Robinson+Cole

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July 27, 2016

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

Re: **Notice of Exempt Modification – Facility Modification**
36 Ritch Avenue, Greenwich, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 57-foot level on the existing 77-foot tree tower at 36 Ritch Avenue in Greenwich (the "Property"). The tower is owned by American Tower Corporation ("ATC"). Cellco's shared use of this tower was approved by the Council in 2011 (Docket No. 414). Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D45A, 700 MHz antennas; and three (3) model SBNHH-1D45A, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install replace three (3) remote radio heads ("RRHs") with three (3) newer model RRHs and install six (6) additional RRHs. Cellco also intends to install one (1) HYBRIFLEX™ antenna cable inside the monopole tower. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs, cable diplexers 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 Peter Tesei, First Selectman for the Town of Greenwich. A copy of this letter is being sent to 36 Ritch Avenue LLC, the owner of the Property and ATC, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed on its existing T-arms at the 57-foot level of the 77-foot tree tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for RF emissions at each of Cellco's operating frequencies, as modified, are included behind Attachment 2. These tables demonstrate that Cellco's modified facility will comply with the RF emissions standards 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 Greenwich 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:
Peter Tesei, Greenwich First Selectman
Katie Deluca, Greenwich Planning Director
ATC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D45A

Multiband Antenna, 698–896 and 2x 1695–2360 MHz, 45° horizontal beamwidth, internal RETs.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Three internal RETs for independent tilt on all three bands

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	15.5	16.2	18.5	19.1	19.4	20.0
Beamwidth, Horizontal, degrees	48	43	44	43	44	39
Beamwidth, Vertical, degrees	18.5	16.8	7.9	7.3	6.9	6.0
Beam Tilt, degrees	2–18	2–18	1–9	1–9	1–9	1–9
USLS (First Lobe), dB	16	17	16	16	15	13
Front-to-Back Ratio at 180°, dB	33	34	37	36	38	39
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	25	25	25	25	25	25
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	15.1	15.9	18.1	18.8	19.1	19.7
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.4	±0.5	±0.4	±0.4	±0.3
Gain by Beam Tilt, average, dBi	2 ° | 15.2	2 ° | 16.0	1 ° | 18.2	1 ° | 18.9	1 ° | 19.1	1 ° | 19.8
	10 ° | 15.1	10 ° | 16.0	5 ° | 18.2	5 ° | 18.8	5 ° | 19.1	5 ° | 19.8
	18 ° | 14.9	18 ° | 15.5	9 ° | 18.0	9 ° | 18.6	9 ° | 18.9	9 ° | 19.4
Beamwidth, Horizontal Tolerance, degrees	±1.7	±3.1	±2.1	±1.4	±1.5	±1.6
Beamwidth, Vertical Tolerance, degrees	±1.1	±0.8	±0.3	±0.3	±0.5	±0.2
USLS, beampeak to 20° above beampeak, dB	17	21	14	14	15	13
Front-to-Back Total Power at 180° ± 30°, dB	24	25	28	29	30	30
CPR at Boresight, dB	26	30	20	24	18	20
CPR at 10 dB Horizontal Beamwidth, dB	13	15	10	10	11	13

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

General Specifications

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

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground

Product Specifications

SBNHH-1D45A

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	693.0 N @ 150 km/h 155.8 lbf @ 150 km/h
Wind Loading, lateral	145.0 N @ 150 km/h 32.6 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	178.0 mm | 7.0 in
Length	1220.0 mm | 48.0 in
Width	457.0 mm | 18.0 in
Net Weight, without mounting kit	22.9 kg | 50.5 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (2) | 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	311.0 mm | 12.2 in
Length	1342.0 mm | 52.8 in
Width	567.0 mm | 22.3 in
Shipping Weight	34.6 kg | 76.3 lb

Regulatory Compliance/Certifications

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

Product Specifications

SBNHH-1D45A

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.

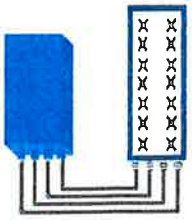
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

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

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

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

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

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

SUPERIOR RF PERFORMANCE

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

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

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

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

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

OPTIMIZED TCO

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

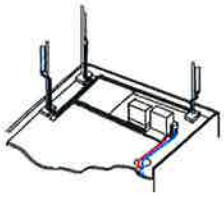
The Alcatel-Lucent RRH2x60-1900A-4R is a very cost-effective solution to deploy LTE MIMO.

EASY INSTALLATION

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

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

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



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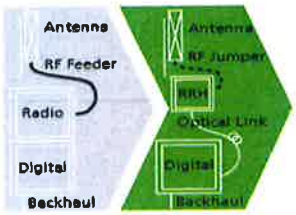
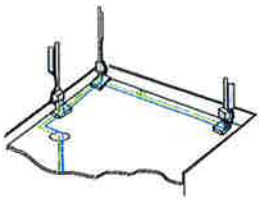


RRH for space-constrained cell sites



Distributed

FEATURES

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

BENEFITS

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

TECHNICAL SPECIFICATIONS

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

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

Environmental specifications

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

Safety and Regulatory Data

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

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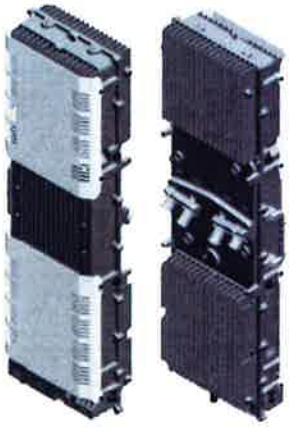
ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
B4 RRH2X60-4R FOR AWS BAND APPLICATIONS

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.

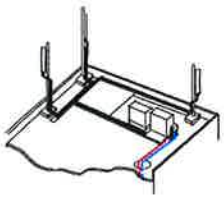
EASY INSTALLATION

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.



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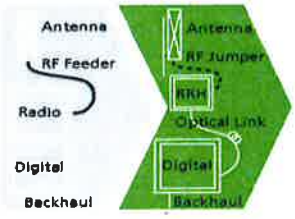
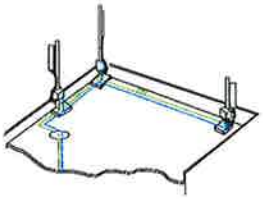


RRH for space-constrained cell sites



Distributed

FEATURES

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

BENEFITS

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

TECHNICAL SPECIFICATIONS

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

Dimensions and weights

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

Electrical Data

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

RF Characteristics

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

Connectivity

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

Environmental specifications

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

Safety and Regulatory Data

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

Alcatel·Lucent

ATTACHMENT 2

Far Field Approximation
with downtilt variation

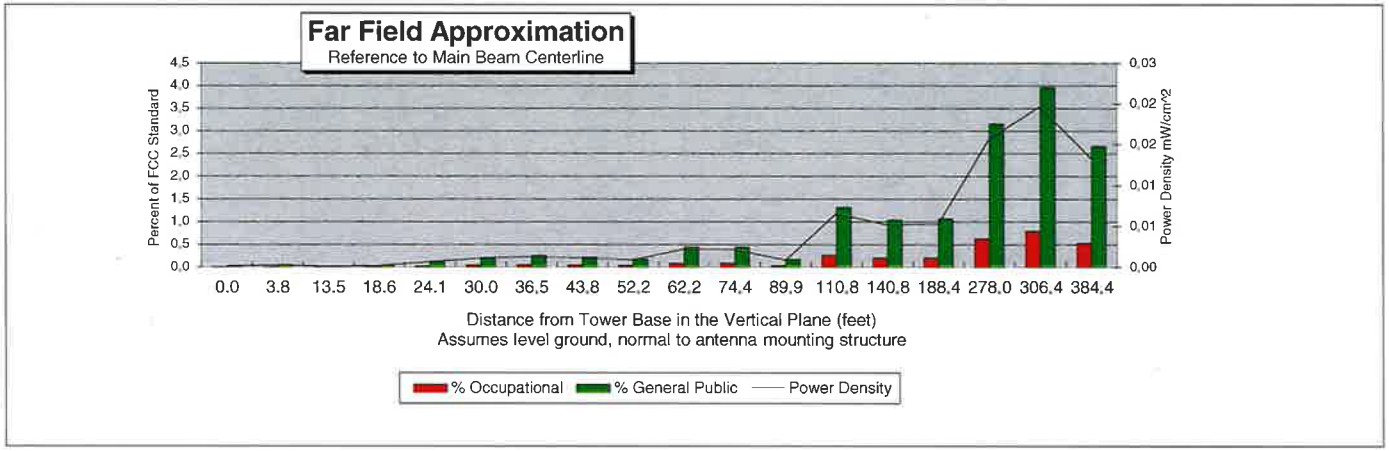
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	BYRAM PARK, CT
Site #:	5-0008
Date:	07/18/16
Name:	Ryan Ulanday
File Name:	BYRAM PARK, CT - FF Power

Operating Freq. (MHz)	**746.0**
Antenna Height (ft):	**57.0**
Antenna Gain (dBi):	**13.3**
Antenna Size (in.):	**55.0**
Downtilt (degrees):	**6.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**422.0**



This approximation is only valid in the far field, which begins at: 37.6 Feet

Enter Main Beam Distance in feet below:

Calc Angle	90.0	86.0	76.0	71.0	66.0	61.0	56.0	51.0	46.0	41.0	36.0	31.0	26.0	21.0	16.0	11.0	10.0	8.0	
Solve for r, dx to antenna	54.0	54.1	55.7	57.1	59.1	61.8	65.2	69.5	75.1	82.3	91.9	104.9	123.2	150.8	196.0	283.1	311.1	388.2	
Distance from Antenna Structure Base in Horizontal plane	0.0	3.8	13.5	18.6	24.1	30.0	36.5	43.8	52.2	62.2	74.4	89.9	110.8	140.8	188.4	278.0	306.4	384.4	#NUM!
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	0
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	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	2.56
Power Density (mW/cm^2)	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	0.02	0.02	0.01	#NUM!
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.3	0.2	0.2	0.6	0.8	0.5	#NUM!
Percent of General Population Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.4	0.4	0.2	1.3	1.0	1.1	3.2	4.0	2.7	#NUM!

Antenna Type SBNHH-1D65A
Max% 3.95%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 Pov
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

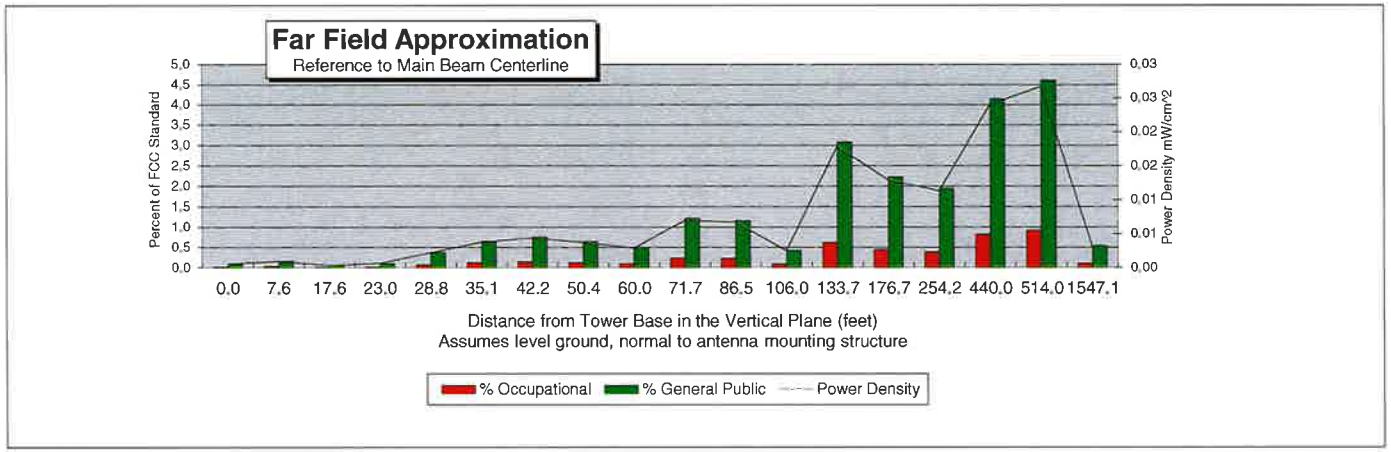
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	BYRAM PARK, CT
Site #:	5-0008
Date:	07/18/16
Name:	Ryan Ulanday
File Name:	BYRAM PARK, CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**57.0**
Antenna Gain (dBi):	**16.7**
Antenna Size (in.):	**70.9**
Downtilt (degrees):	**2.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**443.0**



This approximation is only valid in the far field, which begins at: 62.4 Feet

Enter Main Beam Distance in feet below:

Distance from Antenna Structure Base in Horizontal plane	0.0	7.6	17.6	23.0	28.8	35.1	42.2	50.4	60.0	71.7	86.5	106.0	133.7	176.7	254.2	440.0	514.0	1547.1	#NUM!
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	0	0
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	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	2.56
Power Density (mW/cm^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.01	0.01	0.02	0.03	0.00	#NUM!
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.6	0.4	0.4	0.8	0.9	0.1	#NUM!
Percent of General Population Standard	0.1	0.2	0.1	0.1	0.4	0.6	0.8	0.6	0.5	1.2	1.2	0.4	3.1	2.2	1.9	4.1	4.6	0.5	#NUM!

Antenna Type LPA-80063/6CF
4.61%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 Pov
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

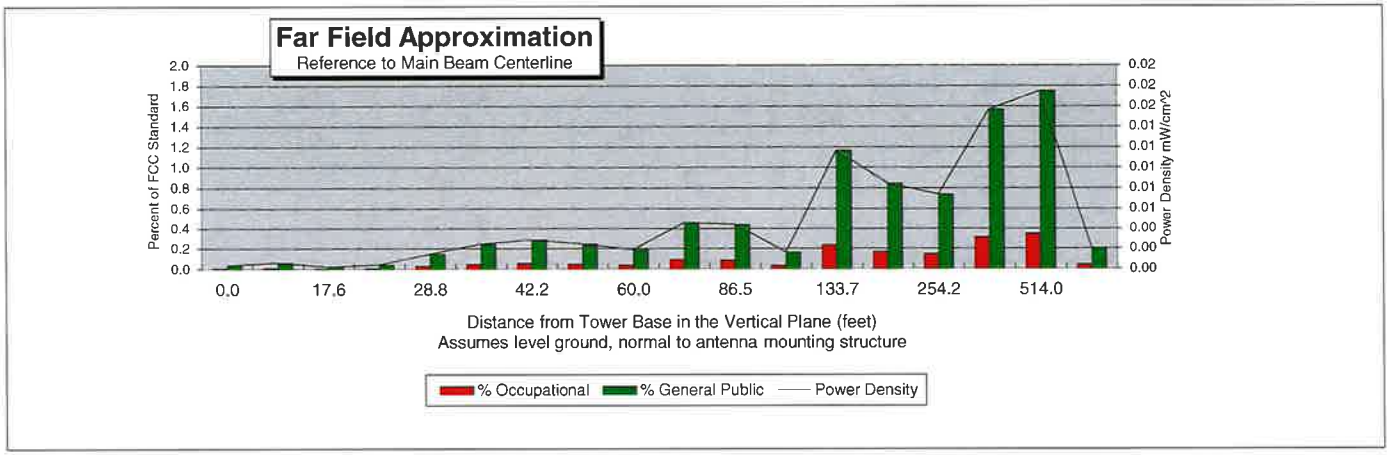
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	BYRAM PARK, CT
Site #:	5-0008
Date:	07/18/16
Name:	Ryan Ulanday
File Name:	BYRAM PARK, CT - FF Power

Operating Freq. (MHz)	**1971.0**
Antenna Height (ft):	**57.0**
Antenna Gain (dBi):	**14.8**
Antenna Size (in.):	**55.0**
Downtilt (degrees):	**2.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**1637.0**



This approximation is only valid in the far field, which begins at: 37.6 Feet

Enter Main Beam Distance in feet below:

Distance from Antenna Structure Base in Horizontal plane	0.0	7.6	17.6	23.0	28.8	35.1	42.2	50.4	60.0	71.7	86.5	106.0	133.7	176.7	254.2	440.0	514.0	1547.1	#NUM!
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	0	0
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	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	2.56
Power Density (mW/cm^2)	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	0.02	0.02	0.00	#NUM!
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.3	0.3	0.0	#NUM!
Percent of General Population Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.5	0.4	0.2	1.2	0.8	0.7	1.6	1.7	0.2	#NUM!

