

October 18, 2018

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

Re: **Notice of Exempt Modification – Facility Modification
719 George Washington Turnpike, Burlington, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 160-foot level of the existing 180-foot tower at 719 George Washington Turnpike in Burlington, Connecticut (the “Property”). The tower and underlying property are owned by the Town of Burlington. The Council approved Cellco’s shared use of the tower in 1997. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model JAHH-65B-R3B, 700/850 MHz antennas and three (3) model JAHH-65B-R3B, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install nine (9) remote radio heads (“RRHs”) 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 Burlington’s First Selectman, Theodore Shafer; and Abby Conroy, Burlington’s Zoning Enforcement Officer.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. Cellco’s new antennas and RRHs will be installed on its existing antenna platform at the 160-foot level of the 180-foot tower.

Melanie A. Bachman, Esq.

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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas and new RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A General Power Density table for Cellco's modified facility is included in Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials is included in Attachment 5.

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:

Theodore Shafer, Burlington First Selectman
Abby Conroy, Burlington Zoning Enforcement Officer
Tim Parks

ATTACHMENT 1

JAHH-65B-R3B



8-port sector antenna, 2x 698–787, 2x 824–894 and 4x 1695–2360 MHz, 65° HPBW, 3x RET and low bands have diplexers. Internal SBT's on first LB (Port 1) and first HB(Port 5).

- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One RET for 700MHz, one RET for 850MHz, and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO
- Internal filter on low band and interleaved dipole technology providing for attractive, low wind load mechanical package
- Separate RS-485 RET input/output for low and high band

Electrical Specifications

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
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 at 50°C, maximum, watts	200	200	300	300	300	250
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	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2 ° 14.3 8 ° 14.3 14 ° 14.3	2 ° 15.0 8 ° 14.9 14 ° 15.4	0 ° 17.2 5 ° 17.6 10 ° 17.6	0 ° 17.6 5 ° 18.2 10 ° 18.2	0 ° 17.7 5 ° 18.3 10 ° 18.3	0 ° 17.9 5 ° 18.7 10 ° 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24
CPR at Sector, dB	11	12	11	11	11	8

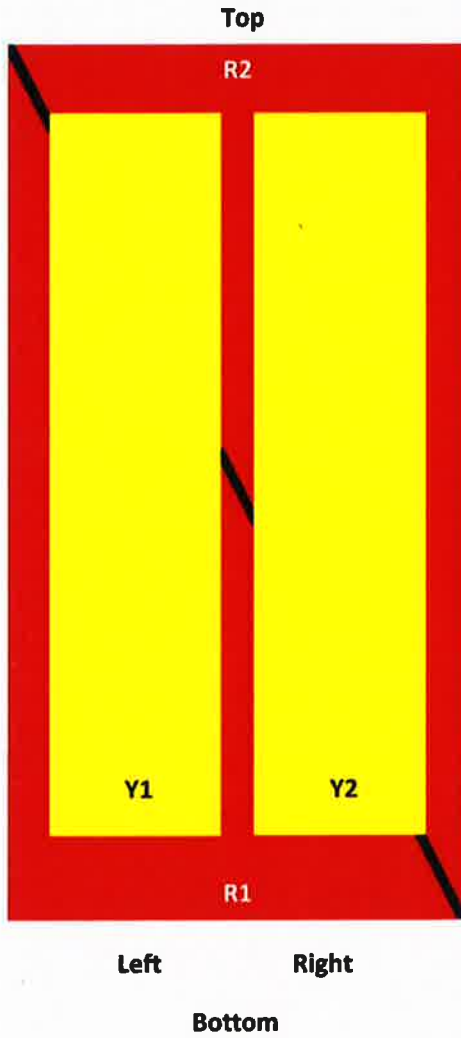
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

JAHH-65B-R3B

Array Layout

JAHH-65A-R3B JAHH-65B-R3B JAHH-65C-R3B

Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANXXXXXXXXXXXXX1
R2	824-894	3-4	2	ANXXXXXXXXXXXXX2
Y1	1695-2360	5-6	3	ANXXXXXXXXXXXXX3
Y2	1695-2360	7-8		



View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band

1695 – 2360 MHz | 698 – 787 MHz | 824 – 894 MHz

JAHH-65B-R3B

Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female
Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Aluminum Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	301.0 N @ 150 km/h 67.7 lbf @ 150 km/h
Wind Loading, lateral	254.0 N @ 150 km/h 57.1 lbf @ 150 km/h
Wind Loading, maximum	638.0 N @ 150 km/h 143.4 lbf @ 150 km/h
Wind Speed, maximum	241 km/h 150 mph

Dimensions

Length	1828.0 mm 72.0 in
Width	350.0 mm 13.8 in
Depth	208.0 mm 8.2 in
Net Weight, without mounting kit	28.7 kg 63.3 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 Port 5
Internal RET	High band (1) Low band (2)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	13 W
Protocol	3GPP/AISG 2.0 (Single RET)
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface, quantity	2 female 2 male

Packed Dimensions

JAHH-65B-R3B

Length	1975.0 mm 77.8 in
Width	456.0 mm 18.0 in
Depth	357.0 mm 14.1 in
Shipping Weight	42.0 kg 92.6 lb

Regulatory Compliance/Certifications

Agency

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

Classification

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



Included Products

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

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

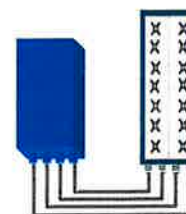


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R
Can be switched between
modes via SW w/o site
visit

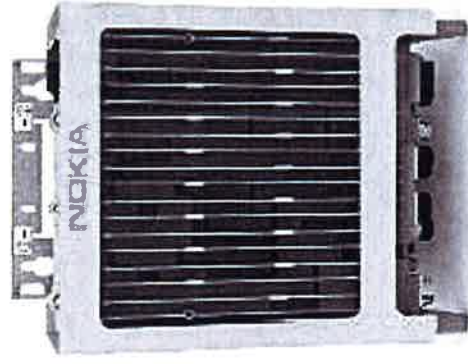
TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
Volume in L	38 (with solar shield)
Weight in kg (lb) (w/o mounting HW)	26 (57.2) (with solar shield)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	550W typical @100% RF load (in 2Tx or 4Tx mode)
Environmental conditions	-40°C (-40°F) / +55°C (+131°F)
Wind load (@130km/h or 83mph)	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

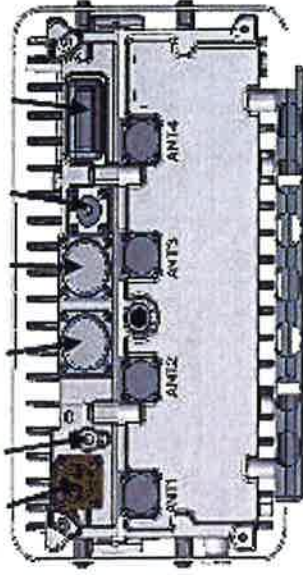
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AHCA AirScale RRH 4T4R B5 160W

Supported Frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX paths/pipes	4TX/4RX
Instantaneous Bandwidth IBW	25MHz (Full Band)
Occupied Bandwidth OBW	25MHz (Full Band)
Output Power	4T4R @ 40W / 2T4R @ 60W
RF Sharing	LTE, WCDMA, LTE + NB-1DT supported
256 QAM Back Off	No backoff at 40W and 0.8dB at 60W.
Supply Voltage / Voltage Range	DC-48V / -36V to -60V
Typical Power Consumption	365W [50% ETSI Busy Hour Load at 4 TX @ 40W]
	529W [100% RF Load at 4 TX @ 40W]
	574W [100% RF Load at 4 TX @ 40W with SBT and 4ISG On]
Antenna Ports	4 Ports, 4.3-10+
Optical Ports	2x CPRI 9.8 Gbps
ALD Control Interfaces	4ISG.0 from ANT1, 2, 3, 4 and RET (power supply ANT1 and ANT3)
Other Interfaces	External Alarm MCR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector



DC IN GND OPT1 OPT2 RET EAC



Operational Temperature Range	-40°C to 55°C (with solar cover)
Dimensions (mm)	337 x 295 x 165 (radio only)
Height x width x depth	13.3" x 11.7" x 6.5" 428 x 324 x 208 (with bracket and enclosure) 16.9" x 12.8" x 8.2"
Volume (liters)	16.5
Weight (kg)	16 / 35.3 lb - w/o bracket
Ingress protection class	IP65
Installation options	Pole or Wall, Vertical or Horizontal Book Mount
Surge protection	Class II 5kA

NOKIA

B66a RRH4x45W

Datasheet

Radio Technology

FDD-LTE

Feature description:

- Remote Radio Head 4x45W or 2x90W Switchable via SW

Power Output

4 x 45 W or 2x90W (SW Switchable)
w/o fans

IBW

70MHz

OBW

60 MHz

RF Sharing

LTE

Mass/Volume

25.8kg/56.9 lb Weight
655H x 299W x 182D mm
25.8" x 11.8" x 7.2"
29.7L / 35.5L

Antenna Conf.

4Tx/4Rx

Temperature

-40 to 55 °C

IP class

IP65

Input Power

DC 48 V

Cooling

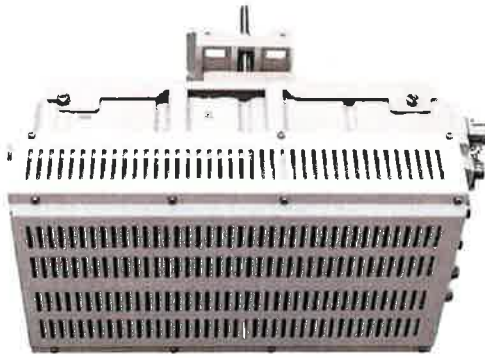
Natural Convection

Mounting

Wall, Pole mount

BBU connection

2 x 9.8Gbps SFP(Rate 7 HW ready)



B66a RRH 4x45 – Interfaces

Power:

- Max power: 816W (add 58W for AISG)
- Breaker size: 25A
- Max distance with 6ga power feed and 5.5V drop: 284 feet

RF Interfaces:

- 4.3/10 Connectors
- No monitoring ports(Spectrum analyzer SW takes place of monitoring ports)

AISG:

- Two Smart Bias-T
- One AISG port

B66 Details

- Max power for a single carrier is:
 - 2x60W for 10,15,20 MHz carrier
 - 2x40W for 5 MHz carrier
- Multi- Carrier Support with AWS-1 carriers: 15.1
- Multi- Carrier Support with AWS-3 carriers: 16.2

Carrier power: Multi-carrier

- Assuming 2 Tx power can be assigned per carrier subject to 40W max for 5Mhz, 60W for larger in 2T, cut that power in half for 4T
- Example:B4 (20Mhz) and AWS3 (10MHz)
 - Power can be varied between those two carriers, can go 60W for 20 MHz carrier, 30W for 10 MHz carrier to use the 90W in 2T.
 - It could be 45/45 for 20Mhz/10Mhz if desired.



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

Product Description

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

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

Features/Benefits

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



Figure 1: HYBRIFLEX Series

Technical Specifications

Structure			
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 and Bending			
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)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Optical Properties			
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
DC Power Cable Properties			
Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Operating Range			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

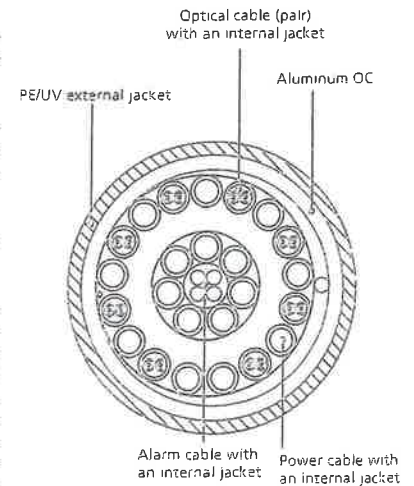


Figure 2: Construction Detail

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

ATTACHMENT 2

Site Name: Burlington Tower Height: 180 Ft		General		Power		Density							
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*Public Safety	1	60	188	159.225	0.0007	0.2000	0.03%						
*Public Safety	1	75	188	154.725	0.0008	0.2000	0.04%						
*Public Safety	1	75	188	155.745	0.0008	0.2000	0.04%						
*Public Safety	1	40	144	155.345	0.0008	0.2000	0.04%						
*Public Safety	receive only		134										
*Public Safety	1	100	113	33.5	0.0031	0.2000	0.16%						
*Public Safety	6	50	106	155	0.0108	0.2000	0.54%						
*AT&T	2	565	169.7	880	0.0152	0.5867	0.26%						
*AT&T	2	875	169.7	1900	0.0235	1.0000	0.23%						
*AT&T	1	1615	170	734	0.0216	0.4893	0.44%						
*AT&T	4	525	169.7	1900	0.0282	1.0000	0.28%						
*AT&T	1	283	169.7	880	0.0038	0.5867	0.06%						
*T-Mobile	1	865	175	700	0.0109	0.4667	0.23%						
*T-Mobile	2	1167	175	1950	0.0294	1.0000	0.29%						
*T-Mobile	2	2334	175	2100	0.0588	1.0000	0.59%						
VZW PCS	1	4900	160	0.0688	1970	1.0	6.88%						
VZW Cellular	1	3050	160	0.0428	869	0.579333	7.39%						
VZW Cellular	3	380	160	0.0160	880	0.579333	2.76%						
VZW AWS	1	7400	160	0.1039	2145	1.0	10.39%						
VZW 700	1	2200	160	0.0309	746	0.497333	6.21%						36.89%
* Source: Siting Council													

ATTACHMENT 3

LAMSON ENGINEERING CORPORATION
437 Cherry Street Room # 109, Newton, Massachusetts 02465
Phone: 617-558-0101

Date: August 15, 2017

NEXIUS
TRANSFORM YOUR BUSINESS THROUGH WIRELESS

Mr. Kostandin Butka
Engineering Project Manager
7A Lyberty Way
Westford, MA 01886

Subject: Structural Analysis Report

Carrier Designation: VERIZON
Site Name: BURLINGTON_CT

Site Data: 719 George Washington Turnpike, Burlington, CT 06013
Latitude 41° 46' 0.56" N, Longitude 72° 57' 41.43" W
179 Foot - Monopole Tower

Dear Mr. Butka,

Lamson Engineering Corporation 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 NEXIUS 'Statement of Work' and the terms of NEXIUS Purchase Order Number PO-2400547.

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:

LC1: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA-222-G standard and 2016 Connecticut State Building Code based upon a wind speed of 93 mph 3-second gust, exposure category C with topographic category 1 and crest height of 0 feet.

All modifications and 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 Lamson Engineering Corporation appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:



Kin Lam
Principal
Lamson Engineering Corporation
437 Cherry Street, Newton, MA 02465
(617)558-0101



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4.1) Recommendations

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tnxTower Output

6) APPENDIX B

Additional Calculations

1) INTRODUCTION

This tower is a 179 ft Monopole tower located in Burlington, Connecticut.

