



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

December 20, 2019

Alex Murshteyn
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379

RE: **EM-VER-113-191112** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 191 Middle Haddam Road, Portland, Connecticut.

Dear Mr. Murshteyn:

The Connecticut Siting Council (Council) is in receipt of your correspondence of December 18, 2019 submitted in response to the Council's November 20, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr



From: Alex Murshteyn [mailto:amurshteyn@clinellc.com]

Sent: Wednesday, December 18, 2019 12:42 PM

To: Robidoux, Evan

Cc: CSC-DL Siting Council; Peter Fales

Subject: RE: Council Incomplete Letter for EM-VER-113-191112 (191 Middle Haddam Road, Portland)

All,

As per the recommendation of the Incomplete Letter provided below, please see attached the updated Structural Analysis report, now with all the approved equipment for all entities, inclusive of AT&T, for this facility. One hardcopy of same is out for UPS delivery as well; package copy attached in order to render the exempt modification filing complete.

Thanks,

Alex Murshteyn
508-821-0159

UPS CampusShip: View/Print Label

1. Ensure there are no other shipping or tracking labels attached to your package. Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

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ALEX MURSHTEYN 5088210159 CENTERLINE COMMUNICATIONS, LLC 750 WEST CENTER STREET WEST BRIDGEWATER MA 023791518		1 LBS	1 OF 1
SHIP TO: MELANIE A. BACHMAN ACTING EXECUTIVE DIRECTOR CONNECTICUT SITING COUNCIL 10 FRANKLIN SQUARE NEW BRITAIN CT 06051-2655		DWT: 14,11,1	
	CT 067 9-06 		
UPS GROUND TRACKING #: 1Z 9Y4 503 03 2205 6976			
			
BILLING: P/P			
Reference # 1: 411257 aka Portland S CT Reference # 2: CSC BM - Completion reply with SA			
<small>CS 21 5.48 WNTNVS0 20.CA 10/2019</small>			



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VIA ELECTRONIC MAIL

November 20, 2019

Alex Murshteyn
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379

RE: **EM-VER-113-191112** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 191 Middle Haddam Road, Portland, Connecticut.

Dear Mr. Murshteyn:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on November 12, 2018.

According to Section 16-50j-71 of the Regulations of Connecticut State Agencies, "...any modification, as defined in Section 16-50j-2a of the Regulations of Connecticut State Agencies, to an existing tower site, except as specified in Sections 16-50j-72 and 16-50j-88 of the Regulations of Connecticut State Agencies, may have a substantial adverse environmental effect."

Staff has reviewed this exempt modification request for completeness and has identified a deficiency in the Structural Analysis Report provided with the filing. The Structural Analysis Report provided is dated September 12, 2019. The Council had approved a request for exempt modification from AT&T for the same facility on November 6, 2019. The above-referenced request for exempt modification does not include AT&T's approved equipment; however, the structural analysis included in A&T's request for exempt modification does appear to include both AT&T's equipment and the equipment that Verizon is now proposing. Please see AT&T's exempt modification filing for this facility, which may be found on the Council's website under the Decisions page in Portland, under the filing number EM-CING-113-191015 or by following the link:

https://www.ct.gov/csc/lib/csc/ems/portland/middlehaddamrd/att_cing/em-cing-113-191015_filing_middlehaddamrd.pdf


Therefore, the exempt modification request is incomplete at this time. The Council recommends that Centerline Communications, LLC provide an updated Structural Analysis Report for the facility that includes proposed and approved equipment of all entities that are located at this facility on or before December 23, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to December 23, 2019. **Please provide an electronic version and one hard copy of the requested information for the incomplete exempt modification to be rendered complete and processed. Please include the Council's exempt modification identification number referenced above with the submittal.**

This notice of incompleteness shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).



Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

A handwritten signature in black ink, appearing to read 'Melanie Bachman', written in a cursive style.

Melanie Bachman
Executive Director

MAB/IN/emr

c: The Honorable Susan S. Bransfield, First Selectman, Town of Portland
Ashley Majorowski, Land Use Administrator, Town of Portland



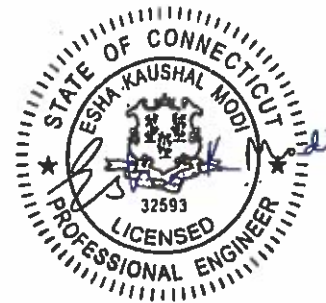
AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 138.5 ft Monopole
ATC Site Name : Middle Haddam Road-CROWN CT, CT
ATC Asset Number : 411257
Engineering Number : 12976958_C3_05
Proposed Carrier : VERIZON WIRELESS
Carrier Site Name : Portland South CT
Carrier Site Number : 15096289
Site Location : 191 Middle Haddam Rd
Portland, CT 06480-1767
41.562200,-72.573800
County : Middlesex
Date : December 13, 2019
Max Usage : 49%
Result : Pass

Prepared By:
Lucas Tait
Structural Engineer

Reviewed By:



Authorized by "EOR"

13 Dec 2019 04:05:16

COA: PEC.0001553



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Calculations Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 138.5 ft monopole to reflect the change in loading by VERIZON WIRELESS.

Supporting Documents

Tower Drawings	EEI Job #12477 Revision II, dated May 13, 2004 Mapping by HTS, ATC Site #411257, dated March 24, 2016
Foundation Drawing	Mapping by TPS Report #TPS-CT-257, dated October 22, 2015
Geotechnical Report	CHA Project #11869.1011.1502, dated September 23, 2002

Analysis

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

Basic Wind Speed:	101 mph (3-Second Gust, Vasd) / 130 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.18, S_1 = 0.06$
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.

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
137.0	3	Andrew LNX-6515DS-A1M	Low Profile Platform	(12) 1 5/8" Coax	T-MOBILE
	3	RFS APXV18-209014-C			
	6	Ericsson KRY 112 20			
128.0	1	VZW Unused Reserve: 17704 sq in	Low Profile Platform	(6) 1 5/8" Coax	VERIZON WIRELESS
119.0	6	Generic 7" x 6" x 3" Diplexer	Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 1/2" Coax (2) 3" conduit	AT&T MOBILITY
	6	Powerwave Allgon LGP21401			
	3	CCI DMP65R-BU6DA			
	3	Commscope NNH4-65B-R6			
	3	Powerwave Allgon 7770.00			
	3	Ericsson RRUS 4449 B5, B12			
	2	Raycap DC6-48-60-18-8F			
3	Ericsson Radio 8843 - B2 + B66A				
104.0	1	RFI Antennas CC807-08	Side Arm	(2) 1/2" Coax	CITY OF MIDDLETOWN, CT
100.0	1	Bird DS428E83I01T		(1) 7/8" Coax	
87.0	1	RFI Antennas CC807-08		(1) 7/8" Coax	
80.0	1	RFI Antennas OA20-41-DIN	Pole Mount	(1) 7/8" Coax	
	2	Radio Waves HP3-11		(2) EW90	

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
128.0	1	Antel BXA-70063/4CF	-	(12) 1 5/8" Coax	VERIZON WIRELESS
	4	Antel LPA-185080/12CF			
	2	Amphenol Antel LPA-171063-12CF-EDIN-X			
	6	Decibel DB846H80E-SX			
	2	Antel BXA-70063/6CF			

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
138.0	1	Generic 10' Omni	Low Profile Platform	-	VERIZON WIRELESS
131.0	4	Decibel DB846H-80E-SX	Low Profile Platform	(1) 2.02 (51.2mm) Hybrid	
	2	RFS APL866513-44TD			
	6	Quintel QS6656-3 (65 lbs)			
	1	Raycap RCMD-6627-PF-48			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			

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	40%	Pass
Shaft	49%	Pass
Base Plate	21%	Pass
Flange	3%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,951.2	11%
Axial (Kips)	51.5	2%

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) (°)
131.0	Samsung B2/B66A RRH-BR049	VERIZON WIRELESS	0.569	0.428
	Samsung B5/B13 RRH-BR04C			
	RFS APL866513-44T0			
	Raycap RCMDC-6627-PF-48			
	Decibel DB846H80E-SX			
80.0	Quintel QS6656-3 (65 lbs) Radio Waves HP3-11	CITY OF MIDDLETOWN, CT	0.227	0.316

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



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

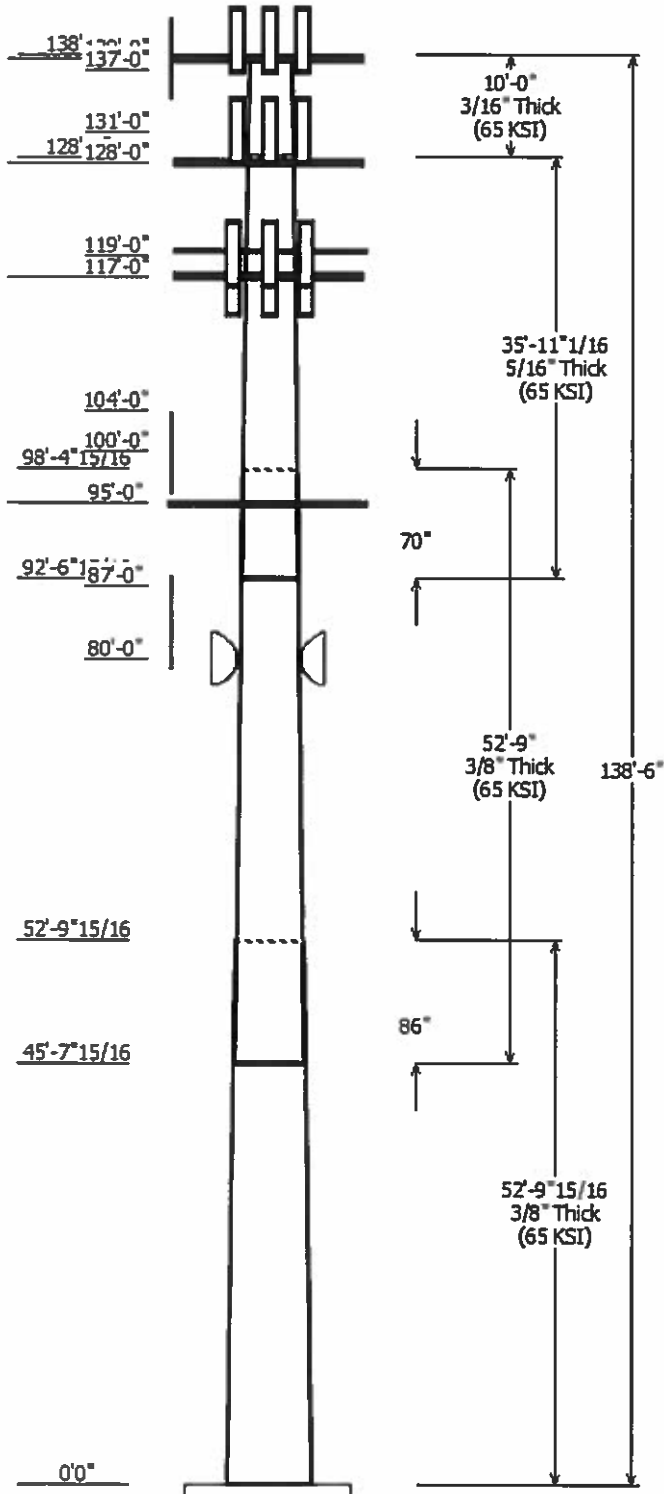
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

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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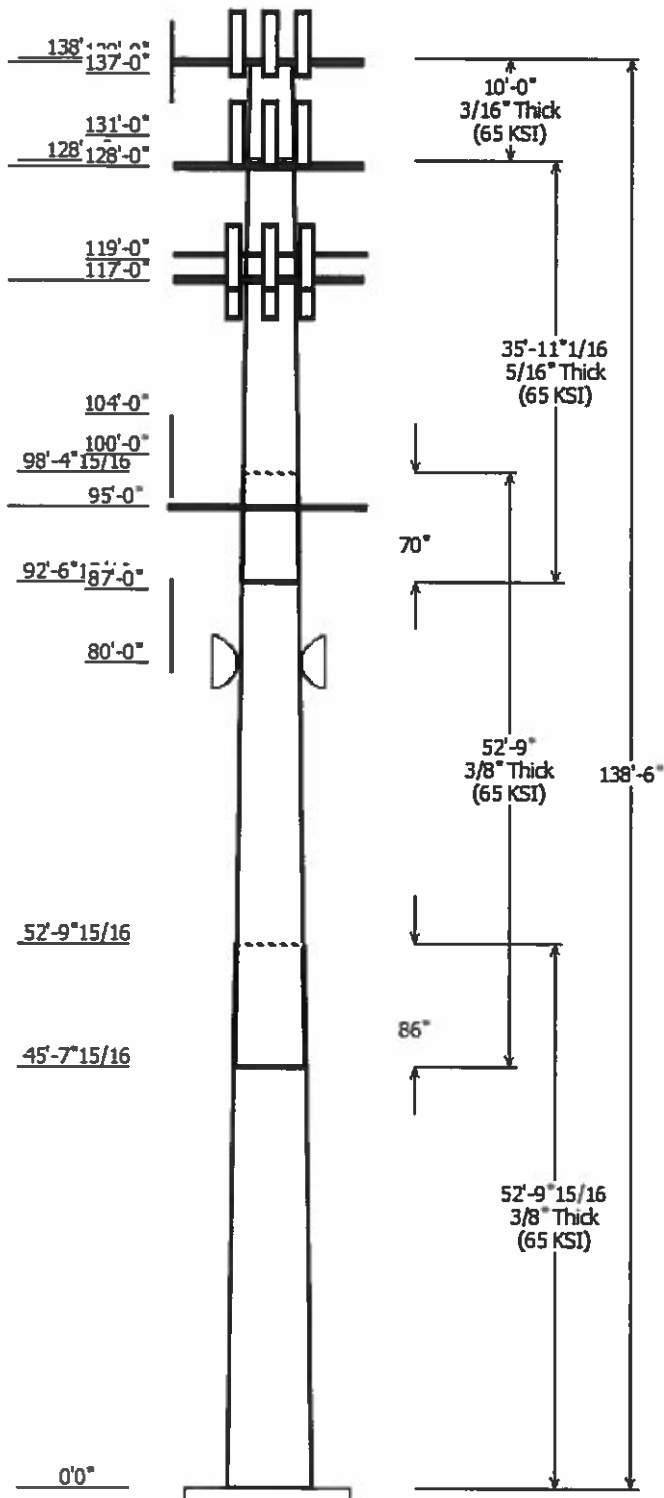


Job Information	
Client : VERIZON WIRELESS	Code: ANSI/TIA-222-G
Pole : 411257	
Location : Middle Haddam Road-CROWN CT, CT	Struct Class : II
Description : 138.5 ft Monopole	Exposure : B
Shape : 18 Sides	Topo : 1
Height : 138.50 (ft)	
Base Elev (ft): 0.00	
Taper: 0.245523(in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade Shape (ksi)
		Across Flats Top	Across Flats Bottom				
1	52.830	51.40	64.38	0.375		0.000	18 Sides 65
2	52.750	40.96	53.91	0.375	Slip Joint	86.000	18 Sides 65
3	35.920	34.20	43.02	0.313	Slip Joint	70.000	18 Sides 65
4	10.000	31.75	34.20	0.188	Butt Joint	0.000	18 Sides 65

Discrete Appurtenance				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	
138.000	138.000	1	Round Low Profile Platform	
138.000	138.000	1	Generic 10' Omni	
137.000	139.000	3	Andrew LNX-6515DS-A1M	
137.000	139.000	3	RFS APXV18-209014-C	
137.000	139.000	6	Ericsson KRY 112 20	
131.000	131.000	6	Quintel QS6656-3 (65 lbs)	
131.000	131.000	4	Decibel DB846H80E-SX	
131.000	131.000	1	Raycap RCMD-6627-PF-48	
131.000	131.000	2	RFS APL866513-44T0	
131.000	131.000	3	Samsung B5/B13 RRH-BR04C	
131.000	131.000	3	Samsung B2/B66A RRH-BR049	
128.000	128.000	1	VZW Unused Reserve: 17704	
128.000	128.000	1	Flat Low Profile Platform	
119.000	119.000	3	CCI DMP65R-BU6DA	
119.000	119.000	3	Commscope NNH4-65B-R6	
119.000	117.000	3	Powerwave Allgon 7770.00	
119.000	119.000	3	Ericsson RRUS 4449 B5, B12	
119.000	119.000	3	Ericsson Radio 8843 - B2 + B66	
119.000	117.000	2	Raycap DC6-48-60-18-8F	
119.000	117.000	6	Powerwave Allgon LGP21401	
119.000	119.000	6	Generic 7" x 6" x 3" Diplexer	
117.000	117.000	1	Round Platform w/ Handrails	
104.000	102.000	1	RFI Antennas CC807-08	
100.000	100.000	1	Bird DS428E83101T	
95.000	95.000	3	Flat Side Arm	
87.000	86.000	1	RFI Antennas CC807-08	
80.000	80.000	2	Radio Waves HP3-11	
80.000	82.000	1	RFI Antennas OA20-41-DIN	

Linear Appurtenance			
Elev From	Elev To	Description	Exposed To Wind
0.000	80.000	7/8" Coax	No
0.000	80.000	EW90	No
0.000	87.000	7/8" Coax	No
0.000	100.0	1/2" Coax	No
0.000	100.0	7/8" Coax	No
0.000	104.0	1/2" Coax	No
0.000	119.0	0.39" (10mm)	No
0.000	119.0	0.78" (19.7mm) 8	No



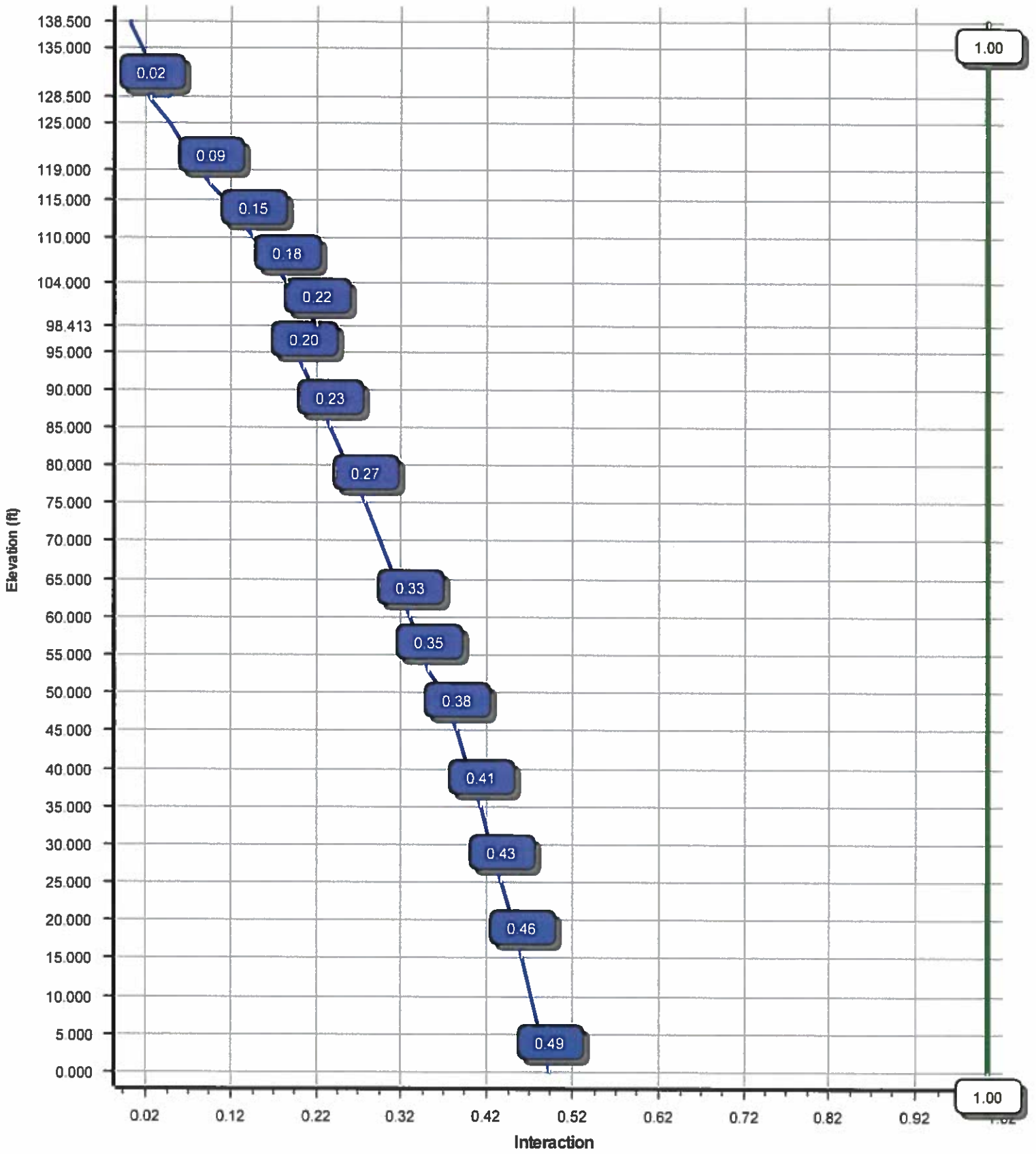
0.000	119.0	1 5/8" Coax	No
0.000	119.0	1/2" Coax	No
0.000	119.0	3" conduit	No
0.000	131.0	1 5/8" Coax	Yes
0.000	131.0	2.02 (51.2mm)	No
0.000	137.0	1 5/8" Coax	No
0.000	137.0	1 5/8" Coax	Yes

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

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2951.24	29.36	51.47
0.9D + 1.6W	2897.27	29.02	38.60
1.2D + 1.0Di + 1.0Wi	1194.65	13.53	88.91
(1.2 + 0.2Sds) * DL + E ELFM	190.13	1.79	51.27
(1.2 + 0.2Sds) * DL + E EMAM	226.40	2.07	51.27
(0.9 - 0.2Sds) * DL + E ELFM	188.83	1.79	35.67
(0.9 - 0.2Sds) * DL + E EMAM	224.76	2.07	35.67
1.0D + 1.0W	572.96	5.73	42.92

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	80.00	2.719	0.316

Load Case : 1.2D + 1.6W
Max Ratio 49.19% at 0.0 ft



Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:25 PM

Customer: VERIZON WIRELESS

Analysis Parameters

Location :	Middlesex County, CT	Height (ft) :	138.5
Code :	ANSI/TIA-222-G	Base Diameter (In) :	64.38
Shape :	18 Sides	Top Diameter (In) :	31.75
Pole Type :	Taper	Taper (in/ft) :	0.246
Pole Manufacturer :	EEL	Rotation (deg) :	0.00

Ice & Wind Parameters

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

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	1.58		
T _L (sec):	6	p:	1
S _s :	0.180	S ₁ :	0.062
F _a :	1.600	F _v :	2.400
S _{ds} :	0.192	S _{d1} :	0.099
		C _s :	0.042
		C _s Max:	0.042
		C _s Min:	0.030

Load Cases

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

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CTE Engineering Number:12976958_C3_05

12/13/2019 2:33:25 PM

Customer: VERIZON WIRELESS

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom				Top				Taper (in/ft)				
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)		Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio
1-18	52.830	0.3750	65	0.00	12,307	64.38	0.00	76.18	39429.1	28.51	171.68	51.40	52.83	60.74	19987.3	22.41	137.09	0.245523	
2-18	52.750	0.3750	65	Slip	86.00	10,055	53.91	45.66	63.73	23083.3	23.59	143.78	40.96	98.41	48.31	10057.8	17.50	109.25	0.245523
3-18	35.920	0.3125	65	Slip	70.00	4,643	43.02	92.58	42.36	9764.3	22.51	137.68	34.20	128.50	33.62	4878.8	17.54	109.46	0.245523
4-18	10.000	0.1875	65	Butt	0.00	664	34.20	128.50	20.24	2959.8	30.40	182.43	31.75	138.50	18.78	2364.1	28.09	169.33	0.245523
Shaft Weight						27,670													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
138.00	Generic 10' Omni	1	1.00	0.000	25.00	3.000	1.00	100.40	6.575	1.00
138.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,143.60	40.772	1.00
137.00	Ericsson KRY 112 20	6	0.80	2.000	12.10	0.449	0.50	27.62	0.948	0.50
137.00	RFS APXV18-209014-C	3	0.80	2.000	18.70	3.570	0.67	106.23	4.502	0.67
137.00	Andrew LNX-6515DS-A1M	3	0.80	2.000	49.80	11.410	0.70	277.11	14.628	0.70
131.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	147.44	2.767	0.50
131.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	126.83	2.767	0.50
131.00	RFS APL866513-44T0	2	0.80	0.000	15.70	4.050	0.82	142.36	4.959	0.82
131.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	1.00	157.59	5.405	1.00
131.00	Decibel DB846H80E-SX	4	0.80	0.000	16.00	5.867	0.73	172.80	6.206	0.73
131.00	Quintel QS6656-3 (65 lbs)	6	0.80	0.000	65.00	8.133	0.74	261.89	10.888	0.74
128.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,138.25	44.908	1.00
128.00	VZW Unused Reserve: 17704 sq	1	0.80	0.000	1,283.50	122.940	0.90	2,164.36	207.313	0.90
119.00	Generic 7" x 6" x 3" Diplexer	6	0.75	0.000	5.00	0.350	0.50	15.82	0.748	0.50
119.00	Powerwave Allgon LGP21401	6	0.75	-2.000	14.10	1.104	0.50	38.51	1.802	0.50
119.00	Raycap DC6-48-60-18-8F	2	0.75	-2.000	20.00	1.260	1.00	71.51	1.904	1.00
119.00	Ericsson Radio 8843 - B2 + B66A	3	0.75	0.000	71.90	1.650	0.50	132.17	2.479	0.50
119.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	134.05	2.882	0.50
119.00	Powerwave Allgon 7770.00	3	0.75	-2.000	35.00	5.508	0.65	166.26	6.538	0.65
119.00	Commscope NNH4-65B-R6	3	0.75	0.000	89.70	12.271	0.64	335.52	15.014	0.64
119.00	CCI DMP65R-BU6DA	3	0.75	0.000	79.40	12.709	0.63	331.41	15.437	0.63
117.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,265.49	51.073	1.00
104.00	RFI Antennas CC807-08	1	1.00	-2.000	24.30	2.855	1.00	94.73	6.130	1.00
100.00	Bird DS428E83I01T	1	1.00	0.000	8.90	0.465	1.00	25.68	0.921	1.00
95.00	Flat Side Arm	3	1.00	0.000	150.00	6.300	0.67	219.94	8.650	0.67
87.00	RFI Antennas CC807-08	1	1.00	-1.000	24.30	2.855	1.00	93.54	6.075	1.00
80.00	RFI Antennas OA20-41-DIN	1	1.00	2.000	28.00	4.410	1.00	142.34	10.407	1.00
80.00	Radio Waves HP3-11	2	1.00	0.000	50.00	8.918	1.00	220.79	10.561	1.00
Totals	Num Loadings:28	74			9,399.20			19,880.43		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 70

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Dist Azimuth (deg)	Dist From Face (in)	Exposed To Wind Carrier
0.00	137.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0	0.00	N T-MOBILE
0.00	137.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	200	0.50	Y T-MOBILE
0.00	131.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	20	0.50	Y VERIZON WIRELESS
0.00	131.00	1	2.02 (51.2mm) Hybrid	2.02	3.04	N	0	0.00	0	0.00	N VERIZON WIRELESS
0.00	119.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0	0.00	N AT&T MOBILITY
0.00	119.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0	0.00	N AT&T MOBILITY
0.00	119.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0	0.00	N AT&T MOBILITY

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:25 PM

Customer: VERIZON WIRELESS

0.00	119.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	2	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	104.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	100.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	100.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	87.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	80.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	80.00	2	EW90	1.32	0.32	N	0	0.00	0.00	0	0.00	N	CITY OF

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.3750	64.380	76.179	39,429.1	28.51	171.68	67.9	1206.	0.0	0.0
5.00		0.3750	63.152	74.718	37,203.6	27.93	168.41	68.5	1160.	0.0	1,283.7
10.00		0.3750	61.925	73.257	35,063.5	27.35	165.13	69.2	1115.	0.0	1,258.8
15.00		0.3750	60.697	71.796	33,007.0	26.78	161.86	69.9	1071.	0.0	1,234.0
20.00		0.3750	59.470	70.335	31,032.5	26.20	158.59	70.6	1027.	0.0	1,209.1
25.00		0.3750	58.242	68.874	29,138.5	25.62	155.31	71.3	985.4	0.0	1,184.2
30.00		0.3750	57.014	67.412	27,323.0	25.05	152.04	71.9	943.9	0.0	1,159.4
35.00		0.3750	55.787	65.951	25,584.7	24.47	148.76	72.6	903.3	0.0	1,134.5
40.00		0.3750	54.559	64.490	23,921.6	23.89	145.49	73.3	863.6	0.0	1,109.7
45.00		0.3750	53.331	63.029	22,332.2	23.31	142.22	74.0	824.8	0.0	1,084.8
45.66	Bot - Section 2	0.3750	53.169	62.835	22,126.8	23.24	141.78	74.1	819.7	0.0	142.1
50.00		0.3750	52.104	61.568	20,814.9	22.74	138.94	74.7	786.8	0.0	1,849.0
52.83	Top - Section 1	0.3750	52.159	61.634	20,881.5	22.76	139.09	74.6	788.5	0.0	1,186.4
55.00		0.3750	51.626	61.000	20,243.6	22.51	137.67	74.9	772.3	0.0	452.8
60.00		0.3750	50.399	59.538	18,823.5	21.93	134.40	75.6	735.6	0.0	1,025.4
65.00		0.3750	49.171	58.077	17,471.4	21.36	131.12	76.3	699.8	0.0	1,000.6
70.00		0.3750	47.943	56.616	16,185.7	20.78	127.85	77.0	664.9	0.0	975.7
75.00		0.3750	46.716	55.155	14,964.6	20.20	124.58	77.6	630.9	0.0	950.8
80.00		0.3750	45.488	53.694	13,806.5	19.63	121.30	78.3	597.8	0.0	926.0
85.00		0.3750	44.261	52.233	12,709.8	19.05	118.03	79.0	565.6	0.0	901.1
87.00		0.3750	43.769	51.648	12,287.9	18.82	116.72	79.3	553.0	0.0	353.5
90.00		0.3750	43.033	50.772	11,672.8	18.47	114.75	79.7	534.3	0.0	522.8
92.58	Bot - Section 3	0.3750	42.399	50.018	11,160.4	18.17	113.07	80.0	518.4	0.0	442.4
95.00		0.3750	41.805	49.311	10,693.7	17.89	111.48	80.4	503.8	0.0	755.4
98.41	Top - Section 2	0.3125	41.592	40.943	8,814.6	21.70	133.10	75.9	417.4	0.0	1,047.3
100.0		0.3125	41.203	40.556	8,567.4	21.49	131.85	76.1	409.5	0.0	220.0
104.0		0.3125	40.221	39.582	7,964.8	20.93	128.71	76.8	390.0	0.0	545.4
105.0		0.3125	39.975	39.339	7,818.7	20.79	127.92	76.9	385.2	0.0	134.3
110.0		0.3125	38.747	38.121	7,115.0	20.10	123.99	77.8	361.7	0.0	658.9
115.0		0.3125	37.520	36.904	6,454.7	19.41	120.06	78.6	338.8	0.0	638.2
117.0		0.3125	37.029	36.417	6,202.5	19.13	118.49	78.9	329.9	0.0	249.5
119.0		0.3125	36.538	35.930	5,957.0	18.85	116.92	79.2	321.1	0.0	246.2
120.0		0.3125	36.292	35.686	5,836.7	18.71	116.13	79.4	316.8	0.0	121.8
125.0		0.3125	35.065	34.468	5,259.4	18.02	112.21	80.2	295.4	0.0	596.8
128.0		0.3125	34.328	33.738	4,932.0	17.61	109.85	80.7	283.0	0.0	348.1
128.5	Top - Section 3	0.3125	34.205	33.616	4,878.8	17.54	109.46	80.8	280.9	0.0	57.3
128.5	Bot - Section 4	0.1875	34.205	20.244	2,959.8	30.40	182.43	65.6	170.4	0.0	
130.0		0.1875	33.837	20.025	2,864.7	30.06	180.46	66.0	166.8	0.0	102.8
131.0		0.1875	33.591	19.879	2,802.5	29.83	179.15	66.3	164.3	0.0	67.9
135.0		0.1875	32.609	19.294	2,562.5	28.90	173.92	67.4	154.8	0.0	266.6
137.0		0.1875	32.118	19.002	2,447.8	28.44	171.30	67.9	150.1	0.0	130.3
138.0		0.1875	31.873	18.856	2,391.8	28.21	169.99	68.2	147.8	0.0	64.4
138.5		0.1875	31.750	18.783	2,364.1	28.09	169.33	68.4	146.7	0.0	32.0
											27,669.9

