

November 6, 2017

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
151 Young Street, East Hampton, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the top of an existing 140-foot tower at 151 Young Street in East Hampton, Connecticut (the “Property”). The tower is owned by Crown Castle (“Crown”). The Council approved Cellco’s use of this tower in 2010 (Petition No. 956). Cellco now intends to replace all of its existing antennas with six (6) model LPA-80063-6CF, 850 MHz antennas; three (3) model JAHH-65B-R3B, 700 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”) on its existing antenna platform and two (2) HYBRIFLEX™ fiber optic 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 Michael Maniscalco, Town Manager of the Town of East Hampton; Jeremy DeCarli, East Hampton’s Planning and Zoning Official; Kevin and Kim Kiely, the owners 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 tower. Cellco’s replacement antennas will be installed at the top level of the 140-foot tower.

17255858-v1

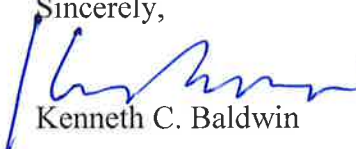
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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas 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 owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owners 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:

Michael Maniscalco, East Hampton Town Manager
Jeremy DeCarli, East Hampton Planning and Zoning Official
Kevin and Kim Kiely
Crown Castle
Tim Parks

ATTACHMENT 1

LPA-80063-6CF-EDIN-X

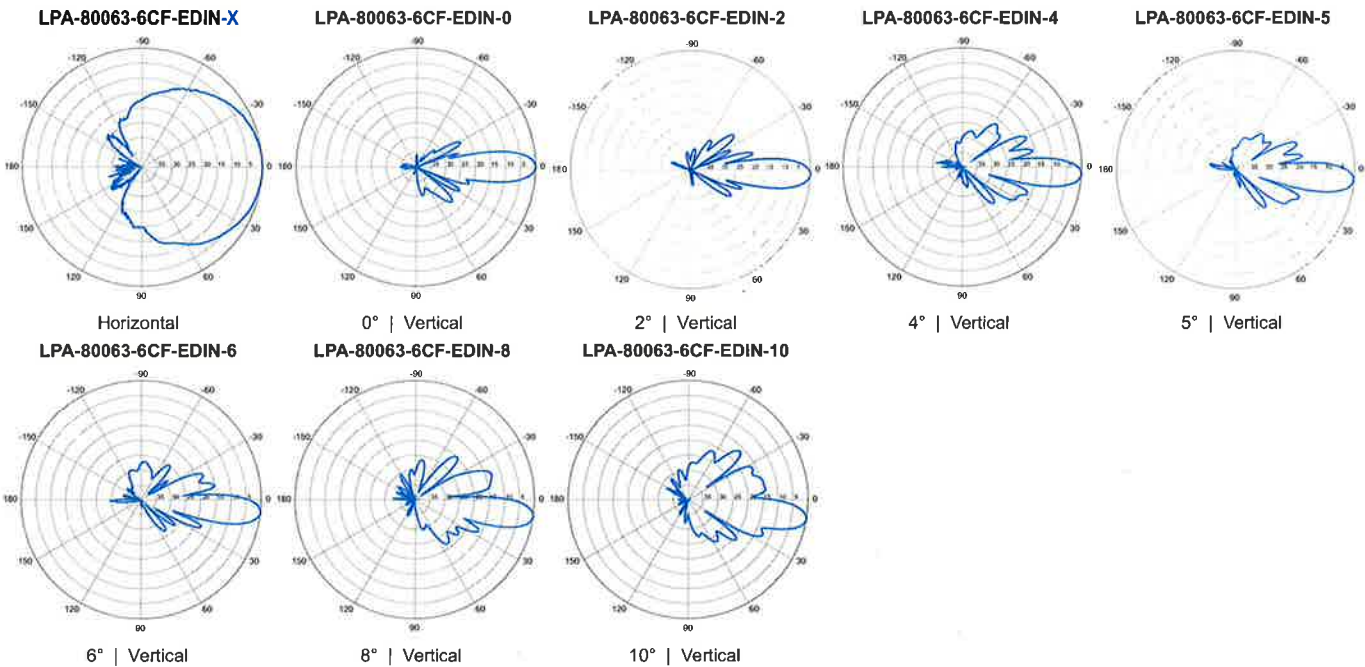
V-Pol | Log Periodic | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.



Electrical Characteristics		
Frequency bands	806-960 MHz	
Polarization	Vertical	
Horizontal beamwidth	63°	
Vertical beamwidth	10°	
Gain	14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.4:1	
Null fill	5% (-26.02 dB)	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1805 x 385 x 332 mm 71.1 x 15.2 x 13.1 in	
Depth of antenna with z-bracket	372 mm 14.6 in	
Weight without mounting brackets	12.3 kg 27 lbs	
Survival wind speed	> 201 km/hr > 125 mph	
Wind area	Front: 0.70 m ² Side: 0.59 m ² Front: 7.5 ft ² Side: 6.3 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 885 N Side: 757 N Front: 199 lbf Side: 170 lbf	
Mounting Options		
	Part Number Fits Pipe Diameter Weight	
3-Point Mounting & Downtilt Bracket Kit (0-20°)	21700000 50-102 mm 2.0-4.0 in 11 kg 25 lbs	
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.	



Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.



JAHH-65B-R3B

Multiband Antenna, 698–787, 824–894 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RETs 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, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–787	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
	2 ° 14.3	2 ° 15.0	0 ° 17.2	0 ° 17.6	0 ° 17.7	0 ° 17.9
Gain by Beam Tilt, average, dBi	8 ° 14.3	8 ° 14.9	5 ° 17.6	5 ° 18.2	5 ° 18.3	5 ° 18.7
	14 ° 14.3	14 ° 15.4	10 ° 17.6	10 ° 18.2	10 ° 18.3	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](#).

General Specifications

Operating Frequency Band	1695 – 2360 MHz 698 – 787 MHz 824 – 894 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

JAHH-65BR3B

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	746.0 N @ 150 km/h 167.7 lbf @ 150 km/h
Wind Loading, lateral	243.0 N @ 150 km/h 54.6 lbf @ 150 km/h
Wind Loading, rear	776.0 N @ 150 km/h 174.5 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	2.0 W
Power Consumption, normal conditions, maximum	13.0 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)

JAHH-65B-R3B

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



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.

General Specifications

Mount Type	Downtilt mounts
Application	Outdoor
Includes	Brackets Hardware
Package Quantity	1

Mechanical Specifications

Color	Silver
Material Type	Galvanized steel

Dimensions

Compatible Diameter, maximum	115.0 mm 4.5 in
Compatible Diameter, minimum	60.0 mm 2.4 in
Net Weight	3.4 kg 7.5 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



ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

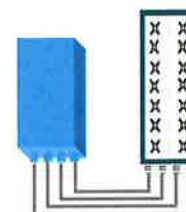


FEATURES

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

BENEFITS

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



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

TECHNICAL SPECIFICATIONS

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

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ALCATEL-LUCENT 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.

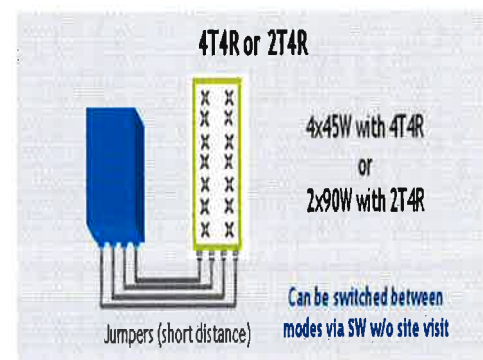
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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



TECHNICAL SPECIFICATIONS

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
Size (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	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

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AirScale RRH 4T4R B5 160W AHCA

Capacity, performance, low total cost of ownership and investment protection

Nokia AirScale Remote Radio Head (RRH) AHCA supports band 5 - full band - along with 4x4 MIMO and 256QAM modulation to deliver higher data rates. It offers Nokia's unique book mounting for faster roll out and radio-integrated Passive Intermodulation (PIM) cancellation for enhanced network performance.

Furthermore, 4TX and 4RX paths in a single radio unit gives the flexibility to support 2T2R-2 sectors or 4T4R-single sector from a single unit, for cost-effective scaling of both coverage and capacity.

Capacity and performance

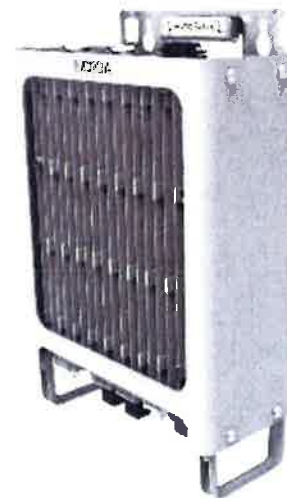
AirScale RRH 4T4R delivers 160 W (4x40 W) transmit power and can support 2x2 MIMO, 4x2 MIMO and 4x4 MIMO. The radio supports 256 QAM modulation in the downlink (DL) for up to 30 percent higher throughput. The Virtual Spectrum Analyzer feature enables both uplink and downlink spectrum to be analyzed.

Low total cost of ownership

With up to two sectors in a single radio, light weight and zero-bolt book mounting, AirScale RRH 4T4R allows operators to achieve faster roll outs and more cost-effective installation and maintenance of radios and tower space.

Investment protection

AirScale RRH 4T4R complements the AirScale System Module, offering a complete base station solution that is software upgradeable to 5G. AirScale System



Module offers 28 Gbps capacity that can be further enhanced by chaining more modules or through Cloud RAN. AirScale RRH is part of the AirScale Base Station portfolio, the next generation Nokia base station platform, and is backwards-compatible with the Nokia Flexi Multiradio 10 Base Station to best use an operator's existing investments.

