

September 20, 2016

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

Re: **Notice of Exempt Modification – Facility Modification  
West Street, Rocky Hill, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 90-foot level of the existing 100-foot tower off West Street in Rocky Hill, Connecticut (the “Property”). The tower is owned by American Tower Corporation (“ATC”). The Council approved Cellco’s use of this tower in 2008. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 1900 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same 90-foot level on the tower. Cellco also intends to replace three (3) remote radio heads (“RRHs”) and install six (6) new RRHs and one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Claudia Baio, Mayor of the Town of Rocky Hill. A copy of this letter is also being sent to Connecticut Light and Power Company, 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).

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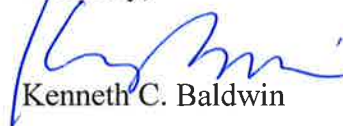
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1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 90-foot level on the 100-foot tower.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for each of Cellco's operating frequencies are included behind Attachment 2. The Far Field calculations demonstrate that Cellco's modified facility will operate well within the RF emissions limits established by the FCC.
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:

Claudia Baio, Rocky Hill Mayor  
Connecticut Light and Power Company  
ATC  
Tim Parks

# **ATTACHMENT 1**



## 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
	0°   14.6	0°   14.5	0°   17.4	0°   17.8	0°   18.1	0°   18.2
Gain by Beam Tilt, average, dBi	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

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

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

### Classification

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



SBNHH-1D65B

## Included Products

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

## \* Footnotes

Performance Note      Severe environmental conditions may degrade optimum performance

# ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

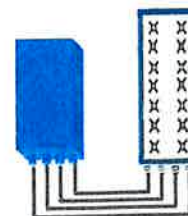


## FEATURES

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

## BENEFITS

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



4x30W with 4T4R  
or  
2x60W with 2T4R

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

# TECHNICAL SPECIFICATIONS

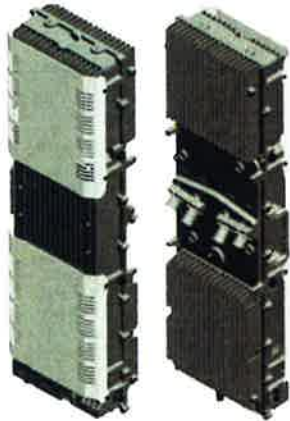
Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W 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.)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
Volume in L	38 (with solar shield)
Weight in kg (lb) (w/o mounting HW)	26 (57.2) (with solar shield)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	550W typical @100% RF load ( in 2Tx or 4Tx mode)
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	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

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# 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.

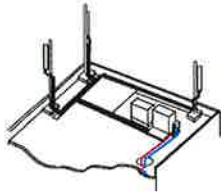
## **EASY INSTALLATION**

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.

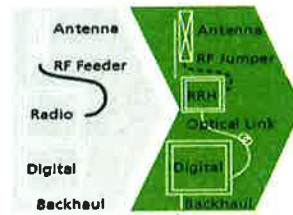
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent B4 RRH2x60-4R installation, providing more flexible site selection and improved network quality along with greatly reduced installation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

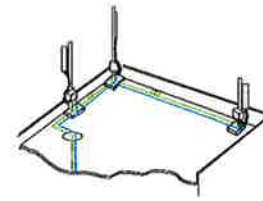
Installation can easily be done by a single person as the Alcatel-Lucent B4 RRH2x60-4R is compact and weighs about 25 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



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 daisy chaining 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

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# B66A RRH 4X45 - PHYSICAL CHARACTERISTICS- TARGET 15.1



B4 RRH4x45-4R (AWS-Extension Band)	
<b>Frequency Band</b>	LR15.1 – B4 / LR16.1 B66 (AWS 1 and 3 only)
<b>RF Output Power</b>	2x90W/4x45W (SW configurable)
<b>Operational range</b>	2110-2180 MHz, DL/ 1710-1780 MHz UL
<b>Instantaneous Bandwidth</b>	70MHz
<b>Configuration (HW readiness)</b>	LTE: 2T2R, 2T4R, 4T4R
<b>Carrier Bandwidths</b>	5, 10, 15 and 20 MHz
<b>Interfaces</b>	2x CPRI Rate 7 Ports Antenna Connectors 4.3-10
<b>AISG Support</b>	AISG 2.0 for RET Internal Smart Bias T
<b>Monitor Ports</b>	NA (Spec An to replace ports)
<b>Environmental</b>	GR487 Compliance / GR3178 Compliance (with exceptions)
<b>Mounting options</b>	Pole/Wall
<b>Connectors location</b>	All bottom
<b>External Alarms</b>	4
<b>Annual Return Rate (Target)</b>	<2%
<b>Operating Temperature</b>	-40 C to +55 C (without solar load)

- Commercial Product Will include B66 support of AWS 1 and 3.
- Lower AWS 3 UL Not in 3GPP Band 66 Definition

Physical Dimensions – Not to Exceed		
	W/O Solar Shield	With Solar Shield
<b>Dimensions HxWxD</b>	H = 26in W = 11.4in D = 5.9in (H=660mm) (W=290mm) (D=150mm)	H = 26.6in W = 12in D = 6.8in (H=675mm) (W=304mm) (D=173mm)
<b>Volume</b>	29l	35.5l
<b>Weight</b>		64lbs / 29kg



**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.

**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



Figure 1: HYBRIFLEX Series

**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)]	0.68 (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)			UL34-V0, UL1666 RoHS Compliant
Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (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), IEEE 1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

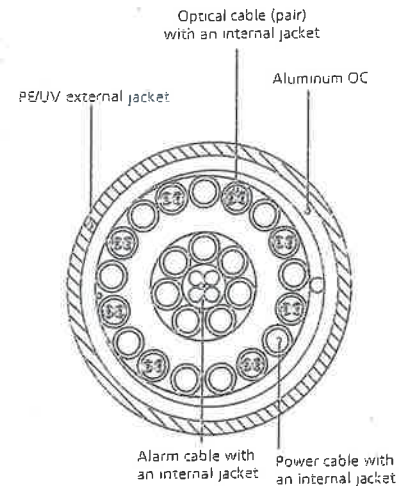


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering.

\* This data is provisional and subject to change

# **ATTACHMENT 2**

Far Field Approximation  
with downtilt variation

Estimated Radiated Emission

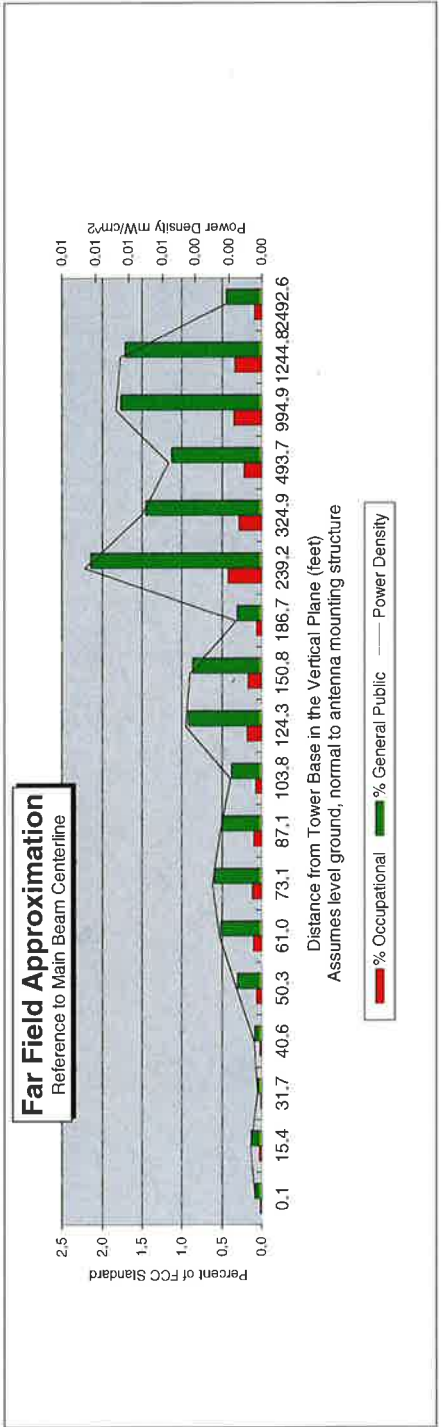
Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types



Location:	ROCKY HILL 4, CT
Site #:	
Date:	08/11/16
Name:	Mark Brauer
File Name:	Rocky Hill 4, CT - FF Power

Operating Freq. (MHz)	746.0
Antenna Height (ft):	90.0
Antenna Gain (dBi):	14.7
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	2140.0
Number of Channels	1



		Distance in feet below:																	
Calc Angle		90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna		87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)		36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)		2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Percent of Occupational Standard		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.4	0.3	0.2	0.4	0.3	0.1
Percent of General Population Standard		0.1	0.1	0.0	0.1	0.3	0.5	0.6	0.5	0.4	0.9	0.9	0.3	2.1	1.5	1.1	1.8	1.7	0.4

Antenna Type: SBNHH-1D65B  
Max%: 2.14%

Instructions:

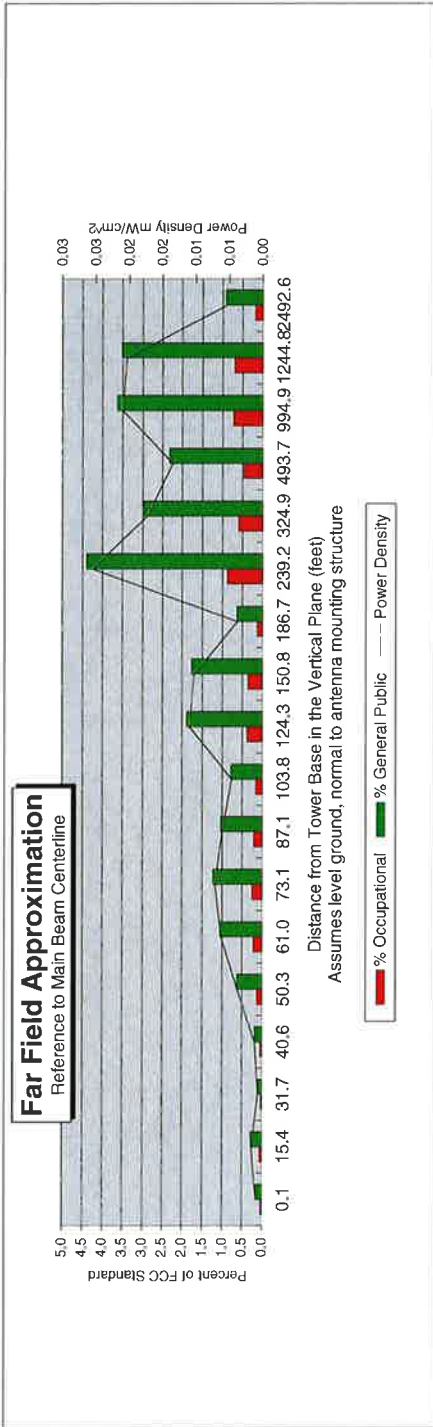
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBi to obtain dB), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density (mW/cm²).
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation  
with downtilt variation

**Estimated Radiated Emission  
Single Emitter Far Field Model  
Dipole / Wire/ Yagi Antenna Types**



Location:	ROCKY HILL 4, CT
Site #:	
Date:	08/11/16
Name:	Mark Brauer
File Name:	Rocky Hill 4, CT - FF Power
Operating Freq. (MHz)	869.0
Antenna Height (ft):	90.0
Antenna Gain (dBi):	16.0
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	3795.0
Number of Channels	9



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.03	0.02	0.01	0.02	0.02	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.1	0.9	0.6	0.5	0.7	0.7	0.2
Percent of General Population Standard	0.2	0.3	0.1	0.2	0.6	1.1	1.2	1.0	0.8	1.9	1.8	0.6	4.4	3.0	2.3	3.6	3.5	0.9

Antenna Type LNX-6514DS-A1M  
Max% 4.40%

Instructions:

