Robinson+Cole

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Also admitted in Massachusetts

August 24, 2016

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

Re: **Notice of Exempt Modification – Facility Modification**
87 West Quasset Road, Woodstock, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) wireless telecommunications antennas at the top of an existing 149-foot tower at 87 Quasset Road in Woodstock, Connecticut (the "Property"). The tower is owned by American Tower Corporation ("ATC"). Cellco's use of the tower was approved by the Council in 2012 (Docket No. 415). Cellco now intends to modify its facility by removing all of its antennas and replacing them with three (3) model SBNHH-1D65B, 700/2100 MHz antennas; three (3) model SBNHH-1D65B, 1900 MHz antennas; six (6) model LPA-80063/6CF, 850 MHz antennas; and three (3) model LNX-6514DS, 850 MHz antennas, all on the same antenna platform at top of the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") and two (2) HYBRIFLEX™ antenna cables inside of the monopole. 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 notice is being sent to Allan D. Walker, Jr., First Selectman of the Town of Woodstock. A copy of this letter is also being sent to Quasset Hill Farm LLC, the owner of the Property and ATC, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new antennas and RRHs will be installed on its existing antenna platform at the top of the existing 149-foot tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included 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 included in Attachment 3).

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

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Allan D. Walker, Jr., Woodstock First Selectman
Quasset Hill Farm LLC
ATC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65B

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

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

Electrical Specifications

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

Electrical Specifications, BASTA*

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

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

General Specifications

Antenna Type	Sector with internal RET
Band	Multiband
Brand	DualPol®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground

Product Specifications

SBNHH-1D65B

Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
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

Depth	180.0 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 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

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

Regulatory Compliance/Certifications

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

Product Specifications

SBNHH-1D65B

Included Products

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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

Vertically Polarized, Log Periodic 63° / 14.5 dBd

LPA-80063/6CF ___

When ordering, replace "___" with connector type.

Mechanical specifications

	Length	1800 mm	70.87	in
	Width	380 mm	14.96	in
	Depth	332 mm	13.07	in
4)	Weight	12.25 kg	27	lbs
	Wind Area			
	Front	0.684 m^2	7.39	ft^2
	Side	0.598 m^2	6.45	ft^2
	Rated Wind Velocity (Safety factor 2.0)			
		>235 km/hr	>146	mph
	Wind load @ 100 mph (161 km/hr)			
	Front	993 N	223.3	lbs
	Side	872 N	196.1	lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting & Downtilting:

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in).

Mounting bracket kit #21699999

Downtilt bracket kit #21699999
The downtilt bracket kit includes the mounting bracket kit.

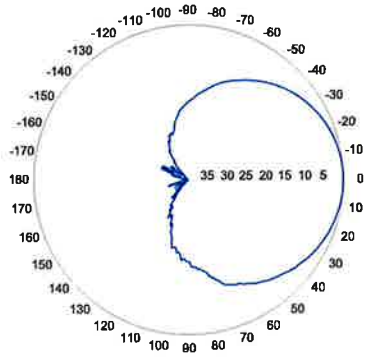
Electrical specifications

	Frequency Range	806-960 MHz
	Impedance	50Ω
3)	Connector	NE, E-DIN
1)	VSWR	≤1.4:1
	Polarization	Vertical
1)	Gain	14.5 dBd
2)	Power Rating	500 W
1)	Half Power Angle	
	H-Plane	63°
	E-Plane	10°
1)	Electrical Downtilt	0°
1)	Null Fill	10%
	Lightning Protection	Direct Ground

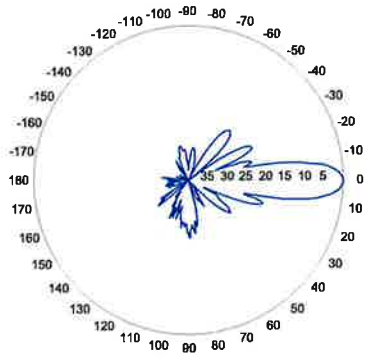
1) Typical Values
2) Power Rating limited by connector only.
3) NE indicates an elongated N Connector.
E-DIN indicates an elongated DIN Connector.
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern[1)]



Horizontal



Vertical

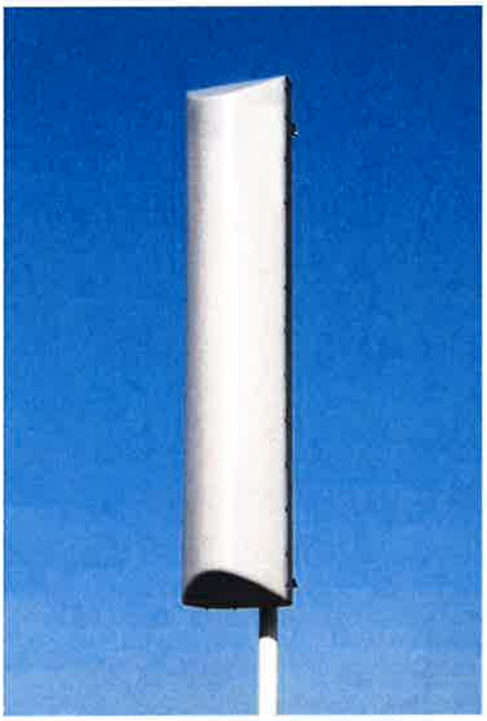
Featuring upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back Ratio.

CF Denotes a Center-Fed Connector.

806-960 MHz



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Every Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

Amphenol Antel, Inc.
The Antenna Technology Company

1300 Capital Drive Rockford, IL 61109 Toll-Free (888) 417-9562 Tel. (815) 399-0001
Fax. (815) 399-0156 Email: antel@antelinc.com www.antelinc.com

Revision Date: 12/1/05

Product Specifications

COMMSCOPE®

LNX-6514DS-VTM | LNX-6514DS-A1M

Single Band Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site collocations and tough zoning restrictions
- Excellent solution for site sharing and maximizing capacity
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Gain, dBi	15.8	15.9
Beamwidth, Horizontal, degrees	65	64
Beamwidth, Vertical, degrees	12.4	11.2
Beam Tilt, degrees	0–10	0–10
USLS (First Lobe), dB	17	18
Front-to-Back Ratio at 180°, dB	32	30
CPR at Boresight, dB	23	23
CPR at Sector, dB	12	10
Isolation, dB	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	**698–806**	**806–896**
Gain by all Beam Tilts, average, dBi	15.6	15.7
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.5
Gain by Beam Tilt, average, dBi	0 ° | 15.7 5 ° | 15.7 10 ° | 15.3	0 ° | 15.9 5 ° | 15.8 10 ° | 15.3
Beamwidth, Horizontal Tolerance, degrees	±0.9	±1.4
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.6
USLS, beampeak to 20° above beampeak, dB	18	20
Front-to-Back Total Power at 180° ± 30°, dB	25	23
CPR at Boresight, dB	25	24
CPR at Sector, dB	15	12

* 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.

General Specifications

Antenna Type	Sector
Band	Single band
Brand	DualPol®
Operating Frequency Band	698 – 896 MHz

Product Specifications

LNX-6514DS-VTM | LNX-6514DS-A1M

Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	2
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	726.0 N @ 150 km/h 163.2 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.5 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight, without mounting kit	14.2 kg | 31.3 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	LNX-6514DS-A1M

Packed Dimensions

Depth	295.0 mm | 11.6 in
Length	2048.0 mm | 80.6 in
Width	392.0 mm | 15.4 in
Shipping Weight	29.2 kg | 64.4 lb

Regulatory Compliance/Certifications

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

Included Products

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets

and double nuts.

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

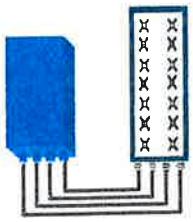
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

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

ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
RRH2X60-1900A-4R FOR BAND 2/25 APPLICATIONS

The Alcatel-Lucent RRH2x60-1900A-4R is a high power, small form factor Remote Radio Head operating in the PCS 1900MHz frequency band for WCDMA and LTE technologies. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.

A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-1900A-4R is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-1900A-4R integrates all the latest technologies. This allows operators to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent RRH2x60-1900A-4R is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

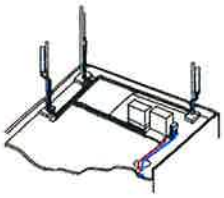
The Alcatel-Lucent RRH2x60-1900A-4R is a very cost-effective solution to deploy LTE MIMO.

EASY INSTALLATION

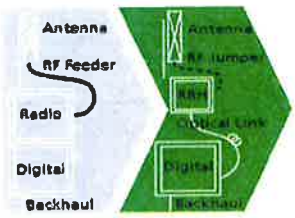
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-1900A-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-1900A-4R is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

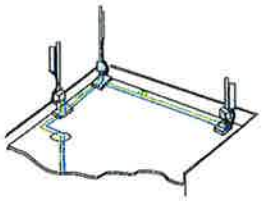
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-190A-4R is compact and weighs about 21 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- RRH2x60-1900A-4R integrates two power amplifiers of 60W rating (at each antenna connector)
- RRH2x60-1900A-4R can operate WCDMA only, LTE only or a mix of WCDMA and LTE
- RRH2x60-1900A-4R offers the possibility for WCDMA (non MIMO) to operate the two radio chains independently (2 blocks of 20 MHz anywhere in the band)
- RRH2x60-1900A-4R is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO deployment and/or WCDMA and LTE simultaneous operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 500x285x208 mm (30l with solar shield)
- Weight : 21 kg (46 lbs) (with solar shield)

Electrical Data

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption: 460W typ. @2x60W (100%RF)

RF Characteristics

- Supported spectrum: DL 1930-1990 / UL 1850-1910
- Frequency band: 3GPP band 2/25
- Output power: 2x60W at antenna connectors
- Technology supported: W-CDMA and LTE
- Instantaneous bandwidth: 20 MHz (MIMO) or 2x20 MHz (non MIMO)
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -124.8dBm for WCDMA and -105 dBm for LTE

Connectivity

- Two CPRI optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 15km using SM fiber
- TMA/RETA: AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions: ETS300-019-1-4 class4.1E
- Ingress Protection: IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

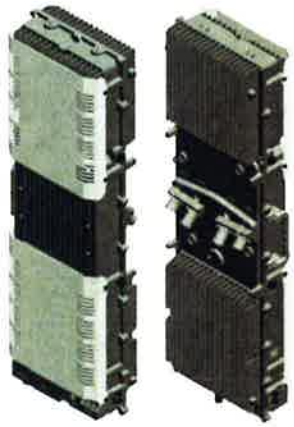
Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089
- Safety : IEC60950-1, EN 60825-1
- Regulatory: CE Mark-European Directive 2002/95/EC (RoHS), 2002/96/EC (WEEE), 1999/5/EC (R&TTE)
- Health : EN 50385

Alcatel·Lucent

ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
B4 RRH2X60-4R FOR AWS BAND APPLICATIONS

The Alcatel-Lucent B4 RRH2x60-4R is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent B4 RRH2x60-4R is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent B4 RRH2x60-4R integrates all the latest technologies. This allows operators to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent B4 RRH2x60-4R is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent B4 RRH2x60-4R is a very cost-effective solution to deploy LTE MIMO.

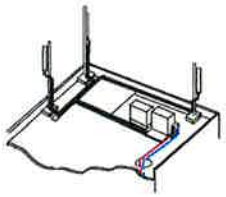
EASY INSTALLATION

The B4 RRH2x60-4R includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

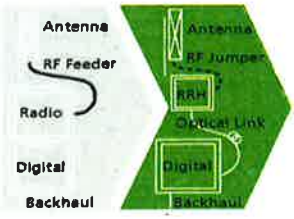
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent B4 RRH2x60-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent B4 RRH2x60-4R is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

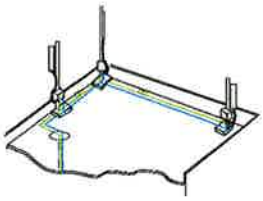
Installation can easily be done by a single person as the Alcatel–Lucent B4 RRH2x60-4R is compact and weighs about 25 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- B4 RRH2x60-4R integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- B4 RRH2x60-4R is optimized for LTE operation
- B4 RRH2x60-4R is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 930x270x146 mm (with solar shield)
- Weight : 25 kg (55 lbs) (with solar shield)

Electrical Data

- Power Supply : -48V DC (-38 to -57V)
- Power Consumption: 346W typ. @2x30W (100%RF), 560W typ. @2x60W (100%RF)

RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity

- Two CPRI (3-6) optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 300m using MM fiber, up to 15km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Four external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B
- Health : EN 50385

Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

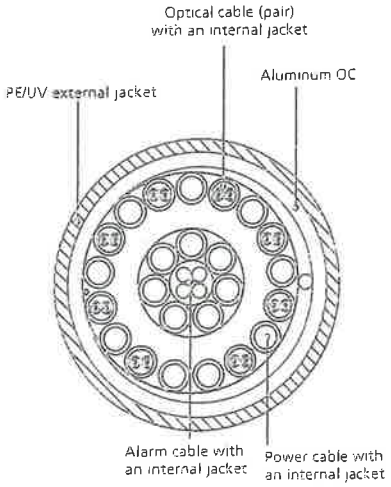


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Woodstock Relo								
Tower Height: 149Ft.								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*AT&T	2	427	138	880	0.0176	0.5867	0.30%	
*AT&T	2	500	138	1900	0.0206	1.0000	0.21%	
*AT&T	1	500	138	740	0.0103	0.4933	0.21%	
Verizon PCS	11	424	147	0.0776	1970	1.0000	7.76%	
Verizon Cellular	9	353	147	0.0529	869	0.5793	9.13%	
Verizon AWS	1	1535	147	0.0255	2145	1.0000	2.55%	
Verizon 700	1	1656	147	0.0276	746	0.4973	5.54%	
								25.70%
* Source: Siting Council								

ATTACHMENT 3

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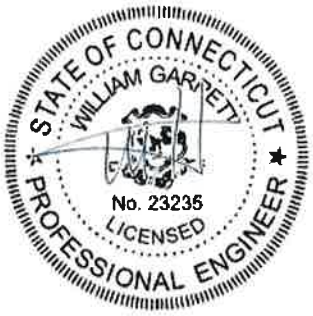
Structural Analysis Report

Structure	:	**149 ft Monopole**
ATC Site Name	:	**Woodstock Relo CT, CT**
ATC Site Number	:	**418609**
Engineering Number	:	**OAA636851_C3_06**
Proposed Carrier	:	**Verizon**
Carrier Site Name	:	**Woodstock CT Relo**
Carrier Site Number	:	**207525**
Site Location	:	**87 West Quasset Road** **Woodstock, CT 06281-3225** **41.929772,-71.989319**
County	:	**Windham**
Date	:	**July 1, 2016**
Max Usage	:	**64%**
Result	:	**Pass**

Reviewed by:
William Garrett, PE
Chief Engineer



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

COA: PEC.0001553

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Table of Contents

AMERICAN TOWER®
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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft monopole to reflect the change in loading by Verizon.

