25	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):	0.18
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}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.79
Redundancy Factor (p):	1.30

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)
34	137.00	411	1.836	1.707	1.040	0.332	118	509
33	132.50	566	1.717	1.189	0.841	0.263	129	700
32	127.50	566	1.590	0.748	0.657	0.195	96	700
31	123.00	453	1.480	0.453	0.519	0.142	56	560
30	120.50	115	1.420	0.324	0.453	0.117	12	142
29	119.50	115	1.397	0.278	0.429	0.107	11	142
28	117.00	277	1.339	0.178	0.372	0.084	20	343
27	112.50	356	1.238	0.044	0.284	0.050	15	441
26	107.50	367	1.130	-0.051	0.206	0.020	6	455
25	102.50	379	1.028	-0.102	0.146	-0.001	0	469
24	99.19	125	0.962	-0.117	0.114	-0.010	-1	155
23	96.69	703	0.915	-0.122	0.093	-0.014	-9	869
22	94.32	289	0.870	-0.121	0.076	-0.017	-4	358
21	91.82	531	0.825	-0.116	0.061	-0.017	-8	657
20	87.50	751	0.749	-0.101	0.040	-0.015	-9	929
19	82.50	773	0.666	-0.076	0.024	-0.006	-4	957
18	77.50	796	0.588	-0.048	0.013	0.005	3	985
17	72.50	818	0.514	-0.021	0.008	0.016	12	1,012
16	67.50	841	0.446	0.003	0.006	0.027	20	1,040
15	62.50	863	0.382	0.024	0.007	0.035	26	1,068
14	57.50	885	0.323	0.040	0.010	0.041	31	1,096
13	53.50	542	0.280	0.050	0.014	0.043	20	671
12	51.00	756	0.254	0.055	0.017	0.044	29	935
11	48.00	1,535	0.225	0.059	0.020	0.045	59	1,900
10	45.50	213	0.203	0.062	0.023	0.045	8	264
9	42.50	1,082	0.177	0.065	0.026	0.044	41	1,339
8	37.50	1,108	0.138	0.069	0.032	0.043	41	1,371
7	32.50	1,134	0.103	0.071	0.037	0.042	41	1,403
6	27.50	1,160	0.074	0.072	0.040	0.040	40	1,436
5	22.50	1,186	0.050	0.071	0.042	0.038	39	1,468
4	17.50	1,212	0.030	0.068	0.041	0.036	38	1,500
3	12.50	1,239	0.015	0.061	0.036	0.032	35	1,533
2	7.50	1,265	0.006	0.046	0.026	0.025	27	1,565
1	2.50	1,291	0.001	0.019	0.011	0.011	13	1,597

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Raycap DC6-48-60-0-8	135.00	33	1.783	1.461	0.948	0.300	9	41
Ericsson RRUS 8843 B	135.00	216	1.783	1.461	0.948	0.300	56	267
Ericsson RRUS 4415 B	135.00	138	1.783	1.461	0.948	0.300	36	171
Ericsson RRUS 4449 B	135.00	213	1.783	1.461	0.948	0.300	55	264
Ericsson RRUS 4478 B	135.00	178	1.783	1.461	0.948	0.300	46	221
Raycap DC9-48-60-24-	135.00	16	1.783	1.461	0.948	0.300	4	20
CCI DMP65R-BU8D	135.00	287	1.783	1.461	0.948	0.300	75	355
Generic Flat Light S	135.00	1,200	1.783	1.461	0.948	0.300	312	1,485
CCI TPA65R-BU8D	135.00	248	1.783	1.461	0.948	0.300	64	306
Alcatel-Lucent RRH2x	121.00	152	1.432	0.348	0.466	0.122	16	188
Alcatel-Lucent RRH2x	121.00	132	1.432	0.348	0.466	0.122	14	163
RFS DB-T1-6Z-8AB-0Z	121.00	88	1.432	0.348	0.466	0.122	9	109
Amphenol Antel LPA-1	120.00	69	1.409	0.300	0.441	0.112	7	85
Antel BXA-70063/6CF_	120.00	102	1.409	0.300	0.441	0.112	10	126
VZW Unused Reserve (	120.00	1,957	1.409	0.300	0.441	0.112	189	2,422
Generic Flat Low Pro	119.00	1,875	1.385	0.257	0.417	0.102	166	2,320
		31,605	48.923	20.234	17.430	5.342	2,019	39,112

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)
34	137.00	411	1.836	1.707	1.040	0.332	118	354
33	132.50	566	1.717	1.189	0.841	0.263	129	488
32	127.50	566	1.590	0.748	0.657	0.195	96	488
31	123.00	453	1.480	0.453	0.519	0.142	56	390
30	120.50	115	1.420	0.324	0.453	0.117	12	99
29	119.50	115	1.397	0.278	0.429	0.107	11	99
28	117.00	277	1.339	0.178	0.372	0.084	20	239
27	112.50	356	1.238	0.044	0.284	0.050	15	307
26	107.50	367	1.130	-0.051	0.206	0.020	6	317
25	102.50	379	1.028	-0.102	0.146	-0.001	0	327
24	99.19	125	0.962	-0.117	0.114	-0.010	-1	108
23	96.69	703	0.915	-0.122	0.093	-0.014	-9	606
22	94.32	289	0.870	-0.121	0.076	-0.017	-4	249
21	91.82	531	0.825	-0.116	0.061	-0.017	-8	458
20	87.50	751	0.749	-0.101	0.040	-0.015	-9	648
19	82.50	773	0.666	-0.076	0.024	-0.006	-4	667
18	77.50	796	0.588	-0.048	0.013	0.005	3	686
17	72.50	818	0.514	-0.021	0.008	0.016	12	706
16	67.50	841	0.446	0.003	0.006	0.027	20	725
15	62.50	863	0.382	0.024	0.007	0.035	26	744
14	57.50	885	0.323	0.040	0.010	0.041	31	764
13	53.50	542	0.280	0.050	0.014	0.043	20	467
12	51.00	756	0.254	0.055	0.017	0.044	29	652
11	48.00	1,535	0.225	0.059	0.020	0.045	59	1,324
10	45.50	213	0.203	0.062	0.023	0.045	8	184
9	42.50	1,082	0.177	0.065	0.026	0.044	41	933
8	37.50	1,108	0.138	0.069	0.032	0.043	41	955
7	32.50	1,134	0.103	0.071	0.037	0.042	41	978
6	27.50	1,160	0.074	0.072	0.040	0.040	40	1,001
5	22.50	1,186	0.050	0.071	0.042	0.038	39	1,023
4	17.50	1,212	0.030	0.068	0.041	0.036	38	1,046
3	12.50	1,239	0.015	0.061	0.036	0.032	35	1,068
2	7.50	1,265	0.006	0.046	0.026	0.025	27	1,091
1	2.50	1,291	0.001	0.019	0.011	0.011	13	1,113
Raycap DC6-48-60-0-8	135.00	33	1.783	1.461	0.948	0.300	9	28
Ericsson RRUS 8843 B	135.00	216	1.783	1.461	0.948	0.300	56	186
Ericsson RRUS 4415 B	135.00	138	1.783	1.461	0.948	0.300	36	119

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Ericsson RRUS 4449 B	135.00	213	1.783	1.461	0.948	0.300	55	184
Ericsson RRUS 4478 B	135.00	178	1.783	1.461	0.948	0.300	46	154
Raycap DC9-48-60-24-	135.00	16	1.783	1.461	0.948	0.300	4	14
CCI DMP65R-BU8D	135.00	287	1.783	1.461	0.948	0.300	75	248
Generic Flat Light S	135.00	1,200	1.783	1.461	0.948	0.300	312	1,035
CCI TPA65R-BU8D	135.00	248	1.783	1.461	0.948	0.300	64	213
Alcatel-Lucent RRH2x	121.00	152	1.432	0.348	0.466	0.122	16	131
Alcatel-Lucent RRH2x	121.00	132	1.432	0.348	0.466	0.122	14	114
RFS DB-T1-6Z-8AB-0Z	121.00	88	1.432	0.348	0.466	0.122	9	76
Amphenol Antel LPA-1	120.00	69	1.409	0.300	0.441	0.112	7	60
Antel BXA-70063/6CF_	120.00	102	1.409	0.300	0.441	0.112	10	88
VZW Unused Reserve (	120.00	1,957	1.409	0.300	0.441	0.112	189	1,688
Generic Flat Low Pro	119.00	1,875	1.385	0.257	0.417	0.102	166	1,617
		31,605	48.923	20.234	17.430	5.342	2,019	27,258

