Robinson+Cole

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Also admitted in Massachusetts

February 2, 2017

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
104 Bunker Hill Road, Andover, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 158-foot level of the existing 175-foot tower at 104 Bunker Hill Road in Andover, Connecticut (the "Property"). The tower is owned by American Tower Corporation ("ATC"). The Council approved Cellco's use of the tower in 2000. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same 158-foot level on the tower. Cellco will also install six (6) remote radio heads ("RRHs") behind its antennas and two (2) HYBRIFLEX™ antenna cables, inside the monopole. Included in Attachment 1 are specifications for the replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Robert Burbank, First Selectman of the Town of Andover, John Valente, Andover's Town Planner/Zoning Agent, Leon and Benjamin Price, the owners of the Property and ATC, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 158-foot level on the 175-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the Town Assessor's Parcel Map and property owner information is included in Attachment 4.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Robert Burbank, Andover First Selectman
John Valente, Town Planner/Zoning Agent
Leon and Benjamin Price
ATC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65B

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

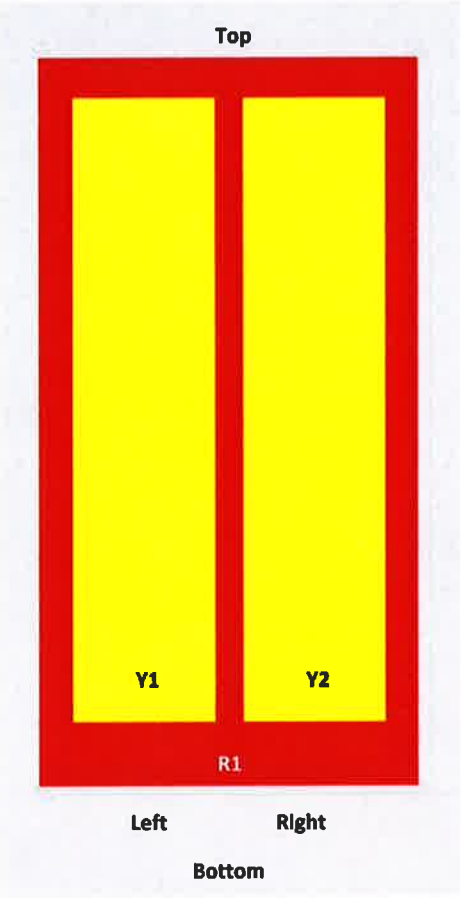
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Array Layout

Product Specifications

SBNHH-1D65B

SBNHH 6S



Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	ANxxxxxxxxxxxxxxxx.1
Y1	1695-2360	3-4	2	ANxxxxxxxxxxxxxxxx.2
Y2	1695-2360	5-6		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

Product Specifications

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Depth	180.0 mm | 7.1 in
Net Weight, without mounting kit	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1) | Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male

Packed Dimensions

Length	2025.0 mm | 79.7 in
Width	390.0 mm | 15.4 in
Depth	296.0 mm | 11.7 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Product Specifications

SBNHH-1D65B

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

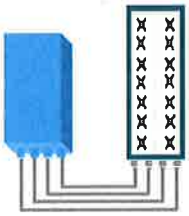
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (In 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) **Volume in L** **Weight in kg (lb) (w/o mounting HW)**	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range **DC power consumption**	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (In 2Tx or 4TX mode)
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal: <200N / Lateral : <150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

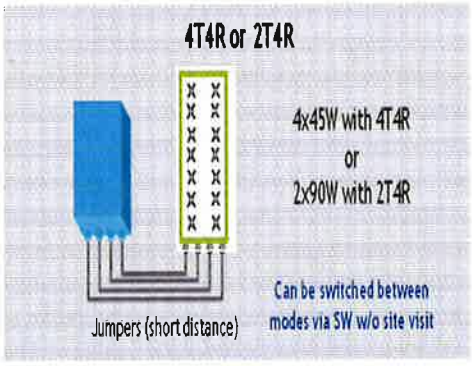
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports



BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall

TECHNICAL SPECIFICATIONS

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (In 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme **Receiver Sensivity (FRC A1-3)**	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.) **Volume in Liters** **Weight in kg (lb) (w/o mounting HW)**	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) 35.5 (with solar shield) 29.7 (without solar shield) 25.8kg (56.8lb) (with solar shield)
DC voltage range **DC power consumption**	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure 250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-99-689 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

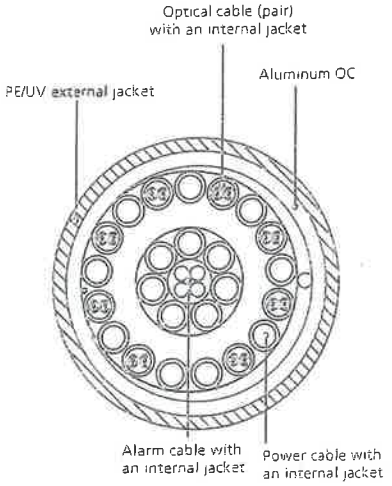


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Columbia (Andover)								
Tower Height: 178'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	2	565	137	880	0.0237	0.5867	0.40%	
*AT&T	2	875	137	1900	0.0367	1.0000	0.37%	
*AT&T	1	283	137	880	0.0059	0.5867	0.10%	
*AT&T	4	525	137	1900	0.0440	1.0000	0.44%	
*AT&T	1	1313	137	734	0.0275	0.4893	0.56%	
*Nextel	9	100	178	851	0.0109	0.5673	0.19%	
*Sprint	11	411	168	1962.5	0.0620	1.0000	0.62%	
*T-Mobile	1	865	148	700	0.0154	0.4667	0.33%	
*T-Mobile	4	1102	148	1900	0.0786	1.0000	0.79%	
Verizon	**11**	**411**	**158**	**0.0651**	**1970**	**1.0000**	**6.51%**	
Verizon	**9**	**255**	**158**	**0.0331**	**869**	**0.5793**	**5.71%**	
Verizon	**1**	**6987**	**158**	**0.1006**	**2145**	**1.0000**	**10.06%**	
Verizon	**1**	**1584**	**158**	**0.0228**	**746**	**0.4973**	**4.59%**	
								30.7%
* Source: Siting Council								

ATTACHMENT 3

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**178 ft Monopole**
ATC Site Name	:	**Andover-Bunker Hill Road, CT**
ATC Site Number	:	**302472**
Engineering Number	:	**OAA691297_C3_02**
Proposed Carrier	:	**Verizon Wireless**
Carrier Site Name	:	**Columbia CT**
Carrier Site Number	:	**118621**
Site Location	:	**104 Bunker Hill Road** **Andover, CT 06232-1301** **41.737786,-72.349839**
County	:	**Tolland**
Date	:	**December 22, 2016**
Max Usage	:	**79%**
Result	:	**Pass**

Prepared By:
Aaron Black
Structural Engineer I

Reviewed By:

Reviewed by:
William Garrett, PE
Chief Engineer

STATE OF CONNECTICUT
WILLIAM GARRETT
No. 23235
LICENSED
PROFESSIONAL ENGINEER

Dec 23 2016 2:59 PM cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

AMERICAN TOWER®
CORPORATION

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 178 ft monopole to reflect the change in loading by Verizon Wireless.

Supporting Documents

Tower Drawings	Summit, PJF Job #29200-028, dated January 14, 2000
Foundation Drawing	Summit, PJF Job #29200-012, dated January 14, 2000
Geotechnical Report	Tectonic Project #1170.C966, dated November 30, 1999

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, V_{ASD}) / 130 mph (3-Second Gust, V_{ULT})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	3
Crest Height:	143 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
178.0	178.0	12	Powerwave 7120.16.05.00 / A-800-110-13I-0-N	Low Profile Platform	(12) 1 5/8" Coax (1) 1/2" Coax	Sprint Nextel
169.0	169.0	9	72" x 6" Panel	Low Profile Platform	(6) 1 5/8" Coax	
158.0	158.0	6	RFS FD9R6004/2C-3L	Low Profile Platform	(12) 1 5/8" Coax	Verizon Wireless
		6	Antel LPA-80080/4CF ___			
145.0	145.0	3	Kathrein Smart Bias Tee	Low Profile Platform	(12) 1 5/8" Coax	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	EMS RR90-17-02DP			
		3	Andrew LNX-6515DS-VTM			
135.0	135.0	6	LGP LGP21903	Low Profile Platform	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Cable	AT&T Mobility
		6	Powerwave LGP21401			
		1	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS 11 (Band 12) (55 lb)			
		6	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
108.0	108.0	1	GPS	Standoff	(1) 1/2" Coax	Verizon Wireless
97.0	97.0	1	GPS	Standoff	(1) 1/2" Coax	Sprint Nextel
88.0	88.0	1	GPS	Standoff	(2) 1/2" Coax	
12.0	12.0	1	PCTEL GPS-TMG-HR-26N	Standoff	(1) 1/2" Coax	AT&T Mobility

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
158.0	158.0	3	Antel BXA-70063/6CF_	-	-	Verizon Wireless
		3	Antel BXA-171085-8BF-EDIN-X			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
158.0	158.0	3	Alcatel-Lucent RRH2x60 700	Low Profile Platform	(2) 1.58" Hybrid	Verizon Wireless
		3	Alcatel-Lucent B66a RRH4x45 (AWS-3)			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Andrew SBNHH-1D65B			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	67%	Pass
Shaft	66%	Pass
Base Plate	40%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	4,675.0	6,311.3	4,446.1	70%
Shear (Kips)	35.5	47.9	38.1	79%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
158.0	Alcatel-Lucent RRH2x60 700	Verizon Wireless	1.913	1.393
	Alcatel-Lucent B66a RRH4x45 (AWS-3)			
	RFS DB-T1-6Z-8AB-0Z			
	Andrew SBNHH-1D65B			

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

AMERICAN TOWER®
CORPORATION

Standard Conditions

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

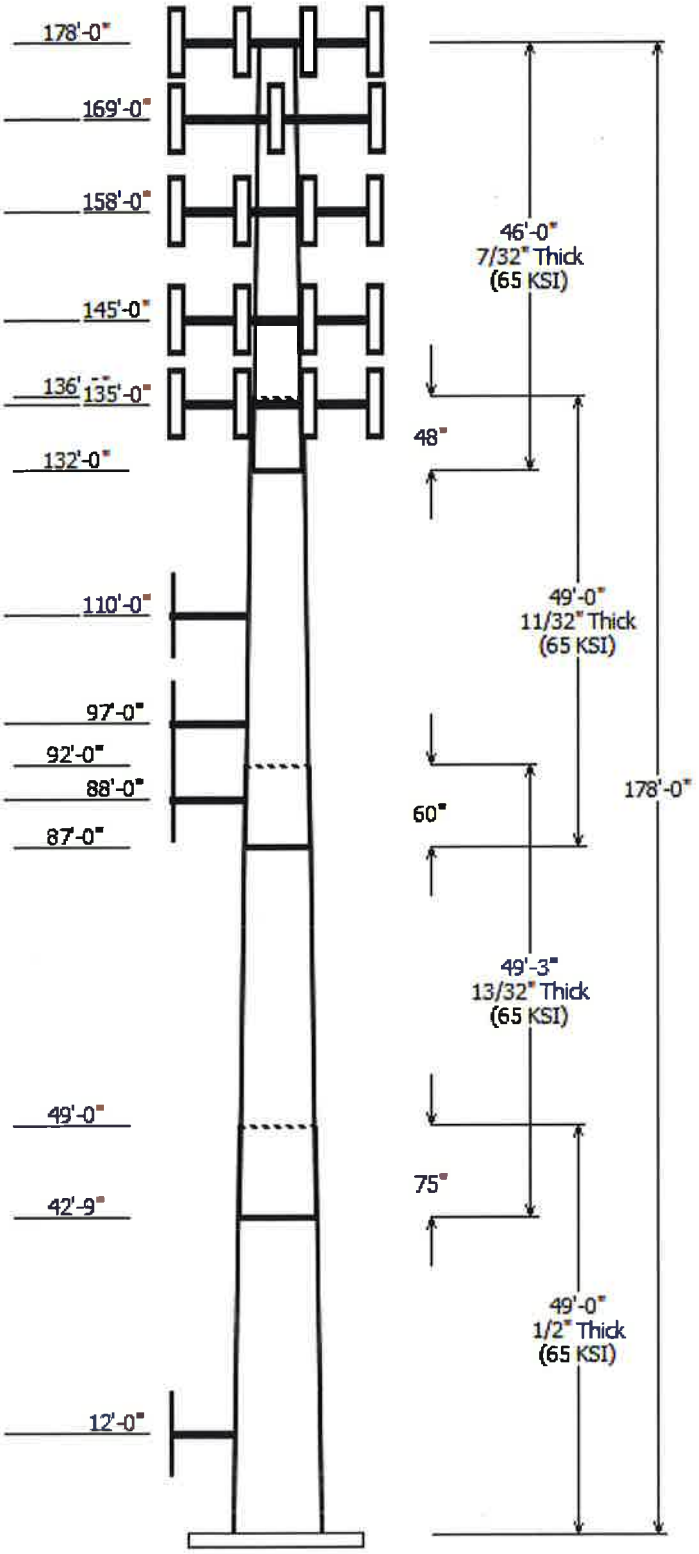
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

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

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

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

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Job Information

Pole :	302472	Code:	ANSI/TIA-222-G
Description :	178' Summit Monopole		
Client :	Verizon Wireless	Struct Class :	II
Location :	Andover-Bunker Hill Road, CT		
Shape :	18 Sides	Exposure :	B
Height :	178.00 (ft)	Topo :	3
Base Elev (ft):	0.00		
Taper:	0.207000 (in/ft)		

Sections Properties

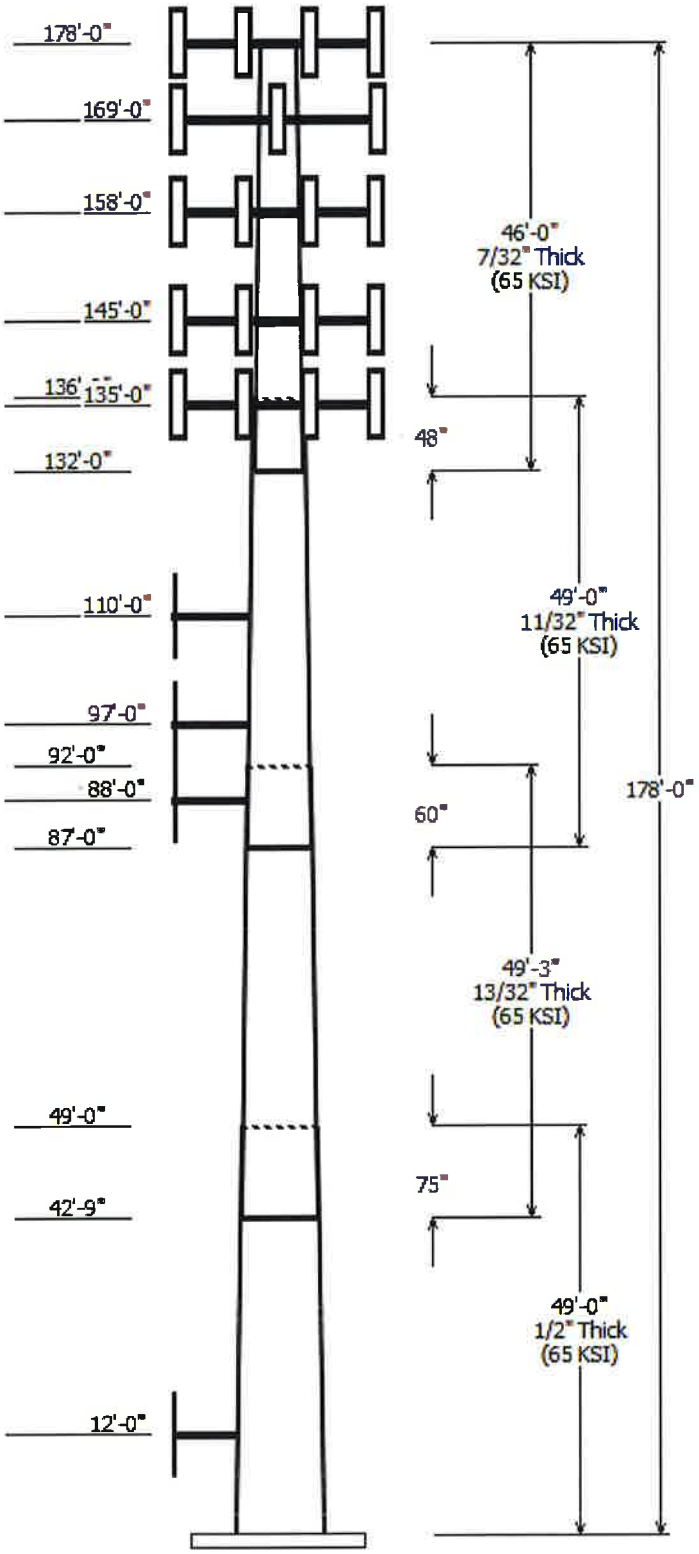
Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	49.000	46.76	56.91	0.500		0.000	0.207000	65
2	49.250	38.67	48.87	0.406	Slip Joint	75.000	0.207000	65
3	49.000	30.25	40.40	0.344	Slip Joint	60.000	0.207000	65
4	46.000	22.00	31.52	0.219	Slip Joint	48.000	0.207000	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
178.000	178.000	1	Flat Low Profile Platform
178.000	178.000	12	Powerwave Allgon
169.000	169.000	1	Round Low Profile Platform
169.000	169.000	9	72" x 6" Panel
158.000	158.000	6	Andrew SBNHH-1D65B
158.000	158.000	2	RFS DB-T1-6Z-8AB-0Z
158.000	158.000	3	Alcatel-Lucent B66a RRH4x45
158.000	158.000	3	Alcatel-Lucent RRH2x60 700
158.000	158.000	6	Antel LPA-80080/4CF ___
158.000	158.000	6	RFS FD9R6004/2C-3L
158.000	158.000	1	Flat Low Profile Platform
145.000	145.000	1	Round Low Profile Platform
145.000	145.000	3	Andrew LNX-6515DS-VTM
145.000	145.000	3	EMS RR90-17-02DP
145.000	145.000	3	Ericsson KRY 112 144/1
145.000	145.000	3	Kathrein Smart Bias Tee
135.000	135.000	1	Flat Low Profile Platform
135.000	135.000	3	KMW AM-X-CD-16-65-00T-RET
135.000	135.000	6	Powerwave 7770.00
135.000	135.000	3	Ericsson RRUS 11 (Band 12) (55
135.000	135.000	1	Raycap DC6-48-60-18-8F
135.000	135.000	6	Powerwave LGP21401
135.000	135.000	6	LGP Allgon LGP21903
110.000	110.000	1	Standoff
110.000	110.000	1	GPS
97.000	97.000	1	Standoff
97.000	97.000	1	GPS
88.000	88.000	1	Standoff
88.000	88.000	1	GPS
12.000	12.000	1	Standoff
12.000	12.000	1	PCTEL GPS-TMG-HR-26N

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	12.000	1/2" Coax	No
0.000	88.000	1/2" Coax	No
0.000	97.000	1/2" Coax	No
0.000	110.0	1/2" Coax	No
0.000	135.0	0.39" (10 mm)	No
0.000	135.0	0.78" (19.7mm) 8	No



0.000	135.0	1 1/4" Coax	No
0.000	145.0	1 5/8" Coax	No
0.000	158.0	1 5/8" Coax	No
0.000	158.0	1.58" (40.1mm)	No
0.000	169.0	1 5/8" Coax	No
0.000	178.0	1 5/8" Coax	No
0.000	178.0	1/2" Coax	No

Load Cases

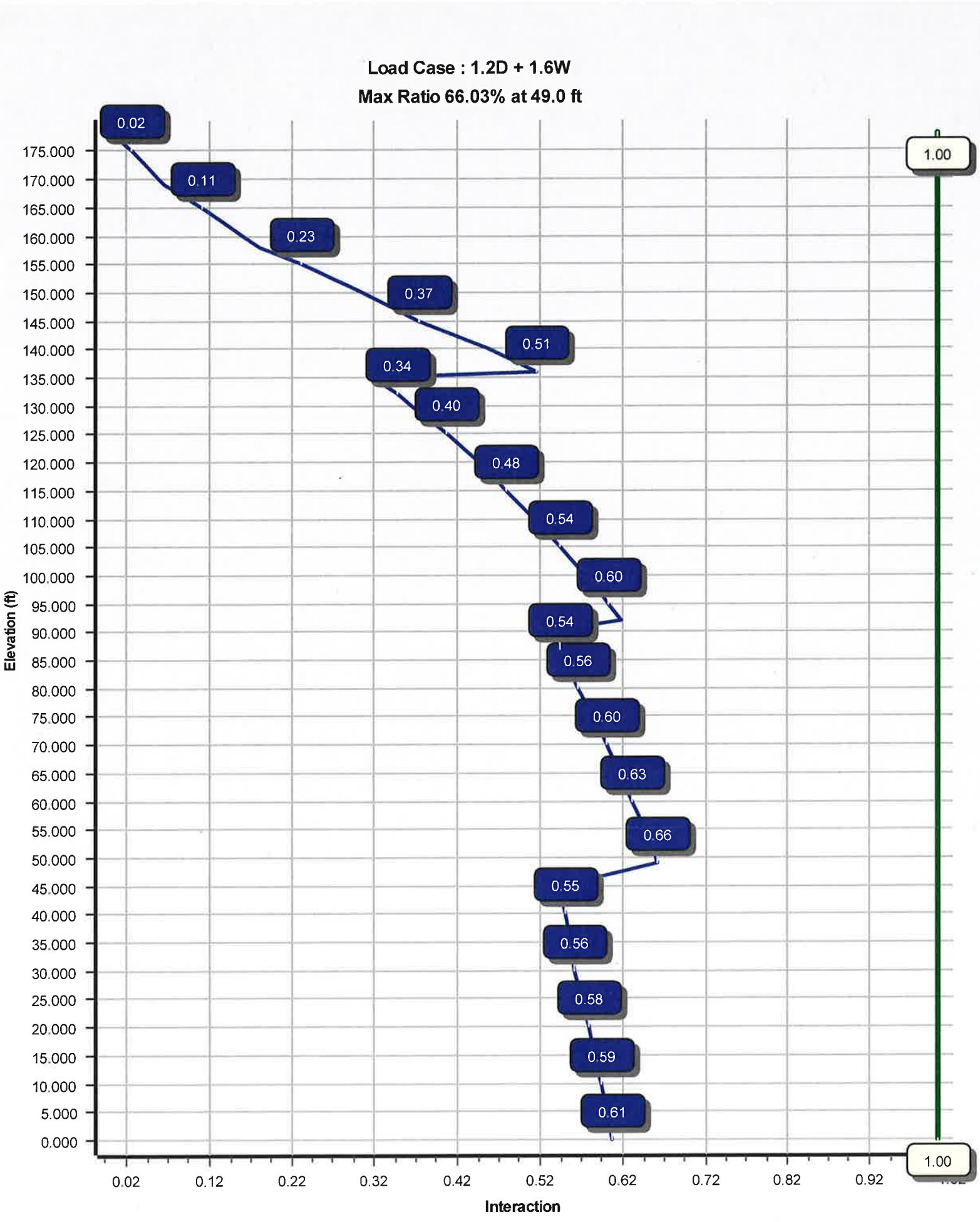
1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	4446.09	38.08	59.56
0.9D + 1.6W	4390.49	38.06	44.66
1.2D + 1.0Di + 1.0Wi	1254.13	10.70	99.26
(1.2 + 0.2Sds) * DL + E ELFM	276.32	1.94	59.33
(1.2 + 0.2Sds) * DL + E EMAM	298.22	2.34	59.33
(0.9 - 0.2Sds) * DL + E ELFM	272.01	1.94	41.35
(0.9 - 0.2Sds) * DL + E EMAM	293.27	2.34	41.35
1.0D + 1.0W	973.88	8.39	49.68