Supporting Documents

Tower Drawings	EEI Project #16757, dated November 30, 2011
Foundation Drawing	EEI Project #16757, dated December 4, 2011
Geotechnical Report	DET Project #2011.17, dated November 23, 2011

Analysis

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

Basic Wind Speed:	100 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.17, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
148.0	148.0	1	VZW Unused Reserve: 12,545 sq in	Low Profile Platform	(15) 1 5/8" Coax	Verizon
138.0	140.0	3	Raycap DC6-48-60-18-8F	Low Profile Platform	(3) 1 5/8" Coax (6) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		15	Ericsson RRUS 11 (Band 12) (55 lb)			
		9	Andrew SBNH-1D6565C (60.8 lbs)			
		3	Ericsson KRC 118 054/1			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
148.0	148.0	6	Antel LPA-80063-6CF-EDIN-X	-	(-	Verizon
		3	Antel BXA-70063-6CF-EDIN-2			
		6	Antel LPA-171063-12CF-EDIN-X			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
148.0	147.0	3	Alcatel-Lucent RRH2X60-1900A-4R	Low Profile Platform	(2) 1 5/8" Hybriflex Cable	Verizon
		3	Alcatel-Lucent RRH2X60-AWS			
		3	Alcatel-Lucent RRH2x60 700			
		2	RFS DB-T1-6Z-8AB-0Z			
		3	Andrew LNX-6514DS-A1M			
		6	Commscope SBNHH-1D65B (72.9")			
		6	Antel LPA-80063/6CF ___ 2°			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	51%	Pass
Shaft	55%	Pass
Base Plate	42%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	4,473.1	64%
Axial (Kips)	52.9	19%
Shear (Kips)	38.8	23%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
148.0	Alcatel-Lucent RRH2X60-1900A-4R	Verizon	1.277	0.904
	Alcatel-Lucent RRH2X60-AWS			
	Alcatel-Lucent RRH2x60 700			
	RFS DB-T1-6Z-8AB-0Z			
	Andrew LNX-6514DS-A1M			
	Commscope SBNHH-1D65B (72.9")			
	Amphenol Antel LPA-80063/6CF ___ 2°			

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

AMERICAN TOWER®
CORPORATION

Standard Conditions

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

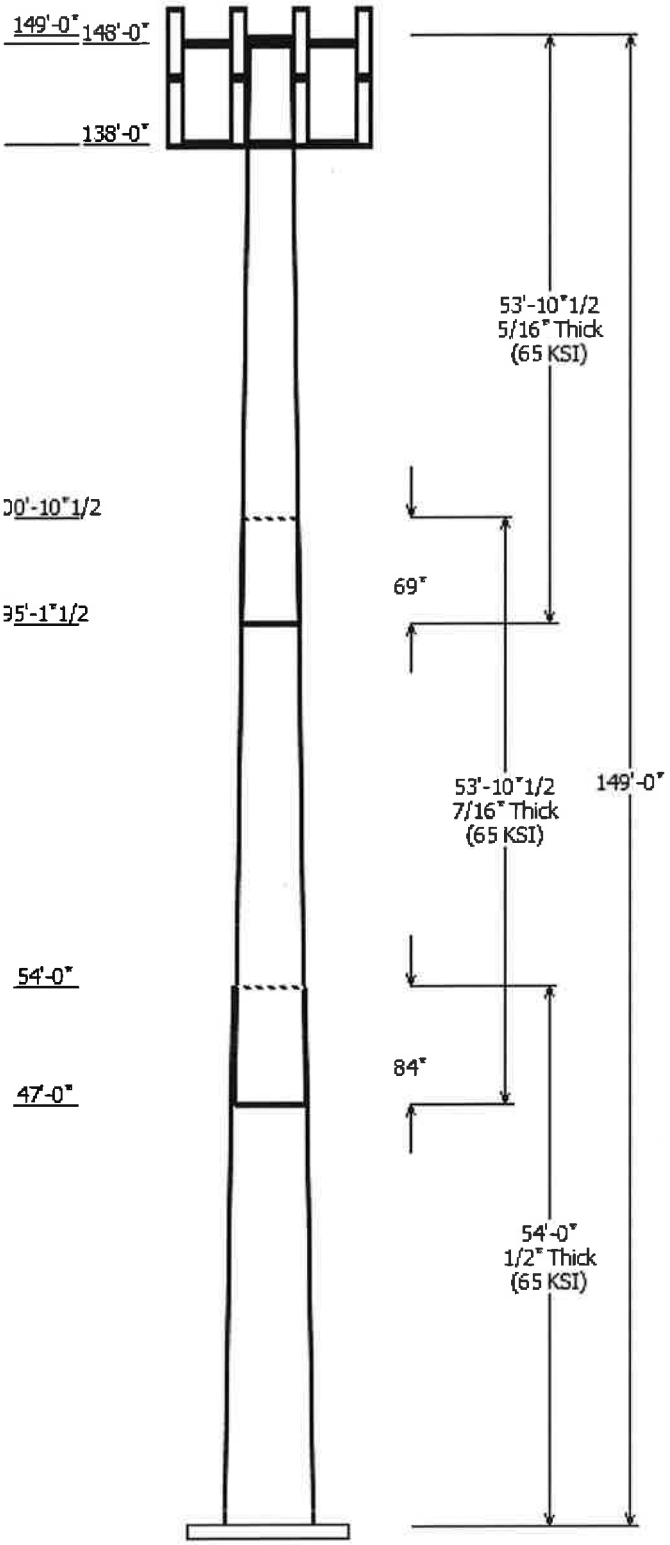
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

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

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

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

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



Job Information

Pole :	418609	Code:	ANSI/TIA-222-G
Description :	149 ft EEI Monopole		
Client :	VERIZON WIRELESS	Struct Class :	II
Location :	Woodstock Relo CT, CT		
Shape :	18 Sides	Exposure :	C
Height :	149.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.21281 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	54.000	49.00	60.50	0.500		0.000	0.212800	65
2	53.875	39.90	51.37	0.438	Slip Joint	84.000	0.212800	65
3	53.875	30.29	41.75	0.313	Slip Joint	69.000	0.212800	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
148.000	147.000	6	Amphenol Antel LPA-
148.000	147.000	6	Commscope SBNHH-1D65B
148.000	147.000	3	Andrew LNX-6514DS-A1M
148.000	147.000	3	Alcatel-Lucent RRH2X60-1900A-
148.000	147.000	3	Alcatel-Lucent RRH2X60-AWS
148.000	148.000	1	VZW Unused Reserve: 12,545
148.000	147.000	2	RFS DB-T1-6Z-8AB-0Z
148.000	147.000	3	Alcatel-Lucent RRH2x60 700
148.000	148.000	1	Flat Low Profile Platform
138.000	138.000	1	Flat Low Profile Platform
138.000	140.000	3	Ericsson KRC 118 054/1
138.000	140.000	9	Andrew SBNH-1D6565C (60.8
138.000	140.000	15	Ericsson RRUS 11 (Band 12) (55
138.000	140.000	3	Raycap DC6-48-60-18-8F

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	138.0	0.39" Fiber Trunk	No
0.000	138.0	0.78" 8 AWG 6	No
0.000	138.0	1 5/8" Coax	No
0.000	148.0	1 5/8" Coax	No
0.000	148.0	1 5/8" Hybriflex	No

Load Cases

1.2D + 1.6W	100 mph with No Ice
0.9D + 1.6W	100 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

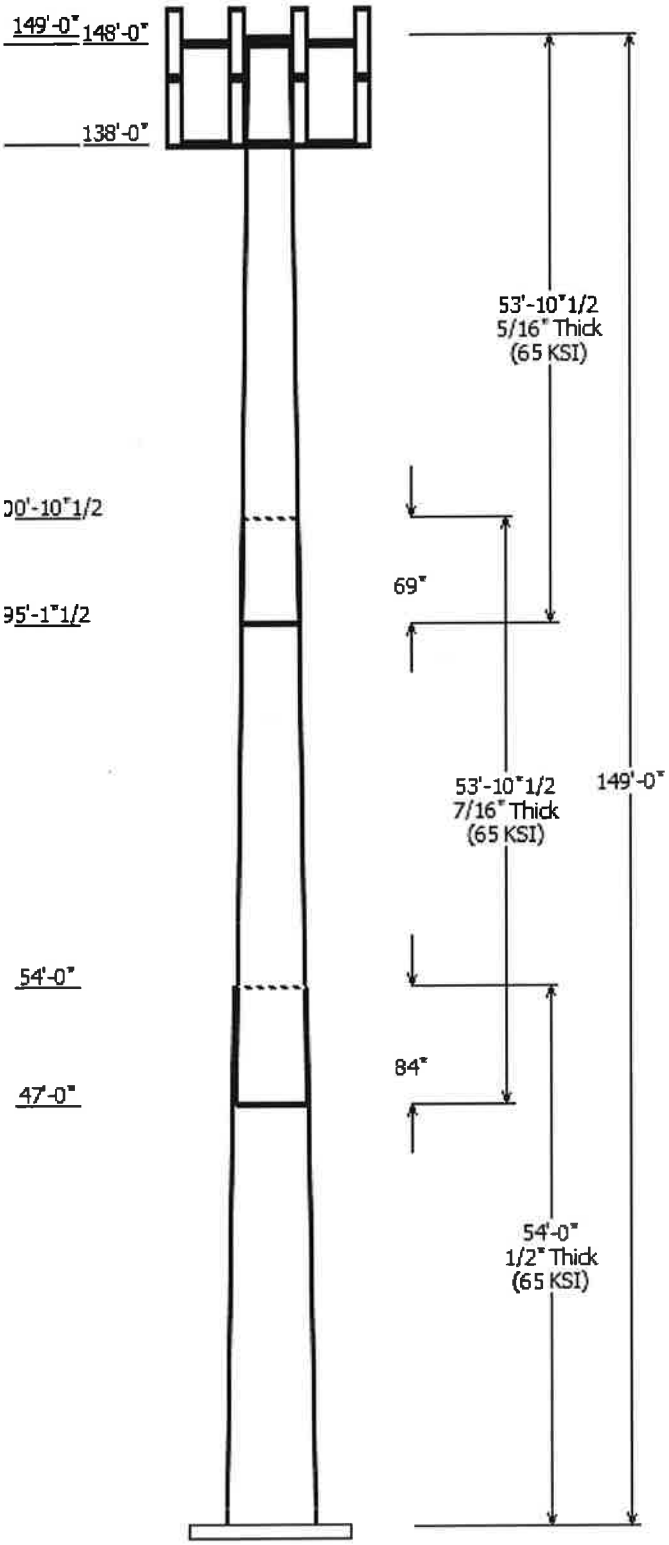
Reactions

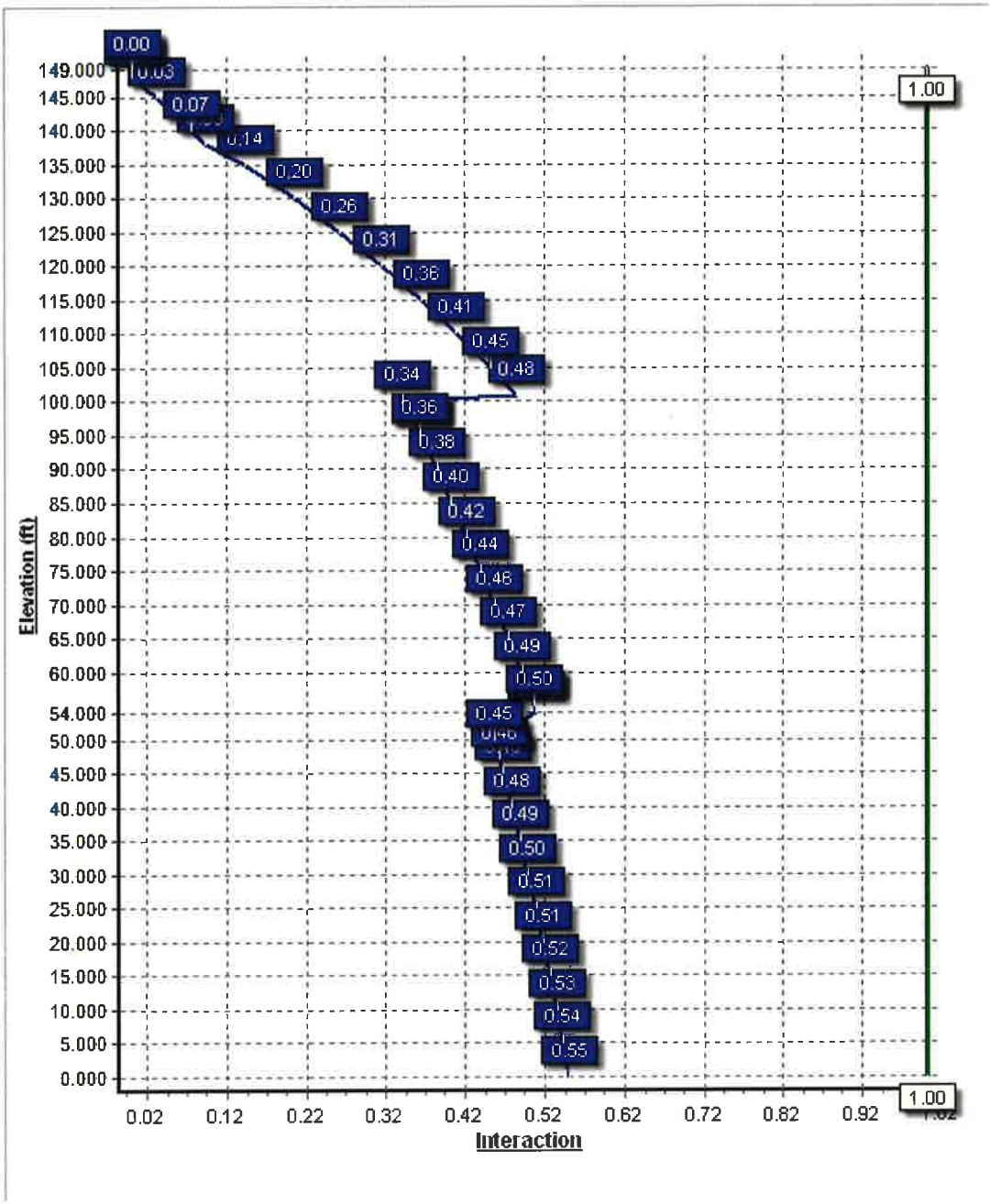
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	4473.11	38.84	52.94
0.9D + 1.6W	4444.59	38.82	39.69