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 93 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
160.0	160.0	3	alcatel lucent	4T4R B5 RRH	2	1 5/8 Hybrid Cable	2
		3	alcatel lucent	B66A RRH 4X45			
		3	alcatel lucent	RRH2x60-700			
		6	commscope	JAAH-65B-R3B w/ Mount Pipe			
		2	raycap	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			
191.0	191.0	3	misc	Omni 2"x20'	1	1 5/8	1			
179.0	179.0	3	commscope	LNx-6515DS-VTM w/ Mount Pipe	6	1 5/8	1			
		3	Ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1 1/4				
		3	Ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe						
177.0	177.0	1	Pirod	Low Profile Platform			1			
170.0	170.0	6	ericsson	Ericsson RRUS 11	12	1 5/8				
		1	pole mounts	Valmont Light Duty Tri-Bracket (1)						
		6	powerwave	LGP13519 diplexer						
		3	powerwave	P65-17-XLH-RR w/mount pipe				1	1 5/8 Fiber	1
		6	powerwave	Powerwave 7770 w/mount pipe				2	DC Power	
		6	powerwave	TMA LGP21401						
		1	raycap	DC6-48-60-18-8F						
168.0	168.0	1	pirod	Low Profile Platform			1			
160.0	160.0	2	celwave	APL866513 w/Mount Pipe	12	1 5/8	1			
		4	celwave	APL868013 w/Mount Pipe						

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (In)	Note
		1	pirod	Low Profile Platform			
138.5	138.5	1	misc	20'-4 Bay Dipole	1	1 5/8	1
		1	tower mounts	3' Side Mount Standoff			
132.5	132.5	1	misc	3' Yagi antenna	1	1 5/8	1
		1	misc	Omni 2"x8'			
		1	tower mounts	3' Side Mount Standoff	1	1/2	
112.5	112.5	1	misc	10' Dipole	1	1 5/8	1
		1	tower mounts	3' Side Mount Standoff			

- Notes:
 1) Existing Equipment
 2) Proposed Equipment
 3) Reserved Equipment

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)
191	191	3	misc	Omni 2"x20'	1	1 5/8
179	179	3	commscope	LNx-6515DS-VTM w/ Mount Pipe	6	1 5/8
		3	Ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	Ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	1	1 1/4
177	177	1	Pirod	Low Profile Platform		
170	170	6	ericsson	Ericsson RRUS 11	12	1 5/8
		1	pole mounts	Valmont Light Duty Tri-Bracket (1)		
		6	powerwave	LGP13519 diplexer		
		3	powerwave	P65-17-XLH-RR w/mount pipe	1	1 5/8 Fiber
		6	powerwave	Powerwave 7770 w/mount pipe	2	DC Power
		6	powerwave	TMA LGP21401		
168	168	1	raycap	DC6-48-60-18-8F		
160	160	1	pirod	Low Profile Platform		
		3	alcatel lucent	4T4R B5 RRH	12	1 5/8
		3	alcatel lucent	B66A RRH 4X45		
		3	alcatel lucent	RRH2x60-700		
		2	celwave	APL866513 w/Mount Pipe	2	1 5/8 Hybrid Cable
		4	celwave	APL868013 w/Mount Pipe		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
1	pirod	Low Profile Platform				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		2	raycap	RC2DC-3315-PF-48		
138.5	138.5	1	misc	20'-4 Bay Dipole	1	1 5/8
		1	tower mounts	3' Side Mount Standoff		
132.5	132.5	1	Misc	3' Yagi antenna	1	1 5/8
		1	Misc	Omni 2"x8'		
		1	tower mounts	3' Side Mount Standoff	1	1/2
112.5	112.5	1	Misc	10' Dipole	1	1 5/8
		1	tower mounts	3' Side Mount Standoff		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Drawing LE-1 8/9/2017	NEXIUS		NEXIUS
RFDS 7/12/2017	VERIZON		NEXIUS
Structural Analysis Report 4/17/2017	CENTEK Engineering		NEXIUS
Structural Analysis Report 2/17/2017	DESTEK Engineering		NEXIUS

3.1) Analysis Method

tnxTower (version 7.0.7.0), 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) All connections of the members are assumed to have been designed to meet or exceed the load carrying capacity of the connected members.

This analysis may be affected if any assumptions are not valid or have been made in error. Lamson Engineering Corporation 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 (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
L1	179 - 139.5	Pole	TP28.0455x19.5x0.1875	1	-9474	1062100.00	88.6	Pass
L2	139.5 - 93.4	Pole	TP37.5377x26.8051x0.375	2	-19465	3187780.00	66.8	Pass
L3	93.4 - 46.31	Pole	TP47.123x35.6737x0.375	3	-32641	3800330.00	81.6	Pass
L4	46.31 - 0	Pole	TP56.25x44.9739x0.375	4	-50871	4334660.00	93.5	Pass
							Summary	
						Pole (L4)	93.5	Pass
						Rating =	93.5	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
	Anchor Rods	0	75.2	Pass
	Base Plate	0	97.2	Pass
	Base Foundation		72.7	Pass

Structure Rating (max from all components) =	97.2%
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4.1) Recommendations

The tower and foundation have sufficient capacity to carry the existing, reserved and proposed loadings. No modifications are required at this time.

APPENDIX A
TNX TOWER OUTPUT

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Omni 2"x20'	191	(2) LGP13519 diplexer	170
Omni 2"x20'	191	(2) LGP13519 diplexer	170
Omni 2"x20'	191	PIROD 13' Low Profile Platform (T-Mobile)	168
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	APL866513 w/Mount Pipe (VERIZON - existing)	160
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	APL866513 w/Mount Pipe	160
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	APL866013 w/Mount Pipe	160
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	APL866013 w/Mount Pipe	160
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	179	APL868013 w/Mount Pipe	160
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	179	APL868013 w/Mount Pipe	160
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	179	PIROD 13' Low Profile Platform	160
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	179	JAHH-65B-R3B w/ Mount Pipe (VERIZON - proposed)	160
LNX-6515DS-VTM w/ Mount Pipe	179	JAHH-65B-R3B w/ Mount Pipe	160
LNX-6515DS-VTM w/ Mount Pipe	179	JAHH-65B-R3B w/ Mount Pipe	160
LNX-6515DS-VTM w/ Mount Pipe	179	JAHH-65B-R3B w/ Mount Pipe	160
PIROD 13' Low Profile Platform (T-Mobile)	177	JAHH-65B-R3B w/ Mount Pipe	160
(2) Ericsson RRUS 11 (ATI)	170	JAHH-65B-R3B w/ Mount Pipe	160
(2) Ericsson RRUS 11	170	RRH2x60-700	160
(2) Ericsson RRUS 11	170	RRH2x60-700	160
DC6-48-60-18-8F	170	RRH2x60-700	160
Valmont Light Duty Tri-Bracket (1)	170	B66A RRH 4X45	160
Powerwave 7770 w/mount pipe	170	B66A RRH 4X45	160
P65-17-XLH-RR w/mount pipe	170	B66A RRH 4X45	160
Powerwave 7770 w/mount pipe	170	4T4R B5 RRH	160
Powerwave 7770 w/mount pipe	170	4T4R B5 RRH	160
Powerwave 7770 w/mount pipe	170	4T4R B5 RRH	160
P65-17-XLH-RR w/mount pipe	170	RC2DC-3315-PF-48	160
Powerwave 7770 w/mount pipe	170	RC2DC-3315-PF-48	160
Powerwave 7770 w/mount pipe	170	3' Side Mount Standoff	138.5
P65-17-XLH-RR w/mount pipe	170	20'-4 Bay Dipole	138.5
Powerwave 7770 w/mount pipe	170	Omni 2"x8'	132.5
(2) TMA LGP21401	170	3' Yagi antenna	132.5
(2) TMA LGP21401	170	3' Side Mount Standoff	132.5
(2) TMA LGP21401	170	3' Side Mount Standoff	112.5
(2) LGP13519 diplexer	170	10' Dipole	112.5