Dish Deflections

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


Load Case : 1.2D + 1.6W
Max Ratio 66.03% at 49.0 ft
0.02
0.11
0.23
0.37
0.51
0.34
0.40
0.48
0.54
0.60
0.54
0.56
0.60
0.63
0.66
0.55
0.56
0.58
0.59
0.61
1.00
1.00
175.000
170.000
165.000
160.000
155.000
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:34 PM

Customer: Verizon Wireless

Analysis Parameters

Location:	Tolland County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	178
Shape:	18 Sides	Base Diameter (in):	56.91
Pole Type:	Taper	Top Diameter (in):	22.00
Pole Manfacturer:	Summit Manufacturing	Taper (in/ft) :	0.207

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:	3	Operational Wind Speed:	60 mph
Crest Height:	143.2 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	2.63				
T_L (sec):	16	p:	1.3	C_s:	0.030
S_s:	0.176	S_1:	0.063	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.188	S_{d1}:	0.101		

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 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:34 PM

Customer: Verizon Wireless

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	49.000	0.5000	65		0.00	13,584	56.91	0.00	89.52	35990.1	18.31	113.82	46.76	49.00	73.42	19857.1	14.73	93.53	0.207008
2-18	49.250	0.4063	65	Slip	75.00	9,371	48.87	42.75	62.49	18546.7	19.45	120.30	38.67	92.00	49.35	9131.9	15.02	95.21	0.207008
3-18	49.000	0.3438	65	Slip	60.00	6,364	40.40	87.00	43.70	8859.4	18.96	117.53	30.25	136.00	32.64	3689.5	13.76	88.02	0.207008
4-18	46.000	0.2188	65	Slip	48.00	2,885	31.52	132.00	21.73	2690.8	23.65	144.10	22.00	178.00	15.12	906.4	15.97	100.57	0.207008
				Shaft Weight		32,204													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
178.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,404.65	52.758	1.00	0.000	0.000
178.00	Powerwave Allgon	12	15.40	5.320	0.71	246.02	5.293	0.71	0.000	0.000
169.00	72" x 6" Panel	9	40.00	4.700	0.69	183.07	5.293	0.69	0.000	0.000
169.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,403.14	48.463	1.00	0.000	0.000
158.00	Alcatel-Lucent B66a	3	67.00	2.660	0.67	173.28	2.735	0.67	0.000	0.000
158.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	160.14	2.735	0.67	0.000	0.000
158.00	Andrew SBNHH-1D65B	6	50.70	8.170	0.69	354.58	10.032	0.69	0.000	0.000
158.00	Antel LPA-80080/4CF ___	6	12.00	5.400	0.64	215.95	3.831	0.64	0.000	0.000
158.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,401.68	52.671	1.00	0.000	0.000
158.00	RFS DB-T1-6Z-8AB-0Z	2	44.00	4.800	0.67	257.77	6.045	0.67	0.000	0.000
158.00	RFS FD9R6004/2C-3L	6	2.60	0.370	0.50	25.62	0.718	0.50	0.000	0.000
145.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.70	442.69	13.761	0.70	0.000	0.000
145.00	EMS RR90-17-02DP	3	13.50	4.360	0.64	166.34	5.782	0.64	0.000	0.000
145.00	Ericsson KRY 112 144/1	3	11.00	0.410	0.50	38.82	0.775	0.50	0.000	0.000
145.00	Kathrein Smart Bias Tee	3	3.31	0.090	0.50	16.18	0.341	0.50	0.000	0.000
145.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,400.13	48.373	1.00	0.000	0.000
135.00	Ericsson RRUS 11 (Band 12)	3	55.00	2.520	0.67	176.99	3.447	0.67	0.000	0.000
135.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,399.40	52.603	1.00	0.000	0.000
135.00	KMW AM-X-CD-16-65-00T-	3	48.50	8.020	0.67	330.75	9.859	0.67	0.000	0.000
135.00	LGP Allgon LGP21903	6	5.50	0.270	0.50	28.92	0.596	0.50	0.000	0.000
135.00	Powerwave 7770.00	6	35.00	5.510	0.65	238.98	7.013	0.65	0.000	0.000
135.00	Powerwave LGP21401	6	14.10	1.100	0.50	67.99	1.772	0.50	0.000	0.000
135.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	172.02	3.136	1.00	0.000	0.000
110.00	GPS	1	10.00	1.000	1.00	70.71	1.132	1.00	0.000	0.000
110.00	Standoff	1	75.00	2.500	0.67	256.17	6.123	0.67	0.000	0.000
97.00	GPS	1	10.00	1.000	1.00	70.74	1.132	1.00	0.000	0.000
97.00	Standoff	1	75.00	2.500	0.67	256.23	6.125	0.67	0.000	0.000
88.00	GPS	1	10.00	1.000	1.00	70.78	1.132	1.00	0.000	0.000
88.00	Standoff	1	75.00	2.500	0.67	256.31	6.126	0.67	0.000	0.000
12.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	1.00	17.57	0.360	1.00	0.000	0.000
12.00	Standoff	1	75.00	2.500	0.67	157.01	5.234	0.67	0.000	0.000
	Totals	97	10133.53			28,559.80			Number of Loadings :	31

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	178.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	178.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	169.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	158.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	158.00	2	1.58" (40.1mm) Hybrid	1.58	1.61	N	0.00	N	Verizon

0.00	145.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
0.00	135.00	1	0.39" (10 mm) Cable	0.39	0.07	N	0.00	N	AT&T Mobility
0.00	135.00	2	0.78" (19.7mm) 8	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	135.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
0.00	110.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Verizon
0.00	97.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	88.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	12.00	1	1/2" Coax	0.63	0.15	N	0.00	N	AT&T Mobility

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		0.5000	56.910	89.519	35,990.1	18.31	113.82	79.9	1245.	0.0	0.0
5.00		0.5000	55.875	87.877	34,045.1	17.94	111.75	80.3	1200.	0.0	1,509.1
10.00		0.5000	54.840	86.234	32,171.5	17.58	109.68	80.7	1155.	0.0	1,481.2
12.00		0.5000	54.426	85.577	31,441.7	17.43	108.85	80.9	1137.	0.0	584.6
15.00		0.5000	53.805	84.592	30,367.9	17.21	107.61	81.2	1111.	0.0	868.6
20.00		0.5000	52.770	82.949	28,633.1	16.85	105.54	81.6	1068.	0.0	1,425.3
25.00		0.5000	51.735	81.307	26,965.5	16.48	103.47	82.0	1026.	0.0	1,397.3
30.00		0.5000	50.700	79.664	25,364.1	16.12	101.40	82.4	985.4	0.0	1,369.4
35.00		0.5000	49.665	78.022	23,827.3	15.75	99.33	82.6	944.9	0.0	1,341.4
40.00		0.5000	48.630	76.379	22,353.9	15.39	97.26	82.6	905.4	0.0	1,313.5
42.75	Bot - Section 2	0.5000	48.060	75.476	21,570.0	15.19	96.12	82.6	884.0	0.0	710.5
45.00		0.5000	47.595	74.736	20,942.5	15.02	95.19	82.6	866.7	0.0	1,051.2
49.00	Top - Section 1	0.4063	47.579	60.824	17,100.7	18.89	117.12	79.2	707.9	0.0	1,843.5
50.00		0.4063	47.372	60.557	16,876.6	18.80	116.61	79.3	701.7	0.0	206.5
55.00		0.4063	46.337	59.223	15,785.2	18.35	114.06	79.8	671.0	0.0	1,019.0
60.00		0.4063	45.302	57.888	14,741.9	17.90	111.51	80.3	640.9	0.0	996.3
65.00		0.4063	44.267	56.554	13,745.6	17.45	108.96	80.9	611.6	0.0	973.5
70.00		0.4063	43.232	55.219	12,795.3	17.00	106.42	81.4	582.9	0.0	950.8
75.00		0.4063	42.197	53.884	11,889.8	16.55	103.87	81.9	555.0	0.0	928.1
80.00		0.4063	41.162	52.550	11,028.1	16.10	101.32	82.5	527.7	0.0	905.4
85.00		0.4063	40.127	51.215	10,209.0	15.65	98.77	82.6	501.1	0.0	882.7
87.00	Bot - Section 3	0.4063	39.713	50.681	9,893.1	15.47	97.75	82.6	490.7	0.0	346.7
88.00		0.4063	39.506	50.415	9,737.6	15.38	97.24	82.6	485.5	0.0	320.3
90.00		0.4063	39.092	49.881	9,431.5	15.20	96.23	82.6	475.2	0.0	635.6
92.00	Top - Section 2	0.3438	39.365	42.573	8,190.3	18.43	114.52	79.7	409.8	0.0	628.9
95.00		0.3438	38.744	41.896	7,805.4	18.11	112.71	80.1	396.8	0.0	431.1
97.00		0.3438	38.330	41.444	7,555.7	17.90	111.51	80.3	388.3	0.0	283.6
100.0		0.3438	37.709	40.767	7,191.1	17.58	109.70	80.7	375.6	0.0	419.6
105.0		0.3438	36.674	39.637	6,609.9	17.05	106.69	81.3	355.0	0.0	684.0
110.0		0.3438	35.639	38.508	6,060.9	16.52	103.68	82.0	335.0	0.0	664.8
115.0		0.3438	34.604	37.379	5,543.2	15.99	100.67	82.6	315.5	0.0	645.6
120.0		0.3438	33.569	36.250	5,055.8	15.46	97.66	82.6	296.6	0.0	626.4
125.0		0.3438	32.534	35.120	4,597.9	14.93	94.64	82.6	278.4	0.0	607.1
130.0		0.3438	31.499	33.991	4,168.5	14.39	91.63	82.6	260.7	0.0	587.9
132.0	Bot - Section 4	0.3438	31.085	33.539	4,004.5	14.18	90.43	82.6	253.7	0.0	229.8
135.0		0.3438	30.464	32.862	3,766.7	13.86	88.62	82.6	243.5	0.0	558.6
136.0	Top - Section 3	0.2188	30.694	21.159	2,482.8	22.98	140.32	74.4	159.3	0.0	183.7
140.0		0.2188	29.866	20.584	2,285.9	22.31	136.53	75.2	150.8	0.0	284.1
145.0		0.2188	28.831	19.865	2,054.8	21.48	131.80	76.1	140.4	0.0	344.1
150.0		0.2188	27.796	19.147	1,839.7	20.64	127.07	77.1	130.4	0.0	331.9
155.0		0.2188	26.761	18.428	1,640.3	19.81	122.34	78.1	120.7	0.0	319.6
158.0		0.2188	26.140	17.997	1,527.8	19.31	119.50	78.7	115.1	0.0	185.9
160.0		0.2188	25.726	17.709	1,455.8	18.97	117.61	79.1	111.5	0.0	121.5
165.0		0.2188	24.691	16.991	1,285.6	18.14	112.87	80.1	102.6	0.0	295.2
169.0		0.2188	23.863	16.416	1,159.5	17.47	109.09	80.9	95.7	0.0	227.4
170.0		0.2188	23.656	16.272	1,129.3	17.31	108.14	81.0	94.0	0.0	55.6
175.0		0.2188	22.621	15.554	986.2	16.47	103.41	82.0	85.9	0.0	270.7
178.0		0.2188	22.000	15.122	906.4	15.97	100.57	82.6	81.2	0.0	156.6
											32,204.2

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:34 PM

Customer: Verizon Wireless

Load Case: 1.2D + 1.6W 101 mph with No Ice 26 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	37.885	41.67	601.04	0.650	0.000	0.00	0.000	0.00	505.6	0.0	0.0
5.00		2.13	0.70	37.050	40.75	588.98	0.650	0.000	5.00	23.859	15.51	981.1	0.0	1,810.9
10.00		2.04	0.70	35.491	39.04	565.87	0.650	0.000	5.00	23.421	15.22	657.8	0.0	1,777.4
12.00	Appertunance(s)	1.98	0.70	34.480	37.92	550.46	0.650	0.000	2.00	9.246	6.01	447.9	0.0	701.6
15.00		1.94	0.70	33.797	37.17	539.81	0.650	0.000	3.00	13.738	8.93	688.1	0.0	1,042.3
20.00		1.88	0.70	32.765	36.04	523.37	0.650	0.000	5.00	22.546	14.65	821.8	0.0	1,710.3
25.00		1.81	0.70	31.574	34.73	503.79	0.650	0.000	5.00	22.108	14.37	777.1	0.0	1,676.8
30.00		1.75	0.70	30.483	33.53	485.21	0.650	0.000	5.00	21.670	14.09	744.5	0.0	1,643.2
35.00		1.69	0.71	30.191	33.21	473.12	0.650	0.000	5.00	21.232	13.80	729.1	0.0	1,609.7
40.00		1.64	0.74	30.472	33.51	465.51	0.650	0.000	5.00	20.794	13.52	559.5	0.0	1,576.2
42.75	Bot - Section 2	1.60	0.76	30.617	33.67	459.00	0.650	0.000	2.75	11.250	7.31	359.6	0.0	852.6
45.00		1.58	0.78	30.685	33.75	454.59	0.650	0.000	2.25	9.261	6.02	448.2	0.0	1,261.4
49.00	Top - Section 1	1.55	0.79	30.748	33.82	448.90	0.650	0.000	4.00	16.244	10.56	356.4	0.0	2,212.1
50.00		1.53	0.80	30.783	33.86	451.97	0.650	0.000	1.00	4.017	2.61	420.1	0.0	247.8
55.00		1.51	0.82	30.812	33.89	446.26	0.650	0.000	5.00	19.824	12.89	691.3	0.0	1,222.8
60.00		1.47	0.84	30.833	33.91	436.55	0.650	0.000	5.00	19.386	12.60	676.1	0.0	1,195.5
65.00		1.43	0.86	30.831	33.91	426.68	0.650	0.000	5.00	18.948	12.32	660.4	0.0	1,168.3
70.00		1.40	0.88	30.814	33.89	416.70	0.650	0.000	5.00	18.510	12.03	644.5	0.0	1,141.0
75.00		1.37	0.90	30.788	33.86	406.67	0.650	0.000	5.00	18.072	11.75	628.5	0.0	1,113.8
80.00		1.34	0.91	30.758	33.83	396.63	0.650	0.000	5.00	17.634	11.46	612.5	0.0	1,086.5
85.00		1.32	0.93	30.728	33.80	386.59	0.650	0.000	5.00	17.196	11.18	420.9	0.0	1,059.3
87.00	Bot - Section 3	1.30	0.94	30.707	33.77	379.57	0.650	0.000	2.00	6.756	4.39	178.5	0.0	416.1
88.00	Appertunance(s)	1.30	0.95	30.699	33.76	376.57	0.650	0.000	1.00	3.410	2.22	178.7	0.0	384.4
90.00		1.29	0.95	30.691	33.76	373.56	0.650	0.000	2.00	6.767	4.40	236.3	0.0	762.8
92.00	Top - Section 2	1.28	0.96	30.681	33.74	369.57	0.650	0.000	2.00	6.697	4.35	291.5	0.0	754.7
95.00		1.27	0.96	30.670	33.73	371.11	0.650	0.000	3.00	9.914	6.44	288.3	0.0	517.4
97.00	Appertunance(s)	1.26	0.97	30.660	33.72	366.14	0.650	0.000	2.00	6.522	4.24	283.6	0.0	340.3
100.0		1.25	0.98	30.651	33.71	361.17	0.650	0.000	3.00	9.652	6.27	445.0	0.0	503.5
105.0		1.24	0.99	30.640	33.70	353.24	0.650	0.000	5.00	15.736	10.23	543.8	0.0	820.8
110.0	Appertunance(s)	1.22	1.00	30.633	33.69	343.37	0.650	0.000	5.00	15.298	9.94	528.4	0.0	797.7
115.0		1.20	1.02	30.632	33.69	333.54	0.650	0.000	5.00	14.860	9.66	513.1	0.0	774.7
120.0		1.19	1.03	30.639	33.70	323.74	0.650	0.000	5.00	14.422	9.37	497.9	0.0	751.6
125.0		1.18	1.04	30.653	33.71	313.98	0.650	0.000	5.00	13.984	9.09	482.9	0.0	728.6
130.0		1.16	1.05	30.674	33.74	304.26	0.650	0.000	5.00	13.546	8.80	330.7	0.0	705.5
132.0	Bot - Section 4	1.15	1.06	30.694	33.76	297.46	0.650	0.000	2.00	5.296	3.44	232.2	0.0	275.7
135.0	Appertunance(s)	1.15	1.07	30.709	33.78	292.62	0.650	0.000	3.00	7.923	5.15	185.0	0.0	670.3
136.0	Top - Section 3	1.14	1.07	30.723	33.79	288.75	0.650	0.000	1.00	2.606	1.69	226.0	0.0	220.4
140.0		1.14	1.08	30.742	33.81	288.08	0.650	0.000	4.00	10.249	6.66	398.9	0.0	340.9
145.0	Appertunance(s)	1.13	1.09	30.781	33.85	279.39	0.650	0.000	5.00	12.417	8.07	429.9	0.0	412.9
150.0		1.12	1.10	30.829	33.91	269.75	0.650	0.000	5.00	11.979	7.79	415.1	0.0	398.2
155.0		1.11	1.11	30.884	33.97	260.12	0.650	0.000	5.00	11.541	7.50	322.7	0.0	383.6
158.0	Appertunance(s)	1.11	1.12	30.932	34.02	252.42	0.650	0.000	3.00	6.715	4.36	196.5	0.0	223.1
160.0		1.10	1.12	30.964	34.06	247.61	0.650	0.000	2.00	4.389	2.85	266.9	0.0	145.8
165.0		1.10	1.13	31.011	34.11	240.87	0.650	0.000	5.00	10.666	6.93	335.3	0.0	354.2
169.0	Appertunance(s)	1.09	1.14	31.076	34.18	232.21	0.650	0.000	4.00	8.217	5.34	181.8	0.0	272.8
170.0		1.09	1.14	31.113	34.22	227.40	0.650	0.000	1.00	2.011	1.31	210.3	0.0	66.7
175.0		1.08	1.15	31.160	34.27	221.62	0.650	0.000	5.00	9.790	6.36	275.6	0.0	324.9
178.0	Appertunance(s)	1.08	1.16	31.224	34.34	213.91	0.650	0.000	3.00	5.664	3.68	101.2	0.0	187.9
						Totals:			178.00			21,407.2	0.0	38,645.1

Site Number:	**302472**	**Code: ANSI/TIA-222-G**	
Site Name:	**Andover-Bunker Hill Road, CT**	**Engineering Number:OAA691297_C3_02**	**12/22/2016 3:57:34 PM**
Customer:	**Verizon Wireless**		

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 26 Iterations

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

Wind Importance Factor :1.00

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 26 Iterations

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

Wind Importance Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		505.6	0.0					0.0	0.0	505.6	0.0	0.0	0.0
5.00		981.1	1,810.9					0.0	284.2	981.1	2,095.1	0.0	0.0
10.00		657.8	1,777.4					0.0	284.2	657.8	2,061.6	0.0	0.0
12.00	Appertunance(s)	447.9	701.6	106.2	0.0	0.0	90.7	0.0	113.7	554.2	906.0	0.0	0.0
15.00		688.1	1,042.3					0.0	170.0	688.1	1,212.3	0.0	0.0
20.00		821.8	1,710.3					0.0	283.3	821.8	1,993.6	0.0	0.0
25.00		777.1	1,676.8					0.0	283.3	777.1	1,960.1	0.0	0.0
30.00		744.5	1,643.2					0.0	283.3	744.5	1,926.6	0.0	0.0
35.00		729.1	1,609.7					0.0	283.3	729.1	1,893.0	0.0	0.0
40.00		559.5	1,576.2					0.0	283.3	559.5	1,859.5	0.0	0.0
42.75	Bot - Section 2	359.6	852.6					0.0	155.8	359.6	1,008.4	0.0	0.0
45.00		448.2	1,261.4					0.0	127.5	448.2	1,388.9	0.0	0.0
49.00	Top - Section 1	356.4	2,212.1					0.0	226.7	356.4	2,438.8	0.0	0.0
50.00		420.1	247.8					0.0	56.7	420.1	304.5	0.0	0.0
55.00		691.3	1,222.8					0.0	283.3	691.3	1,506.1	0.0	0.0
60.00		676.1	1,195.5					0.0	283.3	676.1	1,478.8	0.0	0.0
65.00		660.4	1,168.3					0.0	283.3	660.4	1,451.6	0.0	0.0
70.00		644.5	1,141.0					0.0	283.3	644.5	1,424.3	0.0	0.0
75.00		628.5	1,113.8					0.0	283.3	628.5	1,397.1	0.0	0.0
80.00		612.5	1,086.5					0.0	283.3	612.5	1,369.8	0.0	0.0
85.00		420.9	1,059.3					0.0	283.3	420.9	1,342.6	0.0	0.0
87.00	Bot - Section 3	178.5	416.1					0.0	113.3	178.5	529.4	0.0	0.0
88.00	Appertunance(s)	178.7	384.4	144.5	0.0	0.0	102.0	0.0	56.7	323.2	543.1	0.0	0.0
90.00		236.3	762.8					0.0	112.6	236.3	875.4	0.0	0.0
92.00	Top - Section 2	291.5	754.7					0.0	112.6	291.5	867.3	0.0	0.0
95.00		288.3	517.4					0.0	168.9	288.3	686.3	0.0	0.0
97.00	Appertunance(s)	283.6	340.3	144.3	0.0	0.0	102.0	0.0	112.6	427.9	554.9	0.0	0.0
100.00		445.0	503.5					0.0	168.4	445.0	671.9	0.0	0.0
105.00		543.8	820.8					0.0	280.6	543.8	1,101.4	0.0	0.0
110.00	Appertunance(s)	528.4	797.7	144.2	0.0	0.0	102.0	0.0	280.6	672.6	1,180.4	0.0	0.0
115.00		513.1	774.7					0.0	279.7	513.1	1,054.4	0.0	0.0
120.00		497.9	751.6					0.0	279.7	497.9	1,031.3	0.0	0.0
125.00		482.9	728.6					0.0	279.7	482.9	1,008.3	0.0	0.0
130.00		330.7	705.5					0.0	279.7	330.7	985.2	0.0	0.0
132.00	Bot - Section 4	232.2	275.7					0.0	111.9	232.2	387.6	0.0	0.0
135.00	Appertunance(s)	185.0	670.3	3,490.1	0.0	0.0	2,603.9	0.0	167.8	3,675.1	3,442.0	0.0	0.0
136.00	Top - Section 3	226.0	220.4					0.0	45.4	226.0	265.8	0.0	0.0
140.00		398.9	340.9					0.0	181.5	398.9	522.4	0.0	0.0
145.00	Appertunance(s)	429.9	412.9	2,613.1	0.0	0.0	2,084.8	0.0	226.9	3,043.0	2,724.6	0.0	0.0
150.00		415.1	398.2					0.0	167.8	415.1	566.1	0.0	0.0
155.00		322.7	383.6					0.0	167.8	322.7	551.4	0.0	0.0
158.00	Appertunance(s)	196.5	223.1	4,549.5	0.0	0.0	2,821.1	0.0	100.7	4,746.0	3,144.9	0.0	0.0
160.00		266.9	145.8					0.0	35.8	266.9	181.6	0.0	0.0
165.00		335.3	354.2					0.0	89.5	335.3	443.7	0.0	0.0
169.00	Appertunance(s)	181.8	272.8	2,466.3	0.0	0.0	2,232.0	0.0	71.6	2,648.1	2,576.4	0.0	0.0
170.00		210.3	66.7					0.0	12.0	210.3	78.7	0.0	0.0
175.00		275.6	324.9					0.0	59.9	275.6	384.8	0.0	0.0
178.00	Appertunance(s)	101.2	187.9	3,429.8	0.0	0.0	2,021.8	0.0	36.0	3,531.0	2,245.6	0.0	0.0

