

July 18, 2017

Melanie A. Bachman, Esq.  
Executive Director/Staff Attorney  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification  
53 Gallup Road, Voluntown, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the top of an existing 150-foot tower at 53 Gallup Road in Voluntown, Connecticut (the “Property”). The tower is owned by American Tower Corporation (“ATC”). The Council approved Cellco’s use of this tower in 2013 (Docket No. 438). Cellco now intends to remove nine (9) of its existing antennas and install six (6) new antennas (three (3) model SBNHH-1D65B, 700 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas), all at the same level on the tower. Cellco also intends to install six (6) new remote radio heads (“RRHs”) behind its new 700 MHz and 2100 MHz antennas and two (2) HYBRIFLEX™ fiber optic antenna cables inside the tower. Included in Attachment 1 are specifications for Cellco’s 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 A. Sirpenski, First Selectman of the Town of Voluntown; Peter Zvingilas, Voluntown Zoning Enforcement Officer; ATC, the tower owner; and Byron Gallup, the owner of the Property.

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 structure. Cellco’s replacement antennas and RRHs will be attached to Cellco’s existing antenna platform at the top of the tower.

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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 installation of new antennas and RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A General Power Density table for Cellco's modified facility is included in 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 ("SAR") included in Attachment 3). Please note that the SAR identifies the six (6) proposed replacement antennas as "existing" and the three (3) remaining antennas as "proposed". The final configuration of nine (9) antennas was, however, properly included in the SAR calculation.

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5. A copy of the stamped Certificate of Mailing will be forwarded to the Council upon receipt.

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 A. Sirpenski, Voluntown First Selectman  
Peter Zvingilas, Voluntown Zoning Enforcement Officer  
ATC  
Byron Gallup  
Tim Parks

# **ATTACHMENT 1**



## SBNHH-1D65B

**6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x 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\*

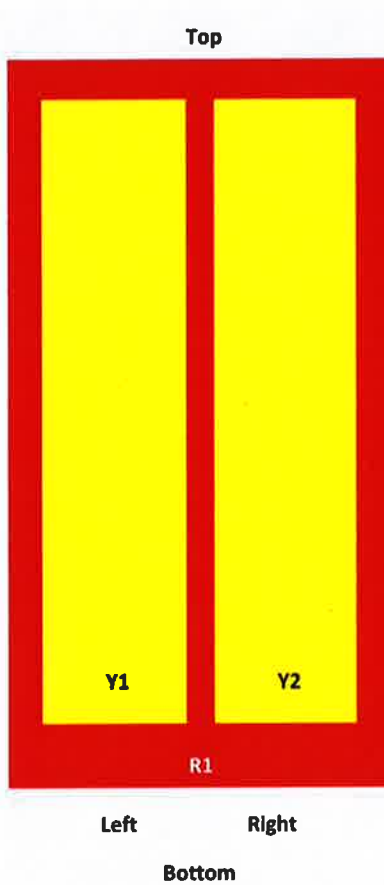
Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0°   14.6	0°   14.5	0°   17.4	0°   17.8	0°   18.1	0°   18.2
	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

SBNHH-1D65B

**SBNHH 65**



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

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

RoHS 2011/65/EU  
China RoHS SJ/T 11364-2006  
ISO 9001:2008

### Classification

Compliant by Exemption  
Above Maximum Concentration Value (MCV)  
Designed, manufactured and/or distributed under this quality management system



SBNHH-1D65B

## Included Products

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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

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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.

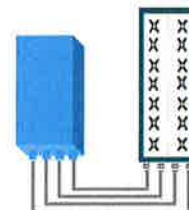


## FEATURES

- 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



## TECHNICAL SPECIFICATIONS

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

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# 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.

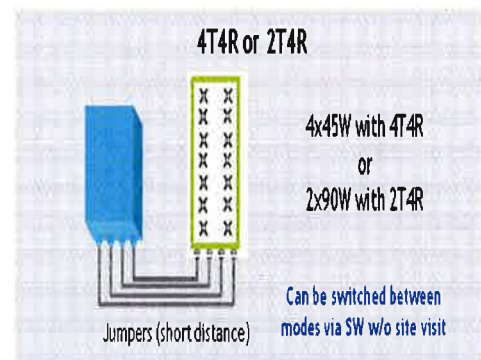
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the 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	
<b>Number of TX/RX paths</b>	4 duplexed (either 4T4R or 2T4R selectable by SW)
<b>Frequency band</b>	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
<b>Instantaneous bandwidth - #carriers</b>	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
<b>LTE carrier bandwidth</b>	5, 10, 15, 20 MHz
<b>RF output power</b>	2x90W or 4x45W (selectable by SW)
<b>Noise figure – RX Diversity scheme</b> <b>Receiver Sensivity (FRC A1-3)</b>	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
<b>Sizes (HxWxD) in mm (in.)</b>	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
<b>Volume in Liters</b>	35.5 (with solar shield) 29.7 (without solar shield)
<b>Weight in kg (lb) (w/o mounting HW)</b>	25.8kg (56.8lb) (with solar shield)
<b>DC voltage range</b>	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
<b>DC power consumption</b>	750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
<b>Environmental conditions</b>	-40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure
<b>Wind load (@150km/h or 93mph)</b>	250N (56lb) Frontal/150N (34lb) Lateral
<b>Antenna ports</b>	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
<b>CPRI ports</b>	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
<b>AISG interfaces</b>	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
<b>Misc. Interfaces</b>	4 external alarms (1 connector) 1 DC connector (2 pins)
<b>Installation conditions</b>	Pole and wall mounting
<b>Regulatory compliance</b>	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

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# **ATTACHMENT 2**

General Power Density

Site Name: Palmer Pond, CT  
 Cumulative Power Density

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm <sup>2</sup> )	Maximum Permissible Exposure* (mW/cm <sup>2</sup> )	Fraction of MPE (%)
VZW PCS	1970	0	449	0	150	0.0000	1.0	0.00%
VZW Cellular	869	0	290	0	150	0.0000	0.5793333333	0.00%
VZW AWS	2145	1	7486	7486.391	150	0.1197	1.0	11.97%
VZW 700	746	1	1649	1649.382	150	0.0264	0.4973333333	5.30%

**Total Percentage of Maximum Permissible Exposure**

17.27%

\*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz

mW/cm<sup>2</sup> = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case maximum values used.

# **ATTACHMENT 3**



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 150.6 ft Monopole  
**ATC Site Name** : Palmer Pond CT CT, CT  
**ATC Site Number** : 418914  
**Engineering Number** : OAA700432\_C3\_01  
**Proposed Carrier** : Verizon  
**Carrier Site Name** : Palmer Pond CT  
**Carrier Site Number** : 220526  
**Site Location** : 75 Gallup Road  
Voluntown, CT 06484  
41.536800,-71.829300  
**County** : New London  
**Date** : April 17, 2017  
**Max Usage** : 24%  
**Result** : Pass

Prepared By:  
Annika A. Venning, E.I.  
Structural Engineer I

Reviewed By:



Apr 17 2017 3:36 PM **cosign**

COA: PEC.0001553



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150.6 ft monopole to reflect the change in loading by Verizon.

## Supporting Documents

<b>Tower Drawings</b>	EEl Job #17125 Rev. 1, dated January 17, 2014
<b>Foundation Drawing</b>	EEl Job #17125 Rev. 1, dated February 19, 2014
<b>Geotechnical Report</b>	DET Job #2013.13, dated November 29, 2013

## 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.

<b>Basic Wind Speed:</b>	105 mph (3-Second Gust, Vasd) / 135 mph (3- Second Gust, Vult)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	C
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.17, S_1 = 0.06$
<b>Site Class:</b>	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](mailto: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 <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
149.0	153.0	1	VZW Unused Reserve: 20,183 sq in	Low Profile Platform	-	Verizon
	150.0	6	Commscope SBNHH-1D65B (40.6 lbs)			

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
149.0	152.0	6	72" x 6" Panel	-	(2) 1 1/4" Coax	Verizon
		6	96" x 12" x 7" Panel			
		5	25" x 13" x 8" RRU/RRH			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
149.0	150.0	3	Alcatel-Lucent RRH2x60 700	Low Profile Platform	(2) 1 5/8" Hybriflex	Verizon
		2	RFS DB-T1-6Z-12AB-0Z			
		3	Alcatel-Lucent B66A RRH4x45-4R w/ Solar Shield			
		3	Antel BXA-70063-6CF-EDIN-X			

<sup>1</sup>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	24%	Pass
Shaft	24%	Pass
Base Plate	21%	Pass

**Foundations**

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	12,660.7	3,840.8	30%
Shear (Kips)	101.3	37.0	36%

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) (°)
149.0	Alcatel-Lucent RRH2x60 700	Verizon	0.443	0.343
	RFS DB-T1-6Z-12AB-0Z			
	Alcatel-Lucent B66A RRH4x45-4R w/ Solar Shield			
	Antel BXA-70063-6CF-EDIN-X			

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



## Standard Conditions

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

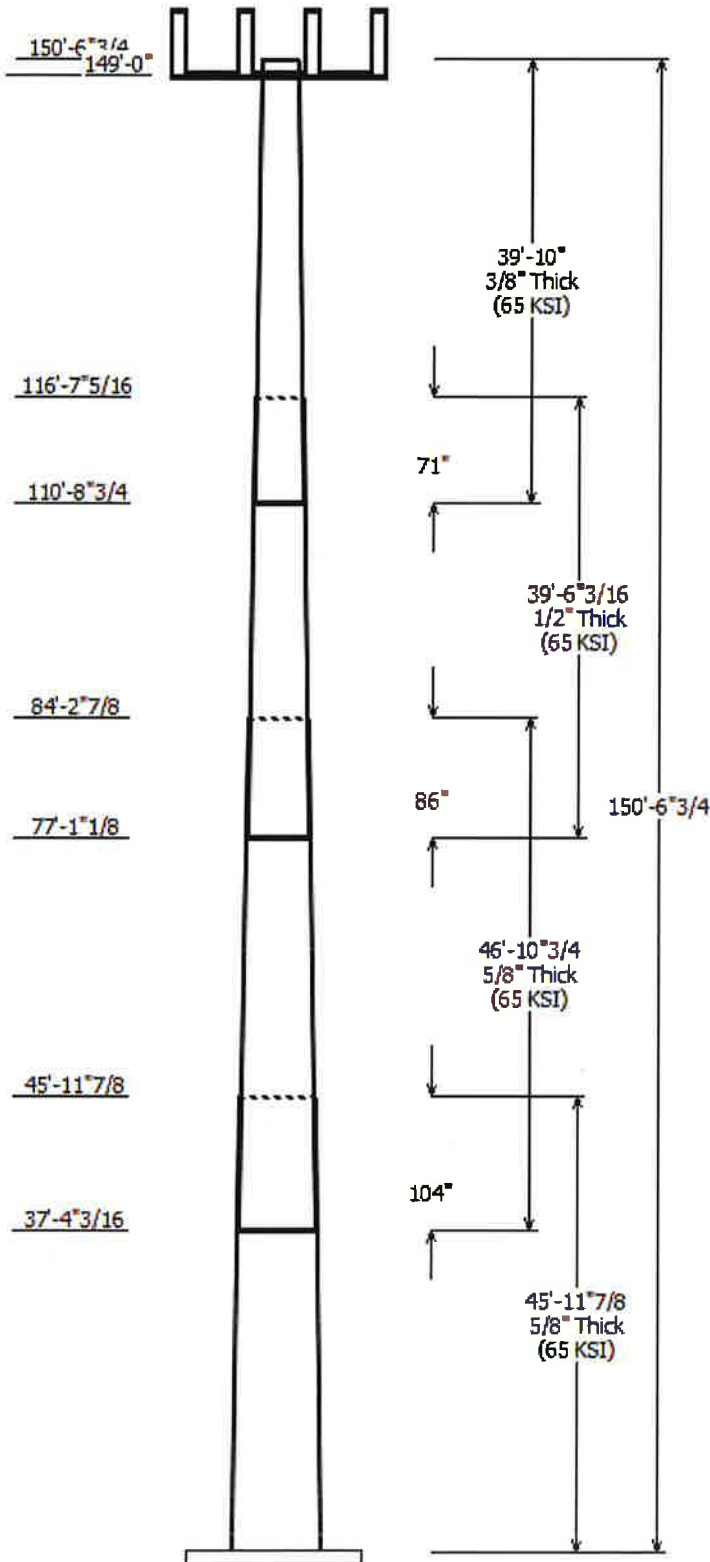
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

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

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

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

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Job Information	
Pole :	418914
Code :	ANSI/TIA-222-G
Description :	ATC418914
Client :	VERIZON WIRELESS
Struct Class :	II
Location :	PALMER POND CT CT, CT
Shape :	18 Sides
Exposure :	C
Height :	150.56 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.32611(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Across Top	Flats Bottom					
1	45.987	61.00	76.00	0.625		0.000	0.326100	65
2	46.896	49.77	65.07	0.625	Slip Joint	103.688	0.326100	65
3	39.516	40.22	53.10	0.500	Slip Joint	85.781	0.326100	65
4	39.833	29.90	42.89	0.375	Slip Joint	70.563	0.326100	65

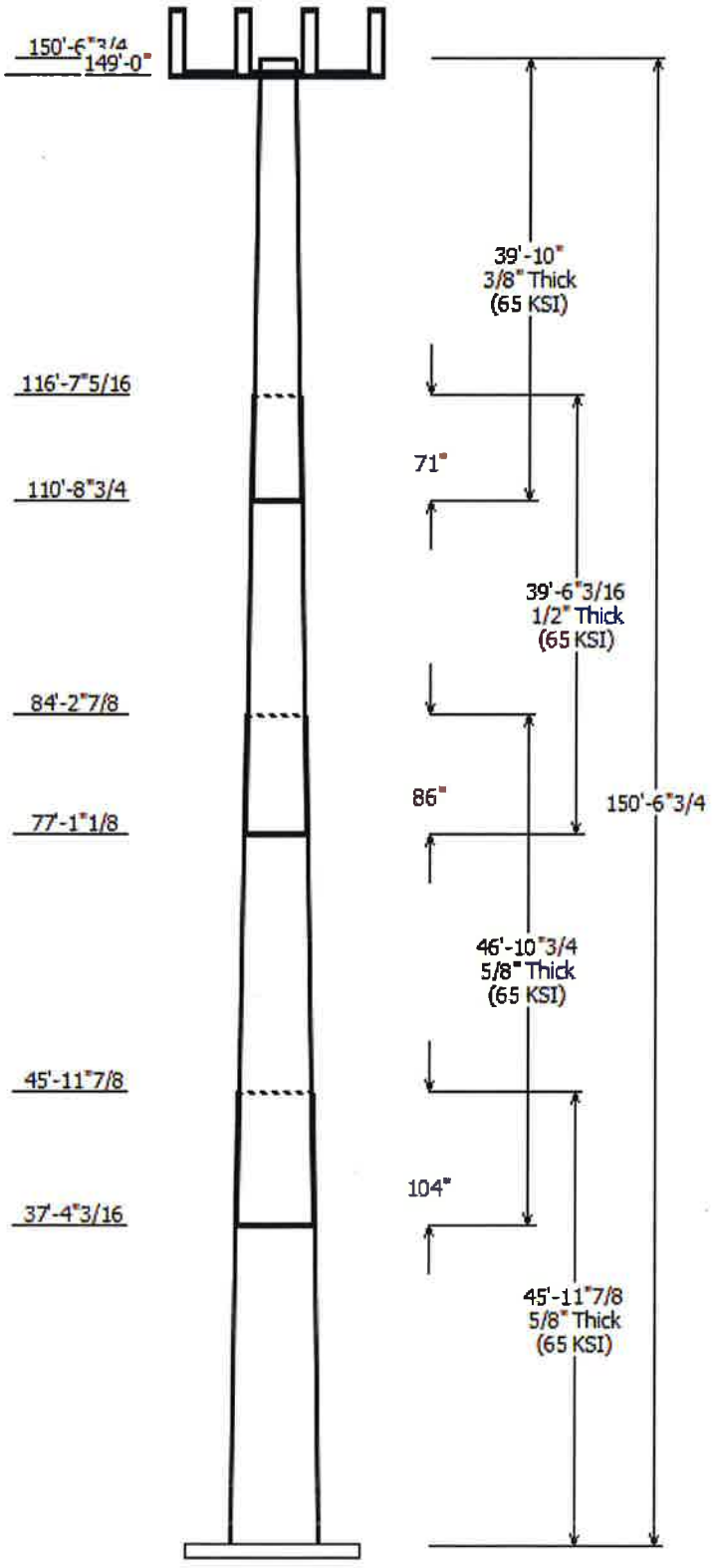
Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
149.000	153.000	1	VZW Unused Reserve: 20,183
149.000	150.000	6	Commscope SBNHH-1D65B
149.000	150.000	3	Antel BXA-70063-6CF-EDIN-X
149.000	150.000	3	Alcatel-Lucent B66A RRH4x45-
149.000	150.000	2	RFS DB-T1-6Z-12AB-0Z
149.000	150.000	3	Alcatel-Lucent RRH2x60 700
149.000	149.000	1	Round Low Profile Platform