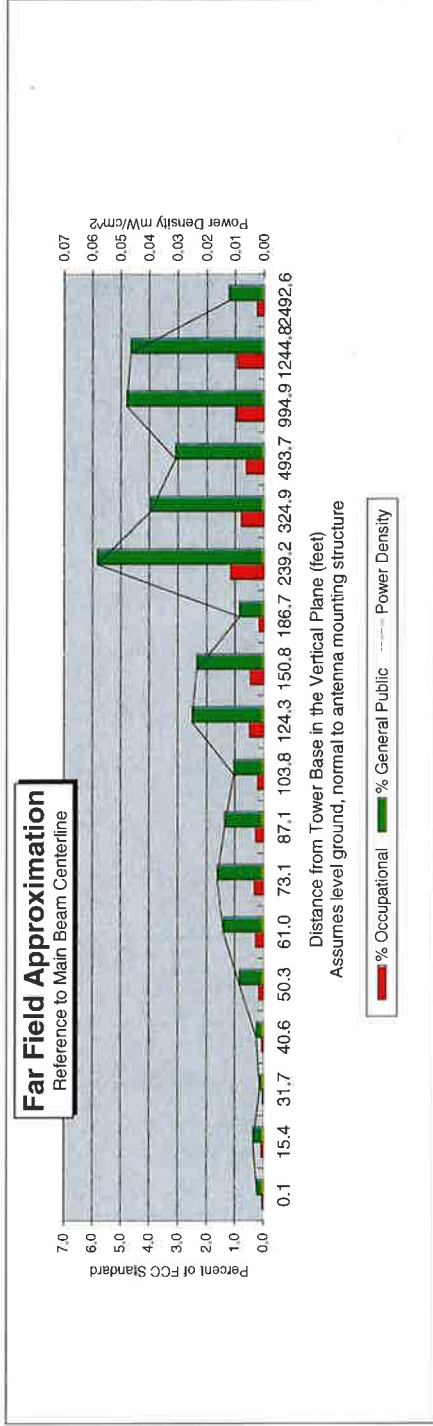
- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Data, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density (mW/cm²).
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation  
with downtilt variation

**Estimated Radiated Emission  
Single Emitter Far Field Model  
Dipole / Wire/ Yagi Antenna Types**



Location:	Rocky Hill 4, CT
Site #:	
Date:	08/11/16
Name:	Mark Brauer
File Name:	Rocky Hill 4, CT - FF Power
Operating Freq. (MHz)	1970.0
Antenna Height (ft):	90.0
Antenna Gain (dBi):	18.4
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	5000.0
Number of Channels	1



Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r, dx to antenna	87.0	88.4	92.6	96.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	36.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.06	0.04	0.03	0.05	0.05	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.5	0.5	0.2	1.2	0.8	0.6	1.0	0.9	0.2
Percent of General Population Standard	0.2	0.4	0.1	0.2	0.8	1.4	1.6	1.4	1.0	2.5	2.3	0.8	5.8	4.0	3.1	4.8	4.7	1.2

Antenna Type: SBNHH-1D65B  
Max%: 5.83%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.



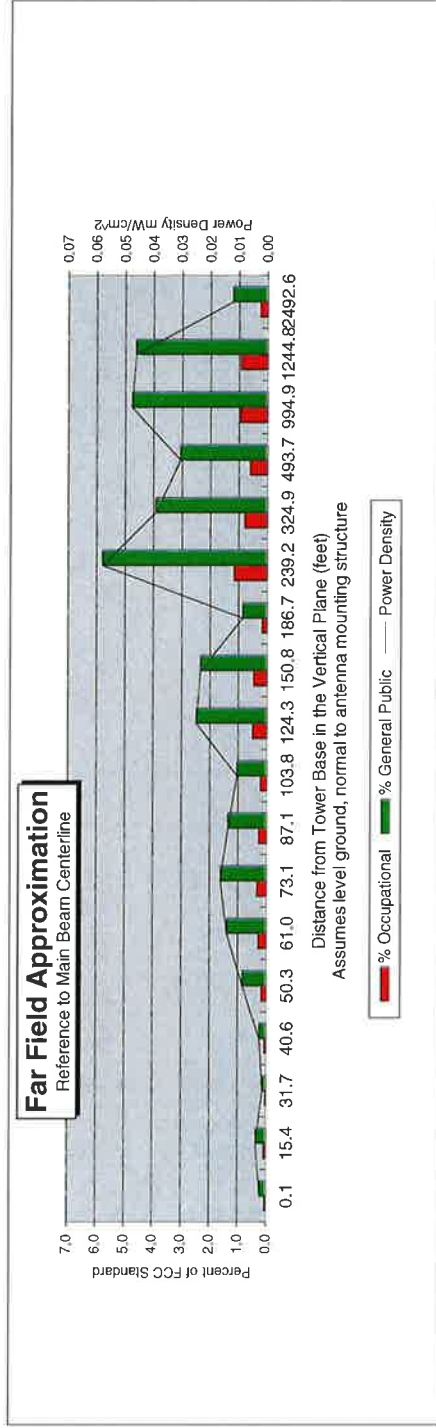
Far Field Approximation  
with downtilt variation

**Estimated Radiated Emission**  
**Single Emitter Far Field Model**  
**Dipole / Wire/ Yagi Antenna Types**



Location:	Rocky Hill 4, CT
Site #:	
Date:	08/11/16
Name:	Mark Brauer
File Name:	Rocky Hill 4, CT - FF Power

Operating Freq. (MHz)	2110.0
Antenna Height (ft):	90.0
Antenna Gain (dBi):	18.4
Antenna Size (in.):	72.0
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	4960.0
Number of Channels	1



Calc. Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0
Solve for r. dx to antenna	87.0	88.4	92.6	95.0	100.5	106.2	113.6	123.1	135.4	151.7	174.1	206.0	254.5	336.3	501.3	998.7	1247.8	2494.1
Distance from Antenna Structure Base in Horizontal plane	0.1	15.4	31.7	40.6	50.3	61.0	73.1	87.1	103.8	124.3	150.8	186.7	239.2	324.9	493.7	994.9	1244.8	2492.6
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0
Reflection Coefficient (1 to 4; 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.06	0.04	0.03	0.05	0.05	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.2	0.3	0.3	0.2	0.5	0.5	0.5	0.2	1.2	0.8	0.6	1.0	0.9	0.2
Percent of General Population Standard	0.2	0.4	0.1	0.2	0.8	1.4	1.6	1.4	1.0	2.5	2.3	0.8	5.8	3.9	3.1	4.8	4.6	1.2

Antenna Type: SBNHH-1D65B  
Max%: 5.79%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and J4 Power Density.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

# **ATTACHMENT 3**



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 100 ft Monopole  
**ATC Site Name** : Rkhl - Rocky Hill, CT  
**ATC Site Number** : 302479  
**Engineering Number** : OAA666991\_C3\_02  
**Proposed Carrier** : Verizon  
**Carrier Site Name** : N/A  
**Carrier Site Number** : N/A  
**Site Location** : 2 West Street  
Rocky Hill, CT 06067-1924  
41.651764,-72.668472  
**County** : Hartford  
**Date** : September 2, 2016  
**Max Usage** : 89%  
**Result** : Pass

Reviewed by:  
William Garrett, PE  
Chief Engineer



Prepared By:  
Steffen Schilstra

*Steffen Schilstra*

Sep 2 2016 2:40 PM

cosign

COA: PEC.0001553



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Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 100 ft monopole to reflect the change in loading by Verizon.

## Supporting Documents

<b>Tower Drawings</b>	ITT Meyer Type D, AT&T Technologies #AT-8935, dated April 13, 1984 Mapping by Hightower Solutions, Project #1981, dated August 9, 2007
<b>Foundation Drawing</b>	SNET Site: Rocky Hill, Conn, dated November 12, 1991
<b>Geotechnical Report</b>	S&ME Job #1261-08-049Q, dated April 24, 2008
<b>Modifications</b>	ATC Engineering #40737338, dated May 5, 2008

## Analysis

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

<b>Basic Wind Speed:</b>	100 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.18$ , $S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

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

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



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	104.0	2	Raycap DC6-48-60-18-8F	Platform w/ Handrails	(12) 1 1/4" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3" Conduit (1) 0.39" Cable	AT&T Mobility
		3	CCI HPA-65R-BUU-H6			
	103.0	6	Powerwave 7770.00			
	102.0	6	Powerwave LGP21901			
	100.0	3	Ericsson RRUS A2 Module (15.1")			
		6	Ericsson RRUS 11 (Band 12)			
92.0	92.0	3	Antel BXA-70063-6CF-EDIN-X	Low Profile Platform	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon
		3	Andrew LNX-6514DS-VTM			
90.0	90.0	1	RFS DB-T1-6Z-8AB-OZ			
82.0	84.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	Metro PCS

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
90.0	90.0	3	Andrew HBX-6517DS-VTM	-	-	Verizon
		3	Antel BXA-171063-8BF-EDIN-X			
		6	RFS FD9R6004/2C-3L			
		3	Alcatel-Lucent RRH2x40-AWS			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
92.0	92.0	6	Andrew SBNHH-1D65B	Low Profile Platform	(1) 1 5/8" Hybriflex	Verizon
90.0	90.0	3	Alcatel-Lucent B25 RRH4x30			
		3	Alcatel-Lucent B13 RRH4x30-4R 700U			
		3	Alcatel-Lucent RRH2X60-AWS Band 4			
		1	RFS DB-T1-6Z-8AB-OZ			

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

Install proposed coax inside the pole shaft.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	46%	Pass
Shaft	89%	Pass
Base Plate	82%	Pass
Reinforcement	73%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,330.3	54%
Axial (Kips)	49.5	11%
Shear (Kips)	18.2	20%

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) (°)
90.0	Alcatel-Lucent B25 RRH4x30	Verizon	0.831	1.007
	Alcatel-Lucent B13 RRH4x30-4R 700U			
	Alcatel-Lucent RRH2X60-AWS Band 4			
	RFS DB-T1-6Z-8AB-0Z			
	Andrew SBNHH-1D65B			

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



## Standard Conditions

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

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

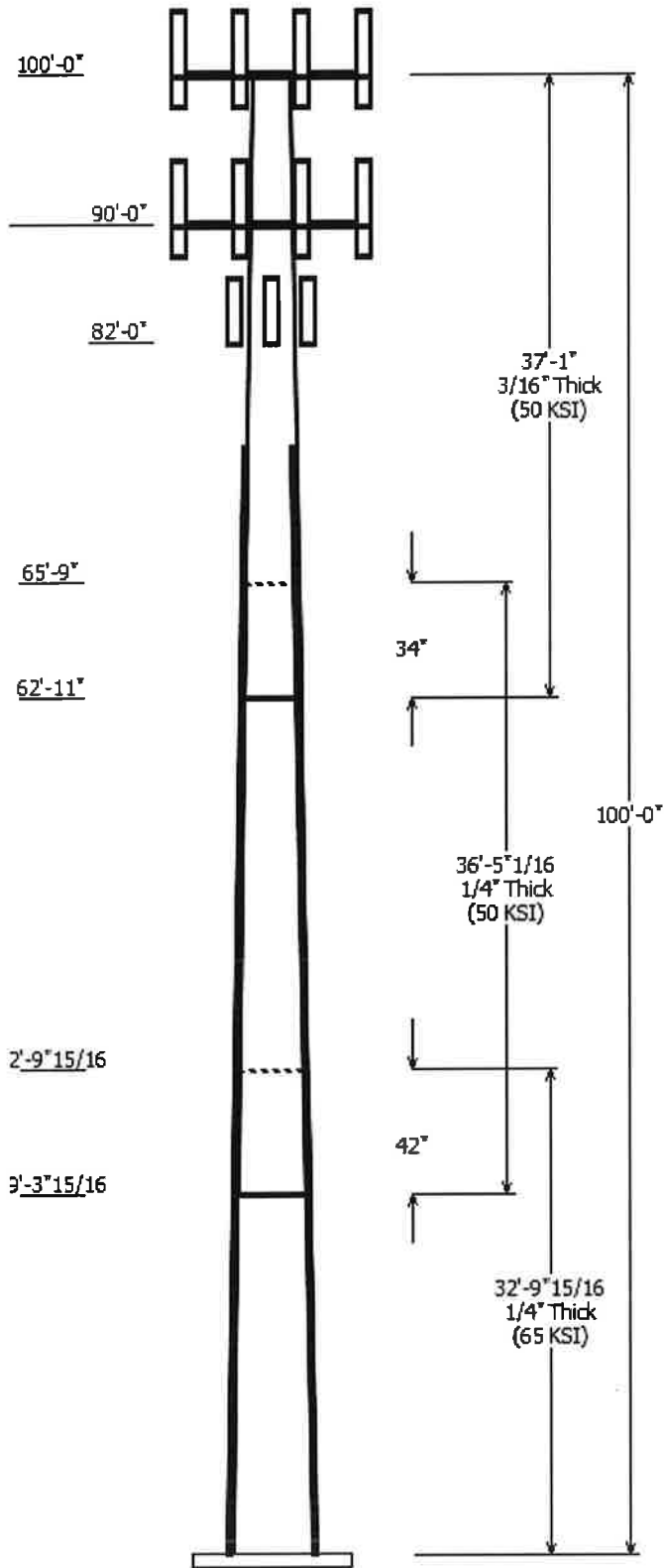
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance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

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

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



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Job Information	
Pole : 302479	Code: ANSI/TIA-222-G
Description : 100 ft Monopole	
Client : Verizon Wireless	Struct Class : II
Location : Rkhl - Rocky Hill, CT	
Shape : 12 Sides	Exposure : B
Height : 100.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.16376(in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Across Top	Flats Bottom				
1	32.830	24.62	30.00	0.250	0.000	0.163800	65
2	36.420	19.73	25.69	0.250 Slip Joint	42.000	0.163800	50
3	37.083	14.50	20.57	0.188 Slip Joint	34.000	0.163800	50