1.2D + 1.0Di + 1.0Wi	1209.00	10.63	87.95
(1.2 + 0.2Sds) * DL + E ELFM	260.83	2.24	52.49
(1.2 + 0.2Sds) * DL + E EMAM	369.83	3.05	52.49
(0.9 - 0.2Sds) * DL + E ELFM	258.82	2.24	36.64
(0.9 - 0.2Sds) * DL + E EMAM	366.98	3.05	36.64
1.0D + 1.0W	1002.90	8.74	44.15

Dish Deflections

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




Elevation (ft)
149.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
54.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction
0.00
0.03
0.07
0.14
0.20
0.26
0.31
0.36
0.41
0.45
0.48
0.34
0.36
0.38
0.40
0.42
0.44
0.46
0.47
0.49
0.50
0.45
0.48
0.49
0.50
0.51
0.51
0.52
0.53
0.54
0.55
1.00
1.00

Site Number:	**418609**	**Code:**	**ANSI/TIA-222-G**
Site Name:	**Woodstock Relo CT, CT**	**Engineering Number:**	**OAA636851_C3_06**
Customer:	**VERIZON WIRELESS**		

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Analysis Parameters

Location:	**Windham County, CT**		
Code:	**ANSI/TIA-222-G**	**Height (ft):**	**149**
Shape:	**18 Sides**	**Base Diameter (in):**	**60.50**
Pole Type:	**Taper**	**Top Diameter (in):**	**30.29**
Pole Manfacturer:	**EE**	**Taper (in/ft) :**	**0.213**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**100 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:**	**1.00 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**1.72**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.039**
S_s:	**0.172**	**S_1:**	**0.063**	**C_s Max:**	**0.039**
F_a:	**1.600**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.183**	**S_{d1}:**	**0.101**		

Load Cases

1.2D + 1.6W	**100 mph with No Ice**
0.9D + 1.6W	**100 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 1.00 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

Site Number: 418609 | Code: ANSI/TIA-222-G |

Site Name: Woodstock Relo CT, CT | Engineering Number: OAA636851_C3_06 | 7/1/2016 8:32:59 AM

Customer: VERIZON WIRELESS

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	54.000	0.5000	65		0.00	15,820	60.50	0.00	95.22	43308.0	19.57	121.00	49.00	54.00	76.98	22884.9	15.52	98.02	0.212819
2-18	53.875	0.4375	65	Slip	84.00	11,507	51.37	47.00	70.73	23183.1	18.94	117.42	39.90	100.88	54.81	10787.1	14.32	91.22	0.212819
3-18	53.875	0.3125	65	Slip	69.00	6,493	41.75	95.13	41.10	8919.7	21.80	133.62	30.29	149.00	29.73	3375.8	15.33	96.93	0.212819
				Shaft Weight		33,820													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
148.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	173.74	3.008	0.67	0.000	-1.000
148.00	Alcatel-Lucent RRH2X60-	3	46.00	1.870	0.50	145.87	2.680	0.50	0.000	-1.000
148.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.50	144.30	2.694	0.50	0.000	-1.000
148.00	Amphenol Antel LPA-	6	27.00	9.590	0.95	428.84	11.439	0.95	0.000	-1.000
148.00	Andrew LNX-6514DS-A1M	3	38.80	8.170	0.83	326.73	9.947	0.83	0.000	-1.000
148.00	Commscope SBNHH-1D65B	6	40.60	8.200	0.83	329.38	9.983	0.83	0.000	-1.000
148.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,363.59	51.548	1.00	0.000	0.000
148.00	RFS DB-T1-6Z-8AB-0Z	2	44.00	4.800	0.67	246.65	5.988	0.67	0.000	-1.000
148.00	VZW Unused Reserve:	1	1449.90	87.190	1.00	2,796.26	168.154	1.00	0.000	0.000
138.00	Andrew SBNH-1D6565C (60.8	9	60.80	11.450	0.84	429.59	13.655	0.84	0.000	2.000
138.00	Ericsson KRC 118 054/1	3	121.00	11.540	0.89	451.35	15.817	0.89	0.000	2.000
138.00	Ericsson RRUS 11 (Band 12)	15	55.00	2.520	0.67	169.58	3.398	0.67	0.000	2.000
138.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,357.50	51.369	1.00	0.000	0.000
138.00	Raycap DC6-48-60-18-8F	3	20.00	1.110	1.00	134.88	2.747	1.00	0.000	2.000
	Totals	59	7295.20			23,100.57			Number of Loadings :	14

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	148.00	15	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	148.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon
0.00	138.00	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	138.00	6	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	138.00	3	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility

Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	60.500	95.217	43,308.0	19.57	121.00	78.4	1409.	0.0	0.0
5.00		0.5000	59.436	93.528	41,044.4	19.20	118.87	78.8	1360.	0.0	1,605.6
10.00		0.5000	58.372	91.839	38,861.1	18.82	116.74	79.3	1311.	0.0	1,576.9
15.00		0.5000	57.308	90.151	36,756.7	18.45	114.62	79.7	1263.	0.0	1,548.2
20.00		0.5000	56.244	88.462	34,729.6	18.07	112.49	80.1	1216.	0.0	1,519.4
25.00		0.5000	55.180	86.773	32,778.5	17.70	110.36	80.6	1170.	0.0	1,490.7
30.00		0.5000	54.115	85.085	30,901.8	17.32	108.23	81.0	1124.	0.0	1,462.0
35.00		0.5000	53.051	83.396	29,098.2	16.95	106.10	81.5	1080.	0.0	1,433.3
40.00		0.5000	51.987	81.707	27,366.1	16.57	103.97	81.9	1036.	0.0	1,404.5
45.00		0.5000	50.923	80.019	25,704.2	16.19	101.85	82.4	994.2	0.0	1,375.8
47.00	Bot - Section 2	0.5000	50.498	79.343	25,058.8	16.04	101.00	82.5	977.4	0.0	542.3
50.00		0.5000	49.859	78.330	24,111.0	15.82	99.72	82.6	952.5	0.0	1,522.3
54.00	Top - Section 1	0.4375	49.883	68.658	21,207.9	18.34	114.02	79.8	837.4	0.0	1,999.5
55.00		0.4375	49.670	68.363	20,935.2	18.26	113.53	79.9	830.2	0.0	233.1
60.00		0.4375	48.606	66.885	19,606.9	17.83	111.10	80.4	794.5	0.0	1,150.6
65.00		0.4375	47.542	65.408	18,335.9	17.40	108.67	80.9	759.6	0.0	1,125.4
70.00		0.4375	46.478	63.930	17,121.2	16.97	106.23	81.4	725.6	0.0	1,100.3
75.00		0.4375	45.414	62.453	15,961.3	16.54	103.80	81.9	692.3	0.0	1,075.1
80.00		0.4375	44.349	60.975	14,855.0	16.11	101.37	82.5	659.7	0.0	1,050.0
85.00		0.4375	43.285	59.498	13,801.0	15.68	98.94	82.6	628.0	0.0	1,024.9
90.00		0.4375	42.221	58.020	12,798.1	15.25	96.51	82.6	597.0	0.0	999.7
95.00		0.4375	41.157	56.542	11,845.0	14.82	94.07	82.6	566.9	0.0	974.6
95.13	Bot - Section 3	0.4375	41.131	56.505	11,821.8	14.81	94.01	82.6	566.1	0.0	24.0
100.0		0.4375	40.093	55.065	10,940.5	14.40	91.64	82.6	537.5	0.0	1,598.7
100.8	Top - Section 2	0.3125	40.532	39.891	8,152.7	21.11	129.70	76.6	396.2	0.0	282.6
105.0		0.3125	39.654	39.020	7,630.4	20.61	126.89	77.2	379.0	0.0	553.8
110.0		0.3125	38.590	37.965	7,027.9	20.01	123.49	77.9	358.7	0.0	654.9
115.0		0.3125	37.526	36.910	6,457.9	19.41	120.08	78.6	339.0	0.0	637.0
120.0		0.3125	36.462	35.854	5,919.6	18.81	116.68	79.3	319.8	0.0	619.0
125.0		0.3125	35.398	34.799	5,412.1	18.21	113.27	80.0	301.1	0.0	601.0
130.0		0.3125	34.334	33.743	4,934.4	17.61	109.87	80.7	283.1	0.0	583.1
135.0		0.3125	33.269	32.688	4,485.8	17.01	106.46	81.4	265.6	0.0	565.1
138.0		0.3125	32.631	32.055	4,230.1	16.65	104.42	81.8	255.3	0.0	330.5
140.0		0.3125	32.205	31.633	4,065.1	16.41	103.06	82.1	248.6	0.0	216.7
145.0		0.3125	31.141	30.577	3,671.7	15.81	99.65	82.6	232.2	0.0	529.2
148.0		0.3125	30.503	29.944	3,448.2	15.45	97.61	82.6	222.7	0.0	308.9
149.0		0.3125	30.290	29.733	3,375.8	15.33	96.93	82.6	219.5	0.0	101.5
											33,820.3

Load Case: 1.2D + 1.6W — 100 mph with No Ice — 21 Iterations

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

Wind Importance Factor : 1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		300.0	0.0					0.0	0.0	300.0	0.0	0.0	0.0
5.00		594.7	1,926.8					0.0	125.8	594.7	2,052.5	0.0	0.0
10.00		584.0	1,892.3					0.0	125.8	584.0	2,018.0	0.0	0.0
15.00		582.4	1,857.8					0.0	125.8	582.4	1,983.6	0.0	0.0
20.00		596.2	1,823.3					0.0	125.8	596.2	1,949.1	0.0	0.0
25.00		613.3	1,788.9					0.0	125.8	613.3	1,914.6	0.0	0.0
30.00		625.2	1,754.4					0.0	125.8	625.2	1,880.1	0.0	0.0
35.00		633.3	1,719.9					0.0	125.8	633.3	1,845.7	0.0	0.0
40.00		638.3	1,685.4					0.0	125.8	638.3	1,811.2	0.0	0.0
45.00		448.4	1,651.0					0.0	125.8	448.4	1,776.7	0.0	0.0
47.00	Bot - Section 2	324.2	650.7					0.0	50.3	324.2	701.0	0.0	0.0
50.00		457.2	1,826.7					0.0	75.5	457.2	1,902.2	0.0	0.0
54.00	Top - Section 1	326.5	2,399.4					0.0	100.6	326.5	2,500.0	0.0	0.0
55.00		391.0	279.8					0.0	25.2	391.0	304.9	0.0	0.0
60.00		650.1	1,380.7					0.0	125.8	650.1	1,506.4	0.0	0.0
65.00		646.7	1,350.5					0.0	125.8	646.7	1,476.3	0.0	0.0
70.00		642.2	1,320.3					0.0	125.8	642.2	1,446.1	0.0	0.0
75.00		636.7	1,290.2					0.0	125.8	636.7	1,415.9	0.0	0.0
80.00		630.3	1,260.0					0.0	125.8	630.3	1,385.8	0.0	0.0
85.00		623.1	1,229.8					0.0	125.8	623.1	1,355.6	0.0	0.0
90.00		615.1	1,199.7					0.0	125.8	615.1	1,325.4	0.0	0.0
95.00		313.1	1,169.5					0.0	125.8	313.1	1,295.3	0.0	0.0
95.13	Bot - Section 3	305.5	28.9					0.0	3.1	305.5	32.0	0.0	0.0
100.00		351.0	1,918.5					0.0	122.6	351.0	2,041.1	0.0	0.0
100.88	Top - Section 2	300.9	339.1					0.0	22.0	300.9	361.1	0.0	0.0
105.00		543.8	664.6					0.0	103.8	543.8	768.3	0.0	0.0
110.00		586.5	785.9					0.0	125.8	586.5	911.7	0.0	0.0
115.00		575.7	764.3					0.0	125.8	575.7	890.1	0.0	0.0
120.00		564.4	742.8					0.0	125.8	564.4	868.6	0.0	0.0
125.00		552.7	721.3					0.0	125.8	552.7	847.0	0.0	0.0
130.00		540.5	699.7					0.0	125.8	540.5	825.5	0.0	0.0
135.00		424.4	678.2					0.0	125.8	424.4	803.9	0.0	0.0
138.00	Appertunance(s)	260.8	396.5	8,306.3	0.0	13,586.4	3,954.2	0.0	75.5	8,567.1	4,426.2	0.0	0.0
140.00		357.7	260.1					0.0	35.8	357.7	295.8	0.0	0.0
145.00		403.5	635.1					0.0	89.4	403.5	724.5	0.0	0.0
148.00	Appertunance(s)	198.5	370.7	12,879.6	0.0	-6,214.3	4,800.0	0.0	53.6	13,078.1	5,224.3	0.0	0.0
149.00		49.2	121.8					0.0	0.0	49.2	121.8	0.0	0.0
								Totals:		39,073.1	52,988.3	0.00	0.00