Product name	AirScale RRH 4T4R B5 160W AHCA - 473966A
Supported frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX ports	4/4
Instantaneous Bandwidth IBW	25MHz
Occupied Bandwidth OBW	25MHz
Output power	4T4R 40 W/ 2T4R 60W
Dimensions (mm) height x width x depth	337 x 295 x 165
Volume (liters)	16.4
Weight (kg)	16
Supply Voltage / Voltage Range	DC-48V / -36V to -60V
Typical Power Consumption	207 W (ETSI 24h Avg – 4x20W mode)
Antenna ports	4TX/4RX, 4.3-10+
Optical ports	2 x CPRI 9.8 Gbps
ALD control interfaces	AISG3.0 from ANT1, 2, 3, 4 and RET (Power supply ANT1 and ANT3)
Other interfaces	External alarm MDR-26 serial connector (4 inputs, 1 output) DC circular power connector
Operational temperature range	-40°C to 55°C (with no solar load)
Ingress protection class	IP65
Installation options	Pole or wall, RAS, vertical or horizontal book mount
Surge protection	Class II 5kA

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Nokia Oyj
 Karaportti 3
 FI-02610 Espoo
 Finland
 Tel. +358 (0) 10 44 88 000

Product code: SR1611002341EN (April)



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

Product Description

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

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

Features/Benefits

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



Figure 1: HYBRIFLEX Series

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in.)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in.)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mass and 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)]	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
Power and Alarm 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
Environmental Properties			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

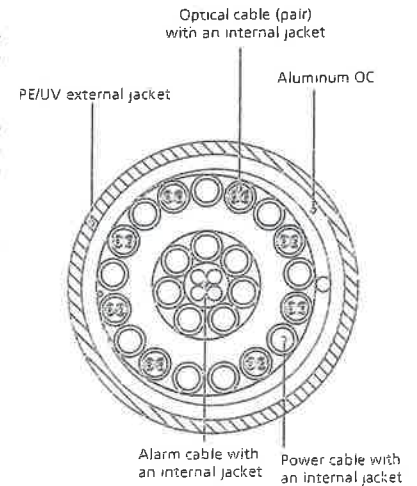


Figure 2: Construction Detail

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

ATTACHMENT 2

ATTACHMENT 3



Date: July 24, 2017

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Velocitel, Inc., d.b.a. FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
(919) 755-1012

Subject: Structural Analysis Report

Carrier Designation: Verizon Wireless Co-Locate
Carrier Site Number: 214409
Carrier Site Name: East Hampton 2 CT
Crown Castle Designation: Crown Castle BU Number: 845994
Crown Castle Site Name: EAST HAMPTON - YOUNG STREET
Crown Castle JDE Job Number: 447063
Crown Castle Work Order Number: 1431678
Crown Castle Application Number: 396349 Rev. 0
Engineering Firm Designation: FDH Velocitel Project Number: 17QISX1400
Site Data: 151 YOUNG STREET, EAST HAMPTON, Middlesex County, CT
Latitude 41° 32' 38.12", Longitude -72° 30' 22.44"
140 Foot - Monopole Tower

Dear Charles McGuirt,

FDH Velocitel 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 1060330, in accordance with application 396349, 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:

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 127 mph converted to a nominal 3-second gust wind speed of 98 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.000 and Risk Category II were used in this analysis.

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 FDH Velocitel appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Ashley Miller, PE
Engineering Lead

Reviewed by:

Dennis D. Abel, PE
Director
CT PE License No. 23247



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1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by PENNSUMMIT TUBULAR, LLC in September of 2005. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 98 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1.

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
139.0	140.0	3	alcatel lucent	B13 RRH 4X30	2	1-5/8	-
		3	alcatel lucent	B66A RRH4X45			
		3	nokia	Airscale RRH 4T4R B5 160W			
		6	antel	LPA-80063-6CF-EDIN			
		6	commscope	JAHH-65B-R3B			
		2	raycap	RC3DC-3315-PF-48			

Table 2 - Existing 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
139.0	140.0	3	antel	BXA-70063/6CF	6	1-5/8	2
		6	decibel	DB846F65ZAXY			
		3	rymsa wireless	MG D3-800Tx			
	139.0	1	crown mounts	T-Arm Mount [TA 602-3]	12	1-5/8	1
118.0	120.0	3	ericsson	RRUS-11	12	1-5/8	1
		2	kmw communications	AM-X-CD-16-65-00T-RET			
		6	powerwave technologies	7770.00			
		6	powerwave technologies	LGP21401			
		1	powerwave technologies	P65-17-XLH-RR			
		1	raycap	DC6-48-60-18-8F			
	118.0	1	crown mounts	Sector Mount [SM 901-3]			