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 26 Iterations

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

Wind Importance Factor :1.00

Totals:	38,495.2	59,623.6	0.00	0.00

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:37 PM

Customer: Verizon Wireless

Load Case: 1.2D + 1.6W 101 mph with No Ice 26 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	-59.56	-38.08	0.00	-4,446.09	0.00	4,446.09	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.605
5.00	-57.36	-37.27	0.00	-4,255.69	0.00	4,255.69	6,350.74	3,175.37	14,433.5	7,227.48	0.09	-0.17	0.598
10.00	-55.22	-36.72	0.00	-4,069.34	0.00	4,069.34	6,265.35	3,132.68	13,970.9	6,995.84	0.37	-0.35	0.591
12.00	-54.26	-36.24	0.00	-3,995.91	0.00	3,995.91	6,230.84	3,115.42	13,787.1	6,903.82	0.53	-0.42	0.588
15.00	-52.97	-35.68	0.00	-3,887.17	0.00	3,887.17	6,178.70	3,089.35	13,512.8	6,766.48	0.82	-0.52	0.583
20.00	-50.87	-34.99	0.00	-3,708.78	0.00	3,708.78	6,090.77	3,045.39	13,059.5	6,539.47	1.47	-0.70	0.576
25.00	-48.82	-34.34	0.00	-3,533.81	0.00	3,533.81	6,001.58	3,000.79	12,611.0	6,314.89	2.30	-0.88	0.568
30.00	-46.80	-33.72	0.00	-3,362.09	0.00	3,362.09	5,911.12	2,955.56	12,167.6	6,092.85	3.32	-1.06	0.560
35.00	-44.81	-33.09	0.00	-3,193.51	0.00	3,193.51	5,796.61	2,898.31	11,683.4	5,850.41	4.53	-1.25	0.554
40.00	-42.88	-32.60	0.00	-3,028.04	0.00	3,028.04	5,674.58	2,837.29	11,194.2	5,605.46	5.94	-1.43	0.548
42.75	-41.83	-32.28	0.00	-2,938.39	0.00	2,938.39	5,607.46	2,803.73	10,929.6	5,472.97	6.80	-1.54	0.544
45.00	-40.39	-31.88	0.00	-2,865.76	0.00	2,865.76	5,552.55	2,776.27	10,715.5	5,365.75	7.54	-1.62	0.541
49.00	-37.91	-31.52	0.00	-2,738.23	0.00	2,738.23	4,334.74	2,167.37	8,395.94	4,204.21	8.97	-1.78	0.660
50.00	-37.55	-31.17	0.00	-2,706.71	0.00	2,706.71	4,321.48	2,160.74	8,333.21	4,172.80	9.35	-1.82	0.658
55.00	-35.95	-30.57	0.00	-2,550.85	0.00	2,550.85	4,254.40	2,127.20	8,021.52	4,016.72	11.37	-2.04	0.644
60.00	-34.38	-29.97	0.00	-2,398.00	0.00	2,398.00	4,186.06	2,093.03	7,713.24	3,862.35	13.62	-2.26	0.629
65.00	-32.84	-29.38	0.00	-2,248.13	0.00	2,248.13	4,116.45	2,058.22	7,408.53	3,709.77	16.10	-2.48	0.614
70.00	-31.33	-28.80	0.00	-2,101.22	0.00	2,101.22	4,045.56	2,022.78	7,107.57	3,559.07	18.83	-2.71	0.598
75.00	-29.86	-28.22	0.00	-1,957.23	0.00	1,957.23	3,973.41	1,986.71	6,810.50	3,410.31	21.78	-2.93	0.582
80.00	-28.41	-27.65	0.00	-1,816.13	0.00	1,816.13	3,899.99	1,950.00	6,517.51	3,263.60	24.98	-3.16	0.564
85.00	-27.02	-27.22	0.00	-1,677.90	0.00	1,677.90	3,805.04	1,902.52	6,195.74	3,102.48	28.41	-3.39	0.548
87.00	-26.47	-27.05	0.00	-1,623.45	0.00	1,623.45	3,765.38	1,882.69	6,066.61	3,037.81	29.84	-3.48	0.542
88.00	-25.92	-26.72	0.00	-1,596.40	0.00	1,596.40	3,745.55	1,872.77	6,002.55	3,005.74	30.58	-3.52	0.538
90.00	-25.02	-26.47	0.00	-1,542.96	0.00	1,542.96	3,705.89	1,852.94	5,875.46	2,942.10	32.07	-3.62	0.531
92.00	-24.12	-26.17	0.00	-1,490.01	0.00	1,490.01	3,054.73	1,527.36	4,893.34	2,450.31	33.61	-3.71	0.616
95.00	-23.40	-25.89	0.00	-1,411.49	0.00	1,411.49	3,020.24	1,510.12	4,760.42	2,383.75	35.98	-3.84	0.600
97.00	-22.82	-25.47	0.00	-1,359.72	0.00	1,359.72	2,996.99	1,498.50	4,672.40	2,339.67	37.61	-3.94	0.589
100.00	-22.09	-25.06	0.00	-1,283.30	0.00	1,283.30	2,961.74	1,480.87	4,541.28	2,274.01	40.13	-4.09	0.572
105.00	-20.93	-24.52	0.00	-1,158.00	0.00	1,158.00	2,901.98	1,450.99	4,325.26	2,165.84	44.55	-4.33	0.542
110.00	-19.71	-23.84	0.00	-1,035.38	0.00	1,035.38	2,840.94	1,420.47	4,112.52	2,059.32	49.21	-4.57	0.510
115.00	-18.61	-23.32	0.00	-916.18	0.00	916.18	2,777.06	1,388.53	3,901.02	1,953.41	54.11	-4.80	0.476
120.00	-17.54	-22.80	0.00	-799.59	0.00	799.59	2,693.16	1,346.58	3,667.73	1,836.59	59.26	-5.02	0.442
125.00	-16.50	-22.29	0.00	-685.60	0.00	685.60	2,609.26	1,304.63	3,441.64	1,723.38	64.62	-5.23	0.404
130.00	-15.50	-21.90	0.00	-574.17	0.00	574.17	2,525.36	1,262.68	3,222.75	1,613.77	70.19	-5.42	0.362
132.00	-15.10	-21.66	0.00	-530.37	0.00	530.37	2,491.80	1,245.90	3,137.20	1,570.93	72.48	-5.50	0.344
135.00	-12.01	-17.68	0.00	-465.40	0.00	465.40	2,441.46	1,220.73	3,011.04	1,507.76	75.97	-5.61	0.314
136.00	-11.74	-17.45	0.00	-447.72	0.00	447.72	1,416.30	708.15	1,774.76	888.70	77.14	-5.64	0.513
140.00	-11.21	-17.03	0.00	-377.93	0.00	377.93	1,392.36	696.18	1,697.02	849.77	81.91	-5.77	0.453
145.00	-8.77	-13.76	0.00	-292.78	0.00	292.78	1,361.30	680.65	1,600.81	801.59	88.06	-5.98	0.372
150.00	-8.21	-13.31	0.00	-224.00	0.00	224.00	1,328.96	664.48	1,505.82	754.03	94.41	-6.15	0.304
155.00	-7.67	-12.94	0.00	-157.47	0.00	157.47	1,295.36	647.68	1,412.23	707.16	100.92	-6.30	0.229
158.00	-5.06	-7.88	0.00	-118.66	0.00	118.66	1,274.59	637.29	1,356.80	679.41	104.90	-6.37	0.179
160.00	-4.91	-7.60	0.00	-102.90	0.00	102.90	1,260.48	630.24	1,320.18	661.07	107.57	-6.42	0.160
165.00	-4.49	-7.22	0.00	-64.89	0.00	64.89	1,224.34	612.17	1,229.85	615.84	114.32	-6.50	0.109
169.00	-2.23	-4.30	0.00	-36.01	0.00	36.01	1,194.51	597.26	1,158.93	580.33	119.78	-6.54	0.064
170.00	-2.18	-4.08	0.00	-31.71	0.00	31.71	1,186.93	593.46	1,141.40	571.55	121.15	-6.55	0.057
175.00	-1.83	-3.77	0.00	-11.30	0.00	11.30	1,148.25	574.12	1,054.98	528.28	128.01	-6.58	0.023
178.00	0.00	-3.53	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	132.13	-6.58	0.000

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:37 PM

Customer: Verizon Wireless

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 26 Iterations

Gust Response Factor :1.10 — Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	37.885	41.67	601.04	0.650	0.000	0.00	0.000	0.00	505.6	0.0	0.0
5.00		2.13	0.70	37.050	40.75	588.98	0.650	0.000	5.00	23.859	15.51	981.1	0.0	1,358.2
10.00		2.04	0.70	35.491	39.04	565.87	0.650	0.000	5.00	23.421	15.22	657.8	0.0	1,333.0
12.00	Appertunance(s)	1.98	0.70	34.480	37.92	550.46	0.650	0.000	2.00	9.246	6.01	447.9	0.0	526.2
15.00		1.94	0.70	33.797	37.17	539.81	0.650	0.000	3.00	13.738	8.93	688.1	0.0	781.7
20.00		1.88	0.70	32.765	36.04	523.37	0.650	0.000	5.00	22.546	14.65	821.8	0.0	1,282.7
25.00		1.81	0.70	31.574	34.73	503.79	0.650	0.000	5.00	22.108	14.37	777.1	0.0	1,257.6
30.00		1.75	0.70	30.483	33.53	485.21	0.650	0.000	5.00	21.670	14.09	744.5	0.0	1,232.4
35.00		1.69	0.71	30.191	33.21	473.12	0.650	0.000	5.00	21.232	13.80	729.1	0.0	1,207.3
40.00		1.64	0.74	30.472	33.51	465.51	0.650	0.000	5.00	20.794	13.52	559.5	0.0	1,182.1
42.75	Bot - Section 2	1.60	0.76	30.617	33.67	459.00	0.650	0.000	2.75	11.250	7.31	359.6	0.0	639.5
45.00		1.58	0.78	30.685	33.75	454.59	0.650	0.000	2.25	9.261	6.02	448.2	0.0	946.1
49.00	Top - Section 1	1.55	0.79	30.748	33.82	448.90	0.650	0.000	4.00	16.244	10.56	356.4	0.0	1,659.1
50.00		1.53	0.80	30.783	33.86	451.97	0.650	0.000	1.00	4.017	2.61	420.1	0.0	185.9
55.00		1.51	0.82	30.812	33.89	446.26	0.650	0.000	5.00	19.824	12.89	691.3	0.0	917.1
60.00		1.47	0.84	30.833	33.91	436.55	0.650	0.000	5.00	19.386	12.60	676.1	0.0	896.6
65.00		1.43	0.86	30.831	33.91	426.68	0.650	0.000	5.00	18.948	12.32	660.4	0.0	876.2
70.00		1.40	0.88	30.814	33.89	416.70	0.650	0.000	5.00	18.510	12.03	644.5	0.0	855.8
75.00		1.37	0.90	30.788	33.86	406.67	0.650	0.000	5.00	18.072	11.75	628.5	0.0	835.3
80.00		1.34	0.91	30.758	33.83	396.63	0.650	0.000	5.00	17.634	11.46	612.5	0.0	814.9
85.00		1.32	0.93	30.728	33.80	386.59	0.650	0.000	5.00	17.196	11.18	420.9	0.0	794.5
87.00	Bot - Section 3	1.30	0.94	30.707	33.77	379.57	0.650	0.000	2.00	6.756	4.39	178.5	0.0	312.1
88.00	Appertunance(s)	1.30	0.95	30.699	33.76	376.57	0.650	0.000	1.00	3.410	2.22	178.7	0.0	288.3
90.00		1.29	0.95	30.691	33.76	373.56	0.650	0.000	2.00	6.767	4.40	236.3	0.0	572.1
92.00	Top - Section 2	1.28	0.96	30.681	33.74	369.57	0.650	0.000	2.00	6.697	4.35	291.5	0.0	566.0
95.00		1.27	0.96	30.670	33.73	371.11	0.650	0.000	3.00	9.914	6.44	288.3	0.0	388.0
97.00	Appertunance(s)	1.26	0.97	30.660	33.72	366.14	0.650	0.000	2.00	6.522	4.24	283.6	0.0	255.2
100.0		1.25	0.98	30.651	33.71	361.17	0.650	0.000	3.00	9.652	6.27	445.0	0.0	377.7
105.0		1.24	0.99	30.640	33.70	353.24	0.650	0.000	5.00	15.736	10.23	543.8	0.0	615.6
110.0	Appertunance(s)	1.22	1.00	30.633	33.69	343.37	0.650	0.000	5.00	15.298	9.94	528.4	0.0	598.3
115.0		1.20	1.02	30.632	33.69	333.54	0.650	0.000	5.00	14.860	9.66	513.1	0.0	581.0
120.0		1.19	1.03	30.639	33.70	323.74	0.650	0.000	5.00	14.422	9.37	497.9	0.0	563.7
125.0		1.18	1.04	30.653	33.71	313.98	0.650	0.000	5.00	13.984	9.09	482.9	0.0	546.4
130.0		1.16	1.05	30.674	33.74	304.26	0.650	0.000	5.00	13.546	8.80	330.7	0.0	529.1
132.0	Bot - Section 4	1.15	1.06	30.694	33.76	297.46	0.650	0.000	2.00	5.296	3.44	232.2	0.0	206.8
135.0	Appertunance(s)	1.15	1.07	30.709	33.78	292.62	0.650	0.000	3.00	7.923	5.15	185.0	0.0	502.7
136.0	Top - Section 3	1.14	1.07	30.723	33.79	288.75	0.650	0.000	1.00	2.606	1.69	226.0	0.0	165.3
140.0		1.14	1.08	30.742	33.81	288.08	0.650	0.000	4.00	10.249	6.66	398.9	0.0	255.7
145.0	Appertunance(s)	1.13	1.09	30.781	33.85	279.39	0.650	0.000	5.00	12.417	8.07	429.9	0.0	309.7
150.0		1.12	1.10	30.829	33.91	269.75	0.650	0.000	5.00	11.979	7.79	415.1	0.0	298.7
155.0		1.11	1.11	30.884	33.97	260.12	0.650	0.000	5.00	11.541	7.50	322.7	0.0	287.7
158.0	Appertunance(s)	1.11	1.12	30.932	34.02	252.42	0.650	0.000	3.00	6.715	4.36	196.5	0.0	167.3
160.0		1.10	1.12	30.964	34.06	247.61	0.650	0.000	2.00	4.389	2.85	266.9	0.0	109.4
165.0		1.10	1.13	31.011	34.11	240.87	0.650	0.000	5.00	10.666	6.93	335.3	0.0	265.7
169.0	Appertunance(s)	1.09	1.14	31.076	34.18	232.21	0.650	0.000	4.00	8.217	5.34	181.8	0.0	204.6
170.0		1.09	1.14	31.113	34.22	227.40	0.650	0.000	1.00	2.011	1.31	210.3	0.0	50.1
175.0		1.08	1.15	31.160	34.27	221.62	0.650	0.000	5.00	9.790	6.36	275.6	0.0	243.7
178.0	Appertunance(s)	1.08	1.16	31.224	34.34	213.91	0.650	0.000	3.00	5.664	3.68	101.2	0.0	140.9
						Totals:			178.00			21,407.2	0.0	28,983.8

Site Number:	**302472**	**Code: ANSI/TIA-222-G**	
Site Name:	**Andover-Bunker Hill Road, CT**	**Engineering Number:OAA691297_C3_02**	**12/22/2016 3:57:37 PM**
Customer:	**Verizon Wireless**		

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 26 Iterations

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

Wind Importance Factor :1.00

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:39 PM

Customer: Verizon Wireless

Load Case: 0.9D + 1.6W 101 mph with No Ice (Reduced DL) 26 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

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		505.6	0.0					0.0	0.0	505.6	0.0	0.0	0.0
5.00		981.1	1,358.2					0.0	213.2	981.1	1,571.4	0.0	0.0
10.00		657.8	1,333.0					0.0	213.2	657.8	1,546.2	0.0	0.0
12.00	Appertunance(s)	447.9	526.2	106.2	0.0	0.0	68.0	0.0	85.3	554.2	679.5	0.0	0.0
15.00		688.1	781.7					0.0	127.5	688.1	909.2	0.0	0.0
20.00		821.8	1,282.7					0.0	212.5	821.8	1,495.2	0.0	0.0
25.00		777.1	1,257.6					0.0	212.5	777.1	1,470.1	0.0	0.0
30.00		744.5	1,232.4					0.0	212.5	744.5	1,444.9	0.0	0.0
35.00		729.1	1,207.3					0.0	212.5	729.1	1,419.8	0.0	0.0
40.00		559.5	1,182.1					0.0	212.5	559.5	1,394.6	0.0	0.0
42.75	Bot - Section 2	359.6	639.5					0.0	116.9	359.6	756.3	0.0	0.0
45.00		448.2	946.1					0.0	95.6	448.2	1,041.7	0.0	0.0
49.00	Top - Section 1	356.4	1,659.1					0.0	170.0	356.4	1,829.1	0.0	0.0
50.00		420.1	185.9					0.0	42.5	420.1	228.4	0.0	0.0
55.00		691.3	917.1					0.0	212.5	691.3	1,129.6	0.0	0.0
60.00		676.1	896.6					0.0	212.5	676.1	1,109.1	0.0	0.0
65.00		660.4	876.2					0.0	212.5	660.4	1,088.7	0.0	0.0
70.00		644.5	855.8					0.0	212.5	644.5	1,068.2	0.0	0.0
75.00		628.5	835.3					0.0	212.5	628.5	1,047.8	0.0	0.0
80.00		612.5	814.9					0.0	212.5	612.5	1,027.4	0.0	0.0
85.00		420.9	794.5					0.0	212.5	420.9	1,006.9	0.0	0.0
87.00	Bot - Section 3	178.5	312.1					0.0	85.0	178.5	397.1	0.0	0.0
88.00	Appertunance(s)	178.7	288.3	144.5	0.0	0.0	76.5	0.0	42.5	323.2	407.3	0.0	0.0
90.00		236.3	572.1					0.0	84.5	236.3	656.5	0.0	0.0
92.00	Top - Section 2	291.5	566.0					0.0	84.5	291.5	650.5	0.0	0.0
95.00		288.3	388.0					0.0	126.7	288.3	514.7	0.0	0.0
97.00	Appertunance(s)	283.6	255.2	144.3	0.0	0.0	76.5	0.0	84.5	427.9	416.2	0.0	0.0
100.00		445.0	377.7					0.0	126.3	445.0	503.9	0.0	0.0
105.00		543.8	615.6					0.0	210.5	543.8	826.1	0.0	0.0
110.00	Appertunance(s)	528.4	598.3	144.2	0.0	0.0	76.5	0.0	210.5	672.6	885.3	0.0	0.0
115.00		513.1	581.0					0.0	209.8	513.1	790.8	0.0	0.0
120.00		497.9	563.7					0.0	209.8	497.9	773.5	0.0	0.0
125.00		482.9	546.4					0.0	209.8	482.9	756.2	0.0	0.0
130.00		330.7	529.1					0.0	209.8	330.7	738.9	0.0	0.0
132.00	Bot - Section 4	232.2	206.8					0.0	83.9	232.2	290.7	0.0	0.0
135.00	Appertunance(s)	185.0	502.7	3,490.1	0.0	0.0	1,952.9	0.0	125.9	3,675.1	2,581.5	0.0	0.0
136.00	Top - Section 3	226.0	165.3					0.0	34.0	226.0	199.3	0.0	0.0
140.00		398.9	255.7					0.0	136.1	398.9	391.8	0.0	0.0
145.00	Appertunance(s)	429.9	309.7	2,613.1	0.0	0.0	1,563.6	0.0	170.1	3,043.0	2,043.4	0.0	0.0
150.00		415.1	298.7					0.0	125.9	415.1	424.6	0.0	0.0
155.00		322.7	287.7					0.0	125.9	322.7	413.5	0.0	0.0
158.00	Appertunance(s)	196.5	167.3	4,549.5	0.0	0.0	2,115.8	0.0	75.5	4,746.0	2,358.7	0.0	0.0
160.00		266.9	109.4					0.0	26.8	266.9	136.2	0.0	0.0
165.00		335.3	265.7					0.0	67.1	335.3	332.8	0.0	0.0
169.00	Appertunance(s)	181.8	204.6	2,466.3	0.0	0.0	1,674.0	0.0	53.7	2,648.1	1,932.3	0.0	0.0
170.00		210.3	50.1					0.0	9.0	210.3	59.0	0.0	0.0
175.00		275.6	243.7					0.0	45.0	275.6	288.6	0.0	0.0
178.00	Appertunance(s)	101.2	140.9	3,429.8	0.0	0.0	1,516.3	0.0	27.0	3,531.0	1,684.2	0.0	0.0