Site Number: 418609 Code: ANSI/TIA-222-G

Site Name: Woodstock Relo CT, CT Engineering Number: OAA636851_C3_06 7/1/2016 8:33:00 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W 100 mph with No Ice 21 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-52.94	-38.84	0.00	-4,473.11	0.00	4,473.11	6,716.77	3,358.39	16,551.8	8,288.22	0.00	0.00	0.548
5.00	-50.79	-38.37	0.00	-4,278.91	0.00	4,278.91	6,634.81	3,317.40	16,057.4	8,040.68	0.08	-0.14	0.540
10.00	-48.68	-37.90	0.00	-4,087.05	0.00	4,087.05	6,551.49	3,275.75	15,567.1	7,795.15	0.31	-0.29	0.532
15.00	-46.60	-37.43	0.00	-3,897.53	0.00	3,897.53	6,466.84	3,233.42	15,081.0	7,551.74	0.69	-0.43	0.523
20.00	-44.56	-36.93	0.00	-3,710.39	0.00	3,710.39	6,380.85	3,190.42	14,599.3	7,310.53	1.22	-0.58	0.515
25.00	-42.56	-36.41	0.00	-3,525.75	0.00	3,525.75	6,293.51	3,146.75	14,122.2	7,071.60	1.91	-0.73	0.505
30.00	-40.60	-35.86	0.00	-3,343.72	0.00	3,343.72	6,204.83	3,102.42	13,649.8	6,835.05	2.76	-0.88	0.496
35.00	-38.67	-35.30	0.00	-3,164.43	0.00	3,164.43	6,114.81	3,057.41	13,182.3	6,600.97	3.76	-1.03	0.486
40.00	-36.78	-34.72	0.00	-2,987.94	0.00	2,987.94	6,023.45	3,011.73	12,719.9	6,369.44	4.92	-1.18	0.475
45.00	-34.95	-34.30	0.00	-2,814.34	0.00	2,814.34	5,930.75	2,965.37	12,262.8	6,140.55	6.23	-1.33	0.464
47.00	-34.21	-34.00	0.00	-2,745.75	0.00	2,745.75	5,893.29	2,946.65	12,081.5	6,049.76	6.80	-1.39	0.460
50.00	-32.26	-33.56	0.00	-2,643.74	0.00	2,643.74	5,819.53	2,909.76	11,776.4	5,896.99	7.71	-1.48	0.454
54.00	-29.73	-33.20	0.00	-2,509.51	0.00	2,509.51	4,932.79	2,466.39	10,012.2	5,013.54	9.00	-1.61	0.507
55.00	-29.38	-32.85	0.00	-2,476.31	0.00	2,476.31	4,917.76	2,458.88	9,938.37	4,976.57	9.34	-1.64	0.504
60.00	-27.80	-32.24	0.00	-2,312.03	0.00	2,312.03	4,841.84	2,420.92	9,571.58	4,792.90	11.15	-1.80	0.488
65.00	-26.25	-31.62	0.00	-2,150.84	0.00	2,150.84	4,764.57	2,382.28	9,208.89	4,611.29	13.12	-1.96	0.472
70.00	-24.75	-30.99	0.00	-1,992.76	0.00	1,992.76	4,685.96	2,342.98	8,850.47	4,431.81	15.26	-2.12	0.455
75.00	-23.27	-30.37	0.00	-1,837.79	0.00	1,837.79	4,606.01	2,303.00	8,496.51	4,254.57	17.56	-2.28	0.437
80.00	-21.83	-29.74	0.00	-1,685.96	0.00	1,685.96	4,524.71	2,262.36	8,147.17	4,079.64	20.04	-2.44	0.418
85.00	-20.43	-29.11	0.00	-1,537.26	0.00	1,537.26	4,420.37	2,210.18	7,764.52	3,888.03	22.67	-2.59	0.400
90.00	-19.06	-28.49	0.00	-1,391.70	0.00	1,391.70	4,310.59	2,155.30	7,381.75	3,696.36	25.47	-2.74	0.381
95.00	-17.74	-28.13	0.00	-1,249.27	0.00	1,249.27	4,200.82	2,100.41	7,008.66	3,509.54	28.42	-2.89	0.360
95.13	-17.69	-27.85	0.00	-1,245.76	0.00	1,245.76	4,198.07	2,099.04	6,999.46	3,504.93	28.50	-2.89	0.360
100.00	-15.63	-27.41	0.00	-1,110.00	0.00	1,110.00	4,091.04	2,045.52	6,645.25	3,327.56	31.52	-3.03	0.338
100.88	-15.26	-27.11	0.00	-1,086.01	0.00	1,086.01	2,749.21	1,374.61	4,543.82	2,275.29	32.08	-3.06	0.483
105.00	-14.45	-26.56	0.00	-974.18	0.00	974.18	2,709.67	1,354.83	4,379.95	2,193.23	34.77	-3.17	0.450
110.00	-13.50	-25.97	0.00	-841.36	0.00	841.36	2,660.51	1,330.25	4,183.25	2,094.74	38.18	-3.34	0.407
115.00	-12.58	-25.37	0.00	-711.53	0.00	711.53	2,610.00	1,305.00	3,988.84	1,997.38	41.76	-3.50	0.361
120.00	-11.69	-24.78	0.00	-584.68	0.00	584.68	2,558.16	1,279.08	3,796.88	1,901.26	45.50	-3.64	0.312
125.00	-10.83	-24.20	0.00	-460.78	0.00	460.78	2,504.97	1,252.49	3,607.56	1,806.46	49.38	-3.76	0.260
130.00	-10.01	-23.62	0.00	-339.80	0.00	339.80	2,450.45	1,225.22	3,421.06	1,713.07	53.38	-3.87	0.203
135.00	-9.21	-23.15	0.00	-221.71	0.00	221.71	2,394.58	1,197.29	3,237.54	1,621.18	57.47	-3.95	0.141
138.00	-5.38	-14.30	0.00	-138.68	0.00	138.68	2,360.41	1,180.21	3,128.95	1,566.80	59.97	-3.99	0.091
140.00	-5.11	-13.92	0.00	-110.08	0.00	110.08	2,337.37	1,168.68	3,057.20	1,530.87	61.64	-4.00	0.074
145.00	-4.41	-13.47	0.00	-40.47	0.00	40.47	2,271.73	1,135.87	2,871.25	1,437.76	65.84	-4.03	0.030
148.00	-0.12	-0.06	0.00	-0.06	0.00	0.06	2,224.69	1,112.34	2,752.97	1,378.53	68.38	-4.03	0.000
149.00	0.00	-0.05	0.00	0.00	0.00	0.00	2,209.00	1,104.50	2,714.10	1,359.07	69.22	-4.03	0.000

Site Number: 418609 Code: ANSI/TIA-222-G

Site Name: Woodstock Relo CT, CT Engineering Number: OAA636851_C3_06 7/1/2016 8:33:00 AM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W — 100 mph with No Ice (Reduced DL) — 21 Iterations

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

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		300.0	0.0					0.0	0.0	300.0	0.0	0.0	0.0
5.00		594.7	1,445.1					0.0	94.3	594.7	1,539.4	0.0	0.0
10.00		584.0	1,419.2					0.0	94.3	584.0	1,513.5	0.0	0.0
15.00		582.4	1,393.4					0.0	94.3	582.4	1,487.7	0.0	0.0
20.00		596.2	1,367.5					0.0	94.3	596.2	1,461.8	0.0	0.0
25.00		613.3	1,341.6					0.0	94.3	613.3	1,436.0	0.0	0.0
30.00		625.2	1,315.8					0.0	94.3	625.2	1,410.1	0.0	0.0
35.00		633.3	1,289.9					0.0	94.3	633.3	1,384.2	0.0	0.0
40.00		638.3	1,264.1					0.0	94.3	638.3	1,358.4	0.0	0.0
45.00		448.4	1,238.2					0.0	94.3	448.4	1,332.5	0.0	0.0
47.00	Bot - Section 2	324.2	488.0					0.0	37.7	324.2	525.8	0.0	0.0
50.00		457.2	1,370.0					0.0	56.6	457.2	1,426.6	0.0	0.0
54.00	Top - Section 1	326.5	1,799.6					0.0	75.5	326.5	1,875.0	0.0	0.0
55.00		391.0	209.8					0.0	18.9	391.0	228.7	0.0	0.0
60.00		650.1	1,035.5					0.0	94.3	650.1	1,129.8	0.0	0.0
65.00		646.7	1,012.9					0.0	94.3	646.7	1,107.2	0.0	0.0
70.00		642.2	990.2					0.0	94.3	642.2	1,084.6	0.0	0.0
75.00		636.7	967.6					0.0	94.3	636.7	1,061.9	0.0	0.0
80.00		630.3	945.0					0.0	94.3	630.3	1,039.3	0.0	0.0
85.00		623.1	922.4					0.0	94.3	623.1	1,016.7	0.0	0.0
90.00		615.1	899.7					0.0	94.3	615.1	994.1	0.0	0.0
95.00		313.1	877.1					0.0	94.3	313.1	971.4	0.0	0.0
95.13	Bot - Section 3	305.5	21.6					0.0	2.4	305.5	24.0	0.0	0.0
100.00		351.0	1,438.9					0.0	92.0	351.0	1,530.8	0.0	0.0
100.88	Top - Section 2	300.9	254.4					0.0	16.5	300.9	270.9	0.0	0.0
105.00		543.8	498.4					0.0	77.8	543.8	576.3	0.0	0.0
110.00		586.5	589.4					0.0	94.3	586.5	683.7	0.0	0.0
115.00		575.7	573.3					0.0	94.3	575.7	667.6	0.0	0.0
120.00		564.4	557.1					0.0	94.3	564.4	651.4	0.0	0.0
125.00		552.7	540.9					0.0	94.3	552.7	635.3	0.0	0.0
130.00		540.5	524.8					0.0	94.3	540.5	619.1	0.0	0.0
135.00		424.4	508.6					0.0	94.3	424.4	602.9	0.0	0.0
138.00	Appertunance(s)	260.8	297.4	8,306.3	0.0	13,586.4	2,965.7	0.0	56.6	8,567.1	3,319.7	0.0	0.0
140.00		357.7	195.0					0.0	26.8	357.7	221.9	0.0	0.0
145.00		403.5	476.3					0.0	67.0	403.5	543.3	0.0	0.0
148.00	Appertunance(s)	198.5	278.0	12,879.6	0.0	-6,214.3	3,600.0	0.0	40.2	13,078.1	3,918.2	0.0	0.0
149.00		49.2	91.4					0.0	0.0	49.2	91.4	0.0	0.0
								Totals:		39,073.1	39,741.2	0.00	0.00

Site Number: 418609 Code: ANSI/TIA-222-G

Site Name: Woodstock Relo CT, CT Engineering Number: OAA636851_C3_06 7/1/2016 8:33:01 AM

Customer: VERIZON WIRELESS

Load Case: 0.9D + 1.6W 100 mph with No Ice (Reduced DL) 21 Iterations

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

Wind Importance Factor : 1.00

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	-39.69	-38.82	0.00	-4,444.59	0.00	4,444.59	6,716.77	3,358.39	16,551.8	8,288.22	0.00	0.00	0.542
5.00	-38.06	-38.32	0.00	-4,250.47	0.00	4,250.47	6,634.81	3,317.40	16,057.4	8,040.68	0.08	-0.14	0.534
10.00	-36.45	-37.82	0.00	-4,058.86	0.00	4,058.86	6,551.49	3,275.75	15,567.1	7,795.15	0.30	-0.29	0.526
15.00	-34.87	-37.32	0.00	-3,869.74	0.00	3,869.74	6,466.84	3,233.42	15,081.0	7,551.74	0.68	-0.43	0.518
20.00	-33.32	-36.80	0.00	-3,683.13	0.00	3,683.13	6,380.85	3,190.42	14,599.3	7,310.53	1.21	-0.58	0.509
25.00	-31.80	-36.25	0.00	-3,499.15	0.00	3,499.15	6,293.51	3,146.75	14,122.2	7,071.60	1.90	-0.73	0.500
30.00	-30.31	-35.68	0.00	-3,317.90	0.00	3,317.90	6,204.83	3,102.42	13,649.8	6,835.05	2.74	-0.87	0.490
35.00	-28.84	-35.10	0.00	-3,139.48	0.00	3,139.48	6,114.81	3,057.41	13,182.3	6,600.97	3.73	-1.02	0.480
40.00	-27.40	-34.51	0.00	-2,963.96	0.00	2,963.96	6,023.45	3,011.73	12,719.9	6,369.44	4.88	-1.17	0.470
45.00	-26.02	-34.08	0.00	-2,791.41	0.00	2,791.41	5,930.75	2,965.37	12,262.8	6,140.55	6.19	-1.32	0.459
47.00	-25.46	-33.78	0.00	-2,723.25	0.00	2,723.25	5,893.29	2,946.65	12,081.5	6,049.76	6.76	-1.38	0.455
50.00	-23.98	-33.33	0.00	-2,621.92	0.00	2,621.92	5,819.53	2,909.76	11,776.4	5,896.99	7.65	-1.47	0.449
54.00	-22.07	-32.98	0.00	-2,488.60	0.00	2,488.60	4,932.79	2,466.39	10,012.2	5,013.54	8.94	-1.59	0.501
55.00	-21.80	-32.62	0.00	-2,455.62	0.00	2,455.62	4,917.76	2,458.88	9,938.37	4,976.57	9.28	-1.62	0.498
60.00	-20.60	-32.00	0.00	-2,292.51	0.00	2,292.51	4,841.84	2,420.92	9,571.58	4,792.90	11.06	-1.79	0.483
65.00	-19.43	-31.37	0.00	-2,132.53	0.00	2,132.53	4,764.57	2,382.28	9,208.89	4,611.29	13.02	-1.95	0.467
70.00	-18.28	-30.74	0.00	-1,975.69	0.00	1,975.69	4,685.96	2,342.98	8,850.47	4,431.81	15.14	-2.11	0.450
75.00	-17.16	-30.11	0.00	-1,822.00	0.00	1,822.00	4,606.01	2,303.00	8,496.51	4,254.57	17.43	-2.26	0.432
80.00	-16.07	-29.48	0.00	-1,671.45	0.00	1,671.45	4,524.71	2,262.36	8,147.17	4,079.64	19.89	-2.42	0.413
85.00	-15.00	-28.85	0.00	-1,524.05	0.00	1,524.05	4,420.37	2,210.18	7,764.52	3,888.03	22.50	-2.57	0.396
90.00	-13.97	-28.23	0.00	-1,379.79	0.00	1,379.79	4,310.59	2,155.30	7,381.75	3,696.36	25.28	-2.72	0.377
95.00	-12.98	-27.89	0.00	-1,238.64	0.00	1,238.64	4,200.82	2,100.41	7,008.66	3,509.54	28.20	-2.87	0.356
95.13	-12.93	-27.60	0.00	-1,235.16	0.00	1,235.16	4,198.07	2,099.04	6,999.46	3,504.93	28.28	-2.87	0.356
100.00	-11.38	-27.18	0.00	-1,100.63	0.00	1,100.63	4,091.04	2,045.52	6,645.25	3,327.56	31.28	-3.01	0.334
100.88	-11.10	-26.88	0.00	-1,076.85	0.00	1,076.85	2,749.21	1,374.61	4,543.82	2,275.29	31.84	-3.03	0.478
105.00	-10.49	-26.33	0.00	-965.97	0.00	965.97	2,709.67	1,354.83	4,379.95	2,193.23	34.50	-3.14	0.445
110.00	-9.76	-25.74	0.00	-834.30	0.00	834.30	2,660.51	1,330.25	4,183.25	2,094.74	37.89	-3.31	0.402
115.00	-9.07	-25.15	0.00	-705.62	0.00	705.62	2,610.00	1,305.00	3,988.84	1,997.38	41.44	-3.47	0.357
120.00	-8.39	-24.56	0.00	-579.90	0.00	579.90	2,558.16	1,279.08	3,796.88	1,901.26	45.15	-3.61	0.309
125.00	-7.75	-23.99	0.00	-457.09	0.00	457.09	2,504.97	1,252.49	3,607.56	1,806.46	48.99	-3.73	0.256
130.00	-7.13	-23.42	0.00	-337.17	0.00	337.17	2,450.45	1,225.22	3,421.06	1,713.07	52.96	-3.84	0.200
135.00	-6.53	-22.96	0.00	-220.08	0.00	220.08	2,394.58	1,197.29	3,237.54	1,621.18	57.02	-3.92	0.139
138.00	-3.80	-14.19	0.00	-137.62	0.00	137.62	2,360.41	1,180.21	3,128.95	1,566.80	59.50	-3.95	0.090
140.00	-3.60	-13.81	0.00	-109.25	0.00	109.25	2,337.37	1,168.68	3,057.20	1,530.87	61.16	-3.97	0.073
145.00	-3.08	-13.37	0.00	-40.18	0.00	40.18	2,271.73	1,135.87	2,871.25	1,437.76	65.33	-4.00	0.029
148.00	-0.09	-0.06	0.00	-0.06	0.00	0.06	2,224.69	1,112.34	2,752.97	1,378.53	67.84	-4.00	0.000
149.00	0.00	-0.05	0.00	0.00	0.00	0.00	2,209.00	1,104.50	2,714.10	1,359.07	68.68	-4.00	0.000