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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	-37.51	-2.01	0.00	-218.07	0.00	218.07	5,119.46	2,559.73	11,051.94	5,534.19	0.00	0.00	0.047
5.00	-35.95	-1.99	0.00	-208.02	0.00	208.02	5,045.45	2,522.72	10,661.06	5,338.45	0.01	-0.01	0.046
10.00	-34.42	-1.96	0.00	-198.06	0.00	198.06	4,969.98	2,484.99	10,273.96	5,144.62	0.03	-0.02	0.045
15.00	-32.92	-1.93	0.00	-188.25	0.00	188.25	4,893.07	2,446.54	9,890.85	4,952.78	0.06	-0.04	0.045
20.00	-31.45	-1.90	0.00	-178.60	0.00	178.60	4,814.71	2,407.35	9,511.92	4,763.03	0.10	-0.05	0.044
25.00	-30.01	-1.86	0.00	-169.11	0.00	169.11	4,734.90	2,367.45	9,137.37	4,575.48	0.16	-0.06	0.043
30.00	-28.61	-1.83	0.00	-159.80	0.00	159.80	4,653.63	2,326.82	8,767.40	4,390.22	0.23	-0.07	0.043
35.00	-27.24	-1.79	0.00	-150.67	0.00	150.67	4,570.92	2,285.46	8,402.22	4,207.35	0.32	-0.09	0.042
40.00	-25.90	-1.75	0.00	-141.72	0.00	141.72	4,486.76	2,243.38	8,042.01	4,026.98	0.41	-0.10	0.041
45.00	-25.63	-1.75	0.00	-132.96	0.00	132.96	4,395.58	2,197.79	7,677.26	3,844.33	0.53	-0.11	0.040
46.00	-23.73	-1.69	0.00	-131.22	0.00	131.22	4,372.76	2,186.38	7,597.34	3,804.32	0.55	-0.12	0.040
50.00	-22.80	-1.66	0.00	-124.47	0.00	124.47	4,281.48	2,140.74	7,281.86	3,646.34	0.65	-0.13	0.039
52.00	-22.13	-1.64	0.00	-121.15	0.00	121.15	3,574.52	1,787.26	6,143.34	3,076.23	0.71	-0.13	0.046
55.00	-21.03	-1.61	0.00	-116.24	0.00	116.24	3,534.07	1,767.03	5,976.69	2,992.79	0.79	-0.14	0.045
60.00	-19.96	-1.59	0.00	-108.19	0.00	108.19	3,465.49	1,732.74	5,701.97	2,855.22	0.95	-0.16	0.044
65.00	-18.92	-1.57	0.00	-100.26	0.00	100.26	3,395.45	1,697.73	5,431.22	2,719.65	1.12	-0.17	0.042
70.00	-17.91	-1.56	0.00	-92.41	0.00	92.41	3,323.97	1,661.99	5,164.63	2,586.16	1.31	-0.19	0.041
75.00	-16.92	-1.56	0.00	-84.62	0.00	84.62	3,251.04	1,625.52	4,902.41	2,454.85	1.51	-0.20	0.040
80.00	-15.97	-1.56	0.00	-76.84	0.00	76.84	3,154.84	1,577.42	4,612.84	2,309.85	1.73	-0.22	0.038
85.00	-15.04	-1.57	0.00	-69.03	0.00	69.03	3,057.03	1,528.51	4,329.82	2,168.13	1.97	-0.23	0.037
90.00	-14.38	-1.58	0.00	-61.18	0.00	61.18	2,959.22	1,479.61	4,055.75	2,030.89	2.22	-0.25	0.035
93.63	-14.02	-1.58	0.00	-55.44	0.00	55.44	2,888.21	1,444.11	3,862.39	1,934.07	2.41	-0.26	0.034
95.00	-13.15	-1.59	0.00	-53.27	0.00	53.27	2,861.41	1,430.71	3,790.65	1,898.14	2.49	-0.26	0.033
98.38	-13.00	-1.59	0.00	-47.89	0.00	47.89	1,159.13	579.56	1,535.51	768.89	2.68	-0.27	0.074
100.00	-12.53	-1.59	0.00	-45.31	0.00	45.31	1,152.97	576.49	1,510.24	756.24	2.77	-0.28	0.071
105.00	-12.07	-1.59	0.00	-37.34	0.00	37.34	1,133.01	566.50	1,432.19	717.16	3.08	-0.30	0.063
110.00	-11.63	-1.58	0.00	-29.39	0.00	29.39	1,111.60	555.80	1,354.21	678.11	3.40	-0.32	0.054
115.00	-11.29	-1.56	0.00	-21.51	0.00	21.51	1,088.74	544.37	1,276.49	639.20	3.75	-0.34	0.044
119.00	-8.83	-1.37	0.00	-15.28	0.00	15.28	1,069.41	534.70	1,214.64	608.22	4.04	-0.35	0.033
119.00	-8.83	-1.37	0.00	-15.28	0.00	15.28	950.95	475.47	1,000.09	624.60	4.04	-0.35	0.034
120.00	-6.05	-1.13	0.00	-13.91	0.00	13.91	950.95	475.47	1,000.09	624.60	4.12	-0.36	0.029
121.00	-5.03	-1.03	0.00	-12.78	0.00	12.78	950.95	475.47	1,000.09	624.60	4.19	-0.36	0.026
125.00	-4.33	-0.93	0.00	-8.65	0.00	8.65	950.95	475.47	1,000.09	624.60	4.49	-0.36	0.018
130.00	-3.63	-0.80	0.00	-3.99	0.00	3.99	950.95	475.47	1,000.09	624.60	4.88	-0.37	0.010
135.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	5.26	-0.37	0.000
139.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	5.57	-0.37	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	-26.14	-2.01	0.00	-216.12	0.00	216.12	5,119.46	2,559.73	11,051.94	5,534.19	0.00	0.00	0.044
5.00	-25.05	-1.99	0.00	-206.08	0.00	206.08	5,045.45	2,522.72	10,661.06	5,338.45	0.01	-0.01	0.044
10.00	-23.98	-1.96	0.00	-196.15	0.00	196.15	4,969.98	2,484.99	10,273.96	5,144.62	0.03	-0.02	0.043
15.00	-22.94	-1.92	0.00	-186.36	0.00	186.36	4,893.07	2,446.54	9,890.85	4,952.78	0.06	-0.04	0.042
20.00	-21.92	-1.89	0.00	-176.74	0.00	176.74	4,814.71	2,407.35	9,511.92	4,763.03	0.10	-0.05	0.042
25.00	-20.91	-1.85	0.00	-167.30	0.00	167.30	4,734.90	2,367.45	9,137.37	4,575.48	0.16	-0.06	0.041
30.00	-19.94	-1.81	0.00	-158.05	0.00	158.05	4,653.63	2,326.82	8,767.40	4,390.22	0.23	-0.07	0.040
35.00	-18.98	-1.78	0.00	-148.98	0.00	148.98	4,570.92	2,285.46	8,402.22	4,207.35	0.31	-0.09	0.040
40.00	-18.05	-1.74	0.00	-140.10	0.00	140.10	4,486.76	2,243.38	8,042.01	4,026.98	0.41	-0.10	0.039
45.00	-17.86	-1.73	0.00	-131.42	0.00	131.42	4,395.58	2,197.79	7,677.26	3,844.33	0.52	-0.11	0.038
46.00	-16.54	-1.67	0.00	-129.69	0.00	129.69	4,372.76	2,186.38	7,597.34	3,804.32	0.54	-0.12	0.038
50.00	-15.89	-1.64	0.00	-123.00	0.00	123.00	4,281.48	2,140.74	7,281.86	3,646.34	0.65	-0.13	0.037
52.00	-15.42	-1.62	0.00	-119.72	0.00	119.72	3,574.52	1,787.26	6,143.34	3,076.23	0.70	-0.13	0.043
55.00	-14.66	-1.59	0.00	-114.85	0.00	114.85	3,534.07	1,767.03	5,976.69	2,992.79	0.78	-0.14	0.043
60.00	-13.91	-1.57	0.00	-106.89	0.00	106.89	3,465.49	1,732.74	5,701.97	2,855.22	0.94	-0.15	0.041
65.00	-13.19	-1.55	0.00	-99.04	0.00	99.04	3,395.45	1,697.73	5,431.22	2,719.65	1.11	-0.17	0.040
70.00	-12.48	-1.54	0.00	-91.29	0.00	91.29	3,323.97	1,661.99	5,164.63	2,586.16	1.30	-0.18	0.039
75.00	-11.79	-1.54	0.00	-83.60	0.00	83.60	3,251.04	1,625.52	4,902.41	2,454.85	1.50	-0.20	0.038
80.00	-11.13	-1.54	0.00	-75.91	0.00	75.91	3,154.84	1,577.42	4,612.84	2,309.85	1.72	-0.22	0.036
85.00	-10.48	-1.55	0.00	-68.20	0.00	68.20	3,057.03	1,528.51	4,329.82	2,168.13	1.95	-0.23	0.035
90.00	-10.02	-1.56	0.00	-60.44	0.00	60.44	2,959.22	1,479.61	4,055.75	2,030.89	2.20	-0.25	0.033
93.63	-9.77	-1.56	0.00	-54.78	0.00	54.78	2,888.21	1,444.11	3,862.39	1,934.07	2.39	-0.26	0.032
95.00	-9.16	-1.57	0.00	-52.64	0.00	52.64	2,861.41	1,430.71	3,790.65	1,898.14	2.46	-0.26	0.031
98.38	-9.06	-1.57	0.00	-47.32	0.00	47.32	1,159.13	579.56	1,535.51	768.89	2.65	-0.27	0.069
100.00	-8.73	-1.57	0.00	-44.78	0.00	44.78	1,152.97	576.49	1,510.24	756.24	2.74	-0.27	0.067
105.00	-8.41	-1.57	0.00	-36.90	0.00	36.90	1,133.01	566.50	1,432.19	717.16	3.04	-0.30	0.059
110.00	-8.10	-1.56	0.00	-29.05	0.00	29.05	1,111.60	555.80	1,354.21	678.11	3.37	-0.32	0.050
115.00	-7.86	-1.54	0.00	-21.28	0.00	21.28	1,088.74	544.37	1,276.49	639.20	3.71	-0.34	0.041
119.00	-6.15	-1.35	0.00	-15.13	0.00	15.13	1,069.41	534.70	1,214.64	608.22	4.00	-0.35	0.031
119.00	-6.15	-1.35	0.00	-15.13	0.00	15.13	950.95	475.47	1,000.09	624.60	4.00	-0.35	0.031
120.00	-4.22	-1.12	0.00	-13.78	0.00	13.78	950.95	475.47	1,000.09	624.60	4.07	-0.35	0.027
121.00	-3.50	-1.02	0.00	-12.66	0.00	12.66	950.95	475.47	1,000.09	624.60	4.15	-0.35	0.024
125.00	-3.02	-0.92	0.00	-8.57	0.00	8.57	950.95	475.47	1,000.09	624.60	4.44	-0.36	0.017
130.00	-2.53	-0.79	0.00	-3.96	0.00	3.96	950.95	475.47	1,000.09	624.60	4.82	-0.36	0.009
135.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	5.20	-0.36	0.000
139.00	0.00	0.00	0.00	0.00	0.00	0.00	950.95	475.47	1,000.09	624.60	5.51	-0.36	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	19.75	0.00	37.91	0.00	0.00	2013.24	98.38	0.47
0.9D + 1.6W	19.74	0.00	28.43	0.00	0.00	1998.85	98.38	0.46
1.2D + 1.0Di + 1.0Wi	6.70	0.00	62.06	0.00	0.00	684.75	98.38	0.18
(1.2 + 0.2Sds) * DL + E ELFM	1.60	0.00	37.51	0.00	0.00	174.10	98.38	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.01	0.00	37.51	0.00	0.00	218.07	98.38	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.60	0.00	26.14	0.00	0.00	172.53	98.38	0.05
(0.9 - 0.2Sds) * DL + E EMAM	2.01	0.00	26.14	0.00	0.00	216.12	98.38	0.07
1.0D + 1.0W	4.59	0.00	31.60	0.00	0.00	466.46	98.38	0.12

AMERICAN TOWER CORPORATION

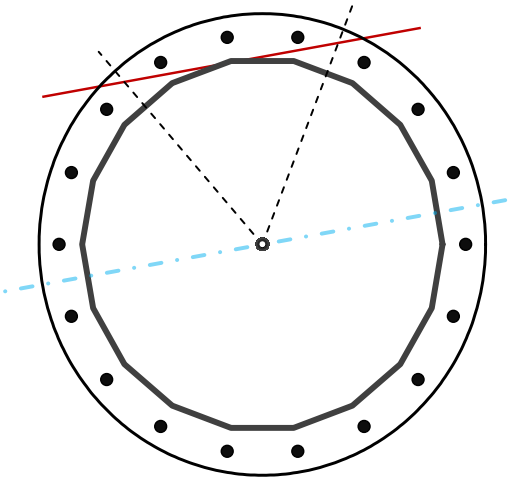
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	53	in
Thickness	7/16	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2,013.2	k-ft
Axial, Pu	37.9	k
Shear, Vu	19.8	k
Neutral Axis	10	°

Report Capacities		
Component	Capacity	Result
Base Plate	17%	Pass
Anchor Rods	36%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	67	in
Thickness	2 1/2	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	413.7	k
Bending Stress, ϕMn	2463.2	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	18	-
Diameter, ø	2 1/4	in
Bolt Circle	61	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	10.6	in
Orientation Offset	0	°
Applied Force, Pu	93.6	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	19.8	2013.2	1.00
Anchor Rod Forces	19.8	2013.2	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	71.8781	3.9932	0.2558		24827.87
Bolt	3.9761	3.2477	0.8393	4.5	25129.50
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	67	in
Thickness, t	2.5	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	40.988	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	18	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	61	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	93.6	k
Applied Shear, Vu	0.3	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.360	OK
Interaction Capacity	0.363	OK

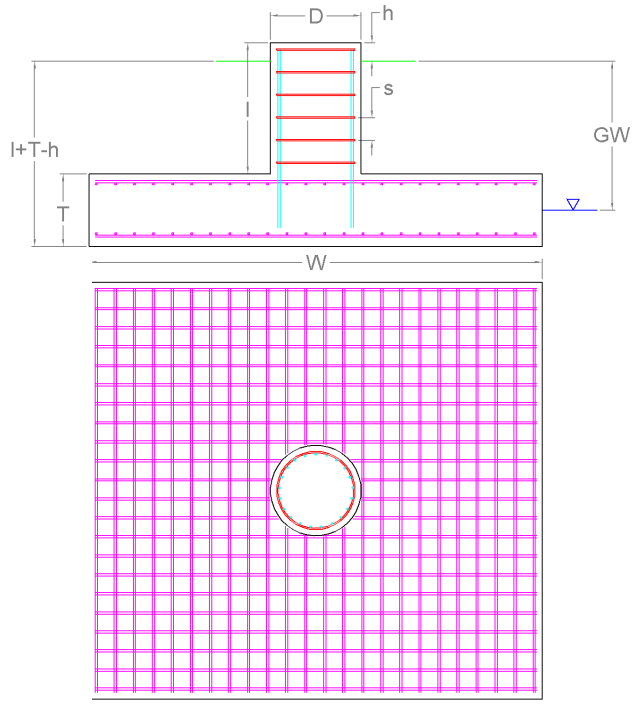
External Base Plate		
Chord Length AA	34.593	in
Additional AA	5.000	in
Section Modulus, Z	61.864	in^3
Applied Moment, Mu	413.7	k-ft
Bending Capacity, ϕMn	2783.9	k-ft
Capacity, Mu/ϕMn	0.149	OK
Chord Length AB	33.295	in
Additional AB	5.000	in
Section Modulus, Z	59.835	in^3
Applied Moment, Mu	302.9	k-ft
Bending Capacity, ϕMn	2692.6	k-ft
Capacity, Mu/ϕMn	0.112	OK
Bend Line Length	35.033	in
Additional Bend Line	0.000	in
Section Modulus, Z	54.739	in^3
Applied Moment, Mu	413.7	k-ft
Bending Capacity, ϕMn	2463.2	k-ft
Capacity, Mu/ϕMn	0.168	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		

Pad & Pier Foundation Analysis (ANSI/TIA-222-G)

