Robinson+Cole

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Also admitted in Massachusetts

June 14, 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**
1919 Boston Post Road, Guilford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) antennas at the 118-foot level of an existing 149-foot tower at 1919 Boston Post Road in Guilford, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 1998. Cellco now intends to remove nine (9) of its existing antennas and install six (6) new antennas (three (3) model JAHH-65B-R3B, 700 MHz antennas and three (3) model JAHH-65B-R3B, 2100 MHz antennas) all at the same 118-foot level on the tower. Cellco also intends to replace three (3) remote radio heads ("RRHs") and install six (6) new RRHs and one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Matthew Hoey, Guilford's First Selectman; George Kral, Guilford's Town Planner; DDR Guilford LLC, the owner of the Property; and 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 structure. Cellco's new antennas and RRHs will be attached to its existing antenna platform at the 118-foot level of the 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 installation of replacement antennas and 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 cumulative General Power Density table for Cellco's modified facility is included in Attachment 2.

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

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

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property 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:
Matthew Hoey, First Selectman
George Kral, Town Planner
DDR Guilford LLC
Crown Castle
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

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

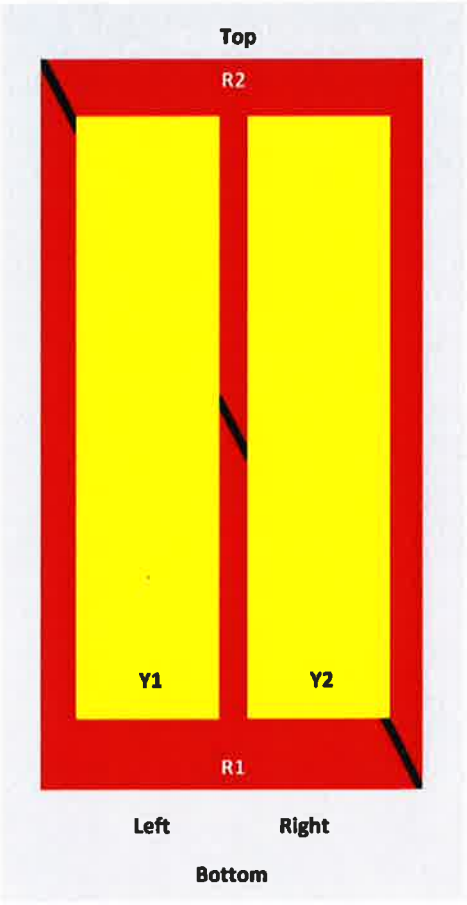
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Product Specifications

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	ANxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxx3
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
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

Product Specifications

JAHH-65B-R3B

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

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	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

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.

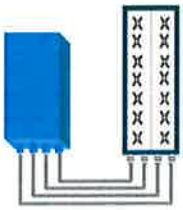
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the 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 (4x30 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.

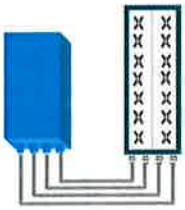
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

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 530W 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.

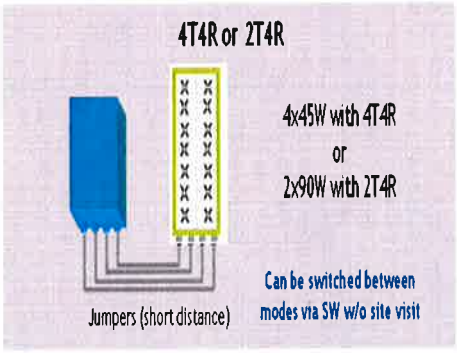
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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 5bW for 2A/20V 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

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
Mechanical Properties			
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)]	.068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Fiber Optic 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)		[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
Environmental			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

* This data is provisional and subject to change

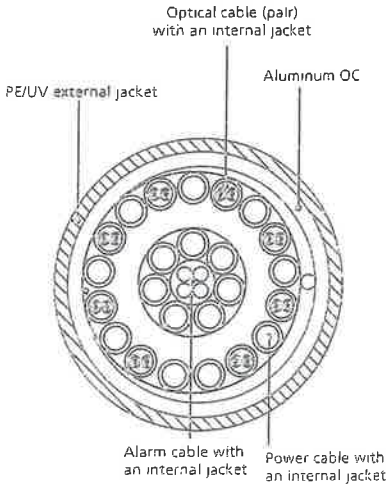


Figure 2: Construction Detail

ATTACHMENT 2

	General	Power	Density					
Site Name: Guilford 2 Relo								
Tower Height: 149Ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T-UMTS	2	414	108	850	0.0286	0.5667	0.51%	
*AT&T-PCS-UMTS	2	656	108	1900	0.0454	1.0000	0.45%	
*AT&T-LTE	2	414	108	850	0.0286	0.5667	0.51%	
*AT&T-PCS-LTE	2	2010	108	1900	0.1390	1.0000	1.39%	
*AT&T-GSM	2	1298	108	700	0.0897	0.4667	1.92%	
*Pocket (now MetroPCS)	3	631	103	2130	0.0724	1.0000	0.72%	
*T-Mobile	2	12	148	1950	0.0004	1.0000	0.00%	
*T-Mobile	2	12	148	2100	0.0004	1.0000	0.00%	
*T-Mobile	2	24	148	2100	0.0009	1.0000	0.01%	
*Nextel	9	100	140	851	0.0180	0.5673	0.32%	
*Sprint	3	348	130	1900	0.0244	1.0000	0.24%	
*Sprint	1	195	130	850	0.0046	0.5667	0.08%	
*Sprint	2	195	130	2500	0.0091	1.0000	0.09%	
VZW PCS	**1**	**2182**	**118**	**0.0563**	**1970**	**1.0000**	**5.63%**	
VZW Cellular	**3**	**394**	**118**	**0.0305**	**869**	**0.5793**	**5.27%**	
VZW Cellular	**1**	**3214**	**118**	**0.0830**	**2145**	**1.0000**	**8.30%**	
VZW 700	**1**	**945**	**118**	**0.0244**	**746**	**0.4973**	**4.91%**	
								30.36%
* Source: Siting Council								

ATTACHMENT 3

Date: **September 23, 2017**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6607

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
crown@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	117687
	Carrier Site Name:	Guilford 2 RELO CT
Crown Castle Designation:	**Crown Castle BU Number:**	876343
	Crown Castle Site Name:	Guilford West Stone Property
	Crown Castle JDE Job Number:	443987
	Crown Castle Work Order Number:	1459174
	Crown Castle Application Number:	394845 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	80750.133593
Site Data:	**1919 Boston Post Rd., Guilford, New Haven County, CT 06437**	
	Latitude *41° 18' 01.27"*, Longitude *-72° 42' 29.13"*	
	149 Foot - Monopole Tower	

Dear Charles McGuirt,

Tower Engineering Professionals 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 1084828, in accordance with application 394845, revision 0.

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:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code (2012 International Building Code) based upon an ultimate 3-second gust wind speed of 128 mph converted to a nominal 3-second gust wind speed of 99 mph per Section 1609.3.1 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 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* 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.

Structural analysis prepared by: Riley Eaton, P.E. / PRS

Respectfully submitted by:

William H. Martin, P.E., S.E.

9/23/17

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 149-ft monopole tower designed by Engineered Endeavors in June of 2008. The tower was originally designed for a wind speed of 115 mph per TIA-222-G for the appurtenances listed in Table 3. TEP did not visit the site. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a nominal 3-second gust wind speed of 99 mph with no ice, 50 mph with 0.75 inch ice thickness, and 60 mph under service loads with the following design criteria:

Type of Analysis: **Rigorous Structural Analysis**
Classification of Structure: **Class II**
Exposure Category: **Exposure C**
Topographic Category: **Category 1**
Earthquake Category: **Not Considered**
Earthquake effects may be ignored per this standard for site locations where Ss does not exceed 1.0. (New Haven County Max Ss = 0.32).

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
116.0	118.0	6	Commscope	JAHH-65B-R3B w/ Mount Pipe	1	1-5/8	1
		3	Alcatel Lucent	RRH2x60-700			
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	B66A RRH4X45			

Notes:
1) See "Appendix B - Base Level Drawing" for assumed feed line configuration.

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
148.0	148.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	6	1-5/8	1
		3	Ericsson	AIR 21 B4A B2P w/ Mount Pipe	1	1-1/4	
		3	Andrew	ETW200VS12UB	1	7/8	
		1	Tower Mounts	Sector Mount [SM 901-3]			
139.0	140.0	12	Decibel	DB848H90E-XY w/ Mount Pipe	12	1-5/8	2
	139.0	1	Tower Mounts	Sector Mount [SM 901-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
129.0	129.0	1	Tower Mounts	Side Arm Mount [SO 102-3]	-	-	1
	127.0	3	Alcatel Lucent	TME-800MHZ RRH			
	123.0	3	Alcatel Lucent	TME-1900MHz RRH (65MHz)			
128.0	130.0	3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe	4	1-1/4	1
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	Alcatel Lucent	TD-RRH8x20-25			
		9	RFS Celwave	ACU-A20-N			
		3	Alcatel Lucent	800 External Notch Filter			
	128.0	1	Tower Mounts	Sector Mount [SM 901-3]			
116.0	118.0	1	Antel	BXA-171063-8BF-2 w/ Mount Pipe	1	1-1/4	3
		1	Antel	BXA-171063-12BF w/ Mount Pipe			
		1	Antel	BXA-171085-12BF-2 w/ Mount Pipe			
		3	Antel	BXA-70063/6CF-2 w/ Mount Pipe			
		3	Antel	BXA-171063-12CF-EDIN-2 w/ Mount Pipe			
		3	Alcatel Lucent	RRH2X40-AWS			
		4	Andrew	DB846F65ZAXY w/ Mount Pipe	12 1	1-5/8 1/2	1
		2	Decibel	DB846H80E-SX w/ Mount Pipe			
		1	Maxrad	GPS-TMG-26NMS			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
	116.0	1	Tower Mounts	Sector Mount [SM 901-3]			
		6	RFS Celwave	FD9R6004/2C-3L	-	-	3
110.0	110.0	3	Ericsson	RRUS 11	-	-	1
		1	Tower Mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
106.0	108.0	6	Powerwave Technologies	7770.00 w/ Mount Pipe	-	-	4
		12	Powerwave Technologies	7020.00			
		3	Ericsson	RRUS 12			
		2	KMW Communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	12 2 2	1-5/8 3/4 3/8	1
		1	KMW Communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		12	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
	106.0	1	Tower Mounts	Sector Mount [SM 901-3]			
98.0	98.0	3	RFS Celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1