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:25 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W	101 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		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		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		268.0	0.0					0.0	0.0	268.0	0.0	0.0	0.0
5.00		530.8	1,540.4					0.0	284.2	530.8	1,824.6	0.0	0.0
10.00		520.5	1,510.6					0.0	284.2	520.5	1,794.7	0.0	0.0
15.00		510.2	1,480.7					0.0	284.2	510.2	1,764.9	0.0	0.0
20.00		499.9	1,450.9					0.0	284.2	499.9	1,735.1	0.0	0.0
25.00		489.6	1,421.1					0.0	284.2	489.6	1,705.2	0.0	0.0
30.00		484.9	1,391.3					0.0	284.2	484.9	1,675.4	0.0	0.0
35.00		490.1	1,361.4					0.0	284.2	490.1	1,645.6	0.0	0.0
40.00		498.0	1,331.6					0.0	284.2	498.0	1,615.8	0.0	0.0
45.00		284.1	1,301.8					0.0	284.2	284.1	1,585.9	0.0	0.0
45.66	Bot - Section 2	256.0	170.5					0.0	37.7	256.0	208.2	0.0	0.0
50.00		368.3	2,218.7					0.0	246.5	368.3	2,465.2	0.0	0.0
52.83	Top - Section 1	257.8	1,423.7					0.0	160.8	257.8	1,584.5	0.0	0.0
55.00		370.4	543.3					0.0	123.3	370.4	666.6	0.0	0.0
60.00		516.7	1,230.5					0.0	284.2	516.7	1,514.7	0.0	0.0
65.00		515.8	1,200.7					0.0	284.2	515.8	1,484.8	0.0	0.0
70.00		515.2	1,170.8					0.0	284.2	515.2	1,455.0	0.0	0.0
75.00		515.5	1,141.0					0.0	284.2	515.5	1,425.2	0.0	0.0
80.00	Appurtenance(s)	515.5	1,111.2	901.9	0.0	359.6	153.6	0.0	284.2	1,417.4	1,548.9	0.0	0.0
85.00		360.6	1,081.3					0.0	278.3	360.6	1,359.7	0.0	0.0
87.00	Appurtenance(s)	257.1	424.2	118.0	0.0	-118.0	29.2	0.0	111.3	375.1	564.7	0.0	0.0
90.00		286.5	627.3					0.0	165.8	286.5	793.1	0.0	0.0
92.58	Bot - Section 3	258.0	530.9					0.0	142.6	258.0	673.5	0.0	0.0
95.00	Appurtenance(s)	302.5	906.5	538.5	0.0	0.0	540.0	0.0	133.8	841.0	1,580.2	0.0	0.0
98.41	Top - Section 2	258.4	1,256.8					0.0	188.7	258.4	1,445.4	0.0	0.0
100.00	Appurtenance(s)	286.6	264.0	20.1	0.0	0.0	10.7	0.0	87.7	306.7	362.4	0.0	0.0
104.00	Appurtenance(s)	256.1	654.5	123.9	0.0	-247.8	29.2	0.0	218.8	380.0	902.4	0.0	0.0
105.00		305.5	161.1					0.0	54.5	305.5	215.6	0.0	0.0
110.00		506.8	790.7					0.0	272.6	506.8	1,063.3	0.0	0.0
115.00		352.7	765.9					0.0	272.6	352.7	1,038.5	0.0	0.0
117.00	Appurtenance(s)	200.3	299.4	1,227.5	0.0	0.0	2,400.0	0.0	109.0	1,427.8	2,808.4	0.0	0.0
119.00	Appurtenance(s)	149.8	295.4	2,399.5	0.0	-1,121.9	1,434.7	0.0	109.0	2,549.4	1,839.2	0.0	0.0
120.00		297.6	146.2					0.0	21.4	297.6	167.6	0.0	0.0
125.00		395.1	716.2					0.0	106.8	395.1	823.0	0.0	0.0
128.00	Appurtenance(s)	171.8	417.8	5,307.1	0.0	0.0	3,340.2	0.0	64.1	5,478.9	3,822.0	0.0	0.0
128.50	Top - Section 3	97.7	68.8					0.0	10.7	97.7	79.4	0.0	0.0
130.00		121.9	123.3					0.0	32.0	121.9	155.4	0.0	0.0
131.00	Appurtenance(s)	219.1	81.5	2,594.0	0.0	0.0	1,177.8	0.0	21.4	2,813.1	1,280.6	0.0	0.0
135.00		254.3	319.9					0.0	47.2	254.3	367.1	0.0	0.0
137.00	Appurtenance(s)	125.4	156.4	1,232.0	0.0	2,463.9	333.7	0.0	23.6	1,357.4	513.7	0.0	0.0
138.00	Appurtenance(s)	62.3	77.3	1,168.5	0.0	0.0	1,830.0	0.0	0.0	1,230.8	1,907.3	0.0	0.0
138.50		20.7	38.4					0.0	0.0	20.7	38.4	0.0	0.0
Totals:										29,584.9	51,501.3	0.00	0.00

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:29 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

101 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	-51.47	-29.36	0.00	-2,951.24	0.00	2,951.24	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.492
5.00	-49.60	-28.92	0.00	-2,804.42	0.00	2,804.42	4,609.64	2,304.82	11,913.0	5,965.37	0.06	-0.10	0.481
10.00	-47.75	-28.48	0.00	-2,659.81	0.00	2,659.81	4,564.26	2,282.13	11,563.7	5,790.45	0.22	-0.21	0.470
15.00	-45.94	-28.05	0.00	-2,517.39	0.00	2,517.39	4,517.10	2,258.55	11,214.5	5,615.62	0.50	-0.31	0.459
20.00	-44.16	-27.62	0.00	-2,377.14	0.00	2,377.14	4,468.14	2,234.07	10,865.8	5,441.02	0.88	-0.42	0.447
25.00	-42.40	-27.20	0.00	-2,239.04	0.00	2,239.04	4,417.41	2,208.70	10,517.9	5,266.79	1.38	-0.52	0.435
30.00	-40.68	-26.77	0.00	-2,103.07	0.00	2,103.07	4,364.88	2,182.44	10,170.9	5,093.05	1.99	-0.63	0.422
35.00	-39.00	-26.33	0.00	-1,969.22	0.00	1,969.22	4,310.58	2,155.29	9,825.30	4,919.95	2.70	-0.74	0.409
40.00	-37.34	-25.88	0.00	-1,837.57	0.00	1,837.57	4,254.48	2,127.24	9,481.15	4,747.62	3.53	-0.84	0.396
45.00	-35.73	-25.61	0.00	-1,708.17	0.00	1,708.17	4,196.60	2,098.30	9,138.82	4,576.20	4.47	-0.95	0.382
45.66	-35.50	-25.38	0.00	-1,691.18	0.00	1,691.18	4,188.79	2,094.39	9,093.56	4,553.54	4.61	-0.96	0.380
50.00	-33.01	-25.01	0.00	-1,581.11	0.00	1,581.11	4,136.94	2,068.47	8,798.58	4,405.83	5.52	-1.05	0.367
52.83	-31.41	-24.75	0.00	-1,510.33	0.00	1,510.33	4,139.66	2,069.83	8,813.83	4,413.46	6.17	-1.11	0.350
55.00	-30.72	-24.41	0.00	-1,456.61	0.00	1,456.61	4,113.24	2,056.62	8,666.83	4,339.86	6.68	-1.16	0.343
60.00	-29.18	-23.91	0.00	-1,334.56	0.00	1,334.56	4,051.10	2,025.55	8,329.95	4,171.16	7.95	-1.26	0.327
65.00	-27.67	-23.41	0.00	-1,215.01	0.00	1,215.01	3,987.17	1,993.58	7,995.80	4,003.84	9.32	-1.35	0.311
70.00	-26.19	-22.90	0.00	-1,097.97	0.00	1,097.97	3,921.45	1,960.72	7,664.66	3,838.03	10.79	-1.45	0.293
75.00	-24.74	-22.39	0.00	-983.48	0.00	983.48	3,853.95	1,926.97	7,336.80	3,673.85	12.35	-1.54	0.274
80.00	-23.20	-20.96	0.00	-871.19	0.00	871.19	3,784.66	1,892.33	7,012.50	3,511.46	14.01	-1.63	0.254
85.00	-21.83	-20.58	0.00	-766.39	0.00	766.39	3,713.59	1,856.79	6,692.03	3,350.99	15.77	-1.71	0.235
87.00	-21.26	-20.21	0.00	-725.23	0.00	725.23	3,684.66	1,842.33	6,564.97	3,287.37	16.49	-1.74	0.227
90.00	-20.46	-19.91	0.00	-664.61	0.00	664.61	3,640.73	1,820.36	6,375.66	3,192.57	17.60	-1.79	0.214
92.58	-19.79	-19.65	0.00	-613.24	0.00	613.24	3,602.44	1,801.22	6,214.10	3,111.67	18.58	-1.83	0.203
95.00	-18.22	-18.77	0.00	-565.70	0.00	565.70	3,566.09	1,783.04	6,063.66	3,036.33	19.52	-1.87	0.192
98.41	-16.77	-18.47	0.00	-501.64	0.00	501.64	2,795.76	1,397.88	4,743.51	2,375.28	20.88	-1.92	0.217
100.00	-16.41	-18.16	0.00	-472.33	0.00	472.33	2,778.82	1,389.41	4,669.93	2,338.44	21.52	-1.94	0.208
104.00	-15.51	-17.76	0.00	-399.68	0.00	399.68	2,735.29	1,367.65	4,485.55	2,246.11	23.17	-2.00	0.184
105.00	-15.29	-17.46	0.00	-381.91	0.00	381.91	2,724.23	1,362.12	4,439.71	2,223.16	23.59	-2.01	0.178
110.00	-14.23	-16.93	0.00	-294.61	0.00	294.61	2,667.87	1,333.93	4,212.22	2,109.24	25.73	-2.07	0.145
115.00	-13.20	-16.55	0.00	-209.96	0.00	209.96	2,609.71	1,304.86	3,987.74	1,996.83	27.93	-2.12	0.110
117.00	-10.44	-15.02	0.00	-176.87	0.00	176.87	2,585.95	1,292.98	3,898.85	1,952.32	28.83	-2.14	0.095
119.00	-8.69	-12.40	0.00	-146.83	0.00	146.83	2,561.90	1,280.95	3,810.50	1,908.08	29.73	-2.16	0.080
120.00	-8.53	-12.10	0.00	-134.43	0.00	134.43	2,549.77	1,274.89	3,766.53	1,886.06	30.18	-2.16	0.075
125.00	-7.72	-11.68	0.00	-73.91	0.00	73.91	2,488.05	1,244.02	3,548.87	1,777.07	32.46	-2.19	0.045
128.00	-4.11	-6.06	0.00	-38.88	0.00	38.88	2,450.16	1,225.08	3,420.09	1,712.59	33.84	-2.20	0.024
128.50	-4.04	-5.96	0.00	-35.85	0.00	35.85	2,443.78	1,221.89	3,398.76	1,701.91	34.07	-2.20	0.023
128.50	-4.04	-5.96	0.00	-35.85	0.00	35.85	1,195.95	597.98	1,675.60	839.05	34.07	-2.20	0.046
130.00	-3.89	-5.83	0.00	-26.91	0.00	26.91	1,190.35	595.17	1,649.59	826.02	34.76	-2.20	0.036
131.00	-2.71	-2.97	0.00	-21.08	0.00	21.08	1,186.52	593.26	1,632.22	817.33	35.22	-2.20	0.028
135.00	-2.36	-2.70	0.00	-9.20	0.00	9.20	1,170.50	585.25	1,562.58	782.45	37.07	-2.21	0.014
137.00	-1.90	-1.33	0.00	-1.34	0.00	1.34	1,162.06	581.03	1,527.68	764.98	38.00	-2.21	0.003
138.00	-0.04	-0.02	0.00	-0.01	0.00	0.01	1,157.73	578.87	1,510.22	756.23	38.46	-2.21	0.000
138.50	0.00	-0.02	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	38.69	-2.21	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CTE Engineering Number:12976958_C3_05

12/13/2019 2:33:29 PM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W	101 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		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		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		268.0	0.0					0.0	0.0	268.0	0.0	0.0	0.0
5.00		530.8	1,155.3					0.0	213.1	530.8	1,368.4	0.0	0.0
10.00		520.5	1,132.9					0.0	213.1	520.5	1,346.1	0.0	0.0
15.00		510.2	1,110.6					0.0	213.1	510.2	1,323.7	0.0	0.0
20.00		499.9	1,088.2					0.0	213.1	499.9	1,301.3	0.0	0.0
25.00		489.6	1,065.8					0.0	213.1	489.6	1,278.9	0.0	0.0
30.00		484.9	1,043.4					0.0	213.1	484.9	1,256.6	0.0	0.0
35.00		490.1	1,021.1					0.0	213.1	490.1	1,234.2	0.0	0.0
40.00		498.0	998.7					0.0	213.1	498.0	1,211.8	0.0	0.0
45.00		284.1	976.3					0.0	213.1	284.1	1,189.4	0.0	0.0
45.66	Bot - Section 2	256.0	127.8					0.0	28.3	256.0	156.1	0.0	0.0
50.00		368.3	1,664.1					0.0	184.8	368.3	1,848.9	0.0	0.0
52.83	Top - Section 1	257.8	1,067.8					0.0	120.6	257.8	1,188.4	0.0	0.0
55.00		370.4	407.5					0.0	92.5	370.4	500.0	0.0	0.0
60.00		516.7	922.9					0.0	213.1	516.7	1,136.0	0.0	0.0
65.00		515.8	900.5					0.0	213.1	515.8	1,113.6	0.0	0.0
70.00		513.7	878.1					0.0	213.1	513.7	1,091.2	0.0	0.0
75.00		510.5	855.7					0.0	213.1	510.5	1,068.9	0.0	0.0
80.00	Appurtenance(s)	506.3	833.4	901.9	0.0	359.6	115.2	0.0	213.1	1,408.2	1,161.7	0.0	0.0
85.00		352.1	811.0					0.0	208.8	352.1	1,019.8	0.0	0.0
87.00	Appurtenance(s)	249.3	318.1	118.0	0.0	-118.0	21.9	0.0	83.5	367.3	423.5	0.0	0.0
90.00		276.6	470.5					0.0	124.4	276.6	594.9	0.0	0.0
92.58	Bot - Section 3	247.9	398.2					0.0	107.0	247.9	505.1	0.0	0.0
95.00	Appurtenance(s)	289.0	679.9	538.5	0.0	0.0	405.0	0.0	100.3	827.5	1,185.2	0.0	0.0
98.41	Top - Section 2	246.3	942.6					0.0	141.5	246.3	1,084.1	0.0	0.0
100.00	Appurtenance(s)	272.1	198.0	20.1	0.0	0.0	8.0	0.0	65.8	292.2	271.8	0.0	0.0
104.00	Appurtenance(s)	242.5	490.9	123.9	0.0	-247.8	21.9	0.0	164.1	366.4	676.8	0.0	0.0
105.00		286.6	120.8					0.0	40.9	286.6	161.7	0.0	0.0
110.00		472.4	593.1					0.0	204.4	472.4	797.5	0.0	0.0
115.00		326.3	574.4					0.0	204.4	326.3	778.8	0.0	0.0
117.00	Appurtenance(s)	183.8	224.5	1,227.5	0.0	0.0	1,800.0	0.0	81.8	1,411.3	2,106.3	0.0	0.0
119.00	Appurtenance(s)	137.0	221.6	2,399.5	0.0	-1,121.9	1,076.0	0.0	81.8	2,536.5	1,379.4	0.0	0.0
120.00		269.8	109.7					0.0	16.0	269.8	125.7	0.0	0.0
125.00		356.4	537.1					0.0	80.1	356.4	617.2	0.0	0.0
128.00	Appurtenance(s)	153.9	313.3	5,307.1	0.0	0.0	2,505.2	0.0	48.1	5,461.0	2,866.5	0.0	0.0
128.50	Top - Section 3	87.0	51.6					0.0	8.0	87.0	59.6	0.0	0.0
130.00		108.3	92.5					0.0	24.0	108.3	116.5	0.0	0.0
131.00	Appurtenance(s)	213.6	61.1	2,594.0	0.0	0.0	883.3	0.0	16.0	2,807.6	960.5	0.0	0.0
135.00		254.3	239.9					0.0	35.4	254.3	275.4	0.0	0.0
137.00	Appurtenance(s)	125.4	117.3	1,232.0	0.0	2,463.9	250.3	0.0	17.7	1,357.4	385.3	0.0	0.0
138.00	Appurtenance(s)	62.3	58.0	1,168.5	0.0	0.0	1,372.5	0.0	0.0	1,230.8	1,430.5	0.0	0.0
138.50		20.7	28.8					0.0	0.0	20.7	28.8	0.0	0.0
Totals:										29,256.3	38,626.0	0.00	0.00

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:32 PM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W

101 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	-38.60	-29.02	0.00	-2,897.27	0.00	2,897.27	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.480
5.00	-37.18	-28.56	0.00	-2,752.15	0.00	2,752.15	4,609.64	2,304.82	11,913.0	5,965.37	0.06	-0.10	0.470
10.00	-35.79	-28.10	0.00	-2,609.37	0.00	2,609.37	4,564.26	2,282.13	11,563.7	5,790.45	0.22	-0.20	0.459
15.00	-34.41	-27.64	0.00	-2,468.88	0.00	2,468.88	4,517.10	2,258.55	11,214.5	5,615.62	0.49	-0.31	0.447
20.00	-33.07	-27.20	0.00	-2,330.67	0.00	2,330.67	4,468.14	2,234.07	10,865.8	5,441.02	0.87	-0.41	0.436
25.00	-31.74	-26.75	0.00	-2,194.69	0.00	2,194.69	4,417.41	2,208.70	10,517.9	5,266.79	1.35	-0.51	0.424
30.00	-30.44	-26.31	0.00	-2,060.93	0.00	2,060.93	4,364.88	2,182.44	10,170.9	5,093.05	1.95	-0.62	0.412
35.00	-29.17	-25.86	0.00	-1,929.38	0.00	1,929.38	4,310.58	2,155.29	9,825.30	4,919.95	2.65	-0.72	0.399
40.00	-27.92	-25.40	0.00	-1,800.09	0.00	1,800.09	4,254.48	2,127.24	9,481.15	4,747.62	3.47	-0.83	0.386
45.00	-26.71	-25.12	0.00	-1,673.11	0.00	1,673.11	4,196.60	2,098.30	9,138.82	4,576.20	4.39	-0.93	0.372
45.66	-26.53	-24.89	0.00	-1,656.45	0.00	1,656.45	4,188.79	2,094.39	9,093.56	4,553.54	4.52	-0.94	0.370
50.00	-24.66	-24.52	0.00	-1,548.53	0.00	1,548.53	4,136.94	2,068.47	8,798.58	4,405.83	5.42	-1.03	0.358
52.83	-23.45	-24.26	0.00	-1,479.15	0.00	1,479.15	4,139.66	2,069.83	8,813.83	4,413.46	6.05	-1.09	0.341
55.00	-22.93	-23.91	0.00	-1,426.51	0.00	1,426.51	4,113.24	2,056.62	8,666.83	4,339.86	6.55	-1.14	0.334
60.00	-21.77	-23.40	0.00	-1,306.97	0.00	1,306.97	4,051.10	2,025.55	8,329.95	4,171.16	7.80	-1.23	0.319
65.00	-20.63	-22.90	0.00	-1,189.96	0.00	1,189.96	3,987.17	1,993.58	7,995.80	4,003.84	9.14	-1.33	0.303
70.00	-19.52	-22.39	0.00	-1,075.48	0.00	1,075.48	3,921.45	1,960.72	7,664.66	3,838.03	10.58	-1.42	0.285
75.00	-18.43	-21.88	0.00	-963.54	0.00	963.54	3,853.95	1,926.97	7,336.80	3,673.85	12.11	-1.51	0.267
80.00	-17.27	-20.46	0.00	-853.79	0.00	853.79	3,784.66	1,892.33	7,012.50	3,511.46	13.74	-1.59	0.248
85.00	-16.24	-20.10	0.00	-751.47	0.00	751.47	3,713.59	1,856.79	6,692.03	3,350.99	15.45	-1.68	0.229
87.00	-15.82	-19.73	0.00	-711.28	0.00	711.28	3,684.66	1,842.33	6,564.97	3,287.37	16.17	-1.71	0.221
90.00	-15.22	-19.45	0.00	-652.08	0.00	652.08	3,640.73	1,820.36	6,375.66	3,192.57	17.26	-1.76	0.209
92.58	-14.71	-19.19	0.00	-601.91	0.00	601.91	3,602.44	1,801.22	6,214.10	3,111.67	18.22	-1.80	0.198
95.00	-13.53	-18.34	0.00	-555.46	0.00	555.46	3,566.09	1,783.04	6,063.66	3,036.33	19.14	-1.83	0.187
98.41	-12.45	-18.07	0.00	-492.86	0.00	492.86	2,795.76	1,397.88	4,743.51	2,375.28	20.47	-1.88	0.212
100.00	-12.17	-17.77	0.00	-464.20	0.00	464.20	2,778.82	1,389.41	4,669.93	2,338.44	21.09	-1.90	0.203
104.00	-11.50	-17.39	0.00	-393.10	0.00	393.10	2,735.29	1,367.65	4,485.55	2,246.11	22.71	-1.96	0.179
105.00	-11.34	-17.11	0.00	-375.71	0.00	375.71	2,724.23	1,362.12	4,439.71	2,223.16	23.12	-1.97	0.173
110.00	-10.54	-16.62	0.00	-290.18	0.00	290.18	2,667.87	1,333.93	4,212.22	2,109.24	25.22	-2.03	0.142
115.00	-9.76	-16.27	0.00	-207.10	0.00	207.10	2,609.71	1,304.86	3,987.74	1,996.83	27.38	-2.08	0.108
117.00	-7.71	-14.78	0.00	-174.56	0.00	174.56	2,585.95	1,292.98	3,898.85	1,952.32	28.26	-2.10	0.093
119.00	-6.42	-12.20	0.00	-144.99	0.00	144.99	2,561.90	1,280.95	3,810.50	1,908.08	29.14	-2.11	0.079
120.00	-6.30	-11.93	0.00	-132.79	0.00	132.79	2,549.77	1,274.89	3,766.53	1,886.06	29.59	-2.12	0.073
125.00	-5.69	-11.55	0.00	-73.16	0.00	73.16	2,488.05	1,244.02	3,548.87	1,777.07	31.82	-2.15	0.044
128.00	-3.03	-5.98	0.00	-38.52	0.00	38.52	2,450.16	1,225.08	3,420.09	1,712.59	33.17	-2.15	0.024
128.50	-2.98	-5.90	0.00	-35.52	0.00	35.52	2,443.78	1,221.89	3,398.76	1,701.91	33.40	-2.16	0.022
128.50	-2.98	-5.90	0.00	-35.52	0.00	35.52	1,195.95	597.98	1,675.60	839.05	33.40	-2.16	0.045
130.00	-2.86	-5.78	0.00	-26.68	0.00	26.68	1,190.35	595.17	1,649.59	826.02	34.08	-2.16	0.035
131.00	-2.01	-2.94	0.00	-20.90	0.00	20.90	1,186.52	593.26	1,632.22	817.33	34.53	-2.16	0.027
135.00	-1.74	-2.68	0.00	-9.13	0.00	9.13	1,170.50	585.25	1,562.58	782.45	36.34	-2.17	0.013
137.00	-1.41	-1.31	0.00	-1.32	0.00	1.32	1,162.06	581.03	1,527.68	764.98	37.25	-2.17	0.003
138.00	-0.03	-0.02	0.00	-0.01	0.00	0.01	1,157.73	578.87	1,510.22	756.23	37.71	-2.17	0.000
138.50	0.00	-0.02	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	37.93	-2.17	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:32 PM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 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

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		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		78.5	0.0					0.0	0.0	78.5	0.0	0.0	0.0
5.00		155.8	2,007.3					214.6	416.1	370.5	2,423.5	0.0	0.0
10.00		153.4	2,022.8					212.5	428.3	365.9	2,451.1	0.0	0.0
15.00		150.8	2,009.9					209.7	434.5	360.4	2,444.5	0.0	0.0
20.00		148.0	1,987.8					206.6	438.9	354.6	2,426.7	0.0	0.0
25.00		145.3	1,960.8					203.4	442.2	348.6	2,403.1	0.0	0.0
30.00		144.2	1,930.9					200.0	445.0	344.2	2,375.9	0.0	0.0
35.00		146.0	1,898.9					201.4	447.3	347.4	2,346.2	0.0	0.0
40.00		148.6	1,865.3					206.2	449.4	354.8	2,314.6	0.0	0.0
45.00		84.9	1,830.5					209.9	451.2	294.8	2,281.7	0.0	0.0
45.66	Bot - Section 2	76.5	240.9					28.1	60.0	104.6	300.8	0.0	0.0
50.00		110.2	2,678.9					184.7	392.8	294.9	3,071.8	0.0	0.0
52.83	Top - Section 1	77.2	1,722.4					121.4	257.0	198.6	1,979.3	0.0	0.0
55.00		111.1	771.2					94.6	197.3	205.7	968.5	0.0	0.0
60.00		155.2	1,746.8					219.0	455.7	374.2	2,202.5	0.0	0.0
65.00		155.2	1,709.1					220.0	457.0	375.2	2,166.1	0.0	0.0
70.00		154.9	1,671.0					220.5	458.2	375.4	2,129.1	0.0	0.0
75.00		154.3	1,632.3					220.5	459.3	374.7	2,091.6	0.0	0.0
80.00	Appurtenance(s)	153.3	1,593.3	196.0	0.0	130.0	737.5	220.1	460.3	569.4	2,791.2	0.0	0.0
85.00		106.8	1,554.0					219.4	455.5	326.1	2,009.5	0.0	0.0
87.00	Appurtenance(s)	75.7	612.0	38.5	0.0	-38.5	122.7	87.5	182.5	201.7	917.2	0.0	0.0
90.00		84.2	905.3					130.8	272.8	215.0	1,178.1	0.0	0.0
92.58	Bot - Section 3	75.5	767.4					112.1	234.8	187.6	1,002.2	0.0	0.0
95.00	Appurtenance(s)	88.1	1,129.1	113.2	0.0	0.0	1,199.8	104.8	220.5	306.1	2,549.4	0.0	0.0
98.41	Top - Section 2	75.1	1,565.7					147.1	311.3	222.2	1,877.1	0.0	0.0
100.00	Appurtenance(s)	83.2	406.7	6.1	0.0	0.0	36.4	68.9	144.9	158.2	587.9	0.0	0.0
104.00	Appurtenance(s)	74.2	1,007.0	40.7	0.0	-81.5	123.9	172.9	363.2	287.8	1,494.1	0.0	0.0
105.00		87.9	249.0					43.0	90.7	130.9	339.7	0.0	0.0
110.00		145.1	1,218.2					213.7	454.0	358.8	1,672.2	0.0	0.0
115.00		100.4	1,182.3					211.3	454.8	311.7	1,637.1	0.0	0.0
117.00	Appurtenance(s)	56.7	464.4	353.0	0.0	0.0	5,665.5	83.8	182.1	493.5	6,312.0	0.0	0.0
119.00	Appurtenance(s)	42.3	458.6	469.6	0.0	-227.7	5,096.9	83.4	182.2	595.3	5,737.8	0.0	0.0
120.00		83.5	227.4					41.5	58.0	125.0	285.4	0.0	0.0
125.00		110.4	1,110.0					205.9	290.4	316.3	1,400.4	0.0	0.0
128.00	Appurtenance(s)	47.8	650.1	1,377.1	0.0	0.0	7,642.8	122.1	174.6	1,547.0	8,467.5	0.0	0.0
128.50	Top - Section 3	27.0	107.4					20.2	29.1	47.3	136.5	0.0	0.0
130.00		33.7	238.2					60.5	87.4	94.2	325.6	0.0	0.0
131.00	Appurtenance(s)	66.6	157.6	504.3	0.0	0.0	4,610.1	40.2	58.3	611.1	4,825.9	0.0	0.0
135.00		79.4	616.5					140.0	121.2	219.3	737.7	0.0	0.0
137.00	Appurtenance(s)	39.2	302.9	247.5	0.0	495.1	1,593.4	69.1	60.7	355.8	1,957.0	0.0	0.0
138.00	Appurtenance(s)	19.5	150.1	343.1	0.0	0.0	4,074.0	0.0	0.0	362.6	4,224.1	0.0	0.0
138.50		6.5	74.7					0.0	0.0	6.5	74.7	0.0	0.0
Totals:										13,572.4	88,917.2	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 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	-88.91	-13.53	0.00	-1,194.65	0.00	1,194.65	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.214
5.00	-86.48	-13.22	0.00	-1,127.02	0.00	1,127.02	4,609.64	2,304.82	11,913.0	5,965.37	0.02	-0.04	0.208
10.00	-84.02	-12.91	0.00	-1,060.92	0.00	1,060.92	4,564.26	2,282.13	11,563.7	5,790.45	0.09	-0.08	0.202
15.00	-81.57	-12.61	0.00	-996.37	0.00	996.37	4,517.10	2,258.55	11,214.5	5,615.62	0.20	-0.13	0.196
20.00	-79.13	-12.30	0.00	-933.34	0.00	933.34	4,468.14	2,234.07	10,865.8	5,441.02	0.35	-0.17	0.189
25.00	-76.72	-12.00	0.00	-871.83	0.00	871.83	4,417.41	2,208.70	10,517.9	5,266.79	0.55	-0.21	0.183
30.00	-74.34	-11.70	0.00	-811.82	0.00	811.82	4,364.88	2,182.44	10,170.9	5,093.05	0.79	-0.25	0.176
35.00	-71.99	-11.39	0.00	-753.32	0.00	753.32	4,310.58	2,155.29	9,825.30	4,919.95	1.08	-0.29	0.170
40.00	-69.67	-11.07	0.00	-696.36	0.00	696.36	4,254.48	2,127.24	9,481.15	4,747.62	1.40	-0.33	0.163
45.00	-67.38	-10.79	0.00	-640.99	0.00	640.99	4,196.60	2,098.30	9,138.82	4,576.20	1.77	-0.37	0.156
45.66	-67.08	-10.71	0.00	-633.83	0.00	633.83	4,188.79	2,094.39	9,093.56	4,553.54	1.82	-0.38	0.155
50.00	-64.00	-10.42	0.00	-587.39	0.00	587.39	4,136.94	2,068.47	8,798.58	4,405.83	2.18	-0.41	0.149
52.83	-62.02	-10.23	0.00	-557.89	0.00	557.89	4,139.66	2,069.83	8,813.83	4,413.46	2.43	-0.43	0.141
55.00	-61.05	-10.05	0.00	-535.69	0.00	535.69	4,113.24	2,056.62	8,666.83	4,339.86	2.63	-0.45	0.138
60.00	-58.84	-9.69	0.00	-485.45	0.00	485.45	4,051.10	2,025.55	8,329.95	4,171.16	3.12	-0.48	0.131
65.00	-56.68	-9.33	0.00	-437.00	0.00	437.00	3,987.17	1,993.58	7,995.80	4,003.84	3.65	-0.52	0.123
70.00	-54.55	-8.97	0.00	-390.34	0.00	390.34	3,921.45	1,960.72	7,664.66	3,838.03	4.21	-0.55	0.116
75.00	-52.45	-8.60	0.00	-345.51	0.00	345.51	3,853.95	1,926.97	7,336.80	3,673.85	4.81	-0.59	0.108
80.00	-49.66	-8.03	0.00	-302.38	0.00	302.38	3,784.66	1,892.33	7,012.50	3,511.46	5.44	-0.62	0.099
85.00	-47.66	-7.70	0.00	-262.24	0.00	262.24	3,713.59	1,856.79	6,692.03	3,350.99	6.10	-0.65	0.091
87.00	-46.74	-7.50	0.00	-246.85	0.00	246.85	3,684.66	1,842.33	6,564.97	3,287.37	6.37	-0.66	0.088
90.00	-45.56	-7.28	0.00	-224.36	0.00	224.36	3,640.73	1,820.36	6,375.66	3,192.57	6.79	-0.67	0.083
92.58	-44.56	-7.09	0.00	-205.59	0.00	205.59	3,602.44	1,801.22	6,214.10	3,111.67	7.16	-0.69	0.078
95.00	-42.01	-6.76	0.00	-188.43	0.00	188.43	3,566.09	1,783.04	6,063.66	3,036.33	7.51	-0.70	0.074
98.41	-40.14	-6.53	0.00	-165.35	0.00	165.35	2,795.76	1,397.88	4,743.51	2,375.28	8.01	-0.71	0.084
100.00	-39.55	-6.37	0.00	-155.00	0.00	155.00	2,778.82	1,389.41	4,669.93	2,338.44	8.25	-0.72	0.081
104.00	-38.06	-6.07	0.00	-129.52	0.00	129.52	2,735.29	1,367.65	4,485.55	2,246.11	8.87	-0.74	0.072
105.00	-37.72	-5.94	0.00	-123.45	0.00	123.45	2,724.23	1,362.12	4,439.71	2,223.16	9.02	-0.75	0.069
110.00	-36.05	-5.57	0.00	-93.74	0.00	93.74	2,667.87	1,333.93	4,212.22	2,109.24	9.81	-0.77	0.058
115.00	-34.42	-5.25	0.00	-65.87	0.00	65.87	2,609.71	1,304.86	3,987.74	1,996.83	10.63	-0.78	0.046
117.00	-28.11	-4.67	0.00	-55.38	0.00	55.38	2,585.95	1,292.98	3,898.85	1,952.32	10.95	-0.79	0.039
119.00	-22.38	-3.99	0.00	-46.05	0.00	46.05	2,561.90	1,280.95	3,810.50	1,908.08	11.28	-0.79	0.033
120.00	-22.10	-3.87	0.00	-42.05	0.00	42.05	2,549.77	1,274.89	3,766.53	1,886.06	11.45	-0.79	0.031
125.00	-20.70	-3.53	0.00	-22.71	0.00	22.71	2,488.05	1,244.02	3,548.87	1,777.07	12.29	-0.80	0.021
128.00	-12.26	-1.87	0.00	-12.11	0.00	12.11	2,450.16	1,225.08	3,420.09	1,712.59	12.79	-0.80	0.012
128.50	-12.12	-1.82	0.00	-11.18	0.00	11.18	2,443.78	1,221.89	3,398.76	1,701.91	12.88	-0.80	0.012
128.50	-12.12	-1.82	0.00	-11.18	0.00	11.18	1,195.95	597.98	1,675.60	839.05	12.88	-0.80	0.023
130.00	-11.80	-1.72	0.00	-8.45	0.00	8.45	1,190.35	595.17	1,649.59	826.02	13.13	-0.81	0.020
131.00	-6.98	-1.04	0.00	-6.72	0.00	6.72	1,186.52	593.26	1,632.22	817.33	13.30	-0.81	0.014
135.00	-6.24	-0.81	0.00	-2.55	0.00	2.55	1,170.50	585.25	1,562.58	782.45	13.97	-0.81	0.009
137.00	-4.29	-0.43	0.00	-0.43	0.00	0.43	1,162.06	581.03	1,527.68	764.98	14.31	-0.81	0.004
138.00	-0.07	-0.01	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	14.48	-0.81	0.000
138.50	0.00	-0.01	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	14.57	-0.81	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:36 PM