Foundation & Soil Parameters			
Ignore Rebar?		N	
Pier Diameter	*D*	7.00	ft
Pier Height Above Ground	*h*	1.0	ft
Pad Base Depth	*l+T-h*	5.0	ft
Pad Width	*W*	26.0	ft
Pad Thickness	*T*	3.0	ft
Water Table Depth [BGL]	*GW*	10	ft
Unit Weight of Concrete		150	pcf
Unit Weight of Soil Above Water Table		127.0	pcf
Unit Weight of Water		62.4	pcf
Unit Weight of Soil [Submerged]		64.6	pcf
Cohesion		0	psf
Friction Angle		34	°
Ultimate Skin Friction		0	psf
Ultimate Bearing Pressure		6,376	psf
Conical Failure Angle		30	°
Soil Uplift at _____ of Pad		Top	
Capacity Increase (Transient Loads)		1.00	
Bearing Strength Reduction Factor, ϕ_s		0.75	
Uplift Strength Reduction Factor, ϕ_s		0.75	

Reactions		
Moment, M_u	2013.2	k-ft
Shear, V_u	19.8	k
Compression, P_u	37.9	k
Uplift, T_u	0.0	k



Soil Axial Capacities and Design Moment		
Weight of Concrete [Buoyancy Considered]	321.5	k
Weight of Soil [Buoyancy Considered]	177.6	k
Skin Friction Resistance	0.0	k
Controlling Failure Mode	Top	
Compressive Force, P_u	102.9	k
Nominal Compressive Capacity per Leg, $\phi_s P_n$	3,232.6	k
$P_u / \phi_s P_n$	**3.2%**	
Inflection Point [BGL]	4.1	ft
Design Moment at Inflection Point, M_u	2,077.8	k-ft

Pad Reinforcement Parameters		
Concrete Compressive Strength, f'_c	4,000	psi
Pad Rebar Size #	9	
Pad Rebar Area (Single)	1.00	in^2
Pad Rebar Quantity [Upper]	18	
Pad Rebar Quantity [Lower]	36	
Pad Rebar Yield Strength, F_y	60	ksi
Pad Clear Cover	3	in
Bending Reduction Factor, ϕ_B	0.90	
Shear Reduction Factor, ϕ_V	0.75	
Compression Reduction Factor, ϕ_C	0.65	
Steel Elastic Modulus	29,000	ksi

Pad Reinforcement Capacities		
Compression Zone Factor, β_1	0.85	
Lower Reinforcement Steel Area	36.00	
Upper Reinforcement Steel Area	18.00	
Lower Reinforcement Spacing	8.7	in
Upper Reinforcement Spacing	18.0	in
One Way Design Shear, V_u	24.1	k
One Way Shear Capacity, ϕV_c	975.4	k
$V_u / \phi V_c$	**2.5%**	
Punching Design Shear Stress, v_u	2.8	psi
Punching Shear Capacity, $\phi_c V_n$	189.7	psi
$v_u / \phi_c V_n$	**1.5%**	
Moment Transfer Flexural Ratio, γ_f	0.60	
Neutral Axis Depth	18.69	In
Moment Transfer Flexural Capacity, $\phi M_{sc,f}$	268,918	k-in
$\gamma_f M_{sc} / \phi M_{sc,f}$	**5.6%**	
Flexure Due to Soil Pressure, M_u	159.8	k-ft
Lower Steel Pad Moment Capacity, ϕM_n	5,089.9	k-ft
$M_u / \phi M_n$	**3.1%**	

Pier Reinforcement Parameters		
Concrete Compressive Strength (f'_c)	4,000	psi
Pier Rebar Size #	9	
Pier Rebar Area	1.00	in^2
Pier Rebar Quantity	36	
Pier Rebar Yield Strength (F_y)	60	ksi
Tie Rebar Size #	4	
Tie Rebar Area (Single)	0.20	in^2
Tie Rebar Spacing	6.0	in
Tie Rebar Yield Strength (F_y)	60	ksi
Rebar Cage Diameter	75.87	in

Pier Reinforcement Capacities		
Design Moment (M_u)	2,077.8	k-ft
Nominal Moment Capacity ($\phi_B M_n$)	6,010.8	k-ft
$M_u / \phi_B M_n$	**34.6%**	
Design Shear (V_u)	19.8	k
Nominal Shear Capacity ($\phi_V V_n$)	794.5	k
$V_u / \phi_V V_n$	**2.5%**	
Design Compression (P_u)	37.9	k
Nominal Compression Capacity ($\phi_P P_n$)	10,857.4	k
$P_u / \phi_P P_n$	**0.3%**	
Pier Reinforcement Ratio	0.006	-

August 12, 2020
October 13, 2020 (Rev. 1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:	Site Number:	CT2388 (NSB)
	FA Number:	12906924
	PACE Number:	MRCTB048378
	PT Number:	2051A0WDWS
	Site Name:	EAST GRANBY CT
	Site Address:	174 South Grand Street West Suffield, CT 06093

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the new AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading:

- **(3) TPA65R-BU8DA-K Antennas (96.0"x20.7"x7.7" – Wt. = 87 lbs. /each)**
- **(3) DMP65R-BU8DA-K Antennas (96.0"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.5" – Wt. = 71 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(2) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.)**

**Proposed equipment shown in bold.*

Mount fabrication drawings prepared by SitePro1, P/N VFA12-M3-WLL, dated October 26, 2018 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.73 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.

Based on our evaluation, we have determined that the New SitePro1 VFA12-M3-WLL mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
New Mount Rating	89	LC4	73%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N VFA12-M3-WLL, dated October 26, 2018.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mount will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 10/13/2020
Project Name: EAST GRANBY CT
Project No.: CT2388
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	135	(ft)
z_g=	900	(ft)
α=	9.5	

K_z= 1.348

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt} =1.0)

Category=	1	

K_h=	#DIV/0!	
K_c=	1.0	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
z=	135	
z_s=	200	(Mean elevation of base of structure above sea level)
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.50	in
Importance Factor =	I=	1.00	(from Table 2-3)
	K_{iz} =	1.15	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.73 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	139	G_h=	0.85
2.6.9.2 Guyed Masts		G_h=	0.85
2.6.9.3 Pole Structures		G_h=	1.1
2.6.9 Appurtenances		G_h=	1.0

2.6.9.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$$F = q_z * G_h * (EPA)_A$$

$$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$$

q_z=	**46.87**	K_z=	1.348	(from 2.6.5.2)
$q_{z\ (ice)}$=	**8.14**	K_{zt}=	1.0	(from 2.6.6.2.1)
$q_{z\ (30)}$=	**2.93**	K_s=	1.0	(from 2.6.7)
		K_e=	0.99	(from 2.6.8)
		K_d=	0.95	(from Table 2-2)
		V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.73 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	4.64	1.30	838	176	52
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	4.64	1.30	838	176	52
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	95	25	6
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.36	1.20	92	24	6
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	77	21	5
4415 B30 RRH	16.5	13.4	5.9	1.54	1.23	1.20	86	23	5
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	53	14	3
PL 3-1/2x5/8	0.6	12.0	-	0.05	0.05	2.00	5		
PL 11-1/4x5/8	0.6	12.0	-	0.05	0.05	2.00	5		
3/4" Round Bar	0.8	12.0	-	0.06	0.06	1.20	4		
5/8" Round Bar	0.6	12.0	-	0.05	0.05	1.20	3		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	11		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	13		

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WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.73	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	725
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	725
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	86
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	92	67	86
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	77	64	74
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	86	39	74
WIND LOADS WITH ICE:												
TPA65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	153
DMP65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	153
B14 4478 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	25	17	23
4449 B5/B12 RRH	21.4	16.7	13.0	2.47	1.92	1.28	1.65	1.20	1.20	24	19	23
B2/B66A 8843 RRH	18.4	16.7	14.4	2.12	1.83	1.10	1.28	1.20	1.20	21	18	20
4415 B30 RRH	20.0	16.9	9.4	2.34	1.30	1.18	2.13	1.20	1.20	23	13	20
WIND LOADS AT 30 MPH:												
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	45
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	45
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	6	4	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	5

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WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	496
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	496
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	68
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	92	67	73
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	77	64	67
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	86	39	51
WIND LOADS WITH ICE:												
TPA65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	112
DMP65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	112
B14 4478 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	25	17	19
4449 B5/B12 RRH	21.4	16.7	13.0	2.47	1.92	1.28	1.65	1.20	1.20	24	19	20
B2/B66A 8843 RRH	18.4	16.7	14.4	2.12	1.83	1.10	1.28	1.20	1.20	21	18	19
4415 B30 RRH	20.0	16.9	9.4	2.34	1.30	1.18	2.13	1.20	1.20	23	13	15
WIND LOADS AT 30 MPH:												
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	31
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	31
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	6	4	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3

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WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.73 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	381
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	381
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	59
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	92	67	67
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	77	64	64
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	86	39	39

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	92
DMP65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	92
B14 4478 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	25	17	17
4449 B5/B12 RRH	21.4	16.7	13.0	2.47	1.92	1.28	1.65	1.20	1.20	24	19	19
B2/B66A 8843 RRH	18.4	16.7	14.4	2.12	1.83	1.10	1.28	1.20	1.20	21	18	18
4415 B30 RRH	20.0	16.9	9.4	2.34	1.30	1.18	2.13	1.20	1.20	23	13	13

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	24
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	24
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	6	4	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	2

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WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	496
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	496
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	68
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	92	67	73
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	77	64	67
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	86	39	51
WIND LOADS WITH ICE:												
TPA65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	112
DMP65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	112
B14 4478 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	25	17	19
4449 B5/B12 RRH	21.4	16.7	13.0	2.47	1.92	1.28	1.65	1.20	1.20	24	19	20
B2/B66A 8843 RRH	18.4	16.7	14.4	2.12	1.83	1.10	1.28	1.20	1.20	21	18	19
4415 B30 RRH	20.0	16.9	9.4	2.34	1.30	1.18	2.13	1.20	1.20	23	13	15
WIND LOADS AT 30 MPH:												
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	31
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	31
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	6	4	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3

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WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	725
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	839	381	725
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	95	59	86
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	92	67	86
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	77	64	74
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	86	39	74

WIND LOADS WITH ICE:

TPA65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	153
DMP65R-BU8DA-K Antenna	99.5	24.2	11.2	16.68	7.71	4.12	8.91	1.27	1.46	173	92	153
B14 4478 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	25	17	23
4449 B5/B12 RRH	21.4	16.7	13.0	2.47	1.92	1.28	1.65	1.20	1.20	24	19	23
B2/B66A 8843 RRH	18.4	16.7	14.4	2.12	1.83	1.10	1.28	1.20	1.20	21	18	20
4415 B30 RRH	20.0	16.9	9.4	2.34	1.30	1.18	2.13	1.20	1.20	23	13	20

WIND LOADS AT 30 MPH:

TPA65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	45
DMP65R-BU8DA-K Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	52	24	45
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
4449 B5/B12 RRH	17.9	13.2	9.5	1.64	1.18	1.36	1.88	1.20	1.20	6	4	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
4415 B30 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	5

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ICE WEIGHT CALCULATIONS

Thickness of ice:	1.73	in.
Density of ice:	56	pcf

TPA65R-BU8DA-K Antenna

Weight of ice based on total radial SF area:			
Height (in):	96.0		
Width (in):	20.7		
Depth (in):	7.7		
Total weight of ice on object:		403	lbs
Weight of object:	87.0	lbs	
Combined weight of ice and object:		490	lbs

DMP65R-BU8DA-K Antenna

Weight of ice based on total radial SF area:			
Height (in):	96.0		
Width (in):	20.7		
Depth (in):	7.7		
Total weight of ice on object:		403	lbs
Weight of object:	96.0	lbs	
Combined weight of ice and object:		499	lbs

B14 4478 RRH

Weight of ice based on total radial SF area:			
Height (in):	18.1		
Width (in):	13.4		
Depth (in):	8.3		
Total weight of ice on object:		56	lbs
Weight of object:	60.0	lbs	
Combined weight of ice and object:		116	lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:			
Height (in):	17.9		
Width (in):	13.2		
Depth (in):	9.5		
Total weight of ice on object:		57	lbs
Weight of object:	71.0	lbs	
Combined weight of ice and object:		128	lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:			
Height (in):	14.9		
Width (in):	13.2		
Depth (in):	10.9		
Total weight of ice on object:		49	lbs
Weight of object:	72.0	lbs	
Combined weight of ice and object:		121	lbs

