Robinson+Cole

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Also admitted in Massachusetts

January 11, 2017

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

Re: **Notice of Exempt Modification – Facility Modification**
750 Rainbow Road, Windsor, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) wireless telecommunications antennas at the 83-foot level of the existing 101-foot tower at 750 Rainbow Road in Windsor, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of the tower in 2008. Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model SBNHH-1D65B, 700 MHz antennas; three (3) model SBNHH-1D65B, 1900 MHz antennas; and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") behind its antennas and two (2) HYBRIFLEX™ antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Donald Trinks, Windsor Mayor and Peter Souza, Windsor Town Manager. The Town of Windsor is the owner of the Property. A copy of this letter is also being sent to Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 83-foot level on the 101-foot tower.

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

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

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field tables for Cellco's modified facility are included in Attachment 2.

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

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

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

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Donald Trinks, Windsor Mayor
Peter Souza, Windsor Town Manager
Crown Castle
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

SBNHH-1D65B

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

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

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

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

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

General Specifications

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

Product Specifications

SBNHH-1D65B

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
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, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
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
RET System	Teletilt®

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	1970.0 mm | 77.6 in
Width	409.0 mm | 16.1 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

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

Included Products

Product Specifications

SBNHH-1D65B

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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

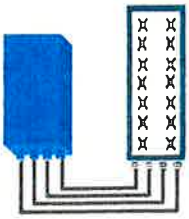
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

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

ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new 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 B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 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, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

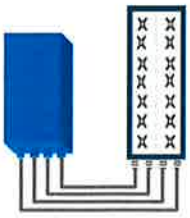
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options (Pole or Wall)



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2) RX Diversity scheme	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) Volume (w/ solar shield) in L Weight (w/ solar shield) in kg (lb)	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 580W typical @100% RF load
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 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG Interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B66A RRH4X45

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

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

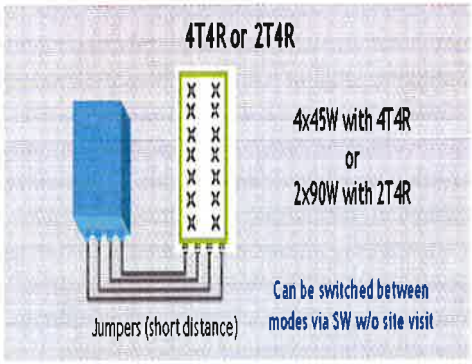
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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

FEATURES

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



BENEFITS

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

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

Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

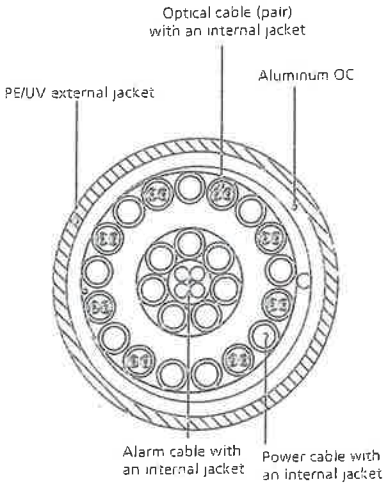


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

Far Field Approximation
with downtilt variation

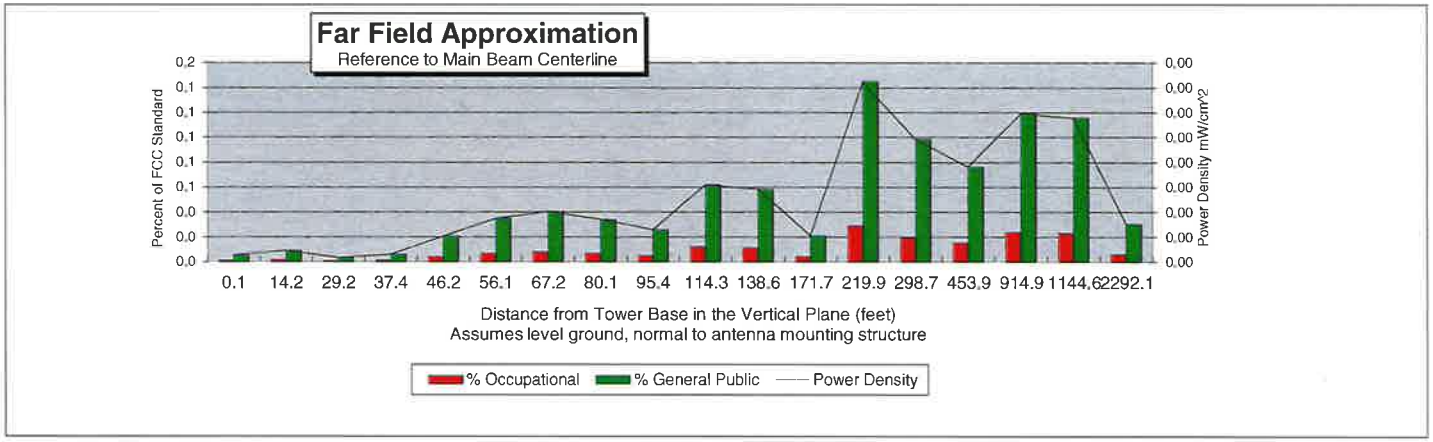
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Windsor 2, CT
Site #:	
Date:	01/25/16
Name:	Mark Brauer
File Name:	Windsor 2, CT - FF Power

Operating Freq. (MHz)	**746.0**
Antenna Height (ft):	**83.0**
Antenna Gain (dBi):	**14.8**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**120.0**
Number of Channels	**1**



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	80.0	81.2	85.2	88.3	92.4	97.7	104.5	113.2	124.5	139.5	160.1	189.4	234.0	309.2	460.9	918.4	1147.4	2293.5	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.2	29.2	37.4	46.2	56.1	67.2	80.1	95.4	114.3	138.6	171.7	219.9	298.7	453.9	914.9	1144.6	2292.1	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/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	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	

Antenna Type SBNHH-1D65B
Max% 0.15%

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

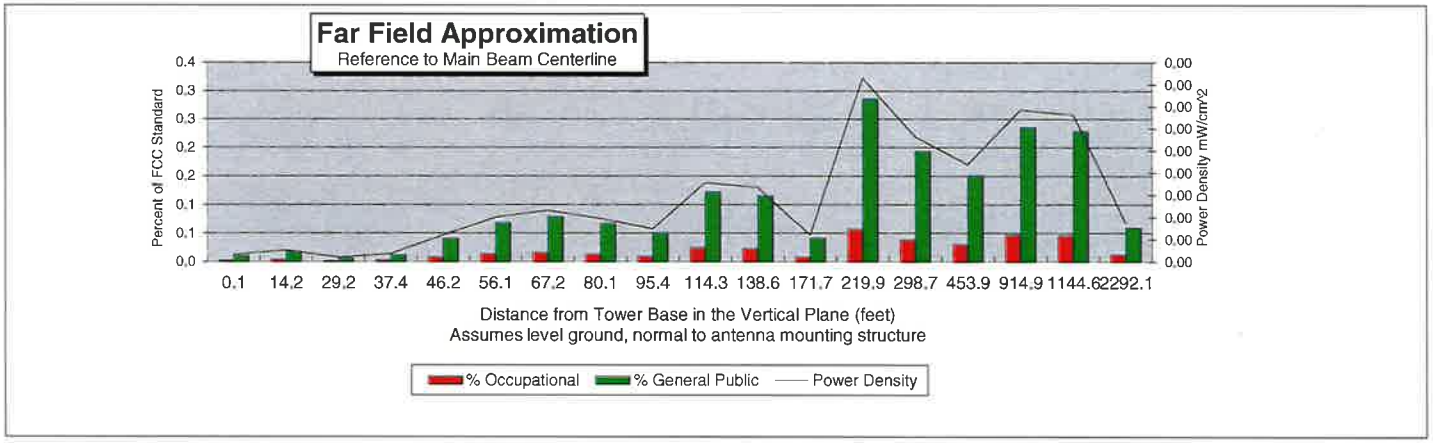
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Windsor 2 CT
Site #:	
Date:	01/25/16
Name:	Mark Brauer
File Name:	Windsor 2, CT - FF Power

Operating Freq. (MHz)	**869.0**
Antenna Height (ft):	**83.0**
Antenna Gain (dBi):	**16.7**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**180.0**
Number of Channels	**9**



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	80.0	81.2	85.2	88.3	92.4	97.7	104.5	113.2	124.5	139.5	160.1	189.4	234.0	309.2	460.9	918.4	1147.4	2293.5	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.2	29.2	37.4	46.2	56.1	67.2	80.1	95.4	114.3	138.6	171.7	219.9	298.7	453.9	914.9	1144.6	2292.1	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/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	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.2	0.2	0.2	0.2	0.1	

Antenna Type LPA-80063-6CF
Max% 0.29%

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

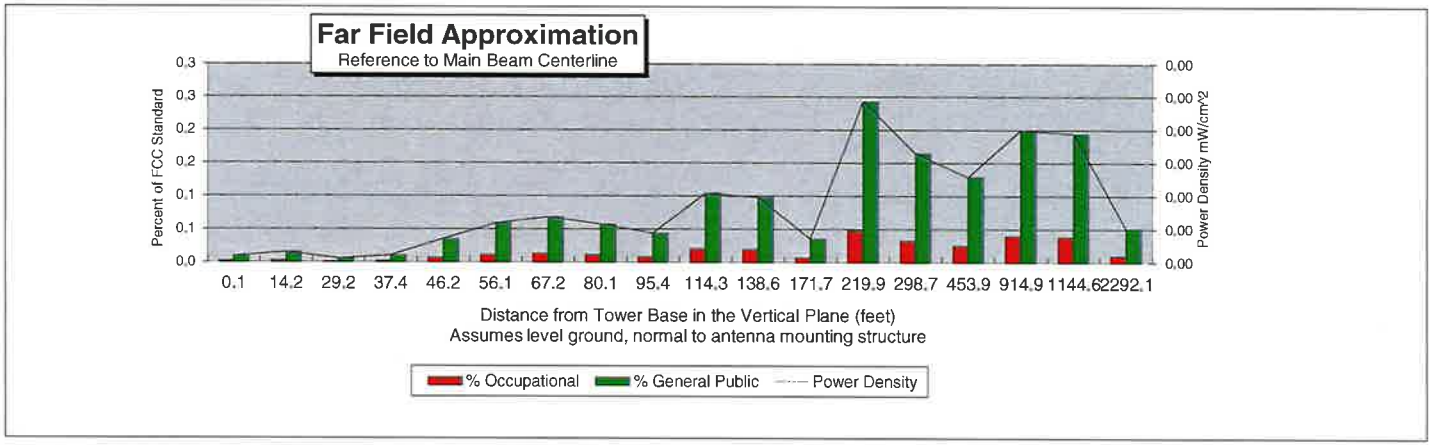
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Windsor 2, CT
Site #:	
Date:	01/25/16
Name:	Mark Brauer
File Name:	Windsor 2, CT - FF Power