Notes:

- 1) Existing Equipment
- 2) Equipment To Be Removed; Not Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140	140	9	-	48"x12"x3" Panel Antenna	-	-
130	130	9	-	48"x12"x3" Panel Antenna	-	-
119.5	119.5	6	Powerwave	7770 Panel	-	-
		6	Powerwave	LGP13519		
		6	Powerwave	LGP21401		
110	110	9	-	48"x12"x3" Panel Antenna	-	-
100	100	9	-	48"x12"x3" Panel Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Velocitel	6109303	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PennSummit Tubular, LLC	4301090	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PennSummit Tubular, LLC	5236444	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) 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) Information for the 20' tower extension taken from previous analysis by GPD Group (DocID 4301091)

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	140 – 120	Pole	TP24x24x0.375	1	-4.76	876.73	25.3	Pass
L2	120 – 80	Pole	TP36.379x28.163x0.2188	2	-11.43	1540.02	49.2	Pass
L3	80 - 39.5	Pole	TP44.261x35.0171x0.3125	3	-19.49	2862.94	44.6	Pass
L4	39.5 – 0	Pole	TP51.75x42.5062x0.375	4	-32.22	4122.27	44.0	Pass
							Summary	
						Pole (L2)	49.2	Pass
						Rating =	49.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	38.5	Pass
1	Base Plate	0	34.2	Pass
1	Base Foundation	0	27.4	Pass
1	Base Foundation Soil Interaction	0	26.6	Pass
1	Flange Bolts	120	39.4	Pass
1	Flange Plates	120	16.8	Pass

Structure Rating (max from all components) =	49.2%
---	--------------

Notes:

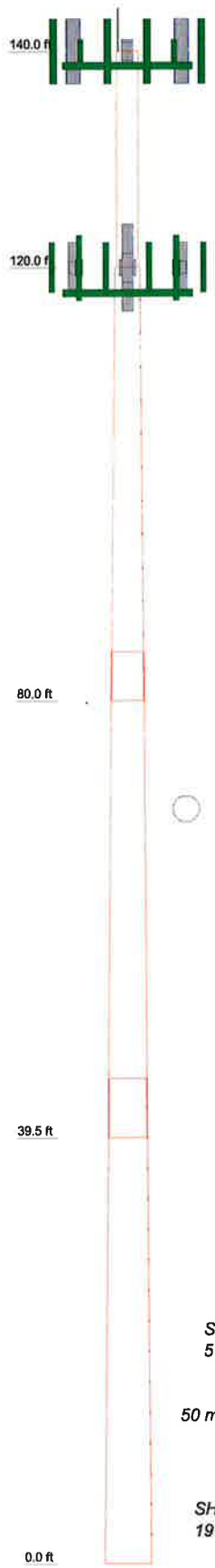
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	20.00	1	0.3750	24.0000	24.0000		A53-B-35	1.9
2	40.00	18	0.2188	4.50	28.1630	36.3790	A53-B-35	3.0
3	45.00	18	0.3125	5.50	35.0171	44.2610	A572-65	6.0
4	45.00	18	0.3750	42.5062	51.7500			8.5
								19.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	140	(2) RXXDC-3315-PF-48	139
B13 RRH 4X30	139	T-Arm Mount [TA 602-3]	139
B13 RRH 4X30	139	RRUS-11	118
B13 RRH 4X30	139	RRUS-11	118
4T4R B5 160W FRIJ	139	RRUS-11	118
4T4R B5 160W FRIJ	139	(2) 7770.00 w/ Mount Pipe	118
4T4R B5 160W FRIJ	139	(2) 7770.00 w/ Mount Pipe	118
B66A RRH4X45	139	(2) 7770.00 w/ Mount Pipe	118
B66A RRH4X45	139	(2) LGP21401	118
B66A RRH4X45	139	(2) LGP21401	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	(2) LGP21401	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	P65-17-XLH-RR w/ Mount Pipe	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	AM-X-CD-16-65-00T-RET w/ Mount Pipe	118
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	139	AM-X-CD-16-65-00T-RET w/ Mount Pipe	118
(2) JAHH-65B-R3B w/ Mount Pipe	139	DC6-48-60-18-8F	118
(2) JAHH-65B-R3B w/ Mount Pipe	139	Sector Mount [SM 901-3]	118
(2) JAHH-65B-R3B w/ Mount Pipe	139		

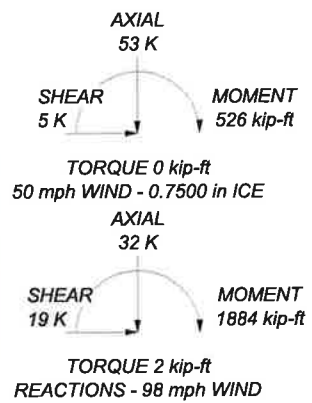
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 98 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 0.00 ft
8. TOWER RATING: 49.2%