Site Number: 418609 Code: ANSI/TIA-222-G

Site Name: Woodstock Relo CT, CT Engineering Number: OAA636851_C3_06 7/1/2016 8:33:01 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 20 Iterations

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

Dead Load Factor : 1.20 Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		90.9	0.0					0.0	0.0	90.9	0.0	0.0	0.0
5.00		180.8	2,517.0					0.0	125.8	180.8	2,642.8	0.0	0.0
10.00		178.5	2,541.5					0.0	125.8	178.5	2,667.3	0.0	0.0
15.00		178.7	2,529.9					0.0	125.8	178.7	2,655.7	0.0	0.0
20.00		183.4	2,506.7					0.0	125.8	183.4	2,632.4	0.0	0.0
25.00		189.2	2,477.3					0.0	125.8	189.2	2,603.1	0.0	0.0
30.00		193.4	2,444.2					0.0	125.8	193.4	2,569.9	0.0	0.0
35.00		196.3	2,408.4					0.0	125.8	196.3	2,534.2	0.0	0.0
40.00		198.4	2,370.7					0.0	125.8	198.4	2,496.5	0.0	0.0
45.00		139.6	2,331.5					0.0	125.8	139.6	2,457.3	0.0	0.0
47.00	Bot - Section 2	101.0	923.0					0.0	50.3	101.0	973.3	0.0	0.0
50.00		142.6	2,239.2					0.0	75.5	142.6	2,314.7	0.0	0.0
54.00	Top - Section 1	101.9	2,944.5					0.0	100.6	101.9	3,045.1	0.0	0.0
55.00		122.3	416.1					0.0	25.2	122.3	441.3	0.0	0.0
60.00		203.7	2,052.2					0.0	125.8	203.7	2,178.0	0.0	0.0
65.00		203.1	2,013.7					0.0	125.8	203.1	2,139.5	0.0	0.0
70.00		202.2	1,974.5					0.0	125.8	202.2	2,100.3	0.0	0.0
75.00		201.0	1,934.8					0.0	125.8	201.0	2,060.6	0.0	0.0
80.00		199.5	1,894.7					0.0	125.8	199.5	2,020.4	0.0	0.0
85.00		197.7	1,854.0					0.0	125.8	197.7	1,979.8	0.0	0.0
90.00		195.7	1,813.0					0.0	125.8	195.7	1,938.8	0.0	0.0
95.00		99.8	1,771.7					0.0	125.8	99.8	1,897.4	0.0	0.0
95.13	Bot - Section 3	97.5	43.9					0.0	3.1	97.5	47.1	0.0	0.0
100.00		112.0	2,502.9					0.0	122.6	112.0	2,625.5	0.0	0.0
100.88	Top - Section 2	96.3	443.9					0.0	22.0	96.3	465.9	0.0	0.0
105.00		174.4	1,149.6					0.0	103.8	174.4	1,253.3	0.0	0.0
110.00		188.7	1,361.4					0.0	125.8	188.7	1,487.2	0.0	0.0
115.00		185.8	1,327.6					0.0	125.8	185.8	1,453.3	0.0	0.0
120.00		182.8	1,293.5					0.0	125.8	182.8	1,419.2	0.0	0.0
125.00		179.7	1,259.2					0.0	125.8	179.7	1,384.9	0.0	0.0
130.00		176.4	1,224.6					0.0	125.8	176.4	1,350.4	0.0	0.0
135.00		139.0	1,189.9					0.0	125.8	139.0	1,315.7	0.0	0.0
138.00	Appertunance(s)	85.7	699.0	1,830.8	0.0	2,730.9	10,769.5	0.0	75.5	1,916.4	11,544.0	0.0	0.0
140.00		117.9	459.6					0.0	35.8	117.9	495.4	0.0	0.0
145.00		133.3	1,119.9					0.0	89.4	133.3	1,209.3	0.0	0.0
148.00	Appertunance(s)	65.8	656.9	3,208.0	0.0	-1,188.3	14,624.3	0.0	53.6	3,273.8	15,334.8	0.0	0.0
149.00		16.3	216.8					0.0	0.0	16.3	216.8	0.0	0.0
								Totals:		10,690.2	87,951.2	0.00	0.00

Site Number: 418609 | Code: ANSI/TIA-222-G |

Site Name: Woodstock Relo CT, CT | Engineering Number: OAA636851_C3_06 | 7/1/2016 8:33:01 AM

Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 1.00 in Radial Ice — 20 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	-87.95	-10.63	0.00	-1,209.00	0.00	1,209.00	6,716.77	3,358.39	16,551.8	8,288.22	0.00	0.00	0.159
5.00	-85.30	-10.51	0.00	-1,155.86	0.00	1,155.86	6,634.81	3,317.40	16,057.4	8,040.68	0.02	-0.04	0.157
10.00	-82.62	-10.38	0.00	-1,103.33	0.00	1,103.33	6,551.49	3,275.75	15,567.1	7,795.15	0.08	-0.08	0.154
15.00	-79.96	-10.25	0.00	-1,051.42	0.00	1,051.42	6,466.84	3,233.42	15,081.0	7,551.74	0.19	-0.12	0.152
20.00	-77.32	-10.12	0.00	-1,000.16	0.00	1,000.16	6,380.85	3,190.42	14,599.3	7,310.53	0.33	-0.16	0.149
25.00	-74.71	-9.97	0.00	-949.57	0.00	949.57	6,293.51	3,146.75	14,122.2	7,071.60	0.52	-0.20	0.146
30.00	-72.14	-9.82	0.00	-899.71	0.00	899.71	6,204.83	3,102.42	13,649.8	6,835.05	0.74	-0.24	0.143
35.00	-69.60	-9.66	0.00	-850.62	0.00	850.62	6,114.81	3,057.41	13,182.3	6,600.97	1.01	-0.28	0.140
40.00	-67.09	-9.50	0.00	-802.31	0.00	802.31	6,023.45	3,011.73	12,719.9	6,369.44	1.33	-0.32	0.137
45.00	-64.63	-9.37	0.00	-754.83	0.00	754.83	5,930.75	2,965.37	12,262.8	6,140.55	1.68	-0.36	0.134
47.00	-63.66	-9.29	0.00	-736.08	0.00	736.08	5,893.29	2,946.65	12,081.5	6,049.76	1.84	-0.37	0.132
50.00	-61.34	-9.16	0.00	-708.21	0.00	708.21	5,819.53	2,909.76	11,776.4	5,896.99	2.08	-0.40	0.131
54.00	-58.29	-9.06	0.00	-671.56	0.00	671.56	4,932.79	2,466.39	10,012.2	5,013.54	2.43	-0.43	0.146
55.00	-57.85	-8.96	0.00	-662.50	0.00	662.50	4,917.76	2,458.88	9,938.37	4,976.57	2.52	-0.44	0.145
60.00	-55.66	-8.78	0.00	-617.70	0.00	617.70	4,841.84	2,420.92	9,571.58	4,792.90	3.00	-0.48	0.140
65.00	-53.52	-8.60	0.00	-573.80	0.00	573.80	4,764.57	2,382.28	9,208.89	4,611.29	3.53	-0.53	0.136
70.00	-51.42	-8.42	0.00	-530.80	0.00	530.80	4,685.96	2,342.98	8,850.47	4,431.81	4.11	-0.57	0.131
75.00	-49.35	-8.23	0.00	-488.73	0.00	488.73	4,606.01	2,303.00	8,496.51	4,254.57	4.73	-0.61	0.126
80.00	-47.33	-8.04	0.00	-447.58	0.00	447.58	4,524.71	2,262.36	8,147.17	4,079.64	5.39	-0.65	0.120
85.00	-45.34	-7.85	0.00	-407.38	0.00	407.38	4,420.37	2,210.18	7,764.52	3,888.03	6.10	-0.69	0.115
90.00	-43.40	-7.66	0.00	-368.11	0.00	368.11	4,310.59	2,155.30	7,381.75	3,696.36	6.85	-0.73	0.110
95.00	-41.50	-7.55	0.00	-329.80	0.00	329.80	4,200.82	2,100.41	7,008.66	3,509.54	7.64	-0.77	0.104
95.13	-41.46	-7.47	0.00	-328.86	0.00	328.86	4,198.07	2,099.04	6,999.46	3,504.93	7.66	-0.77	0.104
100.00	-38.83	-7.33	0.00	-292.45	0.00	292.45	4,091.04	2,045.52	6,645.25	3,327.56	8.47	-0.81	0.097
100.88	-38.36	-7.24	0.00	-286.04	0.00	286.04	2,749.21	1,374.61	4,543.82	2,275.29	8.62	-0.82	0.140
105.00	-37.11	-7.07	0.00	-256.16	0.00	256.16	2,709.67	1,354.83	4,379.95	2,193.23	9.34	-0.85	0.131
110.00	-35.62	-6.89	0.00	-220.79	0.00	220.79	2,660.51	1,330.25	4,183.25	2,094.74	10.25	-0.89	0.119
115.00	-34.16	-6.70	0.00	-186.34	0.00	186.34	2,610.00	1,305.00	3,988.84	1,997.38	11.21	-0.93	0.106
120.00	-32.74	-6.52	0.00	-152.82	0.00	152.82	2,558.16	1,279.08	3,796.88	1,901.26	12.21	-0.97	0.093
125.00	-31.36	-6.33	0.00	-120.23	0.00	120.23	2,504.97	1,252.49	3,607.56	1,806.46	13.24	-1.00	0.079
130.00	-30.01	-6.14	0.00	-88.57	0.00	88.57	2,450.45	1,225.22	3,421.06	1,713.07	14.31	-1.03	0.064
135.00	-28.69	-5.99	0.00	-57.86	0.00	57.86	2,394.58	1,197.29	3,237.54	1,621.18	15.40	-1.05	0.048
138.00	-17.19	-3.86	0.00	-37.16	0.00	37.16	2,360.41	1,180.21	3,128.95	1,566.80	16.06	-1.06	0.031
140.00	-16.69	-3.74	0.00	-29.44	0.00	29.44	2,337.37	1,168.68	3,057.20	1,530.87	16.51	-1.07	0.026
145.00	-15.49	-3.58	0.00	-10.76	0.00	10.76	2,271.73	1,135.87	2,871.25	1,437.76	17.63	-1.07	0.014
148.00	-0.22	-0.02	0.00	-0.02	0.00	0.02	2,224.69	1,112.34	2,752.97	1,378.53	18.30	-1.07	0.000
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	2,209.00	1,104.50	2,714.10	1,359.07	18.53	-1.07	0.000

Site Number: 418609 | Code: ANSI/TIA-222-G |

Site Name: Woodstock Relo CT, CT | Engineering Number: OAA636851_C3_06 | 7/1/2016 8:33:02 AM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W | Serviceability 60 mph | 20 Iterations