Notes:
1) Existing equipment
2) Abandoned equipment; considered in this analysis
3) Existing equipment to be removed; not considered in this analysis
4) 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)
150.0	150.0	12	Generic	72" x 12" Panel Antennas	-	-
140.0	140.0	12	Generic	72" x 12" Panel Antennas	-	-
130.0	130.0	12	Generic	72" x 12" Panel Antennas	-	-
120.0	120.0	12	Generic	72" x 12" Panel Antennas	-	-
110.0	110.0	12	Generic	72" x 12" Panel Antennas	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	Terracon	2302346	CCISites
Tower Foundation Drawings	Engineered Endeavors	2302348	CCISites
Tower Manufacturer Drawings	Engineered Endeavors	2302343	CCISites

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) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation 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 "Appendix B – Base Level Drawing".
4) All tower components are in sufficient condition to carry their full design capacity.
5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not analyze antennas supporting mounts as part of this structural analysis report.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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)	ΦP_{allow} (K)	% Capacity	Pass / Fail
L1	149 - 135.04	Pole	TP26.77x22x0.188	1	-4.936	1019.370	7.8	Pass
L2	135.04 - 92.17	Pole	TP40.91x25.056x0.25	2	-19.561	1969.410	54.0	Pass
L3	92.17 - 45.21	Pole	TP56.31x38.489x0.313	3	-31.876	3237.200	65.4	Pass
L4	45.21 - 0	Pole	TP71x53.118x0.375	4	-53.338	4862.940	62.3	Pass
							Summary	
						Pole (L3)	65.4	Pass
						RATING =	**65.4**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	-	38.0	Pass
1	Base Plate	-	35.2	Pass
1	Base Foundation Soil Interaction	-	27.1	Pass
1	Base Foundation Structural	-	50.2	Pass

Structure Rating (max from all components) =	65.4%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

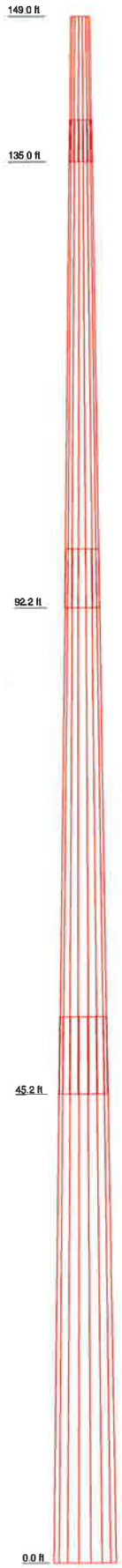
4.1) Recommendations

1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

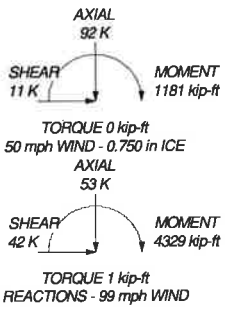
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	13.960	46.790	52.630	52.790
Number of Sides	18	18	18	18
Thickness (in)	0.188	0.250	0.313	0.375
Socket Length (ft)	3.920	5.670	7.580	
Top Dia (in)	22.000	25.056	38.489	53.118
Bot Dia (in)	26.770	40.910	56.310	71.000
Grade	A572-65			
Weight (K)	0.7	4.1	8.4	13.2



ALL REACTIONS ARE FACTORED



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	RRH2x60-700	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	RRH2x60-700	116
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	RRH2x60-700	116
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	RRH2X60-PCS	116
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	RRH2X60-PCS	116
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	RRH2X60-PCS	116
ETW200VS12UB	148	B66A RRHHX45	116
ETW200VS12UB	148	B66A RRHHX45	116
ETW200VS12UB	148	B66A RRHHX45	116
(2) 2.4" Dia x 6-ft Pipe	148	(2) DB846F65ZAXY w/ Mount Pipe	116
(2) 2.4" Dia x 6-ft Pipe	148	(2) DB846H80E-SX w/ Mount Pipe	116
(2) 2.4" Dia x 6-ft Pipe	148	(2) DB846F65ZAXY w/ Mount Pipe	116
Sector Mount [SM 901-3]	148	GPS-TMG-26NMS	116
(4) DB848H80E-XY w/ Mount Pipe	139	DB-T1-6Z-8AB-0Z	116
(4) DB848H80E-XY w/ Mount Pipe	139	2.4" Dia x 6-ft Pipe	116
(4) DB848H80E-XY w/ Mount Pipe	139	2.4" Dia x 6-ft Pipe	116
Sector Mount [SM 901-3]	139	2.4" Dia x 6-ft Pipe	116
TME-800MHZ RRH	129	Sector Mount [SM 901-3]	116
TME-800MHZ RRH	129	RRUS 11	110
TME-800MHZ RRH	129	RRUS 11	110
TME-1900MHz RRH (65MHz)	129	RRUS 11	110
TME-1900MHz RRH (65MHz)	129	2.4" Dia x 6-ft Pipe	110
TME-1900MHz RRH (65MHz)	129	2.4" Dia x 6-ft Pipe	110
2.4" Dia x 6-ft Pipe	129	2.4" Dia x 6-ft Pipe	110
2.4" Dia x 6-ft Pipe	129	Side Arm Mount [SO 102-3]	110
2.4" Dia x 6-ft Pipe	129	AM-X-CD-16-65-00T-RET w/ Mount Pipe	106
Side Arm Mount [SO 102-3]	129	AM-X-CD-16-65-00T-RET w/ Mount Pipe	106
APXV1M14-C-120 w/ Mount Pipe	128	AM-X-CD-14-65-00T-RET w/ Mount Pipe	106
APXV1M14-C-120 w/ Mount Pipe	128	(4) LGP21401	106
APXV1M14-C-120 w/ Mount Pipe	128	(4) LGP21401	106
APXVSPP18-C-A20 w/ Mount Pipe	128	(4) LGP21401	106
APXVSPP18-C-A20 w/ Mount Pipe	128	DC6-48-60-18-8F	106
APXVSPP18-C-A20 w/ Mount Pipe	128	(2) 7770.00 w/ Mount Pipe	106
TD-RRHbx20-25	128	(2) 7770.00 w/ Mount Pipe	106
TD-RRHbx20-25	128	(2) 7770.00 w/ Mount Pipe	106
TD-RRHbx20-25	128	(4) 7020.00	106
(3) ACU-A20-N	128	(4) 7020.00	106
(3) ACU-A20-N	128	(4) 7020.00	106
(3) ACU-A20-N	128	RRUS 12	106
800 EXTERNAL NOTCH FILTER	128	RRUS 12	106
800 EXTERNAL NOTCH FILTER	128	RRUS 12	106
800 EXTERNAL NOTCH FILTER	128	2.4" Dia x 6-ft Pipe	106
(2) 2.4" Dia x 6-ft Pipe	128	2.4" Dia x 6-ft Pipe	106
(2) 2.4" Dia x 6-ft Pipe	128	2.4" Dia x 6-ft Pipe	106
(2) 2.4" Dia x 6-ft Pipe	128	Sector Mount [SM 901-3]	106
Sector Mount [SM 901-3]	128	APXV18-206517S-C w/ Mount Pipe	98
(2) JAHH-65B-R3B w/ Mount Pipe	116	APXV18-206517S-C w/ Mount Pipe	98
(2) JAHH-65B-R3B w/ Mount Pipe	116	APXV18-206517S-C w/ Mount Pipe	98
(2) JAHH-65B-R3B w/ Mount Pipe	116		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 99 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 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: 65.4%

Tower Engineering Professionals

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Raleigh, NC 27603-5263
Phone: (919) 661-6351
FAX: (919) 661-6350

Job:	Guilford West Stone Property (BU 8763
Project:	TEP No. 80750.133593
Client: Crown Castle	Drawn by: pstewart
Code: TIA-222-G	Date: 09/23/17
Path:	Scale: NTS
	Dwg No. E-1

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 New Haven County, Connecticut.
Basic wind speed of 99 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.750 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	149.000-135.040	13.960	3.920	18	22.000	26.770	0.188	0.750	A572-65 (65 ksi)
L2	135.040-92.170	46.790	5.670	18	25.056	40.910	0.250	1.000	A572-65 (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	92.170-45.210	52.630	7.580	18	38.489	56.310	0.313	1.250	A572-65 (65 ksi)
L4	45.210-0.000	52.790		18	53.118	71.000	0.375	1.500	A572-65 (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	22.339	12.981	780.301	7.743	11.176	69.819	1561.628	6.492	3.542	18.891
	27.183	15.820	1412.320	9.437	13.599	103.853	2826.498	7.911	4.382	23.368
L2	26.791	19.683	1530.144	8.806	12.728	120.217	3062.300	9.843	3.970	15.879
	41.541	32.264	6738.861	14.434	20.782	324.260	13486.589	16.135	6.760	27.041
L3	41.032	37.866	6972.278	13.553	19.552	356.596	13953.730	18.937	6.224	19.917
	57.179	55.543	22003.933	19.879	28.605	769.221	44036.819	27.777	9.361	29.954
L4	56.545	62.778	22063.670	18.724	26.984	817.654	44156.372	31.395	8.689	23.17
	72.095	84.061	52972.567	25.072	36.068	1468.686	106014.838	42.039	11.836	31.563