Site Number:	**302472**	**Code: ANSI/TIA-222-G**	
Site Name:	**Andover-Bunker Hill Road, CT**	**Engineering Number:OAA691297_C3_02**	**12/22/2016 3:57:39 PM**
Customer:	**Verizon Wireless**		

Load Case: 0.9D + 1.6W — 101 mph with No Ice (Reduced DL) — 26 Iterations

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

Wind Importance Factor :1.00

Totals:	38,495.2	44,717.7	0.00	0.00

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:39 PM

Customer: Verizon Wireless

Load Case: 0.9D + 1.6W 101 mph with No Ice (Reduced DL) 26 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	-44.66	-38.06	0.00	-4,390.49	0.00	4,390.49	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.596
5.00	-42.98	-37.20	0.00	-4,200.21	0.00	4,200.21	6,350.74	3,175.37	14,433.5	7,227.48	0.09	-0.17	0.588
10.00	-41.36	-36.62	0.00	-4,014.20	0.00	4,014.20	6,265.35	3,132.68	13,970.9	6,995.84	0.36	-0.34	0.581
12.00	-40.63	-36.13	0.00	-3,940.96	0.00	3,940.96	6,230.84	3,115.42	13,787.1	6,903.82	0.52	-0.41	0.577
15.00	-39.64	-35.53	0.00	-3,832.58	0.00	3,832.58	6,178.70	3,089.35	13,512.8	6,766.48	0.81	-0.52	0.573
20.00	-38.04	-34.81	0.00	-3,654.93	0.00	3,654.93	6,090.77	3,045.39	13,059.5	6,539.47	1.45	-0.69	0.565
25.00	-36.48	-34.13	0.00	-3,480.88	0.00	3,480.88	6,001.58	3,000.79	12,611.0	6,314.89	2.27	-0.87	0.557
30.00	-34.94	-33.47	0.00	-3,310.26	0.00	3,310.26	5,911.12	2,955.56	12,167.6	6,092.85	3.28	-1.05	0.549
35.00	-33.43	-32.82	0.00	-3,142.92	0.00	3,142.92	5,796.61	2,898.31	11,683.4	5,850.41	4.47	-1.23	0.543
40.00	-31.97	-32.30	0.00	-2,978.84	0.00	2,978.84	5,674.58	2,837.29	11,194.2	5,605.46	5.86	-1.41	0.537
42.75	-31.17	-31.98	0.00	-2,890.01	0.00	2,890.01	5,607.46	2,803.73	10,929.6	5,472.97	6.70	-1.52	0.534
45.00	-30.08	-31.56	0.00	-2,818.06	0.00	2,818.06	5,552.55	2,776.27	10,715.5	5,365.75	7.44	-1.60	0.531
49.00	-28.21	-31.20	0.00	-2,691.82	0.00	2,691.82	4,334.74	2,167.37	8,395.94	4,204.21	8.84	-1.75	0.647
50.00	-27.92	-30.83	0.00	-2,660.62	0.00	2,660.62	4,321.48	2,160.74	8,333.21	4,172.80	9.21	-1.79	0.644
55.00	-26.70	-30.21	0.00	-2,506.45	0.00	2,506.45	4,254.40	2,127.20	8,021.52	4,016.72	11.20	-2.01	0.630
60.00	-25.51	-29.59	0.00	-2,355.41	0.00	2,355.41	4,186.06	2,093.03	7,713.24	3,862.35	13.42	-2.22	0.616
65.00	-24.33	-28.98	0.00	-2,207.47	0.00	2,207.47	4,116.45	2,058.22	7,408.53	3,709.77	15.87	-2.45	0.601
70.00	-23.19	-28.38	0.00	-2,062.57	0.00	2,062.57	4,045.56	2,022.78	7,107.57	3,559.07	18.55	-2.67	0.585
75.00	-22.06	-27.78	0.00	-1,920.69	0.00	1,920.69	3,973.41	1,986.71	6,810.50	3,410.31	21.46	-2.89	0.569
80.00	-20.96	-27.20	0.00	-1,781.77	0.00	1,781.77	3,899.99	1,950.00	6,517.51	3,263.60	24.60	-3.11	0.552
85.00	-19.91	-26.78	0.00	-1,645.77	0.00	1,645.77	3,805.04	1,902.52	6,195.74	3,102.48	27.97	-3.33	0.536
87.00	-19.49	-26.60	0.00	-1,592.22	0.00	1,592.22	3,765.38	1,882.69	6,066.61	3,037.81	29.39	-3.42	0.530
88.00	-19.08	-26.27	0.00	-1,565.62	0.00	1,565.62	3,745.55	1,872.77	6,002.55	3,005.74	30.11	-3.47	0.526
90.00	-18.39	-26.03	0.00	-1,513.08	0.00	1,513.08	3,705.89	1,852.94	5,875.46	2,942.10	31.58	-3.56	0.519
92.00	-17.71	-25.73	0.00	-1,461.02	0.00	1,461.02	3,054.73	1,527.36	4,893.34	2,450.31	33.09	-3.65	0.602
95.00	-17.17	-25.44	0.00	-1,383.84	0.00	1,383.84	3,020.24	1,510.12	4,760.42	2,383.75	35.42	-3.78	0.586
97.00	-16.73	-25.02	0.00	-1,332.95	0.00	1,332.95	2,996.99	1,498.50	4,672.40	2,339.67	37.02	-3.88	0.576
100.00	-16.17	-24.60	0.00	-1,257.88	0.00	1,257.88	2,961.74	1,480.87	4,541.28	2,274.01	39.50	-4.02	0.559
105.00	-15.29	-24.06	0.00	-1,134.88	0.00	1,134.88	2,901.98	1,450.99	4,325.26	2,165.84	43.84	-4.26	0.530
110.00	-14.36	-23.38	0.00	-1,014.58	0.00	1,014.58	2,840.94	1,420.47	4,112.52	2,059.32	48.42	-4.49	0.498
115.00	-13.53	-22.86	0.00	-897.68	0.00	897.68	2,777.06	1,388.53	3,901.02	1,953.41	53.25	-4.72	0.465
120.00	-12.72	-22.34	0.00	-783.39	0.00	783.39	2,693.16	1,346.58	3,667.73	1,836.59	58.30	-4.93	0.432
125.00	-11.93	-21.84	0.00	-671.68	0.00	671.68	2,609.26	1,304.63	3,441.64	1,723.38	63.57	-5.14	0.395
130.00	-11.18	-21.47	0.00	-562.50	0.00	562.50	2,525.36	1,262.68	3,222.75	1,613.77	69.04	-5.33	0.353
132.00	-10.88	-21.22	0.00	-519.57	0.00	519.57	2,491.80	1,245.90	3,137.20	1,570.93	71.29	-5.40	0.335
135.00	-8.64	-17.33	0.00	-455.90	0.00	455.90	2,441.46	1,220.73	3,011.04	1,507.76	74.71	-5.51	0.306
136.00	-8.44	-17.10	0.00	-438.57	0.00	438.57	1,416.30	708.15	1,774.76	888.70	75.87	-5.54	0.500
140.00	-8.04	-16.69	0.00	-370.18	0.00	370.18	1,392.36	696.18	1,697.02	849.77	80.55	-5.66	0.442
145.00	-6.26	-13.47	0.00	-286.74	0.00	286.74	1,361.30	680.65	1,600.81	801.59	86.59	-5.87	0.363
150.00	-5.85	-13.03	0.00	-219.37	0.00	219.37	1,328.96	664.48	1,505.82	754.03	92.82	-6.04	0.296
155.00	-5.45	-12.68	0.00	-154.21	0.00	154.21	1,295.36	647.68	1,412.23	707.16	99.22	-6.19	0.223
158.00	-3.61	-7.71	0.00	-116.17	0.00	116.17	1,274.59	637.29	1,356.80	679.41	103.13	-6.26	0.174
160.00	-3.50	-7.43	0.00	-100.75	0.00	100.75	1,260.48	630.24	1,320.18	661.07	105.75	-6.30	0.155
165.00	-3.20	-7.07	0.00	-63.59	0.00	63.59	1,224.34	612.17	1,229.85	615.84	112.38	-6.38	0.106
169.00	-1.57	-4.22	0.00	-35.33	0.00	35.33	1,194.51	597.26	1,158.93	580.33	117.73	-6.42	0.062
170.00	-1.53	-4.00	0.00	-31.11	0.00	31.11	1,186.93	593.46	1,141.40	571.55	119.08	-6.43	0.056
175.00	-1.28	-3.70	0.00	-11.09	0.00	11.09	1,148.25	574.12	1,054.98	528.28	125.82	-6.46	0.022
178.00	0.00	-3.53	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	129.87	-6.46	0.000

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:40 PM

Customer: Verizon Wireless

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 26 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

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	9.285	10.21	0.000	1.200	0.000	0.00	0.000	0.00	153.0	0.0	0.0
5.00		2.13	0.70	9.080	9.988	0.000	1.200	2.014	5.00	25.538	30.65	298.1	730.4	2,541.3
10.00		2.04	0.70	8.698	9.568	0.000	1.200	2.215	5.00	25.267	30.32	200.8	791.4	2,568.8
12.00	Appertunance(s)	1.98	0.70	8.450	9.295	0.000	1.200	2.278	2.00	10.005	12.01	137.2	323.6	1,025.2
15.00		1.94	0.70	8.283	9.111	0.000	1.200	2.309	3.00	14.892	17.87	211.2	486.9	1,529.2
20.00		1.88	0.70	8.030	8.833	0.000	1.200	2.344	5.00	24.499	29.40	252.8	809.1	2,519.4
25.00		1.81	0.70	7.738	8.512	0.000	1.200	2.373	5.00	24.085	28.90	239.7	804.0	2,480.8
30.00		1.75	0.70	7.471	8.218	0.000	1.200	2.391	5.00	23.663	28.40	230.1	795.1	2,438.3
35.00		1.69	0.71	7.399	8.139	0.000	1.200	2.403	5.00	23.235	27.88	225.9	783.7	2,393.4
40.00		1.64	0.74	7.468	8.215	0.000	1.200	2.411	5.00	22.803	27.36	173.6	770.7	2,346.9
42.75	Bot - Section 2	1.60	0.76	7.503	8.254	0.000	1.200	2.415	2.75	12.357	14.83	111.7	419.9	1,272.5
45.00		1.58	0.78	7.520	8.272	0.000	1.200	2.417	2.25	10.167	12.20	139.3	346.2	1,607.6
49.00	Top - Section 1	1.55	0.79	7.536	8.289	0.000	1.200	2.419	4.00	17.857	21.43	110.8	605.8	2,818.0
50.00		1.53	0.80	7.544	8.299	0.000	1.200	2.420	1.00	4.421	5.30	130.9	150.9	398.7
55.00		1.51	0.82	7.551	8.306	0.000	1.200	2.421	5.00	21.841	26.21	215.6	739.0	1,961.8
60.00		1.47	0.84	7.556	8.312	0.000	1.200	2.421	5.00	21.404	25.68	211.3	723.5	1,919.0
65.00		1.43	0.86	7.556	8.311	0.000	1.200	2.421	5.00	20.966	25.16	206.9	707.8	1,876.1
70.00		1.40	0.88	7.552	8.307	0.000	1.200	2.421	5.00	20.527	24.63	202.4	692.0	1,833.0
75.00		1.37	0.90	7.545	8.300	0.000	1.200	2.420	5.00	20.089	24.11	197.8	676.0	1,789.8
80.00		1.34	0.91	7.538	8.292	0.000	1.200	2.419	5.00	19.650	23.58	193.2	660.1	1,746.6
85.00		1.32	0.93	7.531	8.284	0.000	1.200	2.418	5.00	19.212	23.05	133.0	644.2	1,703.5
87.00	Bot - Section 3	1.30	0.94	7.526	8.278	0.000	1.200	2.418	2.00	7.562	9.07	56.5	255.1	671.2
88.00	Appertunance(s)	1.30	0.95	7.524	8.276	0.000	1.200	2.417	1.00	3.813	4.58	56.5	129.0	513.4
90.00		1.29	0.95	7.522	8.274	0.000	1.200	2.417	2.00	7.573	9.09	74.8	255.5	1,018.2
92.00	Top - Section 2	1.28	0.96	7.519	8.271	0.000	1.200	2.417	2.00	7.503	9.00	92.4	252.9	1,007.6
95.00		1.27	0.96	7.516	8.268	0.000	1.200	2.417	3.00	11.123	13.35	91.5	373.7	891.1
97.00	Appertunance(s)	1.26	0.97	7.514	8.265	0.000	1.200	2.416	2.00	7.327	8.79	90.2	246.6	586.9
100.0		1.25	0.98	7.512	8.263	0.000	1.200	2.416	3.00	10.860	13.03	141.8	364.2	867.7
105.0		1.24	0.99	7.509	8.260	0.000	1.200	2.416	5.00	17.749	21.30	173.7	591.2	1,412.0
110.0	Appertunance(s)	1.22	1.00	7.507	8.258	0.000	1.200	2.416	5.00	17.311	20.77	169.4	575.5	1,373.2
115.0		1.20	1.02	7.507	8.258	0.000	1.200	2.416	5.00	16.873	20.25	165.0	559.8	1,334.5
120.0		1.19	1.03	7.509	8.260	0.000	1.200	2.416	5.00	16.435	19.72	160.8	544.2	1,295.8
125.0		1.18	1.04	7.512	8.264	0.000	1.200	2.416	5.00	15.997	19.20	156.5	528.6	1,257.2
130.0		1.16	1.05	7.518	8.269	0.000	1.200	2.417	5.00	15.560	18.67	107.5	513.1	1,218.6
132.0	Bot - Section 4	1.15	1.06	7.522	8.274	0.000	1.200	2.417	2.00	6.102	7.32	75.7	202.8	478.5
135.0	Appertunance(s)	1.15	1.07	7.526	8.279	0.000	1.200	2.418	3.00	9.132	10.96	60.3	302.6	972.9
136.0	Top - Section 3	1.14	1.07	7.530	8.282	0.000	1.200	2.418	1.00	3.009	3.61	73.9	100.2	320.7
140.0		1.14	1.08	7.534	8.288	0.000	1.200	2.419	4.00	11.862	14.23	130.8	391.0	731.9
145.0	Appertunance(s)	1.13	1.09	7.544	8.298	0.000	1.200	2.420	5.00	14.434	17.32	141.7	473.3	886.2
150.0		1.12	1.10	7.555	8.311	0.000	1.200	2.421	5.00	13.997	16.80	137.5	457.9	856.1
155.0		1.11	1.11	7.569	8.326	0.000	1.200	2.423	5.00	13.560	16.27	107.4	442.5	826.1
158.0	Appertunance(s)	1.11	1.12	7.581	8.339	0.000	1.200	2.424	3.00	7.927	9.51	65.7	260.0	483.1
160.0		1.10	1.12	7.589	8.347	0.000	1.200	2.425	2.00	5.197	6.24	89.7	170.9	316.7
165.0		1.10	1.13	7.600	8.360	0.000	1.200	2.426	5.00	12.687	15.22	113.1	411.7	765.9
169.0	Appertunance(s)	1.09	1.14	7.616	8.377	0.000	1.200	2.428	4.00	9.836	11.80	61.6	319.5	592.4
170.0		1.09	1.14	7.625	8.387	0.000	1.200	2.429	1.00	2.415	2.90	71.7	79.3	146.0
175.0		1.08	1.15	7.636	8.400	0.000	1.200	2.430	5.00	11.815	14.18	94.3	380.9	705.8
178.0	Appertunance(s)	1.08	1.16	7.652	8.418	0.000	1.200	2.432	3.00	6.880	8.26	34.7	223.1	411.0
							Totals:		178.00			6,770.1	22,065.4	60,710.5

Site Number:	**302472**	**Code: ANSI/TIA-222-G**	
Site Name:	**Andover-Bunker Hill Road, CT**	**Engineering Number:OAA691297_C3_02**	**12/22/2016 3:57:40 PM**
Customer:	**Verizon Wireless**		

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 1.00 in Radial Ice — 26 Iterations

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

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00
Ice Importance Factor :1.00

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:42 PM

Customer: Verizon Wireless

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 26 Iterations

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

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		153.0	0.0					0.0	0.0	153.0	0.0	0.0	0.0
5.00		298.1	2,541.3					0.0	284.2	298.1	2,825.5	0.0	0.0
10.00		200.8	2,568.8					0.0	284.2	200.8	2,853.0	0.0	0.0
12.00	Appertunance(s)	137.2	1,025.2	35.7	0.0	0.0	264.7	0.0	113.7	172.9	1,403.6	0.0	0.0
15.00		211.2	1,529.2					0.0	170.0	211.2	1,699.1	0.0	0.0
20.00		252.8	2,519.4					0.0	283.3	252.8	2,802.7	0.0	0.0
25.00		239.7	2,480.8					0.0	283.3	239.7	2,764.1	0.0	0.0
30.00		230.1	2,438.3					0.0	283.3	230.1	2,721.6	0.0	0.0
35.00		225.9	2,393.4					0.0	283.3	225.9	2,676.7	0.0	0.0
40.00		173.6	2,346.9					0.0	283.3	173.6	2,630.2	0.0	0.0
42.75	Bot - Section 2	111.7	1,272.5					0.0	155.8	111.7	1,428.3	0.0	0.0
45.00		139.3	1,607.6					0.0	127.5	139.3	1,735.1	0.0	0.0
49.00	Top - Section 1	110.8	2,818.0					0.0	226.7	110.8	3,044.6	0.0	0.0
50.00		130.9	398.7					0.0	56.7	130.9	455.4	0.0	0.0
55.00		215.6	1,961.8					0.0	283.3	215.6	2,245.1	0.0	0.0
60.00		211.3	1,919.0					0.0	283.3	211.3	2,202.3	0.0	0.0
65.00		206.9	1,876.1					0.0	283.3	206.9	2,159.4	0.0	0.0
70.00		202.4	1,833.0					0.0	283.3	202.4	2,116.3	0.0	0.0
75.00		197.8	1,789.8					0.0	283.3	197.8	2,073.1	0.0	0.0
80.00		193.2	1,746.6					0.0	283.3	193.2	2,029.9	0.0	0.0
85.00		133.0	1,703.5					0.0	283.3	133.0	1,986.8	0.0	0.0
87.00	Bot - Section 3	56.5	671.2					0.0	113.3	56.5	784.5	0.0	0.0
88.00	Appertunance(s)	56.5	513.4	43.3	0.0	0.0	419.1	0.0	56.7	99.9	989.1	0.0	0.0
90.00		74.8	1,018.2					0.0	112.6	74.8	1,130.8	0.0	0.0
92.00	Top - Section 2	92.4	1,007.6					0.0	112.6	92.4	1,120.2	0.0	0.0
95.00		91.5	891.1					0.0	168.9	91.5	1,060.0	0.0	0.0
97.00	Appertunance(s)	90.2	586.9	43.3	0.0	0.0	419.0	0.0	112.6	133.4	1,118.5	0.0	0.0
100.00		141.8	867.7					0.0	168.4	141.8	1,036.1	0.0	0.0
105.00		173.7	1,412.0					0.0	280.6	173.7	1,692.6	0.0	0.0
110.00	Appertunance(s)	169.4	1,373.2	43.2	0.0	0.0	268.9	0.0	280.6	212.6	1,922.8	0.0	0.0
115.00		165.0	1,334.5					0.0	279.7	165.0	1,614.2	0.0	0.0
120.00		160.8	1,295.8					0.0	279.7	160.8	1,575.6	0.0	0.0
125.00		156.5	1,257.2					0.0	279.7	156.5	1,536.9	0.0	0.0
130.00		107.5	1,218.6					0.0	279.7	107.5	1,498.3	0.0	0.0
132.00	Bot - Section 4	75.7	478.5					0.0	111.9	75.7	590.4	0.0	0.0
135.00	Appertunance(s)	60.3	972.9	861.9	0.0	0.0	6,344.0	0.0	167.8	922.2	7,484.7	0.0	0.0
136.00	Top - Section 3	73.9	320.7					0.0	45.4	73.9	366.0	0.0	0.0
140.00		130.8	731.9					0.0	181.5	130.8	913.4	0.0	0.0
145.00	Appertunance(s)	141.7	886.2	678.5	0.0	0.0	4,539.7	0.0	226.9	820.2	5,652.8	0.0	0.0
150.00		137.5	856.1					0.0	167.8	137.5	1,024.0	0.0	0.0
155.00		107.4	826.1					0.0	167.8	107.4	993.9	0.0	0.0
158.00	Appertunance(s)	65.7	483.1	956.7	0.0	0.0	7,764.5	0.0	100.7	1,022.4	8,348.3	0.0	0.0
160.00		89.7	316.7					0.0	35.8	89.7	352.5	0.0	0.0
165.00		113.1	765.9					0.0	89.5	113.1	855.4	0.0	0.0
169.00	Appertunance(s)	61.6	592.4	626.9	0.0	0.0	4,222.8	0.0	71.6	688.5	4,886.7	0.0	0.0
170.00		71.7	146.0					0.0	12.0	71.7	158.0	0.0	0.0
175.00		94.3	705.8					0.0	59.9	94.3	765.8	0.0	0.0
178.00	Appertunance(s)	34.7	411.0	748.4	0.0	0.0	5,493.9	0.0	36.0	783.1	5,940.8	0.0	0.0

Site Number:	**302472**	**Code: ANSI/TIA-222-G**	
Site Name:	**Andover-Bunker Hill Road, CT**	**Engineering Number:OAA691297_C3_02**	**12/22/2016 3:57:42 PM**
Customer:	**Verizon Wireless**		

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 1.00 in Radial Ice — 26 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