Gust Response Factor : 1.10 | Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		67.5	0.0					0.0	0.0	67.5	0.0	0.0	0.0
5.00		133.8	1,605.6					0.0	104.8	133.8	1,710.4	0.0	0.0
10.00		131.4	1,576.9					0.0	104.8	131.4	1,681.7	0.0	0.0
15.00		131.0	1,548.2					0.0	104.8	131.0	1,653.0	0.0	0.0
20.00		134.1	1,519.4					0.0	104.8	134.1	1,624.2	0.0	0.0
25.00		138.0	1,490.7					0.0	104.8	138.0	1,595.5	0.0	0.0
30.00		140.7	1,462.0					0.0	104.8	140.7	1,566.8	0.0	0.0
35.00		142.5	1,433.3					0.0	104.8	142.5	1,538.1	0.0	0.0
40.00		143.6	1,404.5					0.0	104.8	143.6	1,509.3	0.0	0.0
45.00		100.9	1,375.8					0.0	104.8	100.9	1,480.6	0.0	0.0
47.00	Bot - Section 2	73.0	542.3					0.0	41.9	73.0	584.2	0.0	0.0
50.00		102.9	1,522.3					0.0	62.9	102.9	1,585.2	0.0	0.0
54.00	Top - Section 1	73.5	1,999.5					0.0	83.8	73.5	2,083.4	0.0	0.0
55.00		88.0	233.1					0.0	21.0	88.0	254.1	0.0	0.0
60.00		146.3	1,150.6					0.0	104.8	146.3	1,255.4	0.0	0.0
65.00		145.5	1,125.4					0.0	104.8	145.5	1,230.2	0.0	0.0
70.00		144.5	1,100.3					0.0	104.8	144.5	1,205.1	0.0	0.0
75.00		143.3	1,075.1					0.0	104.8	143.3	1,179.9	0.0	0.0
80.00		141.8	1,050.0					0.0	104.8	141.8	1,154.8	0.0	0.0
85.00		140.2	1,024.9					0.0	104.8	140.2	1,129.7	0.0	0.0
90.00		138.4	999.7					0.0	104.8	138.4	1,104.5	0.0	0.0
95.00		70.4	974.6					0.0	104.8	70.4	1,079.4	0.0	0.0
95.13	Bot - Section 3	68.7	24.0					0.0	2.6	68.7	26.7	0.0	0.0
100.00		79.0	1,598.7					0.0	102.2	79.0	1,700.9	0.0	0.0
100.88	Top - Section 2	67.7	282.6					0.0	18.3	67.7	301.0	0.0	0.0
105.00		122.4	553.8					0.0	86.5	122.4	640.3	0.0	0.0
110.00		132.0	654.9					0.0	104.8	132.0	759.7	0.0	0.0
115.00		129.5	637.0					0.0	104.8	129.5	741.8	0.0	0.0
120.00		127.0	619.0					0.0	104.8	127.0	723.8	0.0	0.0
125.00		124.4	601.0					0.0	104.8	124.4	705.8	0.0	0.0
130.00		121.6	583.1					0.0	104.8	121.6	687.9	0.0	0.0
135.00		95.5	565.1					0.0	104.8	95.5	669.9	0.0	0.0
138.00	Appertunance(s)	58.7	330.5	1,868.9	0.0	3,056.9	3,295.2	0.0	62.9	1,927.6	3,688.5	0.0	0.0
140.00		80.5	216.7					0.0	29.8	80.5	246.5	0.0	0.0
145.00		90.8	529.2					0.0	74.5	90.8	603.7	0.0	0.0
148.00	Appertunance(s)	44.7	308.9	2,897.9	0.0	-1,398.2	4,000.0	0.0	44.7	2,942.6	4,353.6	0.0	0.0
149.00		11.1	101.5					0.0	0.0	11.1	101.5	0.0	0.0
								Totals:		8,791.46	44,156.9	0.00	0.00

Site Number: 418609 Code: ANSI/TIA-222-G

Site Name: Woodstock Relo CT, CT Engineering Number: OAA636851_C3_06 7/1/2016 8:33:02 AM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W Serviceability 60 mph 20 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-44.15	-8.74	0.00	-1,002.90	0.00	1,002.90	6,716.77	3,358.39	16,551.8	8,288.22	0.00	0.00	0.128
5.00	-42.44	-8.63	0.00	-959.22	0.00	959.22	6,634.81	3,317.40	16,057.4	8,040.68	0.02	-0.03	0.126
10.00	-40.75	-8.52	0.00	-916.09	0.00	916.09	6,551.49	3,275.75	15,567.1	7,795.15	0.07	-0.06	0.124
15.00	-39.10	-8.41	0.00	-873.51	0.00	873.51	6,466.84	3,233.42	15,081.0	7,551.74	0.15	-0.10	0.122
20.00	-37.47	-8.29	0.00	-831.48	0.00	831.48	6,380.85	3,190.42	14,599.3	7,310.53	0.27	-0.13	0.120
25.00	-35.87	-8.17	0.00	-790.03	0.00	790.03	6,293.51	3,146.75	14,122.2	7,071.60	0.43	-0.16	0.117
30.00	-34.30	-8.04	0.00	-749.19	0.00	749.19	6,204.83	3,102.42	13,649.8	6,835.05	0.62	-0.20	0.115
35.00	-32.75	-7.91	0.00	-708.98	0.00	708.98	6,114.81	3,057.41	13,182.3	6,600.97	0.84	-0.23	0.113
40.00	-31.24	-7.78	0.00	-669.41	0.00	669.41	6,023.45	3,011.73	12,719.9	6,369.44	1.10	-0.26	0.110
45.00	-29.76	-7.69	0.00	-630.50	0.00	630.50	5,930.75	2,965.37	12,262.8	6,140.55	1.40	-0.30	0.108
47.00	-29.17	-7.62	0.00	-615.12	0.00	615.12	5,893.29	2,946.65	12,081.5	6,049.76	1.53	-0.31	0.107
50.00	-27.58	-7.52	0.00	-592.27	0.00	592.27	5,819.53	2,909.76	11,776.4	5,896.99	1.73	-0.33	0.105
54.00	-25.50	-7.44	0.00	-562.19	0.00	562.19	4,932.79	2,466.39	10,012.2	5,013.54	2.02	-0.36	0.117
55.00	-25.24	-7.36	0.00	-554.75	0.00	554.75	4,917.76	2,458.88	9,938.37	4,976.57	2.09	-0.37	0.117
60.00	-23.98	-7.22	0.00	-517.95	0.00	517.95	4,841.84	2,420.92	9,571.58	4,792.90	2.50	-0.40	0.113
65.00	-22.75	-7.08	0.00	-481.85	0.00	481.85	4,764.57	2,382.28	9,208.89	4,611.29	2.94	-0.44	0.109
70.00	-21.54	-6.94	0.00	-446.45	0.00	446.45	4,685.96	2,342.98	8,850.47	4,431.81	3.42	-0.48	0.105
75.00	-20.36	-6.80	0.00	-411.75	0.00	411.75	4,606.01	2,303.00	8,496.51	4,254.57	3.94	-0.51	0.101
80.00	-19.20	-6.66	0.00	-377.75	0.00	377.75	4,524.71	2,262.36	8,147.17	4,079.64	4.49	-0.55	0.097
85.00	-18.07	-6.52	0.00	-344.46	0.00	344.46	4,420.37	2,210.18	7,764.52	3,888.03	5.08	-0.58	0.093
90.00	-16.96	-6.38	0.00	-311.87	0.00	311.87	4,310.59	2,155.30	7,381.75	3,696.36	5.71	-0.61	0.088
95.00	-15.88	-6.30	0.00	-279.98	0.00	279.98	4,200.82	2,100.41	7,008.66	3,509.54	6.37	-0.65	0.084
95.13	-15.85	-6.24	0.00	-279.20	0.00	279.20	4,198.07	2,099.04	6,999.46	3,504.93	6.39	-0.65	0.083
100.00	-14.15	-6.14	0.00	-248.80	0.00	248.80	4,091.04	2,045.52	6,645.25	3,327.56	7.07	-0.68	0.078
100.88	-13.85	-6.07	0.00	-243.43	0.00	243.43	2,749.21	1,374.61	4,543.82	2,275.29	7.19	-0.68	0.112
105.00	-13.21	-5.95	0.00	-218.37	0.00	218.37	2,709.67	1,354.83	4,379.95	2,193.23	7.79	-0.71	0.104
110.00	-12.45	-5.82	0.00	-188.62	0.00	188.62	2,660.51	1,330.25	4,183.25	2,094.74	8.56	-0.75	0.095
115.00	-11.70	-5.68	0.00	-159.53	0.00	159.53	2,610.00	1,305.00	3,988.84	1,997.38	9.36	-0.78	0.084
120.00	-10.98	-5.55	0.00	-131.11	0.00	131.11	2,558.16	1,279.08	3,796.88	1,901.26	10.20	-0.82	0.073
125.00	-10.27	-5.42	0.00	-103.34	0.00	103.34	2,504.97	1,252.49	3,607.56	1,806.46	11.07	-0.84	0.061
130.00	-9.58	-5.30	0.00	-76.22	0.00	76.22	2,450.45	1,225.22	3,421.06	1,713.07	11.97	-0.87	0.048
135.00	-8.91	-5.19	0.00	-49.75	0.00	49.75	2,394.58	1,197.29	3,237.54	1,621.18	12.88	-0.89	0.034
138.00	-5.26	-3.21	0.00	-31.12	0.00	31.12	2,360.41	1,180.21	3,128.95	1,566.80	13.44	-0.89	0.022
140.00	-5.01	-3.12	0.00	-24.70	0.00	24.70	2,337.37	1,168.68	3,057.20	1,530.87	13.82	-0.90	0.018
145.00	-4.41	-3.02	0.00	-9.08	0.00	9.08	2,271.73	1,135.87	2,871.25	1,437.76	14.76	-0.90	0.008
148.00	-0.10	-0.01	0.00	-0.01	0.00	0.01	2,224.69	1,112.34	2,752.97	1,378.53	15.33	-0.90	0.000
149.00	0.00	-0.01	0.00	0.00	0.00	0.00	2,209.00	1,104.50	2,714.10	1,359.07	15.52	-0.90	0.000

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_1):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coeffiecient F_v:	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.18
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.04
Upper Limit C_s	0.04
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	1.72
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.61
Total Unfactored Dead Load:	44.16 k
Seismic Base Shear (E):	2.24 k

Site Number:	418609	Code: ANSI/TIA-222-G	
Site Name:	Woodstock Relo CT, CT	Engineering Number: OAA636851_C3_06	7/1/2016 8:33:02 AM
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
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.72
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	148.50	102	1.877	1.914	1.116	0.350	31	88
35	146.50	354	1.827	1.665	1.025	0.320	98	305
34	142.50	604	1.729	1.234	0.859	0.264	138	521
33	139.00	247	1.645	0.924	0.733	0.219	47	213
32	136.50	393	1.586	0.736	0.651	0.190	65	340
31	132.50	670	1.495	0.488	0.536	0.147	85	578
30	127.50	688	1.384	0.254	0.415	0.101	60	594
29	122.50	706	1.278	0.091	0.317	0.062	38	609
28	117.50	724	1.175	-0.017	0.237	0.032	20	625
27	112.50	742	1.077	-0.082	0.173	0.010	6	640
26	107.50	760	0.984	-0.114	0.123	-0.005	-3	656
25	102.94	640	0.902	-0.122	0.088	-0.013	-7	553
24	100.44	301	0.859	-0.120	0.072	-0.014	-4	260
23	97.56	1,701	0.810	-0.114	0.057	-0.015	-21	1,468
22	95.06	27	0.769	-0.106	0.045	-0.013	0	23
21	92.50	1,079	0.728	-0.095	0.036	-0.011	-10	932
20	87.50	1,105	0.652	-0.071	0.021	-0.003	-3	954
19	82.50	1,130	0.579	-0.045	0.012	0.007	7	975
18	77.50	1,155	0.511	-0.020	0.008	0.018	18	997
17	72.50	1,180	0.447	0.002	0.006	0.027	27	1,019
16	67.50	1,205	0.388	0.022	0.007	0.034	36	1,040
15	62.50	1,230	0.333	0.037	0.010	0.039	42	1,062
14	57.50	1,255	0.281	0.049	0.014	0.042	46	1,084
13	54.50	254	0.253	0.055	0.017	0.043	9	219
12	52.00	2,083	0.230	0.059	0.019	0.043	78	1,799
11	48.50	1,585	0.200	0.063	0.023	0.043	59	1,368
10	46.00	584	0.180	0.065	0.026	0.043	22	504
9	42.50	1,481	0.154	0.068	0.030	0.042	54	1,278
8	37.50	1,509	0.120	0.070	0.034	0.041	53	1,303
7	32.50	1,538	0.090	0.071	0.038	0.039	53	1,328
6	27.50	1,567	0.064	0.072	0.041	0.038	52	1,353
5	22.50	1,596	0.043	0.071	0.042	0.036	50	1,377
4	17.50	1,624	0.026	0.067	0.040	0.034	48	1,402
3	12.50	1,653	0.013	0.059	0.034	0.030	43	1,427

2	7.50	1,682	0.005	0.044	0.025	0.023	33	1,452
1	2.50	1,710	0.001	0.018	0.010	0.010	15	1,477
Alcatel-Lucent RRH2X	148.00	138	1.865	1.849	1.093	0.342	41	119
Alcatel-Lucent RRH2X	148.00	132	1.865	1.849	1.093	0.342	39	114
Alcatel-Lucent RRH2x	148.00	170	1.865	1.849	1.093	0.342	50	147
RFS DB-T1-6Z-8AB-0Z	148.00	88	1.865	1.849	1.093	0.342	26	76
Andrew LNX-6514DS-A1	148.00	116	1.865	1.849	1.093	0.342	35	100
Commscope SBNHH-	148.00	244	1.865	1.849	1.093	0.342	72	210
Amphenol Antel LPA-8	148.00	162	1.865	1.849	1.093	0.342	48	140
Flat Low Profile Pla	148.00	1,500	1.865	1.849	1.093	0.342	445	1,295
VZW Unused Reserve:	148.00	1,450	1.865	1.849	1.093	0.342	430	1,252
Raycap DC6-48-60-18-	138.00	60	1.621	0.846	0.699	0.207	11	52
Ericsson RRUS 11 (Ba	138.00	825	1.621	0.846	0.699	0.207	148	712
Andrew SBNH-1D6565C	138.00	547	1.621	0.846	0.699	0.207	98	472
Ericsson KRC 118 054	138.00	363	1.621	0.846	0.699	0.207	65	313
Flat Low Profile Pla	138.00	1,500	1.621	0.846	0.699	0.207	269	1,295
		44,157	49.585	28.163	20.272	6.370	3,063	38,121