4415 B30 RRH

Weight of ice based on total radial SF area:			
Height (in):	16.5		
Width (in):	13.4		
Depth (in):	5.9		
Total weight of ice on object:		48	lbs
Weight of object:	46.0	lbs	
Combined weight of ice and object:		94	lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:			
Depth (in):	24.0		
Diameter(in):	9.7		
Total weight of ice on object:		48	lbs
Weight of object:	33	lbs	
Combined weight of ice and object:		81	lbs

PL 11-1/4x5/8

Weight of ice based on total radial SF area:			
Height (in):	11.25		
Width (in):	0.63		
Per foot weight of ice on object:		27	plf

PL 3-1/2x5/8

Weight of ice based on total radial SF area:			
Height (in):	3.5		
Width (in):	0.63		
Per foot weight of ice on object:		11	plf

3/4" Round Bar

Per foot weight of ice:			
diameter (in):	0.75		
Per foot weight of ice on object:		5	plf

5/8" Round Bar

Per foot weight of ice:			
diameter (in):	0.63		
Per foot weight of ice on object:		5	plf

2" Pipe

Per foot weight of ice:			
diameter (in):	2.38		
Per foot weight of ice on object:		9	plf

2-1/2" Pipe

Per foot weight of ice:			
diameter (in):	2.88		
Per foot weight of ice on object:		10	plf

HUDSON
Design Group LLC

Mount Calculations
(New Conditions)

Current Date: 8/12/2020 11:24 AM
Units system: English
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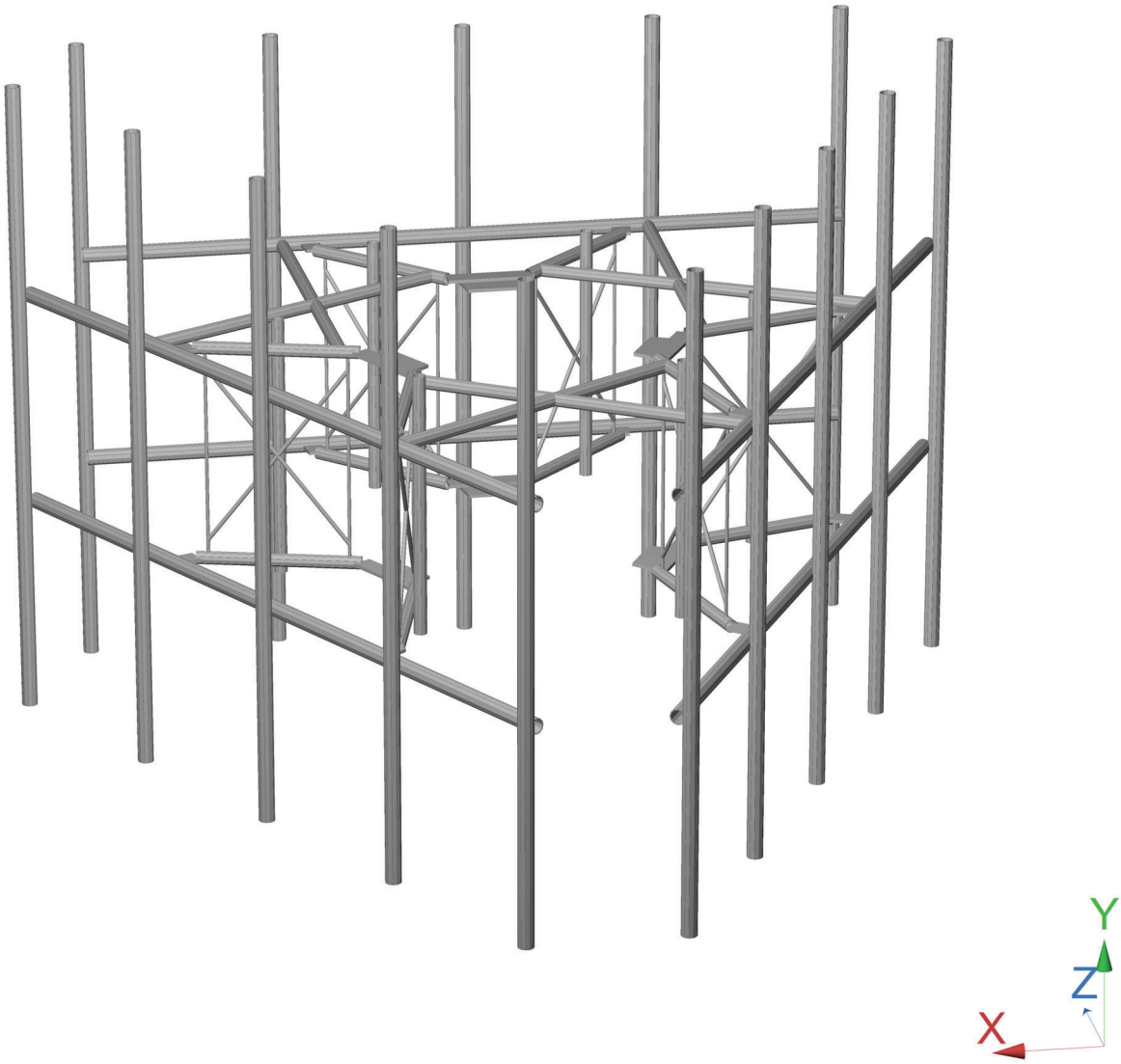

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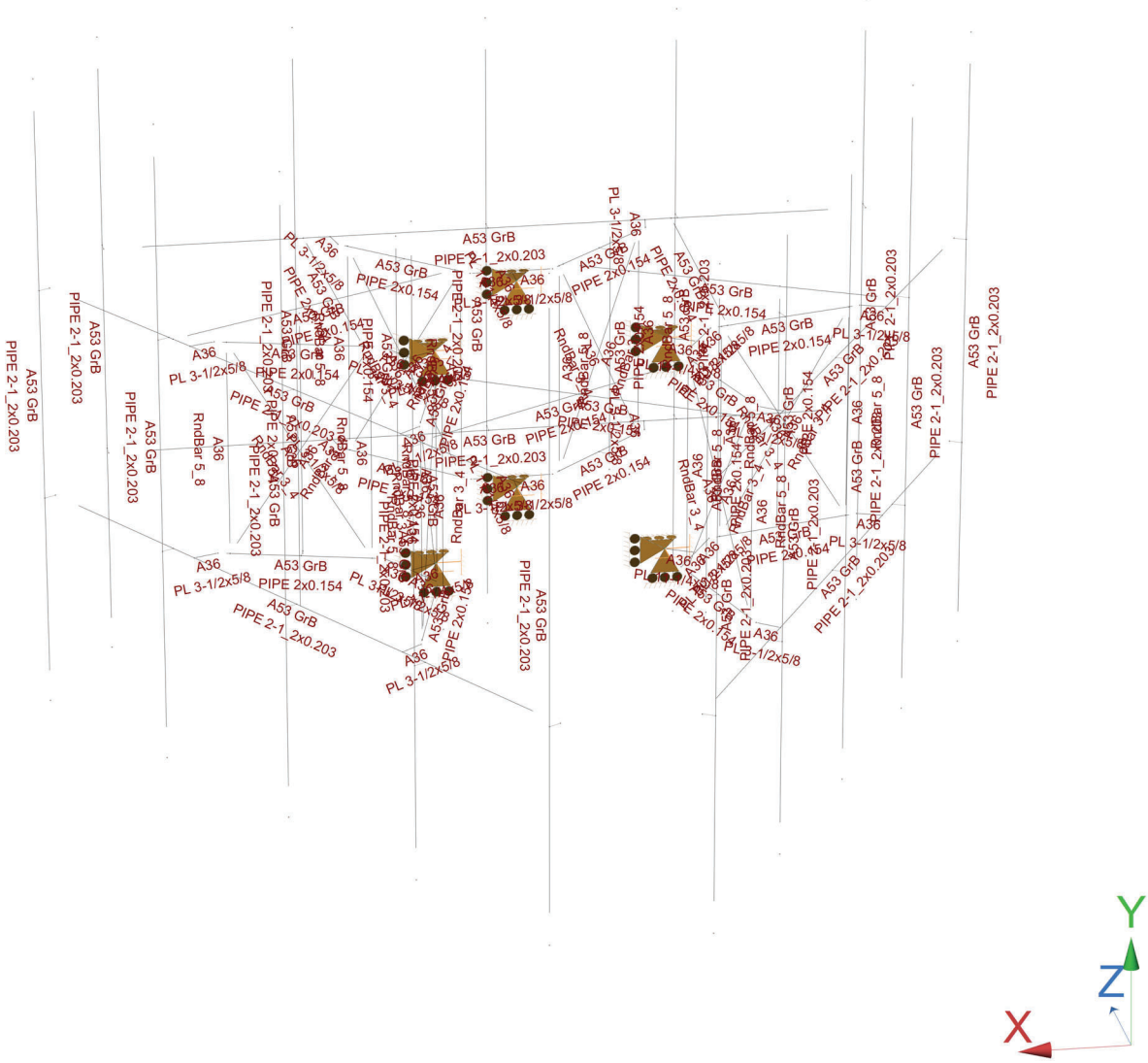

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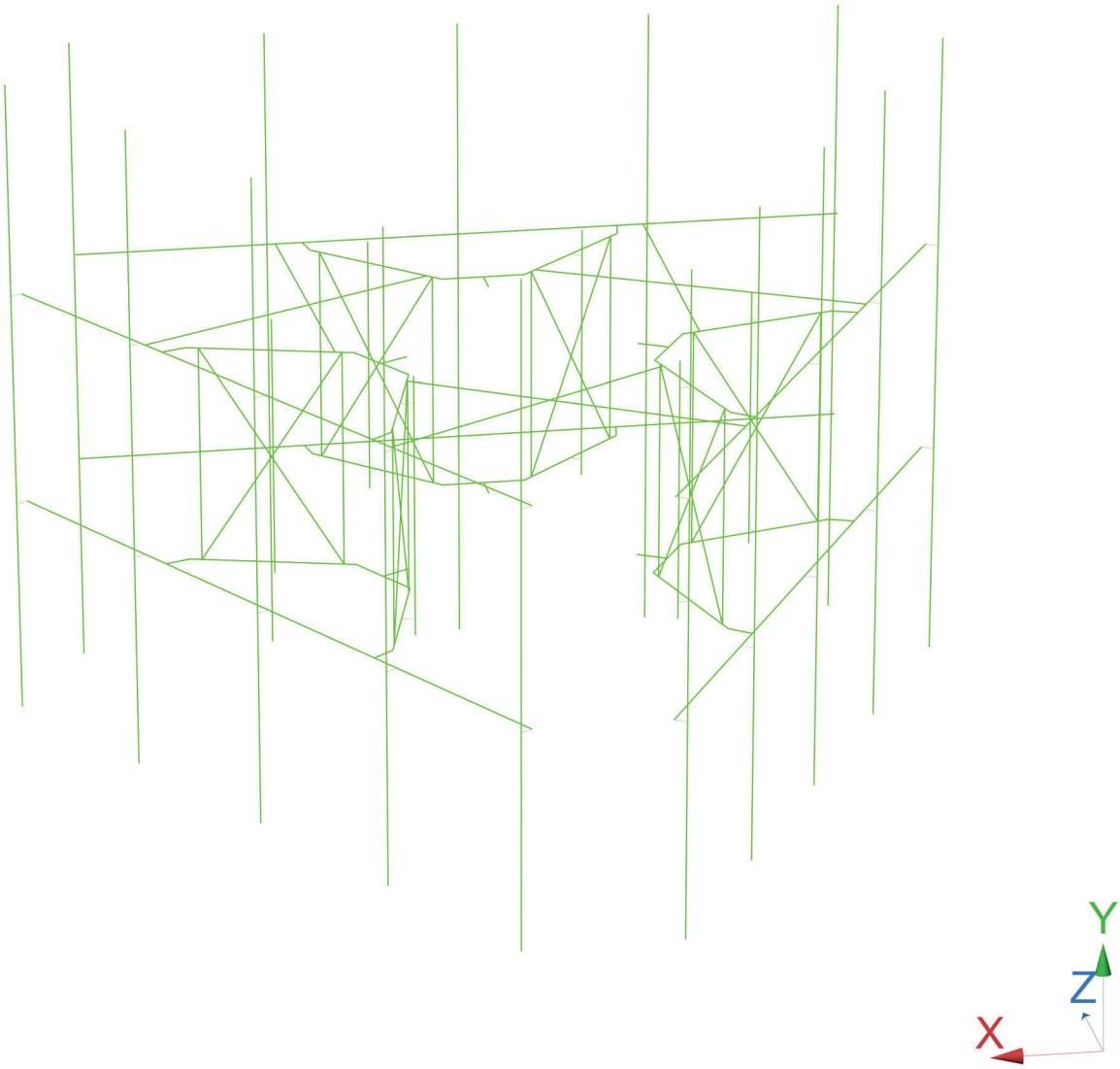