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 149.000-135.040				1	1	1			
L2 135.040-92.170				1	1	1			
L3 92.170-45.210				1	1	1			
L4 45.210-0.000				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
***									
CR 50 1873(1-5/8)	A	Surface Ar (CaAa)	98.000 - 0.000	6	6	-0.250 -0.250	1.980		0.001
***									
Safety Line 3/8	C	Surface Ar (CaAa)	149.000 - 0.000	1	1	0.000 0.000	0.375		0.000
Step Pegs (5/8" SR) 7-in. w/30" step	C	Surface Ar (CaAa)	149.000 - 0.000	1	1	0.000 0.000	0.350		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")	A	No	Inside Pole	148.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
LDF7-50A(1-5/8")	A	No	Inside Pole	148.000 - 0.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HB114-1-0813U4-M5J(1 -1/4")	A	No	Inside Pole	148.000 - 0.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
***								
LDF7-50A(1-5/8")	B	No	Inside Pole	139.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
***								
HB114-1-0813U4-M5J(1 -1/4")	B	No	Inside Pole	128.000 - 0.000	4	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
***								
LDF7-50A(1-5/8")	B	No	Inside Pole	116.000 - 0.000	11	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
LDF4-50A(1/2")	B	No	Inside Pole	116.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
HB158-1-08U8-S8J18(1-5/8")	B	No	Inside Pole	116.000 - 0.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	106.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	C	No	Inside Pole	106.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
FB-L98B-002-75000(3/8")	C	No	Inside Pole	106.000 - 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)	C	No	Inside Pole	106.000 - 0.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
2" Flexible Conduit	C	No	Inside Pole	106.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000

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	149.000-135.040	A	0.000	0.000	0.000	0.000	0.084
		B	0.000	0.000	0.000	0.000	0.039
		C	0.000	0.000	1.012	0.000	0.010
L2	135.040-92.170	A	0.000	0.000	6.926	0.000	0.306
		B	0.000	0.000	0.000	0.000	0.874
		C	0.000	0.000	3.108	0.000	0.189
L3	92.170-45.210	A	0.000	0.000	55.788	0.000	0.537
		B	0.000	0.000	0.000	0.000	1.240

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
		C	0.000	0.000	3.405	0.000	0.572
L4	45.210-0.000	A	0.000	0.000	53.709	0.000	0.517
		B	0.000	0.000	0.000	0.000	1.194
		C	0.000	0.000	3.278	0.000	0.551

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	149.000-135.040	A	1.735	0.000	0.000	0.000	0.000	0.084
		B		0.000	0.000	0.000	0.000	0.039
		C		0.000	0.000	10.703	0.000	0.134
L2	135.040-92.170	A	1.695	0.000	0.000	11.187	0.000	0.439
		B		0.000	0.000	0.000	0.000	0.874
		C		0.000	0.000	32.867	0.000	0.570
L3	92.170-45.210	A	1.612	0.000	0.000	89.639	0.000	1.584
		B		0.000	0.000	0.000	0.000	1.240
		C		0.000	0.000	35.251	0.000	0.973
L4	45.210-0.000	A	1.445	0.000	0.000	85.357	0.000	1.472
		B		0.000	0.000	0.000	0.000	1.194
		C		0.000	0.000	32.430	0.000	0.902

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.000-135.040	0.000	0.105	0.000	0.760
L2	135.040-92.170	-0.275	0.100	-0.321	0.766
L3	92.170-45.210	-1.397	0.082	-1.559	0.593
L4	45.210-0.000	-1.465	0.087	-1.735	0.643

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	22	Safety Line 3/8	135.04 - 149.00	1.0000	1.0000
L1	23	Step Pegs (5/8" SR) 7-in. w/30" step	135.04 - 149.00	1.0000	1.0000
L1	20	CR 50 1873(1-5/8)	135.04 - 98.00	1.0000	1.0000
L2	20	CR 50 1873(1-5/8)	92.17 - 98.00	1.0000	1.0000
L2	22	Safety Line 3/8	92.17 - 135.04	1.0000	1.0000
L2	23	Step Pegs (5/8" SR) 7-in. w/30" step	92.17 - 135.04	1.0000	1.0000
L3	20	CR 50 1873(1-5/8)	45.21 - 92.17	1.0000	1.0000
L3	22	Safety Line 3/8	45.21 - 92.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	23	Step Pegs (5/8" SR) 7-in. w/30" step	45.21 - 92.17	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
180									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.112 0.169 0.233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.112 0.169 0.233
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.112 0.169 0.233
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.112 0.169 0.233
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.112 0.169 0.233
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	6.329 6.775 7.214	5.642 6.426 7.131	0.112 0.169 0.233
ETW200VS12UB	A	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	0.404 0.486 0.575	0.173 0.230 0.295	0.011 0.015 0.020
ETW200VS12UB	B	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	0.404 0.486 0.575	0.173 0.230 0.295	0.011 0.015 0.020
ETW200VS12UB	C	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	0.404 0.486 0.575	0.173 0.230 0.295	0.011 0.015 0.020
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	4.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
Sector Mount [SM 901-3]	C	None		0.000	148.000	No Ice 1/2" Ice 1" Ice	12.900 17.160 21.420	12.900 17.160 21.420	1.257 1.432 1.607
139									
(4) DB848H90E-XY w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	139.000	No Ice 1/2" Ice	7.426 8.116	10.493 12.016	0.061 0.135

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.000			1" Ice	8.816	13.564	0.219
(4) DB848H90E-XY w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	7.426 8.116 8.816	10.493 12.016 13.564	0.061 0.135 0.219
(4) DB848H90E-XY w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	7.426 8.116 8.816	10.493 12.016 13.564	0.061 0.135 0.219
Sector Mount [SM 901-3]	C	None		0.000	139.000	No Ice 1/2" Ice 1" Ice	12.900 17.160 21.420	12.900 17.160 21.420	1.257 1.432 1.607
129									
TME-800MHZ RRH	A	From Leg	1.000 0.000 -2.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
TME-800MHZ RRH	B	From Leg	1.000 0.000 -2.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
TME-800MHZ RRH	C	From Leg	1.000 0.000 -2.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
TME-1900MHz RRH (65MHz)	A	From Leg	1.000 0.000 -6.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	2.313 2.517 2.728	2.375 2.581 2.794	0.060 0.084 0.111
TME-1900MHz RRH (65MHz)	B	From Leg	1.000 0.000 -6.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	2.313 2.517 2.728	2.375 2.581 2.794	0.060 0.084 0.111
TME-1900MHz RRH (65MHz)	C	From Leg	1.000 0.000 -6.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	2.313 2.517 2.728	2.375 2.581 2.794	0.060 0.084 0.111
2.4" Dia x 6-ft Pipe	A	From Leg	4.000 0.000 0.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
2.4" Dia x 6-ft Pipe	B	From Leg	4.000 0.000 0.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
2.4" Dia x 6-ft Pipe	C	From Leg	4.000 0.000 0.000	0.000	129.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
Side Arm Mount [SO 102-3]	C	None		0.000	129.000	No Ice 1/2" Ice 1" Ice	3.000 3.480 3.960	3.000 3.480 3.960	0.081 0.111 0.141
128									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	6.342 6.716 7.097	3.607 3.967 4.333	0.056 0.096 0.140
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	6.342 6.716 7.097	3.607 3.967 4.333	0.056 0.096 0.140
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	6.342 6.716 7.097	3.607 3.967 4.333	0.056 0.096 0.140
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
TD-RRH8x20-25	A	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8x20-25	B	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8x20-25	C	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
(3) ACU-A20-N	A	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
(3) ACU-A20-N	B	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
(3) ACU-A20-N	C	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
800 EXTERNAL NOTCH FILTER	A	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	4.000 0.000 2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.428 1.927 2.296	1.428 1.927 2.296	0.022 0.033 0.048
Sector Mount [SM 901-3]	C	None		0.000	128.000	No Ice 1/2" Ice 1" Ice	12.900 17.160 21.420	12.900 17.160 21.420	1.257 1.432 1.607
116									
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	9.351 9.921 10.455	7.646 8.833 9.734	0.086 0.163 0.247
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	9.351 9.921 10.455	7.646 8.833 9.734	0.086 0.163 0.247
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	9.351 9.921 10.455	7.646 8.833 9.734	0.086 0.163 0.247
RRH2x60-700	A	From Leg	4.000 0.000 2.000	0.000	116.000	No Ice 1/2" Ice 1" Ice	3.500 3.761 4.029	1.816 2.052 2.289	0.060 0.083 0.109
RRH2x60-700	B	From Leg	4.000 0.000	0.000	116.000	No Ice 1/2" Ice	3.500 3.761	1.816 2.052	0.060 0.083