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)
36	148.50	102	1.877	1.914	1.116	0.350	31	88
35	146.50	354	1.827	1.665	1.025	0.320	98	305
34	142.50	604	1.729	1.234	0.859	0.264	138	521
33	139.00	247	1.645	0.924	0.733	0.219	47	213
32	136.50	393	1.586	0.736	0.651	0.190	65	340
31	132.50	670	1.495	0.488	0.536	0.147	85	578
30	127.50	688	1.384	0.254	0.415	0.101	60	594
29	122.50	706	1.278	0.091	0.317	0.062	38	609
28	117.50	724	1.175	-0.017	0.237	0.032	20	625
27	112.50	742	1.077	-0.082	0.173	0.010	6	640
26	107.50	760	0.984	-0.114	0.123	-0.005	-3	656
25	102.94	640	0.902	-0.122	0.088	-0.013	-7	553
24	100.44	301	0.859	-0.120	0.072	-0.014	-4	260
23	97.56	1,701	0.810	-0.114	0.057	-0.015	-21	1,468
22	95.06	27	0.769	-0.106	0.045	-0.013	0	23
21	92.50	1,079	0.728	-0.095	0.036	-0.011	-10	932
20	87.50	1,105	0.652	-0.071	0.021	-0.003	-3	954
19	82.50	1,130	0.579	-0.045	0.012	0.007	7	975
18	77.50	1,155	0.511	-0.020	0.008	0.018	18	997
17	72.50	1,180	0.447	0.002	0.006	0.027	27	1,019
16	67.50	1,205	0.388	0.022	0.007	0.034	36	1,040
15	62.50	1,230	0.333	0.037	0.010	0.039	42	1,062
14	57.50	1,255	0.281	0.049	0.014	0.042	46	1,084
13	54.50	254	0.253	0.055	0.017	0.043	9	219
12	52.00	2,083	0.230	0.059	0.019	0.043	78	1,799
11	48.50	1,585	0.200	0.063	0.023	0.043	59	1,368
10	46.00	584	0.180	0.065	0.026	0.043	22	504
9	42.50	1,481	0.154	0.068	0.030	0.042	54	1,278
8	37.50	1,509	0.120	0.070	0.034	0.041	53	1,303
7	32.50	1,538	0.090	0.071	0.038	0.039	53	1,328
6	27.50	1,567	0.064	0.072	0.041	0.038	52	1,353
5	22.50	1,596	0.043	0.071	0.042	0.036	50	1,377
4	17.50	1,624	0.026	0.067	0.040	0.034	48	1,402
3	12.50	1,653	0.013	0.059	0.034	0.030	43	1,427
2	7.50	1,682	0.005	0.044	0.025	0.023	33	1,452
1	2.50	1,710	0.001	0.018	0.010	0.010	15	1,477
Alcatel-Lucent RRH2X	148.00	138	1.865	1.849	1.093	0.342	41	119
Alcatel-Lucent RRH2X	148.00	132	1.865	1.849	1.093	0.342	39	114

Alcatel-Lucent RRH2x	148.00	170	1.865	1.849	1.093	0.342	50	147
RFS DB-T1-6Z-8AB-0Z	148.00	88	1.865	1.849	1.093	0.342	26	76
Andrew LNX-6514DS-A1	148.00	116	1.865	1.849	1.093	0.342	35	100
Commscope SBNHH-	148.00	244	1.865	1.849	1.093	0.342	72	210
Amphenol Antel LPA-8	148.00	162	1.865	1.849	1.093	0.342	48	140
Flat Low Profile Pla	148.00	1,500	1.865	1.849	1.093	0.342	445	1,295
VZW Unused Reserve:	148.00	1,450	1.865	1.849	1.093	0.342	430	1,252
Raycap DC6-48-60-18-	138.00	60	1.621	0.846	0.699	0.207	11	52
Ericsson RRUS 11 (Ba	138.00	825	1.621	0.846	0.699	0.207	148	712
Andrew SBNH-1D6565C	138.00	547	1.621	0.846	0.699	0.207	98	472
Ericsson KRC 118 054	138.00	363	1.621	0.846	0.699	0.207	65	313
Flat Low Profile Pla	138.00	1,500	1.621	0.846	0.699	0.207	269	1,295
		44,157	49.585	28.163	20.272	6.370	3,063	38,121

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	148.50	102	1.877	1.914	1.116	0.350	31	88
35	146.50	354	1.827	1.665	1.025	0.320	98	305
34	142.50	604	1.729	1.234	0.859	0.264	138	521
33	139.00	247	1.645	0.924	0.733	0.219	47	213
32	136.50	393	1.586	0.736	0.651	0.190	65	340
31	132.50	670	1.495	0.488	0.536	0.147	85	578
30	127.50	688	1.384	0.254	0.415	0.101	60	594
29	122.50	706	1.278	0.091	0.317	0.062	38	609
28	117.50	724	1.175	-0.017	0.237	0.032	20	625
27	112.50	742	1.077	-0.082	0.173	0.010	6	640
26	107.50	760	0.984	-0.114	0.123	-0.005	-3	656
25	102.94	640	0.902	-0.122	0.088	-0.013	-7	553
24	100.44	301	0.859	-0.120	0.072	-0.014	-4	260
23	97.56	1,701	0.810	-0.114	0.057	-0.015	-21	1,468
22	95.06	27	0.769	-0.106	0.045	-0.013	0	23
21	92.50	1,079	0.728	-0.095	0.036	-0.011	-10	932
20	87.50	1,105	0.652	-0.071	0.021	-0.003	-3	954
19	82.50	1,130	0.579	-0.045	0.012	0.007	7	975
18	77.50	1,155	0.511	-0.020	0.008	0.018	18	997
17	72.50	1,180	0.447	0.002	0.006	0.027	27	1,019
16	67.50	1,205	0.388	0.022	0.007	0.034	36	1,040
15	62.50	1,230	0.333	0.037	0.010	0.039	42	1,062
14	57.50	1,255	0.281	0.049	0.014	0.042	46	1,084
13	54.50	254	0.253	0.055	0.017	0.043	9	219
12	52.00	2,083	0.230	0.059	0.019	0.043	78	1,799
11	48.50	1,585	0.200	0.063	0.023	0.043	59	1,368
10	46.00	584	0.180	0.065	0.026	0.043	22	504
9	42.50	1,481	0.154	0.068	0.030	0.042	54	1,278
8	37.50	1,509	0.120	0.070	0.034	0.041	53	1,303
7	32.50	1,538	0.090	0.071	0.038	0.039	53	1,328
6	27.50	1,567	0.064	0.072	0.041	0.038	52	1,353
5	22.50	1,596	0.043	0.071	0.042	0.036	50	1,377
4	17.50	1,624	0.026	0.067	0.040	0.034	48	1,402
3	12.50	1,653	0.013	0.059	0.034	0.030	43	1,427
2	7.50	1,682	0.005	0.044	0.025	0.023	33	1,452
1	2.50	1,710	0.001	0.018	0.010	0.010	15	1,477
Alcatel-Lucent RRH2X	148.00	138	1.865	1.849	1.093	0.342	41	119
Alcatel-Lucent RRH2X	148.00	132	1.865	1.849	1.093	0.342	39	114
Alcatel-Lucent RRH2x	148.00	170	1.865	1.849	1.093	0.342	50	147
RFS DB-T1-6Z-8AB-0Z	148.00	88	1.865	1.849	1.093	0.342	26	76
Andrew LNX-6514DS-A1	148.00	116	1.865	1.849	1.093	0.342	35	100
Commscope SBNHH-	148.00	244	1.865	1.849	1.093	0.342	72	210

Amphenol Antel LPA-8	148.00	162	1.865	1.849	1.093	0.342	48	140
Flat Low Profile Pla	148.00	1,500	1.865	1.849	1.093	0.342	445	1,295
VZW Unused Reserve:	148.00	1,450	1.865	1.849	1.093	0.342	430	1,252
Raycap DC6-48-60-18-	138.00	60	1.621	0.846	0.699	0.207	11	52
Ericsson RRUS 11 (Ba	138.00	825	1.621	0.846	0.699	0.207	148	712
Andrew SBNH-1D6565C	138.00	547	1.621	0.846	0.699	0.207	98	472
Ericsson KRC 118 054	138.00	363	1.621	0.846	0.699	0.207	65	313
Flat Low Profile Pla	138.00	1,500	1.621	0.846	0.699	0.207	269	1,295
		44,157	49.585	28.163	20.272	6.370	3,063	38,121

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)
36	148.50	102	1.877	1.914	1.116	0.350	31	88
35	146.50	354	1.827	1.665	1.025	0.320	98	305
34	142.50	604	1.729	1.234	0.859	0.264	138	521
33	139.00	247	1.645	0.924	0.733	0.219	47	213
32	136.50	393	1.586	0.736	0.651	0.190	65	340
31	132.50	670	1.495	0.488	0.536	0.147	85	578
30	127.50	688	1.384	0.254	0.415	0.101	60	594
29	122.50	706	1.278	0.091	0.317	0.062	38	609
28	117.50	724	1.175	-0.017	0.237	0.032	20	625
27	112.50	742	1.077	-0.082	0.173	0.010	6	640
26	107.50	760	0.984	-0.114	0.123	-0.005	-3	656
25	102.94	640	0.902	-0.122	0.088	-0.013	-7	553
24	100.44	301	0.859	-0.120	0.072	-0.014	-4	260
23	97.56	1,701	0.810	-0.114	0.057	-0.015	-21	1,468
22	95.06	27	0.769	-0.106	0.045	-0.013	0	23
21	92.50	1,079	0.728	-0.095	0.036	-0.011	-10	932
20	87.50	1,105	0.652	-0.071	0.021	-0.003	-3	954
19	82.50	1,130	0.579	-0.045	0.012	0.007	7	975
18	77.50	1,155	0.511	-0.020	0.008	0.018	18	997
17	72.50	1,180	0.447	0.002	0.006	0.027	27	1,019
16	67.50	1,205	0.388	0.022	0.007	0.034	36	1,040
15	62.50	1,230	0.333	0.037	0.010	0.039	42	1,062
14	57.50	1,255	0.281	0.049	0.014	0.042	46	1,084
13	54.50	254	0.253	0.055	0.017	0.043	9	219
12	52.00	2,083	0.230	0.059	0.019	0.043	78	1,799
11	48.50	1,585	0.200	0.063	0.023	0.043	59	1,368
10	46.00	584	0.180	0.065	0.026	0.043	22	504
9	42.50	1,481	0.154	0.068	0.030	0.042	54	1,278
8	37.50	1,509	0.120	0.070	0.034	0.041	53	1,303
7	32.50	1,538	0.090	0.071	0.038	0.039	53	1,328
6	27.50	1,567	0.064	0.072	0.041	0.038	52	1,353
5	22.50	1,596	0.043	0.071	0.042	0.036	50	1,377
4	17.50	1,624	0.026	0.067	0.040	0.034	48	1,402
3	12.50	1,653	0.013	0.059	0.034	0.030	43	1,427
2	7.50	1,682	0.005	0.044	0.025	0.023	33	1,452
1	2.50	1,710	0.001	0.018	0.010	0.010	15	1,477
Alcatel-Lucent RRH2X	148.00	138	1.865	1.849	1.093	0.342	41	119
Alcatel-Lucent RRH2X	148.00	132	1.865	1.849	1.093	0.342	39	114
Alcatel-Lucent RRH2x	148.00	170	1.865	1.849	1.093	0.342	50	147
RFS DB-T1-6Z-8AB-0Z	148.00	88	1.865	1.849	1.093	0.342	26	76
Andrew LNX-6514DS-A1	148.00	116	1.865	1.849	1.093	0.342	35	100
Commscope SBNHH-	148.00	244	1.865	1.849	1.093	0.342	72	210
Amphenol Antel LPA-8	148.00	162	1.865	1.849	1.093	0.342	48	140
Flat Low Profile Pla	148.00	1,500	1.865	1.849	1.093	0.342	445	1,295
VZW Unused Reserve:	148.00	1,450	1.865	1.849	1.093	0.342	430	1,252
Raycap DC6-48-60-18-	138.00	60	1.621	0.846	0.699	0.207	11	52

Ericsson RRUS 11 (Ba	138.00	825	1.621	0.846	0.699	0.207	148	712
Andrew SBNH-1D6565C	138.00	547	1.621	0.846	0.699	0.207	98	472
Ericsson KRC 118 054	138.00	363	1.621	0.846	0.699	0.207	65	313
Flat Low Profile Pla	138.00	1,500	1.621	0.846	0.699	0.207	269	1,295
		44,157	49.585	28.163	20.272	6.370	3,063	38,121

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	38.84	0.00	52.94	0.00	0.00	4473.11	0.00	0.55
0.9D + 1.6W	38.82	0.00	39.69	0.00	0.00	4444.59	0.00	0.54
1.2D + 1.0Di + 1.0Wi	10.63	0.00	87.95	0.00	0.00	1209.00	0.00	0.16
(1.2 + 0.2Sds) * DL + E ELFM	2.24	0.00	52.49	0.00	0.00	260.83	0.00	0.04
(1.2 + 0.2Sds) * DL + E EMAM	3.05	0.00	52.49	0.00	0.00	369.83	0.00	0.05
(0.9 - 0.2Sds) * DL + E ELFM	2.24	0.00	36.64	0.00	0.00	258.82	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	3.05	0.00	36.64	0.00	0.00	366.98	0.00	0.05
1.0D + 1.0W	8.74	0.00	44.15	0.00	0.00	1002.90	0.00	0.13

Base/Flange Plate	Plate Type	***Baseplate***	
	Pole Diameter	60.5	in
	Pole Thickness	0.5	in
	Plate Diameter	74	in
	Plate Thickness	2.75	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	673.77	k-in
	Applied	284.13	k-in
Stiffeners	#	***0***	

Bolts	#	***24***	
	Bolt Circle	68	in
	(R)adial / (S)quare	R	
●	Diameter	2.25	in
	Hole Diameter	2.625	in
	Type	A615-75	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	133.71	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev. ***G***

Moment 4473.1 k-ft
Axial 52.9 k

Date 6/1/2016
Engineer AAV
Site # 418609
Carrier Verizon

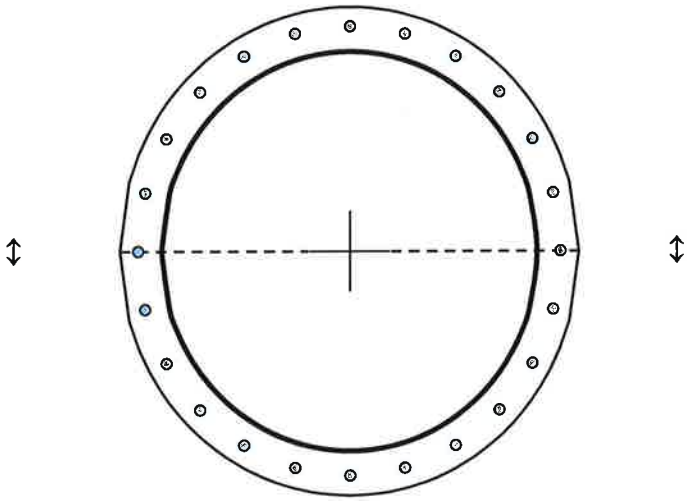
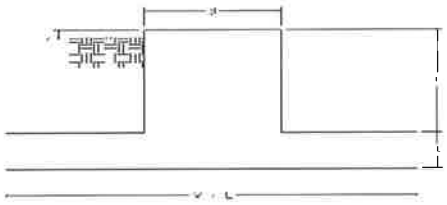