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
0.000	149.0	1 5/8" Hybriflex	No

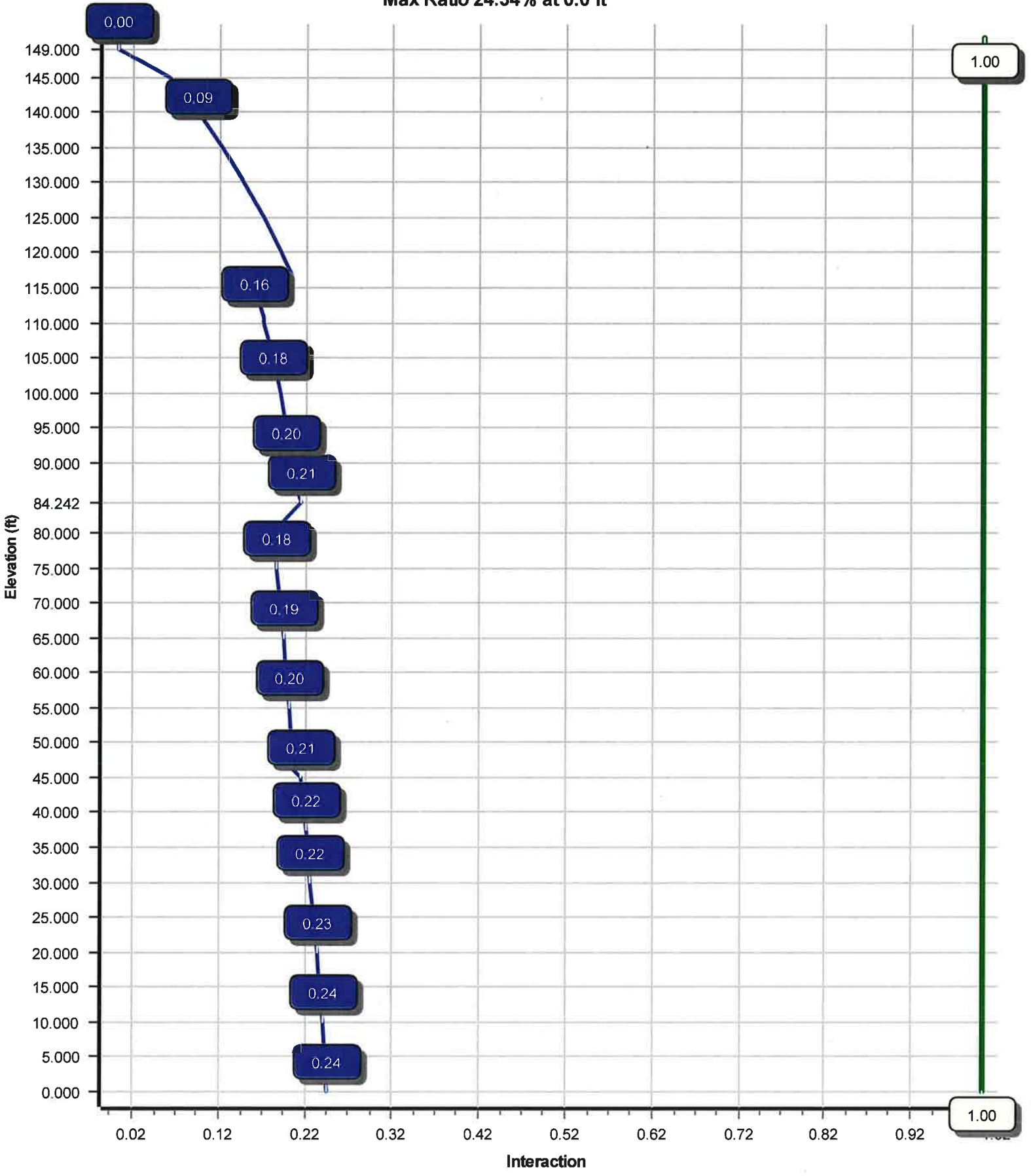
Load Cases	
1.2D + 1.6W	105 mph with No Ice
0.9D + 1.6W	105 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3840.83	36.96	71.50
0.9D + 1.6W	3829.59	36.95	53.62
1.2D + 1.0Di + 1.0Wi	969.29	9.56	94.04
(1.2 + 0.2Sds) * DL + E ELFM	434.68	4.32	70.50
(1.2 + 0.2Sds) * DL + E EMAM	374.79	3.39	70.50
(0.9 - 0.2Sds) * DL + E ELFM	433.33	4.32	49.34
(0.9 - 0.2Sds) * DL + E EMAM	373.51	3.39	49.34
1.0D + 1.0W	782.39	7.54	59.60

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



Load Case : 1.2D + 1.6W  
Max Ratio 24.34% at 0.0 ft



Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:02 AM

Customer: VERIZON WIRELESS

**Analysis Parameters**

Location:	NEW LONDON County, CT	Height (ft):	150.
Code:	ANSI/TIA-222-G	Base Diameter (in):	76.00
Shape:	18 Sides	Top Diameter (in):	29.90
Pole Type:	Taper	Taper (in/ft) :	0.326
Pole Manufacturer:	EEL	Rotation (deg) :	0.00

**Ice & Wind Parameters**

Structure Class:	II	Design Wind Speed Without Ice:	105 mph
Exposure Category:	C	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

**Seismic Parameters**

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	1.13		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.166	S <sub>1</sub> :	0.059
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.177	S <sub>d1</sub> :	0.094
		C <sub>s</sub> :	0.056
		C <sub>s</sub> Max:	0.056
		C <sub>s</sub> Min:	0.030

**Load Cases**

1.2D + 1.6W	105 mph with No Ice
0.9D + 1.6W	105 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph



Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom					Top					Taper (in/ft)		
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )		W/t Ratio	D/t Ratio
1-18	45.987	0.6250	65		0.00	21,070	76.00	0.00	149.52	107326.	20.03	121.60	61.00	45.99	119.77	55165.1	15.80	97.61	0.326110
2-18	46.896	0.6250	65	Slip	103.69	17,980	65.07	37.35	127.84	67082.9	16.95	104.11	49.77	84.24	97.50	29762.4	12.63	79.64	0.326110
3-18	39.516	0.5000	65	Slip	85.78	9,851	53.10	77.09	83.49	29193.9	17.32	106.22	40.22	116.61	63.04	12566.8	12.77	80.44	0.326110
4-18	39.833	0.3750	65	Slip	70.56	5,811	42.89	110.73	50.60	11555.9	18.76	114.37	29.90	150.56	35.14	3870.3	12.65	79.73	0.326110
Shaft Weight						54,711													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
Elev (ft)	Description	Qty	Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor	From Face (ft)	Ecc (ft)
149.00	Alcatel-Lucent B66A	3	56.80	2.540	0.67	140.71	3.233	0.67	0.000	1.000
149.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	137.89	2.774	0.67	0.000	1.000
149.00	Antel BXA-70063-6CF-EDIN-X	3	17.00	7.570	0.66	190.85	8.833	0.66	0.000	1.000
149.00	Commscope SBNHH-1D65B	6	40.60	8.080	0.69	241.72	9.369	0.69	0.000	1.000
149.00	RFS DB-T1-6Z-12AB-0Z	2	16.00	2.510	0.67	109.75	3.162	0.67	0.000	1.000
149.00	Round Low Profile Platform	1	2000.00	28.930	1.00	2,863.88	54.527	1.00	0.000	0.000
149.00	VZW Unused Reserve:	1	1832.90	140.28	1.00	3,109.84	238.010	1.00	0.000	4.000
Totals		19	4500.00			9,051.91			Number of Loadings : 7	

**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	149.00	2	1 5/8" Hybriflex Cable	1.98	1.30	N	0.00	N	Verizon

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

**Segment Properties** (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.6250	76.000	149.520	107,326.	20.03	121.60	77.8	2781.	0.0	0.0
5.00		0.6250	74.369	146.285	100,510.	19.57	118.99	78.4	2661.	0.0	2,516.4
10.00		0.6250	72.739	143.051	93,989.9	19.11	116.38	78.9	2545.	0.0	2,461.4
15.00		0.6250	71.108	139.816	87,757.4	18.65	113.77	79.5	2430.	0.0	2,406.3
20.00		0.6250	69.478	136.582	81,806.7	18.19	111.16	80.0	2319.	0.0	2,351.3
25.00		0.6250	67.847	133.347	76,131.3	17.73	108.56	80.5	2210.	0.0	2,296.3
30.00		0.6250	66.217	130.113	70,724.7	17.27	105.95	81.1	2103.	0.0	2,241.2
35.00		0.6250	64.586	126.878	65,580.2	16.81	103.34	81.6	1999.	0.0	2,186.2
37.35	Bot - Section 2	0.6250	63.821	125.360	63,254.6	16.59	102.11	81.9	1952.	0.0	1,007.0
40.00		0.6250	62.956	123.644	60,691.5	16.35	100.73	82.2	1898.	0.0	2,270.8
45.00		0.6250	61.325	120.409	56,052.0	15.89	98.12	82.6	1800.	0.0	4,194.5
45.99	Top - Section 1	0.6250	62.253	122.250	58,662.7	16.15	99.61	82.4	1856.	0.0	815.0
50.00		0.6250	60.944	119.654	55,004.4	15.78	97.51	82.6	1777.	0.0	1,651.7
55.00		0.6250	59.314	116.420	50,663.2	15.32	94.90	82.6	1682.	0.0	2,008.3
60.00		0.6250	57.683	113.185	46,556.7	14.86	92.29	82.6	1589.	0.0	1,953.2
65.00		0.6250	56.053	109.951	42,678.4	14.40	89.68	82.6	1499.	0.0	1,898.2
70.00		0.6250	54.422	106.716	39,021.6	13.94	87.08	82.6	1412.	0.0	1,843.2
75.00		0.6250	52.792	103.482	35,579.9	13.48	84.47	82.6	1327.	0.0	1,788.1
77.09	Bot - Section 3	0.6250	52.109	102.128	34,201.0	13.29	83.37	82.6	1292.	0.0	732.4
80.00		0.6250	51.161	100.248	32,346.8	13.02	81.86	82.6	1245.	0.0	1,818.9
84.24	Top - Section 2	0.5000	50.778	79.788	25,482.5	16.50	101.56	82.0	988.4	0.0	2,594.9
85.00		0.5000	50.531	79.396	25,108.6	16.41	101.06	82.1	978.7	0.0	205.2
90.00		0.5000	48.900	76.808	22,732.8	15.83	97.80	82.6	915.6	0.0	1,328.8
95.00		0.5000	47.270	74.221	20,511.8	15.26	94.54	82.6	854.7	0.0	1,284.8
100.0		0.5000	45.639	71.633	18,440.3	14.68	91.28	82.6	795.8	0.0	1,240.8
105.0		0.5000	44.008	69.045	16,513.3	14.11	88.02	82.6	739.1	0.0	1,196.7
110.0		0.5000	42.378	66.458	14,725.4	13.53	84.76	82.6	684.4	0.0	1,152.7
110.7	Bot - Section 4	0.5000	42.140	66.080	14,476.0	13.45	84.28	82.6	676.6	0.0	164.4
115.0		0.5000	40.747	63.870	13,071.5	12.96	81.49	82.6	631.8	0.0	1,667.6
116.6	Top - Section 3	0.3750	40.972	48.319	10,061.7	17.85	109.26	80.4	483.7	0.0	613.8
120.0		0.3750	39.867	47.003	9,261.8	17.33	106.31	81.0	457.6	0.0	549.9
125.0		0.3750	38.236	45.063	8,161.3	16.57	101.96	81.9	420.4	0.0	783.2
130.0		0.3750	36.606	43.122	7,151.6	15.80	97.62	82.6	384.8	0.0	750.2
135.0		0.3750	34.975	41.181	6,228.8	15.03	93.27	82.6	350.8	0.0	717.2
140.0		0.3750	33.345	39.241	5,389.1	14.27	88.92	82.6	318.3	0.0	684.1
145.0		0.3750	31.714	37.300	4,628.4	13.50	84.57	82.6	287.4	0.0	651.1
149.0		0.3750	30.410	35.747	4,074.2	12.89	81.09	82.6	263.9	0.0	497.1
150.0		0.3750	30.083	35.359	3,942.9	12.73	80.22	82.6	258.1	0.0	121.0
150.5		0.3750	29.900	35.141	3,870.3	12.65	79.73	82.6	255.0	0.0	67.5
54,711.5											