Antenna Type SBNHH-1D65A
1.75%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 Pov
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

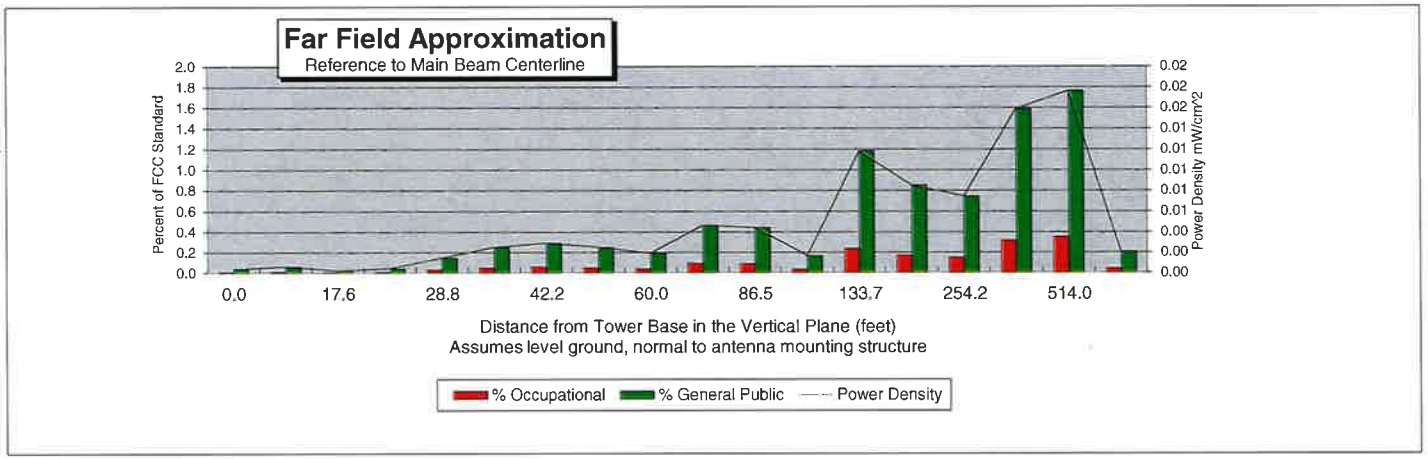
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	BYRAM PARK, CT
Site #:	5-0008
Date:	07/18/16
Name:	Ryan Ulanday
File Name:	BYRAM PARK, CT - FF Power

Operating Freq. (MHz)	**2110.0**
Antenna Height (ft):	**57.0**
Antenna Gain (dBi):	**14.9**
Antenna Size (in.):	**55.0**
Downtilt (degrees):	**2.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**1653.0**



This approximation is only valid in the far field, which begins at: 37.6 Feet

Enter Main Beam Distance in feet below:

Distance from Antenna Structure Base in Horizontal plane	0.0	7.6	17.6	23.0	28.8	35.1	42.2	50.4	60.0	71.7	86.5	106.0	133.7	176.7	254.2	440.0	514.0	1547.1	#NUM!
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	0	0
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	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	2.56
Power Density (mW/cm^2)	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	0.02	0.02	0.00	#NUM!
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.3	0.4	0.0	#NUM!
Percent of General Population Standard	0.0	0.1	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.5	0.4	0.2	1.2	0.9	0.7	1.6	1.8	0.2	#NUM!

Antenna Type SBNHH-1D65A
1.76%

Instructions:

1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to ba 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 Pc
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

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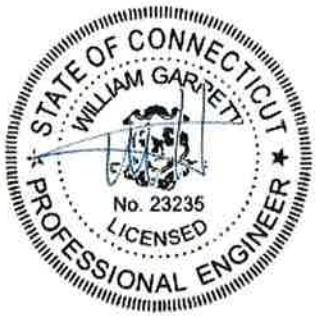
Structural Analysis Report

Structure	:	**76.7 ft Monopole**
ATC Site Name	:	**Byram Park CT, CT**
ATC Site Number	:	**414240**
Engineering Number	:	**OAA680239_C3_02**
Proposed Carrier	:	**Verizon**
Carrier Site Name	:	**Byram Park**
Carrier Site Number	:	**161633**
Site Location	:	**48 Ritch Avenue West** **Greenwich, CT 06830-9992** **41.005064,-73.648306**
County	:	**Fairfield**
Date	:	**June 23, 2016**
Max Usage	:	**75%**
Result	:	**Pass**

Reviewed by:
William Garrett, PE
Chief Engineer



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

Jun 23 2016 2:37 PM

cosign

COA: PEC.0001553

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Table of Contents

Introduction 1

Supporting Documents 1

Analysis 1

Conclusion 1

Existing and Reserved Equipment 2

Equipment to be Removed 2

Proposed Equipment 2

Structure Usages 3

Foundations 3

Deflection, Twist, and Sway 3

Standard Conditions 4

Calculations ..... Attached

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 76.7 ft monopole to reflect the change in loading by Verizon.

Supporting Documents

Tower Drawings	EEI Project #16733 Rev. 3, dated December 9, 2011
Foundation Drawing	Centek Engineering Job #09129 Rev. 0, dated February 14, 2012
Geotechnical Report	DET Job #2010.14, dated October 4, 2010

Analysis

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

Basic Wind Speed:	110 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.26, S_1 = 0.07
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
76.6	77.0	3	Ericsson RRUS 32 w/ Solar Shield (52.9 lbs)	T-Arms	(2) 1 5/8" Fiber	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Commscope LNX-6512DS-A1M (28.7 lbs)			
		3	Ericsson AIR-32 B2A/B66Aa			
		3	RFS APX16DWV-16DWVS-E-A20			
67.0	68.0	6	Powerwave TT19-08BP111-001	Sector Frames	(12) 1 5/8" Coax (4) 0.63" Cable (2) 5/8" Hybriflex Cable	AT&T Mobility
		2	Raycap DC6-48-60-18-8F(32.8 lbs)			
		6	Ericsson RRUS-11			
		6	Powerwave P65-16-XLH-RR			
	67.0	3	Ericsson RRUS-32			
		3	CCI OPA-65R-LCUU-H6			
57.0	57.0	1	VZW Unused Reserve: 14,392 sq in	T-Arms	(16) 1 5/8" Coax	Verizon
	56.0	3	Antel BXA-171063-12CF			
		3	Antel LPA-80063-6CF-EDIN-X			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
57.0	56.0	6	KMW AM-X-CD-16-65-00T-RET	-	(2) 1 5/8" Coax (1) 1 1/4" Coax	Verizon
		3	Commscope LNX-4514DS-A1M			
		1	20" x 15" x 10" BOB			
		3	25" x 13" x 8" RRU/RRH			
		3	Antel BXA-171063-12CF			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
57.0	56.0	3	Alcatel-Lucent RRH 2X60-1900	T-Arms	(1) 1 5/8" Fiber (1) 1 5/8" Hybriflex Cable	Verizon
		3	Alcatel-Lucent RRH2X60-AWS			
		3	Alcatel-Lucent RRH2x60 700			
		2	Commscope RC2DC-4750-PF-48			
		2	Commscope SBNHH-1D65A			
		4	Commscope SBNHH-1D45A			
		3	Antel LPA-80063-6CF-EDIN-X			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	53%	Pass
Shaft	52%	Pass
Base Plate	75%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	4,555.2	3,227.2	71%
Shear (Kips)	74.4	62.2	84%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
57.0	Alcatel-Lucent RRH2X60-AWS	Verizon	0.159	0.289
	Alcatel-Lucent RRH 2X60-1900			
	Alcatel-Lucent RRH2x60 700			
	Commscope RC2DC-4750-PF-48			
	Commscope SBNHH-1D65A			
	Commscope SBNHH-1D45A			
	Amphenol Antel LPA-80063-6CF-EDIN-X			

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

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Standard Conditions

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

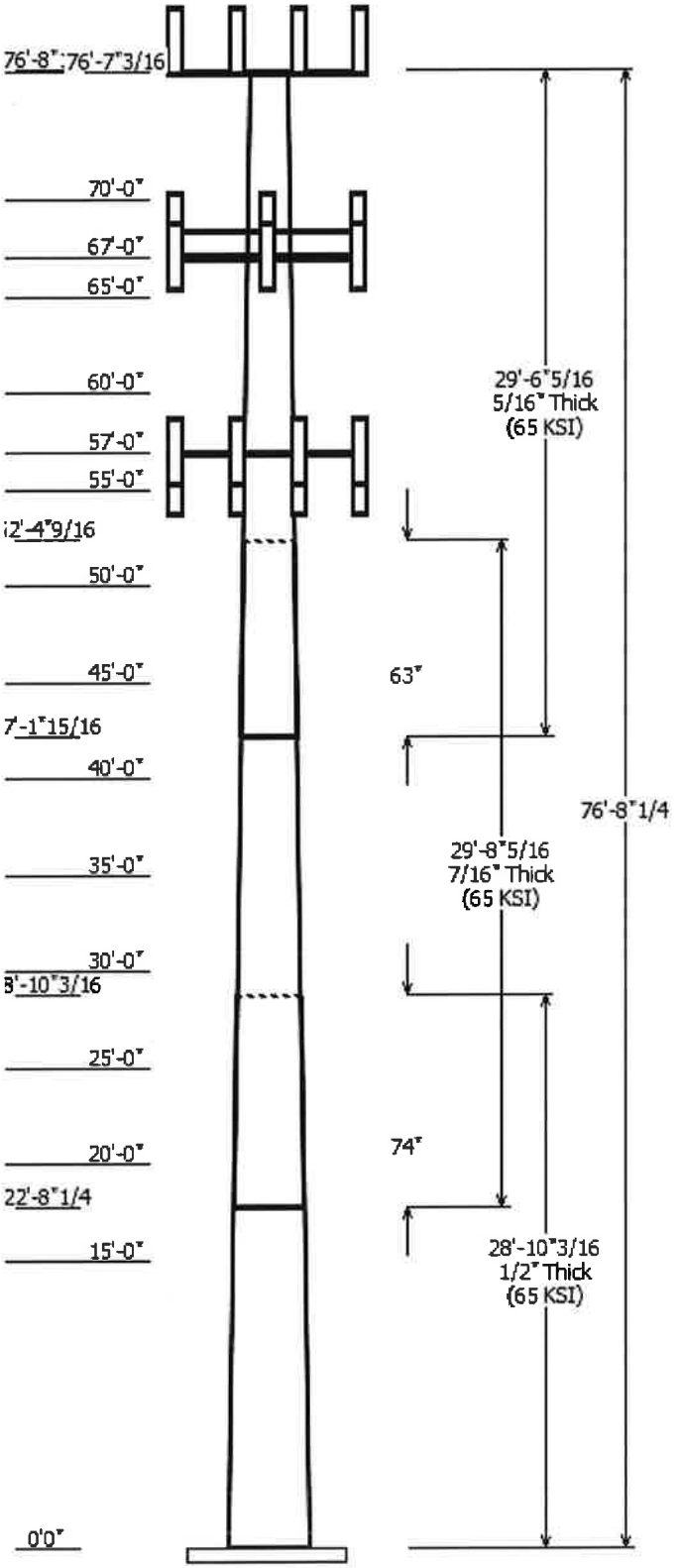
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

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

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

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

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



Job Information

Pole :	414240	Code:	ANSI/TIA-222-G
Description :	77' EEI Monopole		
Client :	Verizon Wireless	Struct Class :	II
Location :	Byram Park CT, CT		
Shape :	18 Sides	Exposure :	C
Height :	76.69 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.33579(in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	28.852	42.31	52.00	0.500		0.000	0.335800	65
2	29.693	35.28	45.25	0.438	Slip Joint	73.969	0.335800	65
3	29.529	27.75	37.66	0.313	Slip Joint	62.656	0.335800	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
76.600	76.600	3	Flat T-Arm
76.600	77.000	3	RFS APX16DWV-16DWVS-E-A20
76.600	77.000	3	Ericsson AIR-32 B2A/B66Aa
76.600	77.000	3	Commscope LNX-6512DS-A1M
76.600	77.000	3	Ericsson RRUS 11 B12
76.600	77.000	3	Ericsson RRUS 32 w/ Solar Shi
76.600	77.000	1	Pine Branches
70.000	70.000	1	Pine Branches
67.000	67.000	3	Round Sector Frame
67.000	68.000	6	Powerwave Allgon P65-16-
67.000	68.000	6	Ericsson RRUS-11
67.000	68.000	1	Raycap DC6-48-60-18-8F(32.8 lb
67.000	68.000	6	Powerwave Allgon TT19-
67.000	67.000	1	Raycap DC6-48-60-18-8F(32.8 lb
67.000	67.000	3	CCI OPA-65R-LCUU-H6
67.000	67.000	3	Ericsson RRUS-32
65.000	65.000	1	Pine Branches
60.000	60.000	1	Pine Branches
57.000	56.000	4	Commscope SBNHH-1D45A
57.000	56.000	2	Commscope SBNHH-1D65A
57.000	56.000	2	Commscope RC2DC-4750-PF-
57.000	56.000	3	Alcatel-Lucent RRH2x60 700
57.000	56.000	3	Alcatel-Lucent RRH 2X60-1900
57.000	56.000	3	Alcatel-Lucent RRH2X60-AWS
57.000	56.000	3	Amphenol Antel LPA-80063-
57.000	56.000	3	Amphenol Antel BXA-171063-
57.000	57.000	1	VZW Unused Reserve: 14,392
57.000	57.000	3	Flat T-Arm
57.000	56.000	3	Amphenol Antel LPA-80063-
55.000	55.000	1	Pine Branches
50.000	50.000	1	Pine Branches
45.000	45.000	1	Pine Branches
40.000	40.000	1	Pine Branches
35.000	35.000	1	Pine Branches
30.000	30.000	1	Pine Branches
25.000	25.000	1	Pine Branches
20.000	20.000	1	Pine Branches
15.000	15.000	1	Pine Branches

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	57.000	1 5/8" Coax	No

0.000	57.000	1 5/8" Fiber	No
0.000	57.000	1 5/8" Hybriflex	No
0.000	67.000	0.63" Cable	No
0.000	67.000	1 5/8" Coax	No
0.000	67.000	5/8" Hybriflex	No
0.000	76.600	1 5/8" Fiber	No