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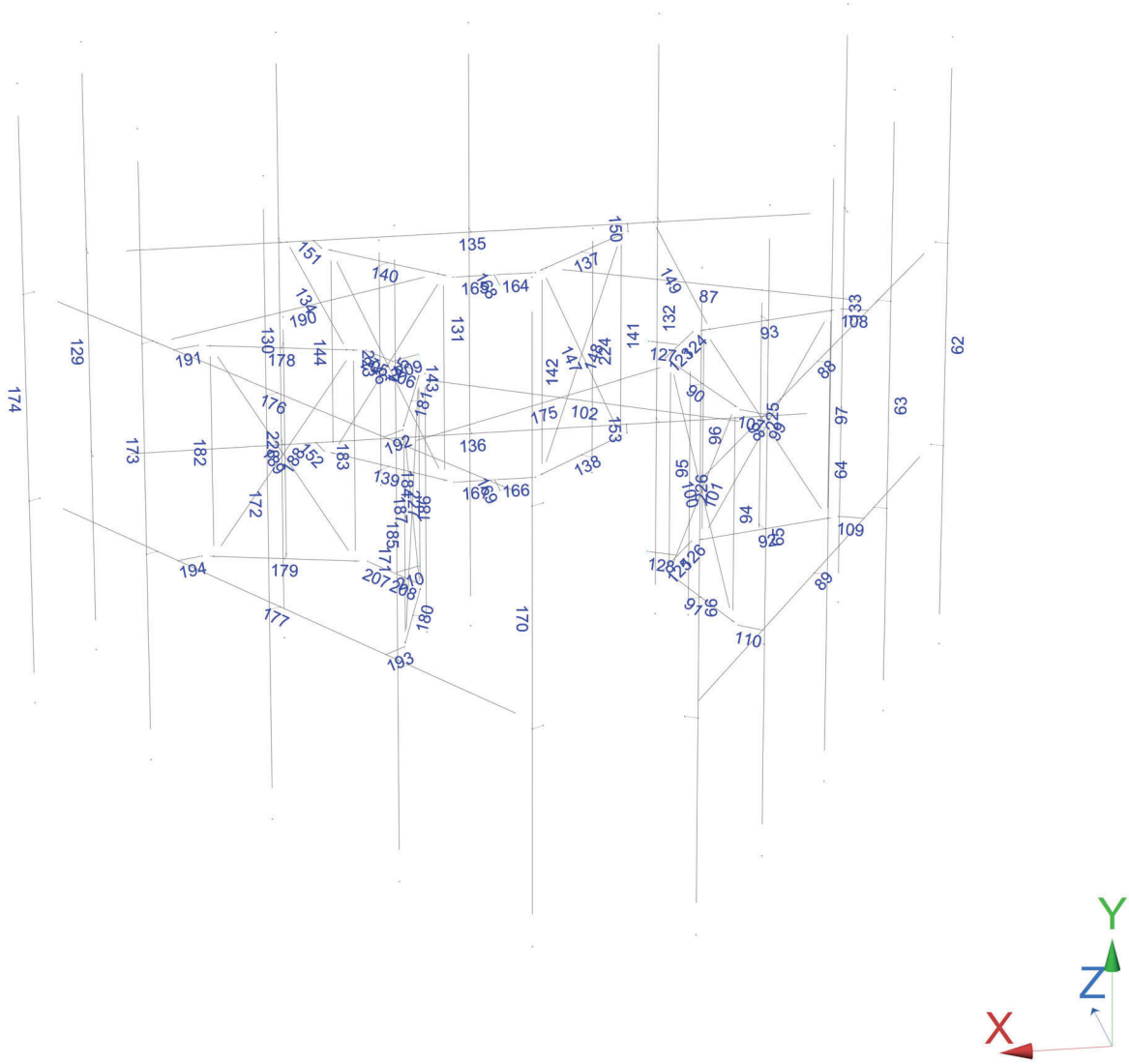

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Load data

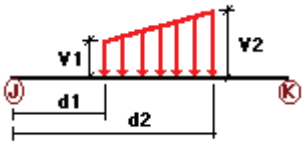
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 lb Live Load Antenna 4	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	62	z	-0.013	-0.013	0.00	No	100.00	Yes
	63	z	-0.013	-0.013	0.00	No	100.00	Yes
	64	z	-0.013	-0.013	0.00	No	100.00	Yes
	65	z	-0.013	-0.013	0.00	No	100.00	Yes
	66	z	-0.013	-0.013	0.00	No	100.00	Yes
	87	z	-0.011	-0.011	0.00	No	100.00	Yes
	88	z	-0.013	-0.013	0.00	No	100.00	Yes
	89	z	-0.013	-0.013	0.00	No	100.00	Yes
	90	z	-0.011	-0.011	0.00	No	100.00	Yes
	91	z	-0.011	-0.011	0.00	No	100.00	Yes
	92	z	-0.011	-0.011	0.00	No	100.00	Yes
	93	z	-0.011	-0.011	0.00	No	100.00	Yes
	94	z	-0.003	-0.003	0.00	No	100.00	Yes
	95	z	-0.003	-0.003	0.00	No	100.00	Yes
	96	z	-0.003	-0.003	0.00	No	100.00	Yes

97	z	-0.003	-0.003	0.00	No	100.00	Yes
98	z	-0.004	-0.004	0.00	No	100.00	Yes
99	z	-0.004	-0.004	0.00	No	100.00	Yes
100	z	-0.004	-0.004	0.00	No	100.00	Yes
101	z	-0.004	-0.004	0.00	No	100.00	Yes
102	z	-0.011	-0.011	0.00	No	100.00	Yes
107	z	-0.005	-0.005	0.00	No	100.00	Yes
108	z	-0.005	-0.005	0.00	No	100.00	Yes
109	z	-0.005	-0.005	0.00	No	100.00	Yes
110	z	-0.005	-0.005	0.00	No	100.00	Yes
123	z	-0.005	-0.005	0.00	No	100.00	Yes
124	z	-0.005	-0.005	0.00	No	100.00	Yes
125	z	-0.005	-0.005	0.00	No	100.00	Yes
126	z	-0.005	-0.005	0.00	No	100.00	Yes
127	z	-0.005	-0.005	0.00	No	100.00	Yes
128	z	-0.005	-0.005	0.00	No	100.00	Yes
130	z	-0.013	-0.013	0.00	No	100.00	Yes
131	z	-0.013	-0.013	0.00	No	100.00	Yes
132	z	-0.013	-0.013	0.00	No	100.00	Yes
134	z	-0.011	-0.011	0.00	No	100.00	Yes
135	z	-0.013	-0.013	0.00	No	100.00	Yes
136	z	-0.013	-0.013	0.00	No	100.00	Yes
137	z	-0.011	-0.011	0.00	No	100.00	Yes
138	z	-0.011	-0.011	0.00	No	100.00	Yes
139	z	-0.011	-0.011	0.00	No	100.00	Yes
140	z	-0.011	-0.011	0.00	No	100.00	Yes
141	z	-0.003	-0.003	0.00	No	100.00	Yes
142	z	-0.003	-0.003	0.00	No	100.00	Yes
143	z	-0.003	-0.003	0.00	No	100.00	Yes
144	z	-0.003	-0.003	0.00	No	100.00	Yes
145	z	-0.004	-0.004	0.00	No	100.00	Yes
146	z	-0.004	-0.004	0.00	No	100.00	Yes
147	z	-0.004	-0.004	0.00	No	100.00	Yes
148	z	-0.004	-0.004	0.00	No	100.00	Yes
149	z	-0.011	-0.011	0.00	No	100.00	Yes
164	z	-0.005	-0.005	0.00	No	100.00	Yes
165	z	-0.005	-0.005	0.00	No	100.00	Yes
166	z	-0.005	-0.005	0.00	No	100.00	Yes
167	z	-0.005	-0.005	0.00	No	100.00	Yes
170	z	-0.013	-0.013	0.00	No	100.00	Yes
171	z	-0.013	-0.013	0.00	No	100.00	Yes
172	z	-0.013	-0.013	0.00	No	100.00	Yes
173	z	-0.013	-0.013	0.00	No	100.00	Yes
174	z	-0.013	-0.013	0.00	No	100.00	Yes
175	z	-0.011	-0.011	0.00	No	100.00	Yes
176	z	-0.013	-0.013	0.00	No	100.00	Yes
177	z	-0.013	-0.013	0.00	No	100.00	Yes
178	z	-0.011	-0.011	0.00	No	100.00	Yes
179	z	-0.011	-0.011	0.00	No	100.00	Yes
180	z	-0.011	-0.011	0.00	No	100.00	Yes
181	z	-0.011	-0.011	0.00	No	100.00	Yes
182	z	-0.003	-0.003	0.00	No	100.00	Yes
183	z	-0.003	-0.003	0.00	No	100.00	Yes
184	z	-0.003	-0.003	0.00	No	100.00	Yes
185	z	-0.003	-0.003	0.00	No	100.00	Yes
186	z	-0.004	-0.004	0.00	No	100.00	Yes
187	z	-0.004	-0.004	0.00	No	100.00	Yes
188	z	-0.004	-0.004	0.00	No	100.00	Yes
189	z	-0.004	-0.004	0.00	No	100.00	Yes
190	z	-0.011	-0.011	0.00	No	100.00	Yes

	191	z	-0.005	-0.005	0.00	No	100.00	Yes
	192	z	-0.005	-0.005	0.00	No	100.00	Yes
	193	z	-0.005	-0.005	0.00	No	100.00	Yes
	194	z	-0.005	-0.005	0.00	No	100.00	Yes
	205	z	-0.005	-0.005	0.00	No	100.00	Yes
	206	z	-0.005	-0.005	0.00	No	100.00	Yes
	207	z	-0.005	-0.005	0.00	No	100.00	Yes
	208	z	-0.005	-0.005	0.00	No	100.00	Yes
	209	z	-0.005	-0.005	0.00	No	100.00	Yes
	210	z	-0.005	-0.005	0.00	No	100.00	Yes
	223	z	-0.011	-0.011	0.00	No	100.00	Yes
	224	z	-0.011	-0.011	0.00	No	100.00	Yes
	225	z	-0.011	-0.011	0.00	No	100.00	Yes
	226	z	-0.011	-0.011	0.00	No	100.00	Yes
	227	z	-0.011	-0.011	0.00	No	100.00	Yes
	228	z	-0.011	-0.011	0.00	No	100.00	Yes
W30	62	x	-0.013	-0.013	0.00	No	100.00	Yes
	63	x	-0.013	-0.013	0.00	No	100.00	Yes
	64	x	-0.013	-0.013	0.00	No	100.00	Yes
	65	x	-0.013	-0.013	0.00	No	100.00	Yes
	66	x	-0.013	-0.013	0.00	No	100.00	Yes
	87	x	-0.011	-0.011	0.00	No	100.00	Yes
	88	x	-0.013	-0.013	0.00	No	100.00	Yes
	89	x	-0.013	-0.013	0.00	No	100.00	Yes
	90	x	-0.011	-0.011	0.00	No	100.00	Yes
	91	x	-0.011	-0.011	0.00	No	100.00	Yes
	92	x	-0.011	-0.011	0.00	No	100.00	Yes
	93	x	-0.011	-0.011	0.00	No	100.00	Yes
	94	x	-0.003	-0.003	0.00	No	100.00	Yes
	95	x	-0.003	-0.003	0.00	No	100.00	Yes
	96	x	-0.003	-0.003	0.00	No	100.00	Yes
	97	x	-0.003	-0.003	0.00	No	100.00	Yes
	98	x	-0.004	-0.004	0.00	No	100.00	Yes
	99	x	-0.004	-0.004	0.00	No	100.00	Yes
	100	x	-0.004	-0.004	0.00	No	100.00	Yes
	101	x	-0.004	-0.004	0.00	No	100.00	Yes
	102	x	-0.011	-0.011	0.00	No	100.00	Yes
	107	x	-0.001	-0.001	0.00	No	100.00	Yes
	108	x	-0.001	-0.001	0.00	No	100.00	Yes
	109	x	-0.001	-0.001	0.00	No	100.00	Yes
	110	x	-0.001	-0.001	0.00	No	100.00	Yes
	123	x	-0.001	-0.001	0.00	No	100.00	Yes
	124	x	-0.001	-0.001	0.00	No	100.00	Yes
	125	x	-0.001	-0.001	0.00	No	100.00	Yes
	126	x	-0.001	-0.001	0.00	No	100.00	Yes
	127	x	-0.005	-0.005	0.00	No	100.00	Yes
	128	x	-0.005	-0.005	0.00	No	100.00	Yes
	129	x	-0.013	-0.013	0.00	No	100.00	Yes
	130	x	-0.013	-0.013	0.00	No	100.00	Yes
	131	x	-0.013	-0.013	0.00	No	100.00	Yes
	132	x	-0.013	-0.013	0.00	No	100.00	Yes
	133	x	-0.013	-0.013	0.00	No	100.00	Yes
	134	x	-0.011	-0.011	0.00	No	100.00	Yes
	137	x	-0.011	-0.011	0.00	No	100.00	Yes
	138	x	-0.011	-0.011	0.00	No	100.00	Yes
	139	x	-0.011	-0.011	0.00	No	100.00	Yes
	140	x	-0.011	-0.011	0.00	No	100.00	Yes
	141	x	-0.003	-0.003	0.00	No	100.00	Yes
	142	x	-0.003	-0.003	0.00	No	100.00	Yes
	143	x	-0.003	-0.003	0.00	No	100.00	Yes