ALL REACTIONS ARE FACTORED



<p>Tower Analysis</p>	<p>FDH Velocitel</p> <p>6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031</p>		<p>Job: 845994_East Hampton - Young Street</p>	
	<p>Project: 17QISX1400</p>		<p>Client: Crown Castle</p>	<p>Drawn by: AMiller</p>
	<p>Code: TIA-222-G</p>		<p>Date: 07/24/17</p>	<p>App'd:</p>
	<p>Path:</p>		<p>Scale: N</p>	<p>Dwg No. 1</p>
	<p>© 2017 Velocitel, Inc. All rights reserved. This document is the property of Velocitel, Inc. and is not to be distributed, copied, or used in any way without the written permission of Velocitel, Inc.</p>			

tnxTower FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job 845994_East Hampton - Young Street	Page 1 of 32
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	Client Crown Castle	Designed by AMiller

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 Middlesex County, Connecticut.

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).

Basic wind speed of 98 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °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

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	140.00-120.00	20.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-35 (35 ksi)
L2	120.00-80.00	40.00	4.50	18	28.1630	36.3790	0.2188	0.8752	A572-65

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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	80.00-39.50	45.00	5.50	18	35.0171	44.2610	0.3125	1.2500	(65 ksi) A572-65
L4	39.50-0.00	45.00		18	42.5062	51.7500	0.3750	1.5000	(65 ksi) 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	I/Q in ²	w in	w/t
L1	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L2	28.5975	19.4064	1914.5501	9.9202	14.3068	133.8209	3831.6194	9.7051	4.5716	20.894
L3	36.9402	25.1122	4148.4338	12.8369	18.4805	224.4759	8302.3262	12.5585	6.0176	27.503
L4	44.9438	43.5914	10637.1814	15.6017	22.4846	473.0877	21288.3594	21.7999	7.2399	23.168
	44.3091	50.1466	11245.7084	14.9566	21.5931	520.7999	22506.2142	25.0781	6.8211	18.19
	52.5483	61.1491	20390.6535	18.2381	26.2890	775.6344	40808.1376	30.5804	8.4480	22.528

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	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 140.00-120.00				1	1	1			
L2 120.00-80.00				1	1	1			
L3 80.00-39.50				1	1	1			
L4 39.50-0.00				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 plf
Safety Line 3/8	B	Surface Ar (CaAa)	140.00 - 8.00	1	1	0.400 0.400	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8)	A	No	Inside Pole	139.00 - 8.00	12	No Ice 1/2" Ice 1" Ice	0.82 0.82 0.82

tnxTower FDH Velocitel 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job 845994_East Hampton - Young Street	Page 3 of 32
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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight p/lf
						In Face	Out Face	
HB158-1-08U8-S8J18(1-5/8)	A	No	Inside Pole	139.00 - 8.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30

2" Conduit	C	No	Inside Pole	118.00 - 8.00	1	No Ice	0.00	2.40
						1/2" Ice	0.00	2.40
						1" Ice	0.00	2.40
LDF2-50A(3/8)	C	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF5-50A(7/8)	C	No	Inside Pole	118.00 - 0.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF7-50A(1-5/8)	C	No	Inside Pole	118.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	140.00-120.00	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	120.00-80.00	A	0.000	0.000	0.000	0.000	0.50
		B	0.000	0.000	1.500	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.49
L3	80.00-39.50	A	0.000	0.000	0.000	0.000	0.50
		B	0.000	0.000	1.519	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.53
L4	39.50-0.00	A	0.000	0.000	0.000	0.000	0.39
		B	0.000	0.000	1.181	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.49

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} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	140.00-120.00	A	1.720	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	7.632	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.00
L2	120.00-80.00	A	1.675	0.000	0.000	0.000	0.000	0.50
		B		0.000	0.000	14.899	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.49
L3	80.00-39.50	A	1.591	0.000	0.000	0.000	0.000	0.50
		B		0.000	0.000	15.086	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.53
L4	39.50-0.00	A	1.421	0.000	0.000	0.000	0.000	0.39
		B		0.000	0.000	11.206	0.000	0.13
		C		0.000	0.000	0.000	0.000	0.49

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Feed Line Center of Pressure

Section	Elevation ft	CP _x	CP _z	CP _x Ice	CP _z Ice
		in	in	in	in
L1	140.00-120.00	0.0533	0.0173	0.4144	0.1346
L2	120.00-80.00	0.0526	0.0171	0.4274	0.1389
L3	80.00-39.50	0.0526	0.0171	0.4431	0.1440
L4	39.50-0.00	0.0413	0.0134	0.3476	0.1129