Totals:	10,808.0	99,265.2	0.00	0.00

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:42 PM

Customer: Verizon Wireless

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 26 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	-99.26	-10.70	0.00	-1,254.13	0.00	1,254.13	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.184
5.00	-96.43	-10.48	0.00	-1,200.65	0.00	1,200.65	6,350.74	3,175.37	14,433.5	7,227.48	0.03	-0.05	0.181
10.00	-93.57	-10.33	0.00	-1,148.25	0.00	1,148.25	6,265.35	3,132.68	13,970.9	6,995.84	0.10	-0.10	0.179
12.00	-92.16	-10.20	0.00	-1,127.58	0.00	1,127.58	6,230.84	3,115.42	13,787.1	6,903.82	0.15	-0.12	0.178
15.00	-90.45	-10.05	0.00	-1,096.99	0.00	1,096.99	6,178.70	3,089.35	13,512.8	6,766.48	0.23	-0.15	0.177
20.00	-87.64	-9.86	0.00	-1,046.76	0.00	1,046.76	6,090.77	3,045.39	13,059.5	6,539.47	0.41	-0.20	0.174
25.00	-84.87	-9.69	0.00	-997.46	0.00	997.46	6,001.58	3,000.79	12,611.0	6,314.89	0.65	-0.25	0.172
30.00	-82.14	-9.52	0.00	-949.02	0.00	949.02	5,911.12	2,955.56	12,167.6	6,092.85	0.94	-0.30	0.170
35.00	-79.46	-9.35	0.00	-901.44	0.00	901.44	5,796.61	2,898.31	11,683.4	5,850.41	1.28	-0.35	0.168
40.00	-76.82	-9.21	0.00	-854.69	0.00	854.69	5,674.58	2,837.29	11,194.2	5,605.46	1.68	-0.40	0.166
42.75	-75.39	-9.13	0.00	-829.36	0.00	829.36	5,607.46	2,803.73	10,929.6	5,472.97	1.92	-0.43	0.165
45.00	-73.65	-9.02	0.00	-808.83	0.00	808.83	5,552.55	2,776.27	10,715.5	5,365.75	2.13	-0.46	0.164
49.00	-70.60	-8.91	0.00	-772.76	0.00	772.76	4,334.74	2,167.37	8,395.94	4,204.21	2.53	-0.50	0.200
50.00	-70.14	-8.82	0.00	-763.85	0.00	763.85	4,321.48	2,160.74	8,333.21	4,172.80	2.64	-0.51	0.199
55.00	-67.89	-8.66	0.00	-719.73	0.00	719.73	4,254.40	2,127.20	8,021.52	4,016.72	3.21	-0.57	0.195
60.00	-65.68	-8.50	0.00	-676.43	0.00	676.43	4,186.06	2,093.03	7,713.24	3,862.35	3.84	-0.64	0.191
65.00	-63.52	-8.34	0.00	-633.93	0.00	633.93	4,116.45	2,058.22	7,408.53	3,709.77	4.55	-0.70	0.186
70.00	-61.39	-8.18	0.00	-592.25	0.00	592.25	4,045.56	2,022.78	7,107.57	3,559.07	5.31	-0.76	0.182
75.00	-59.32	-8.02	0.00	-551.37	0.00	551.37	3,973.41	1,986.71	6,810.50	3,410.31	6.15	-0.83	0.177
80.00	-57.28	-7.85	0.00	-511.30	0.00	511.30	3,899.99	1,950.00	6,517.51	3,263.60	7.05	-0.89	0.171
85.00	-55.29	-7.73	0.00	-472.03	0.00	472.03	3,805.04	1,902.52	6,195.74	3,102.48	8.02	-0.95	0.167
87.00	-54.50	-7.68	0.00	-456.56	0.00	456.56	3,765.38	1,882.69	6,066.61	3,037.81	8.42	-0.98	0.165
88.00	-53.51	-7.58	0.00	-448.88	0.00	448.88	3,745.55	1,872.77	6,002.55	3,005.74	8.63	-0.99	0.164
90.00	-52.38	-7.51	0.00	-433.72	0.00	433.72	3,705.89	1,852.94	5,875.46	2,942.10	9.05	-1.02	0.162
92.00	-51.26	-7.43	0.00	-418.69	0.00	418.69	3,054.73	1,527.36	4,893.34	2,450.31	9.48	-1.05	0.188
95.00	-50.20	-7.35	0.00	-396.41	0.00	396.41	3,020.24	1,510.12	4,760.42	2,383.75	10.15	-1.08	0.183
97.00	-49.08	-7.22	0.00	-381.72	0.00	381.72	2,996.99	1,498.50	4,672.40	2,339.67	10.61	-1.11	0.180
100.00	-48.04	-7.10	0.00	-360.06	0.00	360.06	2,961.74	1,480.87	4,541.28	2,274.01	11.33	-1.15	0.175
105.00	-46.34	-6.95	0.00	-324.54	0.00	324.54	2,901.98	1,450.99	4,325.26	2,165.84	12.57	-1.22	0.166
110.00	-44.41	-6.75	0.00	-289.79	0.00	289.79	2,840.94	1,420.47	4,112.52	2,059.32	13.89	-1.29	0.156
115.00	-42.80	-6.59	0.00	-256.06	0.00	256.06	2,777.06	1,388.53	3,901.02	1,953.41	15.27	-1.35	0.147
120.00	-41.22	-6.43	0.00	-223.11	0.00	223.11	2,693.16	1,346.58	3,667.73	1,836.59	16.72	-1.41	0.137
125.00	-39.68	-6.28	0.00	-190.94	0.00	190.94	2,609.26	1,304.63	3,441.64	1,723.38	18.23	-1.47	0.126
130.00	-38.18	-6.16	0.00	-159.55	0.00	159.55	2,525.36	1,262.68	3,222.75	1,613.77	19.80	-1.53	0.114
132.00	-37.59	-6.08	0.00	-147.24	0.00	147.24	2,491.80	1,245.90	3,137.20	1,570.93	20.44	-1.55	0.109
135.00	-30.13	-4.97	0.00	-128.99	0.00	128.99	2,441.46	1,220.73	3,011.04	1,507.76	21.42	-1.58	0.098
136.00	-29.77	-4.89	0.00	-124.03	0.00	124.03	1,416.30	708.15	1,774.76	888.70	21.76	-1.59	0.161
140.00	-28.85	-4.76	0.00	-104.45	0.00	104.45	1,392.36	696.18	1,697.02	849.77	23.10	-1.62	0.144
145.00	-23.22	-3.80	0.00	-80.64	0.00	80.64	1,361.30	680.65	1,600.81	801.59	24.83	-1.68	0.118
150.00	-22.20	-3.65	0.00	-61.65	0.00	61.65	1,328.96	664.48	1,505.82	754.03	26.61	-1.73	0.098
155.00	-21.21	-3.52	0.00	-43.40	0.00	43.40	1,295.36	647.68	1,412.23	707.16	28.45	-1.77	0.078
158.00	-12.90	-2.25	0.00	-32.83	0.00	32.83	1,274.59	637.29	1,356.80	679.41	29.56	-1.79	0.058
160.00	-12.55	-2.15	0.00	-28.34	0.00	28.34	1,260.48	630.24	1,320.18	661.07	30.32	-1.80	0.053
165.00	-11.69	-2.01	0.00	-17.60	0.00	17.60	1,224.34	612.17	1,229.85	615.84	32.21	-1.82	0.038
169.00	-6.83	-1.17	0.00	-9.55	0.00	9.55	1,194.51	597.26	1,158.93	580.33	33.74	-1.83	0.022
170.00	-6.67	-1.09	0.00	-8.38	0.00	8.38	1,186.93	593.46	1,141.40	571.55	34.13	-1.84	0.020
175.00	-5.91	-0.97	0.00	-2.92	0.00	2.92	1,148.25	574.12	1,054.98	528.28	36.06	-1.84	0.011
178.00	0.00	-0.78	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	37.21	-1.84	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 24 Iterations

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

Shaft Segment Forces (Factored)

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	13.370	14.70	357.05	0.650	0.000	0.00	0.000	0.00	111.5	0.0	0.0
5.00		2.13	0.70	13.075	14.38	349.88	0.650	0.000	5.00	23.859	15.51	216.4	0.0	1,509.1
10.00		2.04	0.70	12.525	13.77	336.16	0.650	0.000	5.00	23.421	15.22	145.1	0.0	1,481.2
12.00	Appertunance(s)	1.98	0.70	12.168	13.38	327.00	0.650	0.000	2.00	9.246	6.01	98.8	0.0	584.6
15.00		1.94	0.70	11.927	13.12	320.68	0.650	0.000	3.00	13.738	8.93	151.8	0.0	868.6
20.00		1.88	0.70	11.563	12.71	310.91	0.650	0.000	5.00	22.546	14.65	181.3	0.0	1,425.3
25.00		1.81	0.70	11.143	12.25	299.28	0.650	0.000	5.00	22.108	14.37	171.4	0.0	1,397.3
30.00		1.75	0.70	10.758	11.83	288.24	0.650	0.000	5.00	21.670	14.09	164.2	0.0	1,369.4
35.00		1.69	0.71	10.655	11.72	281.06	0.650	0.000	5.00	21.232	13.80	160.8	0.0	1,341.4
40.00		1.64	0.74	10.754	11.82	276.54	0.650	0.000	5.00	20.794	13.52	123.4	0.0	1,313.5
42.75	Bot - Section 2	1.60	0.76	10.805	11.88	272.67	0.650	0.000	2.75	11.250	7.31	79.3	0.0	710.5
45.00		1.58	0.78	10.829	11.91	270.05	0.650	0.000	2.25	9.261	6.02	98.9	0.0	1,051.2
49.00	Top - Section 1	1.55	0.79	10.851	11.93	266.67	0.650	0.000	4.00	16.244	10.56	78.6	0.0	1,843.5
50.00		1.53	0.80	10.864	11.95	268.50	0.650	0.000	1.00	4.017	2.61	92.7	0.0	206.5
55.00		1.51	0.82	10.874	11.96	265.11	0.650	0.000	5.00	19.824	12.89	152.5	0.0	1,019.0
60.00		1.47	0.84	10.881	11.96	259.34	0.650	0.000	5.00	19.386	12.60	149.1	0.0	996.3
65.00		1.43	0.86	10.880	11.96	253.47	0.650	0.000	5.00	18.948	12.32	145.7	0.0	973.5
70.00		1.40	0.88	10.874	11.96	247.54	0.650	0.000	5.00	18.510	12.03	142.2	0.0	950.8
75.00		1.37	0.90	10.865	11.95	241.59	0.650	0.000	5.00	18.072	11.75	138.6	0.0	928.1
80.00		1.34	0.91	10.855	11.94	235.62	0.650	0.000	5.00	17.634	11.46	135.1	0.0	905.4
85.00		1.32	0.93	10.844	11.92	229.65	0.650	0.000	5.00	17.196	11.18	92.8	0.0	882.7
87.00	Bot - Section 3	1.30	0.94	10.837	11.92	225.48	0.650	0.000	2.00	6.756	4.39	39.4	0.0	346.7
88.00	Appertunance(s)	1.30	0.95	10.834	11.91	223.70	0.650	0.000	1.00	3.410	2.22	39.4	0.0	320.3
90.00		1.29	0.95	10.831	11.91	221.92	0.650	0.000	2.00	6.767	4.40	52.1	0.0	635.6
92.00	Top - Section 2	1.28	0.96	10.828	11.91	219.54	0.650	0.000	2.00	6.697	4.35	64.3	0.0	628.9
95.00		1.27	0.96	10.824	11.90	220.46	0.650	0.000	3.00	9.914	6.44	63.6	0.0	431.1
97.00	Appertunance(s)	1.26	0.97	10.820	11.90	217.51	0.650	0.000	2.00	6.522	4.24	62.6	0.0	283.6
100.0		1.25	0.98	10.817	11.89	214.55	0.650	0.000	3.00	9.652	6.27	98.2	0.0	419.6
105.0		1.24	0.99	10.813	11.89	209.84	0.650	0.000	5.00	15.736	10.23	120.0	0.0	684.0
110.0	Appertunance(s)	1.22	1.00	10.810	11.89	203.98	0.650	0.000	5.00	15.298	9.94	116.5	0.0	664.8
115.0		1.20	1.02	10.810	11.89	198.14	0.650	0.000	5.00	14.860	9.66	113.2	0.0	645.6
120.0		1.19	1.03	10.813	11.89	192.32	0.650	0.000	5.00	14.422	9.37	109.8	0.0	626.4
125.0		1.18	1.04	10.818	11.89	186.52	0.650	0.000	5.00	13.984	9.09	106.5	0.0	607.1
130.0		1.16	1.05	10.825	11.90	180.74	0.650	0.000	5.00	13.546	8.80	72.9	0.0	587.9
132.0	Bot - Section 4	1.15	1.06	10.832	11.91	176.71	0.650	0.000	2.00	5.296	3.44	51.2	0.0	229.8
135.0	Appertunance(s)	1.15	1.07	10.838	11.92	173.83	0.650	0.000	3.00	7.923	5.15	40.8	0.0	558.6
136.0	Top - Section 3	1.14	1.07	10.842	11.92	171.53	0.650	0.000	1.00	2.606	1.69	49.9	0.0	183.7
140.0		1.14	1.08	10.849	11.93	171.13	0.650	0.000	4.00	10.249	6.66	88.0	0.0	284.1
145.0	Appertunance(s)	1.13	1.09	10.863	11.94	165.97	0.650	0.000	5.00	12.417	8.07	94.8	0.0	344.1
150.0		1.12	1.10	10.880	11.96	160.24	0.650	0.000	5.00	11.979	7.79	91.6	0.0	331.9
155.0		1.11	1.11	10.899	11.98	154.52	0.650	0.000	5.00	11.541	7.50	71.2	0.0	319.6
158.0	Appertunance(s)	1.11	1.12	10.916	12.00	149.95	0.650	0.000	3.00	6.715	4.36	43.3	0.0	185.9
160.0		1.10	1.12	10.927	12.02	147.09	0.650	0.000	2.00	4.389	2.85	58.9	0.0	121.5
165.0		1.10	1.13	10.944	12.03	143.09	0.650	0.000	5.00	10.666	6.93	73.9	0.0	295.2
169.0	Appertunance(s)	1.09	1.14	10.967	12.06	137.95	0.650	0.000	4.00	8.217	5.34	40.1	0.0	227.4
170.0		1.09	1.14	10.980	12.07	135.09	0.650	0.000	1.00	2.011	1.31	46.4	0.0	55.6
175.0		1.08	1.15	10.996	12.09	131.65	0.650	0.000	5.00	9.790	6.36	60.8	0.0	270.7
178.0	Appertunance(s)	1.08	1.16	11.019	12.12	127.07	0.650	0.000	3.00	5.664	3.68	22.3	0.0	156.6
							Totals:		178.00			4,721.7	0.0	32,204.2

Site Number:	**302472**	**Code: ANSI/TIA-222-G**	
Site Name:	**Andover-Bunker Hill Road, CT**	**Engineering Number:OAA691297_C3_02**	**12/22/2016 3:57:42 PM**
Customer:	**Verizon Wireless**		

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 Iterations

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

Wind Importance Factor :1.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 24 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		111.5	0.0					0.0	0.0	111.5	0.0	0.0	0.0
5.00		216.4	1,509.1					0.0	236.9	216.4	1,746.0	0.0	0.0
10.00		145.1	1,481.2					0.0	236.9	145.1	1,718.0	0.0	0.0
12.00	Appertunance(s)	98.8	584.6	23.4	0.0	0.0	75.6	0.0	94.7	122.2	755.0	0.0	0.0
15.00		151.8	868.6					0.0	141.7	151.8	1,010.2	0.0	0.0
20.00		181.3	1,425.3					0.0	236.1	181.3	1,661.4	0.0	0.0
25.00		171.4	1,397.3					0.0	236.1	171.4	1,633.4	0.0	0.0
30.00		164.2	1,369.4					0.0	236.1	164.2	1,605.5	0.0	0.0
35.00		160.8	1,341.4					0.0	236.1	160.8	1,577.5	0.0	0.0
40.00		123.4	1,313.5					0.0	236.1	123.4	1,549.6	0.0	0.0
42.75	Bot - Section 2	79.3	710.5					0.0	129.9	79.3	840.4	0.0	0.0
45.00		98.9	1,051.2					0.0	106.2	98.9	1,157.4	0.0	0.0
49.00	Top - Section 1	78.6	1,843.5					0.0	188.9	78.6	2,032.3	0.0	0.0
50.00		92.7	206.5					0.0	47.2	92.7	253.7	0.0	0.0
55.00		152.5	1,019.0					0.0	236.1	152.5	1,255.1	0.0	0.0
60.00		149.1	996.3					0.0	236.1	149.1	1,232.4	0.0	0.0
65.00		145.7	973.5					0.0	236.1	145.7	1,209.6	0.0	0.0
70.00		142.2	950.8					0.0	236.1	142.2	1,186.9	0.0	0.0
75.00		138.6	928.1					0.0	236.1	138.6	1,164.2	0.0	0.0
80.00		135.1	905.4					0.0	236.1	135.1	1,141.5	0.0	0.0
85.00		92.8	882.7					0.0	236.1	92.8	1,118.8	0.0	0.0
87.00	Bot - Section 3	39.4	346.7					0.0	94.4	39.4	441.2	0.0	0.0
88.00	Appertunance(s)	39.4	320.3	31.9	0.0	0.0	85.0	0.0	47.2	71.3	452.5	0.0	0.0
90.00		52.1	635.6					0.0	93.8	52.1	729.5	0.0	0.0
92.00	Top - Section 2	64.3	628.9					0.0	93.8	64.3	722.8	0.0	0.0
95.00		63.6	431.1					0.0	140.8	63.6	571.9	0.0	0.0
97.00	Appertunance(s)	62.6	283.6	31.8	0.0	0.0	85.0	0.0	93.8	94.4	462.4	0.0	0.0
100.00		98.2	419.6					0.0	140.3	98.2	559.9	0.0	0.0
105.00		120.0	684.0					0.0	233.9	120.0	917.8	0.0	0.0
110.00	Appertunance(s)	116.5	664.8	31.8	0.0	0.0	85.0	0.0	233.9	148.4	983.6	0.0	0.0
115.00		113.2	645.6					0.0	233.1	113.2	878.7	0.0	0.0
120.00		109.8	626.4					0.0	233.1	109.8	859.5	0.0	0.0
125.00		106.5	607.1					0.0	233.1	106.5	840.2	0.0	0.0
130.00		72.9	587.9					0.0	233.1	72.9	821.0	0.0	0.0
132.00	Bot - Section 4	51.2	229.8					0.0	93.2	51.2	323.0	0.0	0.0
135.00	Appertunance(s)	40.8	558.6	769.8	0.0	0.0	2,169.9	0.0	139.9	810.6	2,868.3	0.0	0.0
136.00	Top - Section 3	49.9	183.7					0.0	37.8	49.9	221.5	0.0	0.0
140.00		88.0	284.1					0.0	151.2	88.0	435.3	0.0	0.0
145.00	Appertunance(s)	94.8	344.1	576.4	0.0	0.0	1,737.3	0.0	189.1	671.2	2,270.5	0.0	0.0
150.00		91.6	331.9					0.0	139.9	91.6	471.7	0.0	0.0
155.00		71.2	319.6					0.0	139.9	71.2	459.5	0.0	0.0
158.00	Appertunance(s)	43.3	185.9	1,003.5	0.0	0.0	2,350.9	0.0	83.9	1,046.8	2,620.7	0.0	0.0
160.00		58.9	121.5					0.0	29.8	58.9	151.3	0.0	0.0
165.00		73.9	295.2					0.0	74.6	73.9	369.7	0.0	0.0
169.00	Appertunance(s)	40.1	227.4	544.0	0.0	0.0	1,860.0	0.0	59.6	584.1	2,147.0	0.0	0.0
170.00		46.4	55.6					0.0	10.0	46.4	65.6	0.0	0.0
175.00		60.8	270.7					0.0	50.0	60.8	320.7	0.0	0.0
178.00	Appertunance(s)	22.3	156.6	756.5	0.0	0.0	1,684.8	0.0	30.0	778.8	1,871.3	0.0	0.0

Load Case: 1.0D + 1.0W Serviceability 60 mph 24 Iterations

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

Totals:	8,490.78	49,686.3	0.00	0.00

Site Number: 302472 Code: ANSI/TIA-222-G

Site Name: Andover-Bunker Hill Road, CT Engineering Number:OAA691297_C3_02 12/22/2016 3:57:44 PM