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
				2.000			1" Ice	4.029	2.289	0.109
RRH2x60-700	C	From Leg		4.000	0.000	116.000	No Ice	3.500	1.816	0.060
				0.000			1/2" Ice	3.761	2.052	0.083
				2.000			1" Ice	4.029	2.289	0.109
RRH2X60-PCS	A	From Leg		4.000	0.000	116.000	No Ice	2.200	1.723	0.055
				0.000			1/2" Ice	2.393	1.901	0.075
				2.000			1" Ice	2.593	2.087	0.099
RRH2X60-PCS	B	From Leg		4.000	0.000	116.000	No Ice	2.200	1.723	0.055
				0.000			1/2" Ice	2.393	1.901	0.075
				2.000			1" Ice	2.593	2.087	0.099
RRH2X60-PCS	C	From Leg		4.000	0.000	116.000	No Ice	2.200	1.723	0.055
				0.000			1/2" Ice	2.393	1.901	0.075
				2.000			1" Ice	2.593	2.087	0.099
B66A RRH4X45	A	From Leg		4.000	0.000	116.000	No Ice	2.537	1.610	0.057
				0.000			1/2" Ice	2.750	1.791	0.077
				2.000			1" Ice	2.970	1.978	0.100
B66A RRH4X45	B	From Leg		4.000	0.000	116.000	No Ice	2.537	1.610	0.057
				0.000			1/2" Ice	2.750	1.791	0.077
				2.000			1" Ice	2.970	1.978	0.100
B66A RRH4X45	C	From Leg		4.000	0.000	116.000	No Ice	2.537	1.610	0.057
				0.000			1/2" Ice	2.750	1.791	0.077
				2.000			1" Ice	2.970	1.978	0.100
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg		4.000	0.000	116.000	No Ice	7.271	7.821	0.047
				0.000			1/2" Ice	7.832	9.010	0.114
				2.000			1" Ice	8.348	9.912	0.189
(2) DB846H80E-SX w/ Mount Pipe	B	From Leg		4.000	0.000	116.000	No Ice	5.093	7.488	0.037
				0.000			1/2" Ice	5.547	8.450	0.092
				2.000			1" Ice	6.008	9.288	0.155
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg		4.000	0.000	116.000	No Ice	7.271	7.821	0.047
				0.000			1/2" Ice	7.832	9.010	0.114
				2.000			1" Ice	8.348	9.912	0.189
GPS-TMG-26NMS	B	From Leg		4.000	0.000	116.000	No Ice	0.078	0.078	0.001
				0.000			1/2" Ice	0.123	0.123	0.002
				2.000			1" Ice	0.177	0.177	0.004
DB-T1-6Z-8AB-0Z	A	From Leg		4.000	0.000	116.000	No Ice	4.800	2.000	0.044
				0.000			1/2" Ice	5.070	2.193	0.080
				2.000			1" Ice	5.348	2.393	0.120
2.4" Dia x 6-ft Pipe	A	From Leg		4.000	0.000	116.000	No Ice	1.428	1.428	0.022
				0.000			1/2" Ice	1.927	1.927	0.033
				0.000			1" Ice	2.296	2.296	0.048
2.4" Dia x 6-ft Pipe	B	From Leg		4.000	0.000	116.000	No Ice	1.428	1.428	0.022
				0.000			1/2" Ice	1.927	1.927	0.033
				0.000			1" Ice	2.296	2.296	0.048
2.4" Dia x 6-ft Pipe	C	From Leg		4.000	0.000	116.000	No Ice	1.428	1.428	0.022
				0.000			1/2" Ice	1.927	1.927	0.033
				0.000			1" Ice	2.296	2.296	0.048
Sector Mount [SM 901-3]	C	None			0.000	116.000	No Ice	12.900	12.900	1.257
							1/2" Ice	17.160	17.160	1.432
							1" Ice	21.420	21.420	1.607
110										
RRUS 11	A	From Leg		1.000	0.000	110.000	No Ice	2.791	1.192	0.051
				0.000			1/2" Ice	2.998	1.340	0.072
				0.000			1" Ice	3.213	1.496	0.095
RRUS 11	B	From Leg		1.000	0.000	110.000	No Ice	2.791	1.192	0.051
				0.000			1/2" Ice	2.998	1.340	0.072
				0.000			1" Ice	3.213	1.496	0.095
RRUS 11	C	From Leg		1.000	0.000	110.000	No Ice	2.791	1.192	0.051

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: Lateral ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000					1/2" Ice	2.998	1.340	0.072
			0.000					1" Ice	3.213	1.496	0.095
2.4" Dia x 6-ft Pipe	A	From Leg	1.000		0.000	110.000		No Ice	1.428	1.428	0.022
			0.000					1/2" Ice	1.927	1.927	0.033
			0.000					1" Ice	2.296	2.296	0.048
2.4" Dia x 6-ft Pipe	B	From Leg	1.000		0.000	110.000		No Ice	1.428	1.428	0.022
			0.000					1/2" Ice	1.927	1.927	0.033
			0.000					1" Ice	2.296	2.296	0.048
2.4" Dia x 6-ft Pipe	C	From Leg	1.000		0.000	110.000		No Ice	1.428	1.428	0.022
			0.000					1/2" Ice	1.927	1.927	0.033
			0.000					1" Ice	2.296	2.296	0.048
Side Arm Mount [SO 102-3]	C	None				0.000	110.000	No Ice	3.000	3.000	0.081
								1/2" Ice	3.480	3.480	0.111
								1" Ice	3.960	3.960	0.141
106											
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.000		0.000	106.000		No Ice	8.262	6.304	0.074
			0.000					1/2" Ice	8.822	7.479	0.139
			2.000					1" Ice	9.346	8.368	0.212
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.000		0.000	106.000		No Ice	8.262	6.304	0.074
			0.000					1/2" Ice	8.822	7.479	0.139
			2.000					1" Ice	9.346	8.368	0.212
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.000		0.000	106.000		No Ice	5.232	4.015	0.049
			0.000					1/2" Ice	5.618	4.633	0.094
			2.000					1" Ice	6.012	5.257	0.145
(4) LGP21401	A	From Leg	4.000		0.000	106.000		No Ice	1.104	0.207	0.014
			0.000					1/2" Ice	1.239	0.274	0.021
			2.000					1" Ice	1.381	0.348	0.030
(4) LGP21401	B	From Leg	4.000		0.000	106.000		No Ice	1.104	0.207	0.014
			0.000					1/2" Ice	1.239	0.274	0.021
			2.000					1" Ice	1.381	0.348	0.030
(4) LGP21401	C	From Leg	4.000		0.000	106.000		No Ice	1.104	0.207	0.014
			0.000					1/2" Ice	1.239	0.274	0.021
			2.000					1" Ice	1.381	0.348	0.030
DC6-48-60-18-8F	A	From Leg	4.000		0.000	106.000		No Ice	0.917	0.917	0.019
			0.000					1/2" Ice	1.458	1.458	0.037
			2.000					1" Ice	1.643	1.643	0.057
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.000		0.000	106.000		No Ice	5.746	4.254	0.055
			0.000					1/2" Ice	6.179	5.014	0.103
			2.000					1" Ice	6.607	5.711	0.157
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.000		0.000	106.000		No Ice	5.746	4.254	0.055
			0.000					1/2" Ice	6.179	5.014	0.103
			2.000					1" Ice	6.607	5.711	0.157
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.000		0.000	106.000		No Ice	5.746	4.254	0.055
			0.000					1/2" Ice	6.179	5.014	0.103
			2.000					1" Ice	6.607	5.711	0.157
(4) 7020.00	A	From Leg	4.000		0.000	106.000		No Ice	0.102	0.175	0.002
			0.000					1/2" Ice	0.147	0.239	0.005
			2.000					1" Ice	0.199	0.311	0.009
(4) 7020.00	B	From Leg	4.000		0.000	106.000		No Ice	0.102	0.175	0.002
			0.000					1/2" Ice	0.147	0.239	0.005
			2.000					1" Ice	0.199	0.311	0.009
(4) 7020.00	C	From Leg	4.000		0.000	106.000		No Ice	0.102	0.175	0.002
			0.000					1/2" Ice	0.147	0.239	0.005
			2.000					1" Ice	0.199	0.311	0.009
RRUS 12	A	From Leg	4.000		0.000	106.000		No Ice	3.145	1.285	0.058
			0.000					1/2" Ice	3.365	1.438	0.081
			2.000					1" Ice	3.592	1.600	0.108

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
RRUS 12	B	From Leg	4.000	0.000	106.000	No Ice	3.145	1.285	0.058
			0.000			1/2" Ice	3.365	1.438	0.081
			2.000			1" Ice	3.592	1.600	0.108
RRUS 12	C	From Leg	4.000	0.000	106.000	No Ice	3.145	1.285	0.058
			0.000			1/2" Ice	3.365	1.438	0.081
			2.000			1" Ice	3.592	1.600	0.108
2.4" Dia x 6-ft Pipe	A	From Leg	1.000	0.000	106.000	No Ice	1.428	1.428	0.022
			0.000			1/2" Ice	1.927	1.927	0.033
			0.000			1" Ice	2.296	2.296	0.048
2.4" Dia x 6-ft Pipe	B	From Leg	1.000	0.000	106.000	No Ice	1.428	1.428	0.022
			0.000			1/2" Ice	1.927	1.927	0.033
			0.000			1" Ice	2.296	2.296	0.048
2.4" Dia x 6-ft Pipe	C	From Leg	1.000	0.000	106.000	No Ice	1.428	1.428	0.022
			0.000			1/2" Ice	1.927	1.927	0.033
			0.000			1" Ice	2.296	2.296	0.048
Sector Mount [SM 901-3]	C	None		0.000	106.000	No Ice	12.900	12.900	1.257
						1/2" Ice	17.160	17.160	1.432
						1" Ice	21.420	21.420	1.607
98									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.500	0.000	98.000	No Ice	5.404	4.700	0.052
			0.000			1/2" Ice	5.960	5.860	0.097
			0.000			1" Ice	6.481	6.734	0.150
APXV18-206517S-C w/ Mount Pipe	B	From Leg	0.500	0.000	98.000	No Ice	5.404	4.700	0.052
			0.000			1/2" Ice	5.960	5.860	0.097
			0.000			1" Ice	6.481	6.734	0.150
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.500	0.000	98.000	No Ice	5.404	4.700	0.052
			0.000			1/2" Ice	5.960	5.860	0.097
			0.000			1" Ice	6.481	6.734	0.150
hh									

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

Comb. No.	Description
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

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	149 - 135.04	Pole	Max Tension	2	0.000	0.000	-0.000
			Max. Compression	26	-12.906	0.000	-0.101
			Max. Mx	20	-4.939	38.443	-0.009
			Max. My	14	-4.936	0.002	-38.459
			Max. Vy	20	-9.831	38.443	-0.009
			Max. Vx	2	-9.833	-0.003	38.443
			Max. Torque	6			-0.001
L2	135.04 - 92.17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.248	0.214	1.464
			Max. Mx	20	-19.582	825.647	-0.843
			Max. My	2	-19.561	-1.292	830.573
			Max. Vy	20	-29.590	825.647	-0.843
			Max. Vx	2	-29.816	-1.292	830.573
			Max. Torque	22			-1.077
L3	92.17 - 45.21	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-63.096	2.589	0.637
			Max. Mx	20	-31.886	2279.337	-3.501
			Max. My	2	-31.876	-3.397	2293.856
			Max. Vy	20	-35.010	2279.337	-3.501
			Max. Vx	2	-35.235	-3.397	2293.856