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
100.000	103.000	6	Powerwave Allgon 7770.00
100.000	100.000	6	Ericsson RRUS 11 (Band 12)
100.000	104.000	2	Raycap DC6-48-60-18-8F
100.000	104.000	3	CCI HPA-65R-BUU-H6
100.000	100.000	3	Ericsson RRUS A2 Module
100.000	100.000	1	Flat Platform with Handrails
100.000	102.000	6	Powerwave LGP21901
90.000	92.000	6	Andrew SBNHH-1D65B
90.000	90.000	3	Alcatel-Lucent B13 RRH4x30-
90.000	90.000	3	Alcatel-Lucent B25 RRH4x30
90.000	90.000	1	RFS DB-T1-6Z-8AB-0Z
90.000	90.000	3	Alcatel-Lucent RRH2X60-AWS
90.000	92.000	3	Andrew LNX-6514DS-VTM
90.000	90.000	1	RFS DB-T1-6Z-8AB-0Z
90.000	92.000	3	Antel BXA-70063-6CF-EDIN-X
90.000	90.000	1	Round Low Profile Platform
82.000	84.000	3	RFS APXV18-206517S-C

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
5.000	82.000	1 5/8" Coax	Yes
5.000	90.000	1 5/8" Coax	Yes
5.000	90.000	1 5/8" Hybriflex	No
5.000	90.000	1 5/8" Hybriflex	No
5.000	100.0	0.39" Cable	No
5.000	100.0	0.39" Fiber Trunk	No
5.000	100.0	0.78" 8 AWG 6	No
5.000	100.0	1 1/4" Coax	No
5.000	100.0	3" Conduit	No
0.000	78.406	Reinf.	Yes

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  
1.0D + 1.0W

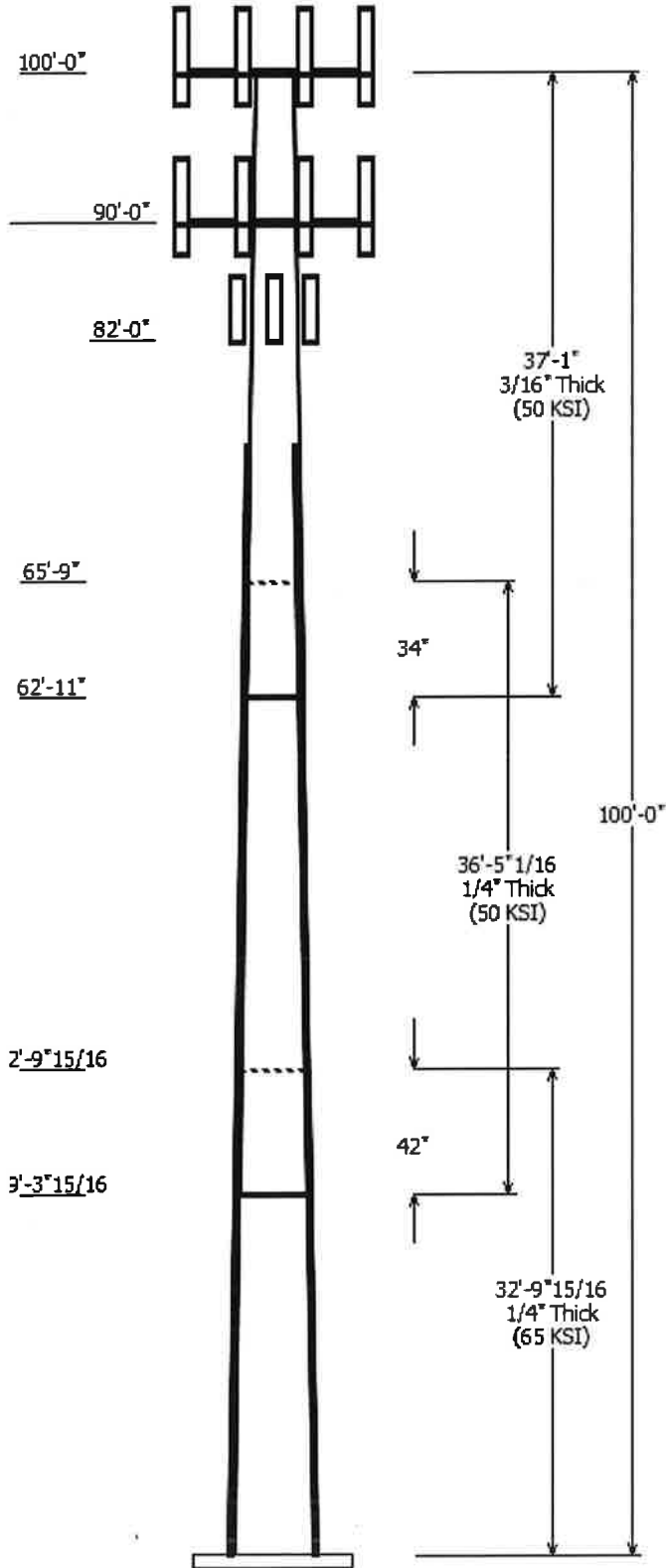
Seismic (Reduced DL) Equivalent Modal  
Serviceability 60 mph

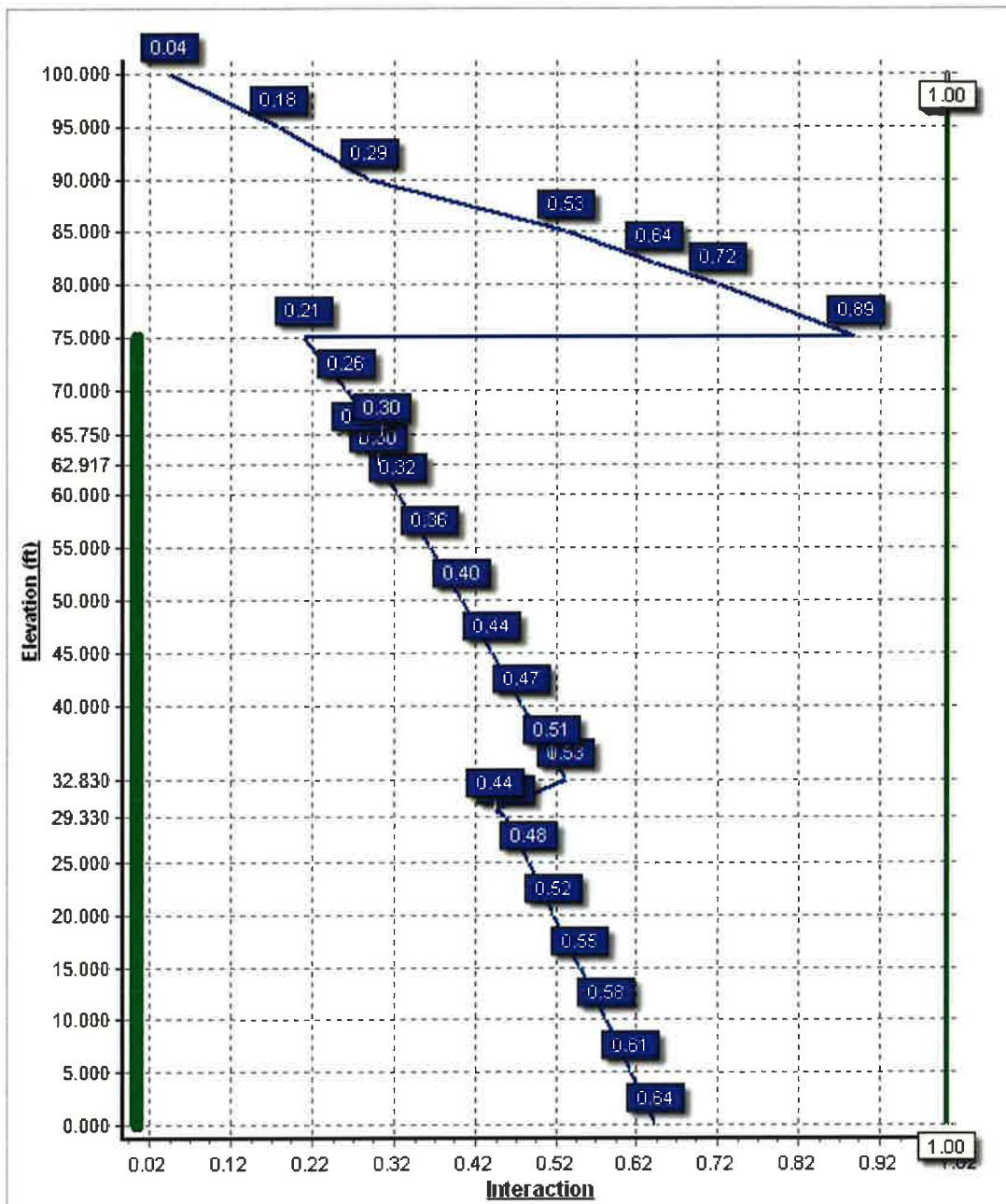
**Reactions**

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	1330.34	18.20	25.68
0.9D + 1.6W	1317.20	18.18	19.25
1.2D + 1.0Di + 1.0Wi	321.06	4.18	49.54
(1.2 + 0.2Sds) * DL + E ELFM	85.34	1.05	25.64
(1.2 + 0.2Sds) * DL + E EMAM	151.33	1.74	25.64
(0.9 - 0.2Sds) * DL + E ELFM	84.34	1.04	17.83
(0.9 - 0.2Sds) * DL + E EMAM	149.43	1.74	17.83
1.0D + 1.0W	297.61	4.09	21.44

**Dish Deflections**

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





Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

**Analysis Parameters**

Location:	Hartford County, CT	Height (ft):	100
Code:	ANSI/TIA-222-G	Base Diameter (in):	30.00
Shape:	12 Sides	Top Diameter (in):	14.50
Pole Type:	Taper	Taper (in/ft) :	0.164
Pole Manufacturer:	ITT Meyer		

**Ice & Wind Parameters**

Structure Class:	II	Design Wind Speed Without Ice:	100 mph
Exposure Category:	B	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):	1.80		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.181	S <sub>1</sub> :	0.063
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.193	S <sub>d1</sub> :	0.101
		C <sub>s</sub> :	0.037
		C <sub>s</sub> Max:	0.037
		C <sub>s</sub> Min:	0.030

**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: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip		Weight (lb)	Bottom						Top						
				Joint Type	Joint Len (in)		Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	32.830	0.2500	65		0.00	2,434	30.00	0.00	23.95	2705.5	30.01	120.00	24.62	32.83	19.62	1487.8	24.25	98.50	0.163760
2-12	36.420	0.2500	50	Slip	42.00	2,241	25.69	29.33	20.48	1693.1	25.40	102.79	19.73	65.75	15.68	759.9	19.01	78.93	0.163760
3-12	37.083	0.1880	50	Slip	34.00	1,325	20.57	62.92	12.34	654.5	27.18	109.43	14.50	100.00	8.66	226.5	18.52	77.13	0.163760
Shaft Weight						6,000													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAa (sf)	Orientation Factor	Weight (lb)	EPAa (sf)	Orientation Factor		
100.00	CCI HPA-65R-BUU-H6	3	51.00	9.660	0.83	382.35	11.433	0.83	0.000	4.000
100.00	Ericsson RRUS 11 (Band 12)	6	50.00	2.570	0.50	161.10	3.423	0.50	0.000	0.000
100.00	Ericsson RRUS A2 Module	3	22.00	2.060	0.50	98.14	2.846	0.50	0.000	0.000
100.00	Flat Platform with Handrails	1	2000.00	42.400	1.00	3,818.72	69.239	1.00	0.000	0.000
100.00	Powerwave Allgon 7770.00	6	35.00	5.510	0.77	218.55	6.880	0.77	0.000	3.000
100.00	Powerwave LGP21901	6	5.50	0.230	0.50	5.99	0.250	0.50	0.000	2.000
100.00	Raycap DC6-48-60-18-8F	2	20.00	1.110	1.00	129.93	2.715	1.00	0.000	4.000
90.00	Alcatel-Lucent B13 RRH4x30-	3	57.20	2.170	0.50	167.52	2.989	0.50	0.000	0.000
90.00	Alcatel-Lucent B25 RRH4x30	3	53.00	2.120	0.50	151.89	2.931	0.50	0.000	0.000
90.00	Alcatel-Lucent RRH2X60-	3	55.00	3.350	0.67	145.90	5.090	0.67	0.000	0.000
90.00	Andrew LNX-6514DS-VTM	3	33.10	8.080	0.83	300.80	9.742	0.83	0.000	2.000
90.00	Andrew SBNHH-1D65B	6	50.70	8.170	0.83	320.80	9.850	0.83	0.000	2.000
90.00	Antel BXA-70063-6CF-EDIN-X	3	17.00	7.570	0.77	240.69	9.181	0.77	0.000	2.000
90.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	226.75	5.924	0.67	0.000	0.000
90.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	226.75	5.924	0.67	0.000	0.000
90.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,320.20	46.005	1.00	0.000	0.000
82.00	RFS APXV18-206517S-C	3	26.40	5.170	0.80	185.19	6.748	0.80	0.000	2.000
Totals		54	5419.30			16,108.36			Number of Loadings : 17	