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:02 AM

Customer: VERIZON WIRELESS

**Load Case: 1.2D + 1.6W**

**105 mph with No Ice**

**17 Iterations**

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		414.7	0.0					0.0	0.0	414.7	0.0	0.0	0.0
5.00		820.4	3,019.7					0.0	15.6	820.4	3,035.3	0.0	0.0
10.00		802.4	2,953.6					0.0	15.6	802.4	2,969.2	0.0	0.0
15.00		796.7	2,887.6					0.0	15.6	796.7	2,903.2	0.0	0.0
20.00		811.9	2,821.6					0.0	15.6	811.9	2,837.2	0.0	0.0
25.00		831.4	2,755.5					0.0	15.6	831.4	2,771.1	0.0	0.0
30.00		843.4	2,689.5					0.0	15.6	843.4	2,705.1	0.0	0.0
35.00		623.7	2,623.5					0.0	15.6	623.7	2,639.1	0.0	0.0
37.35	Bot - Section 2	430.4	1,208.3					0.0	7.3	430.4	1,215.7	0.0	0.0
40.00		665.4	2,725.0					0.0	8.3	665.4	2,733.3	0.0	0.0
45.00		520.5	5,033.4					0.0	15.6	520.5	5,049.0	0.0	0.0
45.99	Top - Section 1	433.6	978.0					0.0	3.1	433.6	981.0	0.0	0.0
50.00		779.1	1,982.0					0.0	12.5	779.1	1,994.5	0.0	0.0
55.00		858.8	2,409.9					0.0	15.6	858.8	2,425.5	0.0	0.0
60.00		850.6	2,343.9					0.0	15.6	850.6	2,359.5	0.0	0.0
65.00		840.6	2,277.9					0.0	15.6	840.6	2,293.5	0.0	0.0
70.00		829.0	2,211.8					0.0	15.6	829.0	2,227.4	0.0	0.0
75.00		581.7	2,145.8					0.0	15.6	581.7	2,161.4	0.0	0.0
77.09	Bot - Section 3	409.1	878.9					0.0	6.5	409.1	885.5	0.0	0.0
80.00		582.9	2,182.6					0.0	9.1	582.9	2,191.7	0.0	0.0
84.24	Top - Section 2	404.9	3,113.9					0.0	13.2	404.9	3,127.1	0.0	0.0
85.00		457.8	246.3					0.0	2.4	457.8	248.7	0.0	0.0
90.00		785.4	1,594.6					0.0	15.6	785.4	1,610.2	0.0	0.0
95.00		768.0	1,541.8					0.0	15.6	768.0	1,557.4	0.0	0.0
100.00		749.5	1,488.9					0.0	15.6	749.5	1,504.5	0.0	0.0
105.00		730.2	1,436.1					0.0	15.6	730.2	1,451.7	0.0	0.0
110.00		411.8	1,383.3					0.0	15.6	411.8	1,398.9	0.0	0.0
110.73	Bot - Section 4	355.3	197.3					0.0	2.3	355.3	199.6	0.0	0.0
115.00		416.0	2,001.1					0.0	13.3	416.0	2,014.4	0.0	0.0
116.61	Top - Section 3	345.6	736.6					0.0	5.0	345.6	741.6	0.0	0.0
120.00		567.9	659.9					0.0	10.6	567.9	670.5	0.0	0.0
125.00		658.2	939.8					0.0	15.6	658.2	955.4	0.0	0.0
130.00		635.3	900.2					0.0	15.6	635.3	915.8	0.0	0.0
135.00		611.9	860.6					0.0	15.6	611.9	876.2	0.0	0.0
140.00		587.8	821.0					0.0	15.6	587.8	836.6	0.0	0.0
145.00		509.1	781.4					0.0	15.6	509.1	797.0	0.0	0.0
149.00	Appertunance(s)	275.4	596.6	14,228.4	0.0	39,838.1	5,400.0	0.0	12.5	14,503.8	6,009.0	0.0	0.0
150.00		84.3	145.2					0.0	0.0	84.3	145.2	0.0	0.0
150.56		30.2	81.0					0.0	0.0	30.2	81.0	0.0	0.0
<b>Totals:</b>										<b>37,339.5</b>	<b>71,518.6</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:02 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

105 mph with No Ice

17 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	-71.50	-36.96	0.00	-3,840.83	0.00	3,840.83	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.243
5.00	-68.44	-36.19	0.00	-3,656.05	0.00	3,656.05	10,319.5	5,159.76	31,250.8	15,648.6	0.03	-0.05	0.240
10.00	-65.44	-35.45	0.00	-3,475.08	0.00	3,475.08	10,161.0	5,080.50	30,084.7	15,064.7	0.11	-0.10	0.237
15.00	-62.50	-34.70	0.00	-3,297.86	0.00	3,297.86	9,999.33	4,999.67	28,930.8	14,486.9	0.24	-0.15	0.234
20.00	-59.64	-33.93	0.00	-3,124.36	0.00	3,124.36	9,834.51	4,917.26	27,789.9	13,915.6	0.43	-0.20	0.231
25.00	-56.84	-33.14	0.00	-2,954.70	0.00	2,954.70	9,666.55	4,833.27	26,662.6	13,351.1	0.67	-0.26	0.227
30.00	-54.11	-32.34	0.00	-2,788.99	0.00	2,788.99	9,495.43	4,747.72	25,549.5	12,793.7	0.97	-0.31	0.224
35.00	-51.45	-31.73	0.00	-2,627.30	0.00	2,627.30	9,321.17	4,660.58	24,451.2	12,243.8	1.32	-0.36	0.220
37.35	-50.22	-31.32	0.00	-2,552.84	0.00	2,552.84	9,238.30	4,619.15	23,941.1	11,988.3	1.51	-0.39	0.218
40.00	-47.47	-30.67	0.00	-2,469.73	0.00	2,469.73	9,143.75	4,571.88	23,368.4	11,701.6	1.73	-0.42	0.216
45.00	-42.41	-30.14	0.00	-2,316.38	0.00	2,316.38	8,945.81	4,472.91	22,258.6	11,145.8	2.20	-0.48	0.213
45.99	-41.42	-29.72	0.00	-2,286.63	0.00	2,286.63	9,066.35	4,533.18	22,906.9	11,470.5	2.30	-0.49	0.204
50.00	-39.40	-28.95	0.00	-2,167.39	0.00	2,167.39	8,889.73	4,444.86	21,978.9	11,005.8	2.74	-0.53	0.201
55.00	-36.96	-28.11	0.00	-2,022.62	0.00	2,022.62	8,649.42	4,324.71	20,800.8	10,415.8	3.32	-0.59	0.199
60.00	-34.58	-27.26	0.00	-1,882.10	0.00	1,882.10	8,409.11	4,204.56	19,655.1	9,842.19	3.97	-0.64	0.195
65.00	-32.27	-26.43	0.00	-1,745.78	0.00	1,745.78	8,168.81	4,084.40	18,541.9	9,284.75	4.68	-0.70	0.192
70.00	-30.03	-25.60	0.00	-1,613.65	0.00	1,613.65	7,928.50	3,964.25	17,461.1	8,743.56	5.44	-0.75	0.188
75.00	-27.86	-25.01	0.00	-1,485.65	0.00	1,485.65	7,688.20	3,844.10	16,412.8	8,218.62	6.26	-0.81	0.184
77.09	-26.97	-24.60	0.00	-1,433.30	0.00	1,433.30	7,587.57	3,793.78	15,983.5	8,003.63	6.62	-0.84	0.183
80.00	-24.77	-24.00	0.00	-1,361.80	0.00	1,361.80	7,447.89	3,723.94	15,396.9	7,709.93	7.14	-0.87	0.180
84.24	-21.64	-23.56	0.00	-1,259.98	0.00	1,259.98	5,888.19	2,944.10	12,139.4	6,078.74	7.94	-0.92	0.211
85.00	-21.38	-23.11	0.00	-1,242.13	0.00	1,242.13	5,866.58	2,933.29	12,034.8	6,026.36	8.08	-0.93	0.210
90.00	-19.76	-22.32	0.00	-1,126.57	0.00	1,126.57	5,706.46	2,853.23	11,321.0	5,668.95	9.09	-0.99	0.202
95.00	-18.19	-21.55	0.00	-1,014.96	0.00	1,014.96	5,514.21	2,757.11	10,567.3	5,291.53	10.17	-1.06	0.195
100.00	-16.67	-20.79	0.00	-907.22	0.00	907.22	5,321.97	2,660.98	9,839.61	4,927.12	11.32	-1.13	0.187
105.00	-15.21	-20.05	0.00	-803.28	0.00	803.28	5,129.72	2,564.86	9,137.83	4,575.71	12.54	-1.19	0.179
110.00	-13.81	-19.61	0.00	-703.04	0.00	703.04	4,937.48	2,468.74	8,462.01	4,237.29	13.82	-1.26	0.169
110.73	-13.61	-19.26	0.00	-688.74	0.00	688.74	4,909.44	2,454.72	8,365.62	4,189.03	14.02	-1.27	0.167
115.00	-11.59	-18.81	0.00	-606.47	0.00	606.47	4,745.23	2,372.62	7,812.15	3,911.88	15.18	-1.32	0.158
116.61	-10.85	-18.45	0.00	-576.20	0.00	576.20	3,496.39	1,748.20	5,824.58	2,916.62	15.63	-1.34	0.201
120.00	-10.17	-17.88	0.00	-513.64	0.00	513.64	3,427.03	1,713.52	5,552.12	2,780.18	16.60	-1.39	0.188
125.00	-9.22	-17.21	0.00	-424.25	0.00	424.25	3,322.11	1,661.05	5,157.82	2,582.74	18.09	-1.46	0.167
130.00	-8.30	-16.56	0.00	-338.21	0.00	338.21	3,203.75	1,601.87	4,757.74	2,382.41	19.65	-1.52	0.145
135.00	-7.42	-15.93	0.00	-255.42	0.00	255.42	3,059.56	1,529.78	4,337.04	2,171.74	21.28	-1.58	0.120
140.00	-6.59	-15.32	0.00	-175.77	0.00	175.77	2,915.38	1,457.69	3,935.81	1,970.83	22.97	-1.63	0.092
145.00	-5.80	-14.79	0.00	-99.15	0.00	99.15	2,771.20	1,385.60	3,554.06	1,779.67	24.70	-1.67	0.058
149.00	-0.22	-0.12	0.00	-0.14	0.00	0.14	2,655.85	1,327.92	3,262.67	1,633.76	26.11	-1.69	0.000
150.00	-0.08	-0.03	0.00	-0.02	0.00	0.02	2,627.01	1,313.51	3,191.78	1,598.26	26.46	-1.69	0.000
150.56	0.00	-0.03	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	26.66	-1.69	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:03 AM

Customer: VERIZON WIRELESS

**Load Case: 0.9D + 1.6W**

**105 mph with No Ice (Reduced DL)**

**17 Iterations**

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		414.7	0.0					0.0	0.0	414.7	0.0	0.0	0.0
5.00		820.4	2,264.8					0.0	11.7	820.4	2,276.5	0.0	0.0
10.00		802.4	2,215.2					0.0	11.7	802.4	2,226.9	0.0	0.0
15.00		796.7	2,165.7					0.0	11.7	796.7	2,177.4	0.0	0.0
20.00		811.9	2,116.2					0.0	11.7	811.9	2,127.9	0.0	0.0
25.00		831.4	2,066.6					0.0	11.7	831.4	2,078.3	0.0	0.0
30.00		843.4	2,017.1					0.0	11.7	843.4	2,028.8	0.0	0.0
35.00		623.7	1,967.6					0.0	11.7	623.7	1,979.3	0.0	0.0
37.35	Bot - Section 2	430.4	906.3					0.0	5.5	430.4	911.7	0.0	0.0
40.00		665.4	2,043.8					0.0	6.2	665.4	2,050.0	0.0	0.0
45.00		520.5	3,775.0					0.0	11.7	520.5	3,786.7	0.0	0.0
45.99	Top - Section 1	433.6	733.5					0.0	2.3	433.6	735.8	0.0	0.0
50.00		779.1	1,486.5					0.0	9.4	779.1	1,495.9	0.0	0.0
55.00		858.8	1,807.4					0.0	11.7	858.8	1,819.1	0.0	0.0
60.00		850.6	1,757.9					0.0	11.7	850.6	1,769.6	0.0	0.0
65.00		840.6	1,708.4					0.0	11.7	840.6	1,720.1	0.0	0.0
70.00		829.0	1,658.9					0.0	11.7	829.0	1,670.6	0.0	0.0
75.00		581.7	1,609.3					0.0	11.7	581.7	1,621.0	0.0	0.0
77.09	Bot - Section 3	409.1	659.2					0.0	4.9	409.1	664.1	0.0	0.0
80.00		582.9	1,637.0					0.0	6.8	582.9	1,643.8	0.0	0.0
84.24	Top - Section 2	404.9	2,335.4					0.0	9.9	404.9	2,345.3	0.0	0.0
85.00		457.8	184.7					0.0	1.8	457.8	186.5	0.0	0.0
90.00		785.4	1,195.9					0.0	11.7	785.4	1,207.6	0.0	0.0
95.00		768.0	1,156.3					0.0	11.7	768.0	1,168.0	0.0	0.0
100.00		749.5	1,116.7					0.0	11.7	749.5	1,128.4	0.0	0.0
105.00		730.2	1,077.1					0.0	11.7	730.2	1,088.8	0.0	0.0
110.00		411.8	1,037.4					0.0	11.7	411.8	1,049.1	0.0	0.0
110.73	Bot - Section 4	355.3	148.0					0.0	1.7	355.3	149.7	0.0	0.0
115.00		416.0	1,500.8					0.0	10.0	416.0	1,510.8	0.0	0.0
116.61	Top - Section 3	345.6	552.4					0.0	3.8	345.6	556.2	0.0	0.0
120.00		567.9	494.9					0.0	7.9	567.9	502.8	0.0	0.0
125.00		658.2	704.9					0.0	11.7	658.2	716.6	0.0	0.0
130.00		635.3	675.2					0.0	11.7	635.3	686.9	0.0	0.0
135.00		611.9	645.4					0.0	11.7	611.9	657.1	0.0	0.0
140.00		587.8	615.7					0.0	11.7	587.8	627.4	0.0	0.0
145.00		509.1	586.0					0.0	11.7	509.1	597.7	0.0	0.0
149.00	Appertunance(s)	275.4	447.4	14,228.4	0.0	39,838.1	4,050.0	0.0	9.4	14,503.8	4,506.8	0.0	0.0
150.00		84.3	108.9					0.0	0.0	84.3	108.9	0.0	0.0
150.56		30.2	60.7					0.0	0.0	30.2	60.7	0.0	0.0
<b>Totals:</b>										<b>37,339.5</b>	<b>53,638.9</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:03 AM

Customer: VERIZON WIRELESS

**Load Case: 0.9D + 1.6W**

105 mph with No Ice (Reduced DL)