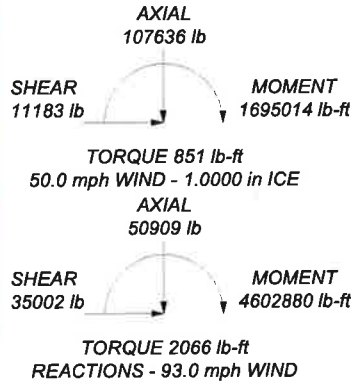
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

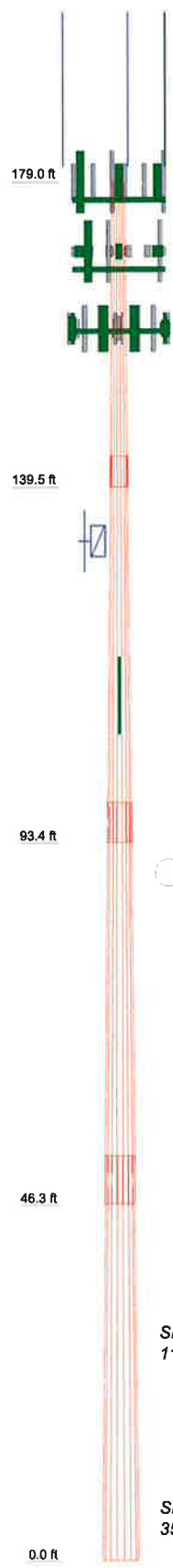
TOWER DESIGN NOTES

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 93.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 93.5%

ALL REACTIONS ARE FACTORED



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	39.50	18	0.1875	4.00	19.5000	28.0455	A572-65	1886.6
2	50.10	18	0.3750	5.20	26.8051	37.5377	A572-65	6451.9
3	52.29	18	0.3750	6.39	35.6737	47.1230	A572-65	8688.1
4	52.70	18	0.3750	44.9739	56.2500		A572-65	10722.8
5	179.0						A572-65	27749.4



Lamson Engineering Corporation 437 Cherry Street Newton, MA 02465 Phone: (617) 558-0101 FAX:	Job: BURLINGTON CT
	Project: 179 ft Monopole
	Client: VERIZON Drawn by: KL App'd:
	Code: TIA-222-G Date: 08/15/17 Scale:
	Path: NTS Dwg No. <small>C:\Burlington CT\BURLINGTON CT.dwg</small>

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 93.0 mph.

Structure Class III.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56.0 pcf.

A wind speed of 50.0 mph is used in combination with ice.

Temperature drop of 50.0 °F.

Deflections calculated using a wind speed of 60.0 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.