Customer: VERIZON WIRELESS

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

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		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		52.9	0.0					0.0	0.0	52.9	0.0	0.0	0.0
5.00		104.8	1,283.7					0.0	236.8	104.8	1,520.5	0.0	0.0
10.00		102.7	1,258.8					0.0	236.8	102.7	1,495.6	0.0	0.0
15.00		100.7	1,234.0					0.0	236.8	100.7	1,470.8	0.0	0.0
20.00		98.7	1,209.1					0.0	236.8	98.7	1,445.9	0.0	0.0
25.00		96.6	1,184.2					0.0	236.8	96.6	1,421.0	0.0	0.0
30.00		95.7	1,159.4					0.0	236.8	95.7	1,396.2	0.0	0.0
35.00		96.7	1,134.5					0.0	236.8	96.7	1,371.3	0.0	0.0
40.00		98.3	1,109.7					0.0	236.8	98.3	1,346.5	0.0	0.0
45.00		56.1	1,084.8					0.0	236.8	56.1	1,321.6	0.0	0.0
45.66	Bot - Section 2	50.5	142.1					0.0	31.4	50.5	173.5	0.0	0.0
50.00		72.7	1,849.0					0.0	205.4	72.7	2,054.3	0.0	0.0
52.83	Top - Section 1	50.9	1,186.4					0.0	134.0	50.9	1,320.4	0.0	0.0
55.00		73.1	452.8					0.0	102.8	73.1	555.5	0.0	0.0
60.00		102.0	1,025.4					0.0	236.8	102.0	1,262.2	0.0	0.0
65.00		101.8	1,000.6					0.0	236.8	101.8	1,237.4	0.0	0.0
70.00		101.4	975.7					0.0	236.8	101.4	1,212.5	0.0	0.0
75.00		100.7	950.8					0.0	236.8	100.7	1,187.6	0.0	0.0
80.00	Appurtenance(s)	99.9	926.0	178.0	0.0	71.0	128.0	0.0	236.8	277.9	1,290.8	0.0	0.0
85.00		69.5	901.1					0.0	232.0	69.5	1,133.1	0.0	0.0
87.00	Appurtenance(s)	49.2	353.5	23.3	0.0	-23.3	24.3	0.0	92.8	72.5	470.6	0.0	0.0
90.00		54.6	522.8					0.0	138.2	54.6	660.9	0.0	0.0
92.58	Bot - Section 3	48.9	442.4					0.0	118.8	48.9	561.3	0.0	0.0
95.00	Appurtenance(s)	57.0	755.4	106.3	0.0	0.0	450.0	0.0	111.5	163.3	1,316.9	0.0	0.0
98.41	Top - Section 2	48.6	1,047.3					0.0	157.2	48.6	1,204.5	0.0	0.0
100.00	Appurtenance(s)	53.7	220.0	4.0	0.0	0.0	8.9	0.0	73.1	57.7	302.0	0.0	0.0
104.00	Appurtenance(s)	47.9	545.4	24.4	0.0	-48.9	24.3	0.0	182.3	72.3	752.0	0.0	0.0
105.00		56.6	134.3					0.0	45.4	56.6	179.7	0.0	0.0
110.00		93.2	658.9					0.0	227.2	93.2	886.1	0.0	0.0
115.00		64.4	638.2					0.0	227.2	64.4	865.4	0.0	0.0
117.00	Appurtenance(s)	36.3	249.5	242.2	0.0	0.0	2,000.0	0.0	90.9	278.5	2,340.4	0.0	0.0
119.00	Appurtenance(s)	27.0	246.2	473.5	0.0	-221.4	1,195.6	0.0	90.9	500.6	1,532.6	0.0	0.0
120.00		53.2	121.8					0.0	17.8	53.2	139.6	0.0	0.0
125.00		70.3	596.8					0.0	89.0	70.3	685.8	0.0	0.0
128.00	Appurtenance(s)	30.4	348.1	1,047.4	0.0	0.0	2,783.5	0.0	53.4	1,077.7	3,185.0	0.0	0.0
128.50	Top - Section 3	17.2	57.3					0.0	8.9	17.2	66.2	0.0	0.0
130.00		21.4	102.8					0.0	26.7	21.4	129.5	0.0	0.0
131.00	Appurtenance(s)	42.2	67.9	511.9	0.0	0.0	981.5	0.0	17.8	554.1	1,067.2	0.0	0.0
135.00		50.2	266.6					0.0	39.4	50.2	306.0	0.0	0.0
137.00	Appurtenance(s)	24.8	130.3	243.1	0.0	486.2	278.1	0.0	19.7	267.9	428.1	0.0	0.0
138.00	Appurtenance(s)	12.3	64.4	230.6	0.0	0.0	1,525.0	0.0	0.0	242.9	1,589.4	0.0	0.0
138.50		4.1	32.0					0.0	0.0	4.1	32.0	0.0	0.0
Totals:										5,773.71	42,917.8	0.00	0.00

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

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Customer: VERIZON WIRELESS

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	-42.92	-5.73	0.00	-572.96	0.00	572.96	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.103
5.00	-41.39	-5.64	0.00	-544.32	0.00	544.32	4,609.64	2,304.82	11,913.0	5,965.37	0.01	-0.02	0.100
10.00	-39.90	-5.55	0.00	-516.14	0.00	516.14	4,564.26	2,282.13	11,563.7	5,790.45	0.04	-0.04	0.098
15.00	-38.42	-5.46	0.00	-488.40	0.00	488.40	4,517.10	2,258.55	11,214.5	5,615.62	0.10	-0.06	0.095
20.00	-36.98	-5.37	0.00	-461.10	0.00	461.10	4,468.14	2,234.07	10,865.8	5,441.02	0.17	-0.08	0.093
25.00	-35.55	-5.29	0.00	-434.23	0.00	434.23	4,417.41	2,208.70	10,517.9	5,266.79	0.27	-0.10	0.091
30.00	-34.16	-5.20	0.00	-407.80	0.00	407.80	4,364.88	2,182.44	10,170.9	5,093.05	0.39	-0.12	0.088
35.00	-32.78	-5.11	0.00	-381.80	0.00	381.80	4,310.58	2,155.29	9,825.30	4,919.95	0.52	-0.14	0.085
40.00	-31.43	-5.02	0.00	-356.24	0.00	356.24	4,254.48	2,127.24	9,481.15	4,747.62	0.69	-0.16	0.082
45.00	-30.11	-4.97	0.00	-331.13	0.00	331.13	4,196.60	2,098.30	9,138.82	4,576.20	0.87	-0.18	0.080
45.66	-29.94	-4.92	0.00	-327.84	0.00	327.84	4,188.79	2,094.39	9,093.56	4,553.54	0.89	-0.19	0.079
50.00	-27.88	-4.85	0.00	-306.49	0.00	306.49	4,136.94	2,068.47	8,798.58	4,405.83	1.07	-0.20	0.076
52.83	-26.56	-4.80	0.00	-292.77	0.00	292.77	4,139.66	2,069.83	8,813.83	4,413.46	1.20	-0.22	0.073
55.00	-26.01	-4.73	0.00	-282.36	0.00	282.36	4,113.24	2,056.62	8,666.83	4,339.86	1.30	-0.22	0.071
60.00	-24.74	-4.63	0.00	-258.71	0.00	258.71	4,051.10	2,025.55	8,329.95	4,171.16	1.54	-0.24	0.068
65.00	-23.50	-4.53	0.00	-235.56	0.00	235.56	3,987.17	1,993.58	7,995.80	4,003.84	1.81	-0.26	0.065
70.00	-22.29	-4.43	0.00	-212.90	0.00	212.90	3,921.45	1,960.72	7,664.66	3,838.03	2.09	-0.28	0.061
75.00	-21.10	-4.33	0.00	-190.75	0.00	190.75	3,853.95	1,926.97	7,336.80	3,673.85	2.40	-0.30	0.057
80.00	-19.81	-4.05	0.00	-169.03	0.00	169.03	3,784.66	1,892.33	7,012.50	3,511.46	2.72	-0.32	0.053
85.00	-18.68	-3.98	0.00	-148.77	0.00	148.77	3,713.59	1,856.79	6,692.03	3,350.99	3.06	-0.33	0.049
87.00	-18.21	-3.91	0.00	-140.81	0.00	140.81	3,684.66	1,842.33	6,564.97	3,287.37	3.20	-0.34	0.048
90.00	-17.55	-3.85	0.00	-129.10	0.00	129.10	3,640.73	1,820.36	6,375.66	3,192.57	3.41	-0.35	0.045
92.58	-16.98	-3.80	0.00	-119.16	0.00	119.16	3,602.44	1,801.22	6,214.10	3,111.67	3.60	-0.36	0.043
95.00	-15.67	-3.63	0.00	-109.96	0.00	109.96	3,566.09	1,783.04	6,063.66	3,036.33	3.79	-0.36	0.041
98.41	-14.46	-3.58	0.00	-97.57	0.00	97.57	2,795.76	1,397.88	4,743.51	2,375.28	4.05	-0.37	0.046
100.00	-14.16	-3.52	0.00	-91.90	0.00	91.90	2,778.82	1,389.41	4,669.93	2,338.44	4.17	-0.38	0.044
104.00	-13.41	-3.44	0.00	-77.82	0.00	77.82	2,735.29	1,367.65	4,485.55	2,246.11	4.49	-0.39	0.040
105.00	-13.23	-3.39	0.00	-74.38	0.00	74.38	2,724.23	1,362.12	4,439.71	2,223.16	4.58	-0.39	0.038
110.00	-12.34	-3.29	0.00	-57.44	0.00	57.44	2,667.87	1,333.93	4,212.22	2,109.24	4.99	-0.40	0.032
115.00	-11.48	-3.22	0.00	-40.99	0.00	40.99	2,609.71	1,304.86	3,987.74	1,996.83	5.42	-0.41	0.025
117.00	-9.14	-2.93	0.00	-34.55	0.00	34.55	2,585.95	1,292.98	3,898.85	1,952.32	5.59	-0.42	0.021
119.00	-7.61	-2.41	0.00	-28.70	0.00	28.70	2,561.90	1,280.95	3,810.50	1,908.08	5.77	-0.42	0.018
120.00	-7.47	-2.36	0.00	-26.28	0.00	26.28	2,549.77	1,274.89	3,766.53	1,886.06	5.86	-0.42	0.017
125.00	-6.79	-2.29	0.00	-14.48	0.00	14.48	2,488.05	1,244.02	3,548.87	1,777.07	6.30	-0.42	0.011
128.00	-3.61	-1.18	0.00	-7.62	0.00	7.62	2,450.16	1,225.08	3,420.09	1,712.59	6.57	-0.43	0.006
128.50	-3.54	-1.17	0.00	-7.03	0.00	7.03	2,443.78	1,221.89	3,398.76	1,701.91	6.61	-0.43	0.006
128.50	-3.54	-1.17	0.00	-7.03	0.00	7.03	1,195.95	597.98	1,675.60	839.05	6.61	-0.43	0.011
130.00	-3.41	-1.14	0.00	-5.28	0.00	5.28	1,190.35	595.17	1,649.59	826.02	6.74	-0.43	0.009
131.00	-2.35	-0.58	0.00	-4.14	0.00	4.14	1,186.52	593.26	1,632.22	817.33	6.83	-0.43	0.007
135.00	-2.05	-0.53	0.00	-1.81	0.00	1.81	1,170.50	585.25	1,562.58	782.45	7.19	-0.43	0.004
137.00	-1.62	-0.26	0.00	-0.26	0.00	0.26	1,162.06	581.03	1,527.68	764.98	7.37	-0.43	0.002
138.00	-0.03	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	7.46	-0.43	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	7.51	-0.43	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

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Customer: VERIZON WIRELESS

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_d):	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 Coefficient 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):	1.58
Redundancy Factor (p):	1.00
Seismic Force Distribution Exponent (k):	1.54
Total Unfactored Dead Load:	42.92 k
Seismic Base Shear (E):	1.79 k

Load Case (1.2 + 0.2Sds) * DL + E ELMF

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	64	0.002	3	40
40	137.50	64	128	0.003	6	80
39	136.00	150	293	0.008	14	186
38	133.00	306	577	0.016	28	379
37	130.50	86	157	0.004	8	106
36	129.25	129	234	0.006	11	160
35	128.25	66	118	0.003	6	82
34	126.50	402	701	0.019	34	497
33	122.50	686	1,139	0.031	55	849
32	119.50	140	223	0.006	11	173
31	118.00	337	529	0.014	25	417
30	116.00	340	520	0.014	25	421
29	112.50	865	1,261	0.034	61	1,072
28	107.50	886	1,204	0.032	58	1,097
27	104.50	180	234	0.006	11	223
26	102.00	728	912	0.025	44	901
25	99.21	293	352	0.009	17	363
24	96.71	1,205	1,390	0.037	67	1,492
23	93.79	867	954	0.026	46	1,074
22	91.29	561	592	0.016	29	695
21	88.50	661	665	0.018	32	819
20	86.00	446	430	0.012	21	553
19	82.50	1,133	1,023	0.028	49	1,403

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

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Customer: VERIZON WIRELESS

18	77.50	1,163	953	0.026	46	1,440
17	72.50	1,188	879	0.024	42	1,471
16	67.50	1,212	803	0.022	39	1,502
15	62.50	1,237	728	0.020	35	1,532
14	57.50	1,262	653	0.018	31	1,563
13	53.92	556	260	0.007	13	688
12	51.42	1,320	575	0.015	28	1,635
11	47.83	2,054	800	0.022	39	2,544
10	45.33	173	62	0.002	3	215
9	42.50	1,322	429	0.012	21	1,637
8	37.50	1,346	360	0.010	17	1,667
7	32.50	1,371	294	0.008	14	1,698
6	27.50	1,396	232	0.006	11	1,729
5	22.50	1,421	173	0.005	8	1,760
4	17.50	1,446	119	0.003	6	1,791
3	12.50	1,471	72	0.002	3	1,821
2	7.50	1,496	33	0.001	2	1,852
1	2.50	1,520	6	0.000	0	1,883
Generic 10' Omni	138.00	25	50	0.001	2	31
Round Low Profile PI	138.00	1,500	2,995	0.081	144	1,858
Ericsson KRY 112 20	137.00	73	143	0.004	7	90
RFS APXV18-209014-C	137.00	56	111	0.003	5	69
Andrew LNX-6515DS-A1	137.00	149	295	0.008	14	185
Samsung B2/B66A RRH-	131.00	253	467	0.013	22	314
Samsung B5/B13 RRH-B	131.00	211	389	0.010	19	261
RFS APL866513-44T0	131.00	31	58	0.002	3	39
Raycap RCMDC-6627-PF	131.00	32	59	0.002	3	40
Decibel DB846H80E-SX	131.00	64	118	0.003	6	79
Quintel QS6656-3 (65	131.00	390	719	0.019	35	483
Flat Low Profile Pla	128.00	1,500	2,667	0.072	129	1,858
VZW Unused Reserve:	128.00	1,283	2,282	0.061	110	1,589
Generic 7" x 6" x 3"	119.00	30	48	0.001	2	37
Powerwave Alligon LGP	119.00	85	134	0.004	6	105
Raycap DC6-48-60-18-	119.00	40	64	0.002	3	50
Ericsson Radio 8843	119.00	216	343	0.009	17	267
Ericsson RRUS 4449 B	119.00	213	338	0.009	16	264
Powerwave Alligon 777	119.00	105	167	0.004	8	130
Commscope NNH4-65B-R	119.00	269	428	0.012	21	333
CCI DMP65R-BU6DA	119.00	238	378	0.010	18	295
Round Platform w/ Ha	117.00	2,000	3,095	0.083	149	2,477
RFI Antennas CC807-0	104.00	24	31	0.001	2	30
Bird DS428E83I01T	100.00	9	11	0.000	1	11
Flat Side Arm	95.00	450	505	0.014	24	557
RFI Antennas CC807-0	87.00	24	24	0.001	1	30
RFI Antennas OA20-41	80.00	28	24	0.001	1	35
Radio Waves HP3-11	80.00	100	86	0.002	4	124
		42,918	37,159	1.000	1,791	53,149

Load Case (0.9 - 0.2Sds) * DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	64	0.002	3	28
40	137.50	64	128	0.003	6	55
39	136.00	150	293	0.008	14	129
38	133.00	306	577	0.016	28	264
37	130.50	86	157	0.004	8	74
36	129.25	129	234	0.006	11	112
35	128.25	66	118	0.003	6	57
34	126.50	402	701	0.019	34	346

33	122.50	686	1,139	0.031	55	591
32	119.50	140	223	0.006	11	120
31	118.00	337	529	0.014	25	290
30	116.00	340	520	0.014	25	293
29	112.50	865	1,261	0.034	61	746
28	107.50	886	1,204	0.032	58	763
27	104.50	180	234	0.006	11	155
26	102.00	728	912	0.025	44	627
25	99.21	293	352	0.009	17	253
24	96.71	1,205	1,390	0.037	67	1,038
23	93.79	867	954	0.026	46	747
22	91.29	561	592	0.016	29	484
21	88.50	661	665	0.018	32	569
20	86.00	446	430	0.012	21	385
19	82.50	1,133	1,023	0.028	49	976
18	77.50	1,163	953	0.026	46	1,002
17	72.50	1,188	879	0.024	42	1,023
16	67.50	1,212	803	0.022	39	1,045
15	62.50	1,237	728	0.020	35	1,066
14	57.50	1,262	653	0.018	31	1,088
13	53.92	556	260	0.007	13	479
12	51.42	1,320	575	0.015	28	1,138
11	47.83	2,054	800	0.022	39	1,770
10	45.33	173	62	0.002	3	149
9	42.50	1,322	429	0.012	21	1,139
8	37.50	1,346	360	0.010	17	1,160
7	32.50	1,371	294	0.008	14	1,182
6	27.50	1,396	232	0.006	11	1,203
5	22.50	1,421	173	0.005	8	1,224
4	17.50	1,446	119	0.003	6	1,246
3	12.50	1,471	72	0.002	3	1,267
2	7.50	1,496	33	0.001	2	1,289
1	2.50	1,520	6	0.000	0	1,310
Generic 10' Omni	138.00	25	50	0.001	2	22
Round Low Profile PI	138.00	1,500	2,995	0.081	144	1,292
Ericsson KRY 112 20	137.00	73	143	0.004	7	63
RFS APXV18-209014-C	137.00	56	111	0.003	5	48
Andrew LNX-6515DS-A1	137.00	149	295	0.008	14	129
Samsung B2/B66A RRH-	131.00	253	467	0.013	22	218
Samsung B5/B13 RRH-B	131.00	211	389	0.010	19	182
RFS APL866513-44T0	131.00	31	58	0.002	3	27
Raycap RCMDC-6627-PF	131.00	32	59	0.002	3	28
Decibel DB846H80E-SX	131.00	64	118	0.003	6	55
Quintel QS6656-3 (65	131.00	390	719	0.019	35	336
Flat Low Profile Pla	128.00	1,500	2,667	0.072	129	1,292
VZW Unused Reserve:	128.00	1,283	2,282	0.061	110	1,106
Generic 7" x 6" x 3"	119.00	30	48	0.001	2	26
Powerwave Allgon LGP	119.00	85	134	0.004	6	73
Raycap DC6-48-60-18-	119.00	40	64	0.002	3	34
Ericsson Radio 8843	119.00	216	343	0.009	17	186
Ericsson RRUS 4449 B	119.00	213	338	0.009	16	184
Powerwave Allgon 777	119.00	105	167	0.004	8	90
Commscope NNH4-65B-R	119.00	269	428	0.012	21	232
CCI DMP65R-BU6DA	119.00	238	378	0.010	18	205
Round Platform w/ Ha	117.00	2,000	3,095	0.083	149	1,723
RFI Antennas CC807-0	104.00	24	31	0.001	2	21
Bird DS428E83I01T	100.00	9	11	0.000	1	8
Flat Side Arm	95.00	450	505	0.014	24	388
RFI Antennas CC807-0	87.00	24	24	0.001	1	21
RFI Antennas OA20-41	80.00	28	24	0.001	1	24
Radio Waves HP3-11	80.00	100	86	0.002	4	86
		42,918	37,159	1.000	1,791	36,978

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number: 12976958_C3_05

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Customer: VERIZON WIRELESS

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

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Customer: VERIZON WIRELESS

Load Case (1.2 + 0.2Sds) * DL + E ELMF 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	-51.27	-1.79	0.00	-190.13	0.00	190.13	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.042
5.00	-49.41	-1.80	0.00	-181.16	0.00	181.16	4,609.64	2,304.82	11,913.0	5,965.37	0.00	-0.01	0.041
10.00	-47.59	-1.80	0.00	-172.17	0.00	172.17	4,564.26	2,282.13	11,563.7	5,790.45	0.01	-0.01	0.040
15.00	-45.80	-1.80	0.00	-163.18	0.00	163.18	4,517.10	2,258.55	11,214.5	5,615.62	0.03	-0.02	0.039
20.00	-44.04	-1.79	0.00	-154.19	0.00	154.19	4,468.14	2,234.07	10,865.8	5,441.02	0.06	-0.03	0.038
25.00	-42.31	-1.79	0.00	-145.21	0.00	145.21	4,417.41	2,208.70	10,517.9	5,266.79	0.09	-0.03	0.037
30.00	-40.61	-1.78	0.00	-136.28	0.00	136.28	4,364.88	2,182.44	10,170.9	5,093.05	0.13	-0.04	0.036
35.00	-38.95	-1.76	0.00	-127.39	0.00	127.39	4,310.58	2,155.29	9,825.30	4,919.95	0.17	-0.05	0.035
40.00	-37.31	-1.75	0.00	-118.58	0.00	118.58	4,254.48	2,127.24	9,481.15	4,747.62	0.23	-0.05	0.034
45.00	-37.09	-1.74	0.00	-109.85	0.00	109.85	4,196.60	2,098.30	9,138.82	4,576.20	0.29	-0.06	0.033
45.66	-34.55	-1.71	0.00	-108.69	0.00	108.69	4,188.79	2,094.39	9,093.56	4,553.54	0.30	-0.06	0.032
50.00	-32.91	-1.68	0.00	-101.30	0.00	101.30	4,136.94	2,068.47	8,798.58	4,405.83	0.36	-0.07	0.031
52.83	-32.23	-1.67	0.00	-96.55	0.00	96.55	4,139.66	2,069.83	8,813.83	4,413.46	0.40	-0.07	0.030
55.00	-30.66	-1.64	0.00	-92.93	0.00	92.93	4,113.24	2,056.62	8,666.83	4,339.86	0.43	-0.07	0.029
60.00	-29.13	-1.60	0.00	-84.75	0.00	84.75	4,051.10	2,025.55	8,329.95	4,171.16	0.51	-0.08	0.028
65.00	-27.63	-1.56	0.00	-76.74	0.00	76.74	3,987.17	1,993.58	7,995.80	4,003.84	0.60	-0.09	0.026
70.00	-26.16	-1.52	0.00	-68.92	0.00	68.92	3,921.45	1,960.72	7,664.66	3,838.03	0.70	-0.09	0.025
75.00	-24.72	-1.48	0.00	-61.31	0.00	61.31	3,853.95	1,926.97	7,336.80	3,673.85	0.80	-0.10	0.023
80.00	-23.16	-1.42	0.00	-53.93	0.00	53.93	3,784.66	1,892.33	7,012.50	3,511.46	0.90	-0.10	0.021
85.00	-22.60	-1.40	0.00	-46.83	0.00	46.83	3,713.59	1,856.79	6,692.03	3,350.99	1.02	-0.11	0.020
87.00	-21.76	-1.37	0.00	-44.02	0.00	44.02	3,684.66	1,842.33	6,564.97	3,287.37	1.06	-0.11	0.019
90.00	-21.06	-1.34	0.00	-39.92	0.00	39.92	3,640.73	1,820.36	6,375.66	3,192.57	1.13	-0.11	0.018
92.58	-19.99	-1.29	0.00	-36.47	0.00	36.47	3,602.44	1,801.22	6,214.10	3,111.67	1.20	-0.12	0.017
95.00	-17.94	-1.20	0.00	-33.35	0.00	33.35	3,566.09	1,783.04	6,063.66	3,036.33	1.26	-0.12	0.016
98.41	-17.58	-1.18	0.00	-29.27	0.00	29.27	2,795.76	1,397.88	4,743.51	2,375.28	1.34	-0.12	0.019
100.00	-16.66	-1.13	0.00	-27.40	0.00	27.40	2,778.82	1,389.41	4,669.93	2,338.44	1.38	-0.12	0.018
104.00	-16.41	-1.12	0.00	-22.87	0.00	22.87	2,735.29	1,367.65	4,485.55	2,246.11	1.49	-0.13	0.016
105.00	-15.31	-1.06	0.00	-21.75	0.00	21.75	2,724.23	1,362.12	4,439.71	2,223.16	1.51	-0.13	0.015
110.00	-14.24	-1.00	0.00	-16.45	0.00	16.45	2,667.87	1,333.93	4,212.22	2,109.24	1.65	-0.13	0.013
115.00	-13.82	-0.97	0.00	-11.46	0.00	11.46	2,609.71	1,304.86	3,987.74	1,996.83	1.79	-0.13	0.011
117.00	-10.93	-0.79	0.00	-9.51	0.00	9.51	2,585.95	1,292.98	3,898.85	1,952.32	1.84	-0.13	0.009
119.00	-9.27	-0.68	0.00	-7.93	0.00	7.93	2,561.90	1,280.95	3,810.50	1,908.08	1.90	-0.14	0.008
120.00	-8.42	-0.63	0.00	-7.25	0.00	7.25	2,549.77	1,274.89	3,766.53	1,886.06	1.93	-0.14	0.007
125.00	-7.93	-0.59	0.00	-4.11	0.00	4.11	2,488.05	1,244.02	3,548.87	1,777.07	2.07	-0.14	0.005
128.00	-4.40	-0.34	0.00	-2.33	0.00	2.33	2,450.16	1,225.08	3,420.09	1,712.59	2.16	-0.14	0.003
128.50	-4.24	-0.33	0.00	-2.16	0.00	2.16	2,443.78	1,221.89	3,398.76	1,701.91	2.17	-0.14	0.003
128.50	-4.24	-0.33	0.00	-2.16	0.00	2.16	1,195.95	597.98	1,675.60	839.05	2.17	-0.14	0.006
130.00	-4.13	-0.32	0.00	-1.66	0.00	1.66	1,190.35	595.17	1,649.59	826.02	2.22	-0.14	0.005
131.00	-2.54	-0.20	0.00	-1.34	0.00	1.34	1,186.52	593.26	1,632.22	817.33	2.25	-0.14	0.004
135.00	-2.35	-0.19	0.00	-0.53	0.00	0.53	1,170.50	585.25	1,562.58	782.45	2.36	-0.14	0.003
137.00	-1.93	-0.15	0.00	-0.15	0.00	0.15	1,162.06	581.03	1,527.68	764.98	2.42	-0.14	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	2.45	-0.14	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	2.46	-0.14	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:40 PM

Customer: VERIZON WIRELESS

Load Case (0.9 - 0.2Sds) * DL + E E LFM

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	-35.67	-1.79	0.00	-188.83	0.00	188.83	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.038
5.00	-34.38	-1.79	0.00	-179.87	0.00	179.87	4,609.64	2,304.82	11,913.0	5,965.37	0.00	-0.01	0.038
10.00	-33.11	-1.79	0.00	-170.90	0.00	170.90	4,564.26	2,282.13	11,563.7	5,790.45	0.01	-0.01	0.037
15.00	-31.87	-1.79	0.00	-161.92	0.00	161.92	4,517.10	2,258.55	11,214.5	5,615.62	0.03	-0.02	0.036
20.00	-30.64	-1.79	0.00	-152.96	0.00	152.96	4,468.14	2,234.07	10,865.8	5,441.02	0.06	-0.03	0.035
25.00	-29.44	-1.78	0.00	-144.02	0.00	144.02	4,417.41	2,208.70	10,517.9	5,266.79	0.09	-0.03	0.034
30.00	-28.26	-1.77	0.00	-135.13	0.00	135.13	4,364.88	2,182.44	10,170.9	5,093.05	0.13	-0.04	0.033
35.00	-27.10	-1.75	0.00	-126.29	0.00	126.29	4,310.58	2,155.29	9,825.30	4,919.95	0.17	-0.05	0.032
40.00	-25.96	-1.73	0.00	-117.53	0.00	117.53	4,254.48	2,127.24	9,481.15	4,747.62	0.23	-0.05	0.031
45.00	-25.81	-1.73	0.00	-108.86	0.00	108.86	4,196.60	2,098.30	9,138.82	4,576.20	0.29	-0.06	0.030
45.66	-24.04	-1.69	0.00	-107.71	0.00	107.71	4,188.79	2,094.39	9,093.56	4,553.54	0.30	-0.06	0.029
50.00	-22.90	-1.67	0.00	-100.37	0.00	100.37	4,136.94	2,068.47	8,798.58	4,405.83	0.35	-0.07	0.028
52.83	-22.42	-1.65	0.00	-95.65	0.00	95.65	4,139.66	2,069.83	8,813.83	4,413.46	0.40	-0.07	0.027
55.00	-21.33	-1.62	0.00	-92.06	0.00	92.06	4,113.24	2,056.62	8,666.83	4,339.86	0.43	-0.07	0.026
60.00	-20.27	-1.59	0.00	-83.95	0.00	83.95	4,051.10	2,025.55	8,329.95	4,171.16	0.51	-0.08	0.025
65.00	-19.22	-1.55	0.00	-76.00	0.00	76.00	3,987.17	1,993.58	7,995.80	4,003.84	0.60	-0.09	0.024
70.00	-18.20	-1.51	0.00	-68.25	0.00	68.25	3,921.45	1,960.72	7,664.66	3,838.03	0.69	-0.09	0.022
75.00	-17.20	-1.46	0.00	-60.71	0.00	60.71	3,853.95	1,926.97	7,336.80	3,673.85	0.79	-0.10	0.021
80.00	-16.11	-1.41	0.00	-53.40	0.00	53.40	3,784.66	1,892.33	7,012.50	3,511.46	0.90	-0.10	0.019
85.00	-15.73	-1.39	0.00	-46.36	0.00	46.36	3,713.59	1,856.79	6,692.03	3,350.99	1.01	-0.11	0.018
87.00	-15.14	-1.35	0.00	-43.59	0.00	43.59	3,684.66	1,842.33	6,564.97	3,287.37	1.05	-0.11	0.017
90.00	-14.65	-1.32	0.00	-39.53	0.00	39.53	3,640.73	1,820.36	6,375.66	3,192.57	1.12	-0.11	0.016
92.58	-13.90	-1.28	0.00	-36.11	0.00	36.11	3,602.44	1,801.22	6,214.10	3,111.67	1.19	-0.12	0.015
95.00	-12.48	-1.18	0.00	-33.02	0.00	33.02	3,566.09	1,783.04	6,063.66	3,036.33	1.25	-0.12	0.014
98.41	-12.23	-1.17	0.00	-28.98	0.00	28.98	2,795.76	1,397.88	4,743.51	2,375.28	1.33	-0.12	0.017
100.00	-11.59	-1.12	0.00	-27.13	0.00	27.13	2,778.82	1,389.41	4,669.93	2,338.44	1.37	-0.12	0.016
104.00	-11.42	-1.11	0.00	-22.64	0.00	22.64	2,735.29	1,367.65	4,485.55	2,246.11	1.48	-0.13	0.014
105.00	-10.65	-1.05	0.00	-21.53	0.00	21.53	2,724.23	1,362.12	4,439.71	2,223.16	1.50	-0.13	0.014
110.00	-9.91	-0.99	0.00	-16.28	0.00	16.28	2,667.87	1,333.93	4,212.22	2,109.24	1.64	-0.13	0.011
115.00	-9.61	-0.96	0.00	-11.34	0.00	11.34	2,609.71	1,304.86	3,987.74	1,996.83	1.77	-0.13	0.009
117.00	-7.60	-0.78	0.00	-9.42	0.00	9.42	2,585.95	1,292.98	3,898.85	1,952.32	1.83	-0.13	0.008
119.00	-6.45	-0.68	0.00	-7.85	0.00	7.85	2,561.90	1,280.95	3,810.50	1,908.08	1.88	-0.13	0.007
120.00	-5.86	-0.62	0.00	-7.18	0.00	7.18	2,549.77	1,274.89	3,766.53	1,886.06	1.91	-0.13	0.006
125.00	-5.51	-0.59	0.00	-4.07	0.00	4.07	2,488.05	1,244.02	3,548.87	1,777.07	2.05	-0.14	0.005
128.00	-3.06	-0.34	0.00	-2.30	0.00	2.30	2,450.16	1,225.08	3,420.09	1,712.59	2.14	-0.14	0.003
128.50	-2.95	-0.33	0.00	-2.14	0.00	2.14	2,443.78	1,221.89	3,398.76	1,701.91	2.15	-0.14	0.002
128.50	-2.95	-0.33	0.00	-2.14	0.00	2.14	1,195.95	597.98	1,675.60	839.05	2.15	-0.14	0.005
130.00	-2.87	-0.32	0.00	-1.65	0.00	1.65	1,190.35	595.17	1,649.59	826.02	2.20	-0.14	0.004
131.00	-1.77	-0.20	0.00	-1.33	0.00	1.33	1,186.52	593.26	1,632.22	817.33	2.23	-0.14	0.003
135.00	-1.64	-0.19	0.00	-0.53	0.00	0.53	1,170.50	585.25	1,562.58	782.45	2.34	-0.14	0.002
137.00	-1.34	-0.15	0.00	-0.15	0.00	0.15	1,162.06	581.03	1,527.68	764.98	2.40	-0.14	0.001
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	2.43	-0.14	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	2.44	-0.14	0.000