	144	x	-0.003	-0.003	0.00	No	100.00	Yes
	145	x	-0.004	-0.004	0.00	No	100.00	Yes
	146	x	-0.004	-0.004	0.00	No	100.00	Yes
	147	x	-0.004	-0.004	0.00	No	100.00	Yes
	148	x	-0.004	-0.004	0.00	No	100.00	Yes
	149	x	-0.011	-0.011	0.00	No	100.00	Yes
	150	x	-0.001	-0.001	0.00	No	100.00	Yes
	151	x	-0.001	-0.001	0.00	No	100.00	Yes
	152	x	-0.001	-0.001	0.00	No	100.00	Yes
	153	x	-0.001	-0.001	0.00	No	100.00	Yes
	164	x	-0.001	-0.001	0.00	No	100.00	Yes
	165	x	-0.001	-0.001	0.00	No	100.00	Yes
	166	x	-0.001	-0.001	0.00	No	100.00	Yes
	167	x	-0.001	-0.001	0.00	No	100.00	Yes
	168	x	-0.005	-0.005	0.00	No	100.00	Yes
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	171	x	-0.013	-0.013	0.00	No	100.00	Yes
	172	x	-0.013	-0.013	0.00	No	100.00	Yes
	173	x	-0.013	-0.013	0.00	No	100.00	Yes
	175	x	-0.011	-0.011	0.00	No	100.00	Yes
	176	x	-0.013	-0.013	0.00	No	100.00	Yes
	177	x	-0.013	-0.013	0.00	No	100.00	Yes
	178	x	-0.011	-0.011	0.00	No	100.00	Yes
	179	x	-0.011	-0.011	0.00	No	100.00	Yes
	180	x	-0.011	-0.011	0.00	No	100.00	Yes
	181	x	-0.011	-0.011	0.00	No	100.00	Yes
	182	x	-0.003	-0.003	0.00	No	100.00	Yes
	183	x	-0.003	-0.003	0.00	No	100.00	Yes
	184	x	-0.003	-0.003	0.00	No	100.00	Yes
	185	x	-0.003	-0.003	0.00	No	100.00	Yes
	186	x	-0.004	-0.004	0.00	No	100.00	Yes
	187	x	-0.004	-0.004	0.00	No	100.00	Yes
	188	x	-0.004	-0.004	0.00	No	100.00	Yes
	189	x	-0.004	-0.004	0.00	No	100.00	Yes
	190	x	-0.011	-0.011	0.00	No	100.00	Yes
	191	x	-0.001	-0.001	0.00	No	100.00	Yes
	192	x	-0.001	-0.001	0.00	No	100.00	Yes
	193	x	-0.001	-0.001	0.00	No	100.00	Yes
	194	x	-0.001	-0.001	0.00	No	100.00	Yes
	205	x	-0.001	-0.001	0.00	No	100.00	Yes
	206	x	-0.001	-0.001	0.00	No	100.00	Yes
	207	x	-0.001	-0.001	0.00	No	100.00	Yes
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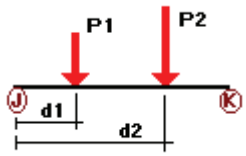
	225	x	-0.011	-0.011	0.00	No	100.00	Yes
	226	x	-0.011	-0.011	0.00	No	100.00	Yes
	227	x	-0.011	-0.011	0.00	No	100.00	Yes
	228	x	-0.011	-0.011	0.00	No	100.00	Yes
Di	62	y	-0.01	-0.01	0.00	No	100.00	Yes
	63	y	-0.01	-0.01	0.00	No	100.00	Yes
	64	y	-0.01	-0.01	0.00	No	100.00	Yes
	65	y	-0.01	-0.01	0.00	No	100.00	Yes
	66	y	-0.01	-0.01	0.00	No	100.00	Yes
	87	y	-0.009	-0.009	0.00	No	100.00	Yes
	88	y	-0.01	-0.01	0.00	No	100.00	Yes
	89	y	-0.01	-0.01	0.00	No	100.00	Yes
	90	y	-0.009	-0.009	0.00	No	100.00	Yes

91	y	-0.009	-0.009	0.00	No	100.00	Yes
92	y	-0.009	-0.009	0.00	No	100.00	Yes
93	y	-0.009	-0.009	0.00	No	100.00	Yes
94	y	-0.005	-0.005	0.00	No	100.00	Yes
95	y	-0.005	-0.005	0.00	No	100.00	Yes
96	y	-0.005	-0.005	0.00	No	100.00	Yes
97	y	-0.005	-0.005	0.00	No	100.00	Yes
98	y	-0.005	-0.005	0.00	No	100.00	Yes
99	y	-0.005	-0.005	0.00	No	100.00	Yes
100	y	-0.005	-0.005	0.00	No	100.00	Yes
101	y	-0.005	-0.005	0.00	No	100.00	Yes
102	y	-0.009	-0.009	0.00	No	100.00	Yes
107	y	-0.011	-0.011	0.00	No	100.00	Yes
108	y	-0.011	-0.011	0.00	No	100.00	Yes
109	y	-0.011	-0.011	0.00	No	100.00	Yes
110	y	-0.011	-0.011	0.00	No	100.00	Yes
123	y	-0.011	-0.011	0.00	No	100.00	Yes
124	y	-0.011	-0.011	0.00	No	100.00	Yes
125	y	-0.011	-0.011	0.00	No	100.00	Yes
126	y	-0.011	-0.011	0.00	No	100.00	Yes
127	y	-0.027	-0.027	0.00	No	100.00	Yes
128	y	-0.027	-0.027	0.00	No	100.00	Yes
129	y	-0.01	-0.01	0.00	No	100.00	Yes
130	y	-0.01	-0.01	0.00	No	100.00	Yes
131	y	-0.01	-0.01	0.00	No	100.00	Yes
132	y	-0.01	-0.01	0.00	No	100.00	Yes
133	y	-0.01	-0.01	0.00	No	100.00	Yes
134	y	-0.009	-0.009	0.00	No	100.00	Yes
135	y	-0.01	-0.01	0.00	No	100.00	Yes
136	y	-0.01	-0.01	0.00	No	100.00	Yes
137	y	-0.009	-0.009	0.00	No	100.00	Yes
138	y	-0.009	-0.009	0.00	No	100.00	Yes
139	y	-0.009	-0.009	0.00	No	100.00	Yes
140	y	-0.009	-0.009	0.00	No	100.00	Yes
141	y	-0.005	-0.005	0.00	No	100.00	Yes
142	y	-0.005	-0.005	0.00	No	100.00	Yes
143	y	-0.005	-0.005	0.00	No	100.00	Yes
144	y	-0.005	-0.005	0.00	No	100.00	Yes
145	y	-0.005	-0.005	0.00	No	100.00	Yes
146	y	-0.005	-0.005	0.00	No	100.00	Yes
147	y	-0.005	-0.005	0.00	No	100.00	Yes
148	y	-0.005	-0.005	0.00	No	100.00	Yes
149	y	-0.009	-0.009	0.00	No	100.00	Yes
150	y	-0.011	-0.011	0.00	No	100.00	Yes
151	y	-0.011	-0.011	0.00	No	100.00	Yes
152	y	-0.011	-0.011	0.00	No	100.00	Yes
153	y	-0.011	-0.011	0.00	No	100.00	Yes
164	y	-0.011	-0.011	0.00	No	100.00	Yes
165	y	-0.011	-0.011	0.00	No	100.00	Yes
166	y	-0.011	-0.011	0.00	No	100.00	Yes
167	y	-0.011	-0.011	0.00	No	100.00	Yes
168	y	-0.027	-0.027	0.00	No	100.00	Yes
169	y	-0.027	-0.027	0.00	No	100.00	Yes
170	y	-0.01	-0.01	0.00	No	100.00	Yes
171	y	-0.01	-0.01	0.00	No	100.00	Yes
172	y	-0.01	-0.01	0.00	No	100.00	Yes
173	y	-0.01	-0.01	0.00	No	100.00	Yes
174	y	-0.01	-0.01	0.00	No	100.00	Yes
175	y	-0.009	-0.009	0.00	No	100.00	Yes
176	y	-0.01	-0.01	0.00	No	100.00	Yes

177	y	-0.01	-0.01	0.00	No	100.00	Yes
178	y	-0.009	-0.009	0.00	No	100.00	Yes
179	y	-0.009	-0.009	0.00	No	100.00	Yes
180	y	-0.009	-0.009	0.00	No	100.00	Yes
181	y	-0.009	-0.009	0.00	No	100.00	Yes
182	y	-0.005	-0.005	0.00	No	100.00	Yes
183	y	-0.005	-0.005	0.00	No	100.00	Yes
184	y	-0.005	-0.005	0.00	No	100.00	Yes
185	y	-0.005	-0.005	0.00	No	100.00	Yes
186	y	-0.005	-0.005	0.00	No	100.00	Yes
187	y	-0.005	-0.005	0.00	No	100.00	Yes
188	y	-0.005	-0.005	0.00	No	100.00	Yes
189	y	-0.005	-0.005	0.00	No	100.00	Yes
190	y	-0.009	-0.009	0.00	No	100.00	Yes
191	y	-0.011	-0.011	0.00	No	100.00	Yes
192	y	-0.011	-0.011	0.00	No	100.00	Yes
193	y	-0.011	-0.011	0.00	No	100.00	Yes
194	y	-0.011	-0.011	0.00	No	100.00	Yes
205	y	-0.011	-0.011	0.00	No	100.00	Yes
206	y	-0.011	-0.011	0.00	No	100.00	Yes
207	y	-0.011	-0.011	0.00	No	100.00	Yes
208	y	-0.011	-0.011	0.00	No	100.00	Yes
209	y	-0.027	-0.027	0.00	No	100.00	Yes
210	y	-0.027	-0.027	0.00	No	100.00	Yes
223	y	-0.009	-0.009	0.00	No	100.00	Yes
224	y	-0.009	-0.009	0.00	No	100.00	Yes
225	y	-0.009	-0.009	0.00	No	100.00	Yes
226	y	-0.009	-0.009	0.00	No	100.00	Yes
227	y	-0.009	-0.009	0.00	No	100.00	Yes
228	y	-0.009	-0.009	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	62	y	-0.044	1.50	No
		y	-0.043	8.50	No
	66	y	-0.048	1.50	No
		y	-0.043	8.50	No
	129	y	-0.044	1.50	No
		y	-0.043	8.50	No
	133	y	-0.048	1.50	No
		y	-0.043	8.50	No
	170	y	-0.044	1.50	No
		y	-0.043	8.50	No
	174	y	-0.048	1.50	No
		y	-0.043	8.50	No
	223	y	-0.06	1.00	No
		y	-0.072	2.00	No
		y	-0.033	3.50	No