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	Safety Line 3/8	120.00 - 140.00	1.0000	1.0000
L2	1	Safety Line 3/8	80.00 - 120.00	1.0000	1.0000
L3	1	Safety Line 3/8	39.50 - 80.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz ft	Lateral ft						
Lightning Rod	C	From Leg	0.00	0.00	0.0000	140.00	No Ice	0.25	0.25	0.03
			0.00	0.00			1/2" Ice	0.66	0.66	0.03
			2.00	0.00			1" Ice	0.97	0.97	0.04
*** B13 RRH 4X30	A	From Leg	4.00	0.00	0.0000	139.00	No Ice	2.06	1.32	0.06
			0.00	1.00			1/2" Ice	2.24	1.48	0.07
			1.00	0.00			1" Ice	2.43	1.64	0.09
B13 RRH 4X30	B	From Leg	4.00	0.00	0.0000	139.00	No Ice	2.06	1.32	0.06
			0.00	1.00			1/2" Ice	2.24	1.48	0.07
			1.00	0.00			1" Ice	2.43	1.64	0.09
B13 RRH 4X30	C	From Leg	4.00	0.00	0.0000	139.00	No Ice	2.06	1.32	0.06
			0.00	1.00			1/2" Ice	2.24	1.48	0.07
			1.00	0.00			1" Ice	2.43	1.64	0.09
4T4R B5 160W FRIJ	A	From Leg	4.00	0.00	0.0000	139.00	No Ice	2.04	0.93	0.04
			0.00	1.00			1/2" Ice	2.23	1.07	0.06
			1.00	0.00			1" Ice	2.42	1.22	0.08
4T4R B5 160W FRIJ	B	From Leg	4.00	0.00	0.0000	139.00	No Ice	2.04	0.93	0.04
			0.00	1.00			1/2" Ice	2.23	1.07	0.06
			1.00	0.00			1" Ice	2.42	1.22	0.08
4T4R B5 160W FRIJ	C	From Leg	4.00	0.00	0.0000	139.00	No Ice	2.04	0.93	0.04

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.00						
			1.00			1/2" Ice	2.23	1.07	0.06
			4.00	0.0000	139.00	1" Ice	2.42	1.22	0.08
B66A RRH4X45	A	From Leg	0.00			No Ice	2.58	1.63	0.06
			1.00			1/2" Ice	2.79	1.81	0.08
			1.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	B	From Leg	4.00	0.0000	139.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			1.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	C	From Leg	4.00	0.0000	139.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			1.00			1" Ice	3.01	2.00	0.10
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	A	From Leg	4.00	0.0000	139.00	No Ice	9.97	10.25	0.05
			0.00			1/2" Ice	10.54	11.42	0.15
			1.00			1" Ice	11.08	12.31	0.25
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00	No Ice	9.97	10.25	0.05
			0.00			1/2" Ice	10.54	11.42	0.15
			1.00			1" Ice	11.08	12.31	0.25
(2) LPA-80063-6CF-EDIN w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00	No Ice	9.97	10.25	0.05
			0.00			1/2" Ice	10.54	11.42	0.15
			1.00			1" Ice	11.08	12.31	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00	0.0000	139.00	No Ice	9.35	7.65	0.09
			0.00			1/2" Ice	9.92	8.83	0.16
			1.00			1" Ice	10.46	9.73	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00	No Ice	9.35	7.65	0.09
			0.00			1/2" Ice	9.92	8.83	0.16
			1.00			1" Ice	10.46	9.73	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00	No Ice	9.35	7.65	0.09
			0.00			1/2" Ice	9.92	8.83	0.16
			1.00			1" Ice	10.46	9.73	0.25
(2) RXXDC-3315-PF-48	A	From Leg	4.00	0.0000	139.00	No Ice	3.36	2.19	0.03
			0.00			1/2" Ice	3.60	2.39	0.06
			1.00			1" Ice	3.84	2.61	0.09
T-Arm Mount [TA 602-3]	C	None		0.0000	139.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21

RRUS-11	A	From Leg	4.00	0.0000	118.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.10
RRUS-11	B	From Leg	4.00	0.0000	118.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.10
RRUS-11	C	From Leg	4.00	0.0000	118.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.10
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
(2) LGP21401	A	From Leg	4.00	0.0000	118.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			2.00			1" Ice	1.38	0.54	0.03

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
(2) LGP21401	B	From Leg	4.00	0.0000	118.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			2.00			1" Ice	1.38	0.54	0.03
(2) LGP21401	C	From Leg	4.00	0.0000	118.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			2.00			1" Ice	1.38	0.54	0.03
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	11.70	8.94	0.09
			0.00			1/2" Ice	12.42	10.45	0.18
			2.00			1" Ice	13.15	11.99	0.27
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	8.26	6.30	0.07
			0.00			1/2" Ice	8.82	7.48	0.14
			2.00			1" Ice	9.35	8.37	0.21
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	8.26	6.30	0.07
			0.00			1/2" Ice	8.82	7.48	0.14
			2.00			1" Ice	9.35	8.37	0.21
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	118.00	No Ice	1.21	1.21	0.03
			0.00			1/2" Ice	1.89	1.89	0.05
			2.00			1" Ice	2.11	2.11	0.08
Sector Mount [SM 901-3]	C	None		0.0000	118.00	No Ice	12.90	12.90	1.26
						1/2" Ice	17.16	17.16	1.43
						1" Ice	21.42	21.42	1.61