Customer: Verizon Wireless

Load Case: 1.0D + 1.0W Serviceability 60 mph 24 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	-49.68	-8.39	0.00	-973.88	0.00	973.88	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.138
5.00	-47.93	-8.21	0.00	-931.91	0.00	931.91	6,350.74	3,175.37	14,433.5	7,227.48	0.02	-0.04	0.136
10.00	-46.21	-8.08	0.00	-890.86	0.00	890.86	6,265.35	3,132.68	13,970.9	6,995.84	0.08	-0.08	0.135
12.00	-45.45	-7.98	0.00	-874.69	0.00	874.69	6,230.84	3,115.42	13,787.1	6,903.82	0.12	-0.09	0.134
15.00	-44.44	-7.85	0.00	-850.77	0.00	850.77	6,178.70	3,089.35	13,512.8	6,766.48	0.18	-0.11	0.133
20.00	-42.77	-7.69	0.00	-811.53	0.00	811.53	6,090.77	3,045.39	13,059.5	6,539.47	0.32	-0.15	0.131
25.00	-41.13	-7.54	0.00	-773.08	0.00	773.08	6,001.58	3,000.79	12,611.0	6,314.89	0.50	-0.19	0.129
30.00	-39.52	-7.40	0.00	-735.37	0.00	735.37	5,911.12	2,955.56	12,167.6	6,092.85	0.73	-0.23	0.127
35.00	-37.94	-7.26	0.00	-698.36	0.00	698.36	5,796.61	2,898.31	11,683.4	5,850.41	0.99	-0.27	0.126
40.00	-36.39	-7.15	0.00	-662.07	0.00	662.07	5,674.58	2,837.29	11,194.2	5,605.46	1.30	-0.31	0.125
42.75	-35.55	-7.08	0.00	-642.41	0.00	642.41	5,607.46	2,803.73	10,929.6	5,472.97	1.49	-0.34	0.124
45.00	-34.39	-6.99	0.00	-626.49	0.00	626.49	5,552.55	2,776.27	10,715.5	5,365.75	1.65	-0.36	0.123
49.00	-32.35	-6.91	0.00	-598.54	0.00	598.54	4,334.74	2,167.37	8,395.94	4,204.21	1.96	-0.39	0.150
50.00	-32.10	-6.83	0.00	-591.64	0.00	591.64	4,321.48	2,160.74	8,333.21	4,172.80	2.05	-0.40	0.149
55.00	-30.84	-6.69	0.00	-557.49	0.00	557.49	4,254.40	2,127.20	8,021.52	4,016.72	2.49	-0.45	0.146
60.00	-29.60	-6.56	0.00	-524.03	0.00	524.03	4,186.06	2,093.03	7,713.24	3,862.35	2.98	-0.49	0.143
65.00	-28.39	-6.43	0.00	-491.24	0.00	491.24	4,116.45	2,058.22	7,408.53	3,709.77	3.52	-0.54	0.139
70.00	-27.20	-6.30	0.00	-459.11	0.00	459.11	4,045.56	2,022.78	7,107.57	3,559.07	4.12	-0.59	0.136
75.00	-26.03	-6.17	0.00	-427.63	0.00	427.63	3,973.41	1,986.71	6,810.50	3,410.31	4.77	-0.64	0.132
80.00	-24.88	-6.04	0.00	-396.79	0.00	396.79	3,899.99	1,950.00	6,517.51	3,263.60	5.47	-0.69	0.128
85.00	-23.76	-5.95	0.00	-366.59	0.00	366.59	3,805.04	1,902.52	6,195.74	3,102.48	6.22	-0.74	0.124
87.00	-23.32	-5.91	0.00	-354.69	0.00	354.69	3,765.38	1,882.69	6,066.61	3,037.81	6.53	-0.76	0.123
88.00	-22.87	-5.84	0.00	-348.79	0.00	348.79	3,745.55	1,872.77	6,002.55	3,005.74	6.69	-0.77	0.122
90.00	-22.14	-5.78	0.00	-337.11	0.00	337.11	3,705.89	1,852.94	5,875.46	2,942.10	7.02	-0.79	0.121
92.00	-21.41	-5.72	0.00	-325.54	0.00	325.54	3,054.73	1,527.36	4,893.34	2,450.31	7.35	-0.81	0.140
95.00	-20.84	-5.66	0.00	-308.39	0.00	308.39	3,020.24	1,510.12	4,760.42	2,383.75	7.87	-0.84	0.136
97.00	-20.37	-5.56	0.00	-297.08	0.00	297.08	2,996.99	1,498.50	4,672.40	2,339.67	8.23	-0.86	0.134
100.00	-19.81	-5.47	0.00	-280.39	0.00	280.39	2,961.74	1,480.87	4,541.28	2,274.01	8.78	-0.89	0.130
105.00	-18.89	-5.35	0.00	-253.03	0.00	253.03	2,901.98	1,450.99	4,325.26	2,165.84	9.75	-0.95	0.123
110.00	-17.91	-5.21	0.00	-226.25	0.00	226.25	2,840.94	1,420.47	4,112.52	2,059.32	10.77	-1.00	0.116
115.00	-17.02	-5.09	0.00	-200.22	0.00	200.22	2,777.06	1,388.53	3,901.02	1,953.41	11.84	-1.05	0.109
120.00	-16.16	-4.98	0.00	-174.77	0.00	174.77	2,693.16	1,346.58	3,667.73	1,836.59	12.97	-1.10	0.101
125.00	-15.32	-4.87	0.00	-149.87	0.00	149.87	2,609.26	1,304.63	3,441.64	1,723.38	14.14	-1.14	0.093
130.00	-14.50	-4.79	0.00	-125.53	0.00	125.53	2,525.36	1,262.68	3,222.75	1,613.77	15.36	-1.19	0.084
132.00	-14.18	-4.73	0.00	-115.96	0.00	115.96	2,491.80	1,245.90	3,137.20	1,570.93	15.86	-1.20	0.080
135.00	-11.32	-3.86	0.00	-101.76	0.00	101.76	2,441.46	1,220.73	3,011.04	1,507.76	16.62	-1.23	0.072
136.00	-11.10	-3.81	0.00	-97.90	0.00	97.90	1,416.30	708.15	1,774.76	888.70	16.88	-1.23	0.118
140.00	-10.67	-3.72	0.00	-82.65	0.00	82.65	1,392.36	696.18	1,697.02	849.77	17.93	-1.26	0.105
145.00	-8.41	-3.01	0.00	-64.03	0.00	64.03	1,361.30	680.65	1,600.81	801.59	19.27	-1.31	0.086
150.00	-7.94	-2.91	0.00	-48.99	0.00	48.99	1,328.96	664.48	1,505.82	754.03	20.66	-1.35	0.071
155.00	-7.48	-2.83	0.00	-34.45	0.00	34.45	1,295.36	647.68	1,412.23	707.16	22.09	-1.38	0.055
158.00	-4.89	-1.72	0.00	-25.95	0.00	25.95	1,274.59	637.29	1,356.80	679.41	22.96	-1.39	0.042
160.00	-4.73	-1.66	0.00	-22.51	0.00	22.51	1,260.48	630.24	1,320.18	661.07	23.55	-1.40	0.038
165.00	-4.37	-1.58	0.00	-14.20	0.00	14.20	1,224.34	612.17	1,229.85	615.84	25.03	-1.42	0.027
169.00	-2.23	-0.94	0.00	-7.89	0.00	7.89	1,194.51	597.26	1,158.93	580.33	26.22	-1.43	0.015
170.00	-2.17	-0.89	0.00	-6.95	0.00	6.95	1,186.93	593.46	1,141.40	571.55	26.52	-1.43	0.014
175.00	-1.85	-0.83	0.00	-2.48	0.00	2.48	1,148.25	574.12	1,054.98	528.28	28.02	-1.44	0.006
178.00	0.00	-0.78	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	28.93	-1.44	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):	16
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coeffiecient F_v:	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.63
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	49.69 k
Seismic Base Shear (E):	1.94 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)
47	176.50	187	5,811	0.011	22	231
46	172.50	321	9,543	0.019	37	397
45	169.50	66	1,885	0.004	7	81
44	167.00	287	8,004	0.016	31	355
43	162.50	370	9,764	0.019	37	458
42	159.00	151	3,826	0.008	15	187
41	156.50	270	6,609	0.013	25	334
40	152.50	459	10,686	0.021	41	569
39	147.50	472	10,263	0.020	39	584
38	142.50	533	10,826	0.021	41	660
37	138.00	435	8,290	0.016	32	539
36	135.50	221	4,067	0.008	16	274
35	133.50	698	12,448	0.025	48	864
34	131.00	323	5,544	0.011	21	400
33	127.50	821	13,347	0.026	51	1,016
32	122.50	840	12,609	0.025	48	1,040
31	117.50	859	11,866	0.023	45	1,064
30	112.50	879	11,121	0.022	43	1,087
29	107.50	899	10,385	0.021	40	1,112
28	102.50	918	9,643	0.019	37	1,136
27	98.50	560	5,433	0.011	21	693
26	96.00	377	3,478	0.007	13	467
25	93.50	572	5,000	0.010	19	708

24	91.00	723	5,985	0.012	23	894
23	89.00	729	5,778	0.011	22	903
22	87.50	368	2,814	0.006	11	455
21	86.00	441	3,263	0.006	12	546
20	82.50	1,119	7,615	0.015	29	1,385
19	77.50	1,142	6,856	0.014	26	1,413
18	72.50	1,164	6,120	0.012	23	1,441
17	67.50	1,187	5,408	0.011	21	1,469
16	62.50	1,210	4,725	0.009	18	1,497
15	57.50	1,232	4,074	0.008	16	1,525
14	52.50	1,255	3,459	0.007	13	1,553
13	49.50	254	622	0.001	2	314
12	47.00	2,032	4,489	0.009	17	2,515
11	43.88	1,157	2,228	0.004	9	1,432
10	41.38	840	1,439	0.003	6	1,040
9	37.50	1,550	2,179	0.004	8	1,918
8	32.50	1,578	1,666	0.003	6	1,952
7	27.50	1,605	1,214	0.002	5	1,987
6	22.50	1,633	827	0.002	3	2,021
5	17.50	1,661	509	0.001	2	2,056
4	13.50	1,010	184	0.000	1	1,250
3	11.00	679	82	0.000	0	841
2	7.50	1,718	97	0.000	0	2,126
1	2.50	1,746	11	0.000	0	2,161
Powerwave Allgon 712	178.00	185	5,855	0.012	22	229
Flat Low Profile Pla	178.00	1,500	47,526	0.094	182	1,856
72" x 6" Panel	169.00	360	10,282	0.020	39	446
Round Low Profile Pl	169.00	1,500	42,842	0.085	164	1,856
RFS FD9R6004/2C-3L	158.00	16	389	0.001	1	19
Alcatel-Lucent RRH2x	158.00	170	4,246	0.008	16	211
Alcatel-Lucent B66a	158.00	201	5,018	0.010	19	249
RFS DB-T1-6Z-8AB-0Z	158.00	88	2,197	0.004	8	109
Antel LPA-80080/4CF	158.00	72	1,797	0.004	7	89
Andrew SBNHH-1D65B	158.00	304	7,594	0.015	29	376
Flat Low Profile Pla	158.00	1,500	37,446	0.074	143	1,856
Kathrein Smart Bias	145.00	10	209	0.000	1	12
Ericsson KRY 112 144	145.00	33	694	0.001	3	41
EMS RR90-17-02DP	145.00	41	852	0.002	3	50
Andrew LNX-6515DS-VT	145.00	154	3,236	0.006	12	190
Round Low Profile Pl	145.00	1,500	31,538	0.062	121	1,856
LGP Allgon LGP21903	135.00	33	601	0.001	2	41
Powerwave LGP21401	135.00	85	1,542	0.003	6	105
Raycap DC6-48-60-18-	135.00	32	580	0.001	2	39
Ericsson RRUS 11 (Ba	135.00	165	3,007	0.006	12	204
Powerwave 7770.00	135.00	210	3,827	0.008	15	260
KMW AM-X-CD-16-65-00	135.00	146	2,652	0.005	10	180
Flat Low Profile Pla	135.00	1,500	27,338	0.054	105	1,856
GPS	110.00	10	121	0.000	0	12
Standoff	110.00	75	908	0.002	3	93
GPS	97.00	10	94	0.000	0	12
Standoff	97.00	75	706	0.001	3	93
GPS	88.00	10	77	0.000	0	12
Standoff	88.00	75	581	0.001	2	93
PCTEL GPS-TMG-HR-26N	12.00	1	0	0.000	0	1
Standoff	12.00	75	11	0.000	0	93
		49,686	505,853	1.000	1,938	61,489

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)
47	176.50	187	5,811	0.011	22	161
46	172.50	321	9,543	0.019	37	277
45	169.50	66	1,885	0.004	7	57
44	167.00	287	8,004	0.016	31	248
43	162.50	370	9,764	0.019	37	319
42	159.00	151	3,826	0.008	15	131
41	156.50	270	6,609	0.013	25	233
40	152.50	459	10,686	0.021	41	396
39	147.50	472	10,263	0.020	39	407
38	142.50	533	10,826	0.021	41	460
37	138.00	435	8,290	0.016	32	375
36	135.50	221	4,067	0.008	16	191
35	133.50	698	12,448	0.025	48	602
34	131.00	323	5,544	0.011	21	279
33	127.50	821	13,347	0.026	51	708
32	122.50	840	12,609	0.025	48	725
31	117.50	859	11,866	0.023	45	741
30	112.50	879	11,121	0.022	43	758
29	107.50	899	10,385	0.021	40	775
28	102.50	918	9,643	0.019	37	792
27	98.50	560	5,433	0.011	21	483
26	96.00	377	3,478	0.007	13	326
25	93.50	572	5,000	0.010	19	493
24	91.00	723	5,985	0.012	23	623
23	89.00	729	5,778	0.011	22	629
22	87.50	368	2,814	0.006	11	317
21	86.00	441	3,263	0.006	12	380
20	82.50	1,119	7,615	0.015	29	965
19	77.50	1,142	6,856	0.014	26	985
18	72.50	1,164	6,120	0.012	23	1,004
17	67.50	1,187	5,408	0.011	21	1,024
16	62.50	1,210	4,725	0.009	18	1,043
15	57.50	1,232	4,074	0.008	16	1,063
14	52.50	1,255	3,459	0.007	13	1,082
13	49.50	254	622	0.001	2	219
12	47.00	2,032	4,489	0.009	17	1,753
11	43.88	1,157	2,228	0.004	9	998
10	41.38	840	1,439	0.003	6	725
9	37.50	1,550	2,179	0.004	8	1,336
8	32.50	1,578	1,666	0.003	6	1,361
7	27.50	1,605	1,214	0.002	5	1,385
6	22.50	1,633	827	0.002	3	1,409
5	17.50	1,661	509	0.001	2	1,433
4	13.50	1,010	184	0.000	1	871
3	11.00	679	82	0.000	0	586
2	7.50	1,718	97	0.000	0	1,482
1	2.50	1,746	11	0.000	0	1,506
Powerwave Allgon 712	178.00	185	5,855	0.012	22	159
Flat Low Profile Pla	178.00	1,500	47,526	0.094	182	1,294
72" x 6" Panel	169.00	360	10,282	0.020	39	310
Round Low Profile Pl	169.00	1,500	42,842	0.085	164	1,294
RFS FD9R6004/2C-3L	158.00	16	389	0.001	1	13
Alcatel-Lucent RRH2x	158.00	170	4,246	0.008	16	147
Alcatel-Lucent B66a	158.00	201	5,018	0.010	19	173
RFS DB-T1-6Z-8AB-0Z	158.00	88	2,197	0.004	8	76
Antel LPA-80080/4CF	158.00	72	1,797	0.004	7	62
Andrew SBNHH-1D65B	158.00	304	7,594	0.015	29	262

Flat Low Profile Pla	158.00	1,500	37,446	0.074	143	1,294
Kathrein Smart Bias	145.00	10	209	0.000	1	9
Ericsson KRY 112 144	145.00	33	694	0.001	3	28
EMS RR90-17-02DP	145.00	41	852	0.002	3	35
Andrew LNX-6515DS-VT	145.00	154	3,236	0.006	12	133
Round Low Profile Pl	145.00	1,500	31,538	0.062	121	1,294
LGP Allgon LGP21903	135.00	33	601	0.001	2	28
Powerwave LGP21401	135.00	85	1,542	0.003	6	73
Raycap DC6-48-60-18-	135.00	32	580	0.001	2	27
Ericsson RRUS 11 (Ba	135.00	165	3,007	0.006	12	142
Powerwave 7770.00	135.00	210	3,827	0.008	15	181
KMW AM-X-CD-16-65-00	135.00	146	2,652	0.005	10	125
Flat Low Profile Pla	135.00	1,500	27,338	0.054	105	1,294
GPS	110.00	10	121	0.000	0	9
Standoff	110.00	75	908	0.002	3	65
GPS	97.00	10	94	0.000	0	9
Standoff	97.00	75	706	0.001	3	65
GPS	88.00	10	77	0.000	0	9
Standoff	88.00	75	581	0.001	2	65
PCTEL GPS-TMG-HR-26N	12.00	1	0	0.000	0	1
Standoff	12.00	75	11	0.000	0	65
		49,686	505,853	1.000	1,938	42,852

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	-59.33	-1.94	0.00	-276.32	0.00	276.32	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.046
5.00	-57.20	-1.95	0.00	-266.61	0.00	266.61	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.046
10.00	-56.36	-1.96	0.00	-256.85	0.00	256.85	6,265.35	3,132.68	13,970.9	6,995.84	0.02	-0.02	0.046
12.00	-55.02	-1.96	0.00	-252.93	0.00	252.93	6,230.84	3,115.42	13,787.1	6,903.82	0.03	-0.03	0.045
15.00	-52.96	-1.97	0.00	-247.04	0.00	247.04	6,178.70	3,089.35	13,512.8	6,766.48	0.05	-0.03	0.045
20.00	-50.94	-1.97	0.00	-237.20	0.00	237.20	6,090.77	3,045.39	13,059.5	6,539.47	0.09	-0.04	0.045
25.00	-48.95	-1.98	0.00	-227.32	0.00	227.32	6,001.58	3,000.79	12,611.0	6,314.89	0.14	-0.06	0.044
30.00	-47.00	-1.98	0.00	-217.43	0.00	217.43	5,911.12	2,955.56	12,167.6	6,092.85	0.21	-0.07	0.044
35.00	-45.08	-1.98	0.00	-207.54	0.00	207.54	5,796.61	2,898.31	11,683.4	5,850.41	0.29	-0.08	0.043
40.00	-44.04	-1.98	0.00	-197.65	0.00	197.65	5,674.58	2,837.29	11,194.2	5,605.46	0.38	-0.09	0.043
42.75	-42.61	-1.97	0.00	-192.21	0.00	192.21	5,607.46	2,803.73	10,929.6	5,472.97	0.43	-0.10	0.043
45.00	-40.09	-1.96	0.00	-187.77	0.00	187.77	5,552.55	2,776.27	10,715.5	5,365.75	0.48	-0.10	0.042
49.00	-39.78	-1.96	0.00	-179.95	0.00	179.95	4,334.74	2,167.37	8,395.94	4,204.21	0.57	-0.11	0.052
50.00	-38.22	-1.95	0.00	-178.00	0.00	178.00	4,321.48	2,160.74	8,333.21	4,172.80	0.59	-0.12	0.052
55.00	-36.70	-1.94	0.00	-168.26	0.00	168.26	4,254.40	2,127.20	8,021.52	4,016.72	0.72	-0.13	0.051
60.00	-35.20	-1.92	0.00	-158.58	0.00	158.58	4,186.06	2,093.03	7,713.24	3,862.35	0.87	-0.15	0.049
65.00	-33.73	-1.91	0.00	-148.96	0.00	148.96	4,116.45	2,058.22	7,408.53	3,709.77	1.03	-0.16	0.048
70.00	-32.29	-1.89	0.00	-139.42	0.00	139.42	4,045.56	2,022.78	7,107.57	3,559.07	1.21	-0.18	0.047
75.00	-30.88	-1.87	0.00	-129.97	0.00	129.97	3,973.41	1,986.71	6,810.50	3,410.31	1.40	-0.19	0.046
80.00	-29.49	-1.84	0.00	-120.64	0.00	120.64	3,899.99	1,950.00	6,517.51	3,263.60	1.61	-0.21	0.045
85.00	-28.95	-1.83	0.00	-111.44	0.00	111.44	3,805.04	1,902.52	6,195.74	3,102.48	1.83	-0.22	0.044
87.00	-28.49	-1.82	0.00	-107.78	0.00	107.78	3,765.38	1,882.69	6,066.61	3,037.81	1.92	-0.23	0.043
88.00	-27.48	-1.79	0.00	-105.96	0.00	105.96	3,745.55	1,872.77	6,002.55	3,005.74	1.97	-0.23	0.043
90.00	-26.59	-1.77	0.00	-102.37	0.00	102.37	3,705.89	1,852.94	5,875.46	2,942.10	2.07	-0.24	0.042
92.00	-25.88	-1.75	0.00	-98.83	0.00	98.83	3,054.73	1,527.36	4,893.34	2,450.31	2.17	-0.24	0.049
95.00	-25.41	-1.74	0.00	-93.57	0.00	93.57	3,020.24	1,510.12	4,760.42	2,383.75	2.32	-0.25	0.048
97.00	-24.62	-1.72	0.00	-90.09	0.00	90.09	2,996.99	1,498.50	4,672.40	2,339.67	2.43	-0.26	0.047
100.00	-23.48	-1.68	0.00	-84.94	0.00	84.94	2,961.74	1,480.87	4,541.28	2,274.01	2.60	-0.27	0.045
105.00	-22.37	-1.64	0.00	-76.55	0.00	76.55	2,901.98	1,450.99	4,325.26	2,165.84	2.88	-0.28	0.043
110.00	-21.17	-1.59	0.00	-68.34	0.00	68.34	2,840.94	1,420.47	4,112.52	2,059.32	3.19	-0.30	0.041
115.00	-20.11	-1.55	0.00	-60.38	0.00	60.38	2,777.06	1,388.53	3,901.02	1,953.41	3.51	-0.31	0.038
120.00	-19.07	-1.50	0.00	-52.64	0.00	52.64	2,693.16	1,346.58	3,667.73	1,836.59	3.85	-0.33	0.036
125.00	-18.06	-1.45	0.00	-45.15	0.00	45.15	2,609.26	1,304.63	3,441.64	1,723.38	4.20	-0.34	0.033
130.00	-17.66	-1.42	0.00	-37.92	0.00	37.92	2,525.36	1,262.68	3,222.75	1,613.77	4.57	-0.36	0.030
132.00	-16.79	-1.37	0.00	-35.07	0.00	35.07	2,491.80	1,245.90	3,137.20	1,570.93	4.72	-0.36	0.029
135.00	-13.83	-1.19	0.00	-30.95	0.00	30.95	2,441.46	1,220.73	3,011.04	1,507.76	4.94	-0.37	0.026
136.00	-13.29	-1.15	0.00	-29.76	0.00	29.76	1,416.30	708.15	1,774.76	888.70	5.02	-0.37	0.043
140.00	-12.63	-1.11	0.00	-25.15	0.00	25.15	1,392.36	696.18	1,697.02	849.77	5.34	-0.38	0.039
145.00	-9.90	-0.92	0.00	-19.59	0.00	19.59	1,361.30	680.65	1,600.81	801.59	5.74	-0.39	0.032
150.00	-9.33	-0.87	0.00	-15.01	0.00	15.01	1,328.96	664.48	1,505.82	754.03	6.16	-0.40	0.027
155.00	-9.00	-0.85	0.00	-10.64	0.00	10.64	1,295.36	647.68	1,412.23	707.16	6.59	-0.41	0.022
158.00	-5.90	-0.58	0.00	-8.10	0.00	8.10	1,274.59	637.29	1,356.80	679.41	6.85	-0.42	0.017
160.00	-5.45	-0.54	0.00	-6.93	0.00	6.93	1,260.48	630.24	1,320.18	661.07	7.02	-0.42	0.015
165.00	-5.09	-0.51	0.00	-4.21	0.00	4.21	1,224.34	612.17	1,229.85	615.84	7.47	-0.43	0.011
169.00	-2.71	-0.28	0.00	-2.16	0.00	2.16	1,194.51	597.26	1,158.93	580.33	7.83	-0.43	0.006
170.00	-2.31	-0.24	0.00	-1.88	0.00	1.88	1,186.93	593.46	1,141.40	571.55	7.92	-0.43	0.005
175.00	-2.08	-0.22	0.00	-0.66	0.00	0.66	1,148.25	574.12	1,054.98	528.28	8.37	-0.43	0.003
178.00	0.00	-0.20	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	8.64	-0.43	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-41.35	-1.94	0.00	-272.01	0.00	272.01	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.043
5.00	-39.86	-1.95	0.00	-262.31	0.00	262.31	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.043
10.00	-39.28	-1.95	0.00	-252.57	0.00	252.57	6,265.35	3,132.68	13,970.9	6,995.84	0.02	-0.02	0.042
12.00	-38.34	-1.95	0.00	-248.67	0.00	248.67	6,230.84	3,115.42	13,787.1	6,903.82	0.03	-0.03	0.042
15.00	-36.91	-1.96	0.00	-242.81	0.00	242.81	6,178.70	3,089.35	13,512.8	6,766.48	0.05	-0.03	0.042
20.00	-35.50	-1.96	0.00	-233.02	0.00	233.02	6,090.77	3,045.39	13,059.5	6,539.47	0.09	-0.04	0.041
25.00	-34.11	-1.96	0.00	-223.22	0.00	223.22	6,001.58	3,000.79	12,611.0	6,314.89	0.14	-0.05	0.041
30.00	-32.75	-1.96	0.00	-213.41	0.00	213.41	5,911.12	2,955.56	12,167.6	6,092.85	0.21	-0.07	0.041
35.00	-31.42	-1.96	0.00	-203.61	0.00	203.61	5,796.61	2,898.31	11,683.4	5,850.41	0.28	-0.08	0.040
40.00	-30.69	-1.96	0.00	-193.82	0.00	193.82	5,674.58	2,837.29	11,194.2	5,605.46	0.37	-0.09	0.040
42.75	-29.69	-1.95	0.00	-188.45	0.00	188.45	5,607.46	2,803.73	10,929.6	5,472.97	0.42	-0.10	0.040
45.00	-27.94	-1.93	0.00	-184.06	0.00	184.06	5,552.55	2,776.27	10,715.5	5,365.75	0.47	-0.10	0.039
49.00	-27.72	-1.93	0.00	-176.34	0.00	176.34	4,334.74	2,167.37	8,395.94	4,204.21	0.56	-0.11	0.048
50.00	-26.64	-1.92	0.00	-174.41	0.00	174.41	4,321.48	2,160.74	8,333.21	4,172.80	0.58	-0.11	0.048
55.00	-25.57	-1.91	0.00	-164.80	0.00	164.80	4,254.40	2,127.20	8,021.52	4,016.72	0.71	-0.13	0.047
60.00	-24.53	-1.89	0.00	-155.26	0.00	155.26	4,186.06	2,093.03	7,713.24	3,862.35	0.85	-0.14	0.046
65.00	-23.51	-1.88	0.00	-145.79	0.00	145.79	4,116.45	2,058.22	7,408.53	3,709.77	1.01	-0.16	0.045
70.00	-22.50	-1.86	0.00	-136.40	0.00	136.40	4,045.56	2,022.78	7,107.57	3,559.07	1.19	-0.17	0.044
75.00	-21.52	-1.83	0.00	-127.12	0.00	127.12	3,973.41	1,986.71	6,810.50	3,410.31	1.37	-0.19	0.043
80.00	-20.55	-1.81	0.00	-117.96	0.00	117.96	3,899.99	1,950.00	6,517.51	3,263.60	1.58	-0.20	0.041
85.00	-20.17	-1.80	0.00	-108.93	0.00	108.93	3,805.04	1,902.52	6,195.74	3,102.48	1.80	-0.22	0.040
87.00	-19.85	-1.78	0.00	-105.34	0.00	105.34	3,765.38	1,882.69	6,066.61	3,037.81	1.89	-0.22	0.040
88.00	-19.15	-1.76	0.00	-103.55	0.00	103.55	3,745.55	1,872.77	6,002.55	3,005.74	1.94	-0.23	0.040
90.00	-18.53	-1.74	0.00	-100.03	0.00	100.03	3,705.89	1,852.94	5,875.46	2,942.10	2.03	-0.23	0.039
92.00	-18.04	-1.72	0.00	-96.56	0.00	96.56	3,054.73	1,527.36	4,893.34	2,450.31	2.13	-0.24	0.045
95.00	-17.71	-1.70	0.00	-91.41	0.00	91.41	3,020.24	1,510.12	4,760.42	2,383.75	2.28	-0.25	0.044
97.00	-17.15	-1.68	0.00	-88.01	0.00	88.01	2,996.99	1,498.50	4,672.40	2,339.67	2.39	-0.25	0.043
100.00	-16.36	-1.64	0.00	-82.96	0.00	82.96	2,961.74	1,480.87	4,541.28	2,274.01	2.55	-0.26	0.042
105.00	-15.59	-1.60	0.00	-74.75	0.00	74.75	2,901.98	1,450.99	4,325.26	2,165.84	2.83	-0.28	0.040
110.00	-14.75	-1.56	0.00	-66.72	0.00	66.72	2,840.94	1,420.47	4,112.52	2,059.32	3.13	-0.29	0.038
115.00	-14.01	-1.51	0.00	-58.94	0.00	58.94	2,777.06	1,388.53	3,901.02	1,953.41	3.44	-0.31	0.035
120.00	-13.29	-1.46	0.00	-51.38	0.00	51.38	2,693.16	1,346.58	3,667.73	1,836.59	3.77	-0.32	0.033
125.00	-12.58	-1.41	0.00	-44.06	0.00	44.06	2,609.26	1,304.63	3,441.64	1,723.38	4.12	-0.34	0.030
130.00	-12.30	-1.39	0.00	-37.01	0.00	37.01	2,525.36	1,262.68	3,222.75	1,613.77	4.48	-0.35	0.028
132.00	-11.70	-1.34	0.00	-34.23	0.00	34.23	2,491.80	1,245.90	3,137.20	1,570.93	4.62	-0.35	0.026
135.00	-9.64	-1.16	0.00	-30.21	0.00	30.21	2,441.46	1,220.73	3,011.04	1,507.76	4.85	-0.36	0.024
136.00	-9.26	-1.13	0.00	-29.05	0.00	29.05	1,416.30	708.15	1,774.76	888.70	4.92	-0.36	0.039
140.00	-8.80	-1.08	0.00	-24.54	0.00	24.54	1,392.36	696.18	1,697.02	849.77	5.23	-0.37	0.035
145.00	-6.90	-0.89	0.00	-19.12	0.00	19.12	1,361.30	680.65	1,600.81	801.59	5.62	-0.38	0.029
150.00	-6.50	-0.85	0.00	-14.65	0.00	14.65	1,328.96	664.48	1,505.82	754.03	6.03	-0.40	0.024
155.00	-6.27	-0.83	0.00	-10.39	0.00	10.39	1,295.36	647.68	1,412.23	707.16	6.45	-0.40	0.020
158.00	-4.11	-0.57	0.00	-7.92	0.00	7.92	1,274.59	637.29	1,356.80	679.41	6.71	-0.41	0.015
160.00	-3.80	-0.53	0.00	-6.77	0.00	6.77	1,260.48	630.24	1,320.18	661.07	6.88	-0.41	0.013
165.00	-3.55	-0.50	0.00	-4.11	0.00	4.11	1,224.34	612.17	1,229.85	615.84	7.32	-0.42	0.010
169.00	-1.89	-0.28	0.00	-2.11	0.00	2.11	1,194.51	597.26	1,158.93	580.33	7.67	-0.42	0.005
170.00	-1.61	-0.24	0.00	-1.84	0.00	1.84	1,186.93	593.46	1,141.40	571.55	7.76	-0.42	0.005
175.00	-1.45	-0.22	0.00	-0.65	0.00	0.65	1,148.25	574.12	1,054.98	528.28	8.20	-0.42	0.002
178.00	0.00	-0.20	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	8.46	-0.42	0.000