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Width (in)	Exposed To Wind	Carrier
5.00	100.00	1	0.39" Cable	0.39	0.07	N 0.00	N	AT&T Mobility
5.00	100.00	2	0.39" Fiber Trunk	0.39	0.06	N 0.00	N	AT&T Mobility
5.00	100.00	4	0.78" 8 AWG 6	0.78	0.59	N 0.00	N	AT&T Mobility
5.00	100.00	12	1 1/4" Coax	1.55	0.63	N 0.00	N	AT&T Mobility
5.00	100.00	1	3" Conduit	3.50	7.58	N 0.00	N	AT&T Mobility
5.00	90.00	12	1 5/8" Coax	1.98	0.82	N 3.96	Y	Verizon
5.00	90.00	1	1 5/8" Hybriflex	1.98	1.30	N 0.00	N	Verizon
5.00	90.00	1	1 5/8" Hybriflex	1.98	1.30	N 0.00	N	Verizon
5.00	82.00	6	1 5/8" Coax	1.98	4.92	N 3.96	Y	Metro PCS
0.00	78.41	4	Reinf.	2.50	0.00	N 0.08	Y	

**Additional Steel**

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	— Intermediate Connections —			Connectors	Continuation?
						Description	Spacing (in)	Len (in)		
0.00	75.00	4	SOL #20 All Thread	80	2.20	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	No

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

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

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fy (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)	Additional Reinforcing		
												Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	Weight (lb)
0.00		0.2500	30.000	23.949	2,705.5	30.01	120.00	72.0	174.2	0.0	0.0	19.64	3,350	0.0
5.00		0.2500	29.181	23.290	2,488.2	29.13	116.72	72.9	164.7	0.0	401.9	19.64	3,203	334.0
10.00		0.2500	28.362	22.630	2,282.8	28.26	113.45	73.9	155.5	0.0	390.6	19.64	3,060	334.0
15.00		0.2500	27.544	21.971	2,089.1	27.38	110.17	74.9	146.5	0.0	379.4	19.64	2,920	334.0
20.00		0.2500	26.725	21.312	1,906.7	26.50	106.90	75.8	137.8	0.0	368.2	19.64	2,783	334.0
25.00		0.2500	25.906	20.653	1,735.2	25.62	103.62	76.8	129.4	0.0	357.0	19.64	2,649	334.0
29.33	Bot - Section 2	0.2500	25.197	20.082	1,595.3	24.86	100.79	77.6	122.3	0.0	300.1	19.64	2,536	289.2
30.00		0.2500	25.087	19.994	1,574.3	24.74	100.35	77.7	121.2	0.0	92.3	19.64	2,598	44.8
32.83	Top - Section 1	0.2500	25.124	20.023	1,581.3	24.78	100.50	62.3	121.6	0.0	385.3	19.64	2,525	189.0
35.00		0.2500	24.768	19.737	1,514.5	24.40	99.07	62.6	118.1	0.0	146.8	19.64	2,469	145.0
40.00		0.2500	23.950	19.078	1,367.7	23.53	95.80	63.0	110.3	0.0	330.2	19.64	2,344	334.0
45.00		0.2500	23.131	18.419	1,230.8	22.65	92.52	63.0	102.8	0.0	319.0	19.64	2,221	334.0
50.00		0.2500	22.312	17.760	1,103.4	21.77	89.25	63.0	95.5	0.0	307.8	19.64	2,102	334.0
55.00		0.2500	21.493	17.101	985.0	20.89	85.97	63.0	88.5	0.0	296.6	19.64	1,986	334.0
60.00		0.2500	20.674	16.442	875.4	20.02	82.70	63.0	81.8	0.0	285.3	19.64	1,874	334.0
62.92	Bot - Section 3	0.2500	20.197	16.057	815.5	19.50	80.79	63.0	78.0	0.0	161.3	19.64	1,810	194.8
65.00		0.2500	19.856	15.783	774.3	19.14	79.42	63.0	75.3	0.0	199.6	19.64	1,814	139.2
65.75	Top - Section 2	0.1880	20.109	12.059	610.8	26.52	106.96	61.0	58.7	0.0	71.0	19.64	1,798	50.1
70.00		0.1880	19.413	11.638	549.0	25.52	103.26	61.8	54.6	0.0	171.4	19.64	1,707	283.9
75.00	Reinf. Top	0.1880	18.594	11.142	481.8	24.36	98.90	62.6	50.1	0.0	193.8	19.64	1,603	334.0
80.00		0.1880	17.775	10.647	420.3	23.19	94.55	63.0	45.7	0.0	185.4			
82.00		0.1880	17.448	10.448	397.3	22.72	92.81	63.0	44.0	0.0	71.8			
85.00		0.1880	16.956	10.151	364.3	22.02	90.19	63.0	41.5	0.0	105.1			
90.00		0.1880	16.138	9.655	313.5	20.86	85.84	63.0	37.5	0.0	168.5			
95.00		0.1880	15.319	9.160	267.7	19.69	81.48	63.0	33.8	0.0	160.1			
100.0		0.1880	14.500	8.664	226.5	18.52	77.13	63.0	30.2	0.0	151.6			
											6,000.0	5,010.0		

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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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

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion Moment MY (lb-ft)	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		191.2	0.0					0.0	0.0	191.2	0.0	0.0	0.0
5.00		414.3	482.2					0.0	400.8	414.3	883.0	0.0	0.0
10.00		439.9	468.8					119.8	758.7	559.7	1,227.5	0.0	0.0
15.00		427.2	455.3					119.8	758.7	547.0	1,214.0	0.0	0.0
20.00		414.5	441.9					119.8	758.7	534.3	1,200.5	0.0	0.0
25.00		375.7	428.4					119.8	758.7	495.5	1,187.1	0.0	0.0
29.33	Bot - Section 2	198.2	360.1					103.8	657.0	302.0	1,017.1	0.0	0.0
30.00		139.5	110.8					16.1	101.7	155.6	212.4	0.0	0.0
32.83	Top - Section 1	199.9	462.4					68.8	429.4	268.7	891.8	0.0	0.0
35.00		288.5	176.2					53.9	329.3	342.5	505.5	0.0	0.0
40.00		403.3	396.2					127.8	758.7	531.2	1,154.9	0.0	0.0
45.00		402.9	382.8					132.5	758.7	535.4	1,141.5	0.0	0.0
50.00		400.6	369.3					136.8	758.7	537.3	1,128.0	0.0	0.0
55.00		396.5	355.9					140.7	758.7	537.3	1,114.6	0.0	0.0
60.00		310.6	342.4					144.5	758.7	455.1	1,101.1	0.0	0.0
62.92	Bot - Section 3	195.5	193.5					85.9	442.6	281.4	636.1	0.0	0.0
65.00		111.2	239.5					62.1	316.1	173.3	555.7	0.0	0.0
65.75	Top - Section 2	194.0	85.2					22.5	113.8	216.4	199.0	0.0	0.0
70.00		354.4	205.6					128.7	644.9	483.2	850.5	0.0	0.0
75.00	Reinf. Top	374.9	232.5					154.3	758.7	529.2	991.2	0.0	0.0
80.00		257.7	222.4					156.8	357.9	414.5	580.3	0.0	0.0
82.00	Appertunance(s)	179.9	86.1	499.3	0.0	998.7	95.0	63.1	143.2	742.4	324.3	0.0	0.0
85.00		281.7	126.2					47.7	108.5	329.4	234.6	0.0	0.0
90.00	Appertunance(s)	314.7	202.2	4,121.3	0.0	5,174.0	3,045.7	80.2	180.8	4,516.1	3,428.7	0.0	0.0
95.00		275.4	192.1					0.0	106.1	275.4	298.2	0.0	0.0
100.00	Appertunance(s)	135.0	181.9	3,815.5	0.0	5,859.0	3,362.4	0.0	106.1	3,950.5	3,650.5	0.0	0.0
<b>Totals:</b>										<b>18,319.0</b>	<b>25,728.2</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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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	-25.68	-18.20	0.00	-1,330.34	0.00	1,330.34	1,551.53	775.77	1,904.52	940.57	0.00	0.00	0.642
5.00	-24.70	-17.91	0.00	-1,239.36	0.00	1,239.36	1,528.89	764.45	1,824.65	901.13	0.16	-0.30	0.611
10.00	-23.39	-17.46	0.00	-1,149.81	0.00	1,149.81	1,505.12	752.56	1,745.00	861.79	0.64	-0.60	0.579
15.00	-22.10	-17.01	0.00	-1,062.50	0.00	1,062.50	1,480.21	740.10	1,665.70	822.62	1.43	-0.89	0.547
20.00	-20.82	-16.56	0.00	-977.44	0.00	977.44	1,454.16	727.08	1,586.85	783.69	2.52	-1.18	0.515
25.00	-19.58	-16.13	0.00	-894.64	0.00	894.64	1,426.98	713.49	1,508.58	745.03	3.92	-1.47	0.483
29.33	-18.53	-15.84	0.00	-824.82	0.00	824.82	1,402.52	701.26	1,441.35	711.83	5.36	-1.71	0.455
30.00	-18.29	-15.71	0.00	-814.20	0.00	814.20	1,398.66	699.33	1,430.99	706.71	5.61	-1.75	0.442
32.83	-17.38	-15.45	0.00	-769.74	0.00	769.74	1,122.95	561.48	1,150.62	568.25	6.69	-1.90	0.530
35.00	-16.83	-15.15	0.00	-736.21	0.00	736.21	1,111.89	555.94	1,122.84	554.53	7.58	-2.02	0.513
40.00	-15.64	-14.64	0.00	-660.46	0.00	660.46	1,081.73	540.87	1,055.54	521.29	9.83	-2.27	0.475
45.00	-14.46	-14.12	0.00	-587.26	0.00	587.26	1,044.36	522.18	983.50	485.71	12.33	-2.50	0.438
50.00	-13.31	-13.58	0.00	-516.67	0.00	516.67	1,006.99	503.49	914.00	451.39	15.08	-2.73	0.401
55.00	-12.17	-13.03	0.00	-448.77	0.00	448.77	969.61	484.81	847.05	418.33	18.05	-2.95	0.362
60.00	-11.06	-12.55	0.00	-383.60	0.00	383.60	932.24	466.12	782.65	386.52	21.25	-3.15	0.322
62.92	-10.43	-12.25	0.00	-347.00	0.00	347.00	910.44	455.22	746.26	368.55	23.20	-3.26	0.298
65.00	-9.87	-12.05	0.00	-321.48	0.00	321.48	894.87	447.43	720.79	355.97	24.64	-3.33	0.276
65.75	-9.67	-11.84	0.00	-312.44	0.00	312.44	662.47	331.23	543.96	268.64	25.17	-3.36	0.302
70.00	-8.82	-11.33	0.00	-262.12	0.00	262.12	646.97	323.48	512.50	253.10	28.22	-3.49	0.258
75.00	-7.84	-10.76	0.00	-205.47	0.00	205.47	628.03	314.01	476.10	235.13	31.96	-3.64	0.208
75.00	-7.84	-10.76	0.00	-205.47	0.00	205.47	628.03	314.01	476.10	235.13	31.96	-3.64	0.888
80.00	-7.26	-10.33	0.00	-151.69	0.00	151.69	603.66	301.83	437.06	215.85	35.84	-3.76	0.716
82.00	-6.95	-9.59	0.00	-130.04	0.00	130.04	592.42	296.21	420.85	207.84	37.46	-3.95	0.638
85.00	-6.69	-9.28	0.00	-101.26	0.00	101.26	575.56	287.78	397.11	196.12	40.02	-4.20	0.529
90.00	-3.60	-4.53	0.00	-49.70	0.00	49.70	547.45	273.73	359.07	177.33	44.60	-4.51	0.287
95.00	-3.31	-4.24	0.00	-27.05	0.00	27.05	519.35	259.67	322.95	159.49	49.42	-4.68	0.176
100.00	0.00	-3.95	0.00	-5.86	0.00	5.86	491.24	245.62	288.74	142.60	54.37	-4.77	0.041



Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

9/2/2016 1:51:17 PM

Customer: Verizon Wireless

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

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

**21 Iterations**

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion Moment MY (lb-ft)	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		191.2	0.0					0.0	0.0	191.2	0.0	0.0	0.0
5.00		414.3	361.7					0.0	300.6	414.3	662.3	0.0	0.0
10.00		439.9	351.6					119.8	569.0	559.7	920.6	0.0	0.0
15.00		427.2	341.5					119.8	569.0	547.0	910.5	0.0	0.0
20.00		414.5	331.4					119.8	569.0	534.3	900.4	0.0	0.0
25.00		375.7	321.3					119.8	569.0	495.5	890.3	0.0	0.0
29.33	Bot - Section 2	198.2	270.1					103.8	492.8	302.0	762.8	0.0	0.0
30.00		139.5	83.1					16.1	76.3	155.6	159.3	0.0	0.0
32.83	Top - Section 1	199.9	346.8					68.8	322.1	268.7	668.9	0.0	0.0
35.00		288.5	132.1					53.9	247.0	342.5	379.1	0.0	0.0
40.00		403.3	297.2					127.8	569.0	531.2	866.2	0.0	0.0
45.00		402.9	287.1					132.5	569.0	535.4	856.1	0.0	0.0
50.00		400.6	277.0					136.8	569.0	537.3	846.0	0.0	0.0
55.00		396.5	266.9					140.7	569.0	537.3	835.9	0.0	0.0
60.00		310.6	256.8					144.5	569.0	455.1	825.8	0.0	0.0
62.92	Bot - Section 3	195.5	145.1					85.9	331.9	281.4	477.1	0.0	0.0
65.00		111.2	179.7					62.1	237.1	173.3	416.8	0.0	0.0
65.75	Top - Section 2	194.0	63.9					22.5	85.3	216.4	149.3	0.0	0.0
70.00		354.4	154.2					128.7	483.7	483.2	637.9	0.0	0.0
75.00	Reinf. Top	374.9	174.4					154.3	569.0	529.2	743.4	0.0	0.0
80.00		257.7	166.8					156.8	268.4	414.5	435.2	0.0	0.0
82.00	Appertunance(s)	179.9	64.6	499.3	0.0	998.7	71.3	63.1	107.4	742.4	243.3	0.0	0.0
85.00		281.7	94.6					47.7	81.3	329.4	176.0	0.0	0.0
90.00	Appertunance(s)	314.7	151.6	4,121.3	0.0	5,174.0	2,284.3	80.2	135.6	4,516.1	2,571.5	0.0	0.0
95.00		275.4	144.1					0.0	79.6	275.4	223.7	0.0	0.0
100.00	Appertunance(s)	135.0	136.5	3,815.5	0.0	5,859.0	2,521.8	0.0	79.6	3,950.5	2,737.9	0.0	0.0
<b>Totals:</b>										<b>18,319.0</b>	<b>19,296.1</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

9/2/2016 1:51:18 PM

Customer: Verizon Wireless

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

100 mph with No Ice (Reduced DL)

21 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-19.25	-18.18	0.00	-1,317.20	0.00	1,317.20	1,551.53	775.77	1,904.52	940.57	0.00	0.00	0.633
5.00	-18.49	-17.86	0.00	-1,226.31	0.00	1,226.31	1,528.89	764.45	1,824.65	901.13	0.16	-0.30	0.602
10.00	-17.49	-17.38	0.00	-1,137.01	0.00	1,137.01	1,505.12	752.56	1,745.00	861.79	0.63	-0.59	0.570
15.00	-16.50	-16.91	0.00	-1,050.11	0.00	1,050.11	1,480.21	740.10	1,665.70	822.62	1.41	-0.89	0.539
20.00	-15.53	-16.43	0.00	-965.57	0.00	965.57	1,454.16	727.08	1,586.85	783.69	2.50	-1.17	0.507
25.00	-14.58	-15.98	0.00	-883.41	0.00	883.41	1,426.98	713.49	1,508.58	745.03	3.87	-1.45	0.475
29.33	-13.79	-15.69	0.00	-814.21	0.00	814.21	1,402.52	701.26	1,441.35	711.83	5.30	-1.69	0.447
30.00	-13.61	-15.56	0.00	-803.69	0.00	803.69	1,398.66	699.33	1,430.99	706.71	5.54	-1.73	0.434
32.83	-12.91	-15.30	0.00	-759.67	0.00	759.67	1,122.95	561.48	1,150.62	568.25	6.61	-1.88	0.521
35.00	-12.50	-14.98	0.00	-726.48	0.00	726.48	1,111.89	555.94	1,122.84	554.53	7.50	-1.99	0.504
40.00	-11.59	-14.47	0.00	-651.58	0.00	651.58	1,081.73	540.87	1,055.54	521.29	9.72	-2.24	0.467
45.00	-10.70	-13.94	0.00	-579.24	0.00	579.24	1,044.36	522.18	983.50	485.71	12.19	-2.47	0.431
50.00	-9.83	-13.40	0.00	-509.55	0.00	509.55	1,006.99	503.49	914.00	451.39	14.90	-2.70	0.394
55.00	-8.97	-12.86	0.00	-442.54	0.00	442.54	969.61	484.81	847.05	418.33	17.84	-2.91	0.356
60.00	-8.14	-12.38	0.00	-378.26	0.00	378.26	932.24	466.12	782.65	386.52	21.00	-3.11	0.316
62.92	-7.66	-12.08	0.00	-342.15	0.00	342.15	910.44	455.22	746.26	368.55	22.93	-3.22	0.293
65.00	-7.24	-11.89	0.00	-316.98	0.00	316.98	894.87	447.43	720.79	355.97	24.35	-3.29	0.271
65.75	-7.09	-11.68	0.00	-308.06	0.00	308.06	662.47	331.23	543.96	268.64	24.87	-3.32	0.296
70.00	-6.46	-11.18	0.00	-258.42	0.00	258.42	646.97	323.48	512.50	253.10	27.88	-3.45	0.253
75.00	-5.72	-10.62	0.00	-202.54	0.00	202.54	628.03	314.01	476.10	235.13	31.57	-3.59	0.203
75.00	-5.72	-10.62	0.00	-202.54	0.00	202.54	628.03	314.01	476.10	235.13	31.57	-3.59	0.872
80.00	-5.29	-10.19	0.00	-149.46	0.00	149.46	603.66	301.83	437.06	215.85	35.41	-3.71	0.702
82.00	-5.06	-9.45	0.00	-128.09	0.00	128.09	592.42	296.21	420.85	207.84	37.00	-3.90	0.626
85.00	-4.86	-9.13	0.00	-99.74	0.00	99.74	575.56	287.78	397.11	196.12	39.54	-4.15	0.518
90.00	-2.62	-4.45	0.00	-48.90	0.00	48.90	547.45	273.73	359.07	177.33	44.05	-4.45	0.281
95.00	-2.41	-4.16	0.00	-26.66	0.00	26.66	519.35	259.67	322.95	159.49	48.81	-4.62	0.172
100.00	0.00	-3.95	0.00	-5.86	0.00	5.86	491.24	245.62	288.74	142.60	53.69	-4.71	0.041

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

9/2/2016 1:51:18 PM

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**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion Moment MY (lb-ft)	MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion Moment MY (lb-ft)	MZ (lb)
0.00		39.5	0.0					0.0	0.0	39.5	0.0	0.0	0.0
5.00		78.4	789.4					0.0	485.9	78.4	1,275.3	0.0	0.0
10.00		77.0	804.4					42.9	1,159.2	120.0	1,963.6	0.0	0.0
15.00		75.4	800.0					44.2	1,181.1	119.6	1,981.0	0.0	0.0
20.00		73.7	789.1					45.1	1,196.3	118.8	1,985.4	0.0	0.0
25.00		67.2	774.8					45.8	1,208.1	112.9	1,982.9	0.0	0.0
29.33	Bot - Section 2	35.6	658.4					40.1	1,054.1	75.6	1,712.5	0.0	0.0
30.00		25.1	158.0					6.2	163.7	31.3	321.7	0.0	0.0
32.83	Top - Section 1	36.0	659.9					26.8	693.0	62.8	1,352.9	0.0	0.0
35.00		52.3	326.8					21.1	533.1	73.3	859.9	0.0	0.0
40.00		73.4	736.4					50.3	1,233.3	123.7	1,969.7	0.0	0.0
45.00		73.8	716.7					52.6	1,239.8	126.4	1,956.4	0.0	0.0
50.00		73.9	696.2					54.6	1,245.6	128.5	1,941.8	0.0	0.0
55.00		73.7	675.2					56.5	1,250.9	130.2	1,926.1	0.0	0.0
60.00		58.1	653.7					58.4	1,255.7	116.4	1,909.5	0.0	0.0
62.92	Bot - Section 3	36.7	372.6					34.8	734.6	71.5	1,107.2	0.0	0.0
65.00		20.9	368.2					25.2	525.7	46.1	893.9	0.0	0.0
65.75	Top - Section 2	36.7	131.4					9.2	189.4	45.8	320.8	0.0	0.0
70.00		67.3	460.1					52.5	1,075.1	119.9	1,535.2	0.0	0.0
75.00	Reinf. Top	71.8	522.7					63.3	1,268.4	135.0	1,791.1	0.0	0.0
80.00		49.7	503.1					60.4	831.8	110.1	1,334.9	0.0	0.0
82.00	Appertunance(s)	35.0	197.1	101.8	0.0	203.7	571.4	20.7	299.6	157.6	1,068.1	0.0	0.0
85.00		55.2	289.0					15.7	259.6	70.9	548.5	0.0	0.0
90.00	Appertunance(s)	67.7	463.3	921.8	0.0	976.0	7,902.9	26.6	433.8	1,016.2	8,800.0	0.0	0.0
95.00		66.1	443.0					0.0	106.1	66.1	549.1	0.0	0.0
100.00	Appertunance(s)	32.6	422.5	862.3	0.0	1,163.9	7,929.9	0.0	106.1	894.9	8,458.6	0.0	0.0
<b>Totals:</b>										<b>4,191.56</b>	<b>49,546.1</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

9/2/2016 1:51:19 PM

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	-49.54	-4.18	0.00	-321.06	0.00	321.06	1,551.53	775.77	1,904.52	940.57	0.00	0.00	0.170
5.00	-48.26	-4.17	0.00	-300.14	0.00	300.14	1,528.89	764.45	1,824.65	901.13	0.04	-0.07	0.163
10.00	-46.29	-4.10	0.00	-279.31	0.00	279.31	1,505.12	752.56	1,745.00	861.79	0.15	-0.15	0.155
15.00	-44.31	-4.03	0.00	-258.81	0.00	258.81	1,480.21	740.10	1,665.70	822.62	0.35	-0.22	0.147
20.00	-42.32	-3.95	0.00	-238.66	0.00	238.66	1,454.16	727.08	1,586.85	783.69	0.61	-0.29	0.139
25.00	-40.33	-3.87	0.00	-218.89	0.00	218.89	1,426.98	713.49	1,508.58	745.03	0.95	-0.36	0.131
29.33	-38.62	-3.81	0.00	-202.12	0.00	202.12	1,402.52	701.26	1,441.35	711.83	1.30	-0.42	0.124
30.00	-38.30	-3.79	0.00	-199.56	0.00	199.56	1,398.66	699.33	1,430.99	706.71	1.36	-0.43	0.120
32.83	-36.94	-3.74	0.00	-188.83	0.00	188.83	1,122.95	561.48	1,150.62	568.25	1.62	-0.46	0.145
35.00	-36.08	-3.69	0.00	-180.71	0.00	180.71	1,111.89	555.94	1,122.84	554.53	1.84	-0.49	0.140
40.00	-34.11	-3.58	0.00	-162.27	0.00	162.27	1,081.73	540.87	1,055.54	521.29	2.39	-0.55	0.130
45.00	-32.15	-3.47	0.00	-144.36	0.00	144.36	1,044.36	522.18	983.50	485.71	3.00	-0.61	0.121
50.00	-30.20	-3.35	0.00	-127.02	0.00	127.02	1,006.99	503.49	914.00	451.39	3.67	-0.67	0.111
55.00	-28.28	-3.22	0.00	-110.29	0.00	110.29	969.61	484.81	847.05	418.33	4.40	-0.72	0.101
60.00	-26.37	-3.09	0.00	-94.20	0.00	94.20	932.24	466.12	782.65	386.52	5.18	-0.77	0.091
62.92	-25.26	-3.02	0.00	-85.17	0.00	85.17	910.44	455.22	746.26	368.55	5.66	-0.80	0.084
65.00	-24.37	-2.96	0.00	-78.88	0.00	78.88	894.87	447.43	720.79	355.97	6.01	-0.81	0.078
65.75	-24.05	-2.92	0.00	-76.66	0.00	76.66	662.47	331.23	543.96	268.64	6.14	-0.82	0.086
70.00	-22.51	-2.79	0.00	-64.24	0.00	64.24	646.97	323.48	512.50	253.10	6.88	-0.85	0.075
75.00	-20.72	-2.64	0.00	-50.27	0.00	50.27	628.03	314.01	476.10	235.13	7.80	-0.89	0.061
75.00	-20.72	-2.64	0.00	-50.27	0.00	50.27	628.03	314.01	476.10	235.13	7.80	-0.89	0.247
80.00	-19.39	-2.53	0.00	-37.05	0.00	37.05	603.66	301.83	437.06	215.85	8.75	-0.92	0.204
82.00	-18.32	-2.37	0.00	-31.80	0.00	31.80	592.42	296.21	420.85	207.84	9.15	-0.97	0.184
85.00	-17.77	-2.31	0.00	-24.70	0.00	24.70	575.56	287.78	397.11	196.12	9.77	-1.03	0.157
90.00	-8.99	-1.14	0.00	-12.18	0.00	12.18	547.45	273.73	359.07	177.33	10.89	-1.10	0.085
95.00	-8.44	-1.07	0.00	-6.49	0.00	6.49	519.35	259.67	322.95	159.49	12.07	-1.14	0.057
100.00	0.00	-0.89	0.00	-1.16	0.00	1.16	491.24	245.62	288.74	142.60	13.28	-1.16	0.008