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_{sa}):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_{s1}):	0.06
Importance Factor (I_g):	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_{dsa}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{ds1}):	0.10
Period Based on Rayleigh Method (sec):	1.58
Redundancy Factor (p):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	1.883	1.944	1.127	0.371	8	40
40	137.50	64	1.863	1.840	1.089	0.358	15	80
39	136.00	150	1.822	1.642	1.016	0.333	33	186
38	133.00	306	1.743	1.291	0.882	0.285	58	379
37	130.50	86	1.678	1.040	0.781	0.248	14	106
36	129.25	129	1.646	0.928	0.734	0.231	20	160
35	128.25	66	1.621	0.844	0.698	0.217	10	82
34	126.50	402	1.577	0.708	0.639	0.195	52	497
33	122.50	686	1.479	0.450	0.518	0.147	67	849
32	119.50	140	1.407	0.297	0.439	0.116	11	173
31	118.00	337	1.372	0.233	0.403	0.102	23	417
30	116.00	340	1.326	0.158	0.359	0.084	19	421
29	112.50	865	1.247	0.054	0.291	0.057	33	1,072
28	107.50	886	1.139	-0.046	0.212	0.026	15	1,097
27	104.50	180	1.076	-0.082	0.172	0.012	1	223
26	102.00	728	1.025	-0.103	0.144	0.002	1	901
25	99.21	293	0.970	-0.116	0.117	-0.005	-1	363
24	96.71	1,205	0.921	-0.121	0.096	-0.010	-8	1,492
23	93.79	867	0.867	-0.121	0.075	-0.013	-7	1,074
22	91.29	561	0.821	-0.115	0.060	-0.013	-5	695
21	88.50	661	0.772	-0.106	0.046	-0.012	-5	819
20	86.00	446	0.729	-0.095	0.036	-0.009	-3	553
19	82.50	1,133	0.671	-0.078	0.024	-0.003	-3	1,403
18	77.50	1,163	0.592	-0.050	0.014	0.007	6	1,440
17	72.50	1,188	0.518	-0.023	0.008	0.018	15	1,471
16	67.50	1,212	0.449	0.002	0.006	0.028	23	1,502
15	62.50	1,237	0.385	0.023	0.007	0.036	30	1,532
14	57.50	1,262	0.326	0.039	0.010	0.041	35	1,563
13	53.92	556	0.286	0.048	0.013	0.044	16	688
12	51.42	1,320	0.260	0.053	0.016	0.045	39	1,635
11	47.83	2,054	0.225	0.059	0.020	0.045	62	2,544
10	45.33	173	0.202	0.062	0.023	0.045	5	215
9	42.50	1,322	0.178	0.065	0.026	0.044	39	1,637
8	37.50	1,346	0.139	0.069	0.032	0.043	39	1,667

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:40 PM

Customer: VERIZON WIRELESS

7	32.50	1,371	0.104	0.071	0.037	0.042	38	1,698
6	27.50	1,396	0.075	0.072	0.040	0.040	37	1,729
5	22.50	1,421	0.050	0.071	0.042	0.038	36	1,760
4	17.50	1,446	0.030	0.068	0.041	0.036	34	1,791
3	12.50	1,471	0.015	0.061	0.036	0.032	31	1,821
2	7.50	1,496	0.006	0.046	0.026	0.025	25	1,852
1	2.50	1,520	0.001	0.020	0.011	0.011	11	1,883
Generic 10' Omni	138.00	25	1.876	1.909	1.114	0.366	6	31
Round Low Profile PI	138.00	1,500	1.876	1.909	1.114	0.366	366	1,858
Ericsson KRY 112 20	137.00	73	1.849	1.772	1.064	0.349	17	90
RFS APXV18-209014-C	137.00	56	1.849	1.772	1.064	0.349	13	69
Andrew LNX-6515DS-A1	137.00	149	1.849	1.772	1.064	0.349	35	185
Samsung B2/B66A RRH-	131.00	253	1.691	1.088	0.801	0.256	43	314
Samsung B5/B13 RRH-B	131.00	211	1.691	1.088	0.801	0.256	36	261
RFS APL866513-44T0	131.00	31	1.691	1.088	0.801	0.256	5	39
Raycap RCMDC-6627-PF	131.00	32	1.691	1.088	0.801	0.256	5	40
Decibel DB846H80E-SX	131.00	64	1.691	1.088	0.801	0.256	11	79
Quintel QS6656-3 (65	131.00	390	1.691	1.088	0.801	0.256	66	483
Flat Low Profile Pla	128.00	1,500	1.614	0.823	0.690	0.214	214	1,858
VZW Unused Reserve:	128.00	1,283	1.614	0.823	0.690	0.214	183	1,589
Generic 7" x 6" x 3"	119.00	30	1.395	0.275	0.427	0.111	2	37
Powerwave Allgon LGP	119.00	85	1.395	0.275	0.427	0.111	6	105
Raycap DC6-48-60-18-	119.00	40	1.395	0.275	0.427	0.111	3	50
Ericsson Radio 8843	119.00	216	1.395	0.275	0.427	0.111	16	267
Ericsson RRUS 4449 B	119.00	213	1.395	0.275	0.427	0.111	16	264
Powerwave Allgon 777	119.00	105	1.395	0.275	0.427	0.111	8	130
Commscope NNH4-65B-	119.00	269	1.395	0.275	0.427	0.111	20	333
CCI DMP65R-BU6DA	119.00	238	1.395	0.275	0.427	0.111	18	295
Round Platform w/ Ha	117.00	2,000	1.349	0.194	0.381	0.093	124	2,477
RFI Antennas CC807-0	104.00	24	1.066	-0.087	0.166	0.010	0	30
Bird DS428E83I01T	100.00	9	0.985	-0.113	0.124	-0.003	0	11
Flat Side Arm	95.00	450	0.889	-0.122	0.083	-0.012	-4	557
RFI Antennas CC807-0	87.00	24	0.746	-0.100	0.040	-0.010	0	30
RFI Antennas OA20-41	80.00	28	0.631	-0.064	0.018	0.002	0	35
Radio Waves HP3-11	80.00	100	0.631	-0.064	0.018	0.002	0	124
		42,918	73.625	30.354	26.218	8.052	2,081	53,149

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	1.883	1.944	1.127	0.371	8	28
40	137.50	64	1.863	1.840	1.089	0.358	15	55
39	136.00	150	1.822	1.642	1.016	0.333	33	129
38	133.00	306	1.743	1.291	0.882	0.285	58	264
37	130.50	86	1.678	1.040	0.781	0.248	14	74
36	129.25	129	1.646	0.928	0.734	0.231	20	112
35	128.25	66	1.621	0.844	0.698	0.217	10	57
34	126.50	402	1.577	0.708	0.639	0.195	52	346
33	122.50	686	1.479	0.450	0.518	0.147	67	591
32	119.50	140	1.407	0.297	0.439	0.116	11	120
31	118.00	337	1.372	0.233	0.403	0.102	23	290
30	116.00	340	1.326	0.158	0.359	0.084	19	293
29	112.50	865	1.247	0.054	0.291	0.057	33	746
28	107.50	886	1.139	-0.046	0.212	0.026	15	763
27	104.50	180	1.076	-0.082	0.172	0.012	1	155
26	102.00	728	1.025	-0.103	0.144	0.002	1	627
25	99.21	293	0.970	-0.116	0.117	-0.005	-1	253
24	96.71	1,205	0.921	-0.121	0.096	-0.010	-8	1,038

23	93.79	867	0.867	-0.121	0.075	-0.013	-7	747
22	91.29	561	0.821	-0.115	0.060	-0.013	-5	484
21	88.50	661	0.772	-0.106	0.046	-0.012	-5	569
20	86.00	446	0.729	-0.095	0.036	-0.009	-3	385
19	82.50	1,133	0.671	-0.078	0.024	-0.003	-3	976
18	77.50	1,163	0.592	-0.050	0.014	0.007	6	1,002
17	72.50	1,188	0.518	-0.023	0.008	0.018	15	1,023
16	67.50	1,212	0.449	0.002	0.006	0.028	23	1,045
15	62.50	1,237	0.385	0.023	0.007	0.036	30	1,066
14	57.50	1,262	0.326	0.039	0.010	0.041	35	1,088
13	53.92	556	0.286	0.048	0.013	0.044	16	479
12	51.42	1,320	0.260	0.053	0.016	0.045	39	1,138
11	47.83	2,054	0.225	0.059	0.020	0.045	62	1,770
10	45.33	173	0.202	0.062	0.023	0.045	5	149
9	42.50	1,322	0.178	0.065	0.026	0.044	39	1,139
8	37.50	1,346	0.139	0.069	0.032	0.043	39	1,160
7	32.50	1,371	0.104	0.071	0.037	0.042	38	1,182
6	27.50	1,396	0.075	0.072	0.040	0.040	37	1,203
5	22.50	1,421	0.050	0.071	0.042	0.038	36	1,224
4	17.50	1,446	0.030	0.068	0.041	0.036	34	1,246
3	12.50	1,471	0.015	0.061	0.036	0.032	31	1,267
2	7.50	1,496	0.006	0.046	0.026	0.025	25	1,289
1	2.50	1,520	0.001	0.020	0.011	0.011	11	1,310
Generic 10' Omni	138.00	25	1.876	1.909	1.114	0.366	6	22
Round Low Profile P1	138.00	1,500	1.876	1.909	1.114	0.366	366	1,292
Ericsson KRY 112 20	137.00	73	1.849	1.772	1.064	0.349	17	63
RFS APXV18-209014-C	137.00	56	1.849	1.772	1.064	0.349	13	48
Andrew LNX-6515DS-A1	137.00	149	1.849	1.772	1.064	0.349	35	129
Samsung B2/B66A RRH-	131.00	253	1.691	1.088	0.801	0.256	43	218
Samsung B5/B13 RRH-B	131.00	211	1.691	1.088	0.801	0.256	36	182
RFS APL866513-44T0	131.00	31	1.691	1.088	0.801	0.256	5	27
Raycap RCMDC-6627-PF	131.00	32	1.691	1.088	0.801	0.256	5	28
Decibel DB846H80E-SX	131.00	64	1.691	1.088	0.801	0.256	11	55
Quintel QS6656-3 (65	131.00	390	1.691	1.088	0.801	0.256	66	336
Flat Low Profile Pla	128.00	1,500	1.614	0.823	0.690	0.214	214	1,292
VZW Unused Reserve:	128.00	1,283	1.614	0.823	0.690	0.214	183	1,106
Generic 7" x 6" x 3"	119.00	30	1.395	0.275	0.427	0.111	2	26
Powerwave Allgon LGP	119.00	85	1.395	0.275	0.427	0.111	6	73
Raycap DC6-48-60-18-	119.00	40	1.395	0.275	0.427	0.111	3	34
Ericsson Radlo 8843	119.00	216	1.395	0.275	0.427	0.111	16	186
Ericsson RRUS 4449 B	119.00	213	1.395	0.275	0.427	0.111	16	184
Powerwave Allgon 777	119.00	105	1.395	0.275	0.427	0.111	8	90
Commscope NNH4-65B-	119.00	269	1.395	0.275	0.427	0.111	20	232
CCI DMP65R-BU6DA	119.00	238	1.395	0.275	0.427	0.111	18	205
Round Platform w/ Ha	117.00	2,000	1.349	0.194	0.381	0.093	124	1,723
RFI Antennas CC807-0	104.00	24	1.066	-0.087	0.166	0.010	0	21
Bird DS428E83I01T	100.00	9	0.985	-0.113	0.124	-0.003	0	8
Fiat Side Arm	95.00	450	0.889	-0.122	0.083	-0.012	-4	388
RFI Antennas CC807-0	87.00	24	0.746	-0.100	0.040	-0.010	0	21
RFI Antennas OA20-41	80.00	28	0.631	-0.064	0.018	0.002	0	24
Radio Waves HP3-11	80.00	100	0.631	-0.064	0.018	0.002	0	86
		42,918	73.625	30.354	26.218	8.052	2,081	36,978

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:40 PM

Customer: VERIZON WIRELESS

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	-51.27	-2.07	0.00	-226.40	0.00	226.40	4,653.24	2,326.62	12,262.25	6,140.24	0.00	0.00	0.048
5.00	-49.41	-2.05	0.00	-216.04	0.00	216.04	4,609.64	2,304.82	11,913.03	5,965.37	0.00	-0.01	0.047
10.00	-47.59	-2.03	0.00	-205.76	0.00	205.76	4,564.26	2,282.13	11,563.71	5,790.45	0.02	-0.02	0.046
15.00	-45.80	-2.00	0.00	-195.61	0.00	195.61	4,517.10	2,258.55	11,214.57	5,615.62	0.04	-0.02	0.045
20.00	-44.04	-1.97	0.00	-185.61	0.00	185.61	4,468.14	2,234.07	10,865.89	5,441.02	0.07	-0.03	0.044
25.00	-42.31	-1.94	0.00	-175.75	0.00	175.75	4,417.41	2,208.70	10,517.94	5,266.79	0.11	-0.04	0.043
30.00	-40.61	-1.91	0.00	-166.06	0.00	166.06	4,364.88	2,182.44	10,170.98	5,093.05	0.15	-0.05	0.042
35.00	-38.95	-1.87	0.00	-156.54	0.00	156.54	4,310.58	2,155.29	9,825.30	4,919.95	0.21	-0.06	0.041
40.00	-37.31	-1.84	0.00	-147.18	0.00	147.18	4,254.48	2,127.24	9,481.15	4,747.62	0.27	-0.07	0.040
45.00	-37.09	-1.83	0.00	-138.01	0.00	138.01	4,196.60	2,098.30	9,138.82	4,576.20	0.35	-0.07	0.039
45.66	-34.55	-1.77	0.00	-136.79	0.00	136.79	4,188.79	2,094.39	9,093.56	4,553.54	0.36	-0.08	0.038
50.00	-32.91	-1.73	0.00	-129.11	0.00	129.11	4,136.94	2,068.47	8,798.58	4,405.83	0.43	-0.08	0.037
52.83	-32.23	-1.72	0.00	-124.21	0.00	124.21	4,139.66	2,069.83	8,813.83	4,413.46	0.48	-0.09	0.036
55.00	-30.66	-1.68	0.00	-120.48	0.00	120.48	4,113.24	2,056.62	8,666.83	4,339.86	0.52	-0.09	0.035
60.00	-29.13	-1.66	0.00	-112.06	0.00	112.06	4,051.10	2,025.55	8,329.95	4,171.16	0.62	-0.10	0.034
65.00	-27.63	-1.63	0.00	-103.79	0.00	103.79	3,987.17	1,993.58	7,995.80	4,003.84	0.73	-0.11	0.033
70.00	-26.16	-1.62	0.00	-95.62	0.00	95.62	3,921.45	1,960.72	7,664.66	3,838.03	0.85	-0.12	0.032
75.00	-24.72	-1.61	0.00	-87.52	0.00	87.52	3,853.95	1,926.97	7,336.80	3,673.85	0.97	-0.12	0.030
80.00	-23.16	-1.62	0.00	-79.45	0.00	79.45	3,784.66	1,892.33	7,012.50	3,511.46	1.11	-0.13	0.029
85.00	-22.60	-1.62	0.00	-71.36	0.00	71.36	3,713.59	1,856.79	6,692.03	3,350.99	1.25	-0.14	0.027
87.00	-21.75	-1.63	0.00	-68.12	0.00	68.12	3,684.66	1,842.33	6,564.97	3,287.37	1.31	-0.14	0.027
90.00	-21.06	-1.63	0.00	-63.25	0.00	63.25	3,640.73	1,820.36	6,375.66	3,192.57	1.40	-0.15	0.026
92.58	-19.99	-1.64	0.00	-59.04	0.00	59.04	3,602.44	1,801.22	6,214.10	3,111.67	1.48	-0.15	0.025
95.00	-17.94	-1.64	0.00	-55.08	0.00	55.08	3,566.09	1,783.04	6,063.66	3,036.33	1.56	-0.15	0.023
98.41	-17.57	-1.64	0.00	-49.48	0.00	49.48	2,795.76	1,397.88	4,743.51	2,375.28	1.67	-0.16	0.027
100.00	-16.66	-1.64	0.00	-46.87	0.00	46.87	2,778.82	1,389.41	4,669.93	2,338.44	1.73	-0.16	0.026
104.00	-16.41	-1.64	0.00	-40.30	0.00	40.30	2,735.29	1,367.65	4,485.55	2,246.11	1.86	-0.17	0.024
105.00	-15.31	-1.62	0.00	-38.66	0.00	38.66	2,724.23	1,362.12	4,439.71	2,223.16	1.90	-0.17	0.023
110.00	-14.24	-1.59	0.00	-30.54	0.00	30.54	2,667.87	1,333.93	4,212.22	2,109.24	2.08	-0.18	0.020
115.00	-13.82	-1.57	0.00	-22.60	0.00	22.60	2,609.71	1,304.86	3,987.74	1,996.83	2.27	-0.18	0.017
117.00	-10.92	-1.41	0.00	-19.46	0.00	19.46	2,585.95	1,292.98	3,898.85	1,952.32	2.34	-0.18	0.014
119.00	-9.27	-1.31	0.00	-16.63	0.00	16.63	2,561.90	1,280.95	3,810.50	1,908.08	2.42	-0.18	0.012
120.00	-8.42	-1.24	0.00	-15.32	0.00	15.32	2,549.77	1,274.89	3,766.53	1,886.06	2.46	-0.18	0.011
125.00	-7.92	-1.19	0.00	-9.13	0.00	9.13	2,488.05	1,244.02	3,548.87	1,777.07	2.65	-0.19	0.008
128.00	-4.40	-0.77	0.00	-5.57	0.00	5.57	2,450.16	1,225.08	3,420.09	1,712.59	2.77	-0.19	0.005
128.50	-4.24	-0.75	0.00	-5.18	0.00	5.18	2,443.78	1,221.89	3,398.76	1,701.91	2.79	-0.19	0.005
128.50	-4.24	-0.75	0.00	-5.18	0.00	5.18	1,195.95	597.98	1,675.60	839.05	2.79	-0.19	0.010
130.00	-4.13	-0.73	0.00	-4.06	0.00	4.06	1,190.35	595.17	1,649.59	826.02	2.85	-0.19	0.008
131.00	-2.54	-0.50	0.00	-3.33	0.00	3.33	1,186.52	593.26	1,632.22	817.33	2.89	-0.19	0.006
135.00	-2.35	-0.47	0.00	-1.32	0.00	1.32	1,170.50	585.25	1,562.58	782.45	3.05	-0.19	0.004
137.00	-1.93	-0.39	0.00	-0.39	0.00	0.39	1,162.06	581.03	1,527.68	764.98	3.13	-0.19	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	3.17	-0.19	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	3.19	-0.19	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

12/13/2019 2:33:40 PM

Customer: VERIZON WIRELESS

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	-35.67	-2.07	0.00	-224.76	0.00	224.76	4,653.24	2,326.62	12,262.25	6,140.24	0.00	0.00	0.044
5.00	-34.38	-2.05	0.00	-214.41	0.00	214.41	4,609.64	2,304.82	11,913.03	5,965.37	0.00	-0.01	0.043
10.00	-33.11	-2.02	0.00	-204.15	0.00	204.15	4,564.26	2,282.13	11,563.71	5,790.45	0.02	-0.02	0.043
15.00	-31.87	-1.99	0.00	-194.02	0.00	194.02	4,517.10	2,258.55	11,214.57	5,615.62	0.04	-0.02	0.042
20.00	-30.64	-1.96	0.00	-184.05	0.00	184.05	4,468.14	2,234.07	10,865.89	5,441.02	0.07	-0.03	0.041
25.00	-29.44	-1.93	0.00	-174.24	0.00	174.24	4,417.41	2,208.70	10,517.94	5,266.79	0.11	-0.04	0.040
30.00	-28.26	-1.89	0.00	-164.60	0.00	164.60	4,364.88	2,182.44	10,170.98	5,093.05	0.15	-0.05	0.039
35.00	-27.10	-1.86	0.00	-155.13	0.00	155.13	4,310.58	2,155.29	9,825.30	4,919.95	0.21	-0.06	0.038
40.00	-25.96	-1.82	0.00	-145.85	0.00	145.85	4,254.48	2,127.24	9,481.15	4,747.62	0.27	-0.07	0.037
45.00	-25.81	-1.82	0.00	-136.74	0.00	136.74	4,196.60	2,098.30	9,138.82	4,576.20	0.34	-0.07	0.036
45.66	-24.04	-1.76	0.00	-135.53	0.00	135.53	4,188.79	2,094.39	9,093.56	4,553.54	0.36	-0.07	0.036
50.00	-22.90	-1.72	0.00	-127.92	0.00	127.92	4,136.94	2,068.47	8,798.58	4,405.83	0.43	-0.08	0.035
52.83	-22.42	-1.70	0.00	-123.06	0.00	123.06	4,139.66	2,069.83	8,813.83	4,413.46	0.48	-0.09	0.033
55.00	-21.33	-1.67	0.00	-119.37	0.00	119.37	4,113.24	2,056.62	8,666.83	4,339.86	0.52	-0.09	0.033
60.00	-20.27	-1.64	0.00	-111.03	0.00	111.03	4,051.10	2,025.55	8,329.95	4,171.16	0.62	-0.10	0.032
65.00	-19.22	-1.62	0.00	-102.83	0.00	102.83	3,987.17	1,993.58	7,995.80	4,003.84	0.73	-0.11	0.031
70.00	-18.20	-1.60	0.00	-94.75	0.00	94.75	3,921.45	1,960.72	7,664.66	3,838.03	0.84	-0.12	0.029
75.00	-17.20	-1.60	0.00	-86.73	0.00	86.73	3,853.95	1,926.97	7,336.80	3,673.85	0.97	-0.12	0.028
80.00	-16.11	-1.60	0.00	-78.75	0.00	78.75	3,784.66	1,892.33	7,012.50	3,511.46	1.10	-0.13	0.027
85.00	-15.72	-1.60	0.00	-70.75	0.00	70.75	3,713.59	1,856.79	6,692.03	3,350.99	1.24	-0.14	0.025
87.00	-15.13	-1.61	0.00	-67.54	0.00	67.54	3,684.66	1,842.33	6,564.97	3,287.37	1.30	-0.14	0.025
90.00	-14.65	-1.61	0.00	-62.72	0.00	62.72	3,640.73	1,820.36	6,375.66	3,192.57	1.39	-0.15	0.024
92.58	-13.90	-1.62	0.00	-58.56	0.00	58.56	3,602.44	1,801.22	6,214.10	3,111.67	1.47	-0.15	0.023
95.00	-12.48	-1.63	0.00	-54.64	0.00	54.64	3,566.09	1,783.04	6,063.66	3,036.33	1.55	-0.15	0.021
98.41	-12.22	-1.63	0.00	-49.08	0.00	49.08	2,795.76	1,397.88	4,743.51	2,375.28	1.66	-0.16	0.025
100.00	-11.59	-1.63	0.00	-46.50	0.00	46.50	2,778.82	1,389.41	4,669.93	2,338.44	1.71	-0.16	0.024
104.00	-11.41	-1.63	0.00	-39.99	0.00	39.99	2,735.29	1,367.65	4,485.55	2,246.11	1.85	-0.17	0.022
105.00	-10.65	-1.61	0.00	-38.36	0.00	38.36	2,724.23	1,362.12	4,439.71	2,223.16	1.88	-0.17	0.021
110.00	-9.91	-1.58	0.00	-30.32	0.00	30.32	2,667.87	1,333.93	4,212.22	2,109.24	2.06	-0.17	0.018
115.00	-9.61	-1.56	0.00	-22.44	0.00	22.44	2,609.71	1,304.86	3,987.74	1,996.83	2.25	-0.18	0.015
117.00	-7.60	-1.40	0.00	-19.33	0.00	19.33	2,585.95	1,292.98	3,898.85	1,952.32	2.32	-0.18	0.013
119.00	-6.45	-1.30	0.00	-16.53	0.00	16.53	2,561.90	1,280.95	3,810.50	1,908.08	2.40	-0.18	0.011
120.00	-5.86	-1.23	0.00	-15.23	0.00	15.23	2,549.77	1,274.89	3,766.53	1,886.06	2.44	-0.18	0.010
125.00	-5.51	-1.18	0.00	-9.07	0.00	9.07	2,488.05	1,244.02	3,548.87	1,777.07	2.63	-0.19	0.007
128.00	-3.06	-0.76	0.00	-5.54	0.00	5.54	2,450.16	1,225.08	3,420.09	1,712.59	2.75	-0.19	0.004
128.50	-2.95	-0.74	0.00	-5.16	0.00	5.16	2,443.78	1,221.89	3,398.76	1,701.91	2.77	-0.19	0.004
128.50	-2.95	-0.74	0.00	-5.16	0.00	5.16	1,195.95	597.98	1,675.60	839.05	2.77	-0.19	0.009
130.00	-2.87	-0.73	0.00	-4.04	0.00	4.04	1,190.35	595.17	1,649.59	826.02	2.83	-0.19	0.007
131.00	-1.76	-0.50	0.00	-3.31	0.00	3.31	1,186.52	593.26	1,632.22	817.33	2.87	-0.19	0.006
135.00	-1.64	-0.47	0.00	-1.32	0.00	1.32	1,170.50	585.25	1,562.58	782.45	3.03	-0.19	0.003
137.00	-1.34	-0.38	0.00	-0.38	0.00	0.38	1,162.06	581.03	1,527.68	764.98	3.10	-0.19	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	3.14	-0.19	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	3.16	-0.19	0.000

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number:12976958_C3_05

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Customer: VERIZON WIRELESS

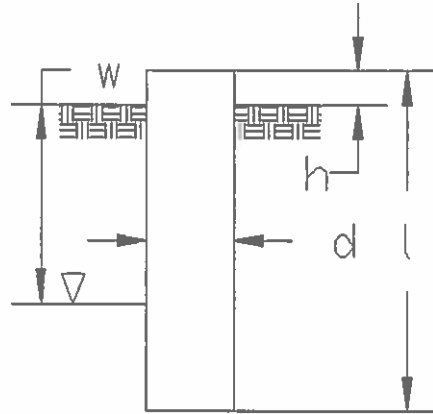
Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	29.36	0.00	51.47	0.00	0.00	2951.24	0.00	0.49
0.9D + 1.6W	29.02	0.00	38.60	0.00	0.00	2897.27	0.00	0.48
1.2D + 1.0Di + 1.0Wi	13.53	0.00	88.91	0.00	0.00	1194.65	0.00	0.21
(1.2 + 0.2Sds) * DL + E ELFM	1.79	0.00	51.27	0.00	0.00	190.13	0.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	2.07	0.00	51.27	0.00	0.00	226.40	0.00	0.05
(0.9 - 0.2Sds) * DL + E ELFM	1.79	0.00	35.67	0.00	0.00	188.83	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.07	0.00	35.67	0.00	0.00	224.76	0.00	0.04
1.0D + 1.0W	5.73	0.00	42.92	0.00	0.00	572.96	0.00	0.10

Site Name: Middle Haddam Road-CROWN CT, CT
Site Number: 411257
Tower Type: MP
Design Base Loads (Factored) - Analysis per TIA-222-G Standards

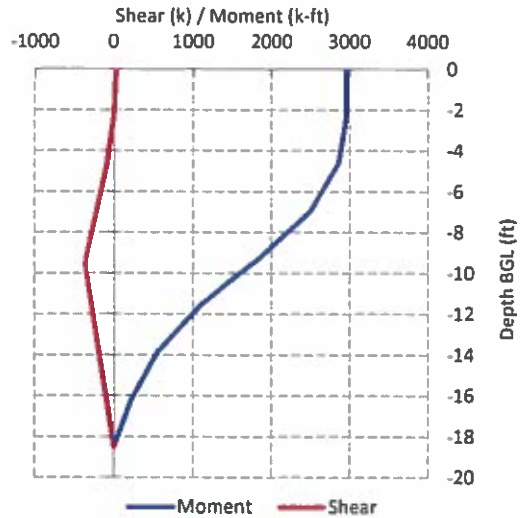
Pier Foundation Analysis

Foundation Analysis Parameters	
Analyze or Design a Foundation?	Analyze -
Foundation Mapped:	Y -
Moment (M):	2951.2 k-ft
Shear/Leg (V):	29.4 k
Axial Load (P):	51.5 k
Uplift/Leg (U):	0.0 k
Diameter of Caisson (d):	8 ft
Caisson Embedment (L-h):	18.5 ft
Caisson Height Above Ground (h):	0.5 ft
Depth Below Ground Surface to Water Table (w):	99 ft
Unit Weight of Concrete:	150 pcf
Unit Weight of Water:	62.4 pcf
Tension/Compression Skin Friction Factor:	1 -
Pullout Angle:	30 °



Depth (ft)		γ_{soil} (pcf)	Cu (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
Top	Bottom					
0	2	105	0	0	0	0
2	4	140	9083	0	0	0
4	9	140	13483	0	6067	0
9	19.5	139	9180	0	4131	43469

Soil Strength Capacities	
Required Embedment:	10.0 ft
Volume of Concrete:	955.0 ft ³
Buoyant Weight of Concrete:	143.3 k
Average Soil Unit Weight:	135.7 pcf
Skin Friction Resistance:	1748.7 k
Compressive Bearing Resistance:	2185.0 k
Pullout Weight (Minus Concrete Weight):	636.9 k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	477.7 k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	2950.3 k
T_u :	0.0 k
$T_u / \phi_s T_n$:	0% Pass
P_u :	67.4 k
$P_u / \phi_s P_n$:	2% Pass
Total Lateral Resistance:	9650.9 k
Inflection Point (Below Ground Surface):	9.6 ft
Moment At Inflection Point (M_D):	3246.6 k-ft
Nominal Moment Capacity ($\phi_s M_n$):	28532.1 k-ft
ϕ_s :	0.75 -
$M_D / \phi_s M_n$:	11% Pass





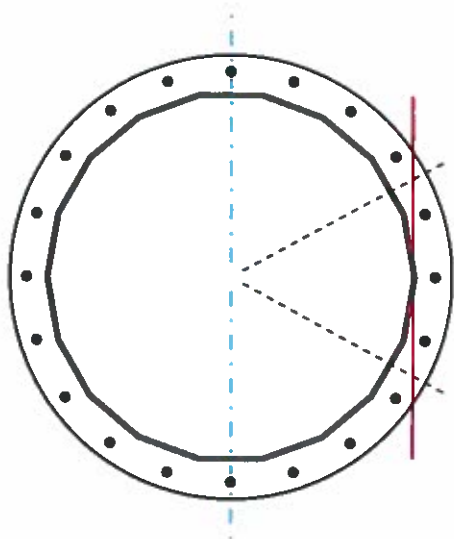
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	64.38	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2951.2	k-ft
Axial, Pu	51.5	k
Shear, Vu	29.4	k
Neutral Axis	270	°

Report Capacities		
Component	Capacity	Result
Base Plate	21%	Pass
Anchor Rods	40%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ϕ	79	in
Thickness	2 1/4	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clp	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	556.8	k
Bending Stress, ϕMn	2619.4	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ϕ	2 1/4	in
Bolt Circle	73	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	11.5	in
Orientation Offset	0	°
Applied Force, Pu	102.8	k
Anchor Rods, ϕPn	259.8	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu k	Moment Mu k-ft	Factor
Base Forces	29.4	2951.2	1.00
Anchor Rod Forces	29.4	2951.2	1.00
Additional Bolt (Grp1) Forces			
Additional Bolt (Grp2) Forces			
Dywidag Forces			
Stiffener Forces			

Geometric Properties

Section	Gross Area in ²	Net Area in ²	Individual Inertia in ⁴	Threads per Inch #	Moment of Inertia in ⁴
Pole	75.0219	4.1679	0.1959		38420.73
Bolt	3.9761	3.2477	0.8393	4.5	40514.59
Bolt1					
Bolt2					
Dywidag					
Stiffener					

Base Plate		
Shape	Round	-
Diameter, D	79	in
Thickness, t	2.25	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	45.784	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	73	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	102.8	k
Applied Shear, Vu	0.7	k
Compressive Capacity, ϕP_n	259.8	k
Tensile Capacity, $\phi R_n t$	0.396	OK
Interaction Capacity	0.401	OK

External Base Plate		
Chord Length AA	39.028	in
Additional AA	4.500	in
Section Modulus, Z	55.091	in ³
Applied Moment, Mu	556.8	k-ft
Bending Capacity, ϕM_n	2974.9	k-ft
Capacity, Mu/ ϕM_n	0.187	OK

Chord Length AB	37.328	in
Additional AB	4.500	in
Section Modulus, Z	52.938	in ³
Applied Moment, Mu	407.9	k-ft
Bending Capacity, ϕM_n	2858.6	k-ft
Capacity, Mu/ ϕM_n	0.143	OK

Bend Line Length	38.327	in
Additional Bend Line	0.000	in
Section Modulus, Z	48.507	in ³
Applied Moment, Mu	556.8	k-ft
Bending Capacity, ϕM_n	2619.4	k-ft
Capacity, Mu/ ϕM_n	0.213	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, ϕM_n	0.0	k-ft
Capacity, Mu/ ϕM_n		

Flange Plate Analysis

Flange Plate	Plate Type	Flange	128.5 ft
	Pole Diameter	34.2064	in
	Pole Thickness	0.1875	in
	Plate Diameter	41	in
	Plate Thickness	1	in
	Plate Fy	60	ksi
	Weld Length	0.55	in
	f _r Resistance Applied	62.98	k-in
		1.47	k-in

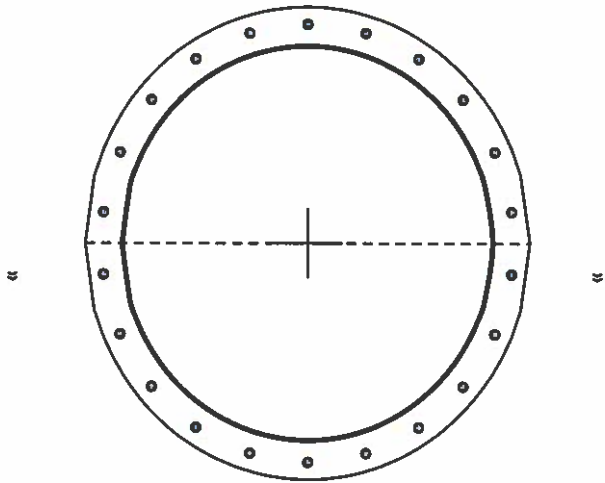
Code Rev.	G
Moment	35.9 k-ft
Axial	4.0 k

Date	12/13/2019
Engineer	Lucas Tait
Site #	411257
Carrier	VZW

Required Flange Thickness:
0.15 in OK

Stiffeners	#	
------------	---	--

Bolts	#	22
	Bolt Circle (R)adial / (S)quare	38 R
	Diameter	1 in
	Hole Diameter	1.125 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	f _r Resistance Applied	54.52 k
		1.87 k



Reinforcement	#	
---------------	---	--

Plate Stress Ratio:
2% Pass

Bolt Stress Ratio:
3% Pass

Extra Bolts	#	
-------------	---	--



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 138.5 ft Monopole
ATC Site Name : Middle Haddam Road-CROWN CT, CT
ATC Asset Number : 411257
Engineering Number : 12976958_C3_05
Proposed Carrier : VERIZON WIRELESS
Carrier Site Name : Portland South CT
Carrier Site Number : 15096289
Site Location : 191 Middle Haddam Rd
Portland, CT 06480-1767
41.562200,-72.573800
County : Middlesex
Date : December 13, 2019
Max Usage : 49%
Result : Pass

Prepared By:
Lucas Tait
Structural Engineer

Reviewed By:



COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
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Existing and Reserved Equipment.....	2
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Deflection and Sway	3
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Calculations	Attached



Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 138.5 ft monopole to reflect the change in loading by VERIZON WIRELESS.