Load Cases

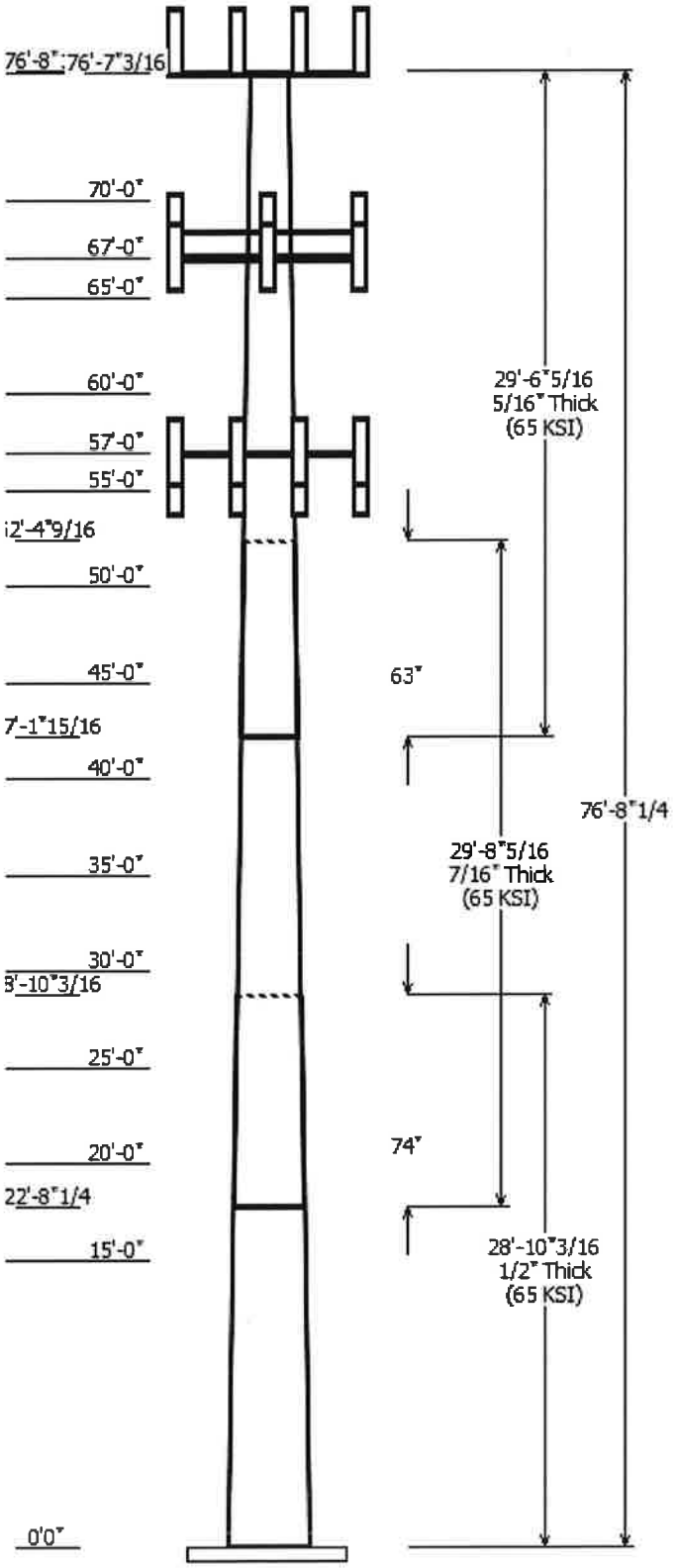
1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

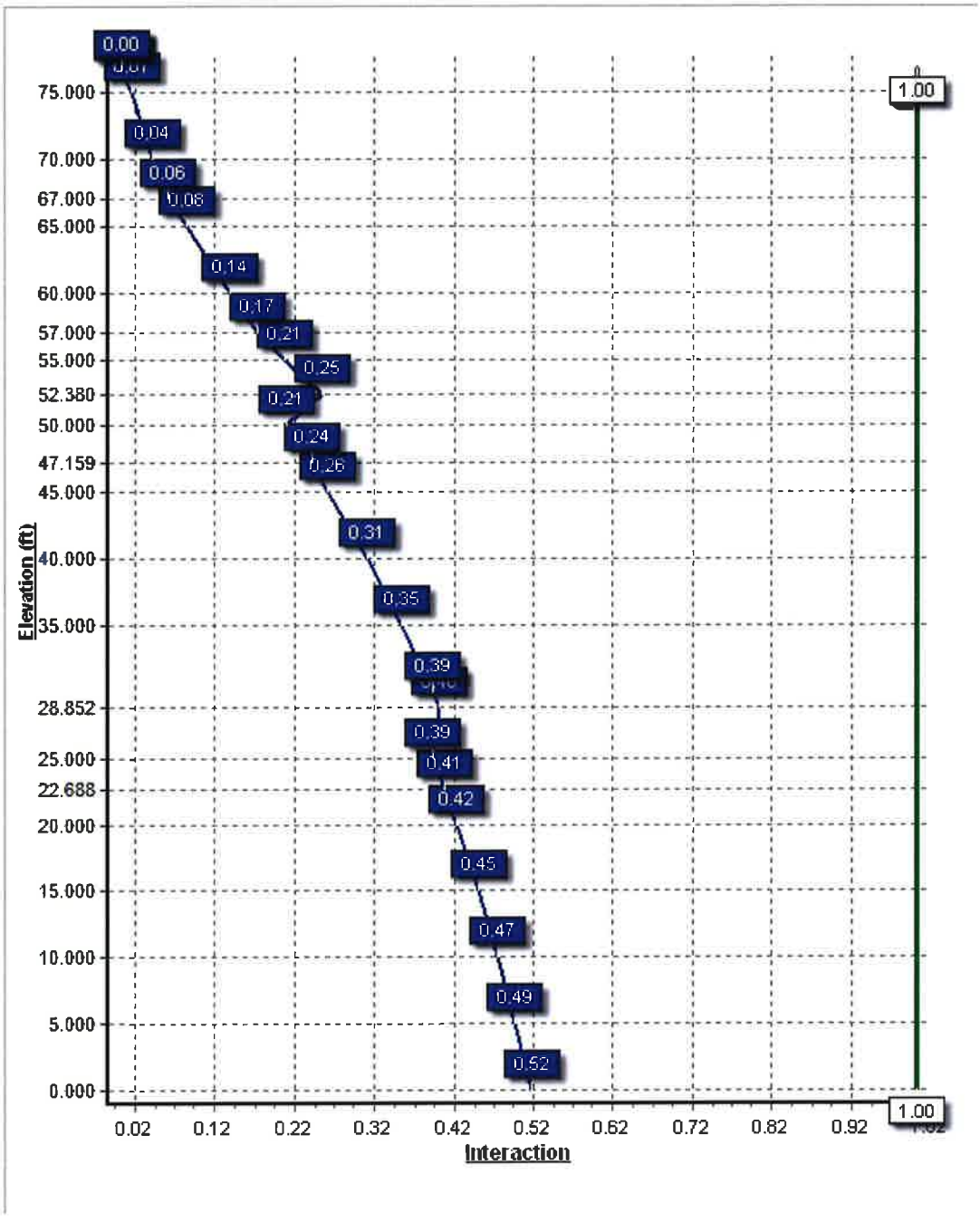
Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3227.17	62.18	39.46
0.9D + 1.6W	3221.33	62.17	29.57
1.2D + 1.0Di + 1.0Wi	665.12	12.91	65.34
(1.2 + 0.2Sds) * DL + E ELFM	258.03	4.79	39.47
(1.2 + 0.2Sds) * DL + E EMAM	241.70	4.01	39.47
(0.9 - 0.2Sds) * DL + E ELFM	257.41	4.79	26.54
(0.9 - 0.2Sds) * DL + E EMAM	241.08	4.01	26.54
1.0D + 1.0W	599.41	11.56	32.96

Dish Deflections

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




0.00
0.04
0.06
0.08
0.14
0.17
0.21
0.25
0.21
0.24
0.26
0.31
0.35
0.39
0.39
0.41
0.42
0.45
0.47
0.49
0.52
1.00
1.00
75.000
70.000
67.000
65.000
60.000
57.000
55.000
52.380
50.000
47.159
45.000
40.000
35.000
28.852
25.000
22.688
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	**414240**	**Code:**	**ANSI/TIA-222-G**
Site Name:	**Byram Park CT, CT**	**Engineering Number:**	**OAA680239_C3_02**
Customer:	**Verizon Wireless**		

6/23/2016 11:45:18 AM

Analysis Parameters

Location:	**Fairfield County, CT**		
Code:	**ANSI/TIA-222-G**	**Height (ft):**	**76.6**
Shape:	**18 Sides**	**Base Diameter (in):**	**52.00**
Pole Type:	**Taper**	**Top Diameter (in):**	**27.75**
Pole Manfacturer:	**EE**	**Taper (in/ft) :**	**0.336**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**110 mph**
Exposure Category:	**C**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Category:	**1**	**Operational Wind Speed:**	**60 mph**
Crest Height:	**0.0 ft**	**Design Ice Thickness:**	**0.75 in**

Seismic Parameters

Analysis Method:	**Equivalent Modal Analysis & Equivalent Lateral Force Methods**				
Site Class:	**D - Stiff Soil**				
Period Based on Rayleigh Method (sec):	**0.68**				
T_L (sec):	**6**	**p:**	**1.3**	**C_s:**	**0.112**
S_s:	**0.263**	**S_1:**	**0.071**	**C_s Max:**	**0.112**
F_a:	**1.590**	**F_v:**	**2.400**	**C_s Min:**	**0.030**
S_{ds}:	**0.279**	**S_{d1}:**	**0.114**		

Load Cases

1.2D + 1.6W	**110 mph with No Ice**
0.9D + 1.6W	**110 mph with No Ice (Reduced DL)**
1.2D + 1.0Di + 1.0Wi	**50 mph with 0.75 in Radial Ice**
(1.2 + 0.2Sds) * DL + E ELFM	**Seismic Equivalent Lateral Forces Method**
(1.2 + 0.2Sds) * DL + E EMAM	**Seismic Equivalent Modal Analysis Method**
(0.9 - 0.2Sds) * DL + E ELFM	**Seismic (Reduced DL) Equivalent Lateral Forces Method**
(0.9 - 0.2Sds) * DL + E EMAM	**Seismic (Reduced DL) Equivalent Modal Analysis Method**
1.0D + 1.0W	**Serviceability 60 mph**

Site Number: 414240 | Code: ANSI/TIA-222-G |

Site Name: Byram Park CT, CT | Engineering Number: OAA680239_C3_02 | 6/23/2016 11:45:18 AM

Customer: Verizon Wireless

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	28.852	0.5000	65		0.00	7,269	52.00	0.00	81.73	27387.9	16.93	104.00	42.31	28.85	66.35	14656.9	13.51	84.63	0.335790
2-18	29.693	0.4375	65	Slip	73.97	5,589	45.25	22.69	62.24	15795.8	16.83	103.45	35.28	52.38	48.39	7425.4	12.81	80.66	0.335790
3-18	29.529	0.3125	65	Slip	62.66	3,228	37.66	47.16	37.05	6530.8	19.84	120.53	27.75	76.69	27.21	2588.4	14.25	88.80	0.335790
				Shaft Weight		16,086													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
76.60	Ericsson RRUS 32 w/ Solar	3	52.90	2.740	0.67	133.90	3.422	0.67	0.000	0.400
76.60	Commscope LNX-6512DS-	3	28.70	5.090	0.83	159.31	6.008	0.83	0.000	0.400
76.60	Ericsson AIR-32 B2A/B66Aa	3	132.20	6.510	0.86	301.70	7.576	0.86	0.000	0.400
76.60	Ericsson RRUS 11 B12	3	50.70	2.790	0.67	130.19	3.421	0.67	0.000	0.400
76.60	Flat T-Arm	3	250.00	12.900	0.67	445.61	20.554	0.67	0.000	0.000
76.60	Pine Branches	1	600.00	45.000	1.00	991.22	74.341	1.00	0.000	0.400
76.60	RFS APX16DWV-16DWVS-E-	3	41.90	7.010	0.67	154.02	9.177	0.67	0.000	0.400
70.00	Pine Branches	1	600.00	45.000	1.00	987.28	74.046	1.00	0.000	0.000
67.00	CCI OPA-65R-LCUU-H6	3	73.00	9.660	0.79	260.87	12.219	0.79	0.000	0.000
67.00	Ericsson RRUS-11	6	55.00	3.790	0.67	137.87	4.975	0.67	0.000	1.000
67.00	Ericsson RRUS-32	3	77.00	3.310	0.67	166.77	4.494	0.67	0.000	0.000
67.00	Powerwave Allgon P65-16-	6	53.00	8.130	0.79	205.04	10.702	0.79	0.000	1.000
67.00	Powerwave Allgon TT19-	6	16.00	0.640	0.50	34.64	1.186	0.50	0.000	1.000
67.00	Raycap DC6-48-60-18-	1	32.80	1.280	1.00	89.75	1.841	1.00	0.000	1.000
67.00	Raycap DC6-48-60-18-	1	32.80	1.280	1.00	89.75	1.841	1.00	0.000	0.000
67.00	Round Sector Frame	3	300.00	14.400	0.75	639.54	29.679	0.75	0.000	0.000
65.00	Pine Branches	1	600.00	45.000	1.00	983.74	73.781	1.00	0.000	0.000
60.00	Pine Branches	1	600.00	45.000	1.00	981.21	73.591	1.00	0.000	0.000
57.00	Alcatel-Lucent RRH 2X60-	3	39.60	1.880	0.50	99.06	2.412	0.50	0.000	-1.000
57.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	128.80	2.711	0.67	0.000	-1.000
57.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.50	105.23	2.412	0.50	0.000	-1.000
57.00	Amphenol Antel BXA-171063-	3	12.80	4.800	0.88	99.75	6.947	0.88	0.000	-1.000
57.00	Amphenol Antel LPA-80063-	3	27.00	9.730	0.94	263.95	12.217	0.94	0.000	-1.000
57.00	Amphenol Antel LPA-80063-	3	27.00	9.730	0.94	263.95	12.217	0.94	0.000	-1.000
57.00	Commscope RC2DC-4750-PF-	2	26.00	3.780	0.67	138.48	4.518	0.67	0.000	-1.000
57.00	Commscope SBNHH-1D45A	4	50.50	7.240	0.72	211.11	8.263	0.72	0.000	-1.000
57.00	Commscope SBNHH-1D65A	2	33.50	5.880	0.83	174.20	6.847	0.83	0.000	-1.000
57.00	Flat T-Arm	3	250.00	12.900	0.67	439.78	20.326	0.67	0.000	0.000
57.00	VZW Unused Reserve:	1	1557.70	100.03	1.00	2,543.08	163.307	1.00	0.000	0.000
55.00	Pine Branches	1	600.00	45.000	1.00	977.96	73.347	1.00	0.000	0.000
50.00	Pine Branches	1	600.00	45.000	1.00	974.19	73.064	1.00	0.000	0.000
45.00	Pine Branches	1	600.00	45.000	1.00	969.22	72.692	1.00	0.000	0.000
40.00	Pine Branches	1	600.00	45.000	1.00	964.63	72.347	1.00	0.000	0.000
35.00	Pine Branches	1	600.00	45.000	1.00	959.45	71.959	1.00	0.000	0.000
30.00	Pine Branches	1	600.00	45.000	1.00	955.90	71.692	1.00	0.000	0.000
25.00	Pine Branches	1	600.00	45.000	1.00	948.49	71.137	1.00	0.000	0.000
20.00	Pine Branches	1	600.00	45.000	1.00	937.87	70.341	1.00	0.000	0.000
15.00	Pine Branches	1	600.00	45.000	1.00	926.69	69.502	1.00	0.000	0.000
	Totals	90	14878.80			30,392.84			Number of Loadings :	38