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

9/2/2016 1:51:19 PM

Customer: Verizon Wireless

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

Serviceability 60 mph

20 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion Moment MY (lb-ft)	MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion Moment MY (lb-ft)	Moment MZ (lb)
0.00		43.0	0.0					0.0	0.0	43.0	0.0	0.0	0.0
5.00		93.2	401.9					0.0	334.0	93.2	735.9	0.0	0.0
10.00		99.0	390.6					27.0	632.2	125.9	1,022.9	0.0	0.0
15.00		96.1	379.4					27.0	632.2	123.1	1,011.7	0.0	0.0
20.00		93.3	368.2					27.0	632.2	120.2	1,000.5	0.0	0.0
25.00		84.5	357.0					27.0	632.2	111.5	989.2	0.0	0.0
29.33	Bot - Section 2	44.6	300.1					23.4	547.5	68.0	847.6	0.0	0.0
30.00		31.4	92.3					3.6	84.7	35.0	177.0	0.0	0.0
32.83	Top - Section 1	45.0	385.3					15.5	357.8	60.5	743.2	0.0	0.0
35.00		64.9	146.8					12.1	274.4	77.1	421.2	0.0	0.0
40.00		90.7	330.2					28.8	632.2	119.5	962.4	0.0	0.0
45.00		90.7	319.0					29.8	632.2	120.5	951.2	0.0	0.0
50.00		90.1	307.8					30.8	632.2	120.9	940.0	0.0	0.0
55.00		89.2	296.6					31.7	632.2	120.9	928.8	0.0	0.0
60.00		69.9	285.3					32.5	632.2	102.4	917.6	0.0	0.0
62.92	Bot - Section 3	44.0	161.3					19.3	368.8	63.3	530.1	0.0	0.0
65.00		25.0	199.6					14.0	263.4	39.0	463.1	0.0	0.0
65.75	Top - Section 2	43.6	71.0					5.1	94.8	48.7	165.8	0.0	0.0
70.00		79.7	171.4					29.0	537.4	108.7	708.8	0.0	0.0
75.00	Reinf. Top	84.3	193.8					34.7	632.2	119.1	826.0	0.0	0.0
80.00		58.0	185.4					35.3	298.2	93.3	483.6	0.0	0.0
82.00	Appertunance(s)	40.5	71.8	112.4	0.0	224.7	79.2	14.2	119.3	167.0	270.3	0.0	0.0
85.00		63.4	105.1					10.7	90.4	74.1	195.5	0.0	0.0
90.00	Appertunance(s)	70.8	168.5	927.3	0.0	1,164.2	2,538.1	18.1	150.6	1,016.2	2,857.2	0.0	0.0
95.00		62.0	160.1					0.0	88.4	62.0	248.5	0.0	0.0
100.00	Appertunance(s)	30.4	151.6	858.5	0.0	1,318.3	2,802.0	0.0	88.4	888.9	3,042.1	0.0	0.0
<b>Totals:</b>										4,121.88	21,440.1	0.00	0.00

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

Load Case: 1.0D + 1.0W

Serviceability 60 mph

20 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-21.44	-4.09	0.00	-297.61	0.00	297.61	1,551.53	775.77	1,904.52	940.57	0.00	0.00	0.149
5.00	-20.70	-4.02	0.00	-277.16	0.00	277.16	1,528.89	764.45	1,824.65	901.13	0.04	-0.07	0.142
10.00	-19.67	-3.92	0.00	-257.05	0.00	257.05	1,505.12	752.56	1,745.00	861.79	0.14	-0.13	0.134
15.00	-18.65	-3.81	0.00	-237.46	0.00	237.46	1,480.21	740.10	1,665.70	822.62	0.32	-0.20	0.127
20.00	-17.65	-3.71	0.00	-218.40	0.00	218.40	1,454.16	727.08	1,586.85	783.69	0.56	-0.26	0.120
25.00	-16.66	-3.61	0.00	-199.86	0.00	199.86	1,426.98	713.49	1,508.58	745.03	0.88	-0.33	0.112
29.33	-15.81	-3.54	0.00	-184.24	0.00	184.24	1,402.52	701.26	1,441.35	711.83	1.20	-0.38	0.106
30.00	-15.63	-3.51	0.00	-181.86	0.00	181.86	1,398.66	699.33	1,430.99	706.71	1.25	-0.39	0.103
32.83	-14.89	-3.46	0.00	-171.92	0.00	171.92	1,122.95	561.48	1,150.62	568.25	1.50	-0.42	0.123
35.00	-14.46	-3.39	0.00	-164.43	0.00	164.43	1,111.89	555.94	1,122.84	554.53	1.69	-0.45	0.119
40.00	-13.50	-3.27	0.00	-147.50	0.00	147.50	1,081.73	540.87	1,055.54	521.29	2.20	-0.51	0.110
45.00	-12.55	-3.15	0.00	-131.15	0.00	131.15	1,044.36	522.18	983.50	485.71	2.76	-0.56	0.102
50.00	-11.60	-3.03	0.00	-115.38	0.00	115.38	1,006.99	503.49	914.00	451.39	3.37	-0.61	0.093
55.00	-10.67	-2.91	0.00	-100.22	0.00	100.22	969.61	484.81	847.05	418.33	4.04	-0.66	0.085
60.00	-9.76	-2.80	0.00	-85.68	0.00	85.68	932.24	466.12	782.65	386.52	4.75	-0.70	0.075
62.92	-9.23	-2.74	0.00	-77.50	0.00	77.50	910.44	455.22	746.26	368.55	5.19	-0.73	0.070
65.00	-8.76	-2.69	0.00	-71.80	0.00	71.80	894.87	447.43	720.79	355.97	5.51	-0.74	0.065
65.75	-8.60	-2.64	0.00	-69.79	0.00	69.79	662.47	331.23	543.96	268.64	5.63	-0.75	0.071
70.00	-7.89	-2.53	0.00	-58.55	0.00	58.55	646.97	323.48	512.50	253.10	6.31	-0.78	0.061
75.00	-7.06	-2.40	0.00	-45.90	0.00	45.90	628.03	314.01	476.10	235.13	7.14	-0.81	0.049
75.00	-7.06	-2.40	0.00	-45.90	0.00	45.90	628.03	314.01	476.10	235.13	7.14	-0.81	0.206
80.00	-6.58	-2.31	0.00	-33.88	0.00	33.88	603.66	301.83	437.06	215.85	8.01	-0.84	0.168
82.00	-6.31	-2.14	0.00	-29.04	0.00	29.04	592.42	296.21	420.85	207.84	8.37	-0.88	0.150
85.00	-6.11	-2.07	0.00	-22.61	0.00	22.61	575.56	287.78	397.11	196.12	8.95	-0.94	0.126
90.00	-3.27	-1.01	0.00	-11.09	0.00	11.09	547.45	273.73	359.07	177.33	9.97	-1.01	0.069
95.00	-3.03	-0.94	0.00	-6.04	0.00	6.04	519.35	259.67	322.95	159.49	11.05	-1.05	0.044
100.00	0.00	-0.89	0.00	-1.32	0.00	1.32	491.24	245.62	288.74	142.60	12.16	-1.07	0.009

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

### Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.04
Upper Limit $C_s$	0.04
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	1.80
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.65
Total Unfactored Dead Load:	21.44 k
Seismic Base Shear (E):	1.04 k

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

### Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period ( $S_g$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	1.80
Redundancy Factor ( $\rho$ ):	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)
25	97.50	240	1.797	1.523	0.972	0.315	65	207
24	92.50	249	1.617	0.832	0.694	0.212	46	214
23	87.50	319	1.447	0.379	0.482	0.129	36	275
22	83.50	196	1.318	0.146	0.352	0.075	13	168
21	81.00	191	1.240	0.046	0.286	0.048	8	165
20	77.50	484	1.135	-0.048	0.209	0.017	7	417
19	72.50	826	0.993	-0.111	0.128	-0.012	-8	712
18	67.87	709	0.871	-0.121	0.076	-0.023	-14	611
17	65.37	166	0.808	-0.113	0.056	-0.023	-3	143
16	63.96	463	0.773	-0.106	0.046	-0.022	-9	399
15	61.46	530	0.714	-0.091	0.033	-0.017	-8	457
14	57.50	918	0.625	-0.062	0.018	-0.006	-4	790
13	52.50	929	0.521	-0.024	0.008	0.013	10	800
12	47.50	940	0.426	0.010	0.006	0.029	24	810
11	42.50	951	0.341	0.035	0.009	0.040	33	819
10	37.50	962	0.266	0.052	0.015	0.046	38	829
9	33.91	421	0.217	0.060	0.021	0.047	17	363
8	31.41	743	0.187	0.064	0.025	0.047	30	640
7	29.66	177	0.166	0.066	0.028	0.046	7	152
6	27.16	848	0.139	0.069	0.032	0.046	34	730
5	22.50	989	0.096	0.071	0.038	0.044	38	852
4	17.50	1,000	0.058	0.072	0.041	0.042	36	862
3	12.50	1,012	0.030	0.068	0.040	0.039	34	871
2	7.50	1,023	0.011	0.056	0.032	0.032	28	881
1	2.50	736	0.001	0.026	0.014	0.016	10	634
Powerwave LGP21901	100.00	33	1.890	1.980	1.140	0.373	11	28
Raycap DC6-48-60-18-	100.00	40	1.890	1.980	1.140	0.373	13	34
Ericsson RRUS A2 Mod	100.00	66	1.890	1.980	1.140	0.373	21	57
Ericsson RRUS 11 (Ba	100.00	300	1.890	1.980	1.140	0.373	97	258
Powerwave Allgon 777	100.00	210	1.890	1.980	1.140	0.373	68	181
CCI HPA-65R-BUU-H6	100.00	153	1.890	1.980	1.140	0.373	49	132
Flat Platform with H	100.00	2,000	1.890	1.980	1.140	0.373	647	1,723
Alcatel-Lucent B25 R	90.00	159	1.531	0.580	0.580	0.168	23	137
Alcatel-Lucent B13 R	90.00	172	1.531	0.580	0.580	0.168	25	148



Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

Alcatel-Lucent RRH2X	90.00	165	1.531	0.580	0.580	0.168	24	142
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
Antel BXA-70063-6CF-	90.00	51	1.531	0.580	0.580	0.168	7	44
Andrew LNX-6514DS-VT	90.00	99	1.531	0.580	0.580	0.168	14	86
Andrew SBNHH-1D65B	90.00	304	1.531	0.580	0.580	0.168	44	262
Round Low Profile PI	90.00	1,500	1.531	0.580	0.580	0.168	218	1,292
RFS APXV18-206517S-C	82.00	79	1.271	0.082	0.311	0.058	4	68
		21,440	44.076	22.062	17.175	5.361	1,747	18,468