Supporting Documents

Tower Drawings	EI Job #12477 Revision II, dated May 13, 2004 Mapping by HTS, ATC Site #411257, dated March 24, 2016
Foundation Drawing	Mapping by TPS Report #TPS-CT-257, dated October 22, 2015
Geotechnical Report	CHA Project #11869.1011.1502, dated September 23, 2002

Analysis

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

Basic Wind Speed:	101 mph (3-Second Gust, Vasd) / 130 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.18, S_1 = 0.06$
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.

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
137.0	3	Andrew LNX-6515DS-A1M	Low Profile Platform	(12) 1 5/8" Coax	T-MOBILE
	3	RFS APXV18-209014-C			
	6	Ericsson KRY 112 20			
128.0	1	VZW Unused Reserve: 17704 sq in	Low Profile Platform	(6) 1 5/8" Coax	VERIZON WIRELESS
119.0	6	Generic 7" x 6" x 3" Diplexer	Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 1/2" Coax (2) 3" conduit	AT&T MOBILITY
	6	Powerwave Allgon LGP21401			
	3	CCI DMP65R-BU6DA			
	3	Commscope NNH4-65B-R6			
	3	Powerwave Allgon 7770.00			
	3	Ericsson RRUS 4449 B5, B12			
	2	Raycap DC6-48-60-18-8F			
3	Ericsson Radio 8843 - B2 + B66A				
104.0	1	RFI Antennas CC807-08	Side Arm	(2) 1/2" Coax (1) 7/8" Coax (1) 7/8" Coax	CITY OF MIDDLETOWN, CT
100.0	1	Bird DS428E83I01T			
87.0	1	RFI Antennas CC807-08			
80.0	1	RFI Antennas OA20-41-DIN	Pole Mount	(1) 7/8" Coax (2) EW90	
	2	Radio Waves HP3-11			

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
128.0	1	Antel BXA-70063/4CF	-	(12) 1 5/8" Coax	VERIZON WIRELESS
	4	Antel LPA-185080/12CF			
	2	Amphenol Antel LPA-171063-12CF-EDIN-X			
	6	Decibel DB846H80E-SX			
	2	Antel BXA-70063/6CF			

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
138.0	1	Generic 10' Omni	Low Profile Platform	-	VERIZON WIRELESS
131.0	4	Decibel DB846H-80E-SX	Low Profile Platform	(1) 2.02 (51.2mm) Hybrid	
	2	RFS APL866513-44T0			
	6	Quintel QS6656-3 (65 lbs)			
	1	Raycap RCMDC-6627-PF-48			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			

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	40%	Pass
Shaft	49%	Pass
Base Plate	21%	Pass
Flange	3%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,951.2	11%
Axial (Kips)	51.5	2%

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) (°)
131.0	Samsung B2/B66A RRH-BR049	VERIZON WIRELESS	0.569	0.428
	Samsung B5/B13 RRH-BR04C			
	RFS APL866513-44T0			
	Raycap RCMDC-6627-PF-48			
	Decibel DB846H80E-SX			
	Quintel QS6656-3 (65 lbs)			
80.0	Radio Waves HP3-11	CITY OF MIDDLETOWN, CT	0.227	0.316

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



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

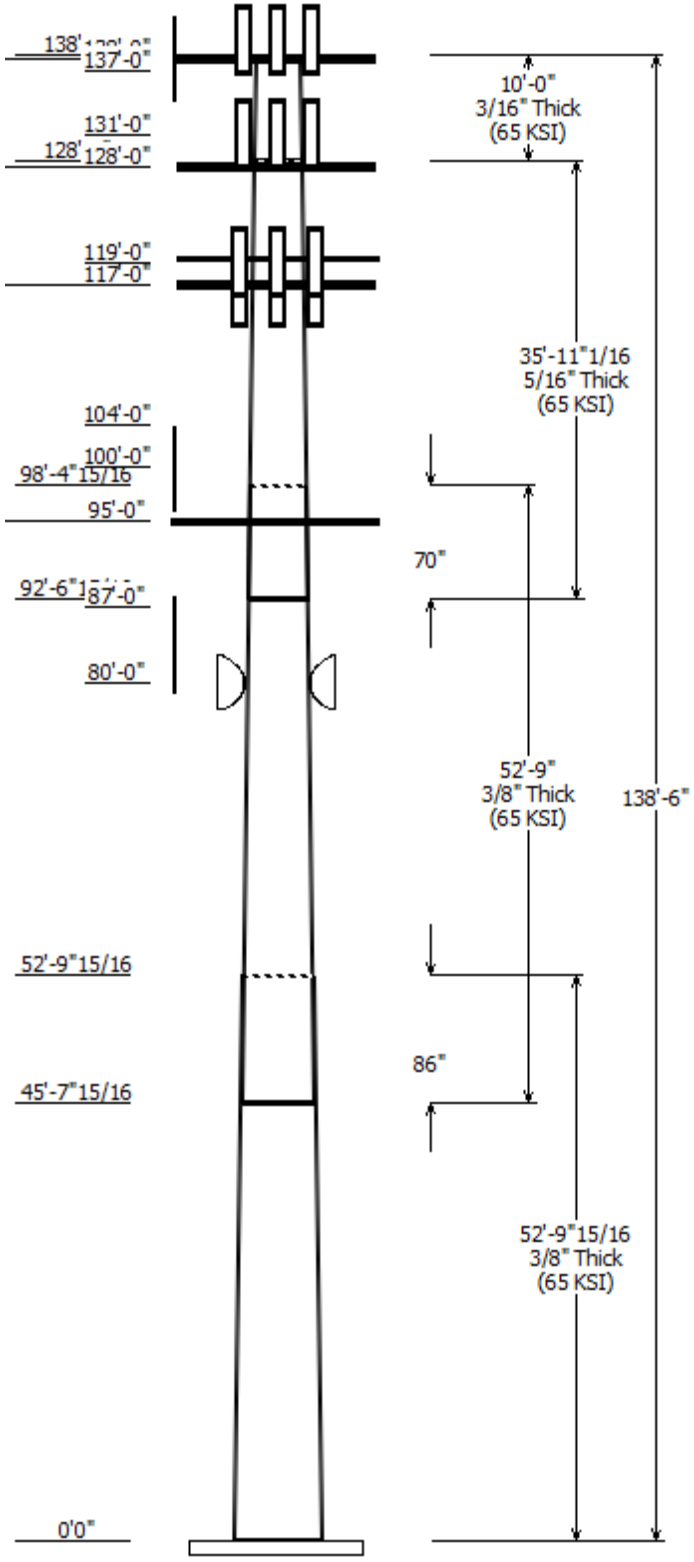
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

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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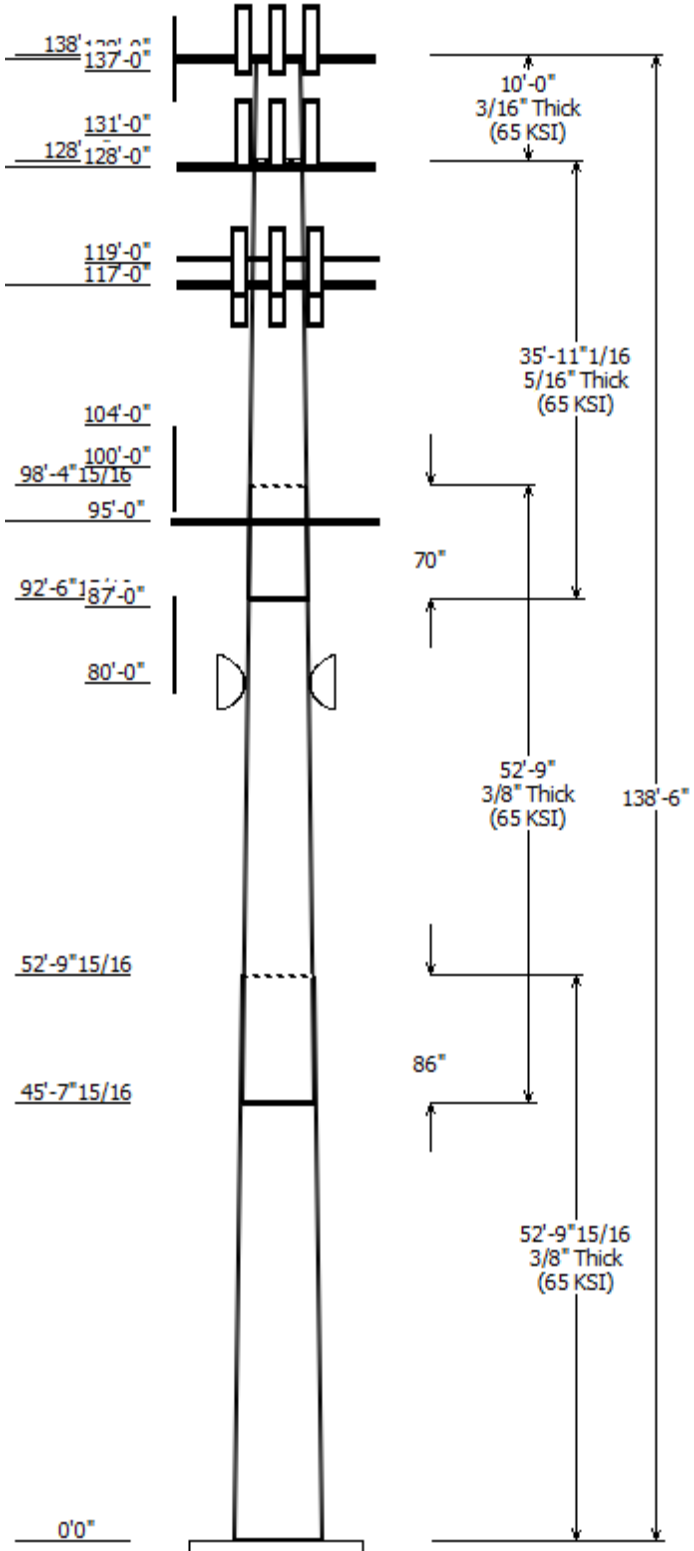


Job Information	
Client : VERIZON WIRELESS	Code: ANSI/TIA-222-G
Pole : 411257	
Location : Middle Haddam Road-CROWN CT, CT	Struct Class : II
Description : 138.5 ft Monopole	Exposure : B
Shape : 18 Sides	Topo : 1
Height : 138.50 (ft)	
Base Elev (ft): 0.00	
Taper: 0.245524in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Top	Bottom				
1	52.830	51.40	64.38	0.375		0.000	18 Sides 65
2	52.750	40.96	53.91	0.375	Slip Joint	86.000	18 Sides 65
3	35.920	34.20	43.02	0.313	Slip Joint	70.000	18 Sides 65
4	10.000	31.75	34.20	0.188	Butt Joint	0.000	18 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
138.000	138.000	1	Round Low Profile Platform
138.000	138.000	1	Generic 10' Omni
137.000	139.000	3	Andrew LNX-6515DS-A1M
137.000	139.000	3	RFS APXV18-209014-C
137.000	139.000	6	Ericsson KRY 112 20
131.000	131.000	6	Quintel QS6656-3 (65 lbs)
131.000	131.000	4	Decibel DB846H80E-SX
131.000	131.000	1	Raycap RCMD-6627-PF-48
131.000	131.000	2	RFS APL866513-44T0
131.000	131.000	3	Samsung B5/B13 RRH-BR04C
131.000	131.000	3	Samsung B2/B66A RRH-BR049
128.000	128.000	1	VZW Unused Reserve: 17704
128.000	128.000	1	Flat Low Profile Platform
119.000	119.000	3	CCI DMP65R-BU6DA
119.000	119.000	3	Commscope NNH4-65B-R6
119.000	117.000	3	Powerwave Allgon 7770.00
119.000	119.000	3	Ericsson RRUS 4449 B5, B12
119.000	119.000	3	Ericsson Radio 8843 - B2 + B66
119.000	117.000	2	Raycap DC6-48-60-18-8F
119.000	117.000	6	Powerwave Allgon LGP21401
119.000	119.000	6	Generic 7" x 6" x 3" Diplexer
117.000	117.000	1	Round Platform w/ Handrails
104.000	102.000	1	RFI Antennas CC807-08
100.000	100.000	1	Bird DS428E83I01T
95.000	95.000	3	Flat Side Arm
87.000	86.000	1	RFI Antennas CC807-08
80.000	80.000	2	Radio Waves HP3-11
80.000	82.000	1	RFI Antennas OA20-41-DIN

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
0.000	80.000	7/8" Coax	No
0.000	80.000	EW90	No
0.000	87.000	7/8" Coax	No
0.000	100.0	1/2" Coax	No
0.000	100.0	7/8" Coax	No
0.000	104.0	1/2" Coax	No
0.000	119.0	0.39" (10mm)	No
0.000	119.0	0.78" (19.7mm) 8	No



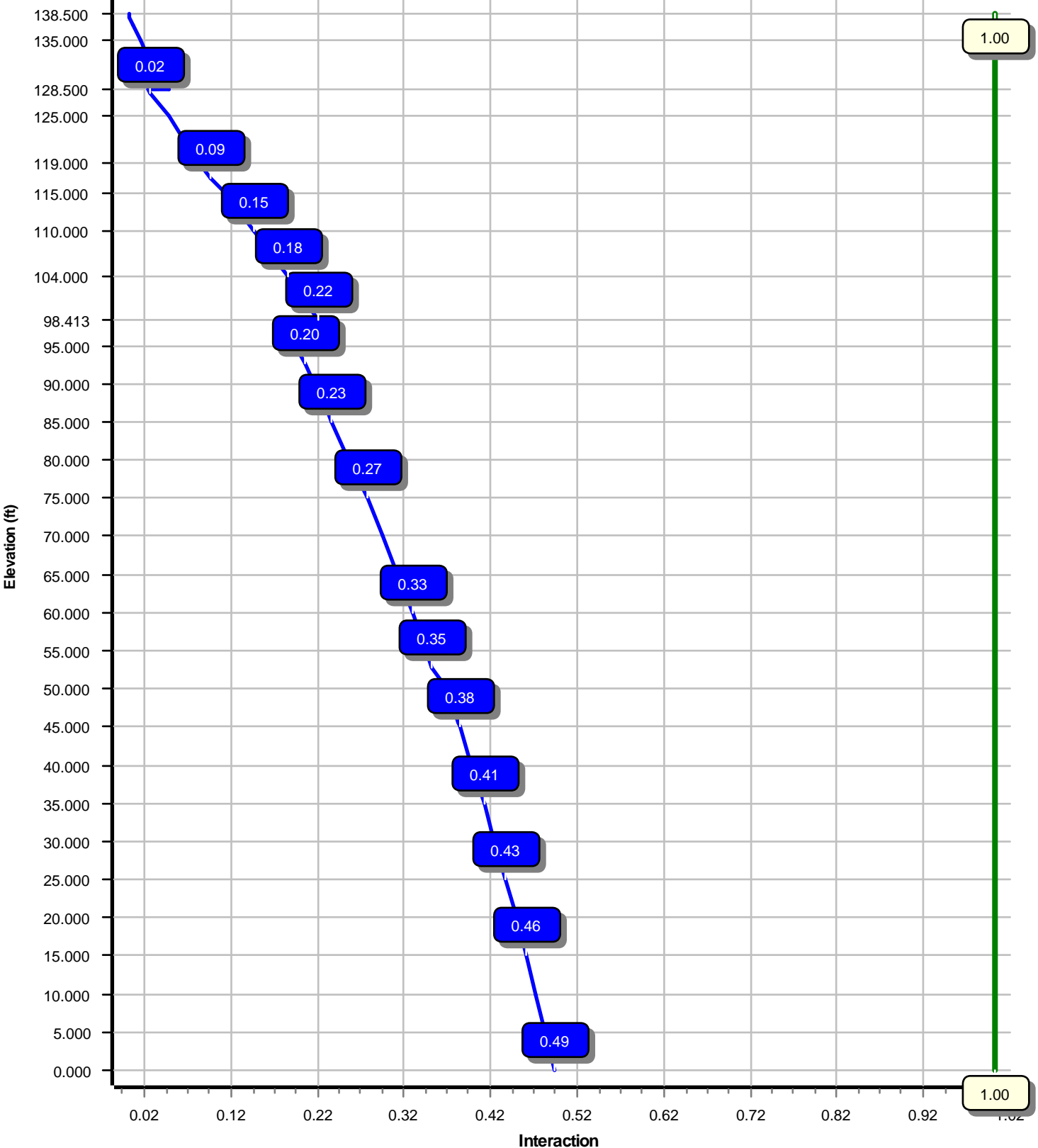
0.000	119.0	1 5/8" Coax	No
0.000	119.0	1/2" Coax	No
0.000	119.0	3" conduit	No
0.000	131.0	1 5/8" Coax	Yes
0.000	131.0	2.02 (51.2mm)	No
0.000	137.0	1 5/8" Coax	No
0.000	137.0	1 5/8" Coax	Yes

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

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2951.24	29.36	51.47
0.9D + 1.6W	2897.27	29.02	38.60
1.2D + 1.0Di + 1.0Wi	1194.65	13.53	88.91
(1.2 + 0.2Sds) * DL + E ELFM	190.13	1.79	51.27
(1.2 + 0.2Sds) * DL + E EMAM	226.40	2.07	51.27
(0.9 - 0.2Sds) * DL + E ELFM	188.83	1.79	35.67
(0.9 - 0.2Sds) * DL + E EMAM	224.76	2.07	35.67
1.0D + 1.0W	572.96	5.73	42.92

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	80.00	2.719	0.316

Load Case : 1.2D + 1.6W
Max Ratio 49.19% at 0.0 ft



Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number: 12976958_C3_05

12/13/2019 2:33:25 PM

Customer: VERIZON WIRELESS

Analysis Parameters

Location :	Middlesex County, CT	Height (ft) :	138.5
Code :	ANSI/TIA-222-G	Base Diameter (in) :	64.38
Shape :	18 Sides	Top Diameter (in) :	31.75
Pole Type :	Taper	Taper (in/ft) :	0.246
Pole Manufacturer :	EEl	Rotation (deg) :	0.00

Ice & Wind Parameters

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

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	1.58		
T_L (sec):	6	p :	1
S_s :	0.180	S_1 :	0.062
F_a :	1.600	F_v :	2.400
S_{ds} :	0.192	S_{d1} :	0.099
		C_s :	0.042
		C_s Max:	0.042
		C_s Min:	0.030

Load Cases

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

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number: 12976958_C3_05

12/13/2019 2:33:25 PM

Customer: VERIZON WIRELESS

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	52.830	0.3750	65		0.00	12,307	64.38	0.00	76.18	39429.1	28.51	171.68	51.40	52.83	60.74	19987.3	22.41	137.09	0.245523
2-18	52.750	0.3750	65	Slip	86.00	10,055	53.91	45.66	63.73	23083.3	23.59	143.78	40.96	98.41	48.31	10057.8	17.50	109.25	0.245523
3-18	35.920	0.3125	65	Slip	70.00	4,643	43.02	92.58	42.36	9764.3	22.51	137.68	34.20	128.50	33.62	4878.8	17.54	109.46	0.245523
4-18	10.000	0.1875	65	Butt	0.00	664	34.20	128.50	20.24	2959.8	30.40	182.43	31.75	138.50	18.78	2364.1	28.09	169.33	0.245523
Shaft Weight						27,670													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
138.00	Generic 10' Omni	1	1.00	0.000	25.00	3.000	1.00	100.40	6.575	1.00
138.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,143.60	40.772	1.00
137.00	Ericsson KRY 112 20	6	0.80	2.000	12.10	0.449	0.50	27.62	0.948	0.50
137.00	RFS APXV18-209014-C	3	0.80	2.000	18.70	3.570	0.67	106.23	4.502	0.67
137.00	Andrew LNX-6515DS-A1M	3	0.80	2.000	49.80	11.410	0.70	277.11	14.628	0.70
131.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	147.44	2.767	0.50
131.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	126.83	2.767	0.50
131.00	RFS APL866513-44T0	2	0.80	0.000	15.70	4.050	0.82	142.36	4.959	0.82
131.00	Raycap RCMDC-6627-PF-48	1	0.80	0.000	32.00	4.056	1.00	157.59	5.405	1.00
131.00	Decibel DB846H80E-SX	4	0.80	0.000	16.00	5.867	0.73	172.80	6.206	0.73
131.00	Quintel QS6656-3 (65 lbs)	6	0.80	0.000	65.00	8.133	0.74	261.89	10.888	0.74
128.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,138.25	44.908	1.00
128.00	VZW Unused Reserve: 17704 sq	1	0.80	0.000	1,283.50	122.940	0.90	2,164.36	207.313	0.90
119.00	Generic 7" x 6" x 3" Diplexer	6	0.75	0.000	5.00	0.350	0.50	15.82	0.748	0.50
119.00	Powerwave Allgon LGP21401	6	0.75	-2.000	14.10	1.104	0.50	38.51	1.802	0.50
119.00	Raycap DC6-48-60-18-8F	2	0.75	-2.000	20.00	1.260	1.00	71.51	1.904	1.00
119.00	Ericsson Radio 8843 - B2 + B66A	3	0.75	0.000	71.90	1.650	0.50	132.17	2.479	0.50
119.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.969	0.50	134.05	2.882	0.50
119.00	Powerwave Allgon 7770.00	3	0.75	-2.000	35.00	5.508	0.65	166.26	6.538	0.65
119.00	Commscope NNH4-65B-R6	3	0.75	0.000	89.70	12.271	0.64	335.52	15.014	0.64
119.00	CCI DMP65R-BU6DA	3	0.75	0.000	79.40	12.709	0.63	331.41	15.437	0.63
117.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,265.49	51.073	1.00
104.00	RFI Antennas CC807-08	1	1.00	-2.000	24.30	2.855	1.00	94.73	6.130	1.00
100.00	Bird DS428E83I01T	1	1.00	0.000	8.90	0.465	1.00	25.68	0.921	1.00
95.00	Flat Side Arm	3	1.00	0.000	150.00	6.300	0.67	219.94	8.650	0.67
87.00	RFI Antennas CC807-08	1	1.00	-1.000	24.30	2.855	1.00	93.54	6.075	1.00
80.00	RFI Antennas OA20-41-DIN	1	1.00	2.000	28.00	4.410	1.00	142.34	10.407	1.00
80.00	Radio Waves HP3-11	2	1.00	0.000	50.00	8.918	1.00	220.79	10.561	1.00
Totals	Num Loadings:28	74			9,399.20			19,880.43		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 70

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat	Dist Between Rows (in)	Dist Between Cols (in)	Dist Azimuth (deg)	Dist From Face (in)	Exposed To Wind Carrier
0.00	137.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N T- MOBILE
0.00	137.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	200	Y T- MOBILE
0.00	131.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	20	Y VERIZON WIRELESS
0.00	131.00	1	2.02 (51.2mm) Hybrid	2.02	3.04	N	0	0.00	0.00	0	N VERIZON WIRELESS
0.00	119.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	N AT&T MOBILITY
0.00	119.00	4	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	N AT&T MOBILITY
0.00	119.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N AT&T MOBILITY

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number: 12976958_C3_05

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Customer: VERIZON WIRELESS

0.00	119.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	119.00	2	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	104.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	100.00	1	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	100.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	87.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	80.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	0.00	N	CITY OF
0.00	80.00	2	EW90	1.32	0.32	N	0	0.00	0.00	0	0.00	N	CITY OF

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.3750	64.380	76.179	39,429.1	28.51	171.68	67.9	1206.	0.0	0.0
5.00		0.3750	63.152	74.718	37,203.6	27.93	168.41	68.5	1160.	0.0	1,283.7
10.00		0.3750	61.925	73.257	35,063.5	27.35	165.13	69.2	1115.	0.0	1,258.8
15.00		0.3750	60.697	71.796	33,007.0	26.78	161.86	69.9	1071.	0.0	1,234.0
20.00		0.3750	59.470	70.335	31,032.5	26.20	158.59	70.6	1027.	0.0	1,209.1
25.00		0.3750	58.242	68.874	29,138.5	25.62	155.31	71.3	985.4	0.0	1,184.2
30.00		0.3750	57.014	67.412	27,323.0	25.05	152.04	71.9	943.9	0.0	1,159.4
35.00		0.3750	55.787	65.951	25,584.7	24.47	148.76	72.6	903.3	0.0	1,134.5
40.00		0.3750	54.559	64.490	23,921.6	23.89	145.49	73.3	863.6	0.0	1,109.7
45.00		0.3750	53.331	63.029	22,332.2	23.31	142.22	74.0	824.8	0.0	1,084.8
45.66	Bot - Section 2	0.3750	53.169	62.835	22,126.8	23.24	141.78	74.1	819.7	0.0	142.1
50.00		0.3750	52.104	61.568	20,814.9	22.74	138.94	74.7	786.8	0.0	1,849.0
52.83	Top - Section 1	0.3750	52.159	61.634	20,881.5	22.76	139.09	74.6	788.5	0.0	1,186.4
55.00		0.3750	51.626	61.000	20,243.6	22.51	137.67	74.9	772.3	0.0	452.8
60.00		0.3750	50.399	59.538	18,823.5	21.93	134.40	75.6	735.6	0.0	1,025.4
65.00		0.3750	49.171	58.077	17,471.4	21.36	131.12	76.3	699.8	0.0	1,000.6
70.00		0.3750	47.943	56.616	16,185.7	20.78	127.85	77.0	664.9	0.0	975.7
75.00		0.3750	46.716	55.155	14,964.6	20.20	124.58	77.6	630.9	0.0	950.8
80.00		0.3750	45.488	53.694	13,806.5	19.63	121.30	78.3	597.8	0.0	926.0
85.00		0.3750	44.261	52.233	12,709.8	19.05	118.03	79.0	565.6	0.0	901.1
87.00		0.3750	43.769	51.648	12,287.9	18.82	116.72	79.3	553.0	0.0	353.5
90.00		0.3750	43.033	50.772	11,672.8	18.47	114.75	79.7	534.3	0.0	522.8
92.58	Bot - Section 3	0.3750	42.399	50.018	11,160.4	18.17	113.07	80.0	518.4	0.0	442.4
95.00		0.3750	41.805	49.311	10,693.7	17.89	111.48	80.4	503.8	0.0	755.4
98.41	Top - Section 2	0.3125	41.592	40.943	8,814.6	21.70	133.10	75.9	417.4	0.0	1,047.3
100.0		0.3125	41.203	40.556	8,567.4	21.49	131.85	76.1	409.5	0.0	220.0
104.0		0.3125	40.221	39.582	7,964.8	20.93	128.71	76.8	390.0	0.0	545.4
105.0		0.3125	39.975	39.339	7,818.7	20.79	127.92	76.9	385.2	0.0	134.3
110.0		0.3125	38.747	38.121	7,115.0	20.10	123.99	77.8	361.7	0.0	658.9
115.0		0.3125	37.520	36.904	6,454.7	19.41	120.06	78.6	338.8	0.0	638.2
117.0		0.3125	37.029	36.417	6,202.5	19.13	118.49	78.9	329.9	0.0	249.5
119.0		0.3125	36.538	35.930	5,957.0	18.85	116.92	79.2	321.1	0.0	246.2
120.0		0.3125	36.292	35.686	5,836.7	18.71	116.13	79.4	316.8	0.0	121.8
125.0		0.3125	35.065	34.468	5,259.4	18.02	112.21	80.2	295.4	0.0	596.8
128.0		0.3125	34.328	33.738	4,932.0	17.61	109.85	80.7	283.0	0.0	348.1
128.5	Top - Section 3	0.3125	34.205	33.616	4,878.8	17.54	109.46	80.8	280.9	0.0	57.3
128.5	Bot - Section 4	0.1875	34.205	20.244	2,959.8	30.40	182.43	65.6	170.4	0.0	
130.0		0.1875	33.837	20.025	2,864.7	30.06	180.46	66.0	166.8	0.0	102.8
131.0		0.1875	33.591	19.879	2,802.5	29.83	179.15	66.3	164.3	0.0	67.9
135.0		0.1875	32.609	19.294	2,562.5	28.90	173.92	67.4	154.8	0.0	266.6
137.0		0.1875	32.118	19.002	2,447.8	28.44	171.30	67.9	150.1	0.0	130.3
138.0		0.1875	31.873	18.856	2,391.8	28.21	169.99	68.2	147.8	0.0	64.4
138.5		0.1875	31.750	18.783	2,364.1	28.09	169.33	68.4	146.7	0.0	32.0
27,669.9											

Load Case: 1.2D + 1.6W	101 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		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		268.0	0.0					0.0	0.0	268.0	0.0	0.0	0.0
5.00		530.8	1,540.4					0.0	284.2	530.8	1,824.6	0.0	0.0
10.00		520.5	1,510.6					0.0	284.2	520.5	1,794.7	0.0	0.0
15.00		510.2	1,480.7					0.0	284.2	510.2	1,764.9	0.0	0.0
20.00		499.9	1,450.9					0.0	284.2	499.9	1,735.1	0.0	0.0
25.00		489.6	1,421.1					0.0	284.2	489.6	1,705.2	0.0	0.0
30.00		484.9	1,391.3					0.0	284.2	484.9	1,675.4	0.0	0.0
35.00		490.1	1,361.4					0.0	284.2	490.1	1,645.6	0.0	0.0
40.00		498.0	1,331.6					0.0	284.2	498.0	1,615.8	0.0	0.0
45.00		284.1	1,301.8					0.0	284.2	284.1	1,585.9	0.0	0.0
45.66	Bot - Section 2	256.0	170.5					0.0	37.7	256.0	208.2	0.0	0.0
50.00		368.3	2,218.7					0.0	246.5	368.3	2,465.2	0.0	0.0
52.83	Top - Section 1	257.8	1,423.7					0.0	160.8	257.8	1,584.5	0.0	0.0
55.00		370.4	543.3					0.0	123.3	370.4	666.6	0.0	0.0
60.00		516.7	1,230.5					0.0	284.2	516.7	1,514.7	0.0	0.0
65.00		515.8	1,200.7					0.0	284.2	515.8	1,484.8	0.0	0.0
70.00		515.2	1,170.8					0.0	284.2	515.2	1,455.0	0.0	0.0
75.00		515.5	1,141.0					0.0	284.2	515.5	1,425.2	0.0	0.0
80.00	Appurtenance(s)	515.5	1,111.2	901.9	0.0	359.6	153.6	0.0	284.2	1,417.4	1,548.9	0.0	0.0
85.00		360.6	1,081.3					0.0	278.3	360.6	1,359.7	0.0	0.0
87.00	Appurtenance(s)	257.1	424.2	118.0	0.0	-118.0	29.2	0.0	111.3	375.1	564.7	0.0	0.0
90.00		286.5	627.3					0.0	165.8	286.5	793.1	0.0	0.0
92.58	Bot - Section 3	258.0	530.9					0.0	142.6	258.0	673.5	0.0	0.0
95.00	Appurtenance(s)	302.5	906.5	538.5	0.0	0.0	540.0	0.0	133.8	841.0	1,580.2	0.0	0.0
98.41	Top - Section 2	258.4	1,256.8					0.0	188.7	258.4	1,445.4	0.0	0.0
100.00	Appurtenance(s)	286.6	264.0	20.1	0.0	0.0	10.7	0.0	87.7	306.7	362.4	0.0	0.0
104.00	Appurtenance(s)	256.1	654.5	123.9	0.0	-247.8	29.2	0.0	218.8	380.0	902.4	0.0	0.0
105.00		305.5	161.1					0.0	54.5	305.5	215.6	0.0	0.0
110.00		506.8	790.7					0.0	272.6	506.8	1,063.3	0.0	0.0
115.00		352.7	765.9					0.0	272.6	352.7	1,038.5	0.0	0.0
117.00	Appurtenance(s)	200.3	299.4	1,227.5	0.0	0.0	2,400.0	0.0	109.0	1,427.8	2,808.4	0.0	0.0
119.00	Appurtenance(s)	149.8	295.4	2,399.5	0.0	-1,121.9	1,434.7	0.0	109.0	2,549.4	1,839.2	0.0	0.0
120.00		297.6	146.2					0.0	21.4	297.6	167.6	0.0	0.0
125.00		395.1	716.2					0.0	106.8	395.1	823.0	0.0	0.0
128.00	Appurtenance(s)	171.8	417.8	5,307.1	0.0	0.0	3,340.2	0.0	64.1	5,478.9	3,822.0	0.0	0.0
128.50	Top - Section 3	97.7	68.8					0.0	10.7	97.7	79.4	0.0	0.0
130.00		121.9	123.3					0.0	32.0	121.9	155.4	0.0	0.0
131.00	Appurtenance(s)	219.1	81.5	2,594.0	0.0	0.0	1,177.8	0.0	21.4	2,813.1	1,280.6	0.0	0.0
135.00		254.3	319.9					0.0	47.2	254.3	367.1	0.0	0.0
137.00	Appurtenance(s)	125.4	156.4	1,232.0	0.0	2,463.9	333.7	0.0	23.6	1,357.4	513.7	0.0	0.0
138.00	Appurtenance(s)	62.3	77.3	1,168.5	0.0	0.0	1,830.0	0.0	0.0	1,230.8	1,907.3	0.0	0.0
138.50		20.7	38.4					0.0	0.0	20.7	38.4	0.0	0.0
Totals:										29,584.9	51,501.3	0.00	0.00