Tapered Pole Section Geometry

Section	Elevation <i>ft</i>	Section Length <i>ft</i>	Splice Length <i>ft</i>	Number of Sides	Top Diameter <i>in</i>	Bottom Diameter <i>in</i>	Wall Thickness <i>in</i>	Bend Radius <i>in</i>	Pole Grade
L1	179.00-139.50	39.50	4.00	18	19.5000	28.0455	0.1875	0.7500	A572-65 (65 ksi)
L2	139.50-93.40	50.10	5.20	18	26.8051	37.5377	0.3750	1.5000	A572-65 (65 ksi)
L3	93.40-46.31	52.29	6.39	18	35.6737	47.1230	0.3750	1.5000	A572-65 (65 ksi)
L4	46.31-0.00	52.70		18	44.9739	56.2500	0.3750	1.5000	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement <i>ft</i>	Total Number	<i>C_{AA}</i>	Weight	
						<i>ft²/ft</i>	<i>plf</i>	
1 5/8	A	No	Inside Pole	179.00 - 3.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04
1 5/8	A	No	Inside Pole	138.50 - 3.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04
1 5/8	A	No	Inside Pole	132.50 - 3.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04
1/2	A	No	Inside Pole	128.50 - 3.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.25 0.25 0.25
1 5/8	A	No	Inside Pole	113.00 - 3.00	1	No Ice 1/2" Ice	0.00 0.00	1.04 1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		
						1" Ice	1/2" Ice	Weight
1 5/8	B	No	Inside Pole	179.00 - 3.00	6	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
HB114-U6S12-120-L1	B	No	Inside Pole	179.00 - 3.00	1	No Ice	0.00	1.70
						1/2" Ice	0.00	1.70
						1" Ice	0.00	1.70
1 5/8	A	No	Inside Pole	170.00 - 3.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
FB-L98B-002	A	No	Inside Pole	170.00 - 3.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
WR-VG122ST-BRDA	A	No	Inside Pole	170.00 - 3.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
1 5/8	C	No	Inside Pole	160.00 - 3.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1 5/8 Fiber Cable	C	No	Inside Pole	160.00 - 3.00	2	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA}		Weight lb
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	
Omni 2"x20'	A	From Face	4.00	0.0000	191.00	No Ice	4.00	4.00	50.00
						1/2" Ice	6.03	6.03	80.77
						1" Ice	8.07	8.07	124.12
Omni 2"x20'	B	From Face	4.00	0.0000	191.00	No Ice	4.00	4.00	50.00
						1/2" Ice	6.03	6.03	80.77
						1" Ice	8.07	8.07	124.12
Omni 2"x20'	C	From Face	4.00	0.0000	191.00	No Ice	4.00	4.00	50.00
						1/2" Ice	6.03	6.03	80.77
						1" Ice	8.07	8.07	124.12
20'-4 Bay Dipole	C	From Face	4.00	0.0000	138.50	No Ice	4.75	4.75	50.00
						1/2" Ice	6.25	6.25	80.00
						1" Ice	7.75	7.75	110.00
3' Side Mount Standoff	C	From Face	2.00	0.0000	138.50	No Ice	1.50	1.50	45.00
						1/2" Ice	2.20	2.20	70.00
						1" Ice	2.90	2.90	95.00
Omni 2"x8'	A	From Face	4.00	0.0000	132.50	No Ice	1.60	1.60	35.00
						1/2" Ice	2.42	2.42	47.45
						1" Ice	3.24	3.24	65.14
3' Yagi antenna	A	From Face	4.00	0.0000	132.50	No Ice	0.60	0.30	10.00
						1/2" Ice	0.81	0.41	36.35
						1" Ice	1.04	0.54	66.52
3' Side Mount Standoff	A	From Face	2.00	0.0000	132.50	No Ice	1.50	1.50	45.00
						1/2" Ice	2.20	2.20	70.00
						1" Ice	2.90	2.90	95.00
10' Dipole	C	From Face	4.00	0.0000	112.50	No Ice	3.38	3.38	25.00
						1/2" Ice	4.97	4.97	53.13
						1" Ice	5.57	5.57	87.92
3' Side Mount Standoff	C	From Face	2.00	0.0000	112.50	No Ice	1.50	1.50	45.00
						1/2" Ice	2.20	2.20	70.00
						1" Ice	2.90	2.90	95.00
PiROD 13' Low Profile	A	None		0.0000	177.00	No Ice	15.70	15.70	1300.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
						ft ²	ft ²	lb	
Platform						1/2" Ice	20.10	20.10	1765.00
(T-Mobile)						1" Ice	24.50	24.50	2230.00
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	3.00	0.0000	179.00	No Ice	6.37	5.78	104.90
			-5.00			1/2" Ice	6.85	6.63	162.69
			0.00			1" Ice	7.30	7.35	227.28
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	3.00	0.0000	179.00	No Ice	6.37	5.78	104.90
			-5.00			1/2" Ice	6.85	6.63	162.69
			0.00			1" Ice	7.30	7.35	227.28
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	3.00	0.0000	179.00	No Ice	6.37	5.78	104.90
			-5.00			1/2" Ice	6.85	6.63	162.69
			0.00			1" Ice	7.30	7.35	227.28
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	3.00	0.0000	179.00	No Ice	6.43	5.75	112.30
			0.00			1/2" Ice	6.91	6.61	170.21
			0.00			1" Ice	7.37	7.33	234.94
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	3.00	0.0000	179.00	No Ice	6.43	5.75	112.30
			0.00			1/2" Ice	6.91	6.61	170.21
			0.00			1" Ice	7.37	7.33	234.94
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	3.00	0.0000	179.00	No Ice	6.43	5.75	112.30
			0.00			1/2" Ice	6.91	6.61	170.21
			0.00			1" Ice	7.37	7.33	234.94
LNX-6515DS-VTM w/ Mount Pipe	A	From Face	3.00	0.0000	179.00	No Ice	11.67	9.83	83.15
			5.00			1/2" Ice	12.39	11.35	172.72
			0.00			1" Ice	13.12	12.90	272.25
LNX-6515DS-VTM w/ Mount Pipe	B	From Face	3.00	0.0000	179.00	No Ice	11.67	9.83	83.15
			5.00			1/2" Ice	12.39	11.35	172.72
			0.00			1" Ice	13.12	12.90	272.25
LNX-6515DS-VTM w/ Mount Pipe	C	From Face	3.00	0.0000	179.00	No Ice	11.67	9.83	83.15
			5.00			1/2" Ice	12.39	11.35	172.72
			0.00			1" Ice	13.12	12.90	272.25
(2) Ericsson RRUS 11 (AT&T)	A	From Face	0.50	0.0000	170.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
(2) Ericsson RRUS 11	B	From Face	0.50	0.0000	170.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
(2) Ericsson RRUS 11	C	From Face	0.50	0.0000	170.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
DC6-48-60-18-8F	C	From Face	0.50	0.0000	170.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
Valmont Light Duty Tri-Bracket (1)	C	None		0.0000	170.00	No Ice	1.76	1.76	54.00
						1/2" Ice	2.08	2.08	70.00
						1" Ice	2.40	2.40	86.00
Powerwave 7770 w/mount pipe	A	From Face	3.00	0.0000	170.00	No Ice	5.65	4.10	57.25
			6.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
P65-17-XLH-RR w/mount pipe	A	From Face	3.00	0.0000	170.00	No Ice	11.75	9.39	122.11
			4.00			1/2" Ice	12.47	10.90	212.11
			0.00			1" Ice	13.18	12.24	313.12
Powerwave 7770 w/mount pipe	A	From Face	3.00	0.0000	170.00	No Ice	5.65	4.10	57.25
			-6.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	B	From Face	3.00	0.0000	170.00	No Ice	5.65	4.10	57.25
			6.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
P65-17-XLH-RR w/mount pipe	B	From Face	3.00	0.0000	170.00	No Ice	11.75	9.39	122.11
			4.00			1/2" Ice	12.47	10.90	212.11
			0.00			1" Ice	13.18	12.24	313.12
Powerwave 7770 w/mount pipe	B	From Face	3.00	0.0000	170.00	No Ice	5.65	4.10	57.25
			-6.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	C	From Face	3.00	0.0000	170.00	No Ice	5.65	4.10	57.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
pipe			6.00			1/2" Ice 6.03	4.75	103.17
			0.00			1" Ice 6.42	5.42	155.38
P65-17-XLH-RR w/mount pipe	C	From Face	3.00	0.0000	170.00	No Ice 11.75	9.39	122.11
			4.00			1/2" Ice 12.47	10.90	212.11
			0.00			1" Ice 13.18	12.24	313.12
Powerwave 7770 w/mount pipe	C	From Face	3.00	0.0000	170.00	No Ice 5.65	4.10	57.25
			-6.00			1/2" Ice 6.03	4.75	103.17
			0.00			1" Ice 6.42	5.42	155.38
(2) TMA LGP21401	A	From Face	3.00	0.0000	170.00	No Ice 1.05	0.38	14.10
			0.00			1/2" Ice 1.18	0.47	21.29
			0.00			1" Ice 1.32	0.57	30.37
(2) TMA LGP21401	B	From Face	3.00	0.0000	170.00	No Ice 1.05	0.38	14.10
			0.00			1/2" Ice 1.18	0.47	21.29
			0.00			1" Ice 1.32	0.57	30.37
(2) TMA LGP21401	C	From Face	3.00	0.0000	170.00	No Ice 1.05	0.38	14.10
			0.00			1/2" Ice 1.18	0.47	21.29
			0.00			1" Ice 1.32	0.57	30.37
(2) LGP13519 diplexer	A	From Face	3.00	0.0000	170.00	No Ice 1.05	0.38	14.10
			0.00			1/2" Ice 1.18	0.47	21.29
			0.00			1" Ice 1.32	0.57	30.37
(2) LGP13519 diplexer	B	From Face	3.00	0.0000	170.00	No Ice 1.05	0.38	14.10
			0.00			1/2" Ice 1.18	0.47	21.29
			0.00			1" Ice 1.32	0.57	30.37
(2) LGP13519 diplexer	C	From Face	3.00	0.0000	170.00	No Ice 1.05	0.38	14.10
			0.00			1/2" Ice 1.18	0.47	21.29
			0.00			1" Ice 1.32	0.57	30.37
PiROD 13' Low Profile Platform (T-Mobile)	A	None		0.0000	168.00	No Ice 15.70	15.70	1300.00
						1/2" Ice 20.10	20.10	1765.00
						1" Ice 24.50	24.50	2230.00
APL866513 w/Mount Pipe (VERIZON - existing)	A	From Face	3.00	0.0000	160.00	No Ice 4.76	5.28	41.25
			6.00			1/2" Ice 5.39	6.31	91.03
			0.00			1" Ice 5.89	7.06	147.11
APL866513 w/Mount Pipe	A	From Face	3.00	0.0000	160.00	No Ice 4.76	5.28	41.25
			-6.00			1/2" Ice 5.39	6.31	91.03
			0.00			1" Ice 5.89	7.06	147.11
APL868013 w/Mount Pipe	B	From Face	3.00	0.0000	160.00	No Ice 3.58	5.28	31.87
			6.00			1/2" Ice 4.20	6.31	75.74
			0.00			1" Ice 4.70	7.06	125.70
APL868013 w/Mount Pipe	B	From Face	3.00	0.0000	160.00	No Ice 3.58	5.28	31.87
			-6.00			1/2" Ice 4.20	6.31	75.74
			0.00			1" Ice 4.70	7.06	125.70
APL868013 w/Mount Pipe	C	From Face	3.00	0.0000	160.00	No Ice 3.58	5.28	31.87
			6.00			1/2" Ice 4.20	6.31	75.74
			0.00			1" Ice 4.70	7.06	125.70
APL868013 w/Mount Pipe	C	From Face	3.00	0.0000	160.00	No Ice 3.58	5.28	31.87
			-6.00			1/2" Ice 4.20	6.31	75.74
			0.00			1" Ice 4.70	7.06	125.70
PiROD 13' Low Profile Platform	A	None		0.0000	160.00	No Ice 15.70	15.70	1300.00
						1/2" Ice 20.10	20.10	1765.00
						1" Ice 24.50	24.50	2230.00
JAHH-65B-R3B w/ Mount Pipe (VERIZON - proposed)	A	From Face	3.00	0.0000	160.00	No Ice 9.11	7.41	85.20
			2.00			1/2" Ice 9.58	8.37	159.17
			0.00			1" Ice 10.05	9.20	241.10
JAHH-65B-R3B w/ Mount Pipe	A	From Face	3.00	0.0000	160.00	No Ice 9.11	7.41	85.20
			-2.00			1/2" Ice 9.58	8.37	159.17
			0.00			1" Ice 10.05	9.20	241.10
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.00	0.0000	160.00	No Ice 9.11	7.41	85.20
			2.00			1/2" Ice 9.58	8.37	159.17
			0.00			1" Ice 10.05	9.20	241.10
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.00	0.0000	160.00	No Ice 9.11	7.41	85.20
			-2.00			1/2" Ice 9.58	8.37	159.17
			0.00			1" Ice 10.05	9.20	241.10
JAHH-65B-R3B w/ Mount	C	From Face	3.00	0.0000	160.00	No Ice 9.11	7.41	85.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
Pipe			2.00			1/2" Ice 9.58	8.37	159.17
			0.00			1" Ice 10.05	9.20	241.10
JAHH-65B-R3B w/ Mount Pipe	C	From Face	3.00	0.0000	160.00	No Ice 9.11	7.41	85.20
			-2.00			1/2" Ice 9.58	8.37	159.17
			0.00			1" Ice 10.05	9.20	241.10
RRH2x60-700	A	From Face	2.50	0.0000	160.00	No Ice 3.50	1.82	60.00
			6.00			1/2" Ice 3.76	2.05	82.72
			0.00			1" Ice 4.03	2.29	109.06
RRH2x60-700	B	From Face	2.50	0.0000	160.00	No Ice 3.50	1.82	60.00
			6.00			1/2" Ice 3.76	2.05	82.72
			0.00			1" Ice 4.03	2.29	109.06
RRH2x60-700	C	From Face	2.50	0.0000	160.00	No Ice 3.50	1.82	60.00
			6.00			1/2" Ice 3.76	2.05	82.72
			0.00			1" Ice 4.03	2.29	109.06
B66A RRH 4X45	A	From Face	2.50	0.0000	160.00	No Ice 2.66	1.59	64.00
			-6.00			1/2" Ice 2.88	1.77	84.35
			0.00			1" Ice 3.10	1.96	107.85
B66A RRH 4X45	B	From Face	2.50	0.0000	160.00	No Ice 2.66	1.59	64.00
			-6.00			1/2" Ice 2.88	1.77	84.35
			0.00			1" Ice 3.10	1.96	107.85
B66A RRH 4X45	C	From Face	2.50	0.0000	160.00	No Ice 2.66	1.59	64.00
			-6.00			1/2" Ice 2.88	1.77	84.35
			0.00			1" Ice 3.10	1.96	107.85
4T4R B5 RRH	A	From Face	2.50	0.0000	160.00	No Ice 2.43	0.79	55.00
			-6.00			1/2" Ice 2.63	0.91	71.54
			0.00			1" Ice 2.83	1.05	90.83
4T4R B5 RRH	B	From Face	2.50	0.0000	160.00	No Ice 2.43	0.79	55.00
			-6.00			1/2" Ice 2.63	0.91	71.54
			0.00			1" Ice 2.83	1.05	90.83
4T4R B5 RRH	C	From Face	2.50	0.0000	160.00	No Ice 2.43	0.79	55.00
			-6.00			1/2" Ice 2.63	0.91	71.54
			0.00			1" Ice 2.83	1.05	90.83
RC2DC-3315-PF-48	A	From Face	2.00	0.0000	160.00	No Ice 4.59	2.52	32.00
			-6.00			1/2" Ice 4.86	2.73	67.82
			0.00			1" Ice 5.14	2.95	107.61
RC2DC-3315-PF-48	B	From Face	2.00	0.0000	160.00	No Ice 4.59	2.52	32.00
			-6.00			1/2" Ice 4.86	2.73	67.82
			0.00			1" Ice 5.14	2.95	107.61