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²	%	ft ²	ft ²
L1 140.00-120.00	130.00	1.065	25	40.000	A	0.000	40.000	40.000	100.00	0.000	0.000
					B	0.000	40.000		100.00	0.750	0.000
					C	0.000	40.000		100.00	0.000	0.000
L2 120.00-80.00	99.44	0.987	23	109.229	A	0.000	109.229	109.229	100.00	0.000	0.000
					B	0.000	109.229		100.00	1.500	0.000
					C	0.000	109.229		100.00	0.000	0.000
L3 80.00-39.50	59.54	0.852	20	137.430	A	0.000	137.430	137.430	100.00	0.000	0.000
					B	0.000	137.430		100.00	1.519	0.000
					C	0.000	137.430		100.00	0.000	0.000
L4 39.50-0.00	19.19	0.7	16	159.411	A	0.000	159.411	159.411	100.00	0.000	0.000
					B	0.000	159.411		100.00	1.181	0.000
					C	0.000	159.411		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

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Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 140.00-120.00	130.00	1.065	6	1.7204	45.735	A	0.000	45.735	45.735	100.00	0.000	0.000
						B	0.000	45.735	100.00	7.632	0.000	
						C	0.000	45.735	100.00	0.000	0.000	
L2 120.00-80.00	99.44	0.987	6	1.6749	120.396	A	0.000	120.396	120.396	100.00	0.000	0.000
						B	0.000	120.396	100.00	14.899	0.000	
						C	0.000	120.396	100.00	0.000	0.000	
L3 80.00-39.50	59.54	0.852	5	1.5912	148.735	A	0.000	148.735	148.735	100.00	0.000	0.000
						B	0.000	148.735	100.00	15.086	0.000	
						C	0.000	148.735	100.00	0.000	0.000	
L4 39.50-0.00	19.19	0.7	4	1.4208	169.887	A	0.000	169.887	169.887	100.00	0.000	0.000
						B	0.000	169.887	100.00	11.206	0.000	
						C	0.000	169.887	100.00	0.000	0.000	

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 140.00-120.00	130.00	1.065	8	40.000	A	0.000	40.000	40.000	100.00	0.000	0.000
					B	0.000	40.000	100.00	0.750	0.000	
					C	0.000	40.000	100.00	0.000	0.000	
L2 120.00-80.00	99.44	0.987	8	109.229	A	0.000	109.229	109.229	100.00	0.000	0.000
					B	0.000	109.229	100.00	1.500	0.000	
					C	0.000	109.229	100.00	0.000	0.000	
L3 80.00-39.50	59.54	0.852	7	137.430	A	0.000	137.430	137.430	100.00	0.000	0.000
					B	0.000	137.430	100.00	1.519	0.000	
					C	0.000	137.430	100.00	0.000	0.000	
L4 39.50-0.00	19.19	0.7	5	159.411	A	0.000	159.411	159.411	100.00	0.000	0.000
					B	0.000	159.411	100.00	1.181	0.000	
					C	0.000	159.411	100.00	0.000	0.000	

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.24	1.89	A	1	0.6	25	1	1	40.000	0.66	32.84	C
			B	1	0.6	1	1	40.000				
			C	1	0.6	1	1	40.000				
L2 120.00-80.00	1.00	3.03	A	1	0.65	23	1	1	109.229	1.80	44.91	C
			B	1	0.65	1	1	109.229				
			C	1	0.65	1	1	109.229				
L3 80.00-39.50	1.04	5.97	A	1	0.65	20	1	1	137.430	1.95	48.03	C
			B	1	0.65	1	1	137.430				
			C	1	0.65	1	1	137.430				
L4 39.50-0.00	0.89	8.52	A	1	0.65	16	1	1	159.411	1.86	47.18	C
			B	1	0.65	1	1	159.411				