Load Case: 1.2D + 1.6W

101 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	-51.47	-29.36	0.00	-2,951.24	0.00	2,951.24	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.492
5.00	-49.60	-28.92	0.00	-2,804.42	0.00	2,804.42	4,609.64	2,304.82	11,913.0	5,965.37	0.06	-0.10	0.481
10.00	-47.75	-28.48	0.00	-2,659.81	0.00	2,659.81	4,564.26	2,282.13	11,563.7	5,790.45	0.22	-0.21	0.470
15.00	-45.94	-28.05	0.00	-2,517.39	0.00	2,517.39	4,517.10	2,258.55	11,214.5	5,615.62	0.50	-0.31	0.459
20.00	-44.16	-27.62	0.00	-2,377.14	0.00	2,377.14	4,468.14	2,234.07	10,865.8	5,441.02	0.88	-0.42	0.447
25.00	-42.40	-27.20	0.00	-2,239.04	0.00	2,239.04	4,417.41	2,208.70	10,517.9	5,266.79	1.38	-0.52	0.435
30.00	-40.68	-26.77	0.00	-2,103.07	0.00	2,103.07	4,364.88	2,182.44	10,170.9	5,093.05	1.99	-0.63	0.422
35.00	-39.00	-26.33	0.00	-1,969.22	0.00	1,969.22	4,310.58	2,155.29	9,825.30	4,919.95	2.70	-0.74	0.409
40.00	-37.34	-25.88	0.00	-1,837.57	0.00	1,837.57	4,254.48	2,127.24	9,481.15	4,747.62	3.53	-0.84	0.396
45.00	-35.73	-25.61	0.00	-1,708.17	0.00	1,708.17	4,196.60	2,098.30	9,138.82	4,576.20	4.47	-0.95	0.382
45.66	-35.50	-25.38	0.00	-1,691.18	0.00	1,691.18	4,188.79	2,094.39	9,093.56	4,553.54	4.61	-0.96	0.380
50.00	-33.01	-25.01	0.00	-1,581.11	0.00	1,581.11	4,136.94	2,068.47	8,798.58	4,405.83	5.52	-1.05	0.367
52.83	-31.41	-24.75	0.00	-1,510.33	0.00	1,510.33	4,139.66	2,069.83	8,813.83	4,413.46	6.17	-1.11	0.350
55.00	-30.72	-24.41	0.00	-1,456.61	0.00	1,456.61	4,113.24	2,056.62	8,666.83	4,339.86	6.68	-1.16	0.343
60.00	-29.18	-23.91	0.00	-1,334.56	0.00	1,334.56	4,051.10	2,025.55	8,329.95	4,171.16	7.95	-1.26	0.327
65.00	-27.67	-23.41	0.00	-1,215.01	0.00	1,215.01	3,987.17	1,993.58	7,995.80	4,003.84	9.32	-1.35	0.311
70.00	-26.19	-22.90	0.00	-1,097.97	0.00	1,097.97	3,921.45	1,960.72	7,664.66	3,838.03	10.79	-1.45	0.293
75.00	-24.74	-22.39	0.00	-983.48	0.00	983.48	3,853.95	1,926.97	7,336.80	3,673.85	12.35	-1.54	0.274
80.00	-23.20	-20.96	0.00	-871.19	0.00	871.19	3,784.66	1,892.33	7,012.50	3,511.46	14.01	-1.63	0.254
85.00	-21.83	-20.58	0.00	-766.39	0.00	766.39	3,713.59	1,856.79	6,692.03	3,350.99	15.77	-1.71	0.235
87.00	-21.26	-20.21	0.00	-725.23	0.00	725.23	3,684.66	1,842.33	6,564.97	3,287.37	16.49	-1.74	0.227
90.00	-20.46	-19.91	0.00	-664.61	0.00	664.61	3,640.73	1,820.36	6,375.66	3,192.57	17.60	-1.79	0.214
92.58	-19.79	-19.65	0.00	-613.24	0.00	613.24	3,602.44	1,801.22	6,214.10	3,111.67	18.58	-1.83	0.203
95.00	-18.22	-18.77	0.00	-565.70	0.00	565.70	3,566.09	1,783.04	6,063.66	3,036.33	19.52	-1.87	0.192
98.41	-16.77	-18.47	0.00	-501.64	0.00	501.64	2,795.76	1,397.88	4,743.51	2,375.28	20.88	-1.92	0.217
100.00	-16.41	-18.16	0.00	-472.33	0.00	472.33	2,778.82	1,389.41	4,669.93	2,338.44	21.52	-1.94	0.208
104.00	-15.51	-17.76	0.00	-399.68	0.00	399.68	2,735.29	1,367.65	4,485.55	2,246.11	23.17	-2.00	0.184
105.00	-15.29	-17.46	0.00	-381.91	0.00	381.91	2,724.23	1,362.12	4,439.71	2,223.16	23.59	-2.01	0.178
110.00	-14.23	-16.93	0.00	-294.61	0.00	294.61	2,667.87	1,333.93	4,212.22	2,109.24	25.73	-2.07	0.145
115.00	-13.20	-16.55	0.00	-209.96	0.00	209.96	2,609.71	1,304.86	3,987.74	1,996.83	27.93	-2.12	0.110
117.00	-10.44	-15.02	0.00	-176.87	0.00	176.87	2,585.95	1,292.98	3,898.85	1,952.32	28.83	-2.14	0.095
119.00	-8.69	-12.40	0.00	-146.83	0.00	146.83	2,561.90	1,280.95	3,810.50	1,908.08	29.73	-2.16	0.080
120.00	-8.53	-12.10	0.00	-134.43	0.00	134.43	2,549.77	1,274.89	3,766.53	1,886.06	30.18	-2.16	0.075
125.00	-7.72	-11.68	0.00	-73.91	0.00	73.91	2,488.05	1,244.02	3,548.87	1,777.07	32.46	-2.19	0.045
128.00	-4.11	-6.06	0.00	-38.88	0.00	38.88	2,450.16	1,225.08	3,420.09	1,712.59	33.84	-2.20	0.024
128.50	-4.04	-5.96	0.00	-35.85	0.00	35.85	2,443.78	1,221.89	3,398.76	1,701.91	34.07	-2.20	0.023
128.50	-4.04	-5.96	0.00	-35.85	0.00	35.85	1,195.95	597.98	1,675.60	839.05	34.07	-2.20	0.046
130.00	-3.89	-5.83	0.00	-26.91	0.00	26.91	1,190.35	595.17	1,649.59	826.02	34.76	-2.20	0.036
131.00	-2.71	-2.97	0.00	-21.08	0.00	21.08	1,186.52	593.26	1,632.22	817.33	35.22	-2.20	0.028
135.00	-2.36	-2.70	0.00	-9.20	0.00	9.20	1,170.50	585.25	1,562.58	782.45	37.07	-2.21	0.014
137.00	-1.90	-1.33	0.00	-1.34	0.00	1.34	1,162.06	581.03	1,527.68	764.98	38.00	-2.21	0.003
138.00	-0.04	-0.02	0.00	-0.01	0.00	0.01	1,157.73	578.87	1,510.22	756.23	38.46	-2.21	0.000
138.50	0.00	-0.02	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	38.69	-2.21	0.000

Load Case: 0.9D + 1.6W	101 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		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		268.0	0.0					0.0	0.0	268.0	0.0	0.0	0.0
5.00		530.8	1,155.3					0.0	213.1	530.8	1,368.4	0.0	0.0
10.00		520.5	1,132.9					0.0	213.1	520.5	1,346.1	0.0	0.0
15.00		510.2	1,110.6					0.0	213.1	510.2	1,323.7	0.0	0.0
20.00		499.9	1,088.2					0.0	213.1	499.9	1,301.3	0.0	0.0
25.00		489.6	1,065.8					0.0	213.1	489.6	1,278.9	0.0	0.0
30.00		484.9	1,043.4					0.0	213.1	484.9	1,256.6	0.0	0.0
35.00		490.1	1,021.1					0.0	213.1	490.1	1,234.2	0.0	0.0
40.00		498.0	998.7					0.0	213.1	498.0	1,211.8	0.0	0.0
45.00		284.1	976.3					0.0	213.1	284.1	1,189.4	0.0	0.0
45.66	Bot - Section 2	256.0	127.8					0.0	28.3	256.0	156.1	0.0	0.0
50.00		368.3	1,664.1					0.0	184.8	368.3	1,848.9	0.0	0.0
52.83	Top - Section 1	257.8	1,067.8					0.0	120.6	257.8	1,188.4	0.0	0.0
55.00		370.4	407.5					0.0	92.5	370.4	500.0	0.0	0.0
60.00		516.7	922.9					0.0	213.1	516.7	1,136.0	0.0	0.0
65.00		515.8	900.5					0.0	213.1	515.8	1,113.6	0.0	0.0
70.00		513.7	878.1					0.0	213.1	513.7	1,091.2	0.0	0.0
75.00		510.5	855.7					0.0	213.1	510.5	1,068.9	0.0	0.0
80.00	Appurtenance(s)	506.3	833.4	901.9	0.0	359.6	115.2	0.0	213.1	1,408.2	1,161.7	0.0	0.0
85.00		352.1	811.0					0.0	208.8	352.1	1,019.8	0.0	0.0
87.00	Appurtenance(s)	249.3	318.1	118.0	0.0	-118.0	21.9	0.0	83.5	367.3	423.5	0.0	0.0
90.00		276.6	470.5					0.0	124.4	276.6	594.9	0.0	0.0
92.58	Bot - Section 3	247.9	398.2					0.0	107.0	247.9	505.1	0.0	0.0
95.00	Appurtenance(s)	289.0	679.9	538.5	0.0	0.0	405.0	0.0	100.3	827.5	1,185.2	0.0	0.0
98.41	Top - Section 2	246.3	942.6					0.0	141.5	246.3	1,084.1	0.0	0.0
100.00	Appurtenance(s)	272.1	198.0	20.1	0.0	0.0	8.0	0.0	65.8	292.2	271.8	0.0	0.0
104.00	Appurtenance(s)	242.5	490.9	123.9	0.0	-247.8	21.9	0.0	164.1	366.4	676.8	0.0	0.0
105.00		286.6	120.8					0.0	40.9	286.6	161.7	0.0	0.0
110.00		472.4	593.1					0.0	204.4	472.4	797.5	0.0	0.0
115.00		326.3	574.4					0.0	204.4	326.3	778.8	0.0	0.0
117.00	Appurtenance(s)	183.8	224.5	1,227.5	0.0	0.0	1,800.0	0.0	81.8	1,411.3	2,106.3	0.0	0.0
119.00	Appurtenance(s)	137.0	221.6	2,399.5	0.0	-1,121.9	1,076.0	0.0	81.8	2,536.5	1,379.4	0.0	0.0
120.00		269.8	109.7					0.0	16.0	269.8	125.7	0.0	0.0
125.00		356.4	537.1					0.0	80.1	356.4	617.2	0.0	0.0
128.00	Appurtenance(s)	153.9	313.3	5,307.1	0.0	0.0	2,505.2	0.0	48.1	5,461.0	2,866.5	0.0	0.0
128.50	Top - Section 3	87.0	51.6					0.0	8.0	87.0	59.6	0.0	0.0
130.00		108.3	92.5					0.0	24.0	108.3	116.5	0.0	0.0
131.00	Appurtenance(s)	213.6	61.1	2,594.0	0.0	0.0	883.3	0.0	16.0	2,807.6	960.5	0.0	0.0
135.00		254.3	239.9					0.0	35.4	254.3	275.4	0.0	0.0
137.00	Appurtenance(s)	125.4	117.3	1,232.0	0.0	2,463.9	250.3	0.0	17.7	1,357.4	385.3	0.0	0.0
138.00	Appurtenance(s)	62.3	58.0	1,168.5	0.0	0.0	1,372.5	0.0	0.0	1,230.8	1,430.5	0.0	0.0
138.50		20.7	28.8					0.0	0.0	20.7	28.8	0.0	0.0
Totals:										29,256.3	38,626.0	0.00	0.00

Load Case: 0.9D + 1.6W

101 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	-38.60	-29.02	0.00	-2,897.27	0.00	2,897.27	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.480
5.00	-37.18	-28.56	0.00	-2,752.15	0.00	2,752.15	4,609.64	2,304.82	11,913.0	5,965.37	0.06	-0.10	0.470
10.00	-35.79	-28.10	0.00	-2,609.37	0.00	2,609.37	4,564.26	2,282.13	11,563.7	5,790.45	0.22	-0.20	0.459
15.00	-34.41	-27.64	0.00	-2,468.88	0.00	2,468.88	4,517.10	2,258.55	11,214.5	5,615.62	0.49	-0.31	0.447
20.00	-33.07	-27.20	0.00	-2,330.67	0.00	2,330.67	4,468.14	2,234.07	10,865.8	5,441.02	0.87	-0.41	0.436
25.00	-31.74	-26.75	0.00	-2,194.69	0.00	2,194.69	4,417.41	2,208.70	10,517.9	5,266.79	1.35	-0.51	0.424
30.00	-30.44	-26.31	0.00	-2,060.93	0.00	2,060.93	4,364.88	2,182.44	10,170.9	5,093.05	1.95	-0.62	0.412
35.00	-29.17	-25.86	0.00	-1,929.38	0.00	1,929.38	4,310.58	2,155.29	9,825.30	4,919.95	2.65	-0.72	0.399
40.00	-27.92	-25.40	0.00	-1,800.09	0.00	1,800.09	4,254.48	2,127.24	9,481.15	4,747.62	3.47	-0.83	0.386
45.00	-26.71	-25.12	0.00	-1,673.11	0.00	1,673.11	4,196.60	2,098.30	9,138.82	4,576.20	4.39	-0.93	0.372
45.66	-26.53	-24.89	0.00	-1,656.45	0.00	1,656.45	4,188.79	2,094.39	9,093.56	4,553.54	4.52	-0.94	0.370
50.00	-24.66	-24.52	0.00	-1,548.53	0.00	1,548.53	4,136.94	2,068.47	8,798.58	4,405.83	5.42	-1.03	0.358
52.83	-23.45	-24.26	0.00	-1,479.15	0.00	1,479.15	4,139.66	2,069.83	8,813.83	4,413.46	6.05	-1.09	0.341
55.00	-22.93	-23.91	0.00	-1,426.51	0.00	1,426.51	4,113.24	2,056.62	8,666.83	4,339.86	6.55	-1.14	0.334
60.00	-21.77	-23.40	0.00	-1,306.97	0.00	1,306.97	4,051.10	2,025.55	8,329.95	4,171.16	7.80	-1.23	0.319
65.00	-20.63	-22.90	0.00	-1,189.96	0.00	1,189.96	3,987.17	1,993.58	7,995.80	4,003.84	9.14	-1.33	0.303
70.00	-19.52	-22.39	0.00	-1,075.48	0.00	1,075.48	3,921.45	1,960.72	7,664.66	3,838.03	10.58	-1.42	0.285
75.00	-18.43	-21.88	0.00	-963.54	0.00	963.54	3,853.95	1,926.97	7,336.80	3,673.85	12.11	-1.51	0.267
80.00	-17.27	-20.46	0.00	-853.79	0.00	853.79	3,784.66	1,892.33	7,012.50	3,511.46	13.74	-1.59	0.248
85.00	-16.24	-20.10	0.00	-751.47	0.00	751.47	3,713.59	1,856.79	6,692.03	3,350.99	15.45	-1.68	0.229
87.00	-15.82	-19.73	0.00	-711.28	0.00	711.28	3,684.66	1,842.33	6,564.97	3,287.37	16.17	-1.71	0.221
90.00	-15.22	-19.45	0.00	-652.08	0.00	652.08	3,640.73	1,820.36	6,375.66	3,192.57	17.26	-1.76	0.209
92.58	-14.71	-19.19	0.00	-601.91	0.00	601.91	3,602.44	1,801.22	6,214.10	3,111.67	18.22	-1.80	0.198
95.00	-13.53	-18.34	0.00	-555.46	0.00	555.46	3,566.09	1,783.04	6,063.66	3,036.33	19.14	-1.83	0.187
98.41	-12.45	-18.07	0.00	-492.86	0.00	492.86	2,795.76	1,397.88	4,743.51	2,375.28	20.47	-1.88	0.212
100.00	-12.17	-17.77	0.00	-464.20	0.00	464.20	2,778.82	1,389.41	4,669.93	2,338.44	21.09	-1.90	0.203
104.00	-11.50	-17.39	0.00	-393.10	0.00	393.10	2,735.29	1,367.65	4,485.55	2,246.11	22.71	-1.96	0.179
105.00	-11.34	-17.11	0.00	-375.71	0.00	375.71	2,724.23	1,362.12	4,439.71	2,223.16	23.12	-1.97	0.173
110.00	-10.54	-16.62	0.00	-290.18	0.00	290.18	2,667.87	1,333.93	4,212.22	2,109.24	25.22	-2.03	0.142
115.00	-9.76	-16.27	0.00	-207.10	0.00	207.10	2,609.71	1,304.86	3,987.74	1,996.83	27.38	-2.08	0.108
117.00	-7.71	-14.78	0.00	-174.56	0.00	174.56	2,585.95	1,292.98	3,898.85	1,952.32	28.26	-2.10	0.093
119.00	-6.42	-12.20	0.00	-144.99	0.00	144.99	2,561.90	1,280.95	3,810.50	1,908.08	29.14	-2.11	0.079
120.00	-6.30	-11.93	0.00	-132.79	0.00	132.79	2,549.77	1,274.89	3,766.53	1,886.06	29.59	-2.12	0.073
125.00	-5.69	-11.55	0.00	-73.16	0.00	73.16	2,488.05	1,244.02	3,548.87	1,777.07	31.82	-2.15	0.044
128.00	-3.03	-5.98	0.00	-38.52	0.00	38.52	2,450.16	1,225.08	3,420.09	1,712.59	33.17	-2.15	0.024
128.50	-2.98	-5.90	0.00	-35.52	0.00	35.52	2,443.78	1,221.89	3,398.76	1,701.91	33.40	-2.16	0.022
128.50	-2.98	-5.90	0.00	-35.52	0.00	35.52	1,195.95	597.98	1,675.60	839.05	33.40	-2.16	0.045
130.00	-2.86	-5.78	0.00	-26.68	0.00	26.68	1,190.35	595.17	1,649.59	826.02	34.08	-2.16	0.035
131.00	-2.01	-2.94	0.00	-20.90	0.00	20.90	1,186.52	593.26	1,632.22	817.33	34.53	-2.16	0.027
135.00	-1.74	-2.68	0.00	-9.13	0.00	9.13	1,170.50	585.25	1,562.58	782.45	36.34	-2.17	0.013
137.00	-1.41	-1.31	0.00	-1.32	0.00	1.32	1,162.06	581.03	1,527.68	764.98	37.25	-2.17	0.003
138.00	-0.03	-0.02	0.00	-0.01	0.00	0.01	1,157.73	578.87	1,510.22	756.23	37.71	-2.17	0.000
138.50	0.00	-0.02	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	37.93	-2.17	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 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

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		78.5	0.0					0.0	0.0	78.5	0.0	0.0	0.0
5.00		155.8	2,007.3					214.6	416.1	370.5	2,423.5	0.0	0.0
10.00		153.4	2,022.8					212.5	428.3	365.9	2,451.1	0.0	0.0
15.00		150.8	2,009.9					209.7	434.5	360.4	2,444.5	0.0	0.0
20.00		148.0	1,987.8					206.6	438.9	354.6	2,426.7	0.0	0.0
25.00		145.3	1,960.8					203.4	442.2	348.6	2,403.1	0.0	0.0
30.00		144.2	1,930.9					200.0	445.0	344.2	2,375.9	0.0	0.0
35.00		146.0	1,898.9					201.4	447.3	347.4	2,346.2	0.0	0.0
40.00		148.6	1,865.3					206.2	449.4	354.8	2,314.6	0.0	0.0
45.00		84.9	1,830.5					209.9	451.2	294.8	2,281.7	0.0	0.0
45.66	Bot - Section 2	76.5	240.9					28.1	60.0	104.6	300.8	0.0	0.0
50.00		110.2	2,678.9					184.7	392.8	294.9	3,071.8	0.0	0.0
52.83	Top - Section 1	77.2	1,722.4					121.4	257.0	198.6	1,979.3	0.0	0.0
55.00		111.1	771.2					94.6	197.3	205.7	968.5	0.0	0.0
60.00		155.2	1,746.8					219.0	455.7	374.2	2,202.5	0.0	0.0
65.00		155.2	1,709.1					220.0	457.0	375.2	2,166.1	0.0	0.0
70.00		154.9	1,671.0					220.5	458.2	375.4	2,129.1	0.0	0.0
75.00		154.3	1,632.3					220.5	459.3	374.7	2,091.6	0.0	0.0
80.00	Appurtenance(s)	153.3	1,593.3	196.0	0.0	130.0	737.5	220.1	460.3	569.4	2,791.2	0.0	0.0
85.00		106.8	1,554.0					219.4	455.5	326.1	2,009.5	0.0	0.0
87.00	Appurtenance(s)	75.7	612.0	38.5	0.0	-38.5	122.7	87.5	182.5	201.7	917.2	0.0	0.0
90.00		84.2	905.3					130.8	272.8	215.0	1,178.1	0.0	0.0
92.58	Bot - Section 3	75.5	767.4					112.1	234.8	187.6	1,002.2	0.0	0.0
95.00	Appurtenance(s)	88.1	1,129.1	113.2	0.0	0.0	1,199.8	104.8	220.5	306.1	2,549.4	0.0	0.0
98.41	Top - Section 2	75.1	1,565.7					147.1	311.3	222.2	1,877.1	0.0	0.0
100.00	Appurtenance(s)	83.2	406.7	6.1	0.0	0.0	36.4	68.9	144.9	158.2	587.9	0.0	0.0
104.00	Appurtenance(s)	74.2	1,007.0	40.7	0.0	-81.5	123.9	172.9	363.2	287.8	1,494.1	0.0	0.0
105.00		87.9	249.0					43.0	90.7	130.9	339.7	0.0	0.0
110.00		145.1	1,218.2					213.7	454.0	358.8	1,672.2	0.0	0.0
115.00		100.4	1,182.3					211.3	454.8	311.7	1,637.1	0.0	0.0
117.00	Appurtenance(s)	56.7	464.4	353.0	0.0	0.0	5,665.5	83.8	182.1	493.5	6,312.0	0.0	0.0
119.00	Appurtenance(s)	42.3	458.6	469.6	0.0	-227.7	5,096.9	83.4	182.2	595.3	5,737.8	0.0	0.0
120.00		83.5	227.4					41.5	58.0	125.0	285.4	0.0	0.0
125.00		110.4	1,110.0					205.9	290.4	316.3	1,400.4	0.0	0.0
128.00	Appurtenance(s)	47.8	650.1	1,377.1	0.0	0.0	7,642.8	122.1	174.6	1,547.0	8,467.5	0.0	0.0
128.50	Top - Section 3	27.0	107.4					20.2	29.1	47.3	136.5	0.0	0.0
130.00		33.7	238.2					60.5	87.4	94.2	325.6	0.0	0.0
131.00	Appurtenance(s)	66.6	157.6	504.3	0.0	0.0	4,610.1	40.2	58.3	611.1	4,825.9	0.0	0.0
135.00		79.4	616.5					140.0	121.2	219.3	737.7	0.0	0.0
137.00	Appurtenance(s)	39.2	302.9	247.5	0.0	495.1	1,593.4	69.1	60.7	355.8	1,957.0	0.0	0.0
138.00	Appurtenance(s)	19.5	150.1	343.1	0.0	0.0	4,074.0	0.0	0.0	362.6	4,224.1	0.0	0.0
138.50		6.5	74.7					0.0	0.0	6.5	74.7	0.0	0.0
Totals:										13,572.4	88,917.2	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 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	-88.91	-13.53	0.00	-1,194.65	0.00	1,194.65	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.214
5.00	-86.48	-13.22	0.00	-1,127.02	0.00	1,127.02	4,609.64	2,304.82	11,913.0	5,965.37	0.02	-0.04	0.208
10.00	-84.02	-12.91	0.00	-1,060.92	0.00	1,060.92	4,564.26	2,282.13	11,563.7	5,790.45	0.09	-0.08	0.202
15.00	-81.57	-12.61	0.00	-996.37	0.00	996.37	4,517.10	2,258.55	11,214.5	5,615.62	0.20	-0.13	0.196
20.00	-79.13	-12.30	0.00	-933.34	0.00	933.34	4,468.14	2,234.07	10,865.8	5,441.02	0.35	-0.17	0.189
25.00	-76.72	-12.00	0.00	-871.83	0.00	871.83	4,417.41	2,208.70	10,517.9	5,266.79	0.55	-0.21	0.183
30.00	-74.34	-11.70	0.00	-811.82	0.00	811.82	4,364.88	2,182.44	10,170.9	5,093.05	0.79	-0.25	0.176
35.00	-71.99	-11.39	0.00	-753.32	0.00	753.32	4,310.58	2,155.29	9,825.30	4,919.95	1.08	-0.29	0.170
40.00	-69.67	-11.07	0.00	-696.36	0.00	696.36	4,254.48	2,127.24	9,481.15	4,747.62	1.40	-0.33	0.163
45.00	-67.38	-10.79	0.00	-640.99	0.00	640.99	4,196.60	2,098.30	9,138.82	4,576.20	1.77	-0.37	0.156
45.66	-67.08	-10.71	0.00	-633.83	0.00	633.83	4,188.79	2,094.39	9,093.56	4,553.54	1.82	-0.38	0.155
50.00	-64.00	-10.42	0.00	-587.39	0.00	587.39	4,136.94	2,068.47	8,798.58	4,405.83	2.18	-0.41	0.149
52.83	-62.02	-10.23	0.00	-557.89	0.00	557.89	4,139.66	2,069.83	8,813.83	4,413.46	2.43	-0.43	0.141
55.00	-61.05	-10.05	0.00	-535.69	0.00	535.69	4,113.24	2,056.62	8,666.83	4,339.86	2.63	-0.45	0.138
60.00	-58.84	-9.69	0.00	-485.45	0.00	485.45	4,051.10	2,025.55	8,329.95	4,171.16	3.12	-0.48	0.131
65.00	-56.68	-9.33	0.00	-437.00	0.00	437.00	3,987.17	1,993.58	7,995.80	4,003.84	3.65	-0.52	0.123
70.00	-54.55	-8.97	0.00	-390.34	0.00	390.34	3,921.45	1,960.72	7,664.66	3,838.03	4.21	-0.55	0.116
75.00	-52.45	-8.60	0.00	-345.51	0.00	345.51	3,853.95	1,926.97	7,336.80	3,673.85	4.81	-0.59	0.108
80.00	-49.66	-8.03	0.00	-302.38	0.00	302.38	3,784.66	1,892.33	7,012.50	3,511.46	5.44	-0.62	0.099
85.00	-47.66	-7.70	0.00	-262.24	0.00	262.24	3,713.59	1,856.79	6,692.03	3,350.99	6.10	-0.65	0.091
87.00	-46.74	-7.50	0.00	-246.85	0.00	246.85	3,684.66	1,842.33	6,564.97	3,287.37	6.37	-0.66	0.088
90.00	-45.56	-7.28	0.00	-224.36	0.00	224.36	3,640.73	1,820.36	6,375.66	3,192.57	6.79	-0.67	0.083
92.58	-44.56	-7.09	0.00	-205.59	0.00	205.59	3,602.44	1,801.22	6,214.10	3,111.67	7.16	-0.69	0.078
95.00	-42.01	-6.76	0.00	-188.43	0.00	188.43	3,566.09	1,783.04	6,063.66	3,036.33	7.51	-0.70	0.074
98.41	-40.14	-6.53	0.00	-165.35	0.00	165.35	2,795.76	1,397.88	4,743.51	2,375.28	8.01	-0.71	0.084
100.00	-39.55	-6.37	0.00	-155.00	0.00	155.00	2,778.82	1,389.41	4,669.93	2,338.44	8.25	-0.72	0.081
104.00	-38.06	-6.07	0.00	-129.52	0.00	129.52	2,735.29	1,367.65	4,485.55	2,246.11	8.87	-0.74	0.072
105.00	-37.72	-5.94	0.00	-123.45	0.00	123.45	2,724.23	1,362.12	4,439.71	2,223.16	9.02	-0.75	0.069
110.00	-36.05	-5.57	0.00	-93.74	0.00	93.74	2,667.87	1,333.93	4,212.22	2,109.24	9.81	-0.77	0.058
115.00	-34.42	-5.25	0.00	-65.87	0.00	65.87	2,609.71	1,304.86	3,987.74	1,996.83	10.63	-0.78	0.046
117.00	-28.11	-4.67	0.00	-55.38	0.00	55.38	2,585.95	1,292.98	3,898.85	1,952.32	10.95	-0.79	0.039
119.00	-22.38	-3.99	0.00	-46.05	0.00	46.05	2,561.90	1,280.95	3,810.50	1,908.08	11.28	-0.79	0.033
120.00	-22.10	-3.87	0.00	-42.05	0.00	42.05	2,549.77	1,274.89	3,766.53	1,886.06	11.45	-0.79	0.031
125.00	-20.70	-3.53	0.00	-22.71	0.00	22.71	2,488.05	1,244.02	3,548.87	1,777.07	12.29	-0.80	0.021
128.00	-12.26	-1.87	0.00	-12.11	0.00	12.11	2,450.16	1,225.08	3,420.09	1,712.59	12.79	-0.80	0.012
128.50	-12.12	-1.82	0.00	-11.18	0.00	11.18	2,443.78	1,221.89	3,398.76	1,701.91	12.88	-0.80	0.012
128.50	-12.12	-1.82	0.00	-11.18	0.00	11.18	1,195.95	597.98	1,675.60	839.05	12.88	-0.80	0.023
130.00	-11.80	-1.72	0.00	-8.45	0.00	8.45	1,190.35	595.17	1,649.59	826.02	13.13	-0.81	0.020
131.00	-6.98	-1.04	0.00	-6.72	0.00	6.72	1,186.52	593.26	1,632.22	817.33	13.30	-0.81	0.014
135.00	-6.24	-0.81	0.00	-2.55	0.00	2.55	1,170.50	585.25	1,562.58	782.45	13.97	-0.81	0.009
137.00	-4.29	-0.43	0.00	-0.43	0.00	0.43	1,162.06	581.03	1,527.68	764.98	14.31	-0.81	0.004
138.00	-0.07	-0.01	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	14.48	-0.81	0.000
138.50	0.00	-0.01	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	14.57	-0.81	0.000