17 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	-53.62	-36.95	0.00	-3,829.59	0.00	3,829.59	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.241
5.00	-51.31	-36.17	0.00	-3,644.85	0.00	3,644.85	10,319.5	5,159.76	31,250.8	15,648.6	0.03	-0.05	0.238
10.00	-49.06	-35.41	0.00	-3,464.00	0.00	3,464.00	10,161.0	5,080.50	30,084.7	15,064.7	0.11	-0.10	0.235
15.00	-46.85	-34.65	0.00	-3,286.95	0.00	3,286.95	9,999.33	4,999.67	28,930.8	14,486.9	0.24	-0.15	0.232
20.00	-44.69	-33.87	0.00	-3,113.71	0.00	3,113.71	9,834.51	4,917.26	27,789.9	13,915.6	0.43	-0.20	0.228
25.00	-42.59	-33.07	0.00	-2,944.35	0.00	2,944.35	9,666.55	4,833.27	26,662.6	13,351.1	0.67	-0.26	0.225
30.00	-40.53	-32.26	0.00	-2,778.99	0.00	2,778.99	9,495.43	4,747.72	25,549.5	12,793.7	0.96	-0.31	0.222
35.00	-38.54	-31.65	0.00	-2,617.71	0.00	2,617.71	9,321.17	4,660.58	24,451.2	12,243.8	1.32	-0.36	0.218
37.35	-37.61	-31.23	0.00	-2,543.45	0.00	2,543.45	9,238.30	4,619.15	23,941.1	11,988.3	1.50	-0.39	0.216
40.00	-35.54	-30.58	0.00	-2,460.58	0.00	2,460.58	9,143.75	4,571.88	23,368.4	11,701.6	1.73	-0.42	0.214
45.00	-31.74	-30.05	0.00	-2,307.70	0.00	2,307.70	8,945.81	4,472.91	22,258.6	11,145.8	2.20	-0.48	0.211
45.99	-31.00	-29.62	0.00	-2,278.04	0.00	2,278.04	9,066.35	4,533.18	22,906.9	11,470.5	2.30	-0.49	0.202
50.00	-29.48	-28.85	0.00	-2,159.17	0.00	2,159.17	8,889.73	4,444.86	21,978.9	11,005.8	2.73	-0.53	0.200
55.00	-27.65	-28.00	0.00	-2,014.90	0.00	2,014.90	8,649.42	4,324.71	20,800.8	10,415.8	3.31	-0.59	0.197
60.00	-25.86	-27.16	0.00	-1,874.88	0.00	1,874.88	8,409.11	4,204.56	19,655.1	9,842.19	3.96	-0.64	0.194
65.00	-24.12	-26.32	0.00	-1,739.09	0.00	1,739.09	8,168.81	4,084.40	18,541.9	9,284.75	4.66	-0.70	0.190
70.00	-22.44	-25.49	0.00	-1,607.48	0.00	1,607.48	7,928.50	3,964.25	17,461.1	8,743.56	5.42	-0.75	0.187
75.00	-20.81	-24.90	0.00	-1,480.01	0.00	1,480.01	7,688.20	3,844.10	16,412.8	8,218.62	6.24	-0.81	0.183
77.09	-20.14	-24.50	0.00	-1,427.86	0.00	1,427.86	7,587.57	3,793.78	15,983.5	8,003.63	6.60	-0.83	0.181
80.00	-18.49	-23.90	0.00	-1,356.67	0.00	1,356.67	7,447.89	3,723.94	15,396.9	7,709.93	7.12	-0.87	0.178
84.24	-16.14	-23.47	0.00	-1,255.27	0.00	1,255.27	5,888.19	2,944.10	12,139.4	6,078.74	7.91	-0.92	0.209
85.00	-15.94	-23.02	0.00	-1,237.49	0.00	1,237.49	5,866.58	2,933.29	12,034.8	6,026.36	8.05	-0.92	0.208
90.00	-14.72	-22.23	0.00	-1,122.39	0.00	1,122.39	5,706.46	2,853.23	11,321.0	5,668.95	9.06	-0.99	0.201
95.00	-13.54	-21.46	0.00	-1,011.23	0.00	1,011.23	5,514.21	2,757.11	10,567.3	5,291.53	10.13	-1.06	0.194
100.00	-12.40	-20.70	0.00	-903.94	0.00	903.94	5,321.97	2,660.98	9,839.61	4,927.12	11.28	-1.12	0.186
105.00	-11.31	-19.96	0.00	-800.44	0.00	800.44	5,129.72	2,564.86	9,137.83	4,575.71	12.49	-1.19	0.177
110.00	-10.25	-19.53	0.00	-700.62	0.00	700.62	4,937.48	2,468.74	8,462.01	4,237.29	13.77	-1.25	0.167
110.73	-10.10	-19.18	0.00	-686.38	0.00	686.38	4,909.44	2,454.72	8,365.62	4,189.03	13.97	-1.26	0.166
115.00	-8.59	-18.74	0.00	-604.46	0.00	604.46	4,745.23	2,372.62	7,812.15	3,911.88	15.12	-1.32	0.156
116.61	-8.03	-18.38	0.00	-574.30	0.00	574.30	3,496.39	1,748.20	5,824.58	2,916.62	15.57	-1.34	0.199
120.00	-7.52	-17.81	0.00	-511.97	0.00	511.97	3,427.03	1,713.52	5,552.12	2,780.18	16.54	-1.38	0.186
125.00	-6.80	-17.14	0.00	-422.91	0.00	422.91	3,322.11	1,661.05	5,157.82	2,582.74	18.02	-1.45	0.166
130.00	-6.11	-16.50	0.00	-337.19	0.00	337.19	3,203.75	1,601.87	4,757.74	2,382.41	19.58	-1.52	0.144
135.00	-5.46	-15.87	0.00	-254.70	0.00	254.70	3,059.56	1,529.78	4,337.04	2,171.74	21.21	-1.58	0.119
140.00	-4.84	-15.27	0.00	-175.33	0.00	175.33	2,915.38	1,457.69	3,935.81	1,970.83	22.89	-1.63	0.091
145.00	-4.25	-14.75	0.00	-98.97	0.00	98.97	2,771.20	1,385.60	3,554.06	1,779.67	24.61	-1.66	0.057
149.00	-0.17	-0.12	0.00	-0.14	0.00	0.14	2,655.85	1,327.92	3,262.67	1,633.76	26.02	-1.68	0.000
150.00	-0.06	-0.03	0.00	-0.02	0.00	0.02	2,627.01	1,313.51	3,191.78	1,598.26	26.37	-1.68	0.000
150.56	0.00	-0.03	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	26.57	-1.68	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:03 AM

Customer: VERIZON WIRELESS

**Load Case: 1.2D + 1.0Di + 1.0Wi**

**50 mph with 0.75 in Radial Ice**

**17 Iterations**

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		111.8	0.0					0.0	0.0	111.8	0.0	0.0	0.0
5.00		221.6	3,568.1					0.0	15.6	221.6	3,583.7	0.0	0.0
10.00		217.5	3,553.6					0.0	15.6	217.5	3,569.2	0.0	0.0
15.00		216.4	3,505.6					0.0	15.6	216.4	3,521.2	0.0	0.0
20.00		221.0	3,446.7					0.0	15.6	221.0	3,462.3	0.0	0.0
25.00		226.7	3,382.2					0.0	15.6	226.7	3,397.8	0.0	0.0
30.00		230.4	3,314.1					0.0	15.6	230.4	3,329.7	0.0	0.0
35.00		170.6	3,243.5					0.0	15.6	170.6	3,259.1	0.0	0.0
37.35	Bot - Section 2	117.8	1,499.1					0.0	7.3	117.8	1,506.4	0.0	0.0
40.00		182.3	3,058.0					0.0	8.3	182.3	3,066.3	0.0	0.0
45.00		142.7	5,651.3					0.0	15.6	142.7	5,666.9	0.0	0.0
45.99	Top - Section 1	119.1	1,100.2					0.0	3.1	119.1	1,103.2	0.0	0.0
50.00		214.2	2,471.3					0.0	12.5	214.2	2,483.9	0.0	0.0
55.00		236.5	3,009.2					0.0	15.6	236.5	3,024.8	0.0	0.0
60.00		234.7	2,932.6					0.0	15.6	234.7	2,948.2	0.0	0.0
65.00		232.4	2,855.3					0.0	15.6	232.4	2,870.9	0.0	0.0
70.00		229.6	2,777.4					0.0	15.6	229.6	2,793.0	0.0	0.0
75.00		161.3	2,698.9					0.0	15.6	161.3	2,714.5	0.0	0.0
77.09	Bot - Section 3	113.6	1,108.8					0.0	6.5	113.6	1,115.3	0.0	0.0
80.00		162.0	2,503.1					0.0	9.1	162.0	2,512.1	0.0	0.0
84.24	Top - Section 2	112.6	3,571.6					0.0	13.2	112.6	3,584.9	0.0	0.0
85.00		127.6	327.9					0.0	2.4	127.6	330.3	0.0	0.0
90.00		219.2	2,118.2					0.0	15.6	219.2	2,133.8	0.0	0.0
95.00		214.9	2,051.4					0.0	15.6	214.9	2,067.0	0.0	0.0
100.00		210.3	1,984.3					0.0	15.6	210.3	1,999.9	0.0	0.0
105.00		205.5	1,916.8					0.0	15.6	205.5	1,932.4	0.0	0.0
110.00		116.1	1,849.1					0.0	15.6	116.1	1,864.7	0.0	0.0
110.73	Bot - Section 4	100.3	265.1					0.0	2.3	100.3	267.3	0.0	0.0
115.00		117.5	2,393.1					0.0	13.3	117.5	2,406.4	0.0	0.0
116.61	Top - Section 3	97.9	882.9					0.0	5.0	97.9	887.9	0.0	0.0
120.00		161.2	960.8					0.0	10.6	161.2	971.3	0.0	0.0
125.00		187.4	1,367.7					0.0	15.6	187.4	1,383.3	0.0	0.0
130.00		181.6	1,312.3					0.0	15.6	181.6	1,327.9	0.0	0.0
135.00		175.7	1,256.7					0.0	15.6	175.7	1,272.3	0.0	0.0
140.00		169.5	1,201.0					0.0	15.6	169.5	1,216.6	0.0	0.0
145.00		147.5	1,145.0					0.0	15.6	147.5	1,160.6	0.0	0.0
149.00	Appertunance(s)	80.1	877.1	3,240.6	0.0	9,348.6	12,084.8	0.0	12.5	3,320.7	12,974.3	0.0	0.0
150.00		24.6	214.7					0.0	0.0	24.6	214.7	0.0	0.0
150.56		8.8	119.9					0.0	0.0	8.8	119.9	0.0	0.0
<b>Totals:</b>										<b>9,661.26</b>	<b>94,043.9</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:03 AM

Customer: VERIZON WIRELESS

**Load Case:** 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

17 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	-94.04	-9.56	0.00	-969.29	0.00	969.29	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.069
5.00	-90.46	-9.36	0.00	-921.50	0.00	921.50	10,319.5	5,159.76	31,250.8	15,648.6	0.01	-0.01	0.068
10.00	-86.89	-9.16	0.00	-874.71	0.00	874.71	10,161.0	5,080.50	30,084.7	15,064.7	0.03	-0.03	0.067
15.00	-83.36	-8.96	0.00	-828.92	0.00	828.92	9,999.33	4,999.67	28,930.8	14,486.9	0.06	-0.04	0.066
20.00	-79.90	-8.75	0.00	-784.12	0.00	784.12	9,834.51	4,917.26	27,789.9	13,915.6	0.11	-0.05	0.064
25.00	-76.50	-8.54	0.00	-740.35	0.00	740.35	9,666.55	4,833.27	26,662.6	13,351.1	0.17	-0.06	0.063
30.00	-73.17	-8.32	0.00	-697.65	0.00	697.65	9,495.43	4,747.72	25,549.5	12,793.7	0.24	-0.08	0.062
35.00	-69.91	-8.16	0.00	-656.03	0.00	656.03	9,321.17	4,660.58	24,451.2	12,243.8	0.33	-0.09	0.061
37.35	-68.40	-8.05	0.00	-636.88	0.00	636.88	9,238.30	4,619.15	23,941.1	11,988.3	0.38	-0.10	0.061
40.00	-65.33	-7.87	0.00	-615.52	0.00	615.52	9,143.75	4,571.88	23,368.4	11,701.6	0.44	-0.11	0.060
45.00	-59.67	-7.73	0.00	-576.16	0.00	576.16	8,945.81	4,472.91	22,258.6	11,145.8	0.55	-0.12	0.058
45.99	-58.56	-7.61	0.00	-568.53	0.00	568.53	9,066.35	4,533.18	22,906.9	11,470.5	0.58	-0.12	0.056
50.00	-56.08	-7.41	0.00	-537.98	0.00	537.98	8,889.73	4,444.86	21,978.9	11,005.8	0.69	-0.13	0.055
55.00	-53.05	-7.18	0.00	-500.94	0.00	500.94	8,649.42	4,324.71	20,800.8	10,415.8	0.83	-0.15	0.054
60.00	-50.10	-6.94	0.00	-465.07	0.00	465.07	8,409.11	4,204.56	19,655.1	9,842.19	1.00	-0.16	0.053
65.00	-47.23	-6.71	0.00	-430.35	0.00	430.35	8,168.81	4,084.40	18,541.9	9,284.75	1.17	-0.17	0.052
70.00	-44.44	-6.49	0.00	-396.77	0.00	396.77	7,928.50	3,964.25	17,461.1	8,743.56	1.36	-0.19	0.051
75.00	-41.72	-6.32	0.00	-364.34	0.00	364.34	7,688.20	3,844.10	16,412.8	8,218.62	1.57	-0.20	0.050
77.09	-40.60	-6.21	0.00	-351.10	0.00	351.10	7,587.57	3,793.78	15,983.5	8,003.63	1.66	-0.21	0.049
80.00	-38.09	-6.05	0.00	-333.04	0.00	333.04	7,447.89	3,723.94	15,396.9	7,709.93	1.79	-0.22	0.048
84.24	-34.51	-5.92	0.00	-307.39	0.00	307.39	5,888.19	2,944.10	12,139.4	6,078.74	1.98	-0.23	0.056
85.00	-34.18	-5.80	0.00	-302.90	0.00	302.90	5,866.58	2,933.29	12,034.8	6,026.36	2.02	-0.23	0.056
90.00	-32.04	-5.58	0.00	-273.90	0.00	273.90	5,706.46	2,853.23	11,321.0	5,668.95	2.27	-0.25	0.054
95.00	-29.97	-5.37	0.00	-245.99	0.00	245.99	5,514.21	2,757.11	10,567.3	5,291.53	2.54	-0.26	0.052
100.00	-27.97	-5.15	0.00	-219.16	0.00	219.16	5,321.97	2,660.98	9,839.61	4,927.12	2.82	-0.28	0.050
105.00	-26.04	-4.95	0.00	-193.38	0.00	193.38	5,129.72	2,564.86	9,137.83	4,575.71	3.13	-0.30	0.047
110.00	-24.18	-4.82	0.00	-168.65	0.00	168.65	4,937.48	2,468.74	8,462.01	4,237.29	3.44	-0.31	0.045
110.73	-23.91	-4.73	0.00	-165.13	0.00	165.13	4,909.44	2,454.72	8,365.62	4,189.03	3.49	-0.31	0.044
115.00	-21.50	-4.60	0.00	-144.95	0.00	144.95	4,745.23	2,372.62	7,812.15	3,911.88	3.78	-0.33	0.042
116.61	-20.61	-4.50	0.00	-137.55	0.00	137.55	3,496.39	1,748.20	5,824.58	2,916.62	3.89	-0.33	0.053
120.00	-19.64	-4.34	0.00	-122.30	0.00	122.30	3,427.03	1,713.52	5,552.12	2,780.18	4.13	-0.34	0.050
125.00	-18.26	-4.15	0.00	-100.62	0.00	100.62	3,322.11	1,661.05	5,157.82	2,582.74	4.49	-0.36	0.044
130.00	-16.93	-3.96	0.00	-79.90	0.00	79.90	3,203.75	1,601.87	4,757.74	2,382.41	4.88	-0.37	0.039
135.00	-15.66	-3.78	0.00	-60.10	0.00	60.10	3,059.56	1,529.78	4,337.04	2,171.74	5.28	-0.39	0.033
140.00	-14.44	-3.60	0.00	-41.20	0.00	41.20	2,915.38	1,457.69	3,935.81	1,970.83	5.69	-0.40	0.026
145.00	-13.28	-3.45	0.00	-23.19	0.00	23.19	2,771.20	1,385.60	3,554.06	1,779.67	6.11	-0.41	0.018
149.00	-0.33	-0.04	0.00	-0.04	0.00	0.04	2,655.85	1,327.92	3,262.67	1,633.76	6.46	-0.41	0.000
150.00	-0.12	-0.01	0.00	-0.01	0.00	0.01	2,627.01	1,313.51	3,191.78	1,598.26	6.54	-0.41	0.000
150.56	0.00	-0.01	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	6.59	-0.41	0.000



Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:03 AM

Customer: VERIZON WIRELESS

**Load Case: 1.0D + 1.0W**

**Serviceability 60 mph**

**17 Iterations**

**Gust Response Factor :1.10**

**Wind Importance Factor 1.00**

**Dead Load Factor :1.00**

**Wind Load Factor :1.00**

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		84.6	0.0					0.0	0.0	84.6	0.0	0.0	0.0
5.00		167.4	2,516.4					0.0	13.0	167.4	2,529.4	0.0	0.0
10.00		163.8	2,461.4					0.0	13.0	163.8	2,474.4	0.0	0.0
15.00		162.6	2,406.3					0.0	13.0	162.6	2,419.3	0.0	0.0
20.00		165.7	2,351.3					0.0	13.0	165.7	2,364.3	0.0	0.0
25.00		169.7	2,296.3					0.0	13.0	169.7	2,309.3	0.0	0.0
30.00		172.1	2,241.2					0.0	13.0	172.1	2,254.2	0.0	0.0
35.00		127.3	2,186.2					0.0	13.0	127.3	2,199.2	0.0	0.0
37.35	Bot - Section 2	87.8	1,007.0					0.0	6.1	87.8	1,013.1	0.0	0.0
40.00		135.8	2,270.8					0.0	6.9	135.8	2,277.7	0.0	0.0
45.00		106.2	4,194.5					0.0	13.0	106.2	4,207.5	0.0	0.0
45.99	Top - Section 1	88.5	815.0					0.0	2.6	88.5	817.5	0.0	0.0
50.00		159.0	1,651.7					0.0	10.4	159.0	1,662.1	0.0	0.0
55.00		175.3	2,008.3					0.0	13.0	175.3	2,021.3	0.0	0.0
60.00		173.6	1,953.2					0.0	13.0	173.6	1,966.2	0.0	0.0
65.00		171.6	1,898.2					0.0	13.0	171.6	1,911.2	0.0	0.0
70.00		169.2	1,843.2					0.0	13.0	169.2	1,856.2	0.0	0.0
75.00		118.7	1,788.1					0.0	13.0	118.7	1,801.1	0.0	0.0
77.09	Bot - Section 3	83.5	732.4					0.0	5.4	83.5	737.9	0.0	0.0
80.00		119.0	1,818.9					0.0	7.6	119.0	1,826.4	0.0	0.0
84.24	Top - Section 2	82.6	2,594.9					0.0	11.0	82.6	2,605.9	0.0	0.0
85.00		93.4	205.2					0.0	2.0	93.4	207.2	0.0	0.0
90.00		160.3	1,328.8					0.0	13.0	160.3	1,341.8	0.0	0.0
95.00		156.7	1,284.8					0.0	13.0	156.7	1,297.8	0.0	0.0
100.00		153.0	1,240.8					0.0	13.0	153.0	1,253.8	0.0	0.0
105.00		149.0	1,196.7					0.0	13.0	149.0	1,209.7	0.0	0.0
110.00		84.0	1,152.7					0.0	13.0	84.0	1,165.7	0.0	0.0
110.73	Bot - Section 4	72.5	164.4					0.0	1.9	72.5	166.3	0.0	0.0
115.00		84.9	1,667.6					0.0	11.1	84.9	1,678.7	0.0	0.0
116.61	Top - Section 3	70.5	613.8					0.0	4.2	70.5	618.0	0.0	0.0
120.00		115.9	549.9					0.0	8.8	115.9	558.7	0.0	0.0
125.00		134.3	783.2					0.0	13.0	134.3	796.2	0.0	0.0
130.00		129.7	750.2					0.0	13.0	129.7	763.2	0.0	0.0
135.00		124.9	717.2					0.0	13.0	124.9	730.2	0.0	0.0
140.00		120.0	684.1					0.0	13.0	120.0	697.1	0.0	0.0
145.00		103.9	651.1					0.0	13.0	103.9	664.1	0.0	0.0
149.00	Appertunance(s)	56.2	497.1	2,903.8	0.0	8,130.2	4,500.0	0.0	10.4	2,960.0	5,007.5	0.0	0.0
150.00		17.2	121.0					0.0	0.0	17.2	121.0	0.0	0.0
150.56		6.2	67.5					0.0	0.0	6.2	67.5	0.0	0.0
<b>Totals:</b>										<b>7,620.31</b>	<b>59,598.8</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:04 AM

Customer: VERIZON WIRELESS

**Load Case: 1.0D + 1.0W**

Serviceability 60 mph

17 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	-59.60	-7.54	0.00	-782.39	0.00	782.39	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.054
5.00	-57.07	-7.38	0.00	-744.69	0.00	744.69	10,319.5	5,159.76	31,250.8	15,648.6	0.01	-0.01	0.053
10.00	-54.59	-7.23	0.00	-707.77	0.00	707.77	10,161.0	5,080.50	30,084.7	15,064.7	0.02	-0.02	0.052
15.00	-52.17	-7.07	0.00	-671.63	0.00	671.63	9,999.33	4,999.67	28,930.8	14,486.9	0.05	-0.03	0.052
20.00	-49.81	-6.92	0.00	-636.26	0.00	636.26	9,834.51	4,917.26	27,789.9	13,915.6	0.09	-0.04	0.051
25.00	-47.50	-6.75	0.00	-601.67	0.00	601.67	9,666.55	4,833.27	26,662.6	13,351.1	0.14	-0.05	0.050
30.00	-45.24	-6.59	0.00	-567.90	0.00	567.90	9,495.43	4,747.72	25,549.5	12,793.7	0.20	-0.06	0.049
35.00	-43.04	-6.46	0.00	-534.96	0.00	534.96	9,321.17	4,660.58	24,451.2	12,243.8	0.27	-0.07	0.048
37.35	-42.03	-6.38	0.00	-519.79	0.00	519.79	9,238.30	4,619.15	23,941.1	11,988.3	0.31	-0.08	0.048
40.00	-39.75	-6.25	0.00	-502.86	0.00	502.86	9,143.75	4,571.88	23,368.4	11,701.6	0.35	-0.09	0.047
45.00	-35.54	-6.14	0.00	-471.63	0.00	471.63	8,945.81	4,472.91	22,258.6	11,145.8	0.45	-0.10	0.046
45.99	-34.72	-6.05	0.00	-465.57	0.00	465.57	9,066.35	4,533.18	22,906.9	11,470.5	0.47	-0.10	0.044
50.00	-33.06	-5.90	0.00	-441.28	0.00	441.28	8,889.73	4,444.86	21,978.9	11,005.8	0.56	-0.11	0.044
55.00	-31.04	-5.72	0.00	-411.81	0.00	411.81	8,649.42	4,324.71	20,800.8	10,415.8	0.68	-0.12	0.043
60.00	-29.07	-5.55	0.00	-383.19	0.00	383.19	8,409.11	4,204.56	19,655.1	9,842.19	0.81	-0.13	0.042
65.00	-27.16	-5.38	0.00	-355.44	0.00	355.44	8,168.81	4,084.40	18,541.9	9,284.75	0.95	-0.14	0.042
70.00	-25.30	-5.21	0.00	-328.55	0.00	328.55	7,928.50	3,964.25	17,461.1	8,743.56	1.11	-0.15	0.041
75.00	-23.50	-5.09	0.00	-302.49	0.00	302.49	7,688.20	3,844.10	16,412.8	8,218.62	1.27	-0.17	0.040
77.09	-22.76	-5.01	0.00	-291.84	0.00	291.84	7,587.57	3,793.78	15,983.5	8,003.63	1.35	-0.17	0.039
80.00	-20.94	-4.89	0.00	-277.29	0.00	277.29	7,447.89	3,723.94	15,396.9	7,709.93	1.45	-0.18	0.039
84.24	-18.33	-4.80	0.00	-256.56	0.00	256.56	5,888.19	2,944.10	12,139.4	6,078.74	1.62	-0.19	0.045
85.00	-18.12	-4.70	0.00	-252.93	0.00	252.93	5,866.58	2,933.29	12,034.8	6,026.36	1.65	-0.19	0.045
90.00	-16.78	-4.54	0.00	-229.40	0.00	229.40	5,706.46	2,853.23	11,321.0	5,668.95	1.85	-0.20	0.043
95.00	-15.48	-4.39	0.00	-206.68	0.00	206.68	5,514.21	2,757.11	10,567.3	5,291.53	2.07	-0.22	0.042
100.00	-14.23	-4.23	0.00	-184.75	0.00	184.75	5,321.97	2,660.98	9,839.61	4,927.12	2.30	-0.23	0.040
105.00	-13.02	-4.08	0.00	-163.60	0.00	163.60	5,129.72	2,564.86	9,137.83	4,575.71	2.55	-0.24	0.038
110.00	-11.85	-3.99	0.00	-143.19	0.00	143.19	4,937.48	2,468.74	8,462.01	4,237.29	2.81	-0.26	0.036
110.73	-11.68	-3.92	0.00	-140.28	0.00	140.28	4,909.44	2,454.72	8,365.62	4,189.03	2.85	-0.26	0.036
115.00	-10.01	-3.83	0.00	-123.53	0.00	123.53	4,745.23	2,372.62	7,812.15	3,911.88	3.09	-0.27	0.034
116.61	-9.39	-3.76	0.00	-117.37	0.00	117.37	3,496.39	1,748.20	5,824.58	2,916.62	3.18	-0.27	0.043
120.00	-8.83	-3.64	0.00	-104.63	0.00	104.63	3,427.03	1,713.52	5,552.12	2,780.18	3.38	-0.28	0.040
125.00	-8.03	-3.50	0.00	-86.43	0.00	86.43	3,322.11	1,661.05	5,157.82	2,582.74	3.68	-0.30	0.036
130.00	-7.27	-3.37	0.00	-68.91	0.00	68.91	3,203.75	1,601.87	4,757.74	2,382.41	4.00	-0.31	0.031
135.00	-6.54	-3.24	0.00	-52.05	0.00	52.05	3,059.56	1,529.78	4,337.04	2,171.74	4.33	-0.32	0.026
140.00	-5.84	-3.12	0.00	-35.82	0.00	35.82	2,915.38	1,457.69	3,935.81	1,970.83	4.68	-0.33	0.020
145.00	-5.18	-3.01	0.00	-20.22	0.00	20.22	2,771.20	1,385.60	3,554.06	1,779.67	5.03	-0.34	0.013
149.00	-0.19	-0.02	0.00	-0.03	0.00	0.03	2,655.85	1,327.92	3,262.67	1,633.76	5.32	-0.34	0.000
150.00	-0.07	-0.01	0.00	0.00	0.00	0.00	2,627.01	1,313.51	3,191.78	1,598.26	5.39	-0.34	0.000
150.56	0.00	-0.01	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	5.43	-0.34	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

### Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.17
Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.18
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.09
Seismic Response Coefficient ( $C_s$ ):	0.06
Upper Limit $C_s$	0.06
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	1.13
Redundancy Factor ( $\rho$ ):	1.30
Seismic Force Distribution Exponent (k):	1.31
Total Unfactored Dead Load:	59.60 k
Seismic Base Shear (E):	4.32 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)
38	150.28	67	49	0.003	13	83
37	149.50	121	87	0.005	23	149
36	147.00	508	359	0.022	96	627
35	142.50	664	451	0.028	121	820
34	137.50	697	451	0.028	121	861
33	132.50	730	450	0.028	121	902
32	127.50	763	447	0.028	120	943
31	122.50	796	443	0.028	119	984
30	118.30	559	297	0.018	80	690
29	115.80	618	319	0.020	86	763
28	112.86	1,679	838	0.052	225	2,074
27	110.36	166	81	0.005	22	205
26	107.50	1,166	546	0.034	147	1,440
25	102.50	1,210	532	0.033	143	1,495
24	97.50	1,254	517	0.032	139	1,549
23	92.50	1,298	499	0.031	134	1,603
22	87.50	1,342	480	0.030	129	1,658
21	84.62	207	71	0.004	19	256
20	82.12	2,606	857	0.053	230	3,219
19	78.55	1,826	566	0.035	152	2,256
18	76.05	738	219	0.014	59	912
17	72.50	1,801	503	0.031	135	2,225
16	67.50	1,856	472	0.029	127	2,293

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

15	62.50	1,911	439	0.027	118	2,361
14	57.50	1,966	405	0.025	109	2,429
13	52.50	2,021	369	0.023	99	2,497
12	47.99	1,662	270	0.017	72	2,053
11	45.49	818	124	0.008	33	1,010
10	42.50	4,207	582	0.036	156	5,198
9	38.67	2,278	278	0.017	75	2,814
8	36.17	1,013	113	0.007	30	1,252
7	32.50	2,199	214	0.013	57	2,717
6	27.50	2,254	176	0.011	47	2,785
5	22.50	2,309	138	0.009	37	2,853
4	17.50	2,364	102	0.006	27	2,921
3	12.50	2,419	67	0.004	18	2,989
2	7.50	2,474	35	0.002	9	3,057
1	2.50	2,529	8	0.001	2	3,125
Alcatel-Lucent RRH2x	149.00	170	122	0.008	33	210
RFS DB-T1-6Z-12AB-0Z	149.00	32	23	0.001	6	40
Alcatel-Lucent B66A	149.00	170	123	0.008	33	211
Antel BXA-70063-6CF-	149.00	51	37	0.002	10	63
Commscope SBNHH-1D65	149.00	244	175	0.011	47	301
Round Low Profile PI	149.00	2,000	1,439	0.089	386	2,471
VZW Unused Reserve:	149.00	1,833	1,319	0.082	354	2,264
		59,599	16,093	1.000	4,317	73,629

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

**Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
38	150.28	67	49	0.003	13	58
37	149.50	121	87	0.005	23	105
36	147.00	508	359	0.022	96	439
35	142.50	664	451	0.028	121	574
34	137.50	697	451	0.028	121	603
33	132.50	730	450	0.028	121	631
32	127.50	763	447	0.028	120	660
31	122.50	796	443	0.028	119	688
30	118.30	559	297	0.018	80	483
29	115.80	618	319	0.020	86	534
28	112.86	1,679	838	0.052	225	1,451
27	110.36	166	81	0.005	22	144
26	107.50	1,166	546	0.034	147	1,008
25	102.50	1,210	532	0.033	143	1,046
24	97.50	1,254	517	0.032	139	1,084
23	92.50	1,298	499	0.031	134	1,122
22	87.50	1,342	480	0.030	129	1,160
21	84.62	207	71	0.004	19	179
20	82.12	2,606	857	0.053	230	2,253
19	78.55	1,826	566	0.035	152	1,579
18	76.05	738	219	0.014	59	638
17	72.50	1,801	503	0.031	135	1,557
16	67.50	1,856	472	0.029	127	1,605
15	62.50	1,911	439	0.027	118	1,652
14	57.50	1,966	405	0.025	109	1,700
13	52.50	2,021	369	0.023	99	1,748
12	47.99	1,662	270	0.017	72	1,437
11	45.49	818	124	0.008	33	707
10	42.50	4,207	582	0.036	156	3,638
9	38.67	2,278	278	0.017	75	1,969
8	36.17	1,013	113	0.007	30	876
7	32.50	2,199	214	0.013	57	1,901

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number:OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