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	76.60	2	1 5/8" Fiber	1.63	1.61	N	0.00	N	T-Mobile

0.00	67.00	4	0.63" Cable	0.63	0.31	N	0.00	N	AT&T Mobility
0.00	67.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	67.00	2	5/8" Hybriflex	0.84	0.70	N	0.00	N	AT&T Mobility
0.00	57.00	16	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	57.00	1	1 5/8" Fiber	1.63	1.61	N	0.00	N	Verizon
0.00	57.00	1	1 5/8" Hybriflex Cable	1.98	1.30	N	0.00	N	Verizon

Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	52.001	81.729	27,387.9	16.93	104.00	81.5	1037.	0.0	0.0
5.00		0.5000	50.322	79.065	24,795.7	16.34	100.64	82.2	970.5	0.0	1,367.9
10.00		0.5000	48.643	76.400	22,372.4	15.74	97.29	82.6	905.9	0.0	1,322.5
15.00		0.5000	46.964	73.736	20,112.5	15.15	93.93	82.6	843.5	0.0	1,277.2
20.00		0.5000	45.285	71.071	18,010.0	14.56	90.57	82.6	783.3	0.0	1,231.9
22.69	Bot - Section 2	0.5000	44.383	69.639	16,943.1	14.24	88.77	82.6	751.9	0.0	643.4
25.00		0.5000	43.606	68.407	16,059.5	13.97	87.21	82.6	725.4	0.0	1,028.6
28.85	Top - Section 1	0.4375	43.188	59.362	13,706.9	16.00	98.72	82.6	625.1	0.0	1,672.9
30.00		0.4375	42.802	58.827	13,339.3	15.84	97.83	82.6	613.8	0.0	230.9
35.00		0.4375	41.123	56.495	11,815.4	15.16	94.00	82.6	565.9	0.0	981.0
40.00		0.4375	39.444	54.164	10,412.2	14.49	90.16	82.6	519.9	0.0	941.4
45.00		0.4375	37.765	51.833	9,124.8	13.81	86.32	82.6	475.9	0.0	901.7
47.16	Bot - Section 3	0.4375	37.040	50.826	8,603.4	13.52	84.66	82.6	457.5	0.0	377.1
50.00		0.4375	36.086	49.501	7,948.0	13.13	82.48	82.6	433.8	0.0	838.6
52.38	Top - Section 2	0.3125	35.912	35.309	5,653.7	18.85	114.92	79.2	310.1	0.0	685.6
55.00		0.3125	35.032	34.437	5,244.8	18.36	112.10	79.8	294.9	0.0	310.9
57.00		0.3125	34.361	33.771	4,946.3	17.98	109.95	80.3	283.5	0.0	232.1
60.00		0.3125	33.353	32.771	4,520.2	17.41	106.73	80.9	266.9	0.0	339.6
65.00		0.3125	31.675	31.106	3,865.5	16.46	101.36	82.0	240.4	0.0	543.4
67.00		0.3125	31.003	30.440	3,622.5	16.08	99.21	82.5	230.1	0.0	209.4
70.00		0.3125	29.996	29.441	3,277.3	15.51	95.99	82.6	215.2	0.0	305.6
75.00		0.3125	28.317	27.776	2,752.1	14.57	90.61	82.6	191.4	0.0	486.7
76.60		0.3125	27.779	27.243	2,596.7	14.26	88.89	82.6	184.1	0.0	149.8
76.69		0.3125	27.750	27.214	2,588.4	14.25	88.80	82.6	183.7	0.0	8.1
											16,086.3

Site Number: 414240 | Code: ANSI/TIA-222-G |

Site Name: Byram Park CT, CT | Engineering Number: OAA680239_C3_02 | 6/23/2016 11:45:18 AM

Customer: Verizon Wireless

Load Case: 1.2D + 1.6W | 110 mph with No Ice | 14 Iterations

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

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		309.7	0.0					0.0	0.0	309.7	0.0	0.0	0.0
5.00		609.2	1,641.4					0.0	190.4	609.2	1,831.8	0.0	0.0
10.00		588.9	1,587.0					0.0	190.4	588.9	1,777.4	0.0	0.0
15.00	Appertunance(s)	577.4	1,532.6	1,981.0	0.0	0.0	720.0	0.0	190.4	2,558.5	2,443.0	0.0	0.0
20.00	Appertunance(s)	445.0	1,478.2	2,102.0	0.0	0.0	720.0	0.0	190.4	2,546.9	2,388.6	0.0	0.0
22.69	Bot - Section 2	295.2	772.1					0.0	102.3	295.2	874.4	0.0	0.0
25.00	Appertunance(s)	369.2	1,234.4	2,203.1	0.0	0.0	720.0	0.0	88.1	2,572.3	2,042.4	0.0	0.0
28.85	Top - Section 1	299.7	2,007.4					0.0	146.7	299.7	2,154.1	0.0	0.0
30.00	Appertunance(s)	367.3	277.1	2,289.3	0.0	0.0	720.0	0.0	43.7	2,656.6	1,040.8	0.0	0.0
35.00	Appertunance(s)	593.9	1,177.2	2,364.8	0.0	0.0	720.0	0.0	190.4	2,958.7	2,087.6	0.0	0.0
40.00	Appertunance(s)	585.9	1,129.6	2,432.2	0.0	0.0	720.0	0.0	190.4	3,018.2	2,040.0	0.0	0.0
45.00	Appertunance(s)	414.3	1,082.0	2,493.3	0.0	0.0	720.0	0.0	190.4	2,907.5	1,992.4	0.0	0.0
47.16	Bot - Section 3	287.3	452.5					0.0	82.2	287.3	534.7	0.0	0.0
50.00	Appertunance(s)	298.9	1,006.3	2,549.2	0.0	0.0	720.0	0.0	108.2	2,848.1	1,834.5	0.0	0.0
52.38	Top - Section 2	282.3	822.7					0.0	90.6	282.3	913.4	0.0	0.0
55.00	Appertunance(s)	257.7	373.1	2,600.9	0.0	0.0	720.0	0.0	99.8	2,858.5	1,192.8	0.0	0.0
57.00	Appertunance(s)	274.3	278.5	12,210.9	0.0	-5,253.4	3,900.0	0.0	76.2	12,485.2	4,254.7	0.0	0.0
60.00	Appertunance(s)	429.0	407.6	2,648.9	0.0	0.0	720.0	0.0	56.5	3,077.9	1,184.1	0.0	0.0
65.00	Appertunance(s)	369.0	652.1	2,694.0	0.0	0.0	720.0	0.0	94.2	3,062.9	1,466.3	0.0	0.0
67.00	Appertunance(s)	255.8	251.3	5,704.5	0.0	2,754.6	2,591.5	0.0	37.7	5,960.3	2,880.5	0.0	0.0
70.00	Appertunance(s)	397.9	366.8	2,736.3	0.0	0.0	720.0	0.0	11.6	3,134.2	1,098.4	0.0	0.0
75.00		321.9	584.1					0.0	19.3	321.9	603.4	0.0	0.0
76.60		80.5	179.7					0.0	6.2	80.5	185.9	0.0	0.0
76.69		4.1	9.7					0.0	0.0	4.1	9.7	0.0	0.0
								Totals:		55,724.6	36,830.9	0.00	0.00

Site Number: 414240 Code: ANSI/TIA-222-G

Site Name: Byram Park CT, CT Engineering Number: OAA680239_C3_02 6/23/2016 11:45:18 AM

Customer: Verizon Wireless

Load Case: 1.2D + 1.6W 110 mph with No Ice 14 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	-39.46	-62.18	0.00	-3,227.17	0.00	3,227.17	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.516
5.00	-37.46	-61.68	0.00	-2,916.26	0.00	2,916.26	5,848.26	2,924.13	11,946.7	5,982.24	0.09	-0.16	0.494
10.00	-35.52	-61.18	0.00	-2,607.89	0.00	2,607.89	5,676.15	2,838.07	11,200.5	5,608.58	0.34	-0.32	0.472
15.00	-32.93	-58.69	0.00	-2,302.01	0.00	2,302.01	5,478.20	2,739.10	10,429.0	5,222.27	0.76	-0.47	0.447
20.00	-30.46	-56.18	0.00	-2,008.57	0.00	2,008.57	5,280.25	2,640.12	9,685.10	4,849.75	1.34	-0.63	0.420
22.69	-29.51	-55.92	0.00	-1,857.58	0.00	1,857.58	5,173.85	2,586.92	9,296.61	4,655.21	1.72	-0.71	0.405
25.00	-27.42	-53.36	0.00	-1,728.28	0.00	1,728.28	5,082.30	2,541.15	8,968.69	4,491.01	2.08	-0.78	0.391
28.85	-25.20	-53.06	0.00	-1,522.76	0.00	1,522.76	4,410.30	2,205.15	7,729.01	3,870.25	2.76	-0.89	0.400
30.00	-24.13	-50.43	0.00	-1,461.82	0.00	1,461.82	4,370.52	2,185.26	7,589.50	3,800.39	2.98	-0.92	0.391
35.00	-21.98	-47.48	0.00	-1,209.69	0.00	1,209.69	4,197.31	2,098.66	6,996.91	3,503.66	4.02	-1.06	0.351
40.00	-19.90	-44.47	0.00	-972.28	0.00	972.28	4,024.10	2,012.05	6,428.41	3,218.98	5.21	-1.20	0.307
45.00	-17.91	-41.54	0.00	-749.93	0.00	749.93	3,850.90	1,925.45	5,884.00	2,946.37	6.53	-1.31	0.260
47.16	-17.35	-41.26	0.00	-660.25	0.00	660.25	3,776.11	1,888.05	5,656.38	2,832.39	7.14	-1.36	0.238
50.00	-15.55	-38.38	0.00	-543.02	0.00	543.02	3,677.69	1,838.84	5,363.67	2,685.82	7.97	-1.42	0.207
52.38	-14.62	-38.09	0.00	-451.67	0.00	451.67	2,517.68	1,258.84	3,679.49	1,842.48	8.69	-1.46	0.252
55.00	-13.48	-35.21	0.00	-351.89	0.00	351.89	2,473.56	1,236.78	3,524.91	1,765.07	9.50	-1.50	0.206
57.00	-9.54	-22.62	0.00	-281.47	0.00	281.47	2,439.26	1,219.63	3,408.19	1,706.63	10.14	-1.53	0.169
60.00	-8.42	-19.52	0.00	-213.61	0.00	213.61	2,386.80	1,193.40	3,235.34	1,620.07	11.12	-1.58	0.136
65.00	-7.03	-16.42	0.00	-116.02	0.00	116.02	2,296.71	1,148.36	2,953.54	1,478.97	12.81	-1.63	0.082
67.00	-4.32	-10.38	0.00	-80.43	0.00	80.43	2,259.74	1,129.87	2,843.16	1,423.69	13.49	-1.64	0.058
70.00	-3.31	-7.22	0.00	-49.29	0.00	49.29	2,187.31	1,093.65	2,660.78	1,332.37	14.53	-1.66	0.039
75.00	-2.72	-6.88	0.00	-13.21	0.00	13.21	2,063.59	1,031.79	2,366.81	1,185.17	16.28	-1.67	0.013
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	16.84	-1.67	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	16.87	-1.67	0.000

Site Number: 414240 | Code: ANSI/TIA-222-G |

Site Name: Byram Park CT, CT | Engineering Number: OAA680239_C3_02 | 6/23/2016 11:45:18 AM

Customer: Verizon Wireless

Load Case: 0.9D + 1.6W — 110 mph with No Ice (Reduced DL) — 14 Iterations

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

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		309.7	0.0					0.0	0.0	309.7	0.0	0.0	0.0
5.00		609.2	1,231.1					0.0	142.8	609.2	1,373.9	0.0	0.0
10.00		588.9	1,190.3					0.0	142.8	588.9	1,333.1	0.0	0.0
15.00	Appertunance(s)	577.4	1,149.5	1,981.0	0.0	0.0	540.0	0.0	142.8	2,558.5	1,832.3	0.0	0.0
20.00	Appertunance(s)	445.0	1,108.7	2,102.0	0.0	0.0	540.0	0.0	142.8	2,546.9	1,791.5	0.0	0.0
22.69	Bot - Section 2	295.2	579.1					0.0	76.7	295.2	655.8	0.0	0.0
25.00	Appertunance(s)	369.2	925.8	2,203.1	0.0	0.0	540.0	0.0	66.0	2,572.3	1,531.8	0.0	0.0
28.85	Top - Section 1	299.7	1,505.6					0.0	110.0	299.7	1,615.6	0.0	0.0
30.00	Appertunance(s)	367.3	207.8	2,289.3	0.0	0.0	540.0	0.0	32.8	2,656.6	780.6	0.0	0.0
35.00	Appertunance(s)	593.9	882.9	2,364.8	0.0	0.0	540.0	0.0	142.8	2,958.7	1,565.7	0.0	0.0
40.00	Appertunance(s)	585.9	847.2	2,432.2	0.0	0.0	540.0	0.0	142.8	3,018.2	1,530.0	0.0	0.0
45.00	Appertunance(s)	414.3	811.5	2,493.3	0.0	0.0	540.0	0.0	142.8	2,907.5	1,494.3	0.0	0.0
47.16	Bot - Section 3	287.3	339.4					0.0	61.7	287.3	401.0	0.0	0.0
50.00	Appertunance(s)	298.9	754.7	2,549.2	0.0	0.0	540.0	0.0	81.1	2,848.1	1,375.8	0.0	0.0
52.38	Top - Section 2	282.3	617.1					0.0	68.0	282.3	685.0	0.0	0.0
55.00	Appertunance(s)	257.7	279.8	2,600.9	0.0	0.0	540.0	0.0	74.8	2,858.5	894.6	0.0	0.0
57.00	Appertunance(s)	274.3	208.9	12,210.9	0.0	-5,253.4	2,925.0	0.0	57.1	12,485.2	3,191.0	0.0	0.0
60.00	Appertunance(s)	429.0	305.7	2,648.9	0.0	0.0	540.0	0.0	42.4	3,077.9	888.1	0.0	0.0
65.00	Appertunance(s)	369.0	489.1	2,694.0	0.0	0.0	540.0	0.0	70.6	3,062.9	1,099.7	0.0	0.0
67.00	Appertunance(s)	255.8	188.5	5,704.5	0.0	2,754.6	1,943.6	0.0	28.3	5,960.3	2,160.4	0.0	0.0
70.00	Appertunance(s)	397.9	275.1	2,736.3	0.0	0.0	540.0	0.0	8.7	3,134.2	823.8	0.0	0.0
75.00		321.9	438.1					0.0	14.5	321.9	452.6	0.0	0.0
76.60		80.5	134.8					0.0	4.6	80.5	139.4	0.0	0.0
76.69		4.1	7.3					0.0	0.0	4.1	7.3	0.0	0.0
								Totals:		55,724.6	27,623.2	0.00	0.00