Plate Stress Ratio:
0.42 (Pass)

Bolt Stress Ratio:
0.51 (Pass)

Site Name:	Woodstock Relo CT, CT
Site Number:	418609
Engineering Number:	OAA636851_C3_06
Engineer:	A. Venning
Date:	07/01/16
Tower Type:	MP

Program Last Updated: *5/13/2014*



Design Loads (Factored) - Analysis per TIA-222-G Standards

Design / Analysis / Mapping:	Analysis				
Compression/Leg:	52.9	k	Concrete Strength (f'_c):	4000	psi
Uplift/Leg:	0.0	k	Pad Tension Steel Depth:	32.00	in
Total Shear:	38.8	k	ϕ_{Shear}:	0.75	
Moment:	4473.1	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	52.9	k	$\phi_{Compression:}$	0.65	
Depth to Base of Foundation (l + t - h):	6.00	ft	β:	0.85	
Diameter of Pier (d):	7.50	ft	Bottom Pad Rebar Size #:	11	
Height of Pier above Ground (h):	1.00		# of Bottom Pad Rebar:	36	
Width of Pad (W):	30.00	ft	Pad Bottom Steel Area:	56.16	in^2
Length of Pad (L):	30.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	11	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	24	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	37.44	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	9	
Depth Below Ground Surface to Water Table:	4.00	ft	Pier Steel Area (Single Bar):	1.00	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	40	
Unit Weight of Soil Above Water Table:	125.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	82.0	in
Unit Weight of Soil Below Water Table:	50.0	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	15.00	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.45		Tie Rebar Size #:	4	
Ultimate Compressive Bearing Pressure:	12000.0	psf	Tie Steel Area (Single Bar):	0.20	in^2
Ultimate Passive Pressure on Pad Face:	2062.0	psf	Tie Spacing:	6	in
$\phi_{Soil\ and\ Concrete\ Weight}$:	0.9		Tie Steel F_y:	60000	psi
ϕ_{Soil}:	0.75				

Overturning Moment Usage

Design OTM:	4744.7	k-ft
OTM Resistance:	9931.7	k-ft
Design OTM / OTM Resistance:	0.48	Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	1728	psf
Factored Nominal Bearing Pressure:	9000	psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.19	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

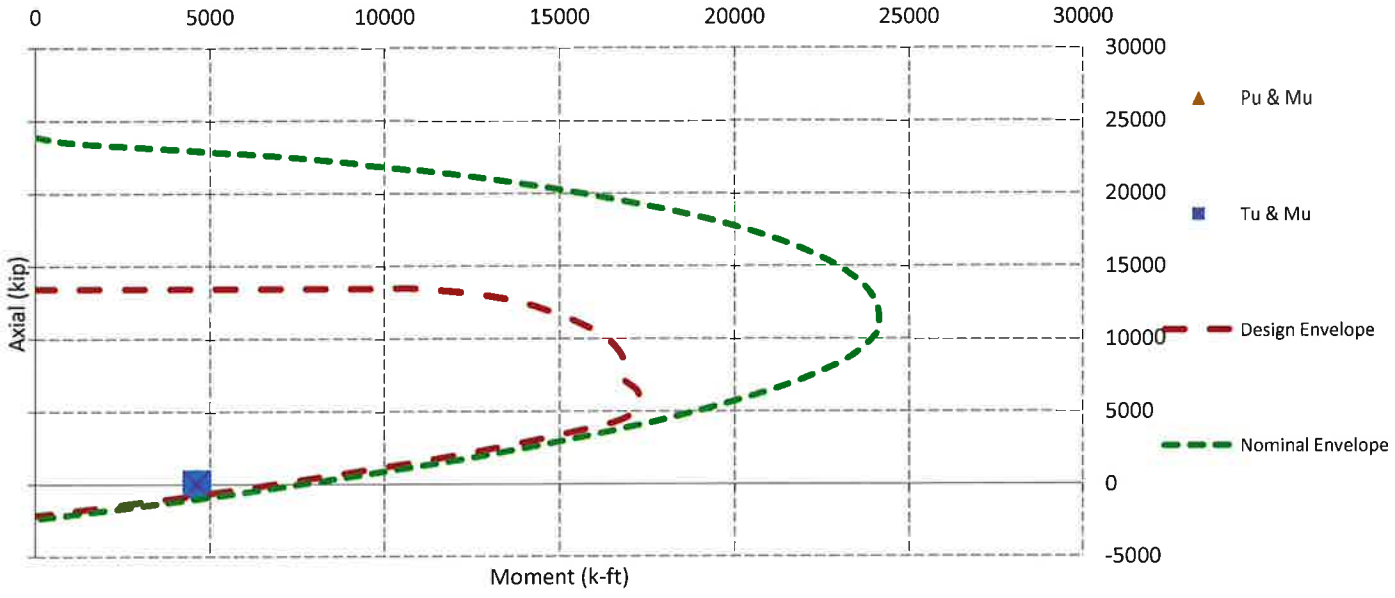
Sliding Factor of Safety

Total Factored Sliding Resistance:	356.2	k
Sliding Design / Sliding Resistance:	0.11	Result: OK

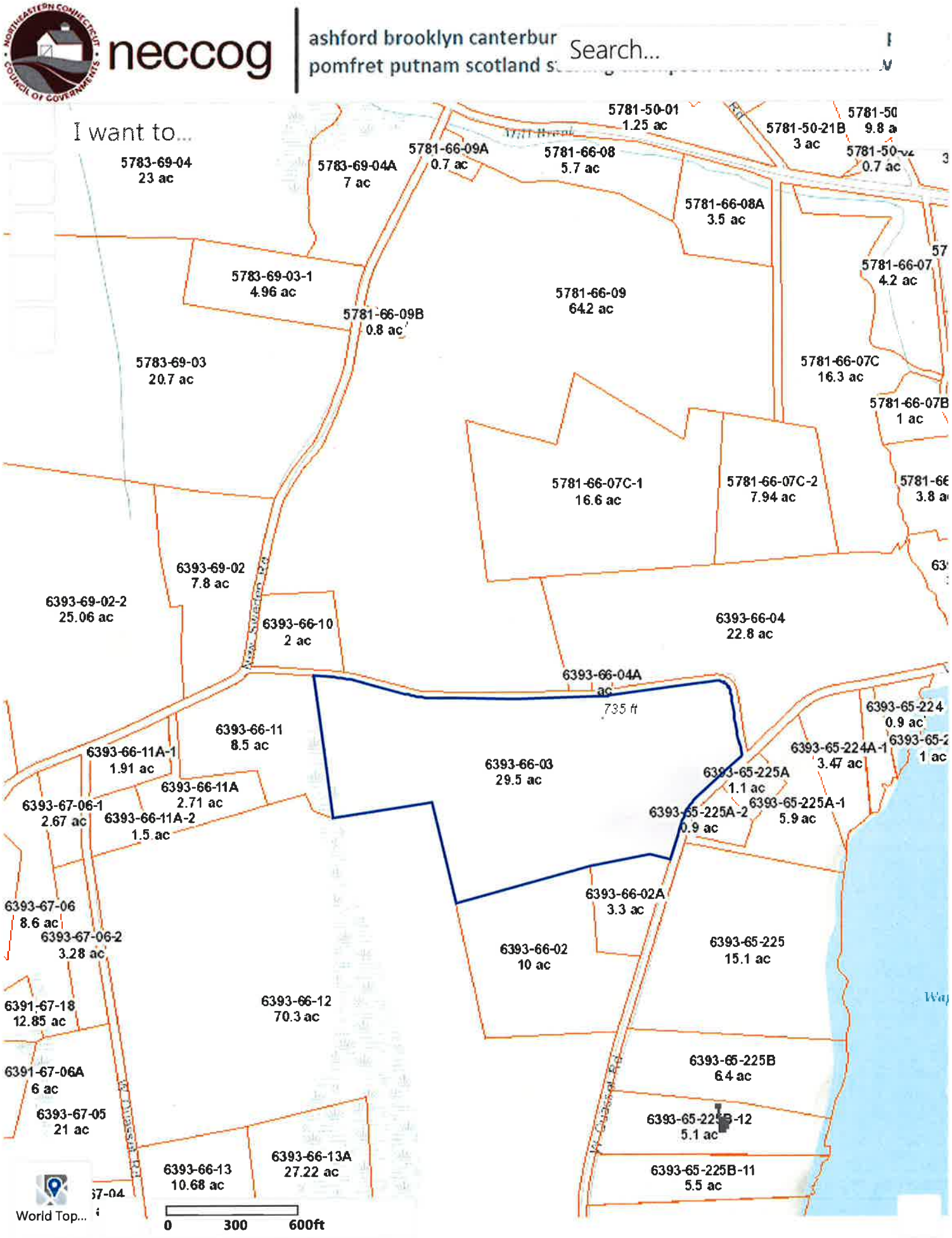
One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	253.8	k
One Way Shear Capacity (ϕV_c):	1092.9	k - ACI11.3.1.1
$V_u / \phi V_c$:	0.23	Result: OK
Load Direction Controling Shear Capacity:	Parallel to Pad Edge	
Lower Steel Pad Factored Moment (M_u):	1941.5	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	7791.4	k-ft - ACI10.3
$M_u / \phi M_n$:	0.25	Result: OK
Load Direction Controling Flexural Capacity:	Parallel to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	1272.5	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	5259.9	k-ft
$M_u / \phi M_n$:	0.24	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0049	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0033	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	10	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	15	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	2327.1	k - ACI11.12.2.1
$V_u / \phi V_c$:	0.00	Result: OK
Factored Moment in Pier (M_u):	4628.3	k-ft
Pier Moment Capacity (ϕM_n):	7218.9	k-ft
$M_u / \phi M_n$:	0.64	Result: OK
Factored Shear in Pier (V_u):	38.8	k
Pier Shear Capacity (ϕV_n):	606.0	k
$V_u / \phi V_c$:	0.06	Result: OK
Pier Shear Reinforcement Ratio:	0.0003	No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k
Pier Tension Capacity (ϕT_n):	2160.0	k
$T_u / \phi T_n$:	0.00	Result: OK
Factored Compression in Pier (P_u):	52.9	k
Pier Compression Capacity (ϕP_n):	11176.8	k - ACI10.3.6.2
$P_u / \phi P_n$:	0.00	Result: OK
Pier Compression Reinforcement Ratio:	0.006	OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.64	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



ATTACHMENT 4


neccog
ashford brooklyn canterbur
pomfret putnam scotland s
Search...
I want to...
5781-50-01
1.25 ac
5781-50-21B
3 ac
5781-50
9.8 a
5781-50-02
0.7 ac
5783-69-04
23 ac
5783-69-04A
7 ac
5781-66-09A
0.7 ac
5781-66-08
5.7 ac
5781-66-08A
3.5 ac
5781-66-07
4.2 ac
5783-69-03-1
4.96 ac
5781-66-09
64.2 ac
5781-66-09B
0.8 ac
5783-69-03
20.7 ac
5781-66-07C
16.3 ac
5781-66-07B
1 ac
5781-66-07C-1
16.6 ac
5781-66-07C-2
7.94 ac
6393-69-02
7.8 ac
6393-69-02-2
25.06 ac
6393-66-10
2 ac
6393-66-04
22.8 ac
6393-66-04A
ac
735 ft
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0.9 ac
6393-66-11
8.5 ac
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1.91 ac
6393-66-03
29.5 ac
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3.47 ac
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2.71 ac
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1.5 ac
6393-65-225A-2
0.9 ac
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5.9 ac
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10 ac
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15.1 ac
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70.3 ac
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6 ac
6393-65-225B
6.4 ac
6393-67-05
21 ac
6393-65-225B-12
5.1 ac
6393-66-13
10.68 ac
6393-66-13A
27.22 ac
6393-65-225B-11
5.5 ac
World Top...
0
300
600ft

87 WEST QUASSET RD

Location	87 WEST QUASSET RD	**Mblu**	6393/ 66/ 03/ /
Acct#	B0029600	**Owner**	QUASSET HILL FARM LLC
Assessment	$119,860	**Appraisal**	$332,400
PID	288	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$4,500	$327,900	$332,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$3,200	$116,660	$119,860

Owner of Record

Owner	QUASSET HILL FARM LLC
Co-Owner	
Address	PO BOX 113 WOODSTOCK , CT 06281

Sale Price	$0
Certificate	1
Book & Page	394/ 012
Sale Date	12/30/2003

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
QUASSET HILL FARM LLC	$0	1	394/ 012	12/30/2003
BISHOP HAROLD R	$0		63/ 241	05/13/1958

Building Information

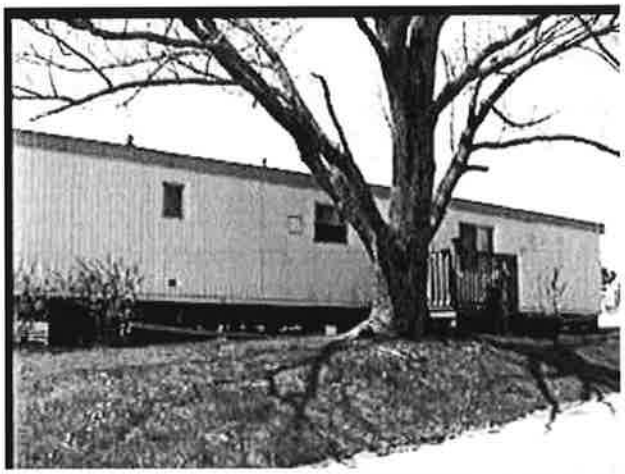
Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	
Replacement Cost Less Depreciation:	$0

Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade:	
Stories:	
Living Units	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Whirlpool Tubs	
Bsmt. Garages	

Building Photo



(http://images.vgsi.com/photos/WoodstockCTPhotos//\00\00\0

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	61O
Description	Farm Orchard
Zone	
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	29.5
Frontage	
Depth	
Assessed Value	$116,660
Appraised Value	$327,900

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed	FR	Frame	897 S.F.	$4,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$4,500	$327,900	$332,400
2013	$4,500	$327,900	$332,400
2012	$4,500	$327,900	$332,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2014	$3,200	$116,660	$119,860
2013	$3,200	$116,660	$119,860
2012	$3,200	$116,660	$119,860