6	27.50	2,254	176	0.011	47	1,949
5	22.50	2,309	138	0.009	37	1,997
4	17.50	2,364	102	0.006	27	2,044
3	12.50	2,419	67	0.004	18	2,092
2	7.50	2,474	35	0.002	9	2,139
1	2.50	2,529	8	0.001	2	2,187
Alcatel-Lucent RRH2x	149.00	170	122	0.008	33	147
RFS DB-T1-6Z-12AB-0Z	149.00	32	23	0.001	6	28
Alcatel-Lucent B66A	149.00	170	123	0.008	33	147
Antel BXA-70063-6CF-	149.00	51	37	0.002	10	44
Commscope SBNHH-1D65	149.00	244	175	0.011	47	211
Round Low Profile PI	149.00	2,000	1,439	0.089	386	1,729
VZW Unused Reserve:	149.00	1,833	1,319	0.082	354	1,585
		59,599	16,093	1.000	4,317	51,528

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

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

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-70.50	-4.32	0.00	-434.68	0.00	434.68	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.033
5.00	-67.45	-4.32	0.00	-413.09	0.00	413.09	10,319.5	5,159.76	31,250.8	15,648.6	0.00	-0.01	0.033
10.00	-64.46	-4.30	0.00	-391.51	0.00	391.51	10,161.0	5,080.50	30,084.7	15,064.7	0.01	-0.01	0.032
15.00	-61.54	-4.28	0.00	-370.00	0.00	370.00	9,999.33	4,999.67	28,930.8	14,486.9	0.03	-0.02	0.032
20.00	-58.68	-4.25	0.00	-348.59	0.00	348.59	9,834.51	4,917.26	27,789.9	13,915.6	0.05	-0.02	0.031
25.00	-55.90	-4.21	0.00	-327.35	0.00	327.35	9,666.55	4,833.27	26,662.6	13,351.1	0.08	-0.03	0.030
30.00	-53.18	-4.15	0.00	-306.31	0.00	306.31	9,495.43	4,747.72	25,549.5	12,793.7	0.11	-0.03	0.030
35.00	-51.93	-4.13	0.00	-285.55	0.00	285.55	9,321.17	4,660.58	24,451.2	12,243.8	0.15	-0.04	0.029
37.35	-49.11	-4.05	0.00	-275.87	0.00	275.87	9,238.30	4,619.15	23,941.1	11,988.3	0.17	-0.04	0.028
40.00	-43.92	-3.90	0.00	-265.12	0.00	265.12	9,143.75	4,571.88	23,368.4	11,701.6	0.19	-0.05	0.027
45.00	-42.91	-3.86	0.00	-245.64	0.00	245.64	8,945.81	4,472.91	22,258.6	11,145.8	0.25	-0.05	0.027
45.99	-40.85	-3.79	0.00	-241.83	0.00	241.83	9,066.35	4,533.18	22,906.9	11,470.5	0.26	-0.05	0.026
50.00	-38.36	-3.69	0.00	-226.61	0.00	226.61	8,889.73	4,444.86	21,978.9	11,005.8	0.31	-0.06	0.025
55.00	-35.93	-3.59	0.00	-208.15	0.00	208.15	8,649.42	4,324.71	20,800.8	10,415.8	0.37	-0.06	0.024
60.00	-33.56	-3.47	0.00	-190.22	0.00	190.22	8,409.11	4,204.56	19,655.1	9,842.19	0.44	-0.07	0.023
65.00	-31.27	-3.34	0.00	-172.87	0.00	172.87	8,168.81	4,084.40	18,541.9	9,284.75	0.52	-0.08	0.022
70.00	-29.05	-3.21	0.00	-156.16	0.00	156.16	7,928.50	3,964.25	17,461.1	8,743.56	0.60	-0.08	0.022
75.00	-28.13	-3.15	0.00	-140.13	0.00	140.13	7,688.20	3,844.10	16,412.8	8,218.62	0.69	-0.09	0.021
77.09	-25.88	-2.99	0.00	-133.53	0.00	133.53	7,587.57	3,793.78	15,983.5	8,003.63	0.73	-0.09	0.020
80.00	-22.66	-2.76	0.00	-124.83	0.00	124.83	7,447.89	3,723.94	15,396.9	7,709.93	0.78	-0.09	0.019
84.24	-22.40	-2.74	0.00	-113.12	0.00	113.12	5,888.19	2,944.10	12,139.4	6,078.74	0.86	-0.10	0.022
85.00	-20.74	-2.61	0.00	-111.04	0.00	111.04	5,866.58	2,933.29	12,034.8	6,026.36	0.88	-0.10	0.022
90.00	-19.14	-2.48	0.00	-97.98	0.00	97.98	5,706.46	2,853.23	11,321.0	5,668.95	0.98	-0.10	0.021
95.00	-17.59	-2.34	0.00	-85.59	0.00	85.59	5,514.21	2,757.11	10,567.3	5,291.53	1.10	-0.11	0.019
100.00	-16.10	-2.19	0.00	-73.89	0.00	73.89	5,321.97	2,660.98	9,839.61	4,927.12	1.21	-0.11	0.018
105.00	-14.66	-2.05	0.00	-62.92	0.00	62.92	5,129.72	2,564.86	9,137.83	4,575.71	1.34	-0.12	0.017
110.00	-14.45	-2.02	0.00	-52.69	0.00	52.69	4,937.48	2,468.74	8,462.01	4,237.29	1.46	-0.12	0.015
110.73	-12.38	-1.80	0.00	-51.22	0.00	51.22	4,909.44	2,454.72	8,365.62	4,189.03	1.48	-0.13	0.015
115.00	-11.62	-1.71	0.00	-43.55	0.00	43.55	4,745.23	2,372.62	7,812.15	3,911.88	1.60	-0.13	0.014
116.61	-10.93	-1.63	0.00	-40.80	0.00	40.80	3,496.39	1,748.20	5,824.58	2,916.62	1.64	-0.13	0.017
120.00	-9.94	-1.51	0.00	-35.28	0.00	35.28	3,427.03	1,713.52	5,552.12	2,780.18	1.73	-0.13	0.016
125.00	-9.00	-1.39	0.00	-27.74	0.00	27.74	3,322.11	1,661.05	5,157.82	2,582.74	1.88	-0.14	0.013
130.00	-8.10	-1.26	0.00	-20.81	0.00	20.81	3,203.75	1,601.87	4,757.74	2,382.41	2.02	-0.14	0.011
135.00	-7.24	-1.14	0.00	-14.49	0.00	14.49	3,059.56	1,529.78	4,337.04	2,171.74	2.18	-0.15	0.009
140.00	-6.42	-1.02	0.00	-8.79	0.00	8.79	2,915.38	1,457.69	3,935.81	1,970.83	2.33	-0.15	0.007
145.00	-5.79	-0.92	0.00	-3.70	0.00	3.70	2,771.20	1,385.60	3,554.06	1,779.67	2.49	-0.15	0.004
149.00	-0.08	-0.01	0.00	-0.01	0.00	0.01	2,655.85	1,327.92	3,262.67	1,633.76	2.61	-0.15	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	2,627.01	1,313.51	3,191.78	1,598.26	2.65	-0.15	0.000
150.56	0.00	0.00	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	2.66	-0.15	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

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	-49.34	-4.32	0.00	-433.33	0.00	433.33	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.031
5.00	-47.20	-4.31	0.00	-411.75	0.00	411.75	10,319.5	5,159.76	31,250.8	15,648.6	0.00	-0.01	0.031
10.00	-45.11	-4.30	0.00	-390.19	0.00	390.19	10,161.0	5,080.50	30,084.7	15,064.7	0.01	-0.01	0.030
15.00	-43.06	-4.27	0.00	-368.70	0.00	368.70	9,999.33	4,999.67	28,930.8	14,486.9	0.03	-0.02	0.030
20.00	-41.07	-4.24	0.00	-347.32	0.00	347.32	9,834.51	4,917.26	27,789.9	13,915.6	0.05	-0.02	0.029
25.00	-39.12	-4.20	0.00	-326.12	0.00	326.12	9,666.55	4,833.27	26,662.6	13,351.1	0.08	-0.03	0.028
30.00	-37.22	-4.14	0.00	-305.13	0.00	305.13	9,495.43	4,747.72	25,549.5	12,793.7	0.11	-0.03	0.028
35.00	-36.34	-4.11	0.00	-284.42	0.00	284.42	9,321.17	4,660.58	24,451.2	12,243.8	0.15	-0.04	0.027
37.35	-34.37	-4.04	0.00	-274.77	0.00	274.77	9,238.30	4,619.15	23,941.1	11,988.3	0.17	-0.04	0.027
40.00	-30.73	-3.88	0.00	-264.05	0.00	264.05	9,143.75	4,571.88	23,368.4	11,701.6	0.19	-0.05	0.026
45.00	-30.03	-3.85	0.00	-244.63	0.00	244.63	8,945.81	4,472.91	22,258.6	11,145.8	0.25	-0.05	0.025
45.99	-28.59	-3.78	0.00	-240.83	0.00	240.83	9,066.35	4,533.18	22,906.9	11,470.5	0.26	-0.05	0.024
50.00	-26.84	-3.68	0.00	-225.66	0.00	225.66	8,889.73	4,444.86	21,978.9	11,005.8	0.30	-0.06	0.024
55.00	-25.14	-3.57	0.00	-207.26	0.00	207.26	8,649.42	4,324.71	20,800.8	10,415.8	0.37	-0.06	0.023
60.00	-23.49	-3.46	0.00	-189.39	0.00	189.39	8,409.11	4,204.56	19,655.1	9,842.19	0.44	-0.07	0.022
65.00	-21.88	-3.33	0.00	-172.11	0.00	172.11	8,168.81	4,084.40	18,541.9	9,284.75	0.51	-0.08	0.021
70.00	-20.33	-3.19	0.00	-155.47	0.00	155.47	7,928.50	3,964.25	17,461.1	8,743.56	0.60	-0.08	0.020
75.00	-19.69	-3.14	0.00	-139.50	0.00	139.50	7,688.20	3,844.10	16,412.8	8,218.62	0.68	-0.09	0.020
77.09	-18.11	-2.98	0.00	-132.93	0.00	132.93	7,587.57	3,793.78	15,983.5	8,003.63	0.72	-0.09	0.019
80.00	-15.86	-2.75	0.00	-124.26	0.00	124.26	7,447.89	3,723.94	15,396.9	7,709.93	0.78	-0.09	0.018
84.24	-15.68	-2.73	0.00	-112.60	0.00	112.60	5,888.19	2,944.10	12,139.4	6,078.74	0.86	-0.10	0.021
85.00	-14.52	-2.60	0.00	-110.53	0.00	110.53	5,866.58	2,933.29	12,034.8	6,026.36	0.88	-0.10	0.021
90.00	-13.39	-2.47	0.00	-97.52	0.00	97.52	5,706.46	2,853.23	11,321.0	5,668.95	0.98	-0.10	0.020
95.00	-12.31	-2.33	0.00	-85.18	0.00	85.18	5,514.21	2,757.11	10,567.3	5,291.53	1.09	-0.11	0.018
100.00	-11.26	-2.18	0.00	-73.54	0.00	73.54	5,321.97	2,660.98	9,839.61	4,927.12	1.21	-0.11	0.017
105.00	-10.26	-2.04	0.00	-62.62	0.00	62.62	5,129.72	2,564.86	9,137.83	4,575.71	1.33	-0.12	0.016
110.00	-10.11	-2.02	0.00	-52.44	0.00	52.44	4,937.48	2,468.74	8,462.01	4,237.29	1.46	-0.12	0.014
110.73	-8.66	-1.79	0.00	-50.97	0.00	50.97	4,909.44	2,454.72	8,365.62	4,189.03	1.48	-0.12	0.014
115.00	-8.13	-1.70	0.00	-43.34	0.00	43.34	4,745.23	2,372.62	7,812.15	3,911.88	1.59	-0.13	0.013
116.61	-7.65	-1.62	0.00	-40.60	0.00	40.60	3,496.39	1,748.20	5,824.58	2,916.62	1.63	-0.13	0.016
120.00	-6.96	-1.50	0.00	-35.11	0.00	35.11	3,427.03	1,713.52	5,552.12	2,780.18	1.73	-0.13	0.015
125.00	-6.30	-1.38	0.00	-27.60	0.00	27.60	3,322.11	1,661.05	5,157.82	2,582.74	1.87	-0.14	0.013
130.00	-5.67	-1.26	0.00	-20.71	0.00	20.71	3,203.75	1,601.87	4,757.74	2,382.41	2.02	-0.14	0.010
135.00	-5.06	-1.14	0.00	-14.42	0.00	14.42	3,059.56	1,529.78	4,337.04	2,171.74	2.17	-0.15	0.008
140.00	-4.49	-1.01	0.00	-8.74	0.00	8.74	2,915.38	1,457.69	3,935.81	1,970.83	2.32	-0.15	0.006
145.00	-4.05	-0.92	0.00	-3.68	0.00	3.68	2,771.20	1,385.60	3,554.06	1,779.67	2.48	-0.15	0.004
149.00	-0.06	-0.01	0.00	-0.01	0.00	0.01	2,655.85	1,327.92	3,262.67	1,633.76	2.60	-0.15	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	2,627.01	1,313.51	3,191.78	1,598.26	2.63	-0.15	0.000
150.56	0.00	0.00	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	2.65	-0.15	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

### 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 ( $S_s$ ):	0.17
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.18
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.09
Period Based on Rayleigh Method (sec):	1.13
Redundancy Factor ( $\rho$ ):	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)
38	150.28	67	1.883	1.943	1.127	0.360	21	83
37	149.50	121	1.863	1.843	1.090	0.349	37	149
36	147.00	508	1.802	1.546	0.980	0.314	138	627
35	142.50	664	1.693	1.096	0.804	0.257	148	820
34	137.50	697	1.576	0.707	0.638	0.202	122	861
33	132.50	730	1.464	0.416	0.501	0.154	98	902
32	127.50	763	1.355	0.205	0.387	0.115	76	943
31	122.50	796	1.251	0.058	0.295	0.083	57	984
30	118.30	559	1.167	-0.024	0.231	0.062	30	690
29	115.80	618	1.118	-0.059	0.198	0.052	28	763
28	112.86	1,679	1.062	-0.089	0.164	0.042	61	2,074
27	110.36	166	1.016	-0.106	0.139	0.035	5	205
26	107.50	1,166	0.963	-0.117	0.114	0.030	30	1,440
25	102.50	1,210	0.876	-0.121	0.078	0.024	25	1,495
24	97.50	1,254	0.793	-0.110	0.052	0.022	24	1,549
23	92.50	1,298	0.713	-0.091	0.033	0.024	27	1,603
22	87.50	1,342	0.638	-0.067	0.019	0.027	32	1,658
21	84.62	207	0.597	-0.052	0.014	0.030	5	256
20	82.12	2,606	0.562	-0.039	0.011	0.032	71	3,219
19	78.55	1,826	0.514	-0.021	0.008	0.034	54	2,256
18	76.05	738	0.482	-0.010	0.006	0.036	23	912
17	72.50	1,801	0.438	0.006	0.006	0.038	60	2,225
16	67.50	1,856	0.380	0.024	0.007	0.040	65	2,293
15	62.50	1,911	0.326	0.039	0.010	0.041	68	2,361
14	57.50	1,966	0.276	0.050	0.014	0.041	69	2,429
13	52.50	2,021	0.230	0.059	0.019	0.040	69	2,497
12	47.99	1,662	0.192	0.064	0.024	0.038	55	2,053
11	45.49	818	0.173	0.066	0.027	0.037	26	1,010
10	42.50	4,207	0.151	0.068	0.030	0.036	130	5,198
9	38.67	2,278	0.125	0.070	0.034	0.034	67	2,814
8	36.17	1,013	0.109	0.071	0.036	0.033	29	1,252
7	32.50	2,199	0.088	0.071	0.039	0.032	60	2,717
6	27.50	2,254	0.063	0.072	0.041	0.030	58	2,785
5	22.50	2,309	0.042	0.070	0.042	0.027	55	2,853