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.63
Redundancy Factor (p):	1.30

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

Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
47	176.50	187	1.858	1.817	1.081	0.336	54	231
46	172.50	321	1.775	1.427	0.935	0.285	79	397
45	169.50	66	1.714	1.175	0.836	0.250	14	81
44	167.00	287	1.664	0.989	0.760	0.222	55	355
43	162.50	370	1.575	0.704	0.637	0.175	56	458
42	159.00	151	1.508	0.521	0.552	0.142	19	187
41	156.50	270	1.461	0.410	0.498	0.120	28	334
40	152.50	459	1.387	0.260	0.419	0.088	35	569
39	147.50	472	1.298	0.117	0.334	0.053	21	584
38	142.50	533	1.211	0.016	0.263	0.023	10	660
37	138.00	435	1.136	-0.047	0.210	0.000	0	539
36	135.50	221	1.095	-0.073	0.184	-0.011	-2	274
35	133.50	698	1.063	-0.088	0.165	-0.018	-11	864
34	131.00	323	1.024	-0.103	0.143	-0.026	-7	400
33	127.50	821	0.970	-0.116	0.117	-0.036	-25	1,016
32	122.50	840	0.895	-0.122	0.085	-0.044	-32	1,040
31	117.50	859	0.824	-0.116	0.061	-0.048	-36	1,064
30	112.50	879	0.755	-0.102	0.042	-0.046	-35	1,087
29	107.50	899	0.689	-0.084	0.028	-0.039	-30	1,112
28	102.50	918	0.627	-0.063	0.018	-0.028	-22	1,136
27	98.50	560	0.579	-0.045	0.012	-0.017	-8	693
26	96.00	377	0.550	-0.034	0.010	-0.009	-3	467
25	93.50	572	0.521	-0.024	0.008	-0.002	-1	708
24	91.00	723	0.494	-0.014	0.007	0.006	4	894
23	89.00	729	0.472	-0.006	0.006	0.012	7	903
22	87.50	368	0.457	-0.001	0.006	0.016	5	455
21	86.00	441	0.441	0.005	0.006	0.020	8	546
20	82.50	1,119	0.406	0.016	0.006	0.028	28	1,385
19	77.50	1,142	0.358	0.031	0.008	0.038	38	1,413
18	72.50	1,164	0.314	0.042	0.011	0.045	45	1,441
17	67.50	1,187	0.272	0.051	0.015	0.049	51	1,469
16	62.50	1,210	0.233	0.058	0.019	0.052	54	1,497
15	57.50	1,232	0.197	0.063	0.024	0.052	56	1,525
14	52.50	1,255	0.164	0.067	0.028	0.052	57	1,553

13	49.50	254	0.146	0.068	0.031	0.052	11	314
12	47.00	2,032	0.132	0.069	0.033	0.051	91	2,515
11	43.88	1,157	0.115	0.070	0.035	0.051	51	1,432
10	41.38	840	0.102	0.071	0.037	0.050	37	1,040
9	37.50	1,550	0.084	0.071	0.039	0.049	66	1,918
8	32.50	1,578	0.063	0.072	0.041	0.048	66	1,952
7	27.50	1,605	0.045	0.071	0.042	0.047	66	1,987
6	22.50	1,633	0.030	0.068	0.041	0.045	64	2,021
5	17.50	1,661	0.018	0.063	0.037	0.043	61	2,056
4	13.50	1,010	0.011	0.056	0.033	0.039	34	1,250
3	11.00	679	0.007	0.050	0.029	0.036	21	841
2	7.50	1,718	0.003	0.039	0.022	0.029	43	2,126
1	2.50	1,746	0.000	0.016	0.008	0.013	20	2,161
Powerwave Allgon 712	178.00	185	1.890	1.980	1.140	0.356	57	229
Flat Low Profile Pla	178.00	1,500	1.890	1.980	1.140	0.356	462	1,856
72" x 6" Panel	169.00	360	1.704	1.136	0.820	0.244	76	446
Round Low Profile Pl	169.00	1,500	1.704	1.136	0.820	0.244	317	1,856
RFS FD9R6004/2C-3L	158.00	16	1.489	0.475	0.530	0.133	2	19
Alcatel-Lucent RRH2x	158.00	170	1.489	0.475	0.530	0.133	20	211
Alcatel-Lucent B66a	158.00	201	1.489	0.475	0.530	0.133	23	249
RFS DB-T1-6Z-8AB-0Z	158.00	88	1.489	0.475	0.530	0.133	10	109
Antel LPA-80080/4CF	158.00	72	1.489	0.475	0.530	0.133	8	89
Andrew SBNHH-1D65B	158.00	304	1.489	0.475	0.530	0.133	35	376
Flat Low Profile Pla	158.00	1,500	1.489	0.475	0.530	0.133	173	1,856
Kathrein Smart Bias	145.00	10	1.254	0.062	0.297	0.037	0	12
Ericsson KRY 112 144	145.00	33	1.254	0.062	0.297	0.037	1	41
EMS RR90-17-02DP	145.00	41	1.254	0.062	0.297	0.037	1	50
Andrew LNX-6515DS-VT	145.00	154	1.254	0.062	0.297	0.037	5	190
Round Low Profile Pl	145.00	1,500	1.254	0.062	0.297	0.037	48	1,856
LGP Allgon LGP21903	135.00	33	1.087	-0.077	0.179	-0.013	0	41
Powerwave LGP21401	135.00	85	1.087	-0.077	0.179	-0.013	-1	105
Raycap DC6-48-60-18-	135.00	32	1.087	-0.077	0.179	-0.013	0	39
Ericsson RRUS 11 (Ba	135.00	165	1.087	-0.077	0.179	-0.013	-2	204
Powerwave 7770.00	135.00	210	1.087	-0.077	0.179	-0.013	-2	260
KMW AM-X-CD-16-65-00	135.00	146	1.087	-0.077	0.179	-0.013	-2	180
Flat Low Profile Pla	135.00	1,500	1.087	-0.077	0.179	-0.013	-16	1,856
GPS	110.00	10	0.722	-0.093	0.034	-0.043	0	12
Standoff	110.00	75	0.722	-0.093	0.034	-0.043	-3	93
GPS	97.00	10	0.561	-0.039	0.011	-0.012	0	12
Standoff	97.00	75	0.561	-0.039	0.011	-0.012	-1	93
GPS	88.00	10	0.462	-0.003	0.006	0.014	0	12
Standoff	88.00	75	0.462	-0.003	0.006	0.014	1	93
PCTEL GPS-TMG-HR-	12.00	1	0.009	0.053	0.030	0.037	0	1
Standoff	12.00	75	0.009	0.053	0.030	0.037	2	93
		49,686	65.744	16.678	18.492	4.515	2,359	61,489

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)
47	176.50	187	1.858	1.817	1.081	0.336	54	161
46	172.50	321	1.775	1.427	0.935	0.285	79	277
45	169.50	66	1.714	1.175	0.836	0.250	14	57
44	167.00	287	1.664	0.989	0.760	0.222	55	248
43	162.50	370	1.575	0.704	0.637	0.175	56	319
42	159.00	151	1.508	0.521	0.552	0.142	19	131
41	156.50	270	1.461	0.410	0.498	0.120	28	233
40	152.50	459	1.387	0.260	0.419	0.088	35	396
39	147.50	472	1.298	0.117	0.334	0.053	21	407

38	142.50	533	1.211	0.016	0.263	0.023	10	460
37	138.00	435	1.136	-0.047	0.210	0.000	0	375
36	135.50	221	1.095	-0.073	0.184	-0.011	-2	191
35	133.50	698	1.063	-0.088	0.165	-0.018	-11	602
34	131.00	323	1.024	-0.103	0.143	-0.026	-7	279
33	127.50	821	0.970	-0.116	0.117	-0.036	-25	708
32	122.50	840	0.895	-0.122	0.085	-0.044	-32	725
31	117.50	859	0.824	-0.116	0.061	-0.048	-36	741
30	112.50	879	0.755	-0.102	0.042	-0.046	-35	758
29	107.50	899	0.689	-0.084	0.028	-0.039	-30	775
28	102.50	918	0.627	-0.063	0.018	-0.028	-22	792
27	98.50	560	0.579	-0.045	0.012	-0.017	-8	483
26	96.00	377	0.550	-0.034	0.010	-0.009	-3	326
25	93.50	572	0.521	-0.024	0.008	-0.002	-1	493
24	91.00	723	0.494	-0.014	0.007	0.006	4	623
23	89.00	729	0.472	-0.006	0.006	0.012	7	629
22	87.50	368	0.457	-0.001	0.006	0.016	5	317
21	86.00	441	0.441	0.005	0.006	0.020	8	380
20	82.50	1,119	0.406	0.016	0.006	0.028	28	965
19	77.50	1,142	0.358	0.031	0.008	0.038	38	985
18	72.50	1,164	0.314	0.042	0.011	0.045	45	1,004
17	67.50	1,187	0.272	0.051	0.015	0.049	51	1,024
16	62.50	1,210	0.233	0.058	0.019	0.052	54	1,043
15	57.50	1,232	0.197	0.063	0.024	0.052	56	1,063
14	52.50	1,255	0.164	0.067	0.028	0.052	57	1,082
13	49.50	254	0.146	0.068	0.031	0.052	11	219
12	47.00	2,032	0.132	0.069	0.033	0.051	91	1,753
11	43.88	1,157	0.115	0.070	0.035	0.051	51	998
10	41.38	840	0.102	0.071	0.037	0.050	37	725
9	37.50	1,550	0.084	0.071	0.039	0.049	66	1,336
8	32.50	1,578	0.063	0.072	0.041	0.048	66	1,361
7	27.50	1,605	0.045	0.071	0.042	0.047	66	1,385
6	22.50	1,633	0.030	0.068	0.041	0.045	64	1,409
5	17.50	1,661	0.018	0.063	0.037	0.043	61	1,433
4	13.50	1,010	0.011	0.056	0.033	0.039	34	871
3	11.00	679	0.007	0.050	0.029	0.036	21	586
2	7.50	1,718	0.003	0.039	0.022	0.029	43	1,482
1	2.50	1,746	0.000	0.016	0.008	0.013	20	1,506
Powerwave Allgon 712	178.00	185	1.890	1.980	1.140	0.356	57	159
Flat Low Profile Pla	178.00	1,500	1.890	1.980	1.140	0.356	462	1,294
72" x 6" Panel	169.00	360	1.704	1.136	0.820	0.244	76	310
Round Low Profile Pl	169.00	1,500	1.704	1.136	0.820	0.244	317	1,294
RFS FD9R6004/2C-3L	158.00	16	1.489	0.475	0.530	0.133	2	13
Alcatel-Lucent RRH2x	158.00	170	1.489	0.475	0.530	0.133	20	147
Alcatel-Lucent B66a	158.00	201	1.489	0.475	0.530	0.133	23	173
RFS DB-T1-6Z-8AB-0Z	158.00	88	1.489	0.475	0.530	0.133	10	76
Antel LPA-80080/4CF	158.00	72	1.489	0.475	0.530	0.133	8	62
Andrew SBNHH-1D65B	158.00	304	1.489	0.475	0.530	0.133	35	262
Flat Low Profile Pla	158.00	1,500	1.489	0.475	0.530	0.133	173	1,294
Kathrein Smart Bias	145.00	10	1.254	0.062	0.297	0.037	0	9
Ericsson KRY 112 144	145.00	33	1.254	0.062	0.297	0.037	1	28
EMS RR90-17-02DP	145.00	41	1.254	0.062	0.297	0.037	1	35
Andrew LNX-6515DS-VT	145.00	154	1.254	0.062	0.297	0.037	5	133
Round Low Profile Pl	145.00	1,500	1.254	0.062	0.297	0.037	48	1,294
LGP Allgon LGP21903	135.00	33	1.087	-0.077	0.179	-0.013	0	28
Powerwave LGP21401	135.00	85	1.087	-0.077	0.179	-0.013	-1	73
Raycap DC6-48-60-18-	135.00	32	1.087	-0.077	0.179	-0.013	0	27
Ericsson RRUS 11 (Ba	135.00	165	1.087	-0.077	0.179	-0.013	-2	142
Powerwave 7770.00	135.00	210	1.087	-0.077	0.179	-0.013	-2	181
KMW AM-X-CD-16-65-00	135.00	146	1.087	-0.077	0.179	-0.013	-2	125
Flat Low Profile Pla	135.00	1,500	1.087	-0.077	0.179	-0.013	-16	1,294
GPS	110.00	10	0.722	-0.093	0.034	-0.043	0	9
Standoff	110.00	75	0.722	-0.093	0.034	-0.043	-3	65
GPS	97.00	10	0.561	-0.039	0.011	-0.012	0	9

Standoff	97.00	75	0.561	-0.039	0.011	-0.012	-1	65
GPS	88.00	10	0.462	-0.003	0.006	0.014	0	9
Standoff	88.00	75	0.462	-0.003	0.006	0.014	1	65
PCTEL GPS-TMG-HR-	12.00	1	0.009	0.053	0.030	0.037	0	1
Standoff	12.00	75	0.009	0.053	0.030	0.037	2	65
		49,686	65.744	16.678	18.492	4.515	2,359	42,852