Operating Freq. (MHz)	**1970.0**
Antenna Height (ft):	**83.0**
Antenna Gain (dBi):	**18.4**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**176.0**
Number of Channels	**11**



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	80.0	81.2	85.2	88.3	92.4	97.7	104.5	113.2	124.5	139.5	160.1	189.4	234.0	309.2	460.9	918.4	1147.4	2293.5	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.2	29.2	37.4	46.2	56.1	67.2	80.1	95.4	114.3	138.6	171.7	219.9	298.7	453.9	914.9	1144.6	2292.1	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/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	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.1	

Antenna Type SBNHH-1D65B
Max% 0.24%

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

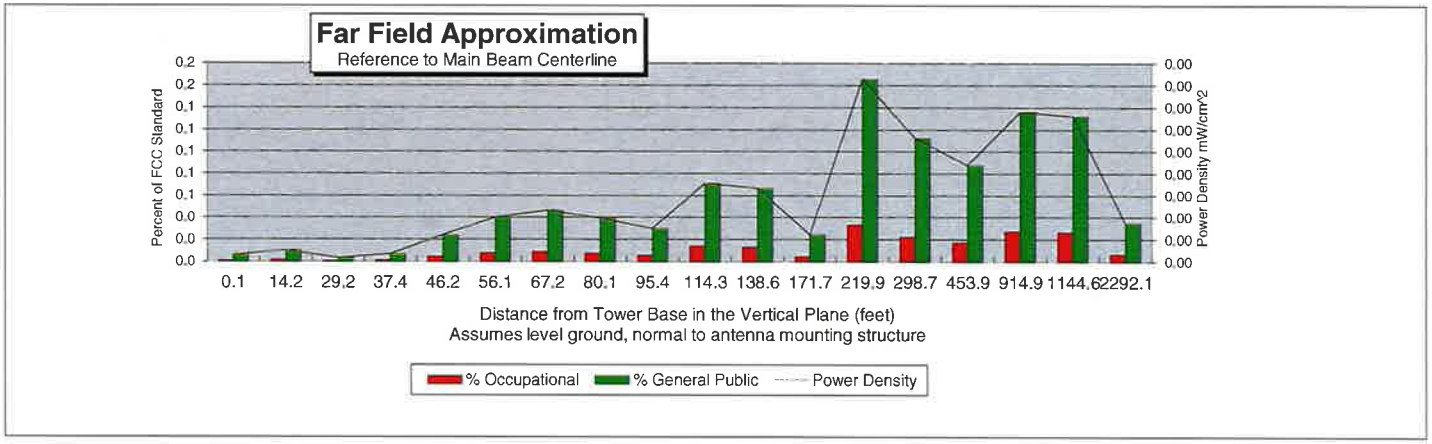
Estimated Radiated Emission

Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Windsor 2, CT
Site #:	
Date:	01/25/16
Name:	Mark Brauer
File Name:	Windsor 2, CT - FF Power

Operating Freq. (MHz)	**2110.0**
Antenna Height (ft):	**83.0**
Antenna Gain (dBi):	**18.4**
Antenna Size (in.):	**72.0**
Downtilt (degrees):	**0.0**
Feedline Loss (dB):	**0.0**
Power @ J4 (w):	**120.0**
Number of Channels	**1**



Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	4.0	2.0	
Solve for r, dx to antenna	80.0	81.2	85.2	88.3	92.4	97.7	104.5	113.2	124.5	139.5	160.1	189.4	234.0	309.2	460.9	918.4	1147.4	2293.5	
Distance from Antenna Structure Base in Horizontal plane	0.1	14.2	29.2	37.4	46.2	56.1	67.2	80.1	95.4	114.3	138.6	171.7	219.9	298.7	453.9	914.9	1144.6	2292.1	
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	4	2	
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0.2	0	
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	
Power Density (mW/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	0.00	0.00	0.00	0.00	0.00	0.00	
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Percent of General Population Standard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.0	

Antenna Type SBNHH-1D65B
Max% 0.17%

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.

ATTACHMENT 3

B+T GRP

November 08, 2016

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6565

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	118753
	Carrier Site Name:	Windsor 2 CT
Crown Castle Designation:	**Crown Castle BU Number:**	842877
	Crown Castle Site Name:	WINDSOR NORTH
	Crown Castle JDE Job Number:	391745
	Crown Castle Work Order Number:	1322408
	Crown Castle Application Number:	357820 Rev. 10
Engineering Firm Designation:	**B+T Group Project Number:**	101655.004.01
Site Data:	**750 Rainbow Road, Windsor, Hartford County, CT** **Latitude *41° 55' 9.3"*, Longitude *-72° 42' 37.6"*** **101 Foot - Monopole Tower**	

Dear Sean Dempsey,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 968156, in accordance with application 357820, revision 10.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II was used in this analysis.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:
B+T Engineering, Inc.

Jennifer Tillson, E.I.
Project Engineer

Scott S. Vance, P.E.
Engineer of Record
COA: PEC.0001564 Expires: 02/10/2017

11/8/16

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 101 ft. Monopole tower designed by Pennsummit Tubular, LLC in March of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
83.0	83.0	3	Alcatel Lucent	B13 RRH 4X30	2	1-3/8	--
		3	Alcatel Lucent	PCS B25 RRH4x30			
		3	Alcatel Lucent	RRH4X45-AWS4 B66			
		9	Andrew	SBNHH-1D65B			
		2	Commscope	RC2DC-3315-PF-48			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
97.0	97.0	1	Telewave	ANT450D6-9	1	7/8	1
		1	--	Side Arm Mount [SO 303-1]			
93.0	93.0	6	Ericsson	RBS 6601	6 2 1	7/8 3/4 3/8	1
		3	Kathrein	800 10121			
		6	Powerwave Tech.	LGP21401			
		3	Powerwave Tech.	P65-17-XLH-RR			
		1	Raycap	DC6-48-60-18-8F			
		1	--	T-Arm Mount [TA 702-3]			
83.0	83.0	**3**	**Antel**	**BXA-70063-6CF-2**	**6**	**1-5/8**	**2**
		6	**Antel**	**LPA-171063-12CF-EDIN-2**			
		6	Antel	LPA-80063/6CF	12	1-5/8	1
		1	--	Platform Mount [LP 304-1]			

Notes:
1) Existing Equipment
2) Equipment To Be Removed; Not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.75	100.75	1	Generic	14' Low Profile Platform	--	--
		2	Generic	4' Dia. Std. dish		
		1	Generic	48" x 12" x 3" Panel antenna		
92.75	92.75	6	Allgon	7920 Panel	--	--
		1	Generic	14' Low Profile Platform		
82.75	82.75	1	Generic	14' Low Profile Platform	--	--
		9	Generic	48" x 12" x 3" Panel antenna		
72.75	72.75	1	Generic	14' Low Profile Platform	--	--
		9	Generic	48" x 12" x 3" Panel antenna		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Verizon Wireless Co-Locate, Rev # 10	357820	CCI Sites
Tower Manufacturer Drawing	PennSummit Tubular, LLC, Job No. 29203-0052	5936703	CCI Sites
Foundation Drawing	PennSummit Tubular, LLC, Job No. 29203-0052	4858945	CCI Sites
Geotech Report	Dr. Clarence Welti, P.E., P.C. Date: 11/06/2002	4713263	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 11/03/2016	CCI Sites

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Mount areas and weights are assumed based on photographs provided.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	101 - 72.75	Pole	TP25.481x20x0.188	1	-5.963	1004.400	26.1	Pass
L2	72.75 - 36	Pole	TP32.236x24.475x0.25	2	-10.440	1725.600	55.7	Pass
L3	36 - 0	Pole	TP38.72x30.96x0.25	3	-16.882	1961.860	80.9	Pass
							Summary	
						Pole (L3)	80.9	Pass
						Rating =	80.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	41.5	Pass
1	Base Plate	Base	62.8	Pass
1	Base Foundation (Structure)	Base	40.4	Pass
1	Base Foundation (Soil Interaction)	Base	50.9	Pass

Structure Rating (max from all components) =	80.9%

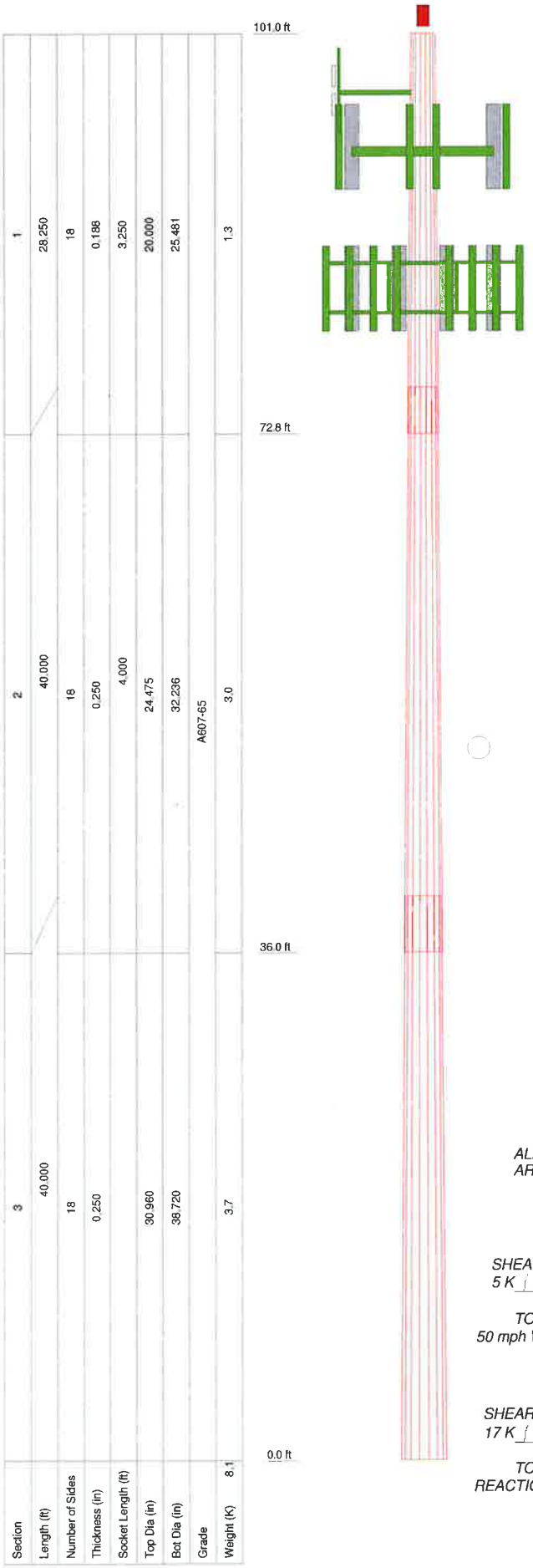
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Capacities up to 100% are considered acceptable based on analysis methods used.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the final load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