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Site Name: PALMER POND CT CT, CT

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Customer: VERIZON WIRELESS

4	17.50	2,364	0.026	0.067	0.040	0.025	51	2,921
3	12.50	2,419	0.013	0.059	0.034	0.021	45	2,989
2	7.50	2,474	0.005	0.044	0.025	0.016	34	3,057
1	2.50	2,529	0.001	0.018	0.010	0.007	15	3,125
Alcatel-Lucent RRH2x	149.00	170	1.851	1.780	1.067	0.342	50	210
RFS DB-T1-6Z-12AB-0Z	149.00	32	1.851	1.780	1.067	0.342	9	40
Alcatel-Lucent B66A	149.00	170	1.851	1.780	1.067	0.342	50	211
Antel BXA-70063-6CF-	149.00	51	1.851	1.780	1.067	0.342	15	63
Commscope SBNHH-	149.00	244	1.851	1.780	1.067	0.342	72	301
Round Low Profile PI	149.00	2,000	1.851	1.780	1.067	0.342	593	2,471
VZW Unused Reserve:	149.00	1,833	1.851	1.780	1.067	0.342	543	2,264
		59,599	38.982	20.286	14.800	5.213	3,402	73,629

**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)
38	150.28	67	1.883	1.943	1.127	0.360	21	58
37	149.50	121	1.863	1.843	1.090	0.349	37	105
36	147.00	508	1.802	1.546	0.980	0.314	138	439
35	142.50	664	1.693	1.096	0.804	0.257	148	574
34	137.50	697	1.576	0.707	0.638	0.202	122	603
33	132.50	730	1.464	0.416	0.501	0.154	98	631
32	127.50	763	1.355	0.205	0.387	0.115	76	660
31	122.50	796	1.251	0.058	0.295	0.083	57	688
30	118.30	559	1.167	-0.024	0.231	0.062	30	483
29	115.80	618	1.118	-0.059	0.198	0.052	28	534
28	112.86	1,679	1.062	-0.089	0.164	0.042	61	1,451
27	110.36	166	1.016	-0.106	0.139	0.035	5	144
26	107.50	1,166	0.963	-0.117	0.114	0.030	30	1,008
25	102.50	1,210	0.876	-0.121	0.078	0.024	25	1,046
24	97.50	1,254	0.793	-0.110	0.052	0.022	24	1,084
23	92.50	1,298	0.713	-0.091	0.033	0.024	27	1,122
22	87.50	1,342	0.638	-0.067	0.019	0.027	32	1,160
21	84.62	207	0.597	-0.052	0.014	0.030	5	179
20	82.12	2,606	0.562	-0.039	0.011	0.032	71	2,253
19	78.55	1,826	0.514	-0.021	0.008	0.034	54	1,579
18	76.05	738	0.482	-0.010	0.006	0.036	23	638
17	72.50	1,801	0.438	0.006	0.006	0.038	60	1,557
16	67.50	1,856	0.380	0.024	0.007	0.040	65	1,605
15	62.50	1,911	0.326	0.039	0.010	0.041	68	1,652
14	57.50	1,966	0.276	0.050	0.014	0.041	69	1,700
13	52.50	2,021	0.230	0.059	0.019	0.040	69	1,748
12	47.99	1,662	0.192	0.064	0.024	0.038	55	1,437
11	45.49	818	0.173	0.066	0.027	0.037	26	707
10	42.50	4,207	0.151	0.068	0.030	0.036	130	3,638
9	38.67	2,278	0.125	0.070	0.034	0.034	67	1,969
8	36.17	1,013	0.109	0.071	0.036	0.033	29	876
7	32.50	2,199	0.088	0.071	0.039	0.032	60	1,901
6	27.50	2,254	0.063	0.072	0.041	0.030	58	1,949
5	22.50	2,309	0.042	0.070	0.042	0.027	55	1,997
4	17.50	2,364	0.026	0.067	0.040	0.025	51	2,044
3	12.50	2,419	0.013	0.059	0.034	0.021	45	2,092
2	7.50	2,474	0.005	0.044	0.025	0.016	34	2,139
1	2.50	2,529	0.001	0.018	0.010	0.007	15	2,187
Alcatel-Lucent RRH2x	149.00	170	1.851	1.780	1.067	0.342	50	147
RFS DB-T1-6Z-12AB-0Z	149.00	32	1.851	1.780	1.067	0.342	9	28
Alcatel-Lucent B66A	149.00	170	1.851	1.780	1.067	0.342	50	147
Antel BXA-70063-6CF-	149.00	51	1.851	1.780	1.067	0.342	15	44

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Commscope SBNHH-	149.00	244	1.851	1.780	1.067	0.342	72	211
Round Low Profile PI	149.00	2,000	1.851	1.780	1.067	0.342	593	1,729
VZW Unused Reserve:	149.00	1,833	1.851	1.780	1.067	0.342	543	1,585
		59,599	38.982	20.286	14.800	5.213	3,402	51,528

Site Number: 418914

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Site Name: PALMER POND CT CT

Engineering Number: OAA700432\_C3\_01

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Customer: VERIZON WIRELESS

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

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-70.50	-3.39	0.00	-374.79	0.00	374.79	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.030
5.00	-67.45	-3.36	0.00	-357.84	0.00	357.84	10,319.5	5,159.76	31,250.8	15,648.6	0.00	0.00	0.029
10.00	-64.46	-3.32	0.00	-341.03	0.00	341.03	10,161.0	5,080.50	30,084.7	15,064.7	0.01	-0.01	0.029
15.00	-61.54	-3.28	0.00	-324.42	0.00	324.42	9,999.33	4,999.67	28,930.8	14,486.9	0.02	-0.01	0.029
20.00	-58.68	-3.22	0.00	-308.05	0.00	308.05	9,834.51	4,917.26	27,789.9	13,915.6	0.04	-0.02	0.028
25.00	-55.90	-3.17	0.00	-291.92	0.00	291.92	9,666.55	4,833.27	26,662.6	13,351.1	0.07	-0.03	0.028
30.00	-53.18	-3.11	0.00	-276.07	0.00	276.07	9,495.43	4,747.72	25,549.5	12,793.7	0.09	-0.03	0.027
35.00	-51.93	-3.09	0.00	-260.50	0.00	260.50	9,321.17	4,660.58	24,451.2	12,243.8	0.13	-0.04	0.027
37.35	-49.12	-3.02	0.00	-253.25	0.00	253.25	9,238.30	4,619.15	23,941.1	11,988.3	0.15	-0.04	0.026
40.00	-43.92	-2.89	0.00	-245.23	0.00	245.23	9,143.75	4,571.88	23,368.4	11,701.6	0.17	-0.04	0.026
45.00	-42.91	-2.87	0.00	-230.78	0.00	230.78	8,945.81	4,472.91	22,258.6	11,145.8	0.22	-0.05	0.026
45.99	-40.85	-2.81	0.00	-227.95	0.00	227.95	9,066.35	4,533.18	22,906.9	11,470.5	0.23	-0.05	0.024
50.00	-38.36	-2.74	0.00	-216.66	0.00	216.66	8,889.73	4,444.86	21,978.9	11,005.8	0.27	-0.05	0.024
55.00	-35.93	-2.68	0.00	-202.94	0.00	202.94	8,649.42	4,324.71	20,800.8	10,415.8	0.33	-0.06	0.024
60.00	-33.57	-2.61	0.00	-189.56	0.00	189.56	8,409.11	4,204.56	19,655.1	9,842.19	0.39	-0.06	0.023
65.00	-31.27	-2.54	0.00	-176.51	0.00	176.51	8,168.81	4,084.40	18,541.9	9,284.75	0.46	-0.07	0.023
70.00	-29.05	-2.49	0.00	-163.79	0.00	163.79	7,928.50	3,964.25	17,461.1	8,743.56	0.54	-0.07	0.022
75.00	-28.14	-2.46	0.00	-151.36	0.00	151.36	7,688.20	3,844.10	16,412.8	8,218.62	0.62	-0.08	0.022
77.09	-25.88	-2.41	0.00	-146.21	0.00	146.21	7,587.57	3,793.78	15,983.5	8,003.63	0.65	-0.08	0.022
80.00	-22.66	-2.33	0.00	-139.21	0.00	139.21	7,447.89	3,723.94	15,396.9	7,709.93	0.71	-0.09	0.021
84.24	-22.40	-2.33	0.00	-129.32	0.00	129.32	5,888.19	2,944.10	12,139.4	6,078.74	0.79	-0.09	0.025
85.00	-20.75	-2.29	0.00	-127.56	0.00	127.56	5,866.58	2,933.29	12,034.8	6,026.36	0.80	-0.09	0.025
90.00	-19.14	-2.27	0.00	-116.08	0.00	116.08	5,706.46	2,853.23	11,321.0	5,668.95	0.90	-0.10	0.024
95.00	-17.59	-2.24	0.00	-104.74	0.00	104.74	5,514.21	2,757.11	10,567.3	5,291.53	1.01	-0.11	0.023
100.00	-16.10	-2.22	0.00	-93.53	0.00	93.53	5,321.97	2,660.98	9,839.61	4,927.12	1.12	-0.11	0.022
105.00	-14.66	-2.19	0.00	-82.45	0.00	82.45	5,129.72	2,564.86	9,137.83	4,575.71	1.25	-0.12	0.021
110.00	-14.45	-2.18	0.00	-71.52	0.00	71.52	4,937.48	2,468.74	8,462.01	4,237.29	1.38	-0.13	0.020
110.73	-12.38	-2.12	0.00	-69.93	0.00	69.93	4,909.44	2,454.72	8,365.62	4,189.03	1.40	-0.13	0.019
115.00	-11.61	-2.09	0.00	-60.89	0.00	60.89	4,745.23	2,372.62	7,812.15	3,911.88	1.51	-0.13	0.018
116.61	-10.92	-2.06	0.00	-57.54	0.00	57.54	3,496.39	1,748.20	5,824.58	2,916.62	1.56	-0.14	0.023
120.00	-9.94	-2.00	0.00	-50.56	0.00	50.56	3,427.03	1,713.52	5,552.12	2,780.18	1.66	-0.14	0.021
125.00	-9.00	-1.92	0.00	-40.58	0.00	40.58	3,322.11	1,661.05	5,157.82	2,582.74	1.81	-0.15	0.018
130.00	-8.10	-1.82	0.00	-30.98	0.00	30.98	3,203.75	1,601.87	4,757.74	2,382.41	1.96	-0.15	0.016
135.00	-7.23	-1.70	0.00	-21.87	0.00	21.87	3,059.56	1,529.78	4,337.04	2,171.74	2.13	-0.16	0.012
140.00	-6.41	-1.55	0.00	-13.39	0.00	13.39	2,915.38	1,457.69	3,935.81	1,970.83	2.29	-0.16	0.009
145.00	-5.79	-1.41	0.00	-5.65	0.00	5.65	2,771.20	1,385.60	3,554.06	1,779.67	2.46	-0.16	0.005
149.00	-0.08	-0.02	0.00	-0.02	0.00	0.02	2,655.85	1,327.92	3,262.67	1,633.76	2.60	-0.17	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	2,627.01	1,313.51	3,191.78	1,598.26	2.64	-0.17	0.000
150.56	0.00	0.00	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	2.66	-0.17	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:04 AM

Customer: VERIZON WIRELESS

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

**Calculated Forces**

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-49.34	-3.39	0.00	-373.51	0.00	373.51	10,474.8	5,237.44	32,428.6	16,238.4	0.00	0.00	0.028
5.00	-47.20	-3.36	0.00	-356.57	0.00	356.57	10,319.5	5,159.76	31,250.8	15,648.6	0.00	0.00	0.027
10.00	-45.11	-3.32	0.00	-339.77	0.00	339.77	10,161.0	5,080.50	30,084.7	15,064.7	0.01	-0.01	0.027
15.00	-43.07	-3.27	0.00	-323.19	0.00	323.19	9,999.33	4,999.67	28,930.8	14,486.9	0.02	-0.01	0.027
20.00	-41.07	-3.22	0.00	-306.84	0.00	306.84	9,834.51	4,917.26	27,789.9	13,915.6	0.04	-0.02	0.026
25.00	-39.12	-3.16	0.00	-290.75	0.00	290.75	9,666.55	4,833.27	26,662.6	13,351.1	0.07	-0.03	0.026
30.00	-37.22	-3.11	0.00	-274.94	0.00	274.94	9,495.43	4,747.72	25,549.5	12,793.7	0.09	-0.03	0.025
35.00	-36.34	-3.08	0.00	-259.41	0.00	259.41	9,321.17	4,660.58	24,451.2	12,243.8	0.13	-0.04	0.025
37.35	-34.37	-3.01	0.00	-252.19	0.00	252.19	9,238.30	4,619.15	23,941.1	11,988.3	0.15	-0.04	0.025
40.00	-30.73	-2.88	0.00	-244.20	0.00	244.20	9,143.75	4,571.88	23,368.4	11,701.6	0.17	-0.04	0.024
45.00	-30.03	-2.86	0.00	-229.79	0.00	229.79	8,945.81	4,472.91	22,258.6	11,145.8	0.22	-0.05	0.024
45.99	-28.59	-2.80	0.00	-226.97	0.00	226.97	9,066.35	4,533.18	22,906.9	11,470.5	0.23	-0.05	0.023
50.00	-26.84	-2.73	0.00	-215.73	0.00	215.73	8,889.73	4,444.86	21,978.9	11,005.8	0.27	-0.05	0.023
55.00	-25.14	-2.66	0.00	-202.07	0.00	202.07	8,649.42	4,324.71	20,800.8	10,415.8	0.33	-0.06	0.022
60.00	-23.49	-2.60	0.00	-188.74	0.00	188.74	8,409.11	4,204.56	19,655.1	9,842.19	0.39	-0.06	0.022
65.00	-21.88	-2.53	0.00	-175.76	0.00	175.76	8,168.81	4,084.40	18,541.9	9,284.75	0.46	-0.07	0.022
70.00	-20.33	-2.47	0.00	-163.09	0.00	163.09	7,928.50	3,964.25	17,461.1	8,743.56	0.53	-0.07	0.021
75.00	-19.69	-2.45	0.00	-150.73	0.00	150.73	7,688.20	3,844.10	16,412.8	8,218.62	0.62	-0.08	0.021
77.09	-18.11	-2.39	0.00	-145.60	0.00	145.60	7,587.57	3,793.78	15,983.5	8,003.63	0.65	-0.08	0.021
80.00	-15.86	-2.32	0.00	-138.64	0.00	138.64	7,447.89	3,723.94	15,396.9	7,709.93	0.70	-0.09	0.020
84.24	-15.68	-2.32	0.00	-128.79	0.00	128.79	5,888.19	2,944.10	12,139.4	6,078.74	0.78	-0.09	0.024
85.00	-14.52	-2.28	0.00	-127.03	0.00	127.03	5,866.58	2,933.29	12,034.8	6,026.36	0.80	-0.09	0.024
90.00	-13.40	-2.26	0.00	-115.61	0.00	115.61	5,706.46	2,853.23	11,321.0	5,668.95	0.90	-0.10	0.023
95.00	-12.31	-2.23	0.00	-104.33	0.00	104.33	5,514.21	2,757.11	10,567.3	5,291.53	1.01	-0.11	0.022
100.00	-11.26	-2.21	0.00	-93.16	0.00	93.16	5,321.97	2,660.98	9,839.61	4,927.12	1.12	-0.11	0.021
105.00	-10.26	-2.18	0.00	-82.13	0.00	82.13	5,129.72	2,564.86	9,137.83	4,575.71	1.24	-0.12	0.020
110.00	-10.11	-2.17	0.00	-71.25	0.00	71.25	4,937.48	2,468.74	8,462.01	4,237.29	1.37	-0.13	0.019
110.73	-8.66	-2.11	0.00	-69.67	0.00	69.67	4,909.44	2,454.72	8,365.62	4,189.03	1.39	-0.13	0.018
115.00	-8.13	-2.08	0.00	-60.67	0.00	60.67	4,745.23	2,372.62	7,812.15	3,911.88	1.51	-0.13	0.017
116.61	-7.64	-2.05	0.00	-57.32	0.00	57.32	3,496.39	1,748.20	5,824.58	2,916.62	1.55	-0.13	0.022
120.00	-6.96	-1.99	0.00	-50.38	0.00	50.38	3,427.03	1,713.52	5,552.12	2,780.18	1.65	-0.14	0.020
125.00	-6.30	-1.91	0.00	-40.43	0.00	40.43	3,322.11	1,661.05	5,157.82	2,582.74	1.80	-0.15	0.018
130.00	-5.66	-1.81	0.00	-30.87	0.00	30.87	3,203.75	1,601.87	4,757.74	2,382.41	1.95	-0.15	0.015
135.00	-5.06	-1.69	0.00	-21.79	0.00	21.79	3,059.56	1,529.78	4,337.04	2,171.74	2.12	-0.16	0.012
140.00	-4.49	-1.54	0.00	-13.34	0.00	13.34	2,915.38	1,457.69	3,935.81	1,970.83	2.28	-0.16	0.008
145.00	-4.05	-1.40	0.00	-5.63	0.00	5.63	2,771.20	1,385.60	3,554.06	1,779.67	2.45	-0.16	0.005
149.00	-0.06	-0.02	0.00	-0.02	0.00	0.02	2,655.85	1,327.92	3,262.67	1,633.76	2.59	-0.16	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	2,627.01	1,313.51	3,191.78	1,598.26	2.63	-0.16	0.000
150.56	0.00	0.00	0.00	0.00	0.00	0.00	2,610.79	1,305.40	3,152.24	1,578.46	2.65	-0.16	0.000