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	22			-1.076
L4	45.21 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-92.164	6.373	-0.543
			Max. Mx	20	-53.338	4303.943	-6.629
			Max. My	2	-53.338	-5.577	4329.288
			Max. Vy	20	-41.468	4303.943	-6.629
			Max. Vx	2	-41.689	-5.577	4329.288
			Max. Torque	22			-1.074

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	35	92.164	9.872	-5.722
	Max. H_x	20	53.359	41.442	-0.056
	Max. H_z	2	53.359	-0.056	41.663
	Max. M_x	2	4329.288	-0.056	41.663
	Max. M_z	8	4301.198	-41.442	0.056
	Max. Torsion	10	1.074	-35.862	-20.782
	Min. Vert	11	40.019	-35.862	-20.782
	Min. H_x	8	53.359	-41.442	0.056
	Min. H_z	14	53.359	0.056	-41.663
	Min. M_x	14	-4328.638	0.056	-41.663
	Min. M_z	20	-4303.943	41.442	-0.056
	Min. Torsion	22	-1.074	35.862	20.782

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	44.465	0.000	0.000	-0.256	1.125	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	53.359	0.056	-41.663	-4329.288	-5.577	0.353
0.9 Dead+1.6 Wind 0 deg - No Ice	40.019	0.056	-41.663	-4303.786	-5.883	0.352
1.2 Dead+1.6 Wind 30 deg - No Ice	53.359	20.770	-36.109	-3752.796	-2155.918	-0.210
0.9 Dead+1.6 Wind 30 deg - No Ice	40.019	20.770	-36.109	-3730.676	-2143.598	-0.210
1.2 Dead+1.6 Wind 60 deg - No Ice	53.359	35.918	-20.880	-2170.835	-3728.228	-0.717
0.9 Dead+1.6 Wind 60 deg - No Ice	40.019	35.918	-20.880	-2158.004	-3706.675	-0.716
1.2 Dead+1.6 Wind 90 deg - No Ice	53.359	41.442	-0.056	-7.274	-4301.198	-1.033
0.9 Dead+1.6 Wind 90 deg - No Ice	40.019	41.442	-0.056	-7.148	-4276.282	-1.031
1.2 Dead+1.6 Wind 120 deg - No Ice	53.359	35.862	20.782	2158.156	-3721.287	-1.074
0.9 Dead+1.6 Wind 120 deg - No Ice	40.019	35.862	20.782	2145.566	-3699.776	-1.072

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
1.2 Dead+1.6 Wind 150 deg - No Ice	53.359	20.672	36.053	3745.208	-2143.883	-0.827
0.9 Dead+1.6 Wind 150 deg - No Ice	40.019	20.672	36.053	3723.299	-2131.636	-0.825
1.2 Dead+1.6 Wind 180 deg - No Ice	53.359	-0.056	41.663	4328.638	8.326	-0.357
0.9 Dead+1.6 Wind 180 deg - No Ice	40.019	-0.056	41.663	4303.305	7.936	-0.356
1.2 Dead+1.6 Wind 210 deg - No Ice	53.359	-20.770	36.109	3752.145	2158.664	0.210
0.9 Dead+1.6 Wind 210 deg - No Ice	40.019	-20.770	36.109	3730.195	2145.648	0.210
1.2 Dead+1.6 Wind 240 deg - No Ice	53.359	-35.918	20.880	2170.187	3730.972	0.721
0.9 Dead+1.6 Wind 240 deg - No Ice	40.019	-35.918	20.880	2157.525	3708.724	0.720
1.2 Dead+1.6 Wind 270 deg - No Ice	53.359	-41.442	0.056	6.629	4303.943	1.037
0.9 Dead+1.6 Wind 270 deg - No Ice	40.019	-41.442	0.056	6.671	4278.332	1.035
1.2 Dead+1.6 Wind 300 deg - No Ice	53.359	-35.862	-20.782	-2158.800	3724.035	1.074
0.9 Dead+1.6 Wind 300 deg - No Ice	40.019	-35.862	-20.782	-2146.042	3701.828	1.072
1.2 Dead+1.6 Wind 330 deg - No Ice	53.359	-20.672	-36.053	-3745.855	2146.634	0.823
0.9 Dead+1.6 Wind 330 deg - No Ice	40.019	-20.672	-36.053	-3723.777	2133.689	0.821
1.2 Dead+1.0 Ice+1.0 Temp	92.164	0.000	0.000	0.543	6.373	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	92.164	0.010	-11.427	-1177.040	5.335	0.083
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	92.164	5.706	-9.901	-1019.925	-581.167	-0.062
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	92.164	9.872	-5.722	-589.394	-1010.171	-0.191
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	92.164	11.393	-0.010	-0.806	-1166.727	-0.269
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	92.164	9.862	5.704	588.126	-1008.885	-0.275
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	92.164	5.688	9.891	1019.598	-578.939	-0.207
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	92.164	-0.010	11.427	1177.998	7.907	-0.083
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	92.164	-5.706	9.901	1020.883	594.408	0.063
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	92.164	-9.872	5.722	590.352	1023.412	0.192
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	92.164	-11.393	0.010	1.765	1179.968	0.269
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	92.164	-9.862	-5.704	-587.166	1022.127	0.275
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	92.164	-5.688	-9.891	-1018.639	592.181	0.207
Dead+Wind 0 deg - Service	44.465	0.012	-8.558	-886.464	-0.281	0.073
Dead+Wind 30 deg - Service	44.465	4.266	-7.417	-768.448	-440.483	-0.043
Dead+Wind 60 deg - Service	44.465	7.378	-4.289	-444.599	-762.353	-0.148
Dead+Wind 90 deg - Service	44.465	8.512	-0.012	-1.692	-879.644	-0.213
Dead+Wind 120 deg - Service	44.465	7.366	4.269	441.596	-760.930	-0.221
Dead+Wind 150 deg - Service	44.465	4.246	7.405	766.486	-438.019	-0.170
Dead+Wind 180 deg - Service	44.465	-0.012	8.558	885.925	2.565	-0.073
Dead+Wind 210 deg - Service	44.465	-4.266	7.417	767.909	442.767	0.043

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
Dead+Wind 240 deg - Service	44.465	-7.378	4.289	444.060	764.636	0.148
Dead+Wind 270 deg - Service	44.465	-8.512	0.012	1.153	881.928	0.213
Dead+Wind 300 deg - Service	44.465	-7.366	-4.269	-442.135	763.213	0.221
Dead+Wind 330 deg - Service	44.465	-4.246	-7.405	-767.025	440.302	0.170