Section	1	2	3
Length (ft)	28.250	40.000	40.000
Number of Sides	18	18	18
Thickness (in)	0.188	0.250	0.250
Socket Length (ft)	3.250	4.000	
Top Dia (in)	20.000	24.475	30.960
Bot Dia (in)	25.481	32.236	38.720
Grade		A607-65	
Weight (K)	1.3	3.0	3.7

Total Weight (K): 8.1

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Strobe (E-Per Photo)	101.5	(2) LPA-80063/6CF w/ Mount Pipe (E)	83
ANT450D6-9 (E)	97	(2) LPA-80063/6CF w/ Mount Pipe (E)	83
Side Arm Mount [SO 303-1] (E)	97	(2) LPA-80063/6CF w/ Mount Pipe (E)	83
800 10121 w/ Mount Pipe (E)	93	(3) SBNHH-1D65B w/ Mount Pipe (P)	83
800 10121 w/ Mount Pipe (E)	93	(3) SBNHH-1D65B w/ Mount Pipe (P)	83
800 10121 w/ Mount Pipe (E)	93	(3) SBNHH-1D65B w/ Mount Pipe (P)	83
P65-17-XLH-RR w/ Mount Pipe (E)	93	PCS B25 RRH4x30 (P)	83
P65-17-XLH-RR w/ Mount Pipe (E)	93	PCS B25 RRH4x30 (P)	83
P65-17-XLH-RR w/ Mount Pipe (E)	93	PCS B25 RRH4x30 (P)	83
(2) LGP21401 (E)	93	RRH4X45-AWS4 B66 (P)	83
(2) LGP21401 (E)	93	RRH4X45-AWS4 B66 (P)	83
(2) LGP21401 (E)	93	RRH4X45-AWS4 B66 (P)	83
DC6-48-60-18-8F (E)	93	B13 RRH 4X30 (P)	83
(2) RBS 6601 (E)	93	B13 RRH 4X30 (P)	83
(2) RBS 6601 (E)	93	B13 RRH 4X30 (P)	83
(2) RBS 6601 (E)	93	RC2DC-3315-PF-48 (P)	83
Side Arm Mount [SO 102-3] (E-Mount Attachment)	93	RC2DC-3315-PF-48 (P)	83
T-Arm Mount [TA 702-3] (E)	93	Platform Mount [LP 304-1] (E-14' Per Photo)	83

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 80.9%

ALL REACTIONS ARE FACTORED

AXIAL 39 K

SHEAR 5 K — *MOMENT 381 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.000 in ICE

AXIAL 17 K

SHEAR 17 K — *MOMENT 1243 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 97 mph WIND

B+T Group
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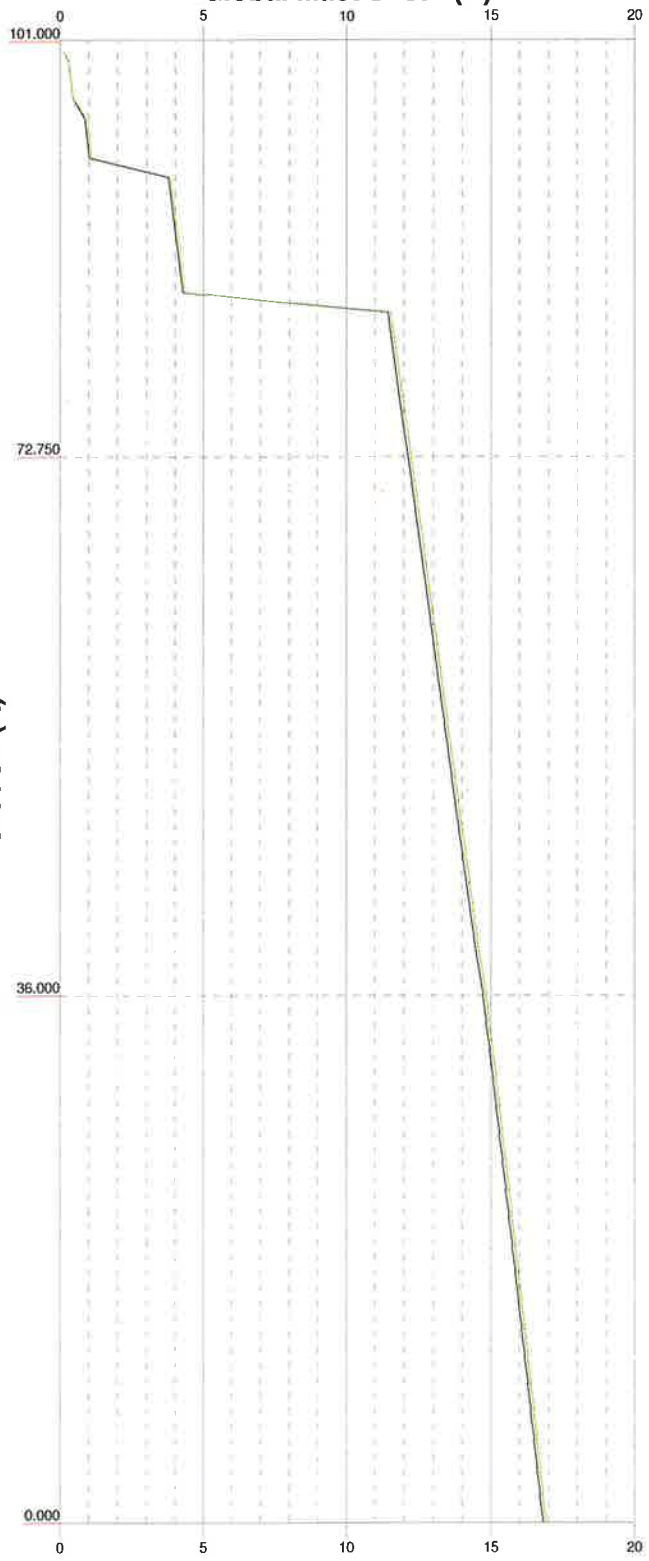
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 101655.004.01 - WINDSOR NORTH, CT (BU# 842877)			
Project:			
Client: Crown Castle	Drawn by: Sreenesh S Kamath	App'd:	
Code: TIA-222-G	Date: 11/08/16	Scale: NTS	
Path:		Dwg No. E-1	