Load Case: 0.9D + 1.6W — 110 mph with No Ice (Reduced DL) — 14 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60
Wind Importance Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-29.57	-62.17	0.00	-3,221.33	0.00	3,221.33	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.513
5.00	-28.03	-61.64	0.00	-2,910.49	0.00	2,910.49	5,848.26	2,924.13	11,946.7	5,982.24	0.09	-0.16	0.492
10.00	-26.53	-61.11	0.00	-2,602.32	0.00	2,602.32	5,676.15	2,838.07	11,200.5	5,608.58	0.34	-0.32	0.469
15.00	-24.56	-58.61	0.00	-2,296.75	0.00	2,296.75	5,478.20	2,739.10	10,429.0	5,222.27	0.76	-0.47	0.445
20.00	-22.68	-56.09	0.00	-2,003.71	0.00	2,003.71	5,280.25	2,640.12	9,685.10	4,849.75	1.34	-0.63	0.418
22.69	-21.95	-55.82	0.00	-1,852.97	0.00	1,852.97	5,173.85	2,586.92	9,296.61	4,655.21	1.72	-0.71	0.403
25.00	-20.37	-53.26	0.00	-1,723.90	0.00	1,723.90	5,082.30	2,541.15	8,968.69	4,491.01	2.08	-0.78	0.388
28.85	-18.70	-52.96	0.00	-1,518.78	0.00	1,518.78	4,410.30	2,205.15	7,729.01	3,870.25	2.75	-0.89	0.397
30.00	-17.88	-50.32	0.00	-1,457.96	0.00	1,457.96	4,370.52	2,185.26	7,589.50	3,800.39	2.97	-0.92	0.388
35.00	-16.25	-47.37	0.00	-1,206.38	0.00	1,206.38	4,197.31	2,098.66	6,996.91	3,503.66	4.02	-1.06	0.349
40.00	-14.69	-44.35	0.00	-969.54	0.00	969.54	4,024.10	2,012.05	6,428.41	3,218.98	5.20	-1.19	0.305
45.00	-13.20	-41.43	0.00	-747.77	0.00	747.77	3,850.90	1,925.45	5,884.00	2,946.37	6.52	-1.31	0.258
47.16	-12.77	-41.15	0.00	-658.32	0.00	658.32	3,776.11	1,888.05	5,656.38	2,832.39	7.12	-1.36	0.236
50.00	-11.43	-38.28	0.00	-541.42	0.00	541.42	3,677.69	1,838.84	5,363.67	2,685.82	7.95	-1.41	0.205
52.38	-10.72	-37.99	0.00	-450.31	0.00	450.31	2,517.68	1,258.84	3,679.49	1,842.48	8.67	-1.46	0.250
55.00	-9.88	-35.11	0.00	-350.80	0.00	350.80	2,473.56	1,236.78	3,524.91	1,765.07	9.48	-1.50	0.204
57.00	-7.00	-22.55	0.00	-280.57	0.00	280.57	2,439.26	1,219.63	3,408.19	1,706.63	10.12	-1.53	0.168
60.00	-6.18	-19.45	0.00	-212.92	0.00	212.92	2,386.80	1,193.40	3,235.34	1,620.07	11.10	-1.57	0.134
65.00	-5.16	-16.37	0.00	-115.65	0.00	115.65	2,296.71	1,148.36	2,953.54	1,478.97	12.78	-1.63	0.081
67.00	-3.17	-10.35	0.00	-80.16	0.00	80.16	2,259.74	1,129.87	2,843.16	1,423.69	13.46	-1.64	0.058
70.00	-2.43	-7.19	0.00	-49.12	0.00	49.12	2,187.31	1,093.65	2,660.78	1,332.37	14.50	-1.66	0.038
75.00	-1.99	-6.86	0.00	-13.17	0.00	13.17	2,063.59	1,031.79	2,366.81	1,185.17	16.24	-1.67	0.012
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	16.80	-1.67	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	16.83	-1.67	0.000

Site Number: 414240 | Code: ANSI/TIA-222-G |

Site Name: Byram Park CT, CT | Engineering Number: OAA680239_C3_02 | 6/23/2016 11:45:19 AM

Customer: Verizon Wireless

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 13 Iterations

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

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		77.1	0.0					0.0	0.0	77.1	0.0	0.0	0.0
5.00		152.2	2,015.2					0.0	190.4	152.2	2,205.6	0.0	0.0
10.00		147.9	1,991.6					0.0	190.4	147.9	2,182.0	0.0	0.0
15.00	Appertunance(s)	145.7	1,944.7	395.1	0.0	0.0	1,646.7	0.0	190.4	540.8	3,781.8	0.0	0.0
20.00	Appertunance(s)	112.6	1,890.0	424.3	0.0	0.0	1,657.9	0.0	190.4	536.8	3,738.2	0.0	0.0
22.69	Bot - Section 2	74.8	993.6					0.0	102.3	74.8	1,095.9	0.0	0.0
25.00	Appertunance(s)	93.8	1,427.6	449.7	0.0	0.0	1,668.5	0.0	88.1	543.5	3,184.1	0.0	0.0
28.85	Top - Section 1	76.2	2,324.1					0.0	146.7	76.2	2,470.8	0.0	0.0
30.00	Appertunance(s)	93.7	371.6	471.0	0.0	0.0	1,675.9	0.0	43.7	564.7	2,091.2	0.0	0.0
35.00	Appertunance(s)	151.8	1,577.1	488.3	0.0	0.0	1,679.5	0.0	190.4	640.1	3,446.9	0.0	0.0
40.00	Appertunance(s)	150.4	1,519.4	504.9	0.0	0.0	1,684.6	0.0	190.4	655.3	3,394.4	0.0	0.0
45.00	Appertunance(s)	106.6	1,460.7	520.1	0.0	0.0	1,689.2	0.0	190.4	626.7	3,340.3	0.0	0.0
47.16	Bot - Section 3	74.1	614.3					0.0	82.2	74.1	696.5	0.0	0.0
50.00	Appertunance(s)	77.2	1,218.6	534.5	0.0	0.0	1,694.2	0.0	108.2	611.7	3,021.0	0.0	0.0
52.38	Top - Section 2	73.1	997.9					0.0	90.6	73.1	1,088.5	0.0	0.0
55.00	Appertunance(s)	66.9	562.2	547.4	0.0	0.0	1,698.0	0.0	99.8	614.3	2,359.9	0.0	0.0
57.00	Appertunance(s)	71.4	420.9	2,304.4	0.0	-846.0	6,999.8	0.0	76.2	2,375.8	7,496.9	0.0	0.0
60.00	Appertunance(s)	112.0	616.1	559.4	0.0	0.0	1,701.2	0.0	56.5	671.4	2,373.8	0.0	0.0
65.00	Appertunance(s)	96.6	985.2	570.4	0.0	0.0	1,703.7	0.0	94.2	667.0	2,783.2	0.0	0.0
67.00	Appertunance(s)	67.3	382.6	1,112.9	0.0	475.3	4,966.8	0.0	37.7	1,180.1	5,387.1	0.0	0.0
70.00	Appertunance(s)	105.1	558.4	581.4	0.0	0.0	1,707.3	0.0	11.6	686.5	2,277.3	0.0	0.0
75.00		85.2	888.3					0.0	19.3	85.2	907.6	0.0	0.0
76.60		21.4	275.8					0.0	6.2	21.4	282.0	0.0	0.0
76.69		1.1	15.0					0.0	0.0	1.1	15.0	0.0	0.0
								Totals:		11,697.8	59,620.0	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph with 0.75 in Radial Ice — 13 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	-65.34	-12.91	0.00	-665.12	0.00	665.12	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.116
5.00	-63.12	-12.79	0.00	-600.57	0.00	600.57	5,848.26	2,924.13	11,946.7	5,982.24	0.02	-0.03	0.111
10.00	-60.94	-12.68	0.00	-536.60	0.00	536.60	5,676.15	2,838.07	11,200.5	5,608.58	0.07	-0.07	0.106
15.00	-57.15	-12.16	0.00	-473.21	0.00	473.21	5,478.20	2,739.10	10,429.0	5,222.27	0.16	-0.10	0.101
20.00	-53.41	-11.64	0.00	-412.39	0.00	412.39	5,280.25	2,640.12	9,685.10	4,849.75	0.28	-0.13	0.095
22.69	-52.31	-11.58	0.00	-381.11	0.00	381.11	5,173.85	2,586.92	9,296.61	4,655.21	0.35	-0.15	0.092
25.00	-49.12	-11.04	0.00	-354.33	0.00	354.33	5,082.30	2,541.15	8,968.69	4,491.01	0.43	-0.16	0.089
28.85	-46.65	-10.97	0.00	-311.80	0.00	311.80	4,410.30	2,205.15	7,729.01	3,870.25	0.57	-0.18	0.091
30.00	-44.56	-10.41	0.00	-299.20	0.00	299.20	4,370.52	2,185.26	7,589.50	3,800.39	0.61	-0.19	0.089
35.00	-41.11	-9.78	0.00	-247.14	0.00	247.14	4,197.31	2,098.66	6,996.91	3,503.66	0.83	-0.22	0.080
40.00	-37.71	-9.13	0.00	-198.23	0.00	198.23	4,024.10	2,012.05	6,428.41	3,218.98	1.07	-0.25	0.071
45.00	-34.37	-8.50	0.00	-152.59	0.00	152.59	3,850.90	1,925.45	5,884.00	2,946.37	1.34	-0.27	0.061
47.16	-33.67	-8.43	0.00	-134.24	0.00	134.24	3,776.11	1,888.05	5,656.38	2,832.39	1.47	-0.28	0.056
50.00	-30.65	-7.80	0.00	-110.31	0.00	110.31	3,677.69	1,838.84	5,363.67	2,685.82	1.64	-0.29	0.049
52.38	-29.56	-7.73	0.00	-91.73	0.00	91.73	2,517.68	1,258.84	3,679.49	1,842.48	1.78	-0.30	0.062
55.00	-27.21	-7.11	0.00	-71.48	0.00	71.48	2,473.56	1,236.78	3,524.91	1,765.07	1.95	-0.31	0.052
57.00	-19.72	-4.69	0.00	-57.26	0.00	57.26	2,439.26	1,219.63	3,408.19	1,706.63	2.08	-0.31	0.042
60.00	-17.35	-4.01	0.00	-43.19	0.00	43.19	2,386.80	1,193.40	3,235.34	1,620.07	2.28	-0.32	0.034
65.00	-14.57	-3.33	0.00	-23.13	0.00	23.13	2,296.71	1,148.36	2,953.54	1,478.97	2.63	-0.33	0.022
67.00	-9.19	-2.12	0.00	-15.99	0.00	15.99	2,259.74	1,129.87	2,843.16	1,423.69	2.77	-0.34	0.015
70.00	-6.92	-1.42	0.00	-9.63	0.00	9.63	2,187.31	1,093.65	2,660.78	1,332.37	2.98	-0.34	0.010
75.00	-6.01	-1.33	0.00	-2.54	0.00	2.54	2,063.59	1,031.79	2,366.81	1,185.17	3.34	-0.34	0.005
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	3.45	-0.34	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	3.46	-0.34	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 13 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		57.6	0.0					0.0	0.0	57.6	0.0	0.0	0.0
5.00		113.3	1,367.9					0.0	158.6	113.3	1,526.5	0.0	0.0
10.00		109.5	1,322.5					0.0	158.6	109.5	1,481.2	0.0	0.0
15.00	Appertunance(s)	107.4	1,277.2	368.4	0.0	0.0	600.0	0.0	158.6	475.7	2,035.8	0.0	0.0
20.00	Appertunance(s)	82.7	1,231.9	390.9	0.0	0.0	600.0	0.0	158.6	473.6	1,990.5	0.0	0.0
22.69	Bot - Section 2	54.9	643.4					0.0	85.3	54.9	728.7	0.0	0.0
25.00	Appertunance(s)	68.7	1,028.6	409.7	0.0	0.0	600.0	0.0	73.4	478.3	1,702.0	0.0	0.0
28.85	Top - Section 1	55.7	1,672.9					0.0	122.2	55.7	1,795.1	0.0	0.0
30.00	Appertunance(s)	68.3	230.9	425.7	0.0	0.0	600.0	0.0	36.4	494.0	867.4	0.0	0.0
35.00	Appertunance(s)	110.4	981.0	439.7	0.0	0.0	600.0	0.0	158.6	550.2	1,739.7	0.0	0.0
40.00	Appertunance(s)	109.0	941.4	452.3	0.0	0.0	600.0	0.0	158.6	561.2	1,700.0	0.0	0.0
45.00	Appertunance(s)	77.0	901.7	463.6	0.0	0.0	600.0	0.0	158.6	540.7	1,660.4	0.0	0.0
47.16	Bot - Section 3	53.4	377.1					0.0	68.5	53.4	445.6	0.0	0.0
50.00	Appertunance(s)	55.6	838.6	474.0	0.0	0.0	600.0	0.0	90.1	529.6	1,528.7	0.0	0.0
52.38	Top - Section 2	52.5	685.6					0.0	75.5	52.5	761.1	0.0	0.0
55.00	Appertunance(s)	47.9	310.9	483.6	0.0	0.0	600.0	0.0	83.1	531.5	994.0	0.0	0.0
57.00	Appertunance(s)	51.0	232.1	2,270.6	0.0	-976.9	3,250.0	0.0	63.5	2,321.6	3,545.6	0.0	0.0
60.00	Appertunance(s)	79.8	339.6	492.6	0.0	0.0	600.0	0.0	47.1	572.3	986.7	0.0	0.0
65.00	Appertunance(s)	68.6	543.4	500.9	0.0	0.0	600.0	0.0	78.5	569.6	1,221.9	0.0	0.0
67.00	Appertunance(s)	47.6	209.4	1,060.7	0.0	512.2	2,159.6	0.0	31.4	1,108.3	2,400.4	0.0	0.0
70.00	Appertunance(s)	74.0	305.6	508.8	0.0	0.0	600.0	0.0	9.7	582.8	915.3	0.0	0.0
75.00		59.9	486.7					0.0	16.1	59.9	502.8	0.0	0.0
76.60		15.0	149.8					0.0	5.2	15.0	154.9	0.0	0.0
76.69		0.8	8.1					0.0	0.0	0.8	8.1	0.0	0.0
								Totals:		10,362.0	30,692.4	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 13 Iterations