	224	y	-0.071	1.00	No
		y	-0.046	2.00	No
	225	y	-0.06	1.00	No
		y	-0.072	2.00	No
		y	-0.033	3.50	No
	226	y	-0.071	1.00	No
		y	-0.046	2.00	No
	227	y	-0.06	1.00	No
		y	-0.072	2.00	No
		y	-0.033	3.50	No
	228	y	-0.071	1.00	No
		y	-0.046	2.00	No
W0	62	z	-0.248	1.50	No
		z	-0.248	8.50	No
	66	z	-0.248	1.50	No
		z	-0.248	8.50	No
	129	z	-0.42	1.50	No
		z	-0.42	8.50	No
	133	z	-0.42	1.50	No
		z	-0.42	8.50	No
	170	z	-0.248	1.50	No
		z	-0.248	8.50	No
	174	z	-0.248	1.50	No
		z	-0.248	8.50	No
	223	z	-0.095	1.00	No
		z	-0.077	2.00	No
		z	-0.053	3.50	No
	224	z	-0.092	1.00	No
		z	-0.086	2.00	No
	225	z	-0.068	1.00	No
		z	-0.067	2.00	No
		z	-0.053	3.50	No
	226	z	-0.073	1.00	No
		z	-0.051	2.00	No
	227	z	-0.068	1.00	No
		z	-0.067	2.00	No
		z	-0.053	3.50	No
	228	z	-0.073	1.00	No
		z	-0.051	2.00	No
W30	62	x	-0.363	1.50	No
		x	-0.363	8.50	No
	66	x	-0.363	1.50	No
		x	-0.363	8.50	No
	129	x	-0.191	1.50	No
		x	-0.191	8.50	No
	133	x	-0.191	1.50	No
		x	-0.191	8.50	No
	170	x	-0.363	1.50	No
		x	-0.363	8.50	No
	174	x	-0.363	1.50	No
		x	-0.363	8.50	No
	223	x	-0.059	1.00	No
		x	-0.064	2.00	No
		x	-0.053	3.50	No
	224	x	-0.067	1.00	No
		x	-0.039	2.00	No
	225	x	-0.086	1.00	No
		x	-0.074	2.00	No
		x	-0.053	3.50	No
	226	x	-0.086	1.00	No

		x	-0.074	2.00	No
	227	x	-0.086	1.00	No
		x	-0.074	2.00	No
		x	-0.053	3.50	No
	228	x	-0.086	1.00	No
		x	-0.074	2.00	No
Di	62	y	-0.201	1.50	No
		y	-0.201	8.50	No
	66	y	-0.201	1.50	No
		y	-0.201	8.50	No
	129	y	-0.201	1.50	No
		y	-0.201	8.50	No
	133	y	-0.201	1.50	No
		y	-0.201	8.50	No
	170	y	-0.201	1.50	No
		y	-0.201	8.50	No
	174	y	-0.201	1.50	No
		y	-0.201	8.50	No
	223	y	-0.056	1.00	No
		y	-0.049	2.00	No
		y	-0.048	3.50	No
	224	y	-0.057	1.00	No
		y	-0.048	2.00	No
	225	y	-0.056	1.00	No
		y	-0.049	2.00	No
		y	-0.048	3.50	No
	226	y	-0.057	1.00	No
		y	-0.048	2.00	No
	227	y	-0.056	1.00	No
		y	-0.049	2.00	No
		y	-0.048	3.50	No
	228	y	-0.057	1.00	No
		y	-0.048	2.00	No
Wi0	62	z	-0.057	1.50	No
		z	-0.057	8.50	No
	66	z	-0.057	1.50	No
		z	-0.057	8.50	No
	129	z	-0.089	1.50	No
		z	-0.089	8.50	No
	133	z	-0.089	1.50	No
		z	-0.089	8.50	No
	170	z	-0.057	1.50	No
		z	-0.057	8.50	No
	174	z	-0.057	1.50	No
		z	-0.057	8.50	No
	223	z	-0.025	1.00	No
		z	-0.021	2.00	No
		z	-0.014	3.50	No
	224	z	-0.024	1.00	No
		z	-0.023	2.00	No
	225	z	-0.019	1.00	No
		z	-0.019	2.00	No
		z	-0.014	3.50	No
	226	z	-0.02	1.00	No
		z	-0.015	2.00	No
	227	z	-0.019	1.00	No
		z	-0.019	2.00	No
		z	-0.014	3.50	No
	228	z	-0.02	1.00	No
		z	-0.015	2.00	No

Wi30	62	x	-0.077	1.50	No
		x	-0.077	8.50	No
	66	x	-0.077	1.50	No
		x	-0.077	8.50	No
	129	x	-0.046	1.50	No
		x	-0.046	8.50	No
	133	x	-0.046	1.50	No
		x	-0.046	8.50	No
	170	x	-0.077	1.50	No
		x	-0.077	8.50	No
	174	x	-0.077	1.50	No
		x	-0.077	8.50	No
	223	x	-0.017	1.00	No
		x	-0.018	2.00	No
		x	-0.014	3.50	No
	224	x	-0.019	1.00	No
		x	-0.013	2.00	No
	225	x	-0.023	1.00	No
		x	-0.02	2.00	No
		x	-0.014	3.50	No
	226	x	-0.023	1.00	No
		x	-0.02	2.00	No
	227	x	-0.023	1.00	No
		x	-0.02	2.00	No
		x	-0.014	3.50	No
	228	x	-0.023	1.00	No
		x	-0.02	2.00	No
WL0	62	z	-0.016	1.50	No
		z	-0.016	8.50	No
	66	z	-0.016	1.50	No
		z	-0.016	8.50	No
	129	z	-0.027	1.50	No
		z	-0.027	8.50	No
	133	z	-0.027	1.50	No
		z	-0.027	8.50	No
	170	z	-0.016	1.50	No
		z	-0.016	8.50	No
	174	z	-0.016	1.50	No
		z	-0.016	8.50	No
	223	z	-0.006	1.00	No
		z	-0.005	2.00	No
		z	-0.003	3.50	No
	224	z	-0.006	1.00	No
		z	-0.005	2.00	No
	225	z	-0.004	1.00	No
		z	-0.004	2.00	No
		z	-0.003	3.50	No
	226	z	-0.005	1.00	No
		z	-0.003	2.00	No
	227	z	-0.004	1.00	No
		z	-0.004	2.00	No
		z	-0.003	3.50	No
	228	z	-0.005	1.00	No
		z	-0.003	2.00	No
WL30	62	x	-0.023	1.50	No
		x	-0.023	8.50	No
	66	x	-0.023	1.50	No
		x	-0.023	8.50	No
	129	x	-0.012	1.50	No
		x	-0.012	8.50	No

	133	x	-0.012	1.50	No
		x	-0.012	8.50	No
	170	x	-0.023	1.50	No
		x	-0.023	8.50	No
	174	x	-0.023	1.50	No
		x	-0.023	8.50	No
	223	x	-0.004	1.00	No
		x	-0.004	2.00	No
		x	-0.003	3.50	No
	224	x	-0.004	1.00	No
		x	-0.002	2.00	No
	225	x	-0.005	1.00	No
		x	-0.005	2.00	No
		x	-0.003	3.50	No
	226	x	-0.005	1.00	No
		x	-0.005	2.00	No
	227	x	-0.005	1.00	No
		x	-0.005	2.00	No
		x	-0.003	3.50	No
	228	x	-0.005	1.00	No
		x	-0.005	2.00	No
LL1	135	y	-0.25	50.00	Yes
LL2	135	y	-0.25	0.00	Yes
LLa1	129	y	-0.25	50.00	Yes
LLa2	130	y	-0.25	50.00	Yes
LLa3	132	y	-0.25	50.00	Yes
LLa4	133	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

		Self weight multiplier			
Condition	**Description**	**Comb.**	**MultX**	**MultY**	**MultZ**
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 8/12/2020 5:37 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2388\NSB\CT2388.retx

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3
LC29=1.2DL+WL0+1.5LLa4
LC30=1.2DL+WL30+1.5LLa4
LC31=1.2DL-WL0+1.5LLa4
LC32=1.2DL-WL30+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**62**	LC2 at 66.67%	0.38	OK	Eq. H1-1b
		63	LC11 at 33.33%	0.23	OK	Eq. H1-1b
		64	LC3 at 33.33%	0.18	OK	Eq. H1-1b
		65	LC9 at 33.33%	0.23	OK	Eq. H1-1b
		66	LC2 at 66.67%	0.38	OK	Eq. H1-1b
		88	LC2 at 25.78%	0.73	OK	Eq. H1-1b
		89	LC4 at 70.83%	**0.73**	**OK**	Eq. H1-1b
		129	LC3 at 66.67%	0.46	OK	Eq. H1-1b
		130	LC12 at 33.33%	0.23	OK	Eq. H1-1b
		131	LC4 at 33.33%	0.17	OK	Eq. H1-1b
		132	LC10 at 33.33%	0.23	OK	Eq. H1-1b
		133	LC3 at 66.67%	0.46	OK	Eq. H1-1b
		135	LC3 at 75.00%	0.64	OK	Eq. H1-1b
		136	LC3 at 29.17%	0.71	OK	Eq. H1-1b
		170	LC4 at 66.67%	0.34	OK	Eq. H1-1b
		171	LC10 at 33.33%	0.23	OK	Eq. H1-1b
		172	LC1 at 33.33%	0.18	OK	Eq. H1-1b
		173	LC11 at 33.33%	0.23	OK	Eq. H1-1b

	174	LC4 at 66.67%	0.34	OK	Eq. H1-1b
	176	LC4 at 74.22%	0.64	OK	Eq. H1-1b
	177	LC2 at 29.17%	0.65	OK	Eq. H1-1b
		---	---	---	---
PIPE 2x0.154	**87**	LC1 at 59.38%	0.16	OK	Eq. H1-1b
	90	LC2 at 88.75%	0.48	OK	Eq. H1-1b
	91	LC4 at 93.75%	0.29	OK	Eq. H1-1b
	92	LC4 at 93.75%	0.36	OK	Eq. H1-1b
	93	LC1 at 93.75%	0.38	OK	Eq. H1-1b
	102	LC4 at 100.00%	0.23	OK	Eq. H1-1b
	134	LC2 at 100.00%	0.23	OK	Eq. H1-1b
	137	LC1 at 87.50%	0.36	OK	Eq. H1-1b
	138	LC1 at 93.75%	0.35	OK	Eq. H1-1b
	139	LC1 at 93.75%	0.36	OK	Eq. H1-1b
	140	LC1 at 48.75%	0.36	OK	Eq. H1-1b
	149	LC4 at 100.00%	0.26	OK	Eq. H1-1b
	175	LC3 at 100.00%	0.19	OK	Eq. H1-1b
	178	LC1 at 93.75%	0.37	OK	Eq. H1-1b
	179	LC2 at 93.75%	0.30	OK	Eq. H1-1b
	180	LC10 at 93.75%	0.30	OK	Eq. H1-1b
	181	LC4 at 88.75%	**0.50**	**OK**	Eq. H1-1b
	190	LC3 at 100.00%	0.18	OK	Eq. H1-1b
	223	LC12 at 12.50%	0.15	OK	Eq. H1-1b
	224	LC10 at 12.50%	0.14	OK	Eq. H1-1b
	225	LC11 at 10.42%	0.12	OK	Eq. H1-1b
	226	LC9 at 12.50%	0.13	OK	Eq. H1-1b
	227	LC10 at 12.50%	0.14	OK	Eq. H1-1b
	228	LC11 at 12.50%	0.11	OK	Eq. H1-1b
		---	---	---	---
PL 11-1/4x5/8	**127**	LC9 at 100.00%	0.38	OK	Eq. H1-1b
	128	LC10 at 100.00%	0.29	OK	Eq. H1-1b
	168	LC9 at 100.00%	0.38	OK	Eq. H1-1b
	169	LC11 at 100.00%	0.29	OK	Eq. H1-1b
	209	LC9 at 100.00%	**0.38**	**OK**	Eq. H1-1b
	210	LC12 at 100.00%	0.29	OK	Eq. H1-1b
		---	---	---	---
PL 3-1/2x5/8	**107**	LC11 at 100.00%	0.32	OK	Eq. H1-1b
	108	LC12 at 100.00%	0.31	OK	Eq. H1-1b
	109	LC9 at 100.00%	0.37	OK	Eq. H1-1b
	110	LC11 at 100.00%	0.37	OK	Eq. H1-1b
	123	LC3 at 100.00%	0.53	OK	Eq. H1-1b
	124	LC10 at 0.00%	0.53	OK	Eq. H1-1b
	125	LC11 at 100.00%	0.57	OK	Eq. H1-1b
	126	LC12 at 0.00%	0.59	OK	Eq. H1-1b
	150	LC12 at 100.00%	0.32	OK	Eq. H1-1b
	151	LC10 at 100.00%	0.31	OK	Eq. H1-1b
	152	LC10 at 100.00%	0.36	OK	Eq. H1-1b
	153	LC12 at 100.00%	0.37	OK	Eq. H1-1b
	164	LC10 at 100.00%	0.50	OK	Eq. H1-1b
	165	LC12 at 0.00%	0.52	OK	Eq. H1-1b
	166	LC12 at 100.00%	0.57	OK	Eq. H1-1b
	167	LC10 at 0.00%	0.59	OK	Eq. H1-1b
	191	LC10 at 100.00%	0.32	OK	Eq. H1-1b
	192	LC11 at 100.00%	0.31	OK	Eq. H1-1b
	193	LC11 at 100.00%	0.36	OK	Eq. H1-1b
	194	LC9 at 100.00%	0.37	OK	Eq. H1-1b
	205	LC2 at 100.00%	0.52	OK	Eq. H1-1b
	206	LC3 at 0.00%	0.54	OK	Eq. H1-1b
	207	LC10 at 100.00%	0.57	OK	Eq. H1-1b
	208	LC11 at 0.00%	**0.59**	**OK**	Eq. H1-1b
		---	---	---	---
RndBar 3_4	**98**	LC11 at 100.00%	0.21	OK	Eq. H1-1b
	99	LC12 at 0.00%	**0.23**	**OK**	Eq. H1-1b
	100	LC10 at 100.00%	0.20	OK	Eq. H1-1b