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:04 AM

Customer: VERIZON WIRELESS

### Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	36.96	0.00	71.50	0.00	0.00	3840.83	0.00	0.24
0.9D + 1.6W	36.95	0.00	53.62	0.00	0.00	3829.59	0.00	0.24
1.2D + 1.0Di + 1.0Wi	9.56	0.00	94.04	0.00	0.00	969.29	0.00	0.07
(1.2 + 0.2Sds) * DL + E ELFM	4.32	0.00	70.50	0.00	0.00	434.68	0.00	0.03
(1.2 + 0.2Sds) * DL + E EMAM	3.39	0.00	70.50	0.00	0.00	374.79	0.00	0.03
(0.9 - 0.2Sds) * DL + E ELFM	4.32	0.00	49.34	0.00	0.00	433.33	0.00	0.03
(0.9 - 0.2Sds) * DL + E EMAM	3.39	0.00	49.34	0.00	0.00	373.51	0.00	0.03
1.0D + 1.0W	7.54	0.00	59.60	0.00	0.00	782.39	0.00	0.05

Site Number: 418914

Code: ANSI/TIA-222-G

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Site Name: PALMER POND CT CT, CT

Engineering Number: OAA700432\_C3\_01

4/17/2017 10:32:04 AM

Customer: VERIZON WIRELESS

**Base Summary**

**Reactions**

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
12,660.70	71.90	101.30	3,840.83	94.04	36.96	30.34

**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	4.000	90.000	Round	0	0.00	6.348	240.93	1142.60	0.21

**Anchor Bolts**

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
84.00	38	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	60.23	260.00	0.24	55.28	260.00	0.22

# **ATTACHMENT 4**

# 53 GALLUP RD

**Location** 53 GALLUP RD

**Mblu** 014/ 004-00/ 0053/ /

**Acct#** RP-01523

**Owner** GALLUP BYRON

**Assessment** \$219,760

**Appraisal** \$860,030

**PID** 6397

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$200,750	\$659,280	\$860,030
Assessment			
Valuation Year	Improvements	Land	Total
2015	\$140,530	\$79,230	\$219,760

## Owner of Record

**Owner** GALLUP BYRON

**Co-Owner**

**Address** 150 GALLUP RD  
VOLUNTOWN, CT 06384

**Sale Price** \$0

**Certificate**

**Book & Page** 109/ 332

**Sale Date** 04/04/2016

**Instrument** 10

## Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
GALLUP BYRON	\$0		109/ 332	10	04/04/2016
GALLUP BENJAMIN & BYRON	\$0	1	25/ 195		01/01/1900

## Building Information

### Building 1 : Section 1

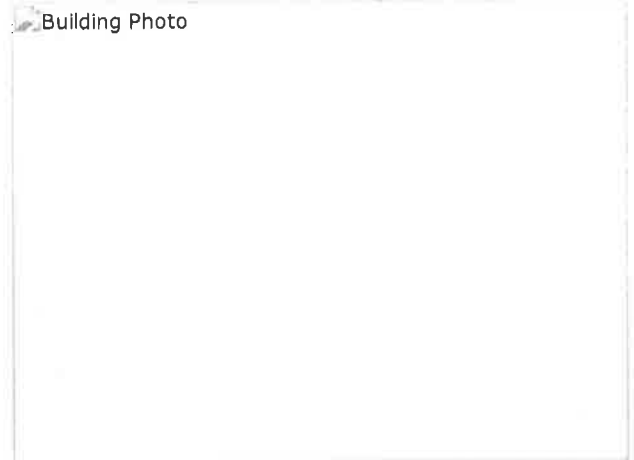
**Year Built:** 1750  
**Living Area:** 1,760  
**Replacement Cost:** \$220,476  
**Building Percent** 58  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$127,880

**Building Attributes**



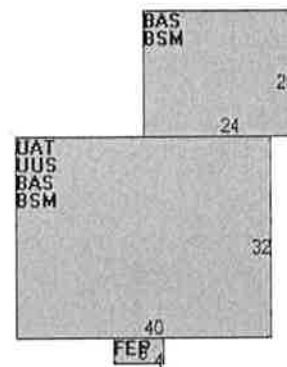
Field	Description
Style	Colonial
Model	Residential
Grade:	C+
Stories	2
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	2 Bedrooms
Total Bthrms:	1
Total Half Baths:	1
Extra Fixtures	0
Total Rooms:	10
Bath Style:	Average
Kitchen Style:	Average
Fireplaces	1
Xtra Openings	
Gas Fireplaces	
Blocked FPL	
SF Fin Bsmt	
Fin Bsmt Qual	
Bsmt Gar	0
Jac/Whlpl	
Woodstove:	
Pellet Stove	
Res Elevator	

### Building Photo



(<http://images.vgsi.com/photos/VoluntownCTPhotos//\00\00\00>)

### Building Layout



Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
BAS	First Floor	1,760	1,760	
BSM	Basement	1,760	0	
FEP	Finished Enclosed Porch	32	0	
UAT	Unfinished Attic	1,280	0	
UUS	Unfinished Upper Story	1,280	0	
		6,112	1,760	

### Extra Features

#### Extra Features

#### Legend

No Data for Extra Features

**Land**

**Land Use**

**Use Code** 1010  
**Description** Single Family  
**Zone** RD  
**Neighborhood** 50  
**Alt Land Appr Category** No

**Land Line Valuation**

**Size (Acres)** 200.00  
**Frontage**  
**Depth**  
**Assessed Value** \$79,230  
**Appraised Value** \$659,280

**Outbuildings**

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
BRN1	Barn - 1 Story			2160 S.F.	\$16,200	1
BRN8	Pole Barn			1024 S.F.	\$5,530	1
BRN8	Pole Barn			2112 S.F.	\$11,400	1
MLK	Milk House			1700 S.F.	\$12,750	1
FGR1	Garage - Ave			648 S.F.	\$11,340	1
SHD1	Shed			144 S.F.	\$690	1
LNT	Lean To			5760 S.F.	\$10,370	1
BRN8	Pole Barn			1700 S.F.	\$4,590	1

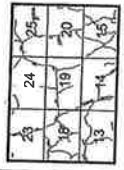
**Valuation History**

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$200,750	\$659,280	\$860,030
2014	\$219,240	\$659,280	\$878,520
2009		\$996,000	\$256,000

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$140,530	\$79,230	\$219,760
2014	\$153,470	\$71,570	\$225,040
2009		\$697,200	\$179,200

**Map Symbols**

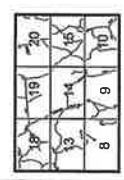
- 107 Lot Number
- 10 Lot Number
- 23.A.C. Surveyed Acreage
- Address
- Commuter Line
- Historic District Boundary
- Fence Boundary
- Edge of Map
- Percol Edge of Water
- Road Boundary
- Map Grid Overlay



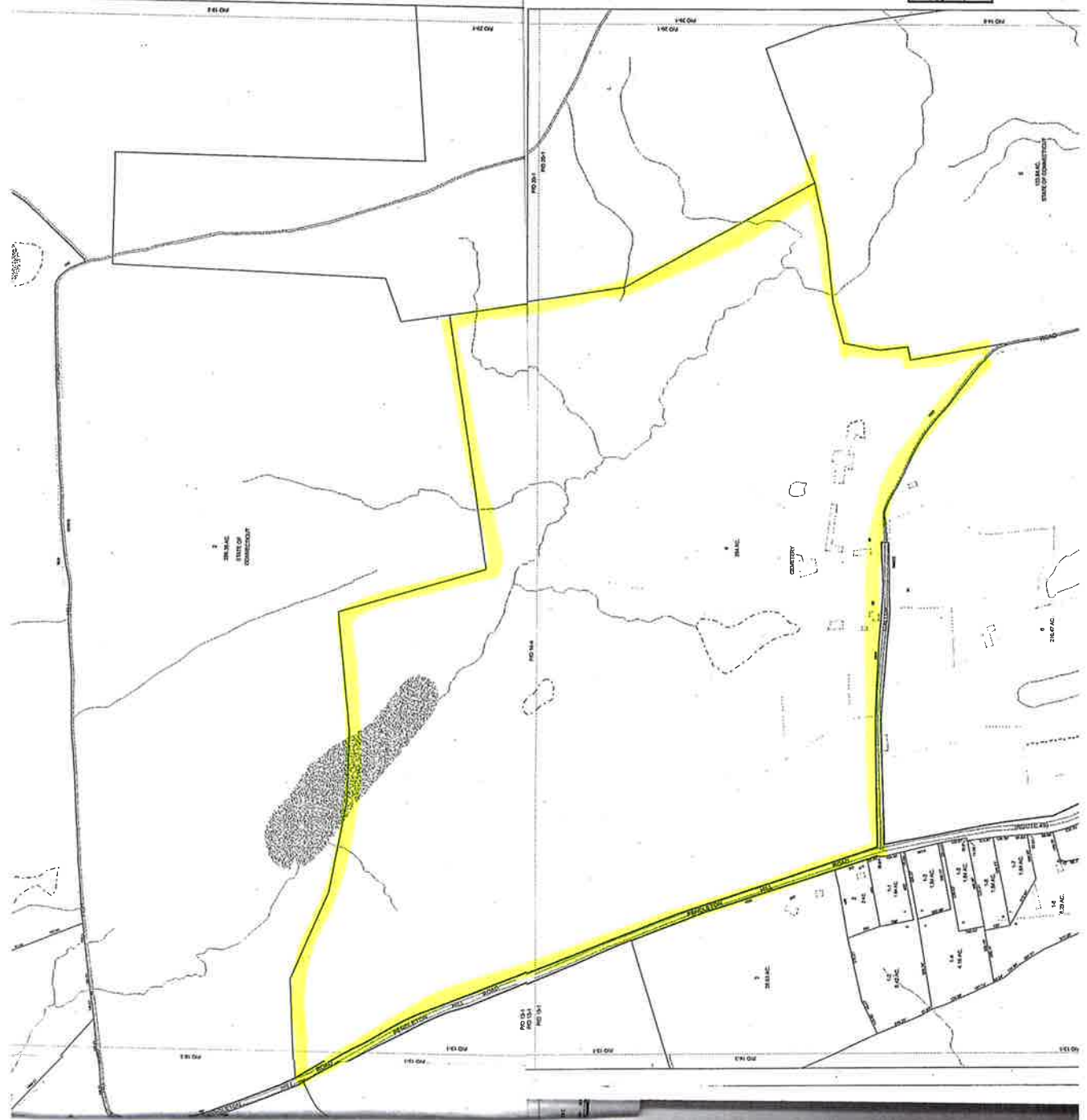
107	108	109	110	111	112	113	114	115	116
117	118	119	120	121	122	123	124	125	126
137	138	139	140	141	142	143	144	145	146
157	158	159	160	161	162	163	164	165	166
177	178	179	180	181	182	183	184	185	186
197	198	199	200	201	202	203	204	205	206
217	218	219	220	221	222	223	224	225	226
237	238	239	240	241	242	243	244	245	246
257	258	259	260	261	262	263	264	265	266
277	278	279	280	281	282	283	284	285	286
297	298	299	300	301	302	303	304	305	306

- Range Line
- Survey
- Percol
- Fence
- Wall
- Building or Structure
- Water
- Map Grid Overlay

- 107 Lot Number
- 10 Lot Number
- 23.A.C. Surveyed Acreage
- Address
- Commuter Line
- Historic District Boundary
- Fence Boundary
- Edge of Map
- Percol Edge of Water
- Road Boundary
- Map Grid Overlay



107	108	109	110	111	112	113	114	115	116
117	118	119	120	121	122	123	124	125	126
137	138	139	140	141	142	143	144	145	146
157	158	159	160	161	162	163	164	165	166
177	178	179	180	181	182	183	184	185	186
197	198	199	200	201	202	203	204	205	206
217	218	219	220	221	222	223	224	225	226
237	238	239	240	241	242	243	244	245	246
257	258	259	260	261	262	263	264	265	266
277	278	279	280	281	282	283	284	285	286
297	298	299	300	301	302	303	304	305	306



33.M.A.C. STATE OF CONNECTICUT

24.M.A.C.

COUNTRY

23.M.A.C.

30.D.A. 30.D.3

30.D.4

30.D.5

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

24.M.A.C.

30.D.1

30.D.2

30.D.6

30.D.7

# **ATTACHMENT 5**



**Certificate of Mailing — Firm**

Name and Address of Sender Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here Postmark with Date of Receipt.				
USPS® Tracking Number Firm-specific Identifier		Address (Name, Street, City, State, and ZIP Code™)		Postage	Fee	Special Handling	Parcel Airlift
1.			Robert A. Sirpenski, First Selectman Town of Voluntown 115 Main Street Voluntown, CT 06384				
2.			Peter Zvingilas, Zoning Enforcement Officer Town of Voluntown 115 Main Street Voluntown, CT 06384				
3.			Byron Gallup, 150 Gallup Road Voluntown, CT 06384				
4.							
5.							
6.							