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-32.96	-11.56	0.00	-599.41	0.00	599.41	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.100
5.00	-31.43	-11.46	0.00	-541.61	0.00	541.61	5,848.26	2,924.13	11,946.7	5,982.24	0.02	-0.03	0.096
10.00	-29.94	-11.37	0.00	-484.29	0.00	484.29	5,676.15	2,838.07	11,200.5	5,608.58	0.06	-0.06	0.092
15.00	-27.90	-10.90	0.00	-427.46	0.00	427.46	5,478.20	2,739.10	10,429.0	5,222.27	0.14	-0.09	0.087
20.00	-25.90	-10.44	0.00	-372.94	0.00	372.94	5,280.25	2,640.12	9,685.10	4,849.75	0.25	-0.12	0.082
22.69	-25.17	-10.39	0.00	-344.90	0.00	344.90	5,173.85	2,586.92	9,296.61	4,655.21	0.32	-0.13	0.079
25.00	-23.47	-9.91	0.00	-320.88	0.00	320.88	5,082.30	2,541.15	8,968.69	4,491.01	0.39	-0.14	0.076
28.85	-21.67	-9.85	0.00	-282.71	0.00	282.71	4,410.30	2,205.15	7,729.01	3,870.25	0.51	-0.17	0.078
30.00	-20.80	-9.36	0.00	-271.40	0.00	271.40	4,370.52	2,185.26	7,589.50	3,800.39	0.55	-0.17	0.076
35.00	-19.06	-8.82	0.00	-224.58	0.00	224.58	4,197.31	2,098.66	6,996.91	3,503.66	0.75	-0.20	0.069
40.00	-17.36	-8.26	0.00	-180.49	0.00	180.49	4,024.10	2,012.05	6,428.41	3,218.98	0.97	-0.22	0.060
45.00	-15.70	-7.71	0.00	-139.21	0.00	139.21	3,850.90	1,925.45	5,884.00	2,946.37	1.21	-0.24	0.051
47.16	-15.25	-7.66	0.00	-122.56	0.00	122.56	3,776.11	1,888.05	5,656.38	2,832.39	1.33	-0.25	0.047
50.00	-13.73	-7.13	0.00	-100.80	0.00	100.80	3,677.69	1,838.84	5,363.67	2,685.82	1.48	-0.26	0.041
52.38	-12.97	-7.07	0.00	-83.84	0.00	83.84	2,517.68	1,258.84	3,679.49	1,842.48	1.61	-0.27	0.051
55.00	-11.97	-6.54	0.00	-65.32	0.00	65.32	2,473.56	1,236.78	3,524.91	1,765.07	1.76	-0.28	0.042
57.00	-8.44	-4.20	0.00	-52.24	0.00	52.24	2,439.26	1,219.63	3,408.19	1,706.63	1.88	-0.28	0.034
60.00	-7.45	-3.62	0.00	-39.65	0.00	39.65	2,386.80	1,193.40	3,235.34	1,620.07	2.07	-0.29	0.028
65.00	-6.23	-3.05	0.00	-21.53	0.00	21.53	2,296.71	1,148.36	2,953.54	1,478.97	2.38	-0.30	0.017
67.00	-3.84	-1.93	0.00	-14.93	0.00	14.93	2,259.74	1,129.87	2,843.16	1,423.69	2.51	-0.31	0.012
70.00	-2.93	-1.34	0.00	-9.15	0.00	9.15	2,187.31	1,093.65	2,660.78	1,332.37	2.70	-0.31	0.008
75.00	-2.43	-1.28	0.00	-2.45	0.00	2.45	2,063.59	1,031.79	2,366.81	1,185.17	3.02	-0.31	0.003
76.60	-0.01	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	3.13	-0.31	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	3.13	-0.31	0.000

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.26
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.59
Site Coeffiecient F_v:	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.28
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Seismic Response Coefficient (C_s):	0.11
Upper Limit C_s	0.11
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	0.68
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.09
Total Unfactored Dead Load:	32.96 k
Seismic Base Shear (E):	4.80 k

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

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1	0.000	2	10
22	75.80	155	17	0.009	42	195
21	72.50	503	53	0.027	131	631
20	68.50	315	31	0.016	77	396
19	66.00	241	23	0.012	57	302
18	62.50	622	56	0.029	138	781
17	58.50	387	32	0.017	80	486
16	56.00	296	24	0.012	58	371
15	53.69	394	30	0.015	74	495
14	51.19	761	55	0.028	136	956
13	48.58	929	64	0.033	157	1,166
12	46.08	446	29	0.015	71	560
11	42.50	1,060	63	0.032	155	1,332
10	37.50	1,100	57	0.029	140	1,381
9	32.50	1,140	50	0.026	124	1,431
8	29.43	267	11	0.005	26	336
7	26.93	1,795	65	0.033	159	2,254
6	23.84	1,102	35	0.018	86	1,384
5	21.34	729	20	0.010	50	915
4	17.50	1,391	31	0.016	77	1,746
3	12.50	1,436	22	0.012	55	1,803
2	7.50	1,481	13	0.007	33	1,860
1	2.50	1,527	4	0.002	10	1,917

Ericsson RRUS 32 w/	76.60	159	18	0.009	44	199
Ericsson RRUS 11 B12	76.60	152	17	0.009	42	191
Commscope LNX-6512DS	76.60	86	10	0.005	24	108
Ericsson AIR-32 B2A/	76.60	397	45	0.023	110	498
RFS APX16DWV-16DWVS-	76.60	126	14	0.007	35	158
Flat T-Arm	76.60	750	84	0.043	208	942
Pine Branches	76.60	600	67	0.035	166	753
Pine Branches	70.00	600	61	0.031	151	753
Powerwave Allgon TT1	67.00	96	9	0.005	23	121
Raycap DC6-48-60-18-	67.00	33	3	0.002	8	41
Raycap DC6-48-60-18-	67.00	33	3	0.002	8	41
Ericsson RRUS-32	67.00	231	22	0.012	55	290
Ericsson RRUS-11	67.00	330	32	0.016	79	414
Powerwave Allgon P65	67.00	318	31	0.016	76	399
CCI OPA-65R-LCUU-H6	67.00	219	21	0.011	52	275
Round Sector Frame	67.00	900	87	0.045	216	1,130
Pine Branches	65.00	600	56	0.029	139	753
Pine Branches	60.00	600	52	0.027	127	753
Alcatel-Lucent RRH2X	57.00	132	11	0.006	27	166
Alcatel-Lucent RRH 2	57.00	119	10	0.005	24	149
Alcatel-Lucent RRH2x	57.00	170	14	0.007	34	214
Commscope RC2DC-4750	57.00	52	4	0.002	10	65
Amphenol Antel BXA-1	57.00	38	3	0.002	8	48
Commscope SBNHH-1D65	57.00	67	5	0.003	13	84
Commscope SBNHH-1D45	57.00	202	16	0.008	41	254
Amphenol Antel LPA-8	57.00	81	7	0.003	16	102
Amphenol Antel LPA-8	57.00	81	7	0.003	16	102
Flat T-Arm	57.00	750	61	0.031	151	942
VZW Unused Reserve:	57.00	1,558	127	0.065	313	1,956
Pine Branches	55.00	600	47	0.024	116	753
Pine Branches	50.00	600	42	0.022	105	753
Pine Branches	45.00	600	38	0.019	93	753
Pine Branches	40.00	600	33	0.017	82	753
Pine Branches	35.00	600	29	0.015	71	753
Pine Branches	30.00	600	24	0.012	60	753
Pine Branches	25.00	600	20	0.010	49	753
Pine Branches	20.00	600	16	0.008	39	753
Pine Branches	15.00	600	11	0.006	28	753
		32,962	1,944	1.000	4,799	41,391

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1	0.000	2	7
22	75.80	155	17	0.009	42	131
21	72.50	503	53	0.027	131	425
20	68.50	315	31	0.016	77	266
19	66.00	241	23	0.012	57	203
18	62.50	622	56	0.029	138	525
17	58.50	387	32	0.017	80	327
16	56.00	296	24	0.012	58	250
15	53.69	394	30	0.015	74	333
14	51.19	761	55	0.028	136	643
13	48.58	929	64	0.033	157	784
12	46.08	446	29	0.015	71	376
11	42.50	1,060	63	0.032	155	895
10	37.50	1,100	57	0.029	140	929
9	32.50	1,140	50	0.026	124	962
8	29.43	267	11	0.005	26	226

7	26.93	1,795	65	0.033	159	1,516
6	23.84	1,102	35	0.018	86	930
5	21.34	729	20	0.010	50	615
4	17.50	1,391	31	0.016	77	1,174
3	12.50	1,436	22	0.012	55	1,212
2	7.50	1,481	13	0.007	33	1,250
1	2.50	1,527	4	0.002	10	1,289
Ericsson RRUS 32 w/	76.60	159	18	0.009	44	134
Ericsson RRUS 11 B12	76.60	152	17	0.009	42	128
Commscope LNX-6512DS	76.60	86	10	0.005	24	73
Ericsson AIR-32 B2A/	76.60	397	45	0.023	110	335
RFS APX16DWV-16DWVS-	76.60	126	14	0.007	35	106
Flat T-Arm	76.60	750	84	0.043	208	633
Pine Branches	76.60	600	67	0.035	166	507
Pine Branches	70.00	600	61	0.031	151	507
Powerwave Allgon TT1	67.00	96	9	0.005	23	81
Raycap DC6-48-60-18-	67.00	33	3	0.002	8	28
Raycap DC6-48-60-18-	67.00	33	3	0.002	8	28
Ericsson RRUS-32	67.00	231	22	0.012	55	195
Ericsson RRUS-11	67.00	330	32	0.016	79	279
Powerwave Allgon P65	67.00	318	31	0.016	76	268
CCI OPA-65R-LCUU-H6	67.00	219	21	0.011	52	185
Round Sector Frame	67.00	900	87	0.045	216	760
Pine Branches	65.00	600	56	0.029	139	507
Pine Branches	60.00	600	52	0.027	127	507
Alcatel-Lucent RRH2X	57.00	132	11	0.006	27	111
Alcatel-Lucent RRH 2	57.00	119	10	0.005	24	100
Alcatel-Lucent RRH2x	57.00	170	14	0.007	34	144
Commscope RC2DC-4750	57.00	52	4	0.002	10	44
Amphenol Antel BXA-1	57.00	38	3	0.002	8	32
Commscope SBNHH-1D65	57.00	67	5	0.003	13	57
Commscope SBNHH-1D45	57.00	202	16	0.008	41	171
Amphenol Antel LPA-8	57.00	81	7	0.003	16	68
Amphenol Antel LPA-8	57.00	81	7	0.003	16	68
Flat T-Arm	57.00	750	61	0.031	151	633
VZW Unused Reserve:	57.00	1,558	127	0.065	313	1,315
Pine Branches	55.00	600	47	0.024	116	507
Pine Branches	50.00	600	42	0.022	105	507
Pine Branches	45.00	600	38	0.019	93	507
Pine Branches	40.00	600	33	0.017	82	507
Pine Branches	35.00	600	29	0.015	71	507
Pine Branches	30.00	600	24	0.012	60	507
Pine Branches	25.00	600	20	0.010	49	507
Pine Branches	20.00	600	16	0.008	39	507
Pine Branches	15.00	600	11	0.006	28	507
		32,962	1,944	1.000	4,799	27,828

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-39.47	-4.79	0.00	-258.03	0.00	258.03	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.047
5.00	-37.61	-4.77	0.00	-234.06	0.00	234.06	5,848.26	2,924.13	11,946.7	5,982.24	0.01	-0.01	0.046
10.00	-35.81	-4.72	0.00	-210.22	0.00	210.22	5,676.15	2,838.07	11,200.5	5,608.58	0.03	-0.03	0.044
15.00	-33.31	-4.62	0.00	-186.61	0.00	186.61	5,478.20	2,739.10	10,429.0	5,222.27	0.06	-0.04	0.042
20.00	-31.64	-4.54	0.00	-163.51	0.00	163.51	5,280.25	2,640.12	9,685.10	4,849.75	0.11	-0.05	0.040
22.69	-30.25	-4.45	0.00	-151.32	0.00	151.32	5,173.85	2,586.92	9,296.61	4,655.21	0.14	-0.06	0.038
25.00	-27.25	-4.24	0.00	-141.02	0.00	141.02	5,082.30	2,541.15	8,968.69	4,491.01	0.17	-0.06	0.037
28.85	-26.91	-4.22	0.00	-124.67	0.00	124.67	4,410.30	2,205.15	7,729.01	3,870.25	0.22	-0.07	0.038
30.00	-24.73	-4.04	0.00	-119.83	0.00	119.83	4,370.52	2,185.26	7,589.50	3,800.39	0.24	-0.07	0.037
35.00	-22.59	-3.83	0.00	-99.64	0.00	99.64	4,197.31	2,098.66	6,996.91	3,503.66	0.32	-0.09	0.034
40.00	-20.51	-3.59	0.00	-80.51	0.00	80.51	4,024.10	2,012.05	6,428.41	3,218.98	0.42	-0.10	0.030
45.00	-19.19	-3.43	0.00	-62.56	0.00	62.56	3,850.90	1,925.45	5,884.00	2,946.37	0.53	-0.11	0.026
47.16	-18.03	-3.27	0.00	-55.16	0.00	55.16	3,776.11	1,888.05	5,656.38	2,832.39	0.58	-0.11	0.024
50.00	-16.32	-3.03	0.00	-45.87	0.00	45.87	3,677.69	1,838.84	5,363.67	2,685.82	0.65	-0.12	0.022
52.38	-15.82	-2.95	0.00	-38.67	0.00	38.67	2,517.68	1,258.84	3,679.49	1,842.48	0.70	-0.12	0.027
55.00	-14.70	-2.78	0.00	-30.94	0.00	30.94	2,473.56	1,236.78	3,524.91	1,765.07	0.77	-0.12	0.023
57.00	-10.13	-2.03	0.00	-25.39	0.00	25.39	2,439.26	1,219.63	3,408.19	1,706.63	0.82	-0.13	0.019
60.00	-8.60	-1.77	0.00	-19.28	0.00	19.28	2,386.80	1,193.40	3,235.34	1,620.07	0.90	-0.13	0.016
65.00	-7.54	-1.57	0.00	-10.46	0.00	10.46	2,296.71	1,148.36	2,953.54	1,478.97	1.04	-0.13	0.010
67.00	-4.44	-0.97	0.00	-7.32	0.00	7.32	2,259.74	1,129.87	2,843.16	1,423.69	1.10	-0.14	0.007
70.00	-3.05	-0.68	0.00	-4.42	0.00	4.42	2,187.31	1,093.65	2,660.78	1,332.37	1.19	-0.14	0.005
75.00	-2.86	-0.64	0.00	-1.02	0.00	1.02	2,063.59	1,031.79	2,366.81	1,185.17	1.33	-0.14	0.002
76.60	0.00	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	1.38	-0.14	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	1.38	-0.14	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.54	-4.79	0.00	-257.41	0.00	257.41	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.045
5.00	-25.29	-4.76	0.00	-233.45	0.00	233.45	5,848.26	2,924.13	11,946.7	5,982.24	0.01	-0.01	0.043
10.00	-24.07	-4.71	0.00	-209.63	0.00	209.63	5,676.15	2,838.07	11,200.5	5,608.58	0.03	-0.03	0.042
15.00	-22.39	-4.61	0.00	-186.06	0.00	186.06	5,478.20	2,739.10	10,429.0	5,222.27	0.06	-0.04	0.040
20.00	-21.27	-4.53	0.00	-163.00	0.00	163.00	5,280.25	2,640.12	9,685.10	4,849.75	0.11	-0.05	0.038
22.69	-20.34	-4.44	0.00	-150.83	0.00	150.83	5,173.85	2,586.92	9,296.61	4,655.21	0.14	-0.06	0.036
25.00	-18.32	-4.23	0.00	-140.56	0.00	140.56	5,082.30	2,541.15	8,968.69	4,491.01	0.17	-0.06	0.035
28.85	-18.09	-4.21	0.00	-124.25	0.00	124.25	4,410.30	2,205.15	7,729.01	3,870.25	0.22	-0.07	0.036
30.00	-16.62	-4.03	0.00	-119.42	0.00	119.42	4,370.52	2,185.26	7,589.50	3,800.39	0.24	-0.07	0.035
35.00	-15.19	-3.81	0.00	-99.29	0.00	99.29	4,197.31	2,098.66	6,996.91	3,503.66	0.32	-0.09	0.032
40.00	-13.78	-3.58	0.00	-80.22	0.00	80.22	4,024.10	2,012.05	6,428.41	3,218.98	0.42	-0.10	0.028
45.00	-12.90	-3.41	0.00	-62.33	0.00	62.33	3,850.90	1,925.45	5,884.00	2,946.37	0.53	-0.11	0.025
47.16	-12.12	-3.26	0.00	-54.96	0.00	54.96	3,776.11	1,888.05	5,656.38	2,832.39	0.58	-0.11	0.023
50.00	-10.97	-3.01	0.00	-45.70	0.00	45.70	3,677.69	1,838.84	5,363.67	2,685.82	0.64	-0.12	0.020
52.38	-10.64	-2.94	0.00	-38.53	0.00	38.53	2,517.68	1,258.84	3,679.49	1,842.48	0.70	-0.12	0.025
55.00	-9.88	-2.77	0.00	-30.82	0.00	30.82	2,473.56	1,236.78	3,524.91	1,765.07	0.77	-0.12	0.021
57.00	-6.81	-2.03	0.00	-25.29	0.00	25.29	2,439.26	1,219.63	3,408.19	1,706.63	0.82	-0.13	0.018
60.00	-5.78	-1.76	0.00	-19.21	0.00	19.21	2,386.80	1,193.40	3,235.34	1,620.07	0.90	-0.13	0.014
65.00	-5.07	-1.56	0.00	-10.42	0.00	10.42	2,296.71	1,148.36	2,953.54	1,478.97	1.04	-0.13	0.009
67.00	-2.98	-0.96	0.00	-7.30	0.00	7.30	2,259.74	1,129.87	2,843.16	1,423.69	1.10	-0.14	0.006
70.00	-2.05	-0.68	0.00	-4.41	0.00	4.41	2,187.31	1,093.65	2,660.78	1,332.37	1.18	-0.14	0.004
75.00	-1.92	-0.64	0.00	-1.02	0.00	1.02	2,063.59	1,031.79	2,366.81	1,185.17	1.33	-0.14	0.002
76.60	0.00	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	1.37	-0.14	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	1.37	-0.14	0.000