**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)
25	97.50	240	1.797	1.523	0.972	0.315	65	207
24	92.50	249	1.617	0.832	0.694	0.212	46	214
23	87.50	319	1.447	0.379	0.482	0.129	36	275
22	83.50	196	1.318	0.146	0.352	0.075	13	168
21	81.00	191	1.240	0.046	0.286	0.048	8	165
20	77.50	484	1.135	-0.048	0.209	0.017	7	417
19	72.50	826	0.993	-0.111	0.128	-0.012	-8	712
18	67.87	709	0.871	-0.121	0.076	-0.023	-14	611
17	65.37	166	0.808	-0.113	0.056	-0.023	-3	143
16	63.96	463	0.773	-0.106	0.046	-0.022	-9	399
15	61.46	530	0.714	-0.091	0.033	-0.017	-8	457
14	57.50	918	0.625	-0.062	0.018	-0.006	-4	790
13	52.50	929	0.521	-0.024	0.008	0.013	10	800
12	47.50	940	0.426	0.010	0.006	0.029	24	810
11	42.50	951	0.341	0.035	0.009	0.040	33	819
10	37.50	962	0.266	0.052	0.015	0.046	38	829
9	33.91	421	0.217	0.060	0.021	0.047	17	363
8	31.41	743	0.187	0.064	0.025	0.047	30	640
7	29.66	177	0.166	0.066	0.028	0.046	7	152
6	27.16	848	0.139	0.069	0.032	0.046	34	730
5	22.50	989	0.096	0.071	0.038	0.044	38	852
4	17.50	1,000	0.058	0.072	0.041	0.042	36	862
3	12.50	1,012	0.030	0.068	0.040	0.039	34	871
2	7.50	1,023	0.011	0.056	0.032	0.032	28	881
1	2.50	736	0.001	0.026	0.014	0.016	10	634
Powerwave LGP21901	100.00	33	1.890	1.980	1.140	0.373	11	28
Raycap DC6-48-60-18-	100.00	40	1.890	1.980	1.140	0.373	13	34
Ericsson RRUS A2 Mod	100.00	66	1.890	1.980	1.140	0.373	21	57
Ericsson RRUS 11 (Ba	100.00	300	1.890	1.980	1.140	0.373	97	258
Powerwave Allgon 777	100.00	210	1.890	1.980	1.140	0.373	68	181
CCI HPA-65R-BUU-H6	100.00	153	1.890	1.980	1.140	0.373	49	132
Fiat Platform with H	100.00	2,000	1.890	1.980	1.140	0.373	647	1,723
Alcatel-Lucent B25 R	90.00	159	1.531	0.580	0.580	0.168	23	137
Alcatel-Lucent B13 R	90.00	172	1.531	0.580	0.580	0.168	25	148
Alcatel-Lucent RRH2X	90.00	165	1.531	0.580	0.580	0.168	24	142
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
Antel BXA-70063-6CF-	90.00	51	1.531	0.580	0.580	0.168	7	44
Andrew LNX-6514DS-VT	90.00	99	1.531	0.580	0.580	0.168	14	86
Andrew SBNHH-1D65B	90.00	304	1.531	0.580	0.580	0.168	44	262
Round Low Profile PI	90.00	1,500	1.531	0.580	0.580	0.168	218	1,292
RFS APXV18-206517S-C	82.00	79	1.271	0.082	0.311	0.058	4	68
		21,440	44.076	22.062	17.175	5.361	1,747	18,468

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

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

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
25	97.50	240	1.797	1.523	0.972	0.315	65	207
24	92.50	249	1.617	0.832	0.694	0.212	46	214
23	87.50	319	1.447	0.379	0.482	0.129	36	275
22	83.50	196	1.318	0.146	0.352	0.075	13	168
21	81.00	191	1.240	0.046	0.286	0.048	8	165
20	77.50	484	1.135	-0.048	0.209	0.017	7	417
19	72.50	826	0.993	-0.111	0.128	-0.012	-8	712
18	67.87	709	0.871	-0.121	0.076	-0.023	-14	611
17	65.37	166	0.808	-0.113	0.056	-0.023	-3	143
16	63.96	463	0.773	-0.106	0.046	-0.022	-9	399
15	61.46	530	0.714	-0.091	0.033	-0.017	-8	457
14	57.50	918	0.625	-0.062	0.018	-0.006	-4	790
13	52.50	929	0.521	-0.024	0.008	0.013	10	800
12	47.50	940	0.426	0.010	0.006	0.029	24	810
11	42.50	951	0.341	0.035	0.009	0.040	33	819
10	37.50	962	0.266	0.052	0.015	0.046	38	829
9	33.91	421	0.217	0.060	0.021	0.047	17	363
8	31.41	743	0.187	0.064	0.025	0.047	30	640
7	29.66	177	0.166	0.066	0.028	0.046	7	152
6	27.16	848	0.139	0.069	0.032	0.046	34	730
5	22.50	989	0.096	0.071	0.038	0.044	38	852
4	17.50	1,000	0.058	0.072	0.041	0.042	36	862
3	12.50	1,012	0.030	0.068	0.040	0.039	34	871
2	7.50	1,023	0.011	0.056	0.032	0.032	28	881
1	2.50	736	0.001	0.026	0.014	0.016	10	634
Powerwave LGP21901	100.00	33	1.890	1.980	1.140	0.373	11	28
Raycap DC6-48-60-18-	100.00	40	1.890	1.980	1.140	0.373	13	34
Ericsson RRUS A2 Mod	100.00	66	1.890	1.980	1.140	0.373	21	57
Ericsson RRUS 11 (Ba	100.00	300	1.890	1.980	1.140	0.373	97	258
Powerwave Allgon 777	100.00	210	1.890	1.980	1.140	0.373	68	181
CCI HPA-65R-BUU-H6	100.00	153	1.890	1.980	1.140	0.373	49	132
Flat Platform with H	100.00	2,000	1.890	1.980	1.140	0.373	647	1,723
Alcatel-Lucent B25 R	90.00	159	1.531	0.580	0.580	0.168	23	137
Alcatel-Lucent B13 R	90.00	172	1.531	0.580	0.580	0.168	25	148
Alcatel-Lucent RRH2X	90.00	165	1.531	0.580	0.580	0.168	24	142
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
Antel BXA-70063-6CF-	90.00	51	1.531	0.580	0.580	0.168	7	44
Andrew LNX-6514DS-VT	90.00	99	1.531	0.580	0.580	0.168	14	86
Andrew SBNHH-1D65B	90.00	304	1.531	0.580	0.580	0.168	44	262
Round Low Profile PI	90.00	1,500	1.531	0.580	0.580	0.168	218	1,292
RFS APXV18-206517S-C	82.00	79	1.271	0.082	0.311	0.058	4	68
		21,440	44.076	22.062	17.175	5.361	1,747	18,468

**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)
25	97.50	240	1.797	1.523	0.972	0.315	65	207
24	92.50	249	1.617	0.832	0.694	0.212	46	214
23	87.50	319	1.447	0.379	0.482	0.129	36	275

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

22	83.50	196	1.318	0.146	0.352	0.075	13	168
21	81.00	191	1.240	0.046	0.286	0.048	8	165
20	77.50	484	1.135	-0.048	0.209	0.017	7	417
19	72.50	826	0.993	-0.111	0.128	-0.012	-8	712
18	67.87	709	0.871	-0.121	0.076	-0.023	-14	611
17	65.37	166	0.808	-0.113	0.056	-0.023	-3	143
16	63.96	463	0.773	-0.106	0.046	-0.022	-9	399
15	61.46	530	0.714	-0.091	0.033	-0.017	-8	457
14	57.50	918	0.625	-0.062	0.018	-0.006	-4	790
13	52.50	929	0.521	-0.024	0.008	0.013	10	800
12	47.50	940	0.426	0.010	0.006	0.029	24	810
11	42.50	951	0.341	0.035	0.009	0.040	33	819
10	37.50	962	0.266	0.052	0.015	0.046	38	829
9	33.91	421	0.217	0.060	0.021	0.047	17	363
8	31.41	743	0.187	0.064	0.025	0.047	30	640
7	29.66	177	0.166	0.066	0.028	0.046	7	152
6	27.16	848	0.139	0.069	0.032	0.046	34	730
5	22.50	989	0.096	0.071	0.038	0.044	38	852
4	17.50	1,000	0.058	0.072	0.041	0.042	36	862
3	12.50	1,012	0.030	0.068	0.040	0.039	34	871
2	7.50	1,023	0.011	0.056	0.032	0.032	28	881
1	2.50	736	0.001	0.026	0.014	0.016	10	634
Powerwave LGP21901	100.00	33	1.890	1.980	1.140	0.373	11	28
Raycap DC6-48-60-18-	100.00	40	1.890	1.980	1.140	0.373	13	34
Ericsson RRUS A2 Mod	100.00	66	1.890	1.980	1.140	0.373	21	57
Ericsson RRUS 11 (Ba	100.00	300	1.890	1.980	1.140	0.373	97	258
Powerwave Allgon 777	100.00	210	1.890	1.980	1.140	0.373	68	181
CCI HPA-65R-BUU-H6	100.00	153	1.890	1.980	1.140	0.373	49	132
Flat Platform with H	100.00	2,000	1.890	1.980	1.140	0.373	647	1,723
Alcatel-Lucent B25 R	90.00	159	1.531	0.580	0.580	0.168	23	137
Alcatel-Lucent B13 R	90.00	172	1.531	0.580	0.580	0.168	25	148
Alcatel-Lucent RRH2X	90.00	165	1.531	0.580	0.580	0.168	24	142
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
RFS DB-T1-6Z-8AB-0Z	90.00	44	1.531	0.580	0.580	0.168	6	38
Antel BX-70063-6CF-	90.00	51	1.531	0.580	0.580	0.168	7	44
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		21,440	44.076	22.062	17.175	5.361	1,747	18,468

Site Number: 302479

Code: ANSI/TIA-222-G

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Site Name: Rkhl - Rocky Hill, CT

Engineering Number: OAA666991\_C3\_02

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Customer: Verizon Wireless

**Analysis Summary**

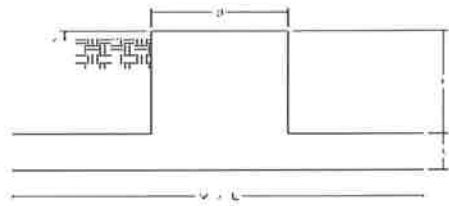
Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	18.20	0.00	25.68	0.00	0.00	1330.34	75.00	0.89
0.9D + 1.6W	18.18	0.00	19.25	0.00	0.00	1317.20	75.00	0.87
1.2D + 1.0Di + 1.0Wi	4.18	0.00	49.54	0.00	0.00	321.06	75.00	0.25
(1.2 + 0.2Sds) * DL + E ELFM	1.05	0.00	25.64	0.00	0.00	85.34	75.00	0.07
(1.2 + 0.2Sds) * DL + E EMAM	1.74	0.00	25.64	0.00	0.00	151.33	75.00	0.15
(0.9 - 0.2Sds) * DL + E ELFM	1.04	0.00	17.83	0.00	0.00	84.34	75.00	0.06
(0.9 - 0.2Sds) * DL + E EMAM	1.74	0.00	17.83	0.00	0.00	149.43	75.00	0.14
1.0D + 1.0W	4.09	0.00	21.44	0.00	0.00	297.61	75.00	0.21

**Additional Steel Summary**

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	75.0	(4) SOL-#20 All Thre	324.3	9.7	16.8	74.0	12.0	7	6	0.0	12.0	0	0	241.7	330.5	0.731

Site Name: Rkhl - Rocky Hill, CT  
 Site Number: 302479  
 Engineering Number: OAA666992  
 Engineer: SRS  
 Date: 09/02/16  
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:

	Analysis
Compression/Leg:	25.7 k
Uplift/Leg:	0.0 k
Total Shear:	18.2 k
Moment:	1330.3 k-ft
Tower + Appurtenance Weight:	27.3 k
Depth to Base of Foundation (l + t - h):	8.00 ft
Diameter of Pier (d):	6.00 ft
Height of Pier above Ground (h):	0.50
Width of Pad (W):	18.00 ft
Length of Pad (L):	18.00 ft
Thickness of Pad (t):	3.00 ft
Tower Leg Center to Center:	0.00 ft
Number of Tower Legs:	1.0 (1 if MP or GT)
Tower Center from Mat Center:	0.00 ft
Depth Below Ground Surface to Water Table:	99.00 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	100.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	50.0 pcf
Friction Angle of Uplift:	0.0 Degrees
Ultimate Coefficient of Shear Friction:	0.35
Ultimate Compressive Bearing Pressure:	30000.0 psf
Ultimate Passive Pressure on Pad Face:	0.0 psf
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9
$\phi_{\text{Soil}}$ :	0.75

Concrete Strength ( $f'_c$ ):	3000 psi
Pad Tension Steel Depth:	32.00 in
$\phi_{\text{Shear}}$ :	0.75
$\phi_{\text{Flexure / Tension}}$ :	0.90
$\phi_{\text{Compression}}$ :	0.65
$\beta$ :	0.85
Bottom Pad Rebar Size #:	10
# of Bottom Pad Rebar:	36
Pad Bottom Steel Area:	45.72 in <sup>2</sup>
Pad Steel $F_y$ :	60000 psi
Top Pad Rebar Size #:	5
# of Top Pad Rebar:	36
Pad Top Steel Area:	11.16 in <sup>2</sup>
Pier Rebar Size #:	11
Pier Steel Area (Single Bar):	1.56 in <sup>2</sup>
# of Pier Rebar:	14
Pier Steel $F_y$ :	60000 psi
Pier Cage Diameter:	64.0 in
Rebar Strain Limit:	0.008
Steel Elastic Modulus:	29000 ksi
Tie Rebar Size #:	4
Tie Steel Area (Single Bar):	0.20 in <sup>2</sup>
Tie Spacing:	12 in
Tie Steel $F_y$ :	60000 psi