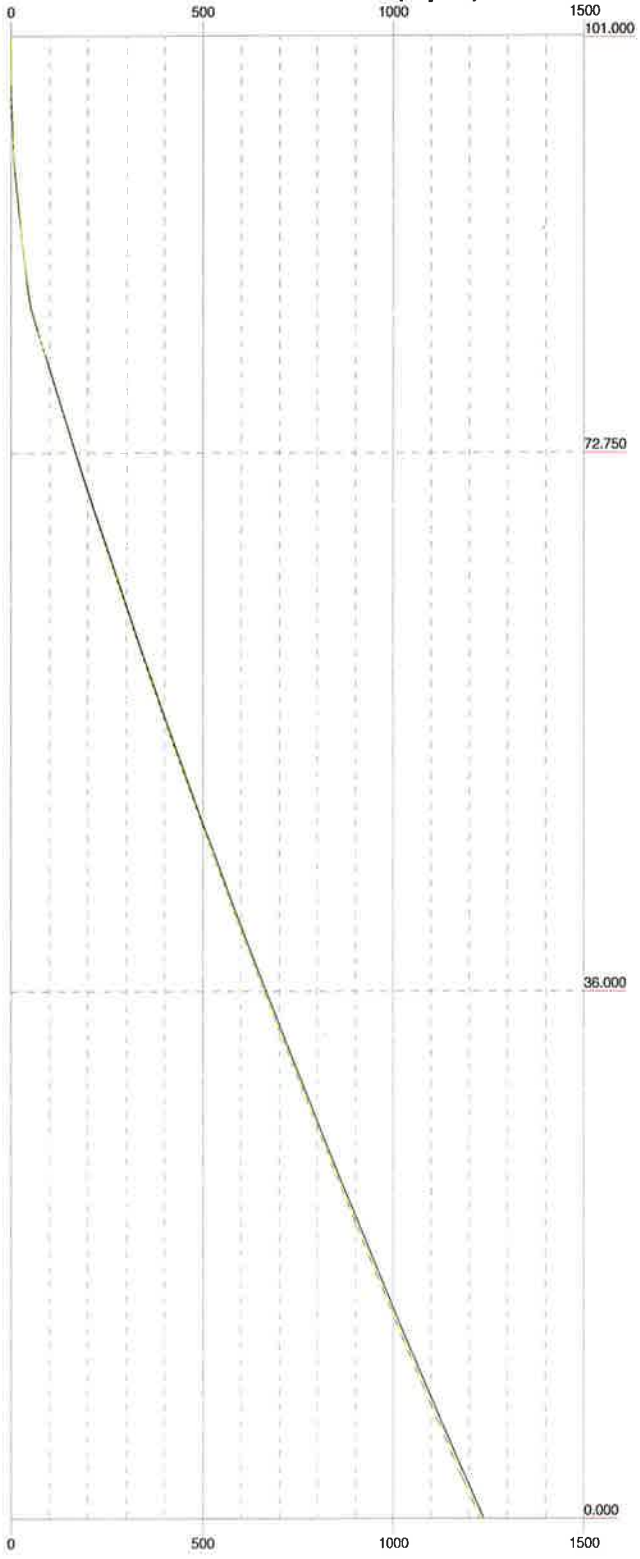
Vx Vz

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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Phone: (918) 587-4630
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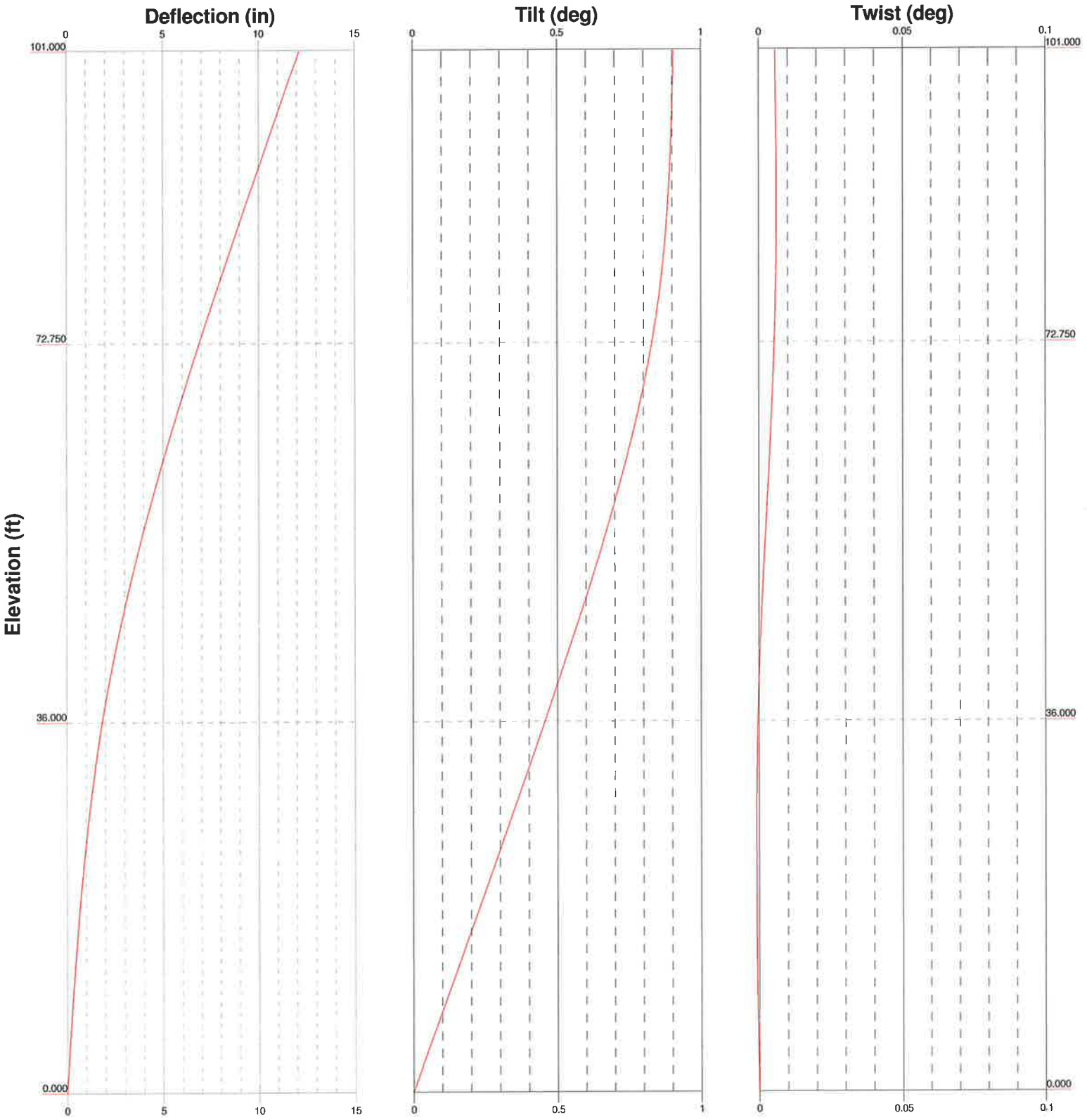
Job: 101655.004.01 - WINDSOR NORTH, CT (BU# 8428			
Project:			
Client: Crown Castle	Drawn by: Sreenesh S Kamath	App'd:	
Code: TIA-222-G	Date: 11/08/16	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-G - Service - 60 mph

Maximum Values



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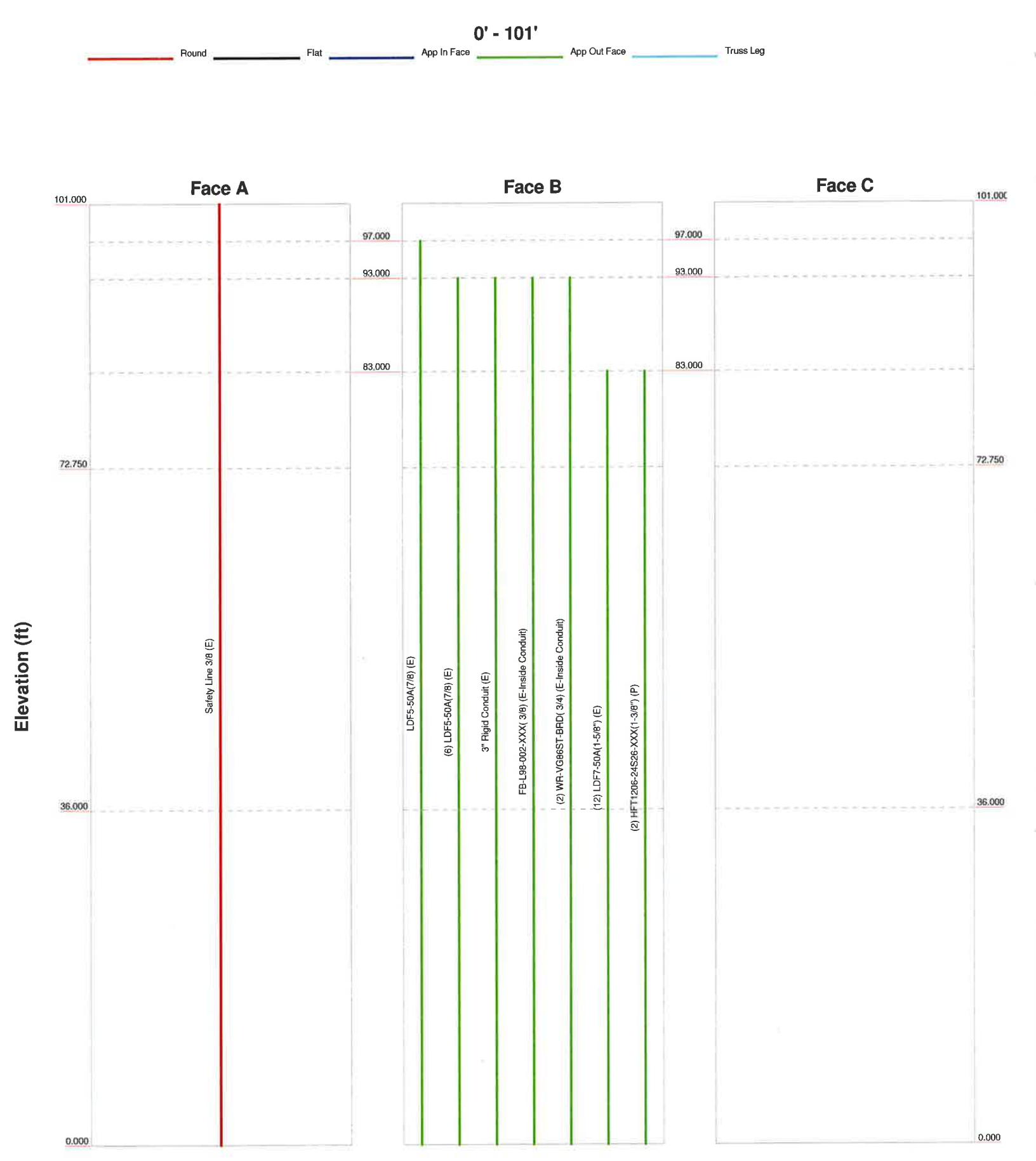
Job: 101655.004.01 - WINDSOR NORTH, CT (BU# 8428			
Project:			
Client: Crown Castle	Drawn by: Sreenesh S Kamath	App'd:	
Code: TIA-222-G	Date: 11/08/16	Scale: NTS	
Path:		Dwg No. E-5	



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Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 101655.004.01 - WINDSOR NORTH, CT (BU# 8428			
Project:			
Client: Crown Castle	Drawn by: Sreenesh S Kamath	App'd:	
Code: TIA-222-G	Date: 11/08/16	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	101.000-72.750	28.250	3.250	18	20.000	25.481	0.188	0.750	A607-65 (65 ksi)
L2	72.750-36.000	40.000	4.000	18	24.475	32.236	0.250	1.000	A607-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	36.000-0.000	40.000		18	30.960	38.720	0.250	1.000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	20.309	11.791	584.741	7.033	10.160	57.553	1170.251	5.897	3.190	17.013
	25.874	15.053	1216.669	8.979	12.944	93.992	2434.939	7.528	4.155	22.158
L2	25.493	19.223	1425.278	8.600	12.434	114.632	2852.431	9.613	3.868	15.471
	32.733	25.381	3280.682	11.355	16.376	200.336	6565.681	12.693	5.234	20.934
L3	32.226	24.368	2903.497	10.902	15.728	184.611	5810.815	12.186	5.009	20.036
	39.317	30.526	5707.566	13.657	19.670	290.170	11422.642	15.266	6.375	25.499

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 101.000-72.750				1	1	1			
L2 72.750-36.000				1	1	1			
L3 36.000-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
AB Safety Line 3/8 (E) *	A	Surface Ar (CaAa)	101.000 - 0.000	1	1	-0.100 -0.100	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF5-50A(7/8) (E)	B	No	Inside Pole	97.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
AB LDF5-50A(7/8) (E)	B	No	Inside Pole	93.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
3" Rigid Conduit (E)	B	No	Inside Pole	93.000 - 0.000	1	No Ice	0.000	0.003
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.003
FB-L98-002-XXX(3/8) (E-Inside Conduit)	B	No	Inside Pole	93.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (E-Inside Conduit)	B	No	Inside Pole	93.000 - 0.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
AB LDF7-50A(1-5/8") (E)	B	No	Inside Pole	83.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HFT1206-24S26-XXX(1 -3/8") (P) **AB** *	B	No	Inside Pole	83.000 - 0.000	2	No Ice	0.000	0.002
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.002

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	101.000-72.750	A	0.000	0.000	1.059	0.000	0.006
		B	0.000	0.000	0.000	0.000	0.272
		C	0.000	0.000	0.000	0.000	0.000
L2	72.750-36.000	A	0.000	0.000	1.378	0.000	0.008
		B	0.000	0.000	0.000	0.000	0.729
		C	0.000	0.000	0.000	0.000	0.000
L3	36.000-0.000	A	0.000	0.000	1.350	0.000	0.008
		B	0.000	0.000	0.000	0.000	0.714
		C	0.000	0.000	0.000	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	101.000-72.750	A	2.202	0.000	0.000	13.500	0.000	0.202
		B		0.000	0.000	0.000	0.000	0.272
		C		0.000	0.000	0.000	0.000	0.000
L2	72.750-36.000	A	2.101	0.000	0.000	17.562	0.000	0.263
		B		0.000	0.000	0.000	0.000	0.729
		C		0.000	0.000	0.000	0.000	0.000
L3	36.000-0.000	A	1.882	0.000	0.000	16.475	0.000	0.237
		B		0.000	0.000	0.000	0.000	0.714
		C		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	101.000-72.750	-0.053	-0.017	-0.474	-0.154
L2	72.750-36.000	-0.053	-0.017	-0.504	-0.164
L3	36.000-0.000	-0.053	-0.017	-0.511	-0.166