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.26
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.07
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.59
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.28
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.11
Period Based on Rayleigh Method (sec):	0.68
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
23	76.64	8	1.888	1.969	1.136	0.604	4	10
22	75.80	155	1.847	1.758	1.059	0.568	76	195
21	72.50	503	1.689	1.082	0.798	0.439	191	631
20	68.50	315	1.508	0.521	0.552	0.311	85	396
19	66.00	241	1.400	0.284	0.432	0.248	52	302
18	62.50	622	1.255	0.063	0.298	0.178	96	781
17	58.50	387	1.100	-0.070	0.187	0.124	42	486
16	56.00	296	1.008	-0.108	0.135	0.102	26	371
15	53.69	394	0.926	-0.121	0.098	0.088	30	495
14	51.19	761	0.842	-0.118	0.067	0.080	53	956
13	48.58	929	0.758	-0.103	0.043	0.075	61	1,166
12	46.08	446	0.682	-0.081	0.027	0.074	29	560
11	42.50	1,060	0.580	-0.046	0.013	0.075	69	1,332
10	37.50	1,100	0.452	0.001	0.006	0.076	72	1,381
9	32.50	1,140	0.339	0.036	0.009	0.073	72	1,431
8	29.43	267	0.278	0.050	0.014	0.069	16	336
7	26.93	1,795	0.233	0.058	0.019	0.064	100	2,254
6	23.84	1,102	0.183	0.065	0.026	0.059	56	1,384
5	21.34	729	0.146	0.068	0.031	0.054	34	915
4	17.50	1,391	0.098	0.071	0.037	0.047	57	1,746
3	12.50	1,436	0.050	0.071	0.042	0.039	49	1,803
2	7.50	1,481	0.018	0.063	0.037	0.031	39	1,860
1	2.50	1,527	0.002	0.032	0.018	0.015	20	1,917
Ericsson RRUS 32 w/	76.60	159	1.886	1.957	1.132	0.602	83	199
Ericsson RRUS 11 B12	76.60	152	1.886	1.957	1.132	0.602	79	191
Commscope LNX-	76.60	86	1.886	1.957	1.132	0.602	45	108
Ericsson AIR-32 B2A/	76.60	397	1.886	1.957	1.132	0.602	207	498
RFS APX16DWV-	76.60	126	1.886	1.957	1.132	0.602	66	158
Flat T-Arm	76.60	750	1.886	1.957	1.132	0.602	392	942
Pine Branches	76.60	600	1.886	1.957	1.132	0.602	313	753
Pine Branches	70.00	600	1.575	0.702	0.636	0.355	185	753
Powerwave Allgon TT1	67.00	96	1.443	0.370	0.477	0.272	23	121
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.272	8	41
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.272	8	41

Ericsson RRUS-32	67.00	231	1.443	0.370	0.477	0.272	54	290
Ericsson RRUS-11	67.00	330	1.443	0.370	0.477	0.272	78	414
Powerwave Allgon P65	67.00	318	1.443	0.370	0.477	0.272	75	399
CCI OPA-65R-LCUU-H6	67.00	219	1.443	0.370	0.477	0.272	52	275
Round Sector Frame	67.00	900	1.443	0.370	0.477	0.272	212	1,130
Pine Branches	65.00	600	1.358	0.209	0.390	0.226	117	753
Pine Branches	60.00	600	1.157	-0.032	0.224	0.141	73	753
Alcatel-Lucent RRH2X	57.00	132	1.044	-0.096	0.154	0.110	13	166
Alcatel-Lucent RRH 2	57.00	119	1.044	-0.096	0.154	0.110	11	149
Alcatel-Lucent RRH2x	57.00	170	1.044	-0.096	0.154	0.110	16	214
Commscope RC2DC-	57.00	52	1.044	-0.096	0.154	0.110	5	65
Amphenol Antel BXA-1	57.00	38	1.044	-0.096	0.154	0.110	4	48
Commscope SBNHH-	57.00	67	1.044	-0.096	0.154	0.110	6	84
Commscope SBNHH-	57.00	202	1.044	-0.096	0.154	0.110	19	254
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.110	8	102
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.110	8	102
Flat T-Arm	57.00	750	1.044	-0.096	0.154	0.110	71	942
VZW Unused Reserve:	57.00	1,558	1.044	-0.096	0.154	0.110	148	1,956
Pine Branches	55.00	600	0.972	-0.116	0.118	0.095	50	753
Pine Branches	50.00	600	0.803	-0.113	0.055	0.077	40	753
Pine Branches	45.00	600	0.651	-0.071	0.021	0.074	39	753
Pine Branches	40.00	600	0.514	-0.021	0.008	0.076	39	753
Pine Branches	35.00	600	0.394	0.020	0.007	0.075	39	753
Pine Branches	30.00	600	0.289	0.048	0.013	0.069	36	753
Pine Branches	25.00	600	0.201	0.063	0.023	0.061	32	753
Pine Branches	20.00	600	0.129	0.069	0.033	0.051	27	753
Pine Branches	15.00	600	0.072	0.072	0.040	0.043	22	753
		32,962	61.626	21.975	20.089	12.433	4,028	41,391

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)
23	76.64	8	1.888	1.969	1.136	0.604	4	7
22	75.80	155	1.847	1.758	1.059	0.568	76	131
21	72.50	503	1.689	1.082	0.798	0.439	191	425
20	68.50	315	1.508	0.521	0.552	0.311	85	266
19	66.00	241	1.400	0.284	0.432	0.248	52	203
18	62.50	622	1.255	0.063	0.298	0.178	96	525
17	58.50	387	1.100	-0.070	0.187	0.124	42	327
16	56.00	296	1.008	-0.108	0.135	0.102	26	250
15	53.69	394	0.926	-0.121	0.098	0.088	30	333
14	51.19	761	0.842	-0.118	0.067	0.080	53	643
13	48.58	929	0.758	-0.103	0.043	0.075	61	784
12	46.08	446	0.682	-0.081	0.027	0.074	29	376
11	42.50	1,060	0.580	-0.046	0.013	0.075	69	895
10	37.50	1,100	0.452	0.001	0.006	0.076	72	929
9	32.50	1,140	0.339	0.036	0.009	0.073	72	962
8	29.43	267	0.278	0.050	0.014	0.069	16	226
7	26.93	1,795	0.233	0.058	0.019	0.064	100	1,516
6	23.84	1,102	0.183	0.065	0.026	0.059	56	930
5	21.34	729	0.146	0.068	0.031	0.054	34	615
4	17.50	1,391	0.098	0.071	0.037	0.047	57	1,174
3	12.50	1,436	0.050	0.071	0.042	0.039	49	1,212
2	7.50	1,481	0.018	0.063	0.037	0.031	39	1,250
1	2.50	1,527	0.002	0.032	0.018	0.015	20	1,289
Ericsson RRUS 32 w/	76.60	159	1.886	1.957	1.132	0.602	83	134
Ericsson RRUS 11 B12	76.60	152	1.886	1.957	1.132	0.602	79	128
Commscope LNX-	76.60	86	1.886	1.957	1.132	0.602	45	73

Ericsson AIR-32 B2A/	76.60	397	1.886	1.957	1.132	0.602	207	335
RFS APX16DWV-	76.60	126	1.886	1.957	1.132	0.602	66	106
Flat T-Arm	76.60	750	1.886	1.957	1.132	0.602	392	633
Pine Branches	76.60	600	1.886	1.957	1.132	0.602	313	507
Pine Branches	70.00	600	1.575	0.702	0.636	0.355	185	507
Powerwave Allgon TT1	67.00	96	1.443	0.370	0.477	0.272	23	81
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.272	8	28
Raycap DC6-48-60-18-	67.00	33	1.443	0.370	0.477	0.272	8	28
Ericsson RRUS-32	67.00	231	1.443	0.370	0.477	0.272	54	195
Ericsson RRUS-11	67.00	330	1.443	0.370	0.477	0.272	78	279
Powerwave Allgon P65	67.00	318	1.443	0.370	0.477	0.272	75	268
CCI OPA-65R-LCUU-H6	67.00	219	1.443	0.370	0.477	0.272	52	185
Round Sector Frame	67.00	900	1.443	0.370	0.477	0.272	212	760
Pine Branches	65.00	600	1.358	0.209	0.390	0.226	117	507
Pine Branches	60.00	600	1.157	-0.032	0.224	0.141	73	507
Alcatel-Lucent RRH2X	57.00	132	1.044	-0.096	0.154	0.110	13	111
Alcatel-Lucent RRH 2	57.00	119	1.044	-0.096	0.154	0.110	11	100
Alcatel-Lucent RRH2x	57.00	170	1.044	-0.096	0.154	0.110	16	144
Commscope RC2DC-	57.00	52	1.044	-0.096	0.154	0.110	5	44
Amphenol Antel BXA-1	57.00	38	1.044	-0.096	0.154	0.110	4	32
Commscope SBNHH-	57.00	67	1.044	-0.096	0.154	0.110	6	57
Commscope SBNHH-	57.00	202	1.044	-0.096	0.154	0.110	19	171
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.110	8	68
Amphenol Antel LPA-8	57.00	81	1.044	-0.096	0.154	0.110	8	68
Flat T-Arm	57.00	750	1.044	-0.096	0.154	0.110	71	633
VZW Unused Reserve:	57.00	1,558	1.044	-0.096	0.154	0.110	148	1,315
Pine Branches	55.00	600	0.972	-0.116	0.118	0.095	50	507
Pine Branches	50.00	600	0.803	-0.113	0.055	0.077	40	507
Pine Branches	45.00	600	0.651	-0.071	0.021	0.074	39	507
Pine Branches	40.00	600	0.514	-0.021	0.008	0.076	39	507
Pine Branches	35.00	600	0.394	0.020	0.007	0.075	39	507
Pine Branches	30.00	600	0.289	0.048	0.013	0.069	36	507
Pine Branches	25.00	600	0.201	0.063	0.023	0.061	32	507
Pine Branches	20.00	600	0.129	0.069	0.033	0.051	27	507
Pine Branches	15.00	600	0.072	0.072	0.040	0.043	22	507
		32,962	61.626	21.975	20.089	12.433	4,028	27,828