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

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		52.9	0.0					0.0	0.0	52.9	0.0	0.0	0.0
5.00		104.8	1,283.7					0.0	236.8	104.8	1,520.5	0.0	0.0
10.00		102.7	1,258.8					0.0	236.8	102.7	1,495.6	0.0	0.0
15.00		100.7	1,234.0					0.0	236.8	100.7	1,470.8	0.0	0.0
20.00		98.7	1,209.1					0.0	236.8	98.7	1,445.9	0.0	0.0
25.00		96.6	1,184.2					0.0	236.8	96.6	1,421.0	0.0	0.0
30.00		95.7	1,159.4					0.0	236.8	95.7	1,396.2	0.0	0.0
35.00		96.7	1,134.5					0.0	236.8	96.7	1,371.3	0.0	0.0
40.00		98.3	1,109.7					0.0	236.8	98.3	1,346.5	0.0	0.0
45.00		56.1	1,084.8					0.0	236.8	56.1	1,321.6	0.0	0.0
45.66	Bot - Section 2	50.5	142.1					0.0	31.4	50.5	173.5	0.0	0.0
50.00		72.7	1,849.0					0.0	205.4	72.7	2,054.3	0.0	0.0
52.83	Top - Section 1	50.9	1,186.4					0.0	134.0	50.9	1,320.4	0.0	0.0
55.00		73.1	452.8					0.0	102.8	73.1	555.5	0.0	0.0
60.00		102.0	1,025.4					0.0	236.8	102.0	1,262.2	0.0	0.0
65.00		101.8	1,000.6					0.0	236.8	101.8	1,237.4	0.0	0.0
70.00		101.4	975.7					0.0	236.8	101.4	1,212.5	0.0	0.0
75.00		100.7	950.8					0.0	236.8	100.7	1,187.6	0.0	0.0
80.00	Appurtenance(s)	99.9	926.0	178.0	0.0	71.0	128.0	0.0	236.8	277.9	1,290.8	0.0	0.0
85.00		69.5	901.1					0.0	232.0	69.5	1,133.1	0.0	0.0
87.00	Appurtenance(s)	49.2	353.5	23.3	0.0	-23.3	24.3	0.0	92.8	72.5	470.6	0.0	0.0
90.00		54.6	522.8					0.0	138.2	54.6	660.9	0.0	0.0
92.58	Bot - Section 3	48.9	442.4					0.0	118.8	48.9	561.3	0.0	0.0
95.00	Appurtenance(s)	57.0	755.4	106.3	0.0	0.0	450.0	0.0	111.5	163.3	1,316.9	0.0	0.0
98.41	Top - Section 2	48.6	1,047.3					0.0	157.2	48.6	1,204.5	0.0	0.0
100.00	Appurtenance(s)	53.7	220.0	4.0	0.0	0.0	8.9	0.0	73.1	57.7	302.0	0.0	0.0
104.00	Appurtenance(s)	47.9	545.4	24.4	0.0	-48.9	24.3	0.0	182.3	72.3	752.0	0.0	0.0
105.00		56.6	134.3					0.0	45.4	56.6	179.7	0.0	0.0
110.00		93.2	658.9					0.0	227.2	93.2	886.1	0.0	0.0
115.00		64.4	638.2					0.0	227.2	64.4	865.4	0.0	0.0
117.00	Appurtenance(s)	36.3	249.5	242.2	0.0	0.0	2,000.0	0.0	90.9	278.5	2,340.4	0.0	0.0
119.00	Appurtenance(s)	27.0	246.2	473.5	0.0	-221.4	1,195.6	0.0	90.9	500.6	1,532.6	0.0	0.0
120.00		53.2	121.8					0.0	17.8	53.2	139.6	0.0	0.0
125.00		70.3	596.8					0.0	89.0	70.3	685.8	0.0	0.0
128.00	Appurtenance(s)	30.4	348.1	1,047.4	0.0	0.0	2,783.5	0.0	53.4	1,077.7	3,185.0	0.0	0.0
128.50	Top - Section 3	17.2	57.3					0.0	8.9	17.2	66.2	0.0	0.0
130.00		21.4	102.8					0.0	26.7	21.4	129.5	0.0	0.0
131.00	Appurtenance(s)	42.2	67.9	511.9	0.0	0.0	981.5	0.0	17.8	554.1	1,067.2	0.0	0.0
135.00		50.2	266.6					0.0	39.4	50.2	306.0	0.0	0.0
137.00	Appurtenance(s)	24.8	130.3	243.1	0.0	486.2	278.1	0.0	19.7	267.9	428.1	0.0	0.0
138.00	Appurtenance(s)	12.3	64.4	230.6	0.0	0.0	1,525.0	0.0	0.0	242.9	1,589.4	0.0	0.0
138.50		4.1	32.0					0.0	0.0	4.1	32.0	0.0	0.0
Totals:										5,773.71	42,917.8	0.00	0.00

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	-42.92	-5.73	0.00	-572.96	0.00	572.96	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.103
5.00	-41.39	-5.64	0.00	-544.32	0.00	544.32	4,609.64	2,304.82	11,913.0	5,965.37	0.01	-0.02	0.100
10.00	-39.90	-5.55	0.00	-516.14	0.00	516.14	4,564.26	2,282.13	11,563.7	5,790.45	0.04	-0.04	0.098
15.00	-38.42	-5.46	0.00	-488.40	0.00	488.40	4,517.10	2,258.55	11,214.5	5,615.62	0.10	-0.06	0.095
20.00	-36.98	-5.37	0.00	-461.10	0.00	461.10	4,468.14	2,234.07	10,865.8	5,441.02	0.17	-0.08	0.093
25.00	-35.55	-5.29	0.00	-434.23	0.00	434.23	4,417.41	2,208.70	10,517.9	5,266.79	0.27	-0.10	0.091
30.00	-34.16	-5.20	0.00	-407.80	0.00	407.80	4,364.88	2,182.44	10,170.9	5,093.05	0.39	-0.12	0.088
35.00	-32.78	-5.11	0.00	-381.80	0.00	381.80	4,310.58	2,155.29	9,825.30	4,919.95	0.52	-0.14	0.085
40.00	-31.43	-5.02	0.00	-356.24	0.00	356.24	4,254.48	2,127.24	9,481.15	4,747.62	0.69	-0.16	0.082
45.00	-30.11	-4.97	0.00	-331.13	0.00	331.13	4,196.60	2,098.30	9,138.82	4,576.20	0.87	-0.18	0.080
45.66	-29.94	-4.92	0.00	-327.84	0.00	327.84	4,188.79	2,094.39	9,093.56	4,553.54	0.89	-0.19	0.079
50.00	-27.88	-4.85	0.00	-306.49	0.00	306.49	4,136.94	2,068.47	8,798.58	4,405.83	1.07	-0.20	0.076
52.83	-26.56	-4.80	0.00	-292.77	0.00	292.77	4,139.66	2,069.83	8,813.83	4,413.46	1.20	-0.22	0.073
55.00	-26.01	-4.73	0.00	-282.36	0.00	282.36	4,113.24	2,056.62	8,666.83	4,339.86	1.30	-0.22	0.071
60.00	-24.74	-4.63	0.00	-258.71	0.00	258.71	4,051.10	2,025.55	8,329.95	4,171.16	1.54	-0.24	0.068
65.00	-23.50	-4.53	0.00	-235.56	0.00	235.56	3,987.17	1,993.58	7,995.80	4,003.84	1.81	-0.26	0.065
70.00	-22.29	-4.43	0.00	-212.90	0.00	212.90	3,921.45	1,960.72	7,664.66	3,838.03	2.09	-0.28	0.061
75.00	-21.10	-4.33	0.00	-190.75	0.00	190.75	3,853.95	1,926.97	7,336.80	3,673.85	2.40	-0.30	0.057
80.00	-19.81	-4.05	0.00	-169.03	0.00	169.03	3,784.66	1,892.33	7,012.50	3,511.46	2.72	-0.32	0.053
85.00	-18.68	-3.98	0.00	-148.77	0.00	148.77	3,713.59	1,856.79	6,692.03	3,350.99	3.06	-0.33	0.049
87.00	-18.21	-3.91	0.00	-140.81	0.00	140.81	3,684.66	1,842.33	6,564.97	3,287.37	3.20	-0.34	0.048
90.00	-17.55	-3.85	0.00	-129.10	0.00	129.10	3,640.73	1,820.36	6,375.66	3,192.57	3.41	-0.35	0.045
92.58	-16.98	-3.80	0.00	-119.16	0.00	119.16	3,602.44	1,801.22	6,214.10	3,111.67	3.60	-0.36	0.043
95.00	-15.67	-3.63	0.00	-109.96	0.00	109.96	3,566.09	1,783.04	6,063.66	3,036.33	3.79	-0.36	0.041
98.41	-14.46	-3.58	0.00	-97.57	0.00	97.57	2,795.76	1,397.88	4,743.51	2,375.28	4.05	-0.37	0.046
100.00	-14.16	-3.52	0.00	-91.90	0.00	91.90	2,778.82	1,389.41	4,669.93	2,338.44	4.17	-0.38	0.044
104.00	-13.41	-3.44	0.00	-77.82	0.00	77.82	2,735.29	1,367.65	4,485.55	2,246.11	4.49	-0.39	0.040
105.00	-13.23	-3.39	0.00	-74.38	0.00	74.38	2,724.23	1,362.12	4,439.71	2,223.16	4.58	-0.39	0.038
110.00	-12.34	-3.29	0.00	-57.44	0.00	57.44	2,667.87	1,333.93	4,212.22	2,109.24	4.99	-0.40	0.032
115.00	-11.48	-3.22	0.00	-40.99	0.00	40.99	2,609.71	1,304.86	3,987.74	1,996.83	5.42	-0.41	0.025
117.00	-9.14	-2.93	0.00	-34.55	0.00	34.55	2,585.95	1,292.98	3,898.85	1,952.32	5.59	-0.42	0.021
119.00	-7.61	-2.41	0.00	-28.70	0.00	28.70	2,561.90	1,280.95	3,810.50	1,908.08	5.77	-0.42	0.018
120.00	-7.47	-2.36	0.00	-26.28	0.00	26.28	2,549.77	1,274.89	3,766.53	1,886.06	5.86	-0.42	0.017
125.00	-6.79	-2.29	0.00	-14.48	0.00	14.48	2,488.05	1,244.02	3,548.87	1,777.07	6.30	-0.42	0.011
128.00	-3.61	-1.18	0.00	-7.62	0.00	7.62	2,450.16	1,225.08	3,420.09	1,712.59	6.57	-0.43	0.006
128.50	-3.54	-1.17	0.00	-7.03	0.00	7.03	2,443.78	1,221.89	3,398.76	1,701.91	6.61	-0.43	0.006
128.50	-3.54	-1.17	0.00	-7.03	0.00	7.03	1,195.95	597.98	1,675.60	839.05	6.61	-0.43	0.011
130.00	-3.41	-1.14	0.00	-5.28	0.00	5.28	1,190.35	595.17	1,649.59	826.02	6.74	-0.43	0.009
131.00	-2.35	-0.58	0.00	-4.14	0.00	4.14	1,186.52	593.26	1,632.22	817.33	6.83	-0.43	0.007
135.00	-2.05	-0.53	0.00	-1.81	0.00	1.81	1,170.50	585.25	1,562.58	782.45	7.19	-0.43	0.004
137.00	-1.62	-0.26	0.00	-0.26	0.00	0.26	1,162.06	581.03	1,527.68	764.98	7.37	-0.43	0.002
138.00	-0.03	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	7.46	-0.43	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	7.51	-0.43	0.000

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 Coefficient 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):	1.58
Redundancy Factor (ρ):	1.00
Seismic Force Distribution Exponent (k):	1.54
Total Unfactored Dead Load:	42.92 k
Seismic Base Shear (E):	1.79 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)
41	138.25	32	64	0.002	3	40
40	137.50	64	128	0.003	6	80
39	136.00	150	293	0.008	14	186
38	133.00	306	577	0.016	28	379
37	130.50	86	157	0.004	8	106
36	129.25	129	234	0.006	11	160
35	128.25	66	118	0.003	6	82
34	126.50	402	701	0.019	34	497
33	122.50	686	1,139	0.031	55	849
32	119.50	140	223	0.006	11	173
31	118.00	337	529	0.014	25	417
30	116.00	340	520	0.014	25	421
29	112.50	865	1,261	0.034	61	1,072
28	107.50	886	1,204	0.032	58	1,097
27	104.50	180	234	0.006	11	223
26	102.00	728	912	0.025	44	901
25	99.21	293	352	0.009	17	363
24	96.71	1,205	1,390	0.037	67	1,492
23	93.79	867	954	0.026	46	1,074
22	91.29	561	592	0.016	29	695
21	88.50	661	665	0.018	32	819
20	86.00	446	430	0.012	21	553
19	82.50	1,133	1,023	0.028	49	1,403

18	77.50	1,163	953	0.026	46	1,440
17	72.50	1,188	879	0.024	42	1,471
16	67.50	1,212	803	0.022	39	1,502
15	62.50	1,237	728	0.020	35	1,532
14	57.50	1,262	653	0.018	31	1,563
13	53.92	556	260	0.007	13	688
12	51.42	1,320	575	0.015	28	1,635
11	47.83	2,054	800	0.022	39	2,544
10	45.33	173	62	0.002	3	215
9	42.50	1,322	429	0.012	21	1,637
8	37.50	1,346	360	0.010	17	1,667
7	32.50	1,371	294	0.008	14	1,698
6	27.50	1,396	232	0.006	11	1,729
5	22.50	1,421	173	0.005	8	1,760
4	17.50	1,446	119	0.003	6	1,791
3	12.50	1,471	72	0.002	3	1,821
2	7.50	1,496	33	0.001	2	1,852
1	2.50	1,520	6	0.000	0	1,883
Generic 10' Omni	138.00	25	50	0.001	2	31
Round Low Profile PI	138.00	1,500	2,995	0.081	144	1,858
Ericsson KRY 112 20	137.00	73	143	0.004	7	90
RFS APXV18-209014-C	137.00	56	111	0.003	5	69
Andrew LNX-6515DS-A1	137.00	149	295	0.008	14	185
Samsung B2/B66A RRH-	131.00	253	467	0.013	22	314
Samsung B5/B13 RRH-B	131.00	211	389	0.010	19	261
RFS APL866513-44T0	131.00	31	58	0.002	3	39
Raycap RCMD-6627-PF	131.00	32	59	0.002	3	40
Decibel DB846H80E-SX	131.00	64	118	0.003	6	79
Quintel QS6656-3 (65	131.00	390	719	0.019	35	483
Flat Low Profile Pla	128.00	1,500	2,667	0.072	129	1,858
VZW Unused Reserve:	128.00	1,283	2,282	0.061	110	1,589
Generic 7" x 6" x 3"	119.00	30	48	0.001	2	37
Powerwave Allgon LGP	119.00	85	134	0.004	6	105
Raycap DC6-48-60-18-	119.00	40	64	0.002	3	50
Ericsson Radio 8843	119.00	216	343	0.009	17	267
Ericsson RRUS 4449 B	119.00	213	338	0.009	16	264
Powerwave Allgon 777	119.00	105	167	0.004	8	130
Commscope NNH4-65B-R	119.00	269	428	0.012	21	333
CCI DMP65R-BU6DA	119.00	238	378	0.010	18	295
Round Platform w/ Ha	117.00	2,000	3,095	0.083	149	2,477
RFI Antennas CC807-0	104.00	24	31	0.001	2	30
Bird DS428E83I01T	100.00	9	11	0.000	1	11
Flat Side Arm	95.00	450	505	0.014	24	557
RFI Antennas CC807-0	87.00	24	24	0.001	1	30
RFI Antennas OA20-41	80.00	28	24	0.001	1	35
Radio Waves HP3-11	80.00	100	86	0.002	4	124
		42,918	37,159	1.000	1,791	53,149

Load Case (0.9 - 0.2Sds) * DL + E ELMF

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)
41	138.25	32	64	0.002	3	28
40	137.50	64	128	0.003	6	55
39	136.00	150	293	0.008	14	129
38	133.00	306	577	0.016	28	264
37	130.50	86	157	0.004	8	74
36	129.25	129	234	0.006	11	112
35	128.25	66	118	0.003	6	57
34	126.50	402	701	0.019	34	346

33	122.50	686	1,139	0.031	55	591
32	119.50	140	223	0.006	11	120
31	118.00	337	529	0.014	25	290
30	116.00	340	520	0.014	25	293
29	112.50	865	1,261	0.034	61	746
28	107.50	886	1,204	0.032	58	763
27	104.50	180	234	0.006	11	155
26	102.00	728	912	0.025	44	627
25	99.21	293	352	0.009	17	253
24	96.71	1,205	1,390	0.037	67	1,038
23	93.79	867	954	0.026	46	747
22	91.29	561	592	0.016	29	484
21	88.50	661	665	0.018	32	569
20	86.00	446	430	0.012	21	385
19	82.50	1,133	1,023	0.028	49	976
18	77.50	1,163	953	0.026	46	1,002
17	72.50	1,188	879	0.024	42	1,023
16	67.50	1,212	803	0.022	39	1,045
15	62.50	1,237	728	0.020	35	1,066
14	57.50	1,262	653	0.018	31	1,088
13	53.92	556	260	0.007	13	479
12	51.42	1,320	575	0.015	28	1,138
11	47.83	2,054	800	0.022	39	1,770
10	45.33	173	62	0.002	3	149
9	42.50	1,322	429	0.012	21	1,139
8	37.50	1,346	360	0.010	17	1,160
7	32.50	1,371	294	0.008	14	1,182
6	27.50	1,396	232	0.006	11	1,203
5	22.50	1,421	173	0.005	8	1,224
4	17.50	1,446	119	0.003	6	1,246
3	12.50	1,471	72	0.002	3	1,267
2	7.50	1,496	33	0.001	2	1,289
1	2.50	1,520	6	0.000	0	1,310
Generic 10' Omni	138.00	25	50	0.001	2	22
Round Low Profile PI	138.00	1,500	2,995	0.081	144	1,292
Ericsson KRY 112 20	137.00	73	143	0.004	7	63
RFS APXV18-209014-C	137.00	56	111	0.003	5	48
Andrew LNX-6515DS-A1	137.00	149	295	0.008	14	129
Samsung B2/B66A RRH-	131.00	253	467	0.013	22	218
Samsung B5/B13 RRH-B	131.00	211	389	0.010	19	182
RFS APL866513-44T0	131.00	31	58	0.002	3	27
Raycap RCMDC-6627-PF	131.00	32	59	0.002	3	28
Decibel DB846H80E-SX	131.00	64	118	0.003	6	55
Quintel QS6656-3 (65	131.00	390	719	0.019	35	336
Flat Low Profile Pla	128.00	1,500	2,667	0.072	129	1,292
VZW Unused Reserve:	128.00	1,283	2,282	0.061	110	1,106
Generic 7" x 6" x 3"	119.00	30	48	0.001	2	26
Powerwave Allgon LGP	119.00	85	134	0.004	6	73
Raycap DC6-48-60-18-	119.00	40	64	0.002	3	34
Ericsson Radio 8843	119.00	216	343	0.009	17	186
Ericsson RRUS 4449 B	119.00	213	338	0.009	16	184
Powerwave Allgon 777	119.00	105	167	0.004	8	90
Commscope NNH4-65B-R	119.00	269	428	0.012	21	232
CCI DMP65R-BU6DA	119.00	238	378	0.010	18	205
Round Platform w/ Ha	117.00	2,000	3,095	0.083	149	1,723
RFI Antennas CC807-0	104.00	24	31	0.001	2	21
Bird DS428E83I01T	100.00	9	11	0.000	1	8
Flat Side Arm	95.00	450	505	0.014	24	388
RFI Antennas CC807-0	87.00	24	24	0.001	1	21
RFI Antennas OA20-41	80.00	28	24	0.001	1	24
Radio Waves HP3-11	80.00	100	86	0.002	4	86
		42,918	37,159	1.000	1,791	36,978

Site Number: 411257

Code: ANSI/TIA-222-G

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Site Name: Middle Haddam Road-CROWN CT Engineering Number: 12976958_C3_05

12/13/2019 2:33:40 PM

Customer: VERIZON WIRELESS

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	-51.27	-1.79	0.00	-190.13	0.00	190.13	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.042
5.00	-49.41	-1.80	0.00	-181.16	0.00	181.16	4,609.64	2,304.82	11,913.0	5,965.37	0.00	-0.01	0.041
10.00	-47.59	-1.80	0.00	-172.17	0.00	172.17	4,564.26	2,282.13	11,563.7	5,790.45	0.01	-0.01	0.040
15.00	-45.80	-1.80	0.00	-163.18	0.00	163.18	4,517.10	2,258.55	11,214.5	5,615.62	0.03	-0.02	0.039
20.00	-44.04	-1.79	0.00	-154.19	0.00	154.19	4,468.14	2,234.07	10,865.8	5,441.02	0.06	-0.03	0.038
25.00	-42.31	-1.79	0.00	-145.21	0.00	145.21	4,417.41	2,208.70	10,517.9	5,266.79	0.09	-0.03	0.037
30.00	-40.61	-1.78	0.00	-136.28	0.00	136.28	4,364.88	2,182.44	10,170.9	5,093.05	0.13	-0.04	0.036
35.00	-38.95	-1.76	0.00	-127.39	0.00	127.39	4,310.58	2,155.29	9,825.30	4,919.95	0.17	-0.05	0.035
40.00	-37.31	-1.75	0.00	-118.58	0.00	118.58	4,254.48	2,127.24	9,481.15	4,747.62	0.23	-0.05	0.034
45.00	-37.09	-1.74	0.00	-109.85	0.00	109.85	4,196.60	2,098.30	9,138.82	4,576.20	0.29	-0.06	0.033
45.66	-34.55	-1.71	0.00	-108.69	0.00	108.69	4,188.79	2,094.39	9,093.56	4,553.54	0.30	-0.06	0.032
50.00	-32.91	-1.68	0.00	-101.30	0.00	101.30	4,136.94	2,068.47	8,798.58	4,405.83	0.36	-0.07	0.031
52.83	-32.23	-1.67	0.00	-96.55	0.00	96.55	4,139.66	2,069.83	8,813.83	4,413.46	0.40	-0.07	0.030
55.00	-30.66	-1.64	0.00	-92.93	0.00	92.93	4,113.24	2,056.62	8,666.83	4,339.86	0.43	-0.07	0.029
60.00	-29.13	-1.60	0.00	-84.75	0.00	84.75	4,051.10	2,025.55	8,329.95	4,171.16	0.51	-0.08	0.028
65.00	-27.63	-1.56	0.00	-76.74	0.00	76.74	3,987.17	1,993.58	7,995.80	4,003.84	0.60	-0.09	0.026
70.00	-26.16	-1.52	0.00	-68.92	0.00	68.92	3,921.45	1,960.72	7,664.66	3,838.03	0.70	-0.09	0.025
75.00	-24.72	-1.48	0.00	-61.31	0.00	61.31	3,853.95	1,926.97	7,336.80	3,673.85	0.80	-0.10	0.023
80.00	-23.16	-1.42	0.00	-53.93	0.00	53.93	3,784.66	1,892.33	7,012.50	3,511.46	0.90	-0.10	0.021
85.00	-22.60	-1.40	0.00	-46.83	0.00	46.83	3,713.59	1,856.79	6,692.03	3,350.99	1.02	-0.11	0.020
87.00	-21.76	-1.37	0.00	-44.02	0.00	44.02	3,684.66	1,842.33	6,564.97	3,287.37	1.06	-0.11	0.019
90.00	-21.06	-1.34	0.00	-39.92	0.00	39.92	3,640.73	1,820.36	6,375.66	3,192.57	1.13	-0.11	0.018
92.58	-19.99	-1.29	0.00	-36.47	0.00	36.47	3,602.44	1,801.22	6,214.10	3,111.67	1.20	-0.12	0.017
95.00	-17.94	-1.20	0.00	-33.35	0.00	33.35	3,566.09	1,783.04	6,063.66	3,036.33	1.26	-0.12	0.016
98.41	-17.58	-1.18	0.00	-29.27	0.00	29.27	2,795.76	1,397.88	4,743.51	2,375.28	1.34	-0.12	0.019
100.00	-16.66	-1.13	0.00	-27.40	0.00	27.40	2,778.82	1,389.41	4,669.93	2,338.44	1.38	-0.12	0.018
104.00	-16.41	-1.12	0.00	-22.87	0.00	22.87	2,735.29	1,367.65	4,485.55	2,246.11	1.49	-0.13	0.016
105.00	-15.31	-1.06	0.00	-21.75	0.00	21.75	2,724.23	1,362.12	4,439.71	2,223.16	1.51	-0.13	0.015
110.00	-14.24	-1.00	0.00	-16.45	0.00	16.45	2,667.87	1,333.93	4,212.22	2,109.24	1.65	-0.13	0.013
115.00	-13.82	-0.97	0.00	-11.46	0.00	11.46	2,609.71	1,304.86	3,987.74	1,996.83	1.79	-0.13	0.011
117.00	-10.93	-0.79	0.00	-9.51	0.00	9.51	2,585.95	1,292.98	3,898.85	1,952.32	1.84	-0.13	0.009
119.00	-9.27	-0.68	0.00	-7.93	0.00	7.93	2,561.90	1,280.95	3,810.50	1,908.08	1.90	-0.14	0.008
120.00	-8.42	-0.63	0.00	-7.25	0.00	7.25	2,549.77	1,274.89	3,766.53	1,886.06	1.93	-0.14	0.007
125.00	-7.93	-0.59	0.00	-4.11	0.00	4.11	2,488.05	1,244.02	3,548.87	1,777.07	2.07	-0.14	0.005
128.00	-4.40	-0.34	0.00	-2.33	0.00	2.33	2,450.16	1,225.08	3,420.09	1,712.59	2.16	-0.14	0.003
128.50	-4.24	-0.33	0.00	-2.16	0.00	2.16	2,443.78	1,221.89	3,398.76	1,701.91	2.17	-0.14	0.003
128.50	-4.24	-0.33	0.00	-2.16	0.00	2.16	1,195.95	597.98	1,675.60	839.05	2.17	-0.14	0.006
130.00	-4.13	-0.32	0.00	-1.66	0.00	1.66	1,190.35	595.17	1,649.59	826.02	2.22	-0.14	0.005
131.00	-2.54	-0.20	0.00	-1.34	0.00	1.34	1,186.52	593.26	1,632.22	817.33	2.25	-0.14	0.004
135.00	-2.35	-0.19	0.00	-0.53	0.00	0.53	1,170.50	585.25	1,562.58	782.45	2.36	-0.14	0.003
137.00	-1.93	-0.15	0.00	-0.15	0.00	0.15	1,162.06	581.03	1,527.68	764.98	2.42	-0.14	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	2.45	-0.14	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	2.46	-0.14	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELMF 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	-35.67	-1.79	0.00	-188.83	0.00	188.83	4,653.24	2,326.62	12,262.2	6,140.24	0.00	0.00	0.038
5.00	-34.38	-1.79	0.00	-179.87	0.00	179.87	4,609.64	2,304.82	11,913.0	5,965.37	0.00	-0.01	0.038
10.00	-33.11	-1.79	0.00	-170.90	0.00	170.90	4,564.26	2,282.13	11,563.7	5,790.45	0.01	-0.01	0.037
15.00	-31.87	-1.79	0.00	-161.92	0.00	161.92	4,517.10	2,258.55	11,214.5	5,615.62	0.03	-0.02	0.036
20.00	-30.64	-1.79	0.00	-152.96	0.00	152.96	4,468.14	2,234.07	10,865.8	5,441.02	0.06	-0.03	0.035
25.00	-29.44	-1.78	0.00	-144.02	0.00	144.02	4,417.41	2,208.70	10,517.9	5,266.79	0.09	-0.03	0.034
30.00	-28.26	-1.77	0.00	-135.13	0.00	135.13	4,364.88	2,182.44	10,170.9	5,093.05	0.13	-0.04	0.033
35.00	-27.10	-1.75	0.00	-126.29	0.00	126.29	4,310.58	2,155.29	9,825.30	4,919.95	0.17	-0.05	0.032
40.00	-25.96	-1.73	0.00	-117.53	0.00	117.53	4,254.48	2,127.24	9,481.15	4,747.62	0.23	-0.05	0.031
45.00	-25.81	-1.73	0.00	-108.86	0.00	108.86	4,196.60	2,098.30	9,138.82	4,576.20	0.29	-0.06	0.030
45.66	-24.04	-1.69	0.00	-107.71	0.00	107.71	4,188.79	2,094.39	9,093.56	4,553.54	0.30	-0.06	0.029
50.00	-22.90	-1.67	0.00	-100.37	0.00	100.37	4,136.94	2,068.47	8,798.58	4,405.83	0.35	-0.07	0.028
52.83	-22.42	-1.65	0.00	-95.65	0.00	95.65	4,139.66	2,069.83	8,813.83	4,413.46	0.40	-0.07	0.027
55.00	-21.33	-1.62	0.00	-92.06	0.00	92.06	4,113.24	2,056.62	8,666.83	4,339.86	0.43	-0.07	0.026
60.00	-20.27	-1.59	0.00	-83.95	0.00	83.95	4,051.10	2,025.55	8,329.95	4,171.16	0.51	-0.08	0.025
65.00	-19.22	-1.55	0.00	-76.00	0.00	76.00	3,987.17	1,993.58	7,995.80	4,003.84	0.60	-0.09	0.024
70.00	-18.20	-1.51	0.00	-68.25	0.00	68.25	3,921.45	1,960.72	7,664.66	3,838.03	0.69	-0.09	0.022
75.00	-17.20	-1.46	0.00	-60.71	0.00	60.71	3,853.95	1,926.97	7,336.80	3,673.85	0.79	-0.10	0.021
80.00	-16.11	-1.41	0.00	-53.40	0.00	53.40	3,784.66	1,892.33	7,012.50	3,511.46	0.90	-0.10	0.019
85.00	-15.73	-1.39	0.00	-46.36	0.00	46.36	3,713.59	1,856.79	6,692.03	3,350.99	1.01	-0.11	0.018
87.00	-15.14	-1.35	0.00	-43.59	0.00	43.59	3,684.66	1,842.33	6,564.97	3,287.37	1.05	-0.11	0.017
90.00	-14.65	-1.32	0.00	-39.53	0.00	39.53	3,640.73	1,820.36	6,375.66	3,192.57	1.12	-0.11	0.016
92.58	-13.90	-1.28	0.00	-36.11	0.00	36.11	3,602.44	1,801.22	6,214.10	3,111.67	1.19	-0.12	0.015
95.00	-12.48	-1.18	0.00	-33.02	0.00	33.02	3,566.09	1,783.04	6,063.66	3,036.33	1.25	-0.12	0.014
98.41	-12.23	-1.17	0.00	-28.98	0.00	28.98	2,795.76	1,397.88	4,743.51	2,375.28	1.33	-0.12	0.017
100.00	-11.59	-1.12	0.00	-27.13	0.00	27.13	2,778.82	1,389.41	4,669.93	2,338.44	1.37	-0.12	0.016
104.00	-11.42	-1.11	0.00	-22.64	0.00	22.64	2,735.29	1,367.65	4,485.55	2,246.11	1.48	-0.13	0.014
105.00	-10.65	-1.05	0.00	-21.53	0.00	21.53	2,724.23	1,362.12	4,439.71	2,223.16	1.50	-0.13	0.014
110.00	-9.91	-0.99	0.00	-16.28	0.00	16.28	2,667.87	1,333.93	4,212.22	2,109.24	1.64	-0.13	0.011
115.00	-9.61	-0.96	0.00	-11.34	0.00	11.34	2,609.71	1,304.86	3,987.74	1,996.83	1.77	-0.13	0.009
117.00	-7.60	-0.78	0.00	-9.42	0.00	9.42	2,585.95	1,292.98	3,898.85	1,952.32	1.83	-0.13	0.008
119.00	-6.45	-0.68	0.00	-7.85	0.00	7.85	2,561.90	1,280.95	3,810.50	1,908.08	1.88	-0.13	0.007
120.00	-5.86	-0.62	0.00	-7.18	0.00	7.18	2,549.77	1,274.89	3,766.53	1,886.06	1.91	-0.13	0.006
125.00	-5.51	-0.59	0.00	-4.07	0.00	4.07	2,488.05	1,244.02	3,548.87	1,777.07	2.05	-0.14	0.005
128.00	-3.06	-0.34	0.00	-2.30	0.00	2.30	2,450.16	1,225.08	3,420.09	1,712.59	2.14	-0.14	0.003
128.50	-2.95	-0.33	0.00	-2.14	0.00	2.14	2,443.78	1,221.89	3,398.76	1,701.91	2.15	-0.14	0.002
128.50	-2.95	-0.33	0.00	-2.14	0.00	2.14	1,195.95	597.98	1,675.60	839.05	2.15	-0.14	0.005
130.00	-2.87	-0.32	0.00	-1.65	0.00	1.65	1,190.35	595.17	1,649.59	826.02	2.20	-0.14	0.004
131.00	-1.77	-0.20	0.00	-1.33	0.00	1.33	1,186.52	593.26	1,632.22	817.33	2.23	-0.14	0.003
135.00	-1.64	-0.19	0.00	-0.53	0.00	0.53	1,170.50	585.25	1,562.58	782.45	2.34	-0.14	0.002
137.00	-1.34	-0.15	0.00	-0.15	0.00	0.15	1,162.06	581.03	1,527.68	764.98	2.40	-0.14	0.001
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	2.43	-0.14	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	2.44	-0.14	0.000

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
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.58
Redundancy Factor (p):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	1.883	1.944	1.127	0.371	8	40
40	137.50	64	1.863	1.840	1.089	0.358	15	80
39	136.00	150	1.822	1.642	1.016	0.333	33	186
38	133.00	306	1.743	1.291	0.882	0.285	58	379
37	130.50	86	1.678	1.040	0.781	0.248	14	106
36	129.25	129	1.646	0.928	0.734	0.231	20	160
35	128.25	66	1.621	0.844	0.698	0.217	10	82
34	126.50	402	1.577	0.708	0.639	0.195	52	497
33	122.50	686	1.479	0.450	0.518	0.147	67	849
32	119.50	140	1.407	0.297	0.439	0.116	11	173
31	118.00	337	1.372	0.233	0.403	0.102	23	417
30	116.00	340	1.326	0.158	0.359	0.084	19	421
29	112.50	865	1.247	0.054	0.291	0.057	33	1,072
28	107.50	886	1.139	-0.046	0.212	0.026	15	1,097
27	104.50	180	1.076	-0.082	0.172	0.012	1	223
26	102.00	728	1.025	-0.103	0.144	0.002	1	901
25	99.21	293	0.970	-0.116	0.117	-0.005	-1	363
24	96.71	1,205	0.921	-0.121	0.096	-0.010	-8	1,492
23	93.79	867	0.867	-0.121	0.075	-0.013	-7	1,074
22	91.29	561	0.821	-0.115	0.060	-0.013	-5	695
21	88.50	661	0.772	-0.106	0.046	-0.012	-5	819
20	86.00	446	0.729	-0.095	0.036	-0.009	-3	553
19	82.50	1,133	0.671	-0.078	0.024	-0.003	-3	1,403
18	77.50	1,163	0.592	-0.050	0.014	0.007	6	1,440
17	72.50	1,188	0.518	-0.023	0.008	0.018	15	1,471
16	67.50	1,212	0.449	0.002	0.006	0.028	23	1,502
15	62.50	1,237	0.385	0.023	0.007	0.036	30	1,532
14	57.50	1,262	0.326	0.039	0.010	0.041	35	1,563
13	53.92	556	0.286	0.048	0.013	0.044	16	688
12	51.42	1,320	0.260	0.053	0.016	0.045	39	1,635
11	47.83	2,054	0.225	0.059	0.020	0.045	62	2,544
10	45.33	173	0.202	0.062	0.023	0.045	5	215
9	42.50	1,322	0.178	0.065	0.026	0.044	39	1,637
8	37.50	1,346	0.139	0.069	0.032	0.043	39	1,667