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	-59.33	-2.34	0.00	-298.22	0.00	298.22	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.049
5.00	-57.20	-2.31	0.00	-286.50	0.00	286.50	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.049
10.00	-56.36	-2.30	0.00	-274.95	0.00	274.95	6,265.35	3,132.68	13,970.9	6,995.84	0.02	-0.02	0.048
12.00	-55.02	-2.27	0.00	-270.35	0.00	270.35	6,230.84	3,115.42	13,787.1	6,903.82	0.04	-0.03	0.048
15.00	-52.96	-2.21	0.00	-263.55	0.00	263.55	6,178.70	3,089.35	13,512.8	6,766.48	0.06	-0.04	0.048
20.00	-50.94	-2.16	0.00	-252.48	0.00	252.48	6,090.77	3,045.39	13,059.5	6,539.47	0.10	-0.05	0.047
25.00	-48.95	-2.10	0.00	-241.68	0.00	241.68	6,001.58	3,000.79	12,611.0	6,314.89	0.16	-0.06	0.046
30.00	-47.00	-2.04	0.00	-231.18	0.00	231.18	5,911.12	2,955.56	12,167.6	6,092.85	0.22	-0.07	0.046
35.00	-45.08	-1.98	0.00	-220.96	0.00	220.96	5,796.61	2,898.31	11,683.4	5,850.41	0.31	-0.08	0.046
40.00	-44.04	-1.95	0.00	-211.03	0.00	211.03	5,674.58	2,837.29	11,194.2	5,605.46	0.40	-0.10	0.045
42.75	-42.61	-1.91	0.00	-205.66	0.00	205.66	5,607.46	2,803.73	10,929.6	5,472.97	0.46	-0.11	0.045
45.00	-40.09	-1.82	0.00	-201.37	0.00	201.37	5,552.55	2,776.27	10,715.5	5,365.75	0.51	-0.11	0.045
49.00	-39.78	-1.81	0.00	-194.11	0.00	194.11	4,334.74	2,167.37	8,395.94	4,204.21	0.61	-0.12	0.055
50.00	-38.23	-1.76	0.00	-192.30	0.00	192.30	4,321.48	2,160.74	8,333.21	4,172.80	0.64	-0.12	0.055
55.00	-36.70	-1.71	0.00	-183.52	0.00	183.52	4,254.40	2,127.20	8,021.52	4,016.72	0.77	-0.14	0.054
60.00	-35.20	-1.66	0.00	-175.00	0.00	175.00	4,186.06	2,093.03	7,713.24	3,862.35	0.93	-0.16	0.054
65.00	-33.73	-1.61	0.00	-166.71	0.00	166.71	4,116.45	2,058.22	7,408.53	3,709.77	1.10	-0.17	0.053
70.00	-32.29	-1.57	0.00	-158.65	0.00	158.65	4,045.56	2,022.78	7,107.57	3,559.07	1.29	-0.19	0.053
75.00	-30.88	-1.54	0.00	-150.78	0.00	150.78	3,973.41	1,986.71	6,810.50	3,410.31	1.50	-0.21	0.052
80.00	-29.49	-1.52	0.00	-143.09	0.00	143.09	3,899.99	1,950.00	6,517.51	3,263.60	1.73	-0.22	0.051
85.00	-28.95	-1.51	0.00	-135.52	0.00	135.52	3,805.04	1,902.52	6,195.74	3,102.48	1.97	-0.24	0.051
87.00	-28.49	-1.51	0.00	-132.49	0.00	132.49	3,765.38	1,882.69	6,066.61	3,037.81	2.08	-0.25	0.051
88.00	-27.48	-1.50	0.00	-130.98	0.00	130.98	3,745.55	1,872.77	6,002.55	3,005.74	2.13	-0.25	0.051
90.00	-26.59	-1.49	0.00	-127.99	0.00	127.99	3,705.89	1,852.94	5,875.46	2,942.10	2.24	-0.26	0.051
92.00	-25.88	-1.50	0.00	-125.00	0.00	125.00	3,054.73	1,527.36	4,893.34	2,450.31	2.35	-0.27	0.059
95.00	-25.41	-1.50	0.00	-120.52	0.00	120.52	3,020.24	1,510.12	4,760.42	2,383.75	2.52	-0.28	0.059
97.00	-24.62	-1.51	0.00	-117.51	0.00	117.51	2,996.99	1,498.50	4,672.40	2,339.67	2.64	-0.29	0.058
100.00	-23.48	-1.53	0.00	-112.98	0.00	112.98	2,961.74	1,480.87	4,541.28	2,274.01	2.83	-0.30	0.058
105.00	-22.37	-1.57	0.00	-105.31	0.00	105.31	2,901.98	1,450.99	4,325.26	2,165.84	3.15	-0.32	0.056
110.00	-21.17	-1.61	0.00	-97.47	0.00	97.47	2,840.94	1,420.47	4,112.52	2,059.32	3.51	-0.35	0.055
115.00	-20.11	-1.64	0.00	-89.44	0.00	89.44	2,777.06	1,388.53	3,901.02	1,953.41	3.88	-0.37	0.053
120.00	-19.07	-1.68	0.00	-81.23	0.00	81.23	2,693.16	1,346.58	3,667.73	1,836.59	4.28	-0.39	0.051
125.00	-18.05	-1.70	0.00	-72.85	0.00	72.85	2,609.26	1,304.63	3,441.64	1,723.38	4.70	-0.41	0.049
130.00	-17.65	-1.71	0.00	-64.35	0.00	64.35	2,525.36	1,262.68	3,222.75	1,613.77	5.14	-0.43	0.047
132.00	-16.79	-1.72	0.00	-60.93	0.00	60.93	2,491.80	1,245.90	3,137.20	1,570.93	5.32	-0.44	0.046
135.00	-13.83	-1.72	0.00	-55.78	0.00	55.78	2,441.46	1,220.73	3,011.04	1,507.76	5.60	-0.45	0.043
136.00	-13.29	-1.72	0.00	-54.05	0.00	54.05	1,416.30	708.15	1,774.76	888.70	5.70	-0.46	0.070
140.00	-12.63	-1.71	0.00	-47.17	0.00	47.17	1,392.36	696.18	1,697.02	849.77	6.09	-0.47	0.065
145.00	-9.89	-1.61	0.00	-38.63	0.00	38.63	1,361.30	680.65	1,600.81	801.59	6.60	-0.50	0.055
150.00	-9.32	-1.58	0.00	-30.56	0.00	30.56	1,328.96	664.48	1,505.82	754.03	7.13	-0.52	0.048
155.00	-8.99	-1.55	0.00	-22.68	0.00	22.68	1,295.36	647.68	1,412.23	707.16	7.69	-0.54	0.039
158.00	-5.90	-1.23	0.00	-18.04	0.00	18.04	1,274.59	637.29	1,356.80	679.41	8.04	-0.56	0.031
160.00	-5.44	-1.17	0.00	-15.58	0.00	15.58	1,260.48	630.24	1,320.18	661.07	8.27	-0.56	0.028
165.00	-5.08	-1.11	0.00	-9.73	0.00	9.73	1,224.34	612.17	1,229.85	615.84	8.87	-0.57	0.020
169.00	-2.71	-0.68	0.00	-5.29	0.00	5.29	1,194.51	597.26	1,158.93	580.33	9.35	-0.58	0.011
170.00	-2.31	-0.60	0.00	-4.61	0.00	4.61	1,186.93	593.46	1,141.40	571.55	9.47	-0.58	0.010
175.00	-2.08	-0.54	0.00	-1.62	0.00	1.62	1,148.25	574.12	1,054.98	528.28	10.09	-0.59	0.005
178.00	0.00	-0.52	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	10.45	-0.59	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	-41.35	-2.34	0.00	-293.27	0.00	293.27	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.046
5.00	-39.86	-2.31	0.00	-281.56	0.00	281.56	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.045
10.00	-39.28	-2.29	0.00	-270.03	0.00	270.03	6,265.35	3,132.68	13,970.9	6,995.84	0.02	-0.02	0.045
12.00	-38.34	-2.26	0.00	-265.45	0.00	265.45	6,230.84	3,115.42	13,787.1	6,903.82	0.03	-0.03	0.045
15.00	-36.91	-2.20	0.00	-258.68	0.00	258.68	6,178.70	3,089.35	13,512.8	6,766.48	0.05	-0.03	0.044
20.00	-35.50	-2.14	0.00	-247.67	0.00	247.67	6,090.77	3,045.39	13,059.5	6,539.47	0.10	-0.05	0.044
25.00	-34.11	-2.08	0.00	-236.95	0.00	236.95	6,001.58	3,000.79	12,611.0	6,314.89	0.15	-0.06	0.043
30.00	-32.75	-2.02	0.00	-226.53	0.00	226.53	5,911.12	2,955.56	12,167.6	6,092.85	0.22	-0.07	0.043
35.00	-31.42	-1.96	0.00	-216.41	0.00	216.41	5,796.61	2,898.31	11,683.4	5,850.41	0.30	-0.08	0.042
40.00	-30.69	-1.93	0.00	-206.60	0.00	206.60	5,674.58	2,837.29	11,194.2	5,605.46	0.40	-0.10	0.042
42.75	-29.69	-1.88	0.00	-201.29	0.00	201.29	5,607.46	2,803.73	10,929.6	5,472.97	0.45	-0.10	0.042
45.00	-27.94	-1.79	0.00	-197.06	0.00	197.06	5,552.55	2,776.27	10,715.5	5,365.75	0.50	-0.11	0.042
49.00	-27.72	-1.78	0.00	-189.90	0.00	189.90	4,334.74	2,167.37	8,395.94	4,204.21	0.60	-0.12	0.052
50.00	-26.64	-1.73	0.00	-188.12	0.00	188.12	4,321.48	2,160.74	8,333.21	4,172.80	0.62	-0.12	0.051
55.00	-25.57	-1.68	0.00	-179.48	0.00	179.48	4,254.40	2,127.20	8,021.52	4,016.72	0.76	-0.14	0.051
60.00	-24.53	-1.63	0.00	-171.11	0.00	171.11	4,186.06	2,093.03	7,713.24	3,862.35	0.91	-0.15	0.050
65.00	-23.51	-1.58	0.00	-162.98	0.00	162.98	4,116.45	2,058.22	7,408.53	3,709.77	1.08	-0.17	0.050
70.00	-22.50	-1.54	0.00	-155.08	0.00	155.08	4,045.56	2,022.78	7,107.57	3,559.07	1.27	-0.19	0.049
75.00	-21.52	-1.50	0.00	-147.40	0.00	147.40	3,973.41	1,986.71	6,810.50	3,410.31	1.47	-0.20	0.049
80.00	-20.55	-1.48	0.00	-139.89	0.00	139.89	3,899.99	1,950.00	6,517.51	3,263.60	1.69	-0.22	0.048
85.00	-20.17	-1.47	0.00	-132.51	0.00	132.51	3,805.04	1,902.52	6,195.74	3,102.48	1.93	-0.24	0.048
87.00	-19.85	-1.47	0.00	-129.56	0.00	129.56	3,765.38	1,882.69	6,066.61	3,037.81	2.03	-0.24	0.048
88.00	-19.15	-1.46	0.00	-128.09	0.00	128.09	3,745.55	1,872.77	6,002.55	3,005.74	2.09	-0.25	0.048
90.00	-18.53	-1.45	0.00	-125.18	0.00	125.18	3,705.89	1,852.94	5,875.46	2,942.10	2.19	-0.26	0.048
92.00	-18.04	-1.46	0.00	-122.27	0.00	122.27	3,054.73	1,527.36	4,893.34	2,450.31	2.30	-0.26	0.056
95.00	-17.71	-1.46	0.00	-117.90	0.00	117.90	3,020.24	1,510.12	4,760.42	2,383.75	2.47	-0.27	0.055
97.00	-17.15	-1.47	0.00	-114.98	0.00	114.98	2,996.99	1,498.50	4,672.40	2,339.67	2.59	-0.28	0.055
100.00	-16.36	-1.49	0.00	-110.56	0.00	110.56	2,961.74	1,480.87	4,541.28	2,274.01	2.77	-0.30	0.054
105.00	-15.59	-1.53	0.00	-103.10	0.00	103.10	2,901.98	1,450.99	4,325.26	2,165.84	3.09	-0.32	0.053
110.00	-14.75	-1.56	0.00	-95.47	0.00	95.47	2,840.94	1,420.47	4,112.52	2,059.32	3.43	-0.34	0.052
115.00	-14.01	-1.60	0.00	-87.65	0.00	87.65	2,777.06	1,388.53	3,901.02	1,953.41	3.80	-0.36	0.050
120.00	-13.29	-1.63	0.00	-79.64	0.00	79.64	2,693.16	1,346.58	3,667.73	1,836.59	4.19	-0.38	0.048
125.00	-12.58	-1.66	0.00	-71.48	0.00	71.48	2,609.26	1,304.63	3,441.64	1,723.38	4.60	-0.40	0.046
130.00	-12.30	-1.67	0.00	-63.18	0.00	63.18	2,525.36	1,262.68	3,222.75	1,613.77	5.03	-0.42	0.044
132.00	-11.70	-1.68	0.00	-59.85	0.00	59.85	2,491.80	1,245.90	3,137.20	1,570.93	5.21	-0.43	0.043
135.00	-9.63	-1.69	0.00	-54.82	0.00	54.82	2,441.46	1,220.73	3,011.04	1,507.76	5.49	-0.44	0.040
136.00	-9.26	-1.69	0.00	-53.13	0.00	53.13	1,416.30	708.15	1,774.76	888.70	5.58	-0.45	0.066
140.00	-8.80	-1.68	0.00	-46.39	0.00	46.39	1,392.36	696.18	1,697.02	849.77	5.96	-0.46	0.061
145.00	-6.89	-1.59	0.00	-38.02	0.00	38.02	1,361.30	680.65	1,600.81	801.59	6.46	-0.49	0.052
150.00	-6.49	-1.55	0.00	-30.09	0.00	30.09	1,328.96	664.48	1,505.82	754.03	6.99	-0.51	0.045
155.00	-6.26	-1.52	0.00	-22.34	0.00	22.34	1,295.36	647.68	1,412.23	707.16	7.54	-0.53	0.036
158.00	-4.11	-1.21	0.00	-17.78	0.00	17.78	1,274.59	637.29	1,356.80	679.41	7.88	-0.54	0.029
160.00	-3.79	-1.15	0.00	-15.36	0.00	15.36	1,260.48	630.24	1,320.18	661.07	8.11	-0.55	0.026
165.00	-3.54	-1.10	0.00	-9.60	0.00	9.60	1,224.34	612.17	1,229.85	615.84	8.69	-0.56	0.018
169.00	-1.88	-0.67	0.00	-5.22	0.00	5.22	1,194.51	597.26	1,158.93	580.33	9.16	-0.57	0.011
170.00	-1.61	-0.59	0.00	-4.55	0.00	4.55	1,186.93	593.46	1,141.40	571.55	9.28	-0.57	0.009
175.00	-1.45	-0.53	0.00	-1.60	0.00	1.60	1,148.25	574.12	1,054.98	528.28	9.88	-0.57	0.004
178.00	0.00	-0.52	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	10.24	-0.57	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	38.08	0.00	59.56	0.00	0.00	4446.09	49.00	0.66
0.9D + 1.6W	38.06	0.00	44.66	0.00	0.00	4390.49	49.00	0.65
1.2D + 1.0Di + 1.0Wi	10.70	0.00	99.26	0.00	0.00	1254.13	49.00	0.20
(1.2 + 0.2Sds) * DL + E ELFM	1.94	0.00	59.33	0.00	0.00	276.32	49.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.34	0.00	59.33	0.00	0.00	298.22	136.00	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.94	0.00	41.35	0.00	0.00	272.01	49.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	2.34	0.00	41.35	0.00	0.00	293.27	136.00	0.07
1.0D + 1.0W	8.39	0.00	49.68	0.00	0.00	973.88	49.00	0.15

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
4,675.00	39.00	35.50	4,446.09	99.26	38.08	70.45

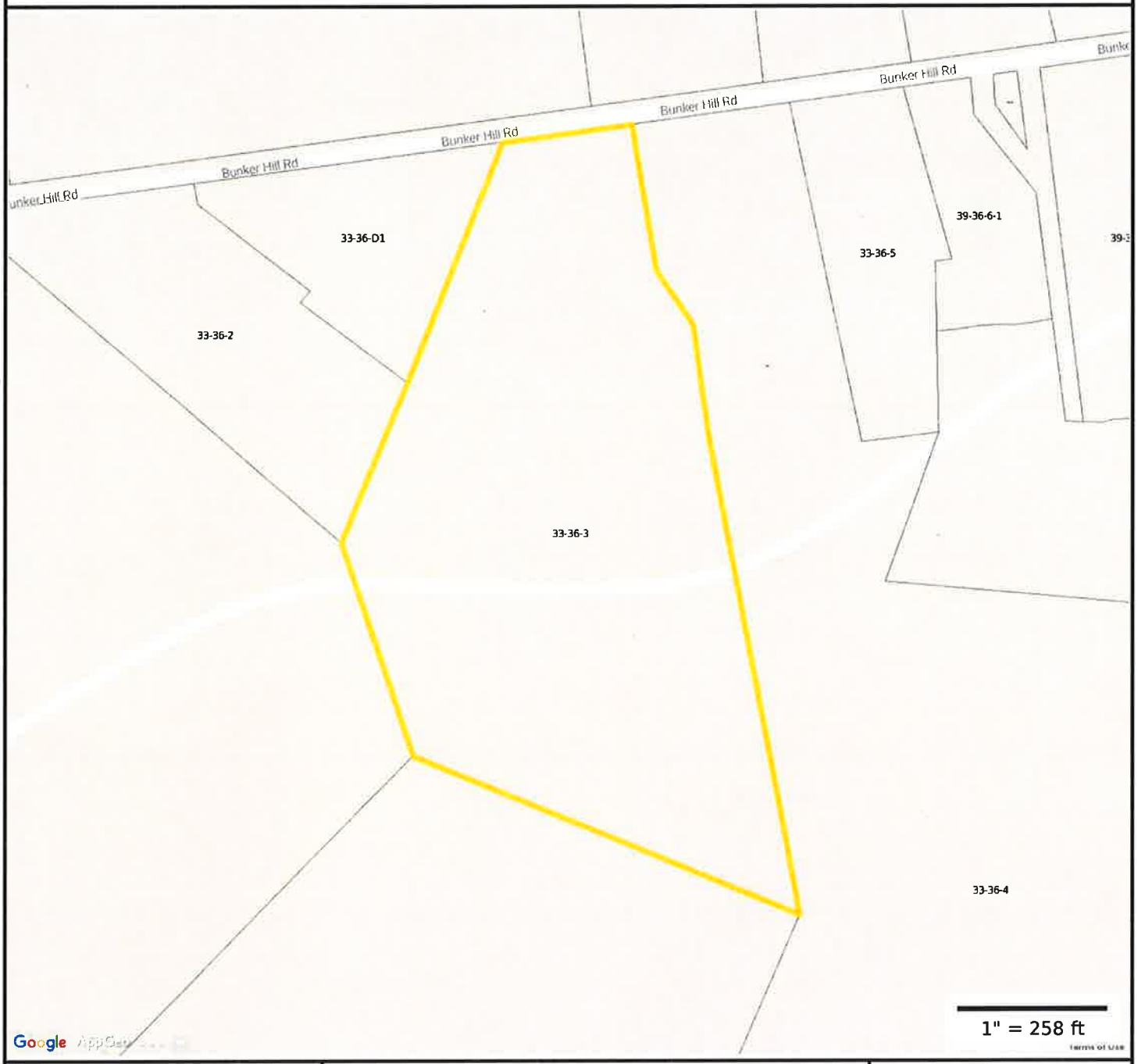
Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
50.0	3.000	64.000	Clipped	0	14.00	9.031	361.84	914.42	0.40

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression Force (kip)	Compression Allow (kip)	Compression Ratio	Tension Force (kip)	Tension Allow (kip)	Tension Ratio
64.00	20	2.25" 18J	2.25	75.00	100.00	Clustered	6.00	45.0	171.69	260.00	0.67	161.77	260.00	0.64

ATTACHMENT 4



Property Information

Property ID	09013001-33-36-3
Location	104 BUNKER HILL RD
Owner	PRICE LEON & BENJAMIN

CRCOG CAPITOL REGION COUNCIL OF GOVERNMENTS
Working together for a better region.

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Town of Andover Assessor

Recent Sales in Neighborhood Previous Parcel Next Parcel Field Definitions Return to Main Search Andover Home

Owner and Parcel Information

Owner Name	PRICE LEON & BENJAMIN	Today's Date	February 1, 2017
Mailing Address	104 BUNKER HILL RD	Parcel ID	1023 (Account #: 1023)
	ANDOVER, CT 06232	Fire District	0
Location Address	104 BUNKER HILL RD	Census Tract	549
Map / Block / Lot	33 / 36 / 3	Acreage	13.90
Use Class / Description	1010 Single Fam MDL-01		
Assessing Neighborhood	12A	Utilities	Well,Septic

Current Appraised Value Information

Building Value	XF Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
$ 168,000	$ 0	$ 42,100	$ 251,700		$ 461,800	$ 461,800	$ 323,200

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
Current	$ 117,600	$ 29,400	$ 176,200	$ 323,200
2011	$ 117,600	$ 29,400	$ 176,200	$ 323,200
2010	$ 131,100	$ 41,700	$ 71,400	$ 244,200

Land Information

Use	Class	Zoning	Area	Value
Single Fam MDL-01	R	R-80	1.84 AC	$ 70,400
Single Fam MDL-01	R	R-80	12.06 AC	$ 19,300
Tel RelTwr	I		1 BL	$ 162,000

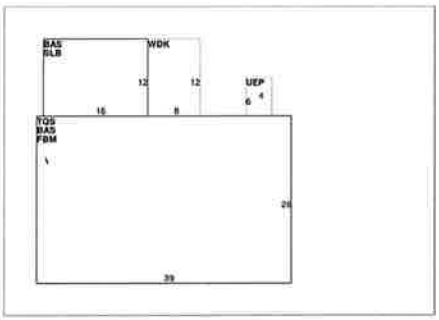
Residential Building Information

Style	Year Built	Eff Year Built	Living Area	Stories	Grade	Exterior Wall	Interior Wall
Colonial	1969	1984	2,017	1 3/4 Stories	C+	Clapboard	Drywall/Sheet
Roof Cover	**Roof Structure**	**Floor Type**	**Heat Type**	**Heat Fuel**	**AC**	**Bedrooms/Full Baths/Half Baths/Total Rooms**	**Basement**
Asph/F Gls/Cmp	Gambrel	Carpet	Oil	Hot Water	None	3 / 3 / 0 / 7	

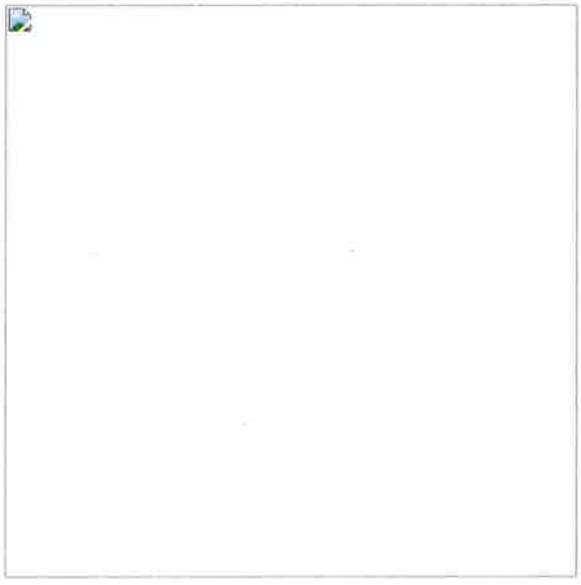
Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	1,206	1,206	
FBM	Basement, Finished	0	1,014	
SLB	Slab	0	192	
TQS	Three Quarter Story	811	1,014	
UEP	Porch, Enclosed, Unfinished	0	24	
WDK	Deck, Wood	0	96	
	Totals	**2,017**	**3,546**	**2,394**

Building Sketch Enlarge



Building Photo Enlarge



Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
Fence-6' Chain		198 L.F.	2001	$ 1,600
Shed Comm Gd		220 S.F.	2001	$ 5,900

Shed Comm Gd	200 S.F.	2001	$ 5,400
Shed Comm Gd	360 S.F.	2001	$ 9,700
Garage Av	880 S.F.	1969	$ 5,300
Work Shop Pr	3,640 S.F.	1969	$ 14,200

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
10/18/2010		113/1034	Unqualified	Other	Improved	PRICE LEON & BENJAMIN
08/23/2004		0094/0229	Unqualified		Improved	PRICE LEON
07/06/2000		0075/0459	Unqualified		Vacant	GREEN DEBORAH R & PRICE LEON
12/10/1997	$ 184,000	0068/0950	Qualified	Arms Length Qualified		GREEN DEBORAH R & PRICE LEON
04/15/1976	$ 69,000	0028/0674	Qualified	Arms Length Qualified		ARNER DAVID C & MARSHA A

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
3660	11/05/2015	RR	Re-Roof	$ 4,800		0		PARTIAL STRIP & RE-ROOF ON TOP LOCATION OF DUTCH COLONIAL
3570	05/26/2015	CM	Commercial	$ 17,500		0		ADD 3 NEW ANTENNAS ALONG W/ BIAS-TEES, COAX & ONE BBU
3403	04/29/2014	EL	Electric	$ 8,000		0		ELECTRICAL NEW GENERATOR HOOKUP
3199	11/01/2012	RS	Residential	$ 25,000		0		INSTALL 3 NEW ANTENNAS & RADIO EQUPMENT ON EXISTING TOWER
3101	02/16/2012	CM	Commercial	$ 20,000		0		RPLC ANTENNAS ON CELL TOWER
2242	08/03/2006			$ 60		100		REMOVE AT&T LINES
1338	08/09/2002	EL	Electric	$ 52,000		100		MODIFY EXISTING TELECOM. FACILITY
104BUN/03	06/28/2001	NC	New Construct	$ 75,000	10/23/2001	100		ANTEN/EQCABI
104BUN/02	04/26/2001	NC	New Construct	$ 50,000	10/23/2001	100	01/08/2002	SHELTER/ANTE
104BUN/01	03/13/2001	NC	New Construct	$ 81,900	10/23/2001	100		CARRIER
104BUN	02/01/2000	PR		$ 150,000	10/23/2001	100		NEXTEL TO
104BUNA	11/30/1999	PR		$ 10,000	10/23/2001	100		CANOPY 22

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