	101	LC11 at 100.00%	0.21	OK	Eq. H1-1b
	145	LC9 at 100.00%	0.21	OK	Eq. H1-1b
	146	LC9 at 0.00%	0.23	OK	Eq. H1-1b
	147	LC11 at 100.00%	0.20	OK	Eq. H1-1b
	148	LC9 at 100.00%	0.21	OK	Eq. H1-1b
	186	LC12 at 0.00%	0.21	OK	Eq. H1-1b
	187	LC11 at 0.00%	0.23	OK	Eq. H1-1b
	188	LC9 at 100.00%	0.20	OK	Eq. H1-1b
	189	LC10 at 100.00%	0.21	OK	Eq. H1-1b
RndBar 5_8	**94**	LC11 at 87.50%	0.59	OK	Eq. H1-1a
	95	LC11 at 87.50%	0.57	OK	Eq. H1-1a
	96	LC12 at 87.50%	0.58	OK	Eq. H1-1a
	97	LC12 at 87.50%	**0.62**	**OK**	Eq. H1-1a
	141	LC9 at 87.50%	0.60	OK	Eq. H1-1a
	142	LC12 at 87.50%	0.57	OK	Eq. H1-1a
	143	LC10 at 87.50%	0.58	OK	Eq. H1-1a
	144	LC9 at 87.50%	0.62	OK	Eq. H1-1a
	182	LC10 at 87.50%	0.60	OK	Eq. H1-1a
	183	LC10 at 87.50%	0.57	OK	Eq. H1-1a
	184	LC11 at 87.50%	0.58	OK	Eq. H1-1a
	185	LC11 at 87.50%	0.61	OK	Eq. H1-1a

Current Date: 8/12/2020 11:28 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2388\NSB\CT2388.retx

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
211	0.00	0.00	2.00	0
213	0.00	-3.3333	2.00	0
142	-1.7321	0.00	-1.00	0
144	-1.7321	-3.3333	-1.00	0
270	1.7321	0.00	-1.00	0
272	1.7321	-3.3333	-1.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
211	1	1	1	1	0	1
213	1	1	1	1	0	1
142	1	1	1	1	0	1
144	1	1	1	1	0	1
270	1	1	1	1	0	1
272	1	1	1	1	0	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
62	153	152		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
63	181	180		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
64	189	188		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
65	177	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
66	155	154		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
129	218	217		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
130	244	243		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
131	250	249		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
132	242	241		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
133	220	219		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
170	277	276		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
171	303	302		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
172	309	308		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
173	301	300		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
174	279	278		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
135	223	224		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
136	225	226		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
134	221	222		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
190	298	299		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
87	156	157		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
149	239	240		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	158	159		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	160	161		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
176	282	283		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
177	284	285		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
180	288	274		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
181	289	275		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
186	294	297		RndBar 3_4	A36	0.00	0.00	0.00
187	295	296		RndBar 3_4	A36	0.00	0.00	0.00
102	174	175		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
175	280	281		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
90	162	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
91	163	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
205	271	326		PL 3-1/2x5/8	A36	0.00	0.00	0.00
207	273	327		PL 3-1/2x5/8	A36	0.00	0.00	0.00
209	326	270		PL 11-1/4x5/8	A36	11.25	9.25	0.00
210	327	272		PL 11-1/4x5/8	A36	11.25	9.25	0.00
206	326	275		PL 3-1/2x5/8	A36	0.00	0.00	0.00
208	327	274		PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142		PL 11-1/4x5/8	A36	11.25	9.25	0.00
128	209	144		PL 11-1/4x5/8	A36	11.25	9.25	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
178	286	271		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
179	287	273		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
188	291	292		RndBar 3_4	A36	0.00	0.00	0.00
189	290	293		RndBar 3_4	A36	0.00	0.00	0.00
191	286	304		PL 3-1/2x5/8	A36	0.00	0.00	0.00
194	287	307		PL 3-1/2x5/8	A36	0.00	0.00	0.00
192	289	305		PL 3-1/2x5/8	A36	0.00	0.00	0.00
193	288	306		PL 3-1/2x5/8	A36	0.00	0.00	0.00
182	290	291		RndBar 5_8	A36	0.00	0.00	0.00
228	362	356		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
183	292	293		RndBar 5_8	A36	0.00	0.00	0.00

185	296	297	RndBar 5_8	A36	0.00	0.00	0.00
227	363	357	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
184	294	295	RndBar 5_8	A36	0.00	0.00	0.00
137	227	212	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
138	228	214	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
147	232	233	RndBar 3_4	A36	0.00	0.00	0.00
148	231	234	RndBar 3_4	A36	0.00	0.00	0.00
150	227	245	PL 3-1/2x5/8	A36	0.00	0.00	0.00
153	228	248	PL 3-1/2x5/8	A36	0.00	0.00	0.00
151	230	246	PL 3-1/2x5/8	A36	0.00	0.00	0.00
152	229	247	PL 3-1/2x5/8	A36	0.00	0.00	0.00
139	229	215	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
140	230	216	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
145	235	238	RndBar 3_4	A36	0.00	0.00	0.00
146	236	237	RndBar 3_4	A36	0.00	0.00	0.00
165	267	216	PL 3-1/2x5/8	A36	0.00	0.00	0.00
167	268	215	PL 3-1/2x5/8	A36	0.00	0.00	0.00
164	212	267	PL 3-1/2x5/8	A36	0.00	0.00	0.00
166	214	268	PL 3-1/2x5/8	A36	0.00	0.00	0.00
168	267	211	PL 11-1/4x5/8	A36	11.25	9.25	0.00
169	268	213	PL 11-1/4x5/8	A36	11.25	9.25	0.00
143	235	236	RndBar 5_8	A36	0.00	0.00	0.00
223	359	353	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
144	237	238	RndBar 5_8	A36	0.00	0.00	0.00
142	233	234	RndBar 5_8	A36	0.00	0.00	0.00
224	358	352	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
141	231	232	RndBar 5_8	A36	0.00	0.00	0.00
92	164	146	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	165	147	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
98	170	173	RndBar 3_4	A36	0.00	0.00	0.00
99	171	172	RndBar 3_4	A36	0.00	0.00	0.00
108	165	185	PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186	PL 3-1/2x5/8	A36	0.00	0.00	0.00
107	162	184	PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187	PL 3-1/2x5/8	A36	0.00	0.00	0.00
97	172	173	RndBar 5_8	A36	0.00	0.00	0.00
225	360	354	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
96	170	171	RndBar 5_8	A36	0.00	0.00	0.00
95	168	169	RndBar 5_8	A36	0.00	0.00	0.00
226	361	355	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	166	167	RndBar 5_8	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
62	0.00	2	0.2588	0.00	0.9659
63	0.00	2	0.2588	0.00	0.9659
64	0.00	2	0.2588	0.00	0.9659
65	0.00	2	0.2588	0.00	0.9659
66	0.00	2	0.2588	0.00	0.9659
129	315.00	0	0.00	0.00	0.00
130	315.00	0	0.00	0.00	0.00
131	315.00	0	0.00	0.00	0.00
132	315.00	0	0.00	0.00	0.00
133	315.00	0	0.00	0.00	0.00

170	0.00	2	-0.9659	0.00	-0.2588
171	0.00	2	-0.9659	0.00	-0.2588
172	0.00	2	-0.9659	0.00	-0.2588
173	0.00	2	-0.9659	0.00	-0.2588
174	0.00	2	-0.9659	0.00	-0.2588
123	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
205	90.00	0	0.00	0.00	0.00
207	90.00	0	0.00	0.00	0.00
209	90.00	0	0.00	0.00	0.00
210	90.00	0	0.00	0.00	0.00
206	90.00	0	0.00	0.00	0.00
208	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
191	90.00	0	0.00	0.00	0.00
194	90.00	0	0.00	0.00	0.00
192	90.00	0	0.00	0.00	0.00
193	90.00	0	0.00	0.00	0.00
182	0.00	2	0.866	0.00	-0.50
183	0.00	2	0.866	0.00	-0.50
185	0.00	2	0.866	0.00	-0.50
184	0.00	2	0.866	0.00	-0.50
150	90.00	0	0.00	0.00	0.00
153	90.00	0	0.00	0.00	0.00
151	90.00	0	0.00	0.00	0.00
152	90.00	0	0.00	0.00	0.00
165	90.00	0	0.00	0.00	0.00
167	90.00	0	0.00	0.00	0.00
164	90.00	0	0.00	0.00	0.00
166	90.00	0	0.00	0.00	0.00
168	90.00	0	0.00	0.00	0.00
169	90.00	0	0.00	0.00	0.00
143	0.00	2	0.00	0.00	1.00
144	0.00	2	0.00	0.00	1.00
142	0.00	2	0.00	0.00	1.00
141	0.00	2	0.00	0.00	1.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
107	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
97	0.00	2	-0.866	0.00	-0.50
96	0.00	2	-0.866	0.00	-0.50
95	0.00	2	-0.866	0.00	-0.50
94	0.00	2	-0.866	0.00	-0.50

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
186	0.00	-3.50	0.00	0.00	3.50	0.00
187	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
209	0.00	-0.625	0.00	0.00	-0.625	0.00
210	0.00	-0.625	0.00	0.00	-0.625	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00
188	0.00	3.50	0.00	0.00	-3.50	0.00
189	0.00	-3.50	0.00	0.00	3.50	0.00
147	0.00	3.50	0.00	0.00	-3.50	0.00
148	0.00	-3.50	0.00	0.00	3.50	0.00
145	0.00	-3.50	0.00	0.00	3.50	0.00
146	0.00	3.50	0.00	0.00	-3.50	0.00
168	0.00	-0.625	0.00	0.00	-0.625	0.00
169	0.00	-0.625	0.00	0.00	-0.625	0.00
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
134	1	1	0	0	0	0	0	0	0	0	Full
190	1	1	0	0	0	0	0	0	0	0	Full
87	1	1	0	0	0	0	0	0	0	0	Full
149	1	1	0	0	0	0	0	0	0	0	Full
187	0	0	0	0	0	0	0	0	0	0	Tension only
102	1	1	0	0	0	0	0	0	0	0	Full
175	1	1	0	0	0	0	0	0	0	0	Full
101	0	0	0	0	0	0	0	0	0	0	Tension only
189	0	0	0	0	0	0	0	0	0	0	Tension only
191	1	1	0	0	0	0	0	0	0	0	Full
194	1	1	0	0	0	0	0	0	0	0	Full
192	1	1	0	0	0	0	0	0	0	0	Full
193	1	1	0	0	0	0	0	0	0	0	Full
148	0	0	0	0	0	0	0	0	0	0	Tension only
150	1	1	0	0	0	0	0	0	0	0	Full
153	1	1	0	0	0	0	0	0	0	0	Full
151	1	1	0	0	0	0	0	0	0	0	Full
152	1	1	0	0	0	0	0	0	0	0	Full
146	0	0	0	0	0	0	0	0	0	0	Tension only
99	0	0	0	0	0	0	0	0	0	0	Tension only
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full