**Overturning Moment Usage**

Design OTM:	1485.0 k-ft
OTM Resistance:	2751.9 k-ft
Design OTM / OTM Resistance:	0.54 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	2537 psf
Factored Nominal Bearing Pressure:	22500 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.11 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

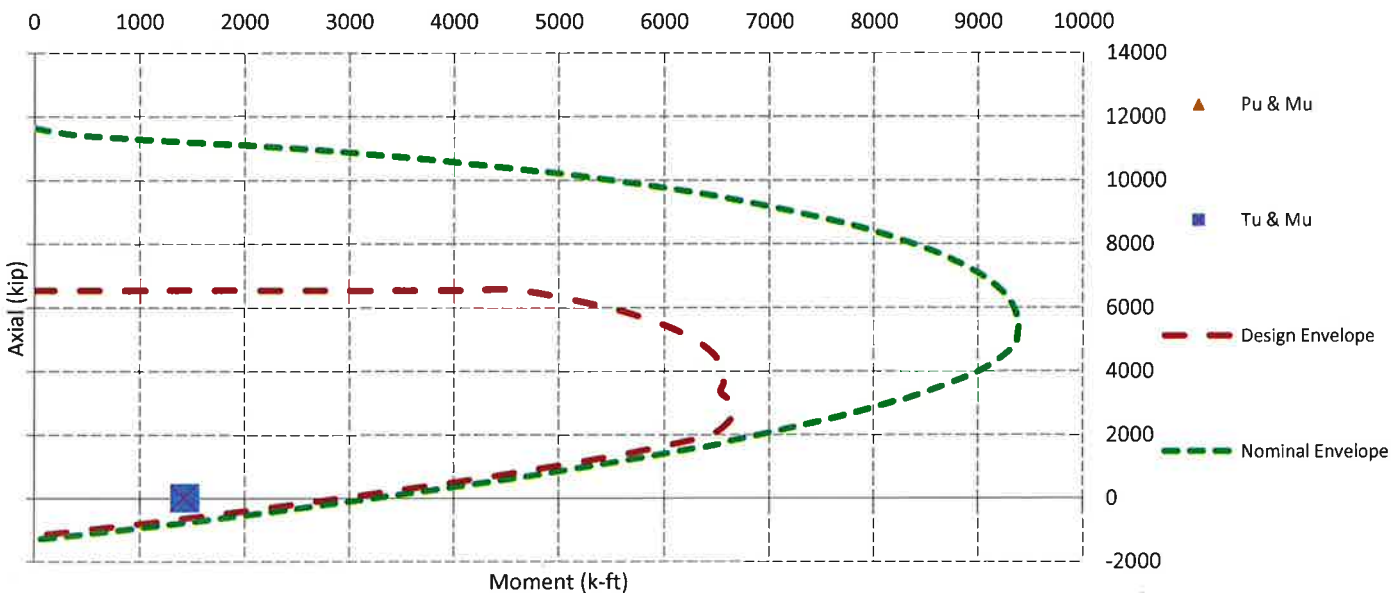
**Sliding Factor of Safety**

Total Factored Sliding Resistance:	89.2 k
Sliding Design / Sliding Resistance:	0.20 Result: OK

**One Way Shear, Flexural Capacity, and Punching Shear**

Factored One Way Shear ( $V_u$ ):	87.1 k
One Way Shear Capacity ( $\phi V_c$ ):	445.5 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.20 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	509.4 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	6148.2 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.08 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	329.4 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	1581.1 k-ft
$M_u / \phi M_n$ :	0.21 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0066 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	0.0 k
Nominal Punching Shear Capacity ( $\phi_c V_n$ ):	1718.0 k - ACI11.12.2.1
$V_u / \phi V_c$ :	0.00 Result: OK
Factored Moment in Pier ( $M_u$ ):	1430.4 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	3087.5 k-ft
$M_u / \phi M_n$ :	0.46 Result: OK
Factored Shear in Pier ( $V_u$ ):	18.2 k
Pier Shear Capacity ( $\phi V_n$ ):	335.6 k
$V_u / \phi V_c$ :	0.05 Result: OK
Pier Shear Reinforcement Ratio:	0.0005 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0 k
Pier Tension Capacity ( $\phi T_n$ ):	1179.4 k
$T_u / \phi T_n$ :	0.00 Result: OK
Factored Compression in Pier ( $P_u$ ):	25.7 k
Pier Compression Capacity ( $\phi P_n$ ):	5369.9 k - ACI10.3.6.2
$P_u / \phi P_n$ :	0.00 Result: OK
Pier Compression Reinforcement Ratio:	0.005 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.46 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



Base/Flange Plate	Plate Type	<b>Baseplate</b>
	Pole Diameter	30 in
	Pole Thickness	0.25 in
	Plate Length	44 in
	Plate Thickness	2 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	$\phi_s$ Resistance	1574.97 k-in
	Applied	1294.66 k-in
	Stiffeners	#

Code Rev. **G**

Date **9/2/2016**

Engineer **SRS**

Site # **302479**

Carrier **Verizon**

Moment **1330.3 k-ft**

Axial **25.7 k**

Bolts	#	<b>8</b>
	Bolt Circle	44 in
	(R)adial / (S)quare	S
	Bolt Gap	6 in
	Diameter	2.25 in
	Hole Diameter	2.625 in
	Type	A615-75
	Fy	75 ksi
	Fu	100 ksi
	$\phi_s$ Resistance	259.82 k
Applied	120.43 k	
Reinforcement	#	<b>4</b>
	DYW. Circle	36.879 in
	Offset Angle	0°
	Type	#20
	Diameter	2.5 in
Fu	100 ksi	
Extra Bolts	#	0

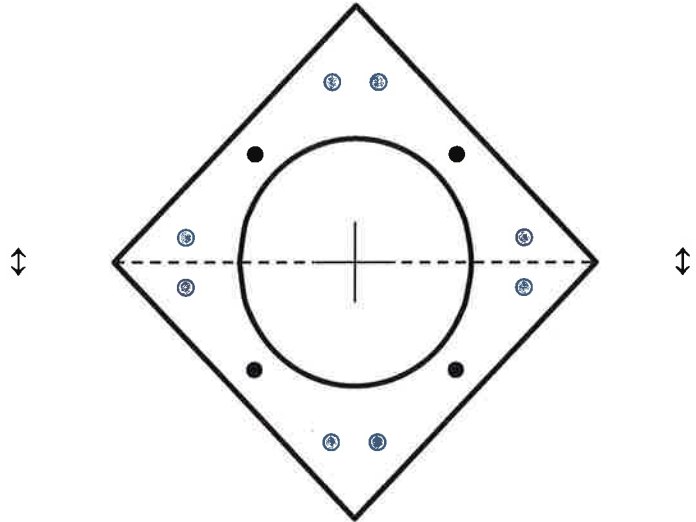


Plate Stress Ratio:

**0.82** (Pass)

Bolt Stress Ratio:

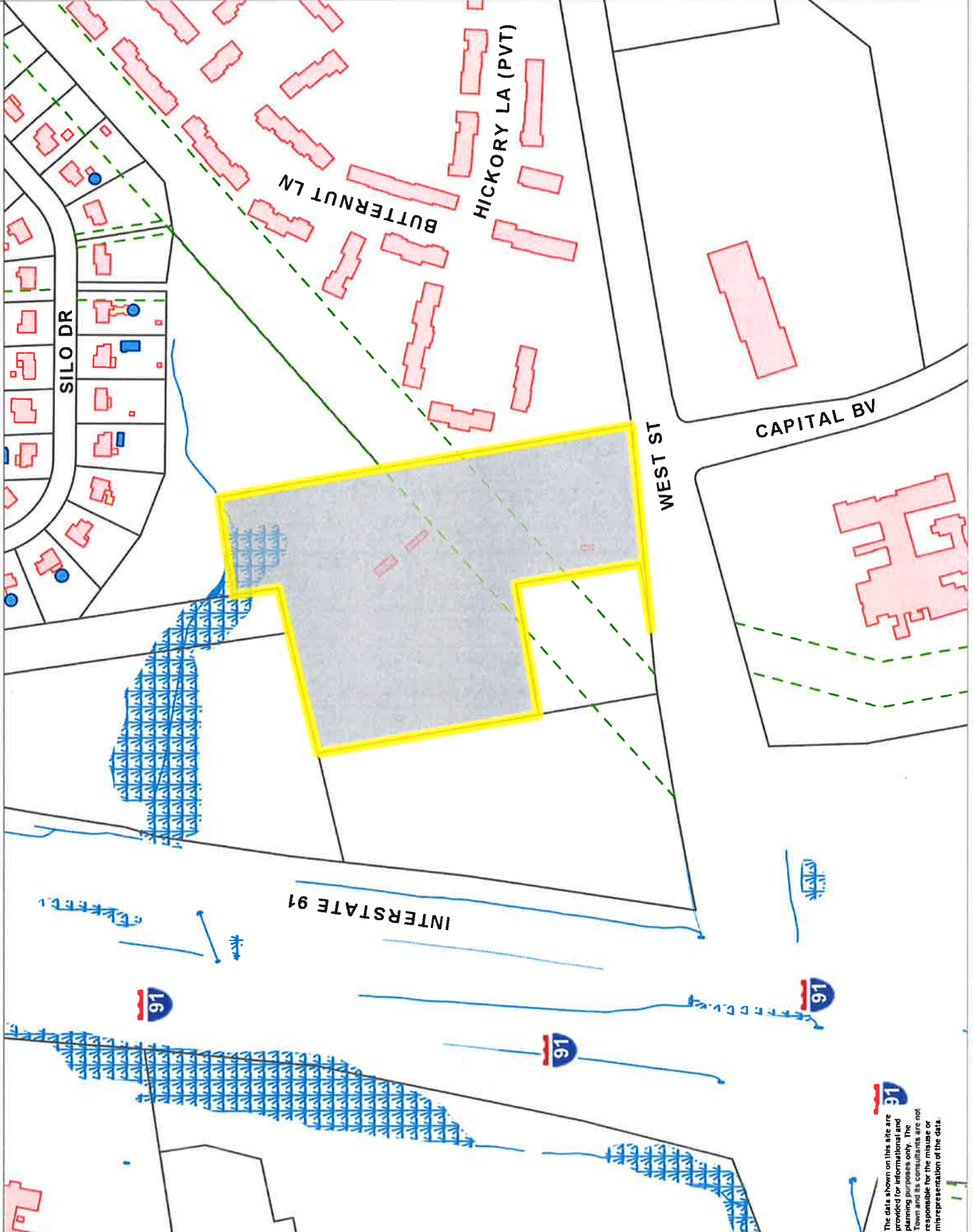
**0.46** (Pass)

# **ATTACHMENT 4**





- Buildings
- Deck
- Greenhouse
- Pool
- Essenments
- Parcels
- CT Highways
- Inherstate
- US Highway
- State Highway
- CT Communities
- CT Communities Opacu
- Town Boundary
- Recreation
- Streets
- Streams
- Culvert
- Drainage Ditch
- Perennial Stream
- Water Bodies



The data shown on this site are provided for informational and planning purposes only. The Town and its commissions are not responsible for the accuracy or misrepresentation of the data.



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# Town of Rocky Hill Property Summary Report

## 699 WEST STREET

<b>PARCEL ID:</b>	12-192	<b>ACCOUNT NUMBER:</b>	001195
<b>LOCATION:</b>	699 WEST STREET		
<b>OWNER NAME:</b>	CONNECTICUT LIGHT + POWER CO THE		



12-192-001 11/05/2012

<b>OWNER OF RECORD</b>
CONNECTICUT LIGHT + POWER CO THE
PO BOX 270
HARTFORD, CT 06141-0270



<b>LIVING AREA:</b>	null	<b>ZONING:</b>	R-20	<b>ACREAGE:</b>	9.98
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### SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
CONNECTICUT LIGHT + POWER CO THE	139/ 448	01-Jul-1982	\$0.00

### CURRENT PARCEL VALUE

<b>TOTAL:</b>	\$1,229,340.00	<b>IMPROVEMENTS:</b>	\$151,620.00	<b>LAND:</b>	\$1,077,720.00
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### ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2014	\$1,229,340.00	\$151,620.00	\$1,077,720.00
2013	\$1,229,340.00	\$151,620.00	\$1,077,720.00
2012	\$545,650.00	\$0.00	\$545,650.00
2011	\$545,650.00	\$0.00	\$545,650.00
2010	\$545,650.00	\$0.00	\$545,650.00
2009	\$545,650.00	\$0.00	\$545,650.00
2008	\$545,650.00	\$0.00	\$545,650.00
2007	\$73,080.00	\$0.00	\$73,080.00
2006	\$73,080.00	\$0.00	\$73,080.00