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	-44.465	0.000	0.000	44.465	0.000	0.000%
2	0.056	-53.359	-41.663	-0.056	53.359	41.663	0.000%
3	0.056	-40.019	-41.663	-0.056	40.019	41.663	0.000%
4	20.770	-53.359	-36.109	-20.770	53.359	36.109	0.000%
5	20.770	-40.019	-36.109	-20.770	40.019	36.109	0.000%
6	35.918	-53.359	-20.880	-35.918	53.359	20.880	0.000%
7	35.918	-40.019	-20.880	-35.918	40.019	20.880	0.000%
8	41.442	-53.359	-0.056	-41.442	53.359	0.056	0.000%
9	41.442	-40.019	-0.056	-41.442	40.019	0.056	0.000%
10	35.862	-53.359	20.782	-35.862	53.359	-20.782	0.000%
11	35.862	-40.019	20.782	-35.862	40.019	-20.782	0.000%
12	20.672	-53.359	36.053	-20.672	53.359	-36.053	0.000%
13	20.672	-40.019	36.053	-20.672	40.019	-36.053	0.000%
14	-0.056	-53.359	41.663	0.056	53.359	-41.663	0.000%
15	-0.056	-40.019	41.663	0.056	40.019	-41.663	0.000%
16	-20.770	-53.359	36.109	20.770	53.359	-36.109	0.000%
17	-20.770	-40.019	36.109	20.770	40.019	-36.109	0.000%
18	-35.918	-53.359	20.880	35.918	53.359	-20.880	0.000%
19	-35.918	-40.019	20.880	35.918	40.019	-20.880	0.000%
20	-41.442	-53.359	0.056	41.442	53.359	-0.056	0.000%
21	-41.442	-40.019	0.056	41.442	40.019	-0.056	0.000%
22	-35.862	-53.359	-20.782	35.862	53.359	20.782	0.000%
23	-35.862	-40.019	-20.782	35.862	40.019	20.782	0.000%
24	-20.672	-53.359	-36.053	20.672	53.359	36.053	0.000%
25	-20.672	-40.019	-36.053	20.672	40.019	36.053	0.000%
26	0.000	-92.164	0.000	0.000	92.164	0.000	0.000%
27	0.010	-92.164	-11.427	-0.010	92.164	11.427	0.000%
28	5.706	-92.164	-9.901	-5.706	92.164	9.901	0.000%
29	9.872	-92.164	-5.722	-9.872	92.164	5.722	0.000%
30	11.393	-92.164	-0.010	-11.393	92.164	0.010	0.000%
31	9.862	-92.164	5.704	-9.862	92.164	-5.704	0.000%
32	5.688	-92.164	9.891	-5.688	92.164	-9.891	0.000%
33	-0.010	-92.164	11.427	0.010	92.164	-11.427	0.000%
34	-5.706	-92.164	9.901	5.706	92.164	-9.901	0.000%
35	-9.872	-92.164	5.722	9.872	92.164	-5.722	0.000%
36	-11.393	-92.164	0.010	11.393	92.164	-0.010	0.000%
37	-9.862	-92.164	-5.704	9.862	92.164	5.704	0.000%
38	-5.688	-92.164	-9.891	5.688	92.164	9.891	0.000%
39	0.012	-44.465	-8.558	-0.012	44.465	8.558	0.000%
40	4.266	-44.465	-7.417	-4.266	44.465	7.417	0.000%
41	7.378	-44.465	-4.289	-7.378	44.465	4.289	0.000%
42	8.512	-44.465	-0.012	-8.512	44.465	0.012	0.000%
43	7.366	-44.465	4.269	-7.366	44.465	-4.269	0.000%
44	4.246	-44.465	7.405	-4.246	44.465	-7.405	0.000%
45	-0.012	-44.465	8.558	0.012	44.465	-8.558	0.000%
46	-4.266	-44.465	7.417	4.266	44.465	-7.417	0.000%
47	-7.378	-44.465	4.289	7.378	44.465	-4.289	0.000%
48	-8.512	-44.465	0.012	8.512	44.465	-0.012	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
49	-7.366	-44.465	-4.269	7.366	44.465	4.269	0.000%
50	-4.246	-44.465	-7.405	4.246	44.465	7.405	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	4	0.00000001	0.00006494
3	Yes	4	0.00000001	0.00003582
4	Yes	5	0.00000001	0.00010680
5	Yes	5	0.00000001	0.00004652
6	Yes	5	0.00000001	0.00010859
7	Yes	5	0.00000001	0.00004739
8	Yes	4	0.00000001	0.00013732
9	Yes	4	0.00000001	0.00008327
10	Yes	5	0.00000001	0.00010463
11	Yes	5	0.00000001	0.00004560
12	Yes	5	0.00000001	0.00010784
13	Yes	5	0.00000001	0.00004710
14	Yes	4	0.00000001	0.00005045
15	Yes	4	0.00000001	0.00002510
16	Yes	5	0.00000001	0.00010777
17	Yes	5	0.00000001	0.00004698
18	Yes	5	0.00000001	0.00010592
19	Yes	5	0.00000001	0.00004613
20	Yes	4	0.00000001	0.00011078
21	Yes	4	0.00000001	0.00006640
22	Yes	5	0.00000001	0.00010845
23	Yes	5	0.00000001	0.00004739
24	Yes	5	0.00000001	0.00010530
25	Yes	5	0.00000001	0.00004586
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00006982
28	Yes	5	0.00000001	0.00008188
29	Yes	5	0.00000001	0.00008194
30	Yes	5	0.00000001	0.00006920
31	Yes	5	0.00000001	0.00008118
32	Yes	5	0.00000001	0.00008157
33	Yes	5	0.00000001	0.00006959
34	Yes	5	0.00000001	0.00008236
35	Yes	5	0.00000001	0.00008210
36	Yes	5	0.00000001	0.00006978
37	Yes	5	0.00000001	0.00008243
38	Yes	5	0.00000001	0.00008223
39	Yes	4	0.00000001	0.00001031
40	Yes	4	0.00000001	0.00004621
41	Yes	4	0.00000001	0.00004882
42	Yes	4	0.00000001	0.00001178
43	Yes	4	0.00000001	0.00004399
44	Yes	4	0.00000001	0.00004834
45	Yes	4	0.00000001	0.00001025
46	Yes	4	0.00000001	0.00004759
47	Yes	4	0.00000001	0.00004508
48	Yes	4	0.00000001	0.00001165
49	Yes	4	0.00000001	0.00004938

50	Yes	4	0.00000001	0.00004491

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 135.04	13.281	39	0.800	0.001
L2	138.96 - 92.17	11.605	39	0.792	0.001
L3	97.84 - 45.21	5.516	39	0.573	0.000
L4	52.79 - 0	1.496	39	0.264	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	39	13.113	0.799	0.001	49039
139.000	(4) DB848H90E-XY w/ Mount Pipe	39	11.612	0.792	0.001	25530
129.000	TME-800MHZ RRH	39	9.987	0.763	0.001	16172
128.000	APXVTM14-C-120 w/ Mount Pipe	39	9.828	0.759	0.001	15635
116.000	(2) JAHH-65B-R3B w/ Mount Pipe	39	7.990	0.696	0.001	11182
110.000	RRUS 11	39	7.126	0.658	0.000	9788
106.000	AM-X-CD-16-65-00T-RET w/ Mount Pipe	39	6.574	0.631	0.000	9037
98.000	APXV18-206517S-C w/ Mount Pipe	39	5.536	0.574	0.000	7937

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 135.04	64.873	2	3.908	0.003
L2	138.96 - 92.17	56.688	2	3.869	0.003
L3	97.84 - 45.21	26.952	2	2.800	0.002
L4	52.79 - 0	7.309	2	1.290	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	64.054	3.906	0.003	10114
139.000	(4) DB848H90E-XY w/ Mount Pipe	2	56.720	3.869	0.003	5264
129.000	TME-800MHZ RRH	2	48.786	3.729	0.003	3331

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
128.000	APXVTM14-C-120 w/ Mount Pipe	2	48.011	3.709	0.003	3221
116.000	(2) JAHH-65B-R3B w/ Mount Pipe	2	39.033	3.404	0.003	2303
110.000	RRUS 11	2	34.814	3.217	0.002	2015
106.000	AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	32.119	3.083	0.002	1860
98.000	APXV18-206517S-C w/ Mount Pipe	2	27.048	2.805	0.002	1633

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	149 - 135.04 (1)	TP26.77x22x0.188	13.960	0.000	0.0	15.023	-4.936	1019.370	0.005
L2	135.04 - 92.17 (2)	TP40.91x25.056x0.25	46.790	0.000	0.0	30.739	-19.561	1969.410	0.010
L3	92.17 - 45.21 (3)	TP56.31x38.489x0.313	52.630	0.000	0.0	52.997	-31.876	3237.200	0.010
L4	45.21 - 0 (4)	TP71x53.118x0.375	52.790	0.000	0.0	84.061	-53.338	4862.940	0.011

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 $\frac{M_{uy}}{\phi M_{ny}}$
L1	149 - 135.04 (1)	TP26.77x22x0.188	38.459	529.362	0.073	0.000	529.362	0.000
L2	135.04 - 92.17 (2)	TP40.91x25.056x0.25	830.573	1571.017	0.529	0.000	1571.017	0.000
L3	92.17 - 45.21 (3)	TP56.31x38.489x0.313	2293.858	3563.867	0.644	0.000	3563.867	0.000
L4	45.21 - 0 (4)	TP71x53.118x0.375	4329.292	7080.275	0.611	0.000	7080.275	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	149 - 135.04 (1)	TP26.77x22x0.188	9.832	509.685	0.019	0.000	1060.017	0.000
L2	135.04 - 92.17 (2)	TP40.91x25.056x0.25	29.816	984.705	0.030	0.354	3145.875	0.000
L3	92.17 - 45.21 (3)	TP56.31x38.489x0.313	35.235	1618.600	0.022	0.353	7136.450	0.000

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 $\frac{T_u}{\phi T_n}$
L4	45.21 - 0 (4)	TP71x53.118x0.375	41.689	2431.470	0.017	0.353	14177.833	0.000

Pole Interaction Design Data

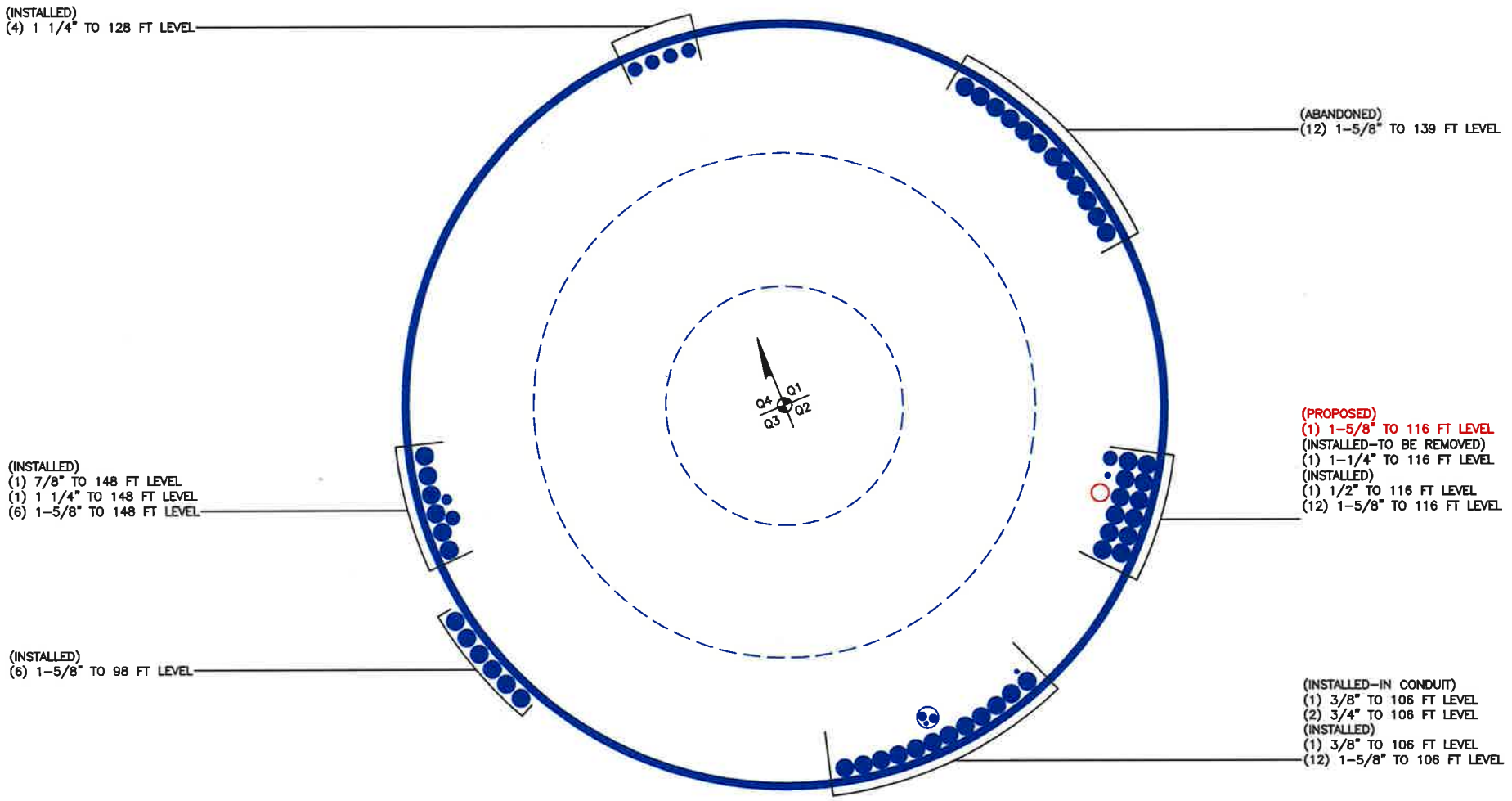
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 135.04 (1)	0.005	0.073	0.000	0.019	0.000	0.078	1.000	4.8.2
L2	135.04 - 92.17 (2)	0.010	0.529	0.000	0.030	0.000	0.540	1.000	4.8.2
L3	92.17 - 45.21 (3)	0.010	0.644	0.000	0.022	0.000	0.654	1.000	4.8.2
L4	45.21 - 0 (4)	0.011	0.611	0.000	0.017	0.000	0.623	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	149 - 135.04	Pole	TP26.77x22x0.188	1	-4.936	1019.370	7.8	Pass
L2	135.04 - 92.17	Pole	TP40.91x25.056x0.25	2	-19.561	1969.410	54.0	Pass
L3	92.17 - 45.21	Pole	TP56.31x38.489x0.313	3	-31.876	3237.200	65.4	Pass
L4	45.21 - 0	Pole	TP71x53.118x0.375	4	-53.338	4862.940	62.3	Pass
							Summary	
						Pole (L3)	65.4	Pass
						RATING =	**65.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876343 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