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	12	Safety Line 3/8	72.75 - 101.00	1.0000	1.0000
L2	12	Safety Line 3/8	36.00 - 72.75	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Strobe	C	None			0.000	101.500	No Ice	4.500	3.000	0.020
(E-Per Photo)							1/2" Ice	4.770	3.237	0.058
							1" Ice	5.048	3.481	0.100
AB										
ANT450D6-9	C	From Leg	6.000		0.000	97.000	No Ice	2.862	2.862	0.176
(E)			0.000				1/2" Ice	4.370	4.370	0.200
			0.000				1" Ice	5.878	5.878	0.224
Side Arm Mount [SO 303-1]	C	From Leg	3.000		0.000	97.000	No Ice	2.240	5.320	0.115
(E)			0.000				1/2" Ice	3.190	7.690	0.159
			0.000				1" Ice	4.140	10.060	0.202
AB										
800 10121 w/ Mount Pipe	A	From Leg	3.000		0.000	93.000	No Ice	5.388	4.600	0.066
(E)			0.000				1/2" Ice	5.813	5.351	0.114
			0.000				1" Ice	6.234	6.046	0.168
800 10121 w/ Mount Pipe	B	From Leg	3.000		0.000	93.000	No Ice	5.388	4.600	0.066
(E)			0.000				1/2" Ice	5.813	5.351	0.114
			0.000				1" Ice	6.234	6.046	0.168
800 10121 w/ Mount Pipe	C	From Leg	3.000		0.000	93.000	No Ice	5.388	4.600	0.066
(E)			0.000				1/2" Ice	5.813	5.351	0.114
			0.000				1" Ice	6.234	6.046	0.168
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	3.000		0.000	93.000	No Ice	11.704	8.938	0.092
(E)			0.000				1/2" Ice	12.424	10.450	0.178
			0.000				1" Ice	13.153	11.986	0.273
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	3.000		0.000	93.000	No Ice	11.704	8.938	0.092
(E)			0.000				1/2" Ice	12.424	10.450	0.178
			0.000				1" Ice	13.153	11.986	0.273
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	3.000		0.000	93.000	No Ice	11.704	8.938	0.092
			0.000				1/2" Ice	12.424	10.450	0.178

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(E)			0.000				1" Ice	13.153	11.986	0.273
(2) LGP21401	A	From Leg	3.000		0.000	93.000	No Ice	1.104	0.207	0.014
(E)			0.000				1/2" Ice	1.239	0.274	0.021
			0.000				1" Ice	1.381	0.348	0.030
(2) LGP21401	B	From Leg	3.000		0.000	93.000	No Ice	1.104	0.207	0.014
(E)			0.000				1/2" Ice	1.239	0.274	0.021
			0.000				1" Ice	1.381	0.348	0.030
(2) LGP21401	C	From Leg	3.000		0.000	93.000	No Ice	1.104	0.207	0.014
(E)			0.000				1/2" Ice	1.239	0.274	0.021
			0.000				1" Ice	1.381	0.348	0.030
DC6-48-60-18-8F	A	From Leg	3.000		0.000	93.000	No Ice	0.917	0.917	0.019
(E)			0.000				1/2" Ice	1.458	1.458	0.037
			0.000				1" Ice	1.643	1.643	0.057
(2) RBS 6601	A	From Leg	3.000		0.000	93.000	No Ice	0.412	0.298	0.022
(E)			0.000				1/2" Ice	0.536	0.393	0.034
			0.000				1" Ice	0.667	0.495	0.049
(2) RBS 6601	B	From Leg	3.000		0.000	93.000	No Ice	0.412	0.298	0.022
(E)			0.000				1/2" Ice	0.536	0.393	0.034
			0.000				1" Ice	0.667	0.495	0.049
(2) RBS 6601	C	From Leg	3.000		0.000	93.000	No Ice	0.412	0.298	0.022
(E)			0.000				1/2" Ice	0.536	0.393	0.034
			0.000				1" Ice	0.667	0.495	0.049
Side Arm Mount [SO 102-3]	C	None			0.000	93.000	No Ice	3.000	3.000	0.081
(E-Mount Attachment)							1/2" Ice	3.480	3.480	0.111
							1" Ice	3.960	3.960	0.141
T-Arm Mount [TA 702-3]	C	None			0.000	93.000	No Ice	5.640	5.640	0.339
(E)							1/2" Ice	6.550	6.550	0.429
							1" Ice	7.460	7.460	0.519
AB										
(2) LPA-80063/6CF w/	A	From Leg	4.000		0.000	83.000	No Ice	9.831	10.215	0.052
Mount Pipe			0.000				1/2" Ice	10.400	11.384	0.145
(E)			0.000				1" Ice	10.933	12.269	0.246
(2) LPA-80063/6CF w/	B	From Leg	4.000		0.000	83.000	No Ice	9.831	10.215	0.052
Mount Pipe			0.000				1/2" Ice	10.400	11.384	0.145
(E)			0.000				1" Ice	10.933	12.269	0.246
(2) LPA-80063/6CF w/	C	From Leg	4.000		0.000	83.000	No Ice	9.831	10.215	0.052
Mount Pipe			0.000				1/2" Ice	10.400	11.384	0.145
(E)			0.000				1" Ice	10.933	12.269	0.246
(3) SBNHH-1D65B w/	A	From Leg	4.000		0.000	83.000	No Ice	8.397	7.071	0.066
Mount Pipe			0.000				1/2" Ice	8.960	8.260	0.135
(P)			0.000				1" Ice	9.490	9.170	0.212
(3) SBNHH-1D65B w/	B	From Leg	4.000		0.000	83.000	No Ice	8.397	7.071	0.066
Mount Pipe			0.000				1/2" Ice	8.960	8.260	0.135
(P)			0.000				1" Ice	9.490	9.170	0.212
(3) SBNHH-1D65B w/	C	From Leg	4.000		0.000	83.000	No Ice	8.397	7.071	0.066
Mount Pipe			0.000				1/2" Ice	8.960	8.260	0.135
(P)			0.000				1" Ice	9.490	9.170	0.212
PCS B25 RRH4x30	A	From Leg	4.000		0.000	83.000	No Ice	2.200	1.742	0.055
(P)			0.000				1/2" Ice	2.393	1.920	0.075
			0.000				1" Ice	2.593	2.106	0.099
PCS B25 RRH4x30	B	From Leg	4.000		0.000	83.000	No Ice	2.200	1.742	0.055
(P)			0.000				1/2" Ice	2.393	1.920	0.075
			0.000				1" Ice	2.593	2.106	0.099
PCS B25 RRH4x30	C	From Leg	4.000		0.000	83.000	No Ice	2.200	1.742	0.055
(P)			0.000				1/2" Ice	2.393	1.920	0.075
			0.000				1" Ice	2.593	2.106	0.099
RRH4X45-AWS4 B66	A	From Leg	4.000		0.000	83.000	No Ice	2.660	1.586	0.064

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(P)			0.000				1/2" Ice	2.878	1.769	0.084
			0.000				1" Ice	3.104	1.959	0.108
RRH4X45-AWS4 B66	B	From Leg	4.000		0.000	83.000	No Ice	2.660	1.586	0.064
(P)			0.000				1/2" Ice	2.878	1.769	0.084
			0.000				1" Ice	3.104	1.959	0.108
RRH4X45-AWS4 B66	C	From Leg	4.000		0.000	83.000	No Ice	2.660	1.586	0.064
(P)			0.000				1/2" Ice	2.878	1.769	0.084
			0.000				1" Ice	3.104	1.959	0.108
B13 RRH 4X30	A	From Leg	4.000		0.000	83.000	No Ice	2.055	1.320	0.056
(P)			0.000				1/2" Ice	2.241	1.475	0.073
			0.000				1" Ice	2.433	1.638	0.093
B13 RRH 4X30	B	From Leg	4.000		0.000	83.000	No Ice	2.055	1.320	0.056
(P)			0.000				1/2" Ice	2.241	1.475	0.073
			0.000				1" Ice	2.433	1.638	0.093
B13 RRH 4X30	C	From Leg	4.000		0.000	83.000	No Ice	2.055	1.320	0.056
(P)			0.000				1/2" Ice	2.241	1.475	0.073
			0.000				1" Ice	2.433	1.638	0.093
RC2DC-3315-PF-48	A	From Leg	4.000		0.000	83.000	No Ice	3.792	2.512	0.032
(P)			0.000				1/2" Ice	4.044	2.725	0.063
			0.000				1" Ice	4.303	2.945	0.099
RC2DC-3315-PF-48	B	From Leg	4.000		0.000	83.000	No Ice	3.792	2.512	0.032
(P)			0.000				1/2" Ice	4.044	2.725	0.063
			0.000				1" Ice	4.303	2.945	0.099
Platform Mount [LP 304-1]	C	None			0.000	83.000	No Ice	17.460	17.460	1.349
(E-14' Per Photo)							1/2" Ice	22.440	22.440	1.625
							1" Ice	27.420	27.420	1.900

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice

Comb. No.	Description
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	101 - 72.75	Pole	Max Tension	36	0.000	-0.000	0.000
			Max. Compression	26	-21.648	2.375	-0.707
			Max. Mx	20	-5.983	128.534	0.829
			Max. My	14	-5.969	-0.103	-129.627
			Max. Vy	20	-11.907	128.534	0.829
			Max. Vx	14	12.013	-0.103	-129.627
			Max. Torque	24			2.144
L2	72.75 - 36	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.247	2.886	-0.660
			Max. Mx	20	-10.453	602.683	4.134
			Max. My	14	-10.444	-3.343	-607.597
			Max. Vy	20	-14.423	602.683	4.134
			Max. Vx	14	14.529	-3.343	-607.597
			Max. Torque	24			1.585
L3	36 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.126	3.299	-0.548
			Max. Mx	20	-16.882	1229.666	7.779
			Max. My	14	-16.882	-6.957	-1238.767
			Max. Vy	20	-16.826	1229.666	7.779
			Max. Vx	14	16.929	-6.957	-1238.767
			Max. Torque	24			1.581