7	32.50	1,371	0.104	0.071	0.037	0.042	38	1,698
6	27.50	1,396	0.075	0.072	0.040	0.040	37	1,729
5	22.50	1,421	0.050	0.071	0.042	0.038	36	1,760
4	17.50	1,446	0.030	0.068	0.041	0.036	34	1,791
3	12.50	1,471	0.015	0.061	0.036	0.032	31	1,821
2	7.50	1,496	0.006	0.046	0.026	0.025	25	1,852
1	2.50	1,520	0.001	0.020	0.011	0.011	11	1,883
Generic 10' Omni	138.00	25	1.876	1.909	1.114	0.366	6	31
Round Low Profile PI	138.00	1,500	1.876	1.909	1.114	0.366	366	1,858
Ericsson KRY 112 20	137.00	73	1.849	1.772	1.064	0.349	17	90
RFS APXV18-209014-C	137.00	56	1.849	1.772	1.064	0.349	13	69
Andrew LNX-6515DS-A1	137.00	149	1.849	1.772	1.064	0.349	35	185
Samsung B2/B66A RRH-	131.00	253	1.691	1.088	0.801	0.256	43	314
Samsung B5/B13 RRH-B	131.00	211	1.691	1.088	0.801	0.256	36	261
RFS APL866513-44T0	131.00	31	1.691	1.088	0.801	0.256	5	39
Raycap RCMDC-6627-PF	131.00	32	1.691	1.088	0.801	0.256	5	40
Decibel DB846H80E-SX	131.00	64	1.691	1.088	0.801	0.256	11	79
Quintel QS6656-3 (65	131.00	390	1.691	1.088	0.801	0.256	66	483
Flat Low Profile Pla	128.00	1,500	1.614	0.823	0.690	0.214	214	1,858
VZW Unused Reserve:	128.00	1,283	1.614	0.823	0.690	0.214	183	1,589
Generic 7" x 6" x 3"	119.00	30	1.395	0.275	0.427	0.111	2	37
Powerwave Allgon LGP	119.00	85	1.395	0.275	0.427	0.111	6	105
Raycap DC6-48-60-18-	119.00	40	1.395	0.275	0.427	0.111	3	50
Ericsson Radio 8843	119.00	216	1.395	0.275	0.427	0.111	16	267
Ericsson RRUS 4449 B	119.00	213	1.395	0.275	0.427	0.111	16	264
Powerwave Allgon 777	119.00	105	1.395	0.275	0.427	0.111	8	130
Commscope NNH4-65B-	119.00	269	1.395	0.275	0.427	0.111	20	333
CCI DMP65R-BU6DA	119.00	238	1.395	0.275	0.427	0.111	18	295
Round Platform w/ Ha	117.00	2,000	1.349	0.194	0.381	0.093	124	2,477
RFI Antennas CC807-0	104.00	24	1.066	-0.087	0.166	0.010	0	30
Bird DS428E83101T	100.00	9	0.985	-0.113	0.124	-0.003	0	11
Flat Side Arm	95.00	450	0.889	-0.122	0.083	-0.012	-4	557
RFI Antennas CC807-0	87.00	24	0.746	-0.100	0.040	-0.010	0	30
RFI Antennas OA20-41	80.00	28	0.631	-0.064	0.018	0.002	0	35
Radio Waves HP3-11	80.00	100	0.631	-0.064	0.018	0.002	0	124
		42,918	73.625	30.354	26.218	8.052	2,081	53,149

Load Case (0.9 - 0.2Sds) * DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	138.25	32	1.883	1.944	1.127	0.371	8	28
40	137.50	64	1.863	1.840	1.089	0.358	15	55
39	136.00	150	1.822	1.642	1.016	0.333	33	129
38	133.00	306	1.743	1.291	0.882	0.285	58	264
37	130.50	86	1.678	1.040	0.781	0.248	14	74
36	129.25	129	1.646	0.928	0.734	0.231	20	112
35	128.25	66	1.621	0.844	0.698	0.217	10	57
34	126.50	402	1.577	0.708	0.639	0.195	52	346
33	122.50	686	1.479	0.450	0.518	0.147	67	591
32	119.50	140	1.407	0.297	0.439	0.116	11	120
31	118.00	337	1.372	0.233	0.403	0.102	23	290
30	116.00	340	1.326	0.158	0.359	0.084	19	293
29	112.50	865	1.247	0.054	0.291	0.057	33	746
28	107.50	886	1.139	-0.046	0.212	0.026	15	763
27	104.50	180	1.076	-0.082	0.172	0.012	1	155
26	102.00	728	1.025	-0.103	0.144	0.002	1	627
25	99.21	293	0.970	-0.116	0.117	-0.005	-1	253
24	96.71	1,205	0.921	-0.121	0.096	-0.010	-8	1,038

23	93.79	867	0.867	-0.121	0.075	-0.013	-7	747
22	91.29	561	0.821	-0.115	0.060	-0.013	-5	484
21	88.50	661	0.772	-0.106	0.046	-0.012	-5	569
20	86.00	446	0.729	-0.095	0.036	-0.009	-3	385
19	82.50	1,133	0.671	-0.078	0.024	-0.003	-3	976
18	77.50	1,163	0.592	-0.050	0.014	0.007	6	1,002
17	72.50	1,188	0.518	-0.023	0.008	0.018	15	1,023
16	67.50	1,212	0.449	0.002	0.006	0.028	23	1,045
15	62.50	1,237	0.385	0.023	0.007	0.036	30	1,066
14	57.50	1,262	0.326	0.039	0.010	0.041	35	1,088
13	53.92	556	0.286	0.048	0.013	0.044	16	479
12	51.42	1,320	0.260	0.053	0.016	0.045	39	1,138
11	47.83	2,054	0.225	0.059	0.020	0.045	62	1,770
10	45.33	173	0.202	0.062	0.023	0.045	5	149
9	42.50	1,322	0.178	0.065	0.026	0.044	39	1,139
8	37.50	1,346	0.139	0.069	0.032	0.043	39	1,160
7	32.50	1,371	0.104	0.071	0.037	0.042	38	1,182
6	27.50	1,396	0.075	0.072	0.040	0.040	37	1,203
5	22.50	1,421	0.050	0.071	0.042	0.038	36	1,224
4	17.50	1,446	0.030	0.068	0.041	0.036	34	1,246
3	12.50	1,471	0.015	0.061	0.036	0.032	31	1,267
2	7.50	1,496	0.006	0.046	0.026	0.025	25	1,289
1	2.50	1,520	0.001	0.020	0.011	0.011	11	1,310
Generic 10' Omni	138.00	25	1.876	1.909	1.114	0.366	6	22
Round Low Profile PI	138.00	1,500	1.876	1.909	1.114	0.366	366	1,292
Ericsson KRY 112 20	137.00	73	1.849	1.772	1.064	0.349	17	63
RFS APXV18-209014-C	137.00	56	1.849	1.772	1.064	0.349	13	48
Andrew LNX-6515DS-A1	137.00	149	1.849	1.772	1.064	0.349	35	129
Samsung B2/B66A RRH-	131.00	253	1.691	1.088	0.801	0.256	43	218
Samsung B5/B13 RRH-B	131.00	211	1.691	1.088	0.801	0.256	36	182
RFS APL866513-44T0	131.00	31	1.691	1.088	0.801	0.256	5	27
Raycap RCMDC-6627-PF	131.00	32	1.691	1.088	0.801	0.256	5	28
Decibel DB846H80E-SX	131.00	64	1.691	1.088	0.801	0.256	11	55
Quintel QS6656-3 (65	131.00	390	1.691	1.088	0.801	0.256	66	336
Flat Low Profile Pla	128.00	1,500	1.614	0.823	0.690	0.214	214	1,292
VZW Unused Reserve:	128.00	1,283	1.614	0.823	0.690	0.214	183	1,106
Generic 7" x 6" x 3"	119.00	30	1.395	0.275	0.427	0.111	2	26
Powerwave Allgon LGP	119.00	85	1.395	0.275	0.427	0.111	6	73
Raycap DC6-48-60-18-	119.00	40	1.395	0.275	0.427	0.111	3	34
Ericsson Radio 8843	119.00	216	1.395	0.275	0.427	0.111	16	186
Ericsson RRUS 4449 B	119.00	213	1.395	0.275	0.427	0.111	16	184
Powerwave Allgon 777	119.00	105	1.395	0.275	0.427	0.111	8	90
Commscope NNH4-65B-	119.00	269	1.395	0.275	0.427	0.111	20	232
CCI DMP65R-BU6DA	119.00	238	1.395	0.275	0.427	0.111	18	205
Round Platform w/ Ha	117.00	2,000	1.349	0.194	0.381	0.093	124	1,723
RFI Antennas CC807-0	104.00	24	1.066	-0.087	0.166	0.010	0	21
Bird DS428E83I01T	100.00	9	0.985	-0.113	0.124	-0.003	0	8
Flat Side Arm	95.00	450	0.889	-0.122	0.083	-0.012	-4	388
RFI Antennas CC807-0	87.00	24	0.746	-0.100	0.040	-0.010	0	21
RFI Antennas OA20-41	80.00	28	0.631	-0.064	0.018	0.002	0	24
Radio Waves HP3-11	80.00	100	0.631	-0.064	0.018	0.002	0	86
		42,918	73.625	30.354	26.218	8.052	2,081	36,978

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	-51.27	-2.07	0.00	-226.40	0.00	226.40	4,653.24	2,326.62	12,262.25	6,140.24	0.00	0.00	0.048
5.00	-49.41	-2.05	0.00	-216.04	0.00	216.04	4,609.64	2,304.82	11,913.03	5,965.37	0.00	-0.01	0.047
10.00	-47.59	-2.03	0.00	-205.76	0.00	205.76	4,564.26	2,282.13	11,563.71	5,790.45	0.02	-0.02	0.046
15.00	-45.80	-2.00	0.00	-195.61	0.00	195.61	4,517.10	2,258.55	11,214.57	5,615.62	0.04	-0.02	0.045
20.00	-44.04	-1.97	0.00	-185.61	0.00	185.61	4,468.14	2,234.07	10,865.89	5,441.02	0.07	-0.03	0.044
25.00	-42.31	-1.94	0.00	-175.75	0.00	175.75	4,417.41	2,208.70	10,517.94	5,266.79	0.11	-0.04	0.043
30.00	-40.61	-1.91	0.00	-166.06	0.00	166.06	4,364.88	2,182.44	10,170.98	5,093.05	0.15	-0.05	0.042
35.00	-38.95	-1.87	0.00	-156.54	0.00	156.54	4,310.58	2,155.29	9,825.30	4,919.95	0.21	-0.06	0.041
40.00	-37.31	-1.84	0.00	-147.18	0.00	147.18	4,254.48	2,127.24	9,481.15	4,747.62	0.27	-0.07	0.040
45.00	-37.09	-1.83	0.00	-138.01	0.00	138.01	4,196.60	2,098.30	9,138.82	4,576.20	0.35	-0.07	0.039
45.66	-34.55	-1.77	0.00	-136.79	0.00	136.79	4,188.79	2,094.39	9,093.56	4,553.54	0.36	-0.08	0.038
50.00	-32.91	-1.73	0.00	-129.11	0.00	129.11	4,136.94	2,068.47	8,798.58	4,405.83	0.43	-0.08	0.037
52.83	-32.23	-1.72	0.00	-124.21	0.00	124.21	4,139.66	2,069.83	8,813.83	4,413.46	0.48	-0.09	0.036
55.00	-30.66	-1.68	0.00	-120.48	0.00	120.48	4,113.24	2,056.62	8,666.83	4,339.86	0.52	-0.09	0.035
60.00	-29.13	-1.66	0.00	-112.06	0.00	112.06	4,051.10	2,025.55	8,329.95	4,171.16	0.62	-0.10	0.034
65.00	-27.63	-1.63	0.00	-103.79	0.00	103.79	3,987.17	1,993.58	7,995.80	4,003.84	0.73	-0.11	0.033
70.00	-26.16	-1.62	0.00	-95.62	0.00	95.62	3,921.45	1,960.72	7,664.66	3,838.03	0.85	-0.12	0.032
75.00	-24.72	-1.61	0.00	-87.52	0.00	87.52	3,853.95	1,926.97	7,336.80	3,673.85	0.97	-0.12	0.030
80.00	-23.16	-1.62	0.00	-79.45	0.00	79.45	3,784.66	1,892.33	7,012.50	3,511.46	1.11	-0.13	0.029
85.00	-22.60	-1.62	0.00	-71.36	0.00	71.36	3,713.59	1,856.79	6,692.03	3,350.99	1.25	-0.14	0.027
87.00	-21.75	-1.63	0.00	-68.12	0.00	68.12	3,684.66	1,842.33	6,564.97	3,287.37	1.31	-0.14	0.027
90.00	-21.06	-1.63	0.00	-63.25	0.00	63.25	3,640.73	1,820.36	6,375.66	3,192.57	1.40	-0.15	0.026
92.58	-19.99	-1.64	0.00	-59.04	0.00	59.04	3,602.44	1,801.22	6,214.10	3,111.67	1.48	-0.15	0.025
95.00	-17.94	-1.64	0.00	-55.08	0.00	55.08	3,566.09	1,783.04	6,063.66	3,036.33	1.56	-0.15	0.023
98.41	-17.57	-1.64	0.00	-49.48	0.00	49.48	2,795.76	1,397.88	4,743.51	2,375.28	1.67	-0.16	0.027
100.00	-16.66	-1.64	0.00	-46.87	0.00	46.87	2,778.82	1,389.41	4,669.93	2,338.44	1.73	-0.16	0.026
104.00	-16.41	-1.64	0.00	-40.30	0.00	40.30	2,735.29	1,367.65	4,485.55	2,246.11	1.86	-0.17	0.024
105.00	-15.31	-1.62	0.00	-38.66	0.00	38.66	2,724.23	1,362.12	4,439.71	2,223.16	1.90	-0.17	0.023
110.00	-14.24	-1.59	0.00	-30.54	0.00	30.54	2,667.87	1,333.93	4,212.22	2,109.24	2.08	-0.18	0.020
115.00	-13.82	-1.57	0.00	-22.60	0.00	22.60	2,609.71	1,304.86	3,987.74	1,996.83	2.27	-0.18	0.017
117.00	-10.92	-1.41	0.00	-19.46	0.00	19.46	2,585.95	1,292.98	3,898.85	1,952.32	2.34	-0.18	0.014
119.00	-9.27	-1.31	0.00	-16.63	0.00	16.63	2,561.90	1,280.95	3,810.50	1,908.08	2.42	-0.18	0.012
120.00	-8.42	-1.24	0.00	-15.32	0.00	15.32	2,549.77	1,274.89	3,766.53	1,886.06	2.46	-0.18	0.011
125.00	-7.92	-1.19	0.00	-9.13	0.00	9.13	2,488.05	1,244.02	3,548.87	1,777.07	2.65	-0.19	0.008
128.00	-4.40	-0.77	0.00	-5.57	0.00	5.57	2,450.16	1,225.08	3,420.09	1,712.59	2.77	-0.19	0.005
128.50	-4.24	-0.75	0.00	-5.18	0.00	5.18	2,443.78	1,221.89	3,398.76	1,701.91	2.79	-0.19	0.005
128.50	-4.24	-0.75	0.00	-5.18	0.00	5.18	1,195.95	597.98	1,675.60	839.05	2.79	-0.19	0.010
130.00	-4.13	-0.73	0.00	-4.06	0.00	4.06	1,190.35	595.17	1,649.59	826.02	2.85	-0.19	0.008
131.00	-2.54	-0.50	0.00	-3.33	0.00	3.33	1,186.52	593.26	1,632.22	817.33	2.89	-0.19	0.006
135.00	-2.35	-0.47	0.00	-1.32	0.00	1.32	1,170.50	585.25	1,562.58	782.45	3.05	-0.19	0.004
137.00	-1.93	-0.39	0.00	-0.39	0.00	0.39	1,162.06	581.03	1,527.68	764.98	3.13	-0.19	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	3.17	-0.19	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	3.19	-0.19	0.000

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	-35.67	-2.07	0.00	-224.76	0.00	224.76	4,653.24	2,326.62	12,262.25	6,140.24	0.00	0.00	0.044
5.00	-34.38	-2.05	0.00	-214.41	0.00	214.41	4,609.64	2,304.82	11,913.03	5,965.37	0.00	-0.01	0.043
10.00	-33.11	-2.02	0.00	-204.15	0.00	204.15	4,564.26	2,282.13	11,563.71	5,790.45	0.02	-0.02	0.043
15.00	-31.87	-1.99	0.00	-194.02	0.00	194.02	4,517.10	2,258.55	11,214.57	5,615.62	0.04	-0.02	0.042
20.00	-30.64	-1.96	0.00	-184.05	0.00	184.05	4,468.14	2,234.07	10,865.89	5,441.02	0.07	-0.03	0.041
25.00	-29.44	-1.93	0.00	-174.24	0.00	174.24	4,417.41	2,208.70	10,517.94	5,266.79	0.11	-0.04	0.040
30.00	-28.26	-1.89	0.00	-164.60	0.00	164.60	4,364.88	2,182.44	10,170.98	5,093.05	0.15	-0.05	0.039
35.00	-27.10	-1.86	0.00	-155.13	0.00	155.13	4,310.58	2,155.29	9,825.30	4,919.95	0.21	-0.06	0.038
40.00	-25.96	-1.82	0.00	-145.85	0.00	145.85	4,254.48	2,127.24	9,481.15	4,747.62	0.27	-0.07	0.037
45.00	-25.81	-1.82	0.00	-136.74	0.00	136.74	4,196.60	2,098.30	9,138.82	4,576.20	0.34	-0.07	0.036
45.66	-24.04	-1.76	0.00	-135.53	0.00	135.53	4,188.79	2,094.39	9,093.56	4,553.54	0.36	-0.07	0.036
50.00	-22.90	-1.72	0.00	-127.92	0.00	127.92	4,136.94	2,068.47	8,798.58	4,405.83	0.43	-0.08	0.035
52.83	-22.42	-1.70	0.00	-123.06	0.00	123.06	4,139.66	2,069.83	8,813.83	4,413.46	0.48	-0.09	0.033
55.00	-21.33	-1.67	0.00	-119.37	0.00	119.37	4,113.24	2,056.62	8,666.83	4,339.86	0.52	-0.09	0.033
60.00	-20.27	-1.64	0.00	-111.03	0.00	111.03	4,051.10	2,025.55	8,329.95	4,171.16	0.62	-0.10	0.032
65.00	-19.22	-1.62	0.00	-102.83	0.00	102.83	3,987.17	1,993.58	7,995.80	4,003.84	0.73	-0.11	0.031
70.00	-18.20	-1.60	0.00	-94.75	0.00	94.75	3,921.45	1,960.72	7,664.66	3,838.03	0.84	-0.12	0.029
75.00	-17.20	-1.60	0.00	-86.73	0.00	86.73	3,853.95	1,926.97	7,336.80	3,673.85	0.97	-0.12	0.028
80.00	-16.11	-1.60	0.00	-78.75	0.00	78.75	3,784.66	1,892.33	7,012.50	3,511.46	1.10	-0.13	0.027
85.00	-15.72	-1.60	0.00	-70.75	0.00	70.75	3,713.59	1,856.79	6,692.03	3,350.99	1.24	-0.14	0.025
87.00	-15.13	-1.61	0.00	-67.54	0.00	67.54	3,684.66	1,842.33	6,564.97	3,287.37	1.30	-0.14	0.025
90.00	-14.65	-1.61	0.00	-62.72	0.00	62.72	3,640.73	1,820.36	6,375.66	3,192.57	1.39	-0.15	0.024
92.58	-13.90	-1.62	0.00	-58.56	0.00	58.56	3,602.44	1,801.22	6,214.10	3,111.67	1.47	-0.15	0.023
95.00	-12.48	-1.63	0.00	-54.64	0.00	54.64	3,566.09	1,783.04	6,063.66	3,036.33	1.55	-0.15	0.021
98.41	-12.22	-1.63	0.00	-49.08	0.00	49.08	2,795.76	1,397.88	4,743.51	2,375.28	1.66	-0.16	0.025
100.00	-11.59	-1.63	0.00	-46.50	0.00	46.50	2,778.82	1,389.41	4,669.93	2,338.44	1.71	-0.16	0.024
104.00	-11.41	-1.63	0.00	-39.99	0.00	39.99	2,735.29	1,367.65	4,485.55	2,246.11	1.85	-0.17	0.022
105.00	-10.65	-1.61	0.00	-38.36	0.00	38.36	2,724.23	1,362.12	4,439.71	2,223.16	1.88	-0.17	0.021
110.00	-9.91	-1.58	0.00	-30.32	0.00	30.32	2,667.87	1,333.93	4,212.22	2,109.24	2.06	-0.17	0.018
115.00	-9.61	-1.56	0.00	-22.44	0.00	22.44	2,609.71	1,304.86	3,987.74	1,996.83	2.25	-0.18	0.015
117.00	-7.60	-1.40	0.00	-19.33	0.00	19.33	2,585.95	1,292.98	3,898.85	1,952.32	2.32	-0.18	0.013
119.00	-6.45	-1.30	0.00	-16.53	0.00	16.53	2,561.90	1,280.95	3,810.50	1,908.08	2.40	-0.18	0.011
120.00	-5.86	-1.23	0.00	-15.23	0.00	15.23	2,549.77	1,274.89	3,766.53	1,886.06	2.44	-0.18	0.010
125.00	-5.51	-1.18	0.00	-9.07	0.00	9.07	2,488.05	1,244.02	3,548.87	1,777.07	2.63	-0.19	0.007
128.00	-3.06	-0.76	0.00	-5.54	0.00	5.54	2,450.16	1,225.08	3,420.09	1,712.59	2.75	-0.19	0.004
128.50	-2.95	-0.74	0.00	-5.16	0.00	5.16	2,443.78	1,221.89	3,398.76	1,701.91	2.77	-0.19	0.004
128.50	-2.95	-0.74	0.00	-5.16	0.00	5.16	1,195.95	597.98	1,675.60	839.05	2.77	-0.19	0.009
130.00	-2.87	-0.73	0.00	-4.04	0.00	4.04	1,190.35	595.17	1,649.59	826.02	2.83	-0.19	0.007
131.00	-1.76	-0.50	0.00	-3.31	0.00	3.31	1,186.52	593.26	1,632.22	817.33	2.87	-0.19	0.006
135.00	-1.64	-0.47	0.00	-1.32	0.00	1.32	1,170.50	585.25	1,562.58	782.45	3.03	-0.19	0.003
137.00	-1.34	-0.38	0.00	-0.38	0.00	0.38	1,162.06	581.03	1,527.68	764.98	3.10	-0.19	0.002
138.00	0.00	0.00	0.00	0.00	0.00	0.00	1,157.73	578.87	1,510.22	756.23	3.14	-0.19	0.000
138.50	0.00	0.00	0.00	0.00	0.00	0.00	1,155.54	577.77	1,501.49	751.86	3.16	-0.19	0.000

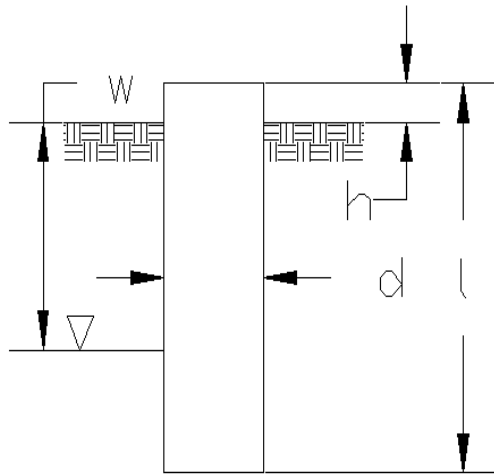
Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	29.36	0.00	51.47	0.00	0.00	2951.24	0.00	0.49
0.9D + 1.6W	29.02	0.00	38.60	0.00	0.00	2897.27	0.00	0.48
1.2D + 1.0Di + 1.0Wi	13.53	0.00	88.91	0.00	0.00	1194.65	0.00	0.21
(1.2 + 0.2Sds) * DL + E ELFM	1.79	0.00	51.27	0.00	0.00	190.13	0.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	2.07	0.00	51.27	0.00	0.00	226.40	0.00	0.05
(0.9 - 0.2Sds) * DL + E ELFM	1.79	0.00	35.67	0.00	0.00	188.83	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.07	0.00	35.67	0.00	0.00	224.76	0.00	0.04
1.0D + 1.0W	5.73	0.00	42.92	0.00	0.00	572.96	0.00	0.10

Site Name: Middle Haddam Road-CROWN CT, CT
Site Number: 411257
Tower Type: MP
Design Base Loads (Factored) - Analysis per TIA-222-G Standards

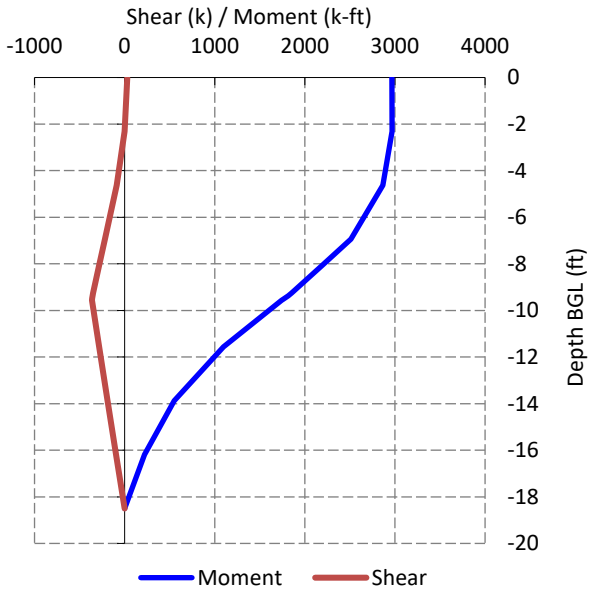
Pier Foundation Analysis

Foundation Analysis Parameters		
Analyze or Design a Foundation?	Analyze	-
Foundation Mapped:	Y	-
Moment (M):	2951.2	k-ft
Shear/Leg (V):	29.4	k
Axial Load (P):	51.5	k
Uplift/Leg (U):	0.0	k
Diameter of Caisson (d):	8	ft
Caisson Embedment (L-h):	18.5	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	99	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Water:	62.4	pcf
Tension/Compression Skin Friction Factor:	1	-
Pullout Angle:	30	°



Depth (ft)		γ_{Soil} (pcf)	Cu (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
Top	Bottom					
0	2	105	0	0	0	0
2	4	140	9083	0	0	0
4	9	140	13483	0	6067	0
9	19.5	139	9180	0	4131	43469

Soil Strength Capacities		
Required Embedment:	10.0	ft
Volume of Concrete:	955.0	ft ³
Buoyant Weight of Concrete:	143.3	k
Average Soil Unit Weight:	135.7	pcf
Skin Friction Resistance:	1748.7	k
Compressive Bearing Resistance:	2185.0	k
Pullout Weight (Minus Concrete Weight):	636.9	k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	477.7	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	2950.3	k
T_u :	0.0	k
$T_u / \phi_s T_n$:	0%	Pass
P_u :	67.4	k
$P_u / \phi_s P_n$:	2%	Pass
Total Lateral Resistance:	9650.9	k
Inflection Point (Below Ground Surface):	9.6	ft
Moment At Inflection Point (M_D):	3246.6	k-ft
Nominal Moment Capacity ($\phi_s M_n$):	28532.1	k-ft
ϕ_s :	0.75	-
$M_D / \phi_s M_n$:	11%	Pass





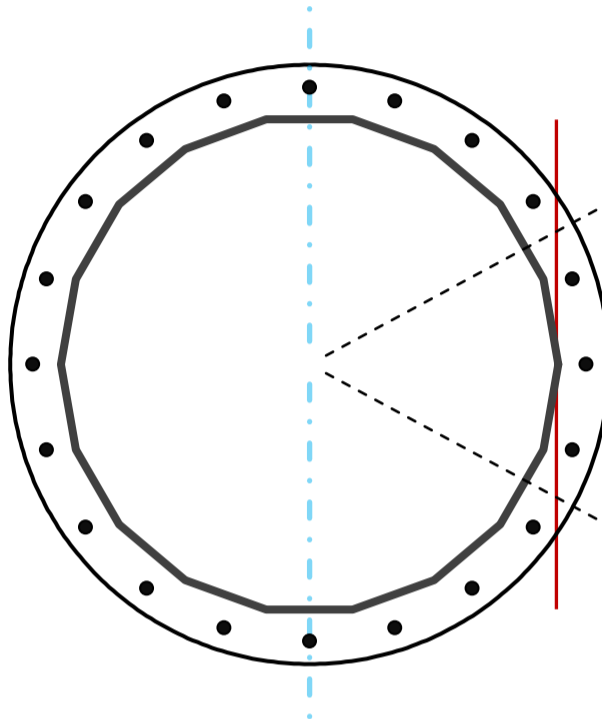
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	64.38	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2951.2	k-ft
Axial, Pu	51.5	k
Shear, Vu	29.4	k
Neutral Axis	270	°

Report Capacities		
Component	Capacity	Result
Base Plate	21%	Pass
Anchor Rods	40%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ϕ	79	in
Thickness	2 1/4	in
Grade	A572-60	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	556.8	k
Bending Stress, ϕMn	2619.4	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, ϕ	2 1/4	in
Bolt Circle	73	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	11.5	in
Orientation Offset	0	°
Applied Force, Pu	102.8	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	29.4	2951.2	1.00
Anchor Rod Forces	29.4	2951.2	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	75.0219	4.1679	0.1959		38420.73
Bolt	3.9761	3.2477	0.8393	4.5	40514.59
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate

Shape	Round	-
Diameter, D	79	in
Thickness, t	2.25	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	45.784	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods

Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	73	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	102.8	k
Applied Shear, Vu	0.7	k
Compressive Capacity, ϕP_n	259.8	k
Tensile Capacity, ϕR_n	0.396	OK
Interaction Capacity	0.401	OK

External Base Plate

Chord Length AA	39.028	in
Additional AA	4.500	in
Section Modulus, Z	55.091	in ³
Applied Moment, Mu	556.8	k-ft
Bending Capacity, ϕM_n	2974.9	k-ft
Capacity, $M_u/\phi M_n$	0.187	OK

Chord Length AB	37.328	in
Additional AB	4.500	in
Section Modulus, Z	52.938	in ³
Applied Moment, Mu	407.9	k-ft
Bending Capacity, ϕM_n	2858.6	k-ft
Capacity, $M_u/\phi M_n$	0.143	OK

Bend Line Length	38.327	in
Additional Bend Line	0.000	in
Section Modulus, Z	48.507	in ³
Applied Moment, Mu	556.8	k-ft
Bending Capacity, ϕM_n	2619.4	k-ft
Capacity, $M_u/\phi M_n$	0.213	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, ϕM_n	0.0	k-ft
Capacity, $M_u/\phi M_n$		

Flange Plate Analysis

Flange Plate	Plate Type	Flange	128.5 ft
	Pole Diameter	34.2064	in
	Pole Thickness	0.1875	in
	Plate Diameter	41	in
	Plate Thickness	1	in
	Plate Fy	60	ksi
	Weld Length	0.55	in
	f _s Resistance	62.98	k-in
	Applied	1.47	k-in

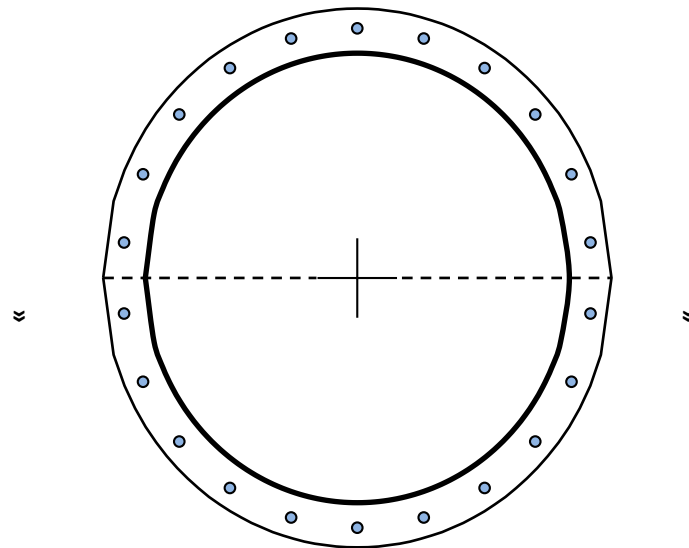
Code Rev.	G
Moment	35.9 k-ft
Axial	4.0 k

Date	12/13/2019
Engineer	Lucas.Tait
Site #	411257
Carrier	VZW

Required Flange Thickness:
0.15 in OK

Stiffeners	#	
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Bolts	#	22	
	Bolt Circle	38	in
	(R)adial / (S)quare	R	
	Bolt Gap	6	in
	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	f _s Resistance	54.52	k
Applied	1.87	k	



Reinforcement	#	
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Plate Stress Ratio:
2% Pass

Bolt Stress Ratio:
3% Pass

Extra Bolts	O	#	
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