ATC
Applied Technology Council

WINDSPEED BY LOCATION

Search Results

Query Date: Fri Sep 22 2017
Latitude: 41.3004
Longitude: -72.7081

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

Risk Category I: 117
Risk Category II: 128
Risk Category III-IV: 138
MRI 10-Year:** 78
MRI 25-Year:** 88
MRI 50-Year:** 96
MRI 100-Year:** 104

ASCE 7-05 Windspeed:
113 (3-sec peak gust in mph)
ASCE 7-93 Windspeed:
83 (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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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#: *876343*
Site Name: *Guilford West Stone Property*
App #: *394845 Rev. 0*

Pole Manufacturer:	*Other*

Reactions		
Mu:	4329	ft-kips
Axial, Pu:	53	kips
Shear, Vu:	42	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	28	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	79	in

Anchor Rod Results

		Rigid
Max Rod (Cu+ Vu/ή):	98.8 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	38.0% **Pass**	

Plate Data		
Diam:	85	in
Thick:	2.75	in
Grade:	50	ksi
Single-Rod B-eff:	8.05	in

Base Plate Results

	Flexural Check	Rigid
Base Plate Stress:	15.8 ksi	AISC LRFD
Allowable Plate Stress:	45.0 ksi	φ*Fy
Base Plate Stress Ratio:	35.2% **Pass**	Y.L. Length: 34.64

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

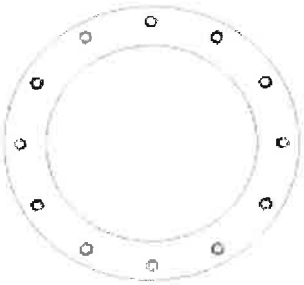
Stiffener Results

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

Pole Data		
Diam:	71	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



* 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

TOWER ENGINEERING PROFESSIONALS

JOB:	Guilford West Stone Property (BU 876343); TEP No. 80750.133593		
SHEET NUMBER:	1	OF	2
CALCULATED BY:	RKE	DATE	9/23/2017
CHECKED BY:	PRS	DATE	9/23/2017

Pad and Pier Foundation for Monopole - TIA-222-G

q_a, ALLOWABLE SOIL PRESS. (ksf)	10.67
NET or GROSS	NET
SAFETY FACTOR IN q_a	2
SOIL DENSITY (pcf)	120

$\varphi^* q_n$ = 16.0 ksf

F'c (ksi)	4
F'y (ksi)	60

Base Reactions LC1: 1.2D + 1.6W

M, MOMENT (k-ft)	4329.0
P_t, TOTAL DOWNLOAD (k)	53.0
H, HORIZONTAL SHEAR (k)	42.0

Base Reaction LC 2: 0.9D + 1.6W

M (k-ft)	4329.0
P_t (k)	39.8
H (k)	42.0

Try:

L (ft.)	B (ft.)	t (ft.)	Soil depth to TOP of mat (ft.)	Soil depth to BOT. of mat (ft.)	Pier dia./width (ft.)	Pier Height, h (cu.ft.)	Pier Shape
30	30	3.00	9	12.00	8.50	10.00	Square

W_m, Weight of Mat (k) =	405.0
W_p, Weight of Pier (k) =	108.4
W_s, Weight of Soil (k) =	894.0

Concrete Vol. (cu yd) 126.76

CHECK BEARING PRESSURE for LC1: 1.2D + 1.6W

$P = P_t + Wf + Ws$ =	1741.8 k
$e = M / P$ =	2.80 ft
L/6 =	5.00 ft
Width of Wedge, L' =	30.00 ft
90° Axis: q_{max} =	1.58 ksf
Diag. Axis: q_{max} =	2.03 ksf

Capacity: 12.7%

CHECK BEARING STABILITY FOR LC2: 0.9D +1.6W

90° Axis	$M_{\varphi qn}$[1] =	17964.5 k-ft
	$M_{ot}/M_{\varphi qn}$=	0.27
Diag. Axis	$M_{\varphi qn}$=	19717.3 k-ft
	$M_{ot}/M_{\varphi qn}$=	0.25

Capacity: 27.1%

[1] $M_{\varphi qn}$ is the overturning moment at which $q_{max} = \varphi q_n$

CHECK OVERTURNING: LC2 CONTROLS

$M_{st} = P * (L/2) + (Vf+s * L/2)$ =	19595.4 k-ft
$M_{ot} = M+H^*(t+h)$ =	4875.0 k-ft
M_{ot}/M_{st} =	0.25

Capacity: 24.9%

TOWER ENGINEERING PROFESSIONALS

JOB:	Guilford West Stone Property (BU 876343); TEP No. 80750.133593		
SHEET NUMBER:	2	OF	2
CALCULATED BY:	RKE	DATE	9/23/2017
CHECKED BY:	PRS	DATE	9/23/2017

CHECK ONE WAY SHEAR

Vu =	242.1 k
Vc =	1092.9 k

Capacity: 22.2%

CHECK TWO WAY SHEAR: PUNCHING + UNBALANCED MOMENT

v_u =	24.3 psi
φv_c =	189.7 psi

Capacity: 12.8%

CALCULATE REINFORCING REQUIRED

F'c = 4.0 ksi F'y = 60.0 ksi

Temp & Shrinkage reinforcing, $A_{s,t}$ = 0.39 in^2/ft (ACI 318 Sec. 10.5.4)

BOTTOM REINFORCING

Bar Size = 8
Bar Spacing, c-c: 6.0
d = 31.5 in.

Mu= 712.7 in-k/ft

φMn=0.9*As*Fy*d(1-0.59*As*Fy/(b*d*F'c))

Solution: As,req = 0.42 in^2/ft

Check, As = 1.58 in^2/ft

Capacity: 26.8%

TOP REINFORCING

Bar Size = 8
Bar Spacing, c-c: 10.8
d= 31.5 in.

Mu= 430.7 in-k/ft

φMn=0.9*As*Fy*d(1-0.59*As*Fy/(b*d*F'c))

Solution: As,req = 0.25 in^2/ft

Check, As = 0.88 in^2/ft

Capacity: 28.9%

		PASS	PASS
	Results Summary:	LC1	LC2
	Soil Interaction:	N/A	N/A
Drilled Caisson Tool - Input	Foundation Structural:	50.2%	13.5%

Guilford West Stone Property (BU 876343)

TEP #:	80750.133593	
Analysis:	RKE	9/23/2017
Check:	PRS	9/23/2017

Code Revisions: TIA-222-G ACI 318-11

Tower Type: Monopole

	LC1	LC2	
Moment:	4,749.00	1,291.00	kip-ft
Axial (download):	53.00	92.00	kip
Shear:	42.00	11.00	kip
Axial (uplift):			kip