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

Comb. No.	Description
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
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

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	42423.91	0.00	0.00	393.24	585.25	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	50908.69	-68.41	-34883.59	-4582345.27	12190.06	-508.36
0.9 Dead+1.6 Wind 0 deg - No Ice	38181.52	-68.41	-34883.59	-4510267.25	11792.07	-499.49
1.2 Dead+1.6 Wind 30 deg - No Ice	50908.69	17422.05	-30175.87	-3962711.28	-2287374.92	580.02
0.9 Dead+1.6 Wind 30 deg - No Ice	38181.52	17422.05	-30175.87	-3900393.31	-2251531.50	593.70
1.2 Dead+1.6 Wind 60 deg - No Ice	50908.69	30244.28	-17382.55	-2281058.69	-3973796.88	1512.73
0.9 Dead+1.6 Wind 60 deg - No Ice	38181.52	30244.28	-17382.55	-2245241.98	-3911372.40	1527.71
1.2 Dead+1.6 Wind 90 deg - No Ice	50908.69	34962.58	68.41	11891.82	-4595159.26	2043.99
0.9 Dead+1.6 Wind 90 deg - No Ice	38181.52	34962.58	68.41	11576.55	-4522942.92	2056.02
1.2 Dead+1.6 Wind 120 deg - No Ice	50908.69	30312.68	17501.04	2301716.24	-3985100.89	2031.51
0.9 Dead+1.6 Wind 120 deg - No Ice	38181.52	30312.68	17501.04	2265321.07	-3922489.45	2037.31
1.2 Dead+1.6 Wind 150 deg - No Ice	50908.69	17540.53	30244.28	3974981.91	-2307099.73	1474.82
0.9 Dead+1.6 Wind 150 deg - No Ice	38181.52	17540.53	30244.28	3912219.25	-2270926.43	1472.94

Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
No Ice						
1.2 Dead+1.6 Wind 180 deg - No Ice	50908.69	68.41	34883.59	4583356.82	-10649.17	519.14
0.9 Dead+1.6 Wind 180 deg - No Ice	38181.52	68.41	34883.60	4510990.09	-10668.49	510.03
1.2 Dead+1.6 Wind 210 deg - No Ice	50908.69	-17422.05	30175.87	3963703.53	2288942.92	-579.82
0.9 Dead+1.6 Wind 210 deg - No Ice	38181.52	-17422.05	30175.87	3901120.90	2252674.86	-593.63
1.2 Dead+1.6 Wind 240 deg - No Ice	50908.69	-30244.28	17382.55	2282017.62	3975361.42	-1523.51
0.9 Dead+1.6 Wind 240 deg - No Ice	38181.52	-30244.28	17382.55	2245945.36	3912513.49	-1538.19
1.2 Dead+1.6 Wind 270 deg - No Ice	50908.69	-34962.58	-68.41	-10946.85	4596693.22	-2054.63
0.9 Dead+1.6 Wind 270 deg - No Ice	38181.52	-34962.58	-68.41	-10883.54	4524061.93	-2066.46
1.2 Dead+1.6 Wind 300 deg - No Ice	50908.69	-30312.68	-17501.04	-2300752.02	3986607.72	-2031.30
0.9 Dead+1.6 Wind 300 deg - No Ice	38181.52	-30312.68	-17501.04	-2264614.26	3923588.63	-2037.24
1.2 Dead+1.6 Wind 330 deg - No Ice	50908.69	-17540.53	-30244.28	-3973984.38	2308610.01	-1464.15
0.9 Dead+1.6 Wind 330 deg - No Ice	38181.52	-17540.53	-30244.28	-3911488.24	2272027.87	-1462.43
1.2 Dead+1.0 Ice+1.0 Temp	107635.72	-0.11	0.02	2128.29	6630.63	0.72
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	107635.72	-13.57	-11160.35	-1682962.20	9461.70	-340.99
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	107635.72	5575.96	-9657.85	-1456112.52	-835050.41	96.16
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	107635.72	9671.41	-5568.13	-838287.54	-1453971.38	507.61
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	107635.72	11176.01	13.57	4751.08	-1681237.49	784.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	107635.72	9684.98	5591.62	847110.93	-1456546.92	850.87
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	107635.72	5599.45	9671.41	1463078.04	-839504.64	689.84
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	107635.72	13.56	11160.36	1687380.10	4336.29	343.81
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	107635.72	-5575.96	9657.85	1460511.39	848864.39	-94.55
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	107635.72	-9671.41	5568.13	842665.46	1467774.55	-507.62
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	107635.72	-11176.03	-13.57	-374.69	1695013.87	-783.83
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	107635.72	-9684.98	-5591.62	-842714.74	1470313.65	-849.20
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	107635.72	-5599.46	-9671.41	-1458660.90	853282.18	-687.13
Dead+Wind 0 deg - Service	42423.91	-13.85	-7060.50	-920771.10	2936.72	-105.01
Dead+Wind 30 deg - Service	42423.91	3526.25	-6107.65	-796217.23	-459298.68	121.92
Dead+Wind 60 deg - Service	42423.91	6121.49	-3518.26	-458192.40	-798293.34	316.18
Dead+Wind 90 deg - Service	42423.91	7076.49	13.85	2718.23	-923202.50	425.90
Dead+Wind 120 deg - Service	42423.91	6135.34	3542.24	463013.96	-800587.76	421.65
Dead+Wind 150 deg - Service	42423.91	3550.23	6121.49	799359.68	-463273.36	304.43
Dead+Wind 180 deg - Service	42423.91	13.85	7060.50	921620.66	-1652.43	105.48
Dead+Wind 210 deg - Service	42423.91	-3526.25	6107.65	797066.15	460583.93	-121.88
Dead+Wind 240 deg - Service	42423.91	-6121.49	3518.26	459040.17	799578.48	-316.59
Dead+Wind 270 deg - Service	42423.91	-7076.49	-13.85	-1870.93	924486.55	-426.30
Dead+Wind 300 deg - Service	42423.91	-6135.34	-3542.24	-462166.01	801870.92	-421.61
Dead+Wind 330 deg - Service	42423.91	-3550.23	-6121.49	-798510.59	464556.63	-303.96

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	179 - 139.5	37.9375	49	2.0130	0.0020
L2	143.5 - 93.4	23.9559	49	1.6280	0.0020
L3	98.6 - 46.31	11.0499	49	1.0902	0.0011
L4	52.7 - 0	3.1002	49	0.5462	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
191.00	Omni 2"x20'	49	37.9375	2.0130	0.0020	25418
179.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	49	37.9375	2.0130	0.0020	25418
177.00	PiROD 13' Low Profile Platform	49	37.1102	1.9918	0.0020	25418
170.00	(2) Ericsson RRUS 11	49	34.2256	1.9176	0.0021	14121
168.00	PiROD 13' Low Profile Platform	49	33.4077	1.8963	0.0021	11553
160.00	APL866513 w/Mount Pipe	49	30.1851	1.8104	0.0021	6688
138.50	20'-4 Bay Dipole	49	22.2268	1.5707	0.0019	3722
132.50	Omni 2"x8'	49	20.2581	1.5007	0.0018	3909
112.50	10' Dipole	49	14.4632	1.2603	0.0014	4702

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	θP_{allow} lb	% Capacity	Pass Fail
L1	179 - 139.5	Pole	TP28.0455x19.5x0.1875	1	-9474.33	1062100.00	88.6	Pass
L2	139.5 - 93.4	Pole	TP37.5377x26.8051x0.375	2	-19464.90	3187780.00	66.8	Pass
L3	93.4 - 46.31	Pole	TP47.123x35.6737x0.375	3	-32640.70	3800330.00	81.6	Pass
L4	46.31 - 0	Pole	TP56.25x44.9739x0.375	4	-50871.20	4334660.00	93.5	Pass

Summary ELC: Load Case 1

Pole (L4) 93.5 Pass
 Rating = 93.5 Pass

APPENDIX B
ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: 0
Site Name: BURLINGTON CT
App #: 0
Pole Manufacturer: Other

Anchor Rod Data

Qty:	18	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65	in

Plate Data

Diam:	71	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	9.92	in

Stiffener Data (Welding at both sides)

Config:	0	*
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:	56.25	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions

Mu:	4603	ft-kips
Axial, Pu:	51	kips
Shear, Vu:	35	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: **AISC LRFD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod (Cu+ Vu/η): 195.6 Kips
 Allowable Axial, Φ*Fu*Anet: 260.0 Kips
 Anchor Rod Stress Ratio: 75.2% **Pass**

Rigid
AISC LRFD
φ*Tn

Base Plate Results

Base Plate Stress: 52.5 ksi
 Allowable Plate Stress: 54.0 ksi
 Base Plate Stress Ratio: 97.2% **Pass**

Flexural Check

Rigid
AISC LRFD
φ*Fy
Y.L. Length: 32.57

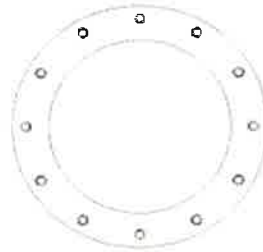
n/a

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



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** 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 1.1.103.14128 - Phase 1

BU: _____
 Site Name: BURLINGTON CT
 App Number: _____
 Work Order: _____

Monopole Drilled Pier

Input

Criteria

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

Forces

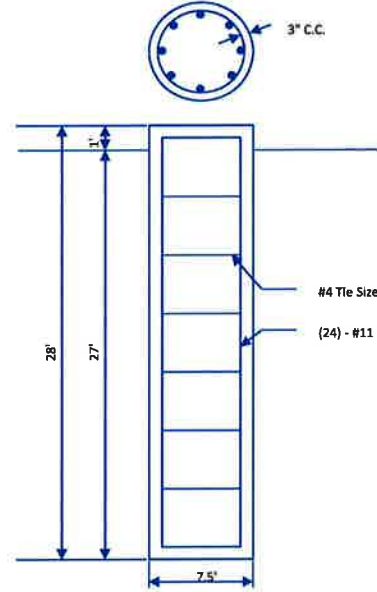
Compression: 51 kips
 Shear: 35 kips
 Moment: 4603 k-ft
 Swelling Force: 0 kips

Foundation Dimensions

Pier Diameter: 7.5 ft
 Ext. above grade: 1 ft
 Depth below grade: 27 ft

Material Properties

Number of Rebar: 24
 Rebar Size: 11
 Tie Size: 4
 Rebar tensile strength: 60 ksi
 Concrete Strength: 4000 psi
 Ultimate Concrete Strain: 0.003 in/in
 Clear Cover to Ties: 3 in



Soil Profile: Profile 1

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	3.33	0	3.33	130		0			0	
2	23.67	3.33	27	130		34			3	

Analysis Results

Soil Lateral Capacity
 Depth to Zero Shear: 5.71 ft
 Max Moment, Mu: 4782.33 k-ft
 Soil Safety Factor: 3.60
 Safety Factor Req'd: 1.33
RATING: 37.0%