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	38	39.126	2.532	4.386
	Max. H_x	20	16.900	16.808	0.089
	Max. H_z	3	12.675	0.089	16.912
	Max. M_x	2	1237.098	0.089	16.912
	Max. M_z	8	1226.352	-16.808	-0.089
	Max. Torsion	24	1.578	8.482	14.690
	Min. Vert	7	12.675	-14.512	8.378
	Min. H_x	8	16.900	-16.808	-0.089
	Min. H_z	15	12.675	-0.089	-16.912
	Min. M_x	14	-1238.767	-0.089	-16.912
	Min. M_z	20	-1229.666	16.808	0.089
	Min. Torsion	12	-1.578	-8.482	-14.690

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	14.083	0.000	0.000	0.682	1.355	-0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	16.900	-0.089	-16.912	-1237.098	10.270	-1.430
0.9 Dead+1.6 Wind 0 deg - No Ice	12.675	-0.089	-16.912	-1228.465	9.772	-1.404
1.2 Dead+1.6 Wind 30 deg - No Ice	16.900	8.327	-14.601	-1066.960	-604.888	-0.898
0.9 Dead+1.6 Wind 30 deg - No Ice	12.675	8.327	-14.601	-1059.547	-600.992	-0.883
1.2 Dead+1.6 Wind 60 deg - No Ice	16.900	14.512	-8.378	-610.690	-1057.534	-0.126
0.9 Dead+1.6 Wind 60 deg - No Ice	12.675	14.512	-8.378	-606.540	-1050.402	-0.126
1.2 Dead+1.6 Wind 90 deg - No Ice	16.900	16.808	0.089	9.449	-1226.352	0.679
0.9 Dead+1.6 Wind 90 deg - No Ice	12.675	16.808	0.089	9.164	-1218.011	0.665
1.2 Dead+1.6 Wind 120 deg - No Ice	16.900	14.601	8.533	627.261	-1066.117	1.303
0.9 Dead+1.6 Wind 120 deg - No Ice	12.675	14.601	8.533	622.560	-1058.917	1.278
1.2 Dead+1.6 Wind 150 deg - No Ice	16.900	8.482	14.690	1077.212	-619.790	1.578
0.9 Dead+1.6 Wind 150 deg - No Ice	12.675	8.482	14.690	1069.298	-615.775	1.549
1.2 Dead+1.6 Wind 180 deg - No Ice	16.900	0.089	16.912	1238.767	-6.957	1.430
0.9 Dead+1.6 Wind 180 deg - No Ice	12.675	0.089	16.912	1229.701	-7.318	1.405
1.2 Dead+1.6 Wind 210 deg - No Ice	16.900	-8.327	14.601	1068.629	608.202	0.899
0.9 Dead+1.6 Wind 210 deg - No Ice	12.675	-8.327	14.601	1060.783	603.446	0.884

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 240 deg - No Ice	16.900	-14.512	8.378	612.359	1060.848	0.126
0.9 Dead+1.6 Wind 240 deg - No Ice	12.675	-14.512	8.378	607.777	1052.856	0.126
1.2 Dead+1.6 Wind 270 deg - No Ice	16.900	-16.808	-0.089	-7.779	1229.666	-0.680
0.9 Dead+1.6 Wind 270 deg - No Ice	12.675	-16.808	-0.089	-7.927	1220.466	-0.666
1.2 Dead+1.6 Wind 300 deg - No Ice	16.900	-14.601	-8.533	-625.591	1069.431	-1.304
0.9 Dead+1.6 Wind 300 deg - No Ice	12.675	-14.601	-8.533	-621.324	1061.372	-1.279
1.2 Dead+1.6 Wind 330 deg - No Ice	16.900	-8.482	-14.690	-1075.543	623.103	-1.578
0.9 Dead+1.6 Wind 330 deg - No Ice	12.675	-8.482	-14.690	-1068.062	618.230	-1.549
1.2 Dead+1.0 Ice+1.0 Temp	39.126	-0.000	0.000	0.548	3.299	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	39.126	-0.038	-5.042	-376.992	7.361	-0.886
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	39.126	2.466	-4.347	-324.401	-179.630	-0.542
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	39.126	4.309	-2.488	-184.738	-317.594	-0.054
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	39.126	4.998	0.038	4.573	-369.564	0.449
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	39.126	4.347	2.554	192.809	-321.613	0.832
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	39.126	2.532	4.386	329.531	-186.591	0.992
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	39.126	0.038	5.042	378.106	-0.676	0.885
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	39.126	-2.466	4.347	325.516	186.319	0.542
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	39.126	-4.309	2.488	185.852	324.287	0.053
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	39.126	-4.998	-0.038	-3.464	376.256	-0.450
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	39.126	-4.347	-2.554	-191.700	328.302	-0.833
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	39.126	-2.532	-4.386	-328.421	193.277	-0.992
Dead+Wind 0 deg - Service	14.083	-0.019	-3.618	-263.173	3.210	-0.304
Dead+Wind 30 deg - Service	14.083	1.782	-3.124	-226.904	-127.909	-0.191
Dead+Wind 60 deg - Service	14.083	3.105	-1.793	-129.651	-224.386	-0.027
Dead+Wind 90 deg - Service	14.083	3.596	0.019	2.528	-260.371	0.144
Dead+Wind 120 deg - Service	14.083	3.124	1.826	134.215	-226.221	0.277
Dead+Wind 150 deg - Service	14.083	1.815	3.143	230.124	-131.087	0.336
Dead+Wind 180 deg - Service	14.083	0.019	3.618	264.558	-0.460	0.304
Dead+Wind 210 deg - Service	14.083	-1.782	3.124	228.289	130.658	0.191
Dead+Wind 240 deg - Service	14.083	-3.105	1.793	131.036	227.136	0.027
Dead+Wind 270 deg - Service	14.083	-3.596	-0.019	-1.143	263.121	-0.144
Dead+Wind 300 deg - Service	14.083	-3.124	-1.826	-132.830	228.971	-0.277
Dead+Wind 330 deg - Service	14.083	-1.815	-3.143	-228.739	133.837	-0.336

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-14.083	0.000	0.000	14.083	0.000	0.000%
2	-0.089	-16.900	-16.912	0.089	16.900	16.912	0.000%
3	-0.089	-12.675	-16.912	0.089	12.675	16.912	0.000%
4	8.327	-16.900	-14.601	-8.327	16.900	14.601	0.000%
5	8.327	-12.675	-14.601	-8.327	12.675	14.601	0.000%
6	14.512	-16.900	-8.378	-14.512	16.900	8.378	0.000%
7	14.512	-12.675	-8.378	-14.512	12.675	8.378	0.000%
8	16.808	-16.900	0.089	-16.808	16.900	-0.089	0.000%
9	16.808	-12.675	0.089	-16.808	12.675	-0.089	0.000%
10	14.601	-16.900	8.533	-14.601	16.900	-8.533	0.000%
11	14.601	-12.675	8.533	-14.601	12.675	-8.533	0.000%
12	8.482	-16.900	14.690	-8.482	16.900	-14.690	0.000%
13	8.482	-12.675	14.690	-8.482	12.675	-14.690	0.000%
14	0.089	-16.900	16.912	-0.089	16.900	-16.912	0.000%
15	0.089	-12.675	16.912	-0.089	12.675	-16.912	0.000%
16	-8.327	-16.900	14.601	8.327	16.900	-14.601	0.000%
17	-8.327	-12.675	14.601	8.327	12.675	-14.601	0.000%
18	-14.512	-16.900	8.378	14.512	16.900	-8.378	0.000%
19	-14.512	-12.675	8.378	14.512	12.675	-8.378	0.000%
20	-16.808	-16.900	-0.089	16.808	16.900	0.089	0.000%
21	-16.808	-12.675	-0.089	16.808	12.675	0.089	0.000%
22	-14.601	-16.900	-8.533	14.601	16.900	8.533	0.000%
23	-14.601	-12.675	-8.533	14.601	12.675	8.533	0.000%
24	-8.482	-16.900	-14.690	8.482	16.900	14.690	0.000%
25	-8.482	-12.675	-14.690	8.482	12.675	14.690	0.000%
26	0.000	-39.126	0.000	0.000	39.126	-0.000	0.000%
27	-0.038	-39.126	-5.042	0.038	39.126	5.042	0.000%
28	2.466	-39.126	-4.347	-2.466	39.126	4.347	0.000%
29	4.309	-39.126	-2.488	-4.309	39.126	2.488	0.000%
30	4.998	-39.126	0.038	-4.998	39.126	-0.038	0.000%
31	4.347	-39.126	2.554	-4.347	39.126	-2.554	0.000%
32	2.532	-39.126	4.386	-2.532	39.126	-4.386	0.000%
33	0.038	-39.126	5.042	-0.038	39.126	-5.042	0.000%
34	-2.466	-39.126	4.347	2.466	39.126	-4.347	0.000%
35	-4.309	-39.126	2.488	4.309	39.126	-2.488	0.000%
36	-4.998	-39.126	-0.038	4.998	39.126	0.038	0.000%
37	-4.347	-39.126	-2.554	4.347	39.126	2.554	0.000%
38	-2.532	-39.126	-4.386	2.532	39.126	4.386	0.000%
39	-0.019	-14.083	-3.618	0.019	14.083	3.618	0.000%
40	1.782	-14.083	-3.124	-1.782	14.083	3.124	0.000%
41	3.105	-14.083	-1.793	-3.105	14.083	1.793	0.000%
42	3.596	-14.083	0.019	-3.596	14.083	-0.019	0.000%
43	3.124	-14.083	1.826	-3.124	14.083	-1.826	0.000%
44	1.815	-14.083	3.143	-1.815	14.083	-3.143	0.000%
45	0.019	-14.083	3.618	-0.019	14.083	-3.618	0.000%
46	-1.782	-14.083	3.124	1.782	14.083	-3.124	0.000%
47	-3.105	-14.083	1.793	3.105	14.083	-1.793	0.000%
48	-3.596	-14.083	-0.019	3.596	14.083	0.019	0.000%
49	-3.124	-14.083	-1.826	3.124	14.083	1.826	0.000%
50	-1.815	-14.083	-3.143	1.815	14.083	3.143	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001