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-39.47	-4.01	0.00	-241.70	0.00	241.70	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.045
5.00	-37.61	-3.98	0.00	-221.63	0.00	221.63	5,848.26	2,924.13	11,946.7	5,982.24	0.01	-0.01	0.043
10.00	-35.81	-3.94	0.00	-201.73	0.00	201.73	5,676.15	2,838.07	11,200.5	5,608.58	0.03	-0.02	0.042
15.00	-33.31	-3.87	0.00	-182.03	0.00	182.03	5,478.20	2,739.10	10,429.0	5,222.27	0.06	-0.04	0.041
20.00	-31.64	-3.81	0.00	-162.70	0.00	162.70	5,280.25	2,640.12	9,685.10	4,849.75	0.10	-0.05	0.040
22.69	-30.26	-3.76	0.00	-152.46	0.00	152.46	5,173.85	2,586.92	9,296.61	4,655.21	0.13	-0.06	0.039
25.00	-27.25	-3.62	0.00	-143.77	0.00	143.77	5,082.30	2,541.15	8,968.69	4,491.01	0.16	-0.06	0.037
28.85	-26.91	-3.61	0.00	-129.81	0.00	129.81	4,410.30	2,205.15	7,729.01	3,870.25	0.21	-0.07	0.040
30.00	-24.73	-3.50	0.00	-125.67	0.00	125.67	4,370.52	2,185.26	7,589.50	3,800.39	0.23	-0.07	0.039
35.00	-22.59	-3.39	0.00	-108.15	0.00	108.15	4,197.31	2,098.66	6,996.91	3,503.66	0.31	-0.09	0.036
40.00	-20.51	-3.29	0.00	-91.17	0.00	91.17	4,024.10	2,012.05	6,428.41	3,218.98	0.41	-0.10	0.033
45.00	-19.19	-3.22	0.00	-74.74	0.00	74.74	3,850.90	1,925.45	5,884.00	2,946.37	0.52	-0.11	0.030
47.16	-18.03	-3.16	0.00	-67.79	0.00	67.79	3,776.11	1,888.05	5,656.38	2,832.39	0.57	-0.11	0.029
50.00	-16.32	-3.06	0.00	-58.81	0.00	58.81	3,677.69	1,838.84	5,363.67	2,685.82	0.64	-0.12	0.026
52.38	-15.82	-3.03	0.00	-51.52	0.00	51.52	2,517.68	1,258.84	3,679.49	1,842.48	0.70	-0.12	0.034
55.00	-14.70	-2.96	0.00	-43.57	0.00	43.57	2,473.56	1,236.78	3,524.91	1,765.07	0.77	-0.13	0.031
57.00	-10.13	-2.60	0.00	-37.66	0.00	37.66	2,439.26	1,219.63	3,408.19	1,706.63	0.83	-0.13	0.026
60.00	-8.60	-2.42	0.00	-29.87	0.00	29.87	2,386.80	1,193.40	3,235.34	1,620.07	0.91	-0.14	0.022
65.00	-7.54	-2.25	0.00	-17.74	0.00	17.74	2,296.71	1,148.36	2,953.54	1,478.97	1.06	-0.15	0.015
67.00	-4.43	-1.65	0.00	-13.24	0.00	13.24	2,259.74	1,129.87	2,843.16	1,423.69	1.12	-0.15	0.011
70.00	-3.05	-1.27	0.00	-8.28	0.00	8.28	2,187.31	1,093.65	2,660.78	1,332.37	1.22	-0.15	0.008
75.00	-2.86	-1.20	0.00	-1.91	0.00	1.91	2,063.59	1,031.79	2,366.81	1,185.17	1.38	-0.15	0.003
76.60	0.00	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	1.43	-0.15	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	1.43	-0.15	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-26.54	-4.01	0.00	-241.08	0.00	241.08	5,994.12	2,997.06	12,661.4	6,340.12	0.00	0.00	0.042
5.00	-25.29	-3.98	0.00	-221.02	0.00	221.02	5,848.26	2,924.13	11,946.7	5,982.24	0.01	-0.01	0.041
10.00	-24.07	-3.93	0.00	-201.13	0.00	201.13	5,676.15	2,838.07	11,200.5	5,608.58	0.03	-0.02	0.040
15.00	-22.39	-3.86	0.00	-181.47	0.00	181.47	5,478.20	2,739.10	10,429.0	5,222.27	0.06	-0.04	0.039
20.00	-21.27	-3.80	0.00	-162.17	0.00	162.17	5,280.25	2,640.12	9,685.10	4,849.75	0.10	-0.05	0.037
22.69	-20.34	-3.75	0.00	-151.96	0.00	151.96	5,173.85	2,586.92	9,296.61	4,655.21	0.13	-0.06	0.037
25.00	-18.32	-3.61	0.00	-143.30	0.00	143.30	5,082.30	2,541.15	8,968.69	4,491.01	0.16	-0.06	0.036
28.85	-18.09	-3.60	0.00	-129.38	0.00	129.38	4,410.30	2,205.15	7,729.01	3,870.25	0.21	-0.07	0.038
30.00	-16.62	-3.49	0.00	-125.25	0.00	125.25	4,370.52	2,185.26	7,589.50	3,800.39	0.23	-0.07	0.037
35.00	-15.19	-3.38	0.00	-107.78	0.00	107.78	4,197.31	2,098.66	6,996.91	3,503.66	0.31	-0.09	0.034
40.00	-13.78	-3.27	0.00	-90.87	0.00	90.87	4,024.10	2,012.05	6,428.41	3,218.98	0.41	-0.10	0.032
45.00	-12.90	-3.21	0.00	-74.50	0.00	74.50	3,850.90	1,925.45	5,884.00	2,946.37	0.52	-0.11	0.029
47.16	-12.12	-3.15	0.00	-67.57	0.00	67.57	3,776.11	1,888.05	5,656.38	2,832.39	0.57	-0.11	0.027
50.00	-10.97	-3.05	0.00	-58.63	0.00	58.63	3,677.69	1,838.84	5,363.67	2,685.82	0.64	-0.12	0.025
52.38	-10.64	-3.02	0.00	-51.37	0.00	51.37	2,517.68	1,258.84	3,679.49	1,842.48	0.70	-0.12	0.032
55.00	-9.88	-2.95	0.00	-43.45	0.00	43.45	2,473.56	1,236.78	3,524.91	1,765.07	0.77	-0.13	0.029
57.00	-6.81	-2.59	0.00	-37.56	0.00	37.56	2,439.26	1,219.63	3,408.19	1,706.63	0.82	-0.13	0.025
60.00	-5.78	-2.42	0.00	-29.79	0.00	29.79	2,386.80	1,193.40	3,235.34	1,620.07	0.91	-0.14	0.021
65.00	-5.07	-2.25	0.00	-17.70	0.00	17.70	2,296.71	1,148.36	2,953.54	1,478.97	1.06	-0.15	0.014
67.00	-2.98	-1.65	0.00	-13.21	0.00	13.21	2,259.74	1,129.87	2,843.16	1,423.69	1.12	-0.15	0.011
70.00	-2.05	-1.27	0.00	-8.26	0.00	8.26	2,187.31	1,093.65	2,660.78	1,332.37	1.22	-0.15	0.007
75.00	-1.92	-1.19	0.00	-1.91	0.00	1.91	2,063.59	1,031.79	2,366.81	1,185.17	1.38	-0.15	0.003
76.60	0.00	0.00	0.00	0.00	0.00	0.00	2,024.00	1,012.00	2,276.38	1,139.88	1.43	-0.15	0.000
76.69	0.00	0.00	0.00	0.00	0.00	0.00	2,021.83	1,010.92	2,271.48	1,137.43	1.43	-0.15	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	62.18	0.00	39.46	0.00	0.00	3227.17	0.00	0.52
0.9D + 1.6W	62.17	0.00	29.57	0.00	0.00	3221.33	0.00	0.51
1.2D + 1.0Di + 1.0Wi	12.91	0.00	65.34	0.00	0.00	665.12	0.00	0.12
(1.2 + 0.2Sds) * DL + E ELFM	4.79	0.00	39.47	0.00	0.00	258.03	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	4.01	0.00	39.47	0.00	0.00	241.70	0.00	0.04
(0.9 - 0.2Sds) * DL + E ELFM	4.79	0.00	26.54	0.00	0.00	257.41	0.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	4.01	0.00	26.54	0.00	0.00	241.08	0.00	0.04
1.0D + 1.0W	11.56	0.00	32.96	0.00	0.00	599.41	0.00	0.10

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
4,555.20	38.30	74.40	3,227.17	65.34	62.18	70.85

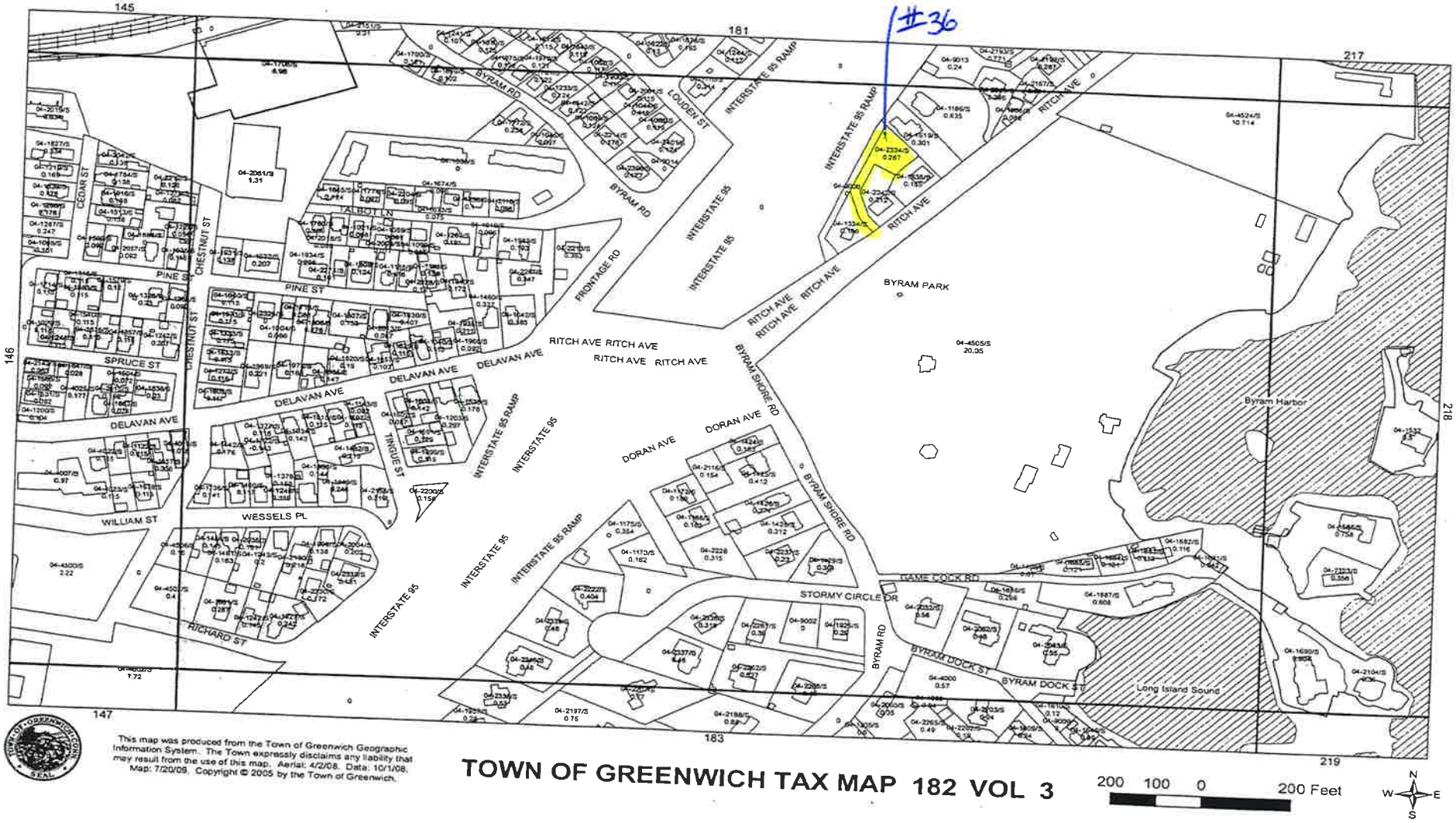
Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
50.0	2.750	66.000	Round	0	0.00	8.252	529.36	702.09	0.75

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression Force (kip)	Compression Allow (kip)	Compression Ratio	Tension Force (kip)	Tension Allow (kip)	Tension Ratio
60.00	20	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	132.35	260.00	0.53	125.82	260.00	0.51

ATTACHMENT 4



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TOWN OF GREENWICH TAX MAP 182 VOL 3

200 100 0 200 Feet

N W E S

Tax ID 182/005 Printed 07/21/2016 Card No. 1 of 1

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
04-2334/S

Parent Parcel Number

Property Address
RITCH AVENUE 0036

Neighborhood
2700 BYRAM

Property Class
270 Telecommunications

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	04	
Section & Plat	040	
Routing Number	7117N0001	

Site Description

Topography:

Public Utilities:
Water, Sewer, Electric

Street or Road:

Neighborhood:

Zoning:
R-7 Single Family 7,500 SF

Legal Acres:
0.2670

OWNERSHIP

36 RITCH AVENUE LLC
16B ARTHER STREET
GREENWICH, CT 06831

LOT NO PT5 & PT7A-1-1-3 R ITCH AV N1B

TRANSFER OF OWNERSHIP

Date		
02/15/2002	KELLY BRIAN & LAURA W/S	Bk/Pg: 3786, 114 $0
11/16/2000	CATALANO ANTHONY ETAL DBA CATALANO B	Bk/Pg: 3492, 86 $125000
08/20/1986	NA	Bk/Pg: 1611, 290 $0

COMMERCIAL

VALUATION RECORD

Assessment Year		10/01/2005	11/30/2005	10/01/2010	10/01/2012	10/01/2015	10/01/2015	10/01/2015
Reason for Change		2005 Reval	2005 BAA	2010 Reval	2012 List	2015 Prelim	2015 Final	2015 BAA
VALUATION	L	622000	264400	605600	605600	664000	664000	664000
Market	B	0	0	101300	579000	2350700	2350700	2236000
	T	622000	264400	706900	1184600	3014700	3014700	2900000
VALUATION	L	435400	185080	423920	423920	464800	464800	464800
70% Assessed	B	0	0	70910	405300	1645490	1645490	1565200
	T	435400	185080	494830	829220	2110290	2110290	2030000

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				11630.52	57.09	57.09	664000		664000

BA10: Sustained
BA15: Decrease Total value by $114,700
BP12: 11-4098 Erection of 77' monopine to rplc orig flagpole type mono pole cmplt. Construction of equip storage bldg. cmplt. Both poles stndg and tied in as of 10/11/12 w/ orig. still operating. Add 2nd pole and misc site imprvmnts.
BP15: 15-0972, 9 Anteenna Panels, $15,000
CKMP: 8586
DBA: Telecommunications site w/ a 70' flagpole monopole owned by Cingular (and carrier), and a 77' monopine (pole) owned by Verizon (w/ Verizon, ATT & Mobile carriers) both serviced by a custom utility bldg.
LAND: See BP03 memo.

Permit Number / Type	FilingDate	Est. Cost / Est. SqFt	Field Visit

Supplemental Cards

TRUE TAX VALUE 664000

Supplemental Cards
TOTAL LAND VALUE 664000

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

	B	1	2	U
Frame				
Brick				
Metal				
Guard				

FRAMING

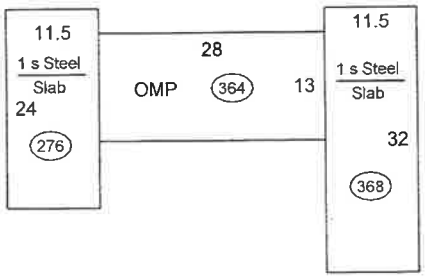
	B	1	2	U
F Res	0	644	0	0

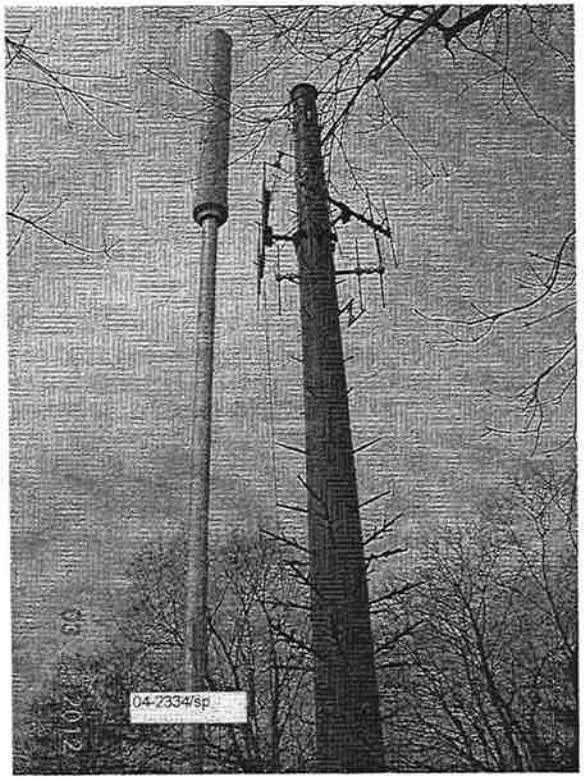
FINISH

	UF	SF	FO	FD
1	0	0	0	644
Total	0	0	0	644

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	0	644	0	0
Sprink	0	644	0	0





(LCM: 150.00)

SPECIAL FEATURES

Description	Value

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	STGCA	0.00		Good	2012	2012	AV	0.00	N	0.00	644	0	0	0	150	100	163300
01	TOWERMON	0.00	5PF	Good	2003	2003	GD	1477	N	3323	70	232630	0	0	100	100	663000
02	STNWALGS	8.00		Good	2012	2010	AV	125.00	N	281.25	992@ 0	279000	3	0	100	100	771300
03	PAVING	0.00	85	Avg	2012	2010	AV	5.20	N	7.80	2856	22280	3	0	100	100	61600
04	RTWCBREF	0.00	41C	Good	2012	2010	AV	17.00	N	38.25	4x112	17140	3	0	100	100	47400
05	TOWERMON	0.00	5PF	Exe	2012	2010	AV	0.00	N	0.00	77	200000	3	SV	100	100	552900
06	COMCNPYH	0.00	51	Exe	2012	2012	AV	63.00	N	226.80	8x 18	32660	2	0	100	100	91200

Data Collector/Date	Appraiser/Date	Neighborhood	Supplemental Cards TOTAL IMPROVEMENT VALUE	2350700
bd 10/11/2012	bd 10/01/2012	Neigh 2700 AV		