Soil Axial Capacity
 Skin Friction (k): 333.73 kips
 End Bearing (k): 99.40 kips
 Comp. Capacity (k), φCn: 433.13 kips
 Comp. (k), Cu: 51.00 kips
RATING: 11.8%

Concrete/Steel Check

Mu (from soil analysis) 4782.33 k-ft
 φMn 6579.49 k-ft
RATING: 72.7%

rho provided 0.59
 rho required 0.33 OK

Rebar Spacing 9.27
 Spacing required 22.56 OK

Dev. Length required 21.04
 Dev. Length provided 53.51 OK

Overall Foundation Rating: 72.7%

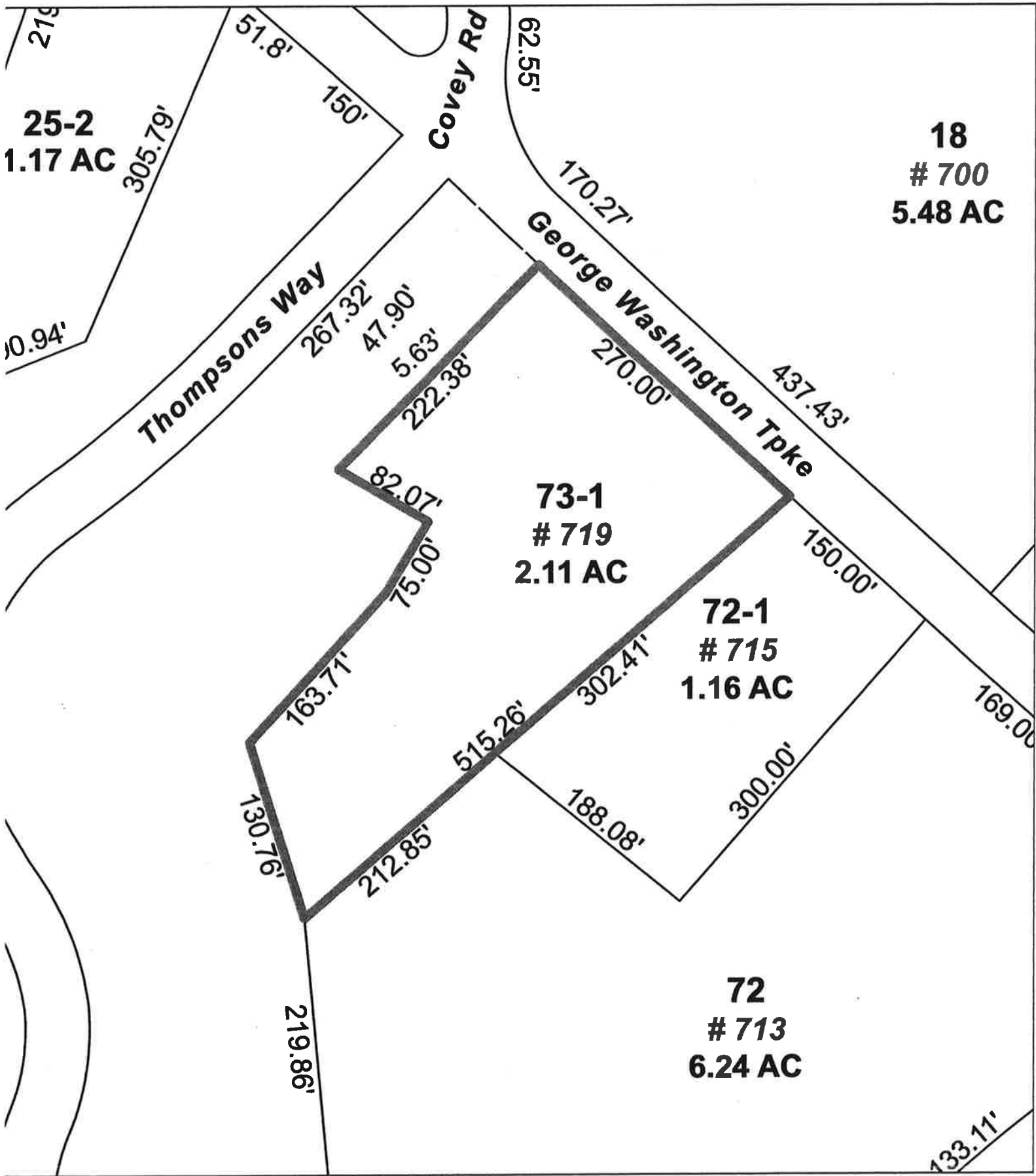
ATTACHMENT 4



Town of Burlington, Connecticut. Assessment Parcel Map

Map-Block-Lot 4-08-73-1

Address: 719 GEO WASHINGTON TPKE



1 inch = 100 feet

N

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Burlington and its mapping.



Property Information

Property Location	719 GEO WASHINGTON TPKE
Owner	BURLINGTON TOWN OF
Co-Owner	
Mailing Address	200 SPIELMAN HWY BURLINGTON CT 06013
Land Use	9032 Mun Fire
Land Class	E
Zoning Code	CB
Census Tract	4101

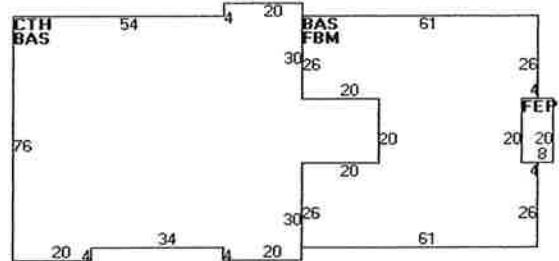
Neighborhood	4500
Acreage	2.11
Utilities	Well,Septic
Lot Setting/Desc	Rural Level

Additional Info	
-----------------	--

Photo



Sketch



Primary Construction Details

Year Built	1987
Stories	1
Building Style	Fire Station
Building Use	Ind/Com
Building Condition	Average +20
Floors	Concrete
Total Rooms	

Bedrooms	
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable
Roof Cover	Asphalt

Exterior Walls	Vinyl Siding
Interior Walls	Drywall
Heating Type	Hot Water
Heating Fuel	Oil
AC Type	None
Gross Bldg Area	19920
Total Living Area	9880



Town of Burlington, CT

Property Listing Report

Map Block Lot

4-08-73-1

Account

00037000

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	977900	684530
Extras	27100	18970
Improvements	1044600	731220
Outbuildings	39600	27720
Land	159200	111440
Total	1203800	842660

Outbuilding and Extra Items

Type	Description
Fram Shedw/Ele	400.00 S.F.
Open Porch	1040.00 S.F.
Air Condition	8500.00 UNITS
Paving-Asphalt	10000.00 S.F.
Light w/Pole	5.00 UNITS

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Basement, Finished	3912	0
First Floor	9880	9880
Cathedral	5968	0
Porch, Enclosed	160	0
Total Area	19920	9880

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BURLINGTON TOWN OF	00091/0528		0

ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

TOTAL NO.
of Pieces Listed by Sender

2

TOTAL NO.
of Pieces Received at Post Office™

2

Affix Stamp Here
Postmark with Date of Receipt.

neopost®
10/18/2018
US POSTAGE \$002.38
ZIP 06103
041L12203360

Postmaster, per (name of receiving employee)

USPS® Tracking Number
Firm-specific Identifier

Address
(Name, Street, City, State, and ZIP Code™)

1. Theodore Shafer, First Selectman
Town of Burlington
200 Spielman Highway
Burlington, CT 06013

2. Abby Conroy, Zoning Enforcement Officer
Town of Burlington
200 Spielman Highway
Burlington, CT 06013



Postage

Fee

Special Handling

Parcel Airlift

1.

2.

3.

4.

5.

6.