2	Yes	5	0.00000001	0.00004799
3	Yes	4	0.00000001	0.00088299
4	Yes	5	0.00000001	0.00023469
5	Yes	5	0.00000001	0.00009768
6	Yes	5	0.00000001	0.00024913
7	Yes	5	0.00000001	0.00010426
8	Yes	4	0.00000001	0.00079856
9	Yes	4	0.00000001	0.00046999
10	Yes	5	0.00000001	0.00027922
11	Yes	5	0.00000001	0.00011668
12	Yes	5	0.00000001	0.00023686
13	Yes	5	0.00000001	0.00009760
14	Yes	5	0.00000001	0.00003844
15	Yes	4	0.00000001	0.00070646
16	Yes	5	0.00000001	0.00026795
17	Yes	5	0.00000001	0.00011191
18	Yes	5	0.00000001	0.00025014
19	Yes	5	0.00000001	0.00010396
20	Yes	4	0.00000001	0.00050758
21	Yes	4	0.00000001	0.00029651
22	Yes	5	0.00000001	0.00024146
23	Yes	5	0.00000001	0.00009949
24	Yes	5	0.00000001	0.00028712
25	Yes	5	0.00000001	0.00011989
26	Yes	4	0.00000001	0.00004474
27	Yes	5	0.00000001	0.00029376
28	Yes	5	0.00000001	0.00034801
29	Yes	5	0.00000001	0.00035325
30	Yes	5	0.00000001	0.00026535
31	Yes	5	0.00000001	0.00040308
32	Yes	5	0.00000001	0.00037246
33	Yes	5	0.00000001	0.00029247
34	Yes	5	0.00000001	0.00039093
35	Yes	5	0.00000001	0.00036865
36	Yes	5	0.00000001	0.00027204
37	Yes	5	0.00000001	0.00037929
38	Yes	5	0.00000001	0.00042768
39	Yes	4	0.00000001	0.00008718
40	Yes	4	0.00000001	0.00010212
41	Yes	4	0.00000001	0.00011930
42	Yes	4	0.00000001	0.00004344
43	Yes	4	0.00000001	0.00017116
44	Yes	4	0.00000001	0.00011437
45	Yes	4	0.00000001	0.00008407
46	Yes	4	0.00000001	0.00015719
47	Yes	4	0.00000001	0.00012290
48	Yes	4	0.00000001	0.00004050
49	Yes	4	0.00000001	0.00011486
50	Yes	4	0.00000001	0.00018815

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 72.75	12.139	49	0.907	0.007
L2	76 - 36	7.474	49	0.846	0.003
L3	40 - 0	2.218	50	0.503	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
101.500	Strobe	49	12.139	0.907	0.007	58512
97.000	ANT450D6-9	49	11.376	0.903	0.006	58512
93.000	800 10121 w/ Mount Pipe	49	10.616	0.898	0.005	36570
83.000	(2) LPA-80063/6CF w/ Mount Pipe	49	8.744	0.876	0.004	16253

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 72.75	56.800	24	4.225	0.031
L2	76 - 36	35.042	24	3.965	0.015
L3	40 - 0	10.405	24	2.361	0.005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
101.500	Strobe	24	56.800	4.225	0.031	13329
97.000	ANT450D6-9	24	53.245	4.209	0.028	13329
93.000	800 10121 w/ Mount Pipe	24	49.702	4.190	0.025	8330
83.000	(2) LPA-80063/6CF w/ Mount Pipe	24	40.971	4.096	0.019	3701

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	101 - 72.75 (1)	TP25.481x20x0.188	28.250	0.000	0.0	14.677	-5.963	1004.400	0.006
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	40.000	0.000	0.0	24.765	-10.440	1725.600	0.006
L3	36 - 0 (3)	TP38.72x30.96x0.25	40.000	0.000	0.0	30.526	-16.882	1961.860	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uv}}{\phi M_{ny}}$
L1	101 - 72.75 (1)	TP25.481x20x0.188	129.835	509.514	0.255	0.000	509.514	0.000
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	609.717	1107.292	0.551	0.000	1107.292	0.000
L3	36 - 0 (3)	TP38.72x30.96x0.25	1243.000	1554.067	0.800	0.000	1554.067	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	101 - 72.75 (1)	TP25.481x20x0.188	12.066	502.202	0.024	1.585	1020.275	0.002
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	14.583	862.802	0.017	1.581	2217.292	0.001
L3	36 - 0 (3)	TP38.72x30.96x0.25	16.980	980.930	0.017	1.578	3111.933	0.001

Pole Interaction Design Data

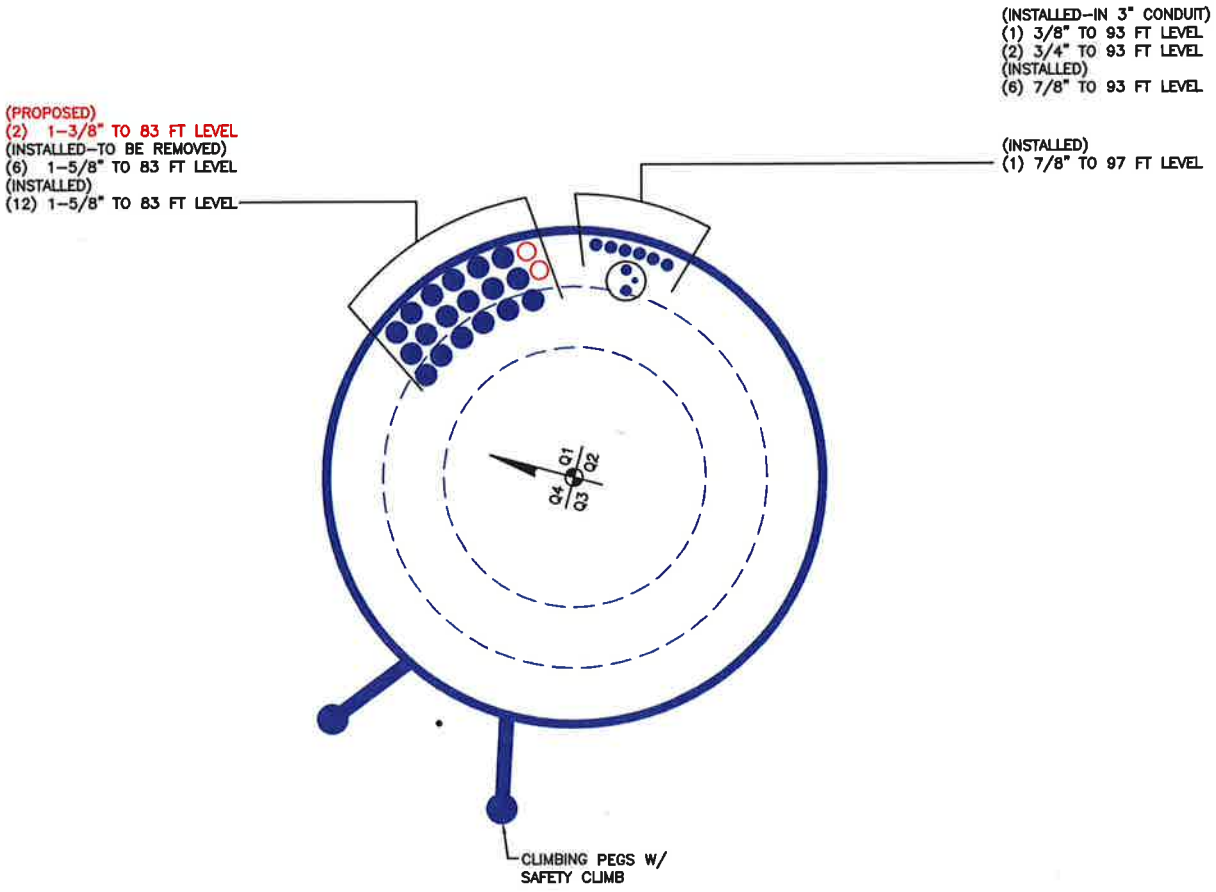
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	101 - 72.75 (1)	0.006	0.255	0.000	0.024	0.002	0.261 ✔	1.000	4.8.2 ✔
L2	72.75 - 36 (2)	0.006	0.551	0.000	0.017	0.001	0.557 ✔	1.000	4.8.2 ✔
L3	36 - 0 (3)	0.009	0.800	0.000	0.017	0.001	0.809 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	101 - 72.75	Pole	TP25.481x20x0.188	1	-5.963	1004.400	26.1	Pass
L2	72.75 - 36	Pole	TP32.236x24.475x0.25	2	-10.440	1725.600	55.7	Pass
L3	36 - 0	Pole	TP38.72x30.96x0.25	3	-16.882	1961.860	80.9	Pass
							Summary	
						Pole (L3)	80.9	Pass
						RATING =	**80.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842877

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *842877*
Site Name: *WINDSOR NORTH, CT*
App #: *357820 Revision # 10*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	48	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	46	in
Thick:	2.5	in
Grade:	55	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	38.72	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	1243	ft-kips
Factored Axial, Pu:	17	kips
Factored Shear, Vu:	17	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	107.8 Kips
Axial Design Strength, Φ*Fu*Anet:	260.0 Kips
Anchor Rod Stress Ratio:	41.5% Pass

Base Plate Results	Flexural Check
Base Plate Stress:	31.1 ksi
PL Design Bending Strength, Φ*Fy:	49.5 ksi
Base Plate Stress Ratio:	62.8% Pass

PL Ref. Data
Yield Line (in): 26.33
Max PL Length: 26.33

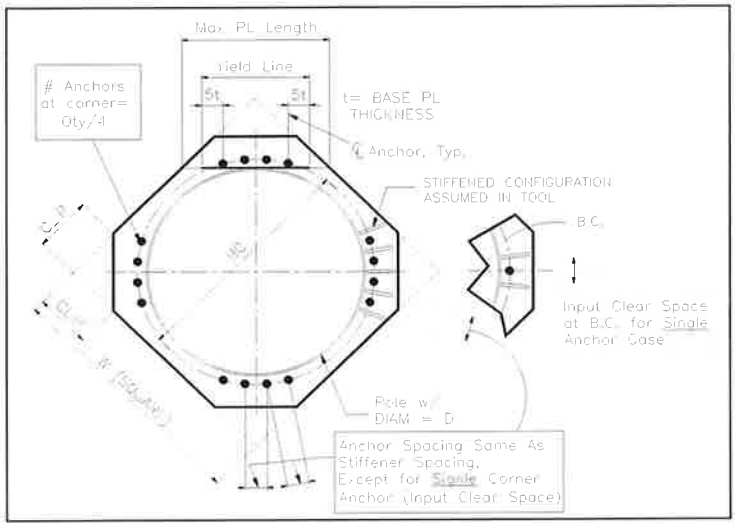
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2

Date: 08-11-2016

BU:	842877
Site Name:	WINDSOR NORTH, CT
App Number:	357820 Revision # 10
Work Order:	1322408