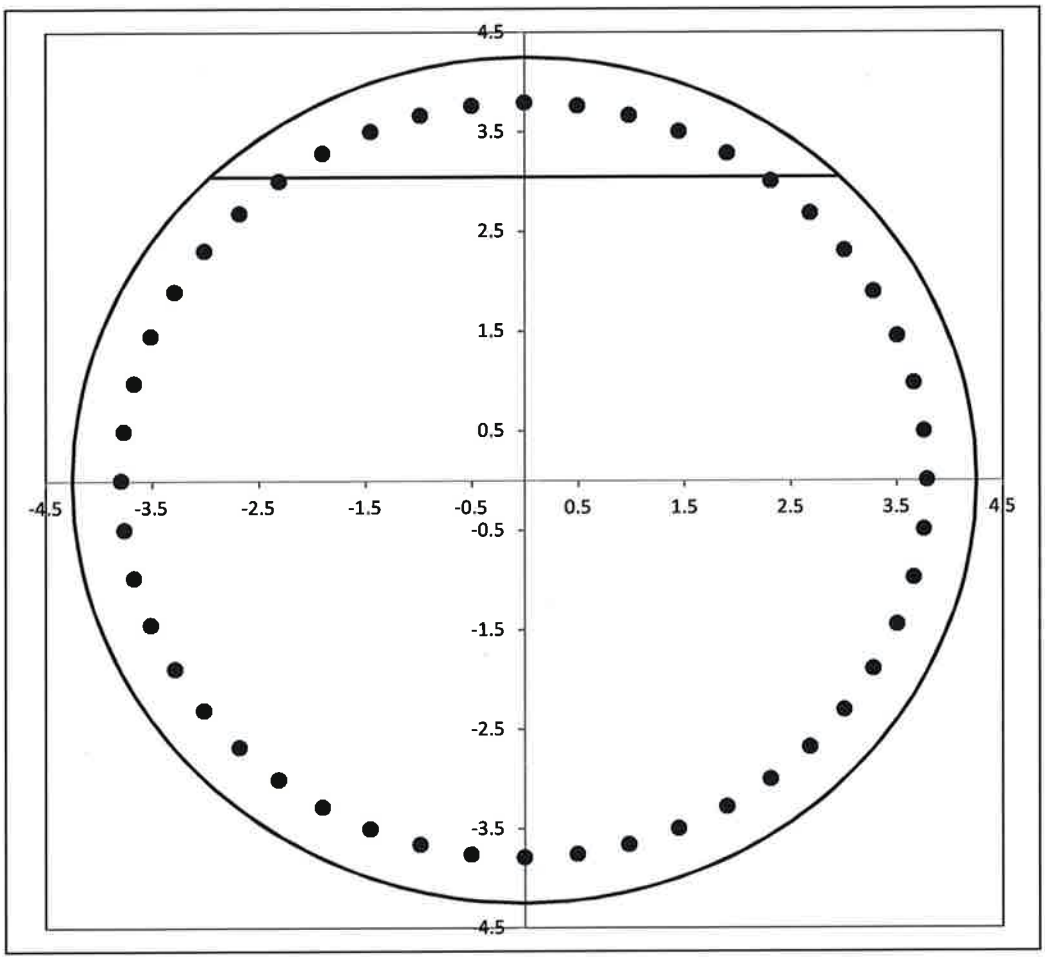
Shaft Information

Diameter:	8.50	ft
Projection:	1.00	ft
Caisson Length:	10.00	ft
f'c:	4.000	ksi
Max εc:	0.003	in/in

Cage 1 Reinforcement

Tie Bar Size:	4	*(fy = 60.0 ksi)*
Clear Cover to Tie:	4.44	*in (Cage Ø = 91.00in)*
Tie Bar Spacing:	6.00	in
Vertical Bar Size:	9	
Vertical Bar Quantity:	48	*(ρ =0.587%)*
fy:	60.0	ksi
E:	29,000	ksi

Reinforcement Capacity



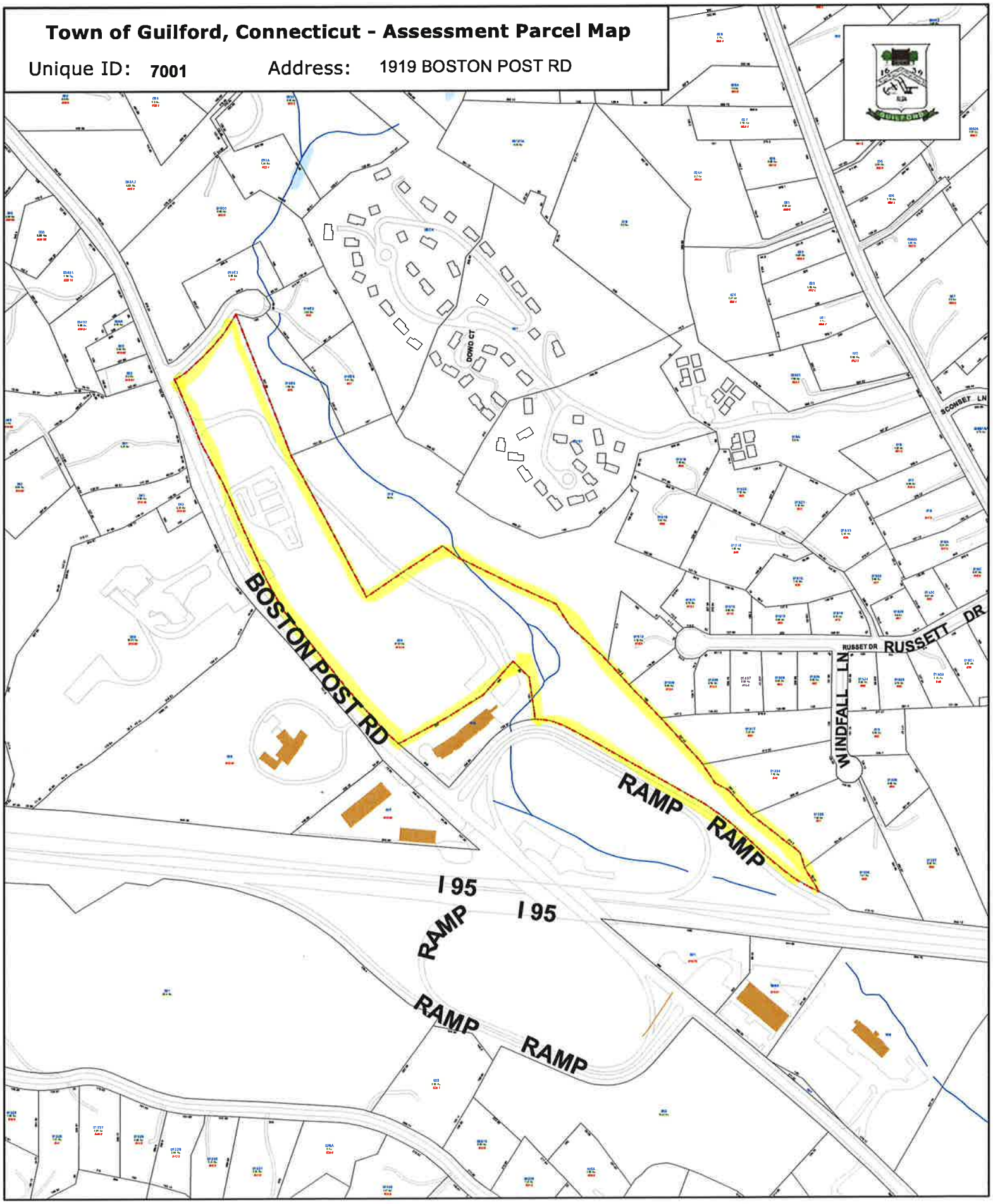
		LC1	LC2	
	Vu =	42.0	42.0	kip
	Vc =	1036.9	1039.4	kip
fy,tie = 60.0	Vs =	385.6	385.6	kip
	ϕVn =	1066.9	1068.8	kip
	Capacity =	3.9%	3.9%	
		PASS	PASS	

	LC1	LC2	
Mu =	4749.0	1291.0	kip-ft
ϕMn =	9466.8	9589.6	kip-ft
Capacity =	50.2%	13.5%	
	PASS	PASS	

ATTACHMENT 4

Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: **7001** Address: 1919 BOSTON POST RD



Approximate Scale: **1 inch = 450 feet**

0 310 620 Feet

Map Produced:
October 2017

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein.

Town of Guilford
Property Listing Report

Parcel ID 079035

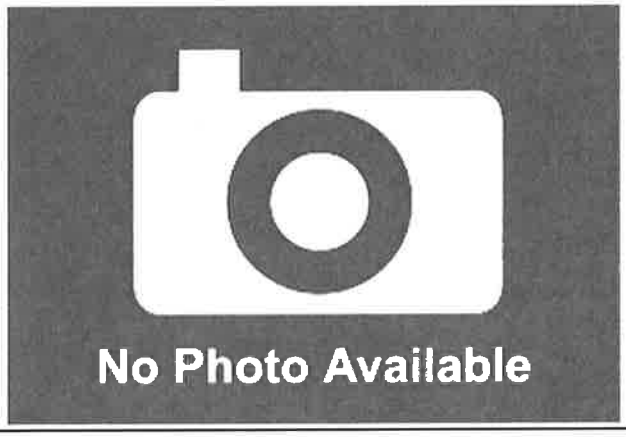
Account

Property Information

Owner	DDR GUILFORD LLC
Address	1919 BOSTON POST RD
Mailing Address	3300 ENTERPRISE PKWY BEACHWOOD , OH 44122
Land Use	- REGIONAL SHOPPING
Land Class	Commercial

Census Tract	1903
Neighborhood	N
Zoning	SCW
Acreage	27.83
Utilities	
Lot Setting/ Desc	/

Photo



PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	22971207	16079840
Outbuildings	694069	485850
Improvements		
Extras		
Land	6694400	4686080
Total	30359676	21251770
Previous		

Construction Details

Year Built	2015
Stories	1
Building Style	
Building Use	Neighborhood
Building Condition	GOOD
Total Rooms	0
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	FLAT
Roof Cover	POLY RUBBER

EXTERIOR WALLS:	
Primary	CONCRETE BLOCK
Secondary	
INTERIOR WALLS:	
Primary	
Secondary	
FLOORS:	
Primary	
Secondary	
HEATING/AC:	
Heating Type	
Heating Fuel	
AC Type	

BUILDING AREA:	
Effective Building Area	
Gross Building Area	0
Total Living Area	63416

SALES HISTORY:	
Sale Date	1/28/2015
Sale Price	0
Book/ Page	0879/1141

Report Created On 5/22/2018

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 06/14/2018 US POSTAGE $002.38 ZIP 06103 041L12203380
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Matthew Hoey, First Selectman Town of Guilford 31 Park Street Guilford, CT 06437				
2.	George Kral, Town Planner Town of Guilford 31 Park Street Guilford, CT 06437		[redacted]		
3.	DDR Guilford LLC 3300 Enterprise Parkway Beachwood, OH 44122				
4.					
5.					
6.					

OLD STATE HOUSE STA 06103 JUN 14 2018 USPS