CROWN CASTLE

Monopole Drilled Pier

Input

Criteria

TIA Revision:	G
ACI 318 Revision:	2008
Seismic Category:	B

Forces

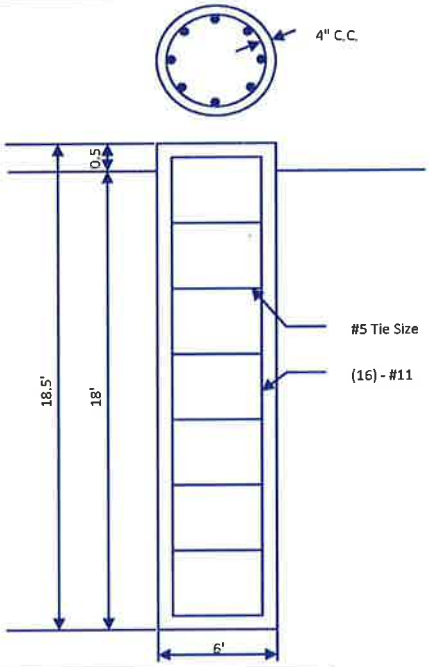
Compression	17 kips
Shear	17 kips
Moment	1243 k-ft
Swelling Force	0 kips

Foundation Dimensions

Pier Diameter:	6 ft
Ext. above grade:	0.5 ft
Depth below grade:	18 ft

Material Properties

Number of Rebar:	16
Rebar Size:	11
Tie Size	5
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	4 in



Soil Profile: Soil

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	135			0	0	0	
2	1.5	3.5	5	135		34	0	0	0	
3	3	5	8	135		34	1	1	0	
4	7	8	15	75		34	1	1	0	
5	3	15	18	75		34	1.6	1.6	32	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	4.75 ft
Max Moment, Mu:	1325.92 k-ft
Soil Safety Factor:	2.61
Safety Factor Req'd:	1.33
RATING:	50.9%

Soil Axial Capacity

Skin Friction (k):	209.23 kips
End Bearing (k):	678.58 kips
Comp. Capacity (k), ϕCn:	887.81 kips
Comp. (k), Cu:	17.00 kips
RATING:	1.9%

Concrete/Steel Check

Mu (from soil analysis)	1325.92 k-ft
ϕMn	3282.95 k-ft
RATING:	40.4%

rho provided	0.61	
rho required	0.33	OK
Rebar Spacing	10.63	
Spacing required	22.56	OK
Dev. Length required	12.92	
Dev. Length provided	61.78	OK

Overall Foundation Rating: 50.9%

ATC Applied Technology Council

WINDSPEED BY LOCATION

Search Results

Query Date: Tue Nov 08 2016
Latitude: 41.9193
Longitude: -72.7104

ASCE 7-10 Windspeeds (3-sec peak gust in mph*):

Risk Category I: 110
Risk Category II: 120
Risk Category III-IV: 129
MRI 10-Year:** 76
MRI 25-Year:** 86
MRI 50-Year:** 91
MRI 100-Year:** 98

ASCE 7-05 Windspeed:
97 (3-sec peak gust in mph)
ASCE 7-93 Windspeed:
79 (fastest mile in mph)

*Miles per hour
**Mean Recurrence Interval

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.

Print your results

WINDSPEED WEBSITE DISCLAIMER

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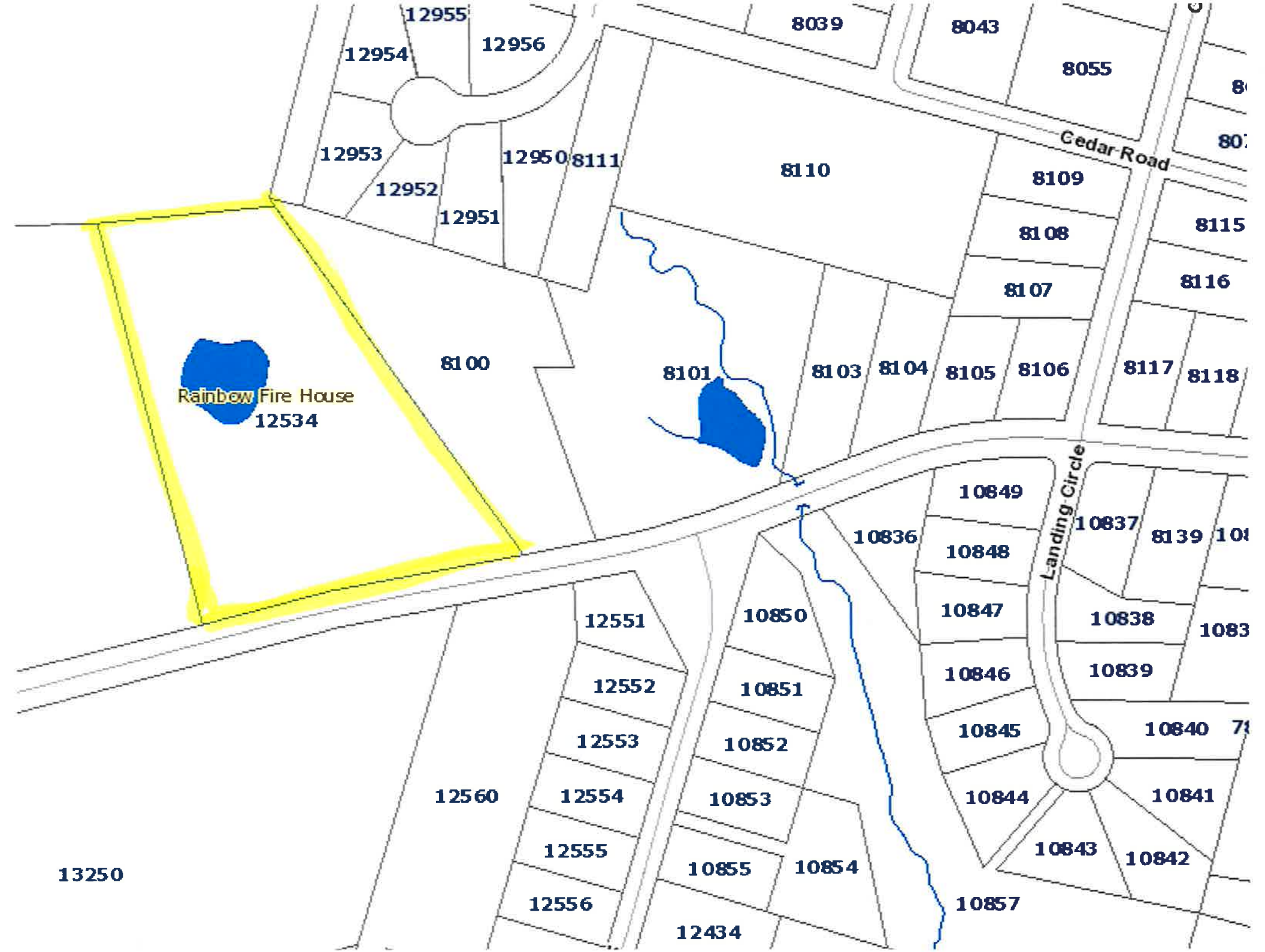
ATTACHMENT 4


12955
12954
12956
8039
8043
8055
Cedar Road
12953
12950
8111
8110
8109
12952
12951
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8107
8116
8100
8101
8103
8104
8105
8106
8117
8118
Rainbow Fire House
12534
10849
10836
10848
10837
8139
Landing Circle
10847
10838
10846
10839
10845
10840
12551
10850
12552
10851
12553
10852
10844
10841
12560
12554
10853
10843
10842
12555
10855
10854
13250
10857
12556
12434

Property Cards

Address Search : 12534 Submit Clear Search

Your search returned multiple addresses

Additional addresses:
750 RAINBOW RD

750 Rainbow Rd

Property Owner:
Windsor Town Of

Property Co-Owner
C/O At&T Mobility

Mailing Address:
575 Morosgo Dr Suite 13-F
Atlanta, GA
30324

File Code
12534

Map:
8

Block:
140

Lot:
750

Census Tract:
12534.01

Property Type:
Cell Tower

Land Area (Acres):
0.05

Zone:
NZ

Click to Enlarge

Construction Details

Year Built:

Building Style:

Stories:

Living Area:
0 Sq/Ft

Building ID
102171

Grade

Exterior Wall

Total Rooms:

Bedrooms:

Bathrooms:

Half Baths:

Heating Type

Heating Fuel

AC Type

Valuation

Assessed Land Value:
$97,580

Assessed Building Value:
$119,700

Total Assessed Value:
$217,280

Appraised Land Value:
$139,400

Appraised Building Value:
$171,000

Total Appraised Value:
$310,400

Last Sale

Last Sale Date:
Wednesday, September 23rd, 1998

Last Sale Price:
$0

Qualified Sale:
U

Book/Page:
1169/ 11

Prior Owners

Sale Date	Owner Name	Sale Price	Book / Page
1997/6/30	RIVER BEND ASSOCIATES	0	1121/ 400
1976/9/29	CULBRO CORP	0	312/ 1

Parcel Sketch

Sub Area Detail

Code	Gross Area (Sq Ft)	Living Area (Sq Ft)

Outbuildings & Extra Features

Code	Description	Appraised Value	Assessed Value
CB3	PerCastConCel	$131300.00	$91910.00

AOF Office Area
APT Apartment
BAS First Floor
CAN Canopy
CDN Canopy (Det)
CLP Loading Platform (Finished)
EAF Attic (Expan)(Finished)
EAU Attic (Expan)(Unfinished)
FAT Attic (Finished)
FBM Basement (Finished)
FCB Cabana (Encl)(Finished)
FCP Carport (Framed)
FDC Carport (Det)(Framed)
FDS Porch (Scrn)(Det)(Finished)
FDU Utility (Det)(Finished)
FEP Porch (Encl)(Finished)
FGR Garage (Framed)
FHS Half-Story (Finished)
FLL Lower Level (Finished)
FOP Porch (Open)(Finished)
FSP Porch (Screen)(Finished)
FST Utility (Finished)
FUS Upper-Story (Finished)
PTO Patio
SDA Store Display Area
SFB Base (Semi-Finished)
SPA Service Prod Area
TQS Three-Qtr Story
UAT Attic (Unifinished)
UBM Basement (Unfinished)
UCB Cabana (Encl)(Unfinished)
UDS Porch (Scrn)(Dedt)(Unifinished)
UDU Utility (Det)(Unifinished)
UEP Porch (Encl)(Unfinished)
UHS Half-Story (Unfinished)
ULP Loading Platform (Unfinished)
UOP Porch (Open)(Unfinished)
USP Porch (Scrn)(Unfinished)
UST Utility (Strg)(Unfinished)
UUS Upper-Story (Unfinished)
WDK Wood Deck