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
Sum Weight:	3.17	19.42	C	1	0.65		1	1 OTM	159.411 415.61 kip-ft	6.26		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.24	1.89	A	1	0.6	25	1	1	40.000	0.66	32.84	C
			B	1	0.6	1	1	40.000				
			C	1	0.6	1	1	40.000				
L2 120.00-80.00	1.00	3.03	A	1	0.65	23	1	1	109.229	1.80	44.91	C
			B	1	0.65	1	1	109.229				
			C	1	0.65	1	1	109.229				
L3 80.00-39.50	1.04	5.97	A	1	0.65	20	1	1	137.430	1.95	48.03	C
			B	1	0.65	1	1	137.430				
			C	1	0.65	1	1	137.430				
L4 39.50-0.00	0.89	8.52	A	1	0.65	16	1	1	159.411	1.86	47.18	C
			B	1	0.65	1	1	159.411				
			C	1	0.65	1	1	159.411				
Sum Weight:	3.17	19.42						OTM	415.61 kip-ft	6.26		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.24	1.89	A	1	0.6	25	1	1	40.000	0.66	32.84	C
			B	1	0.6	1	1	40.000				
			C	1	0.6	1	1	40.000				
L2 120.00-80.00	1.00	3.03	A	1	0.65	23	1	1	109.229	1.80	44.91	C
			B	1	0.65	1	1	109.229				
			C	1	0.65	1	1	109.229				
L3 80.00-39.50	1.04	5.97	A	1	0.65	20	1	1	137.430	1.95	48.03	C
			B	1	0.65	1	1	137.430				
			C	1	0.65	1	1	137.430				
L4 39.50-0.00	0.89	8.52	A	1	0.65	16	1	1	159.411	1.86	47.18	C
			B	1	0.65	1	1	159.411				
			C	1	0.65	1	1	159.411				
Sum Weight:	3.17	19.42						OTM	415.61 kip-ft	6.26		

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Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.33	2.98	A	1	1.2	6	1	1	45.735	0.39	19.55	C
			B	1	1.2		1	1	45.735			
			C	1	1.2		1	1	45.735			
L2 120.00-80.00	1.17	5.84	A	1	1.2	6	1	1	120.396	0.95	23.79	C
			B	1	1.2		1	1	120.396			
			C	1	1.2		1	1	120.396			
L3 80.00-39.50	1.21	9.29	A	1	1.2	5	1	1	148.735	1.01	24.98	C
			B	1	1.2		1	1	148.735			
			C	1	1.2		1	1	148.735			
L4 39.50-0.00	1.01	11.92	A	1	1.2	4	1	1	169.887	0.95	24.16	C
			B	1	1.2		1	1	169.887			
			C	1	1.2		1	1	169.887			
Sum Weight:	3.72	30.03						OTM	224.01 kip-ft	3.31		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.33	2.98	A	1	1.2	6	1	1	45.735	0.39	19.55	C
			B	1	1.2		1	1	45.735			
			C	1	1.2		1	1	45.735			
L2 120.00-80.00	1.17	5.84	A	1	1.2	6	1	1	120.396	0.95	23.79	C
			B	1	1.2		1	1	120.396			
			C	1	1.2		1	1	120.396			
L3 80.00-39.50	1.21	9.29	A	1	1.2	5	1	1	148.735	1.01	24.98	C
			B	1	1.2		1	1	148.735			
			C	1	1.2		1	1	148.735			
L4 39.50-0.00	1.01	11.92	A	1	1.2	4	1	1	169.887	0.95	24.16	C
			B	1	1.2		1	1	169.887			
			C	1	1.2		1	1	169.887			
Sum Weight:	3.72	30.03						OTM	224.01 kip-ft	3.31		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.33	2.98	A	1	1.2	6	1	1	45.735	0.39	19.55	C
			B	1	1.2		1	1	45.735			
			C	1	1.2		1	1	45.735			

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L2 120.00-80.00	1.17	5.84	A	1	1.2	6	1	1	120.396	0.95	23.79	C
			B	1	1.2		1	1	120.396			
			C	1	1.2		1	1	120.396			
L3 80.00-39.50	1.21	9.29	A	1	1.2	5	1	1	148.735	1.01	24.98	C
			B	1	1.2		1	1	148.735			
			C	1	1.2		1	1	148.735			
L4 39.50-0.00	1.01	11.92	A	1	1.2	4	1	1	169.887	0.95	24.16	C
			B	1	1.2		1	1	169.887			
			C	1	1.2		1	1	169.887			
Sum Weight:	3.72	30.03						OTM	224.01 kip-ft	3.31		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.24	1.89	A	1	0.6	8	1	1	40.000	0.22	11.01	C
			B	1	0.6		1	1	40.000			
			C	1	0.6		1	1	40.000			
L2 120.00-80.00	1.00	3.03	A	1	0.65	8	1	1	109.229	0.60	15.06	C
			B	1	0.65		1	1	109.229			
			C	1	0.65		1	1	109.229			
L3 80.00-39.50	1.04	5.97	A	1	0.65	7	1	1	137.430	0.65	16.11	C
			B	1	0.65		1	1	137.430			
			C	1	0.65		1	1	137.430			
L4 39.50-0.00	0.89	8.52	A	1	0.65	5	1	1	159.411	0.63	15.82	C
			B	1	0.65		1	1	159.411			
			C	1	0.65		1	1	159.411			
Sum Weight:	3.17	19.42						OTM	139.39 kip-ft	2.10		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 140.00-120.00	0.24	1.89	A	1	0.6	8	1	1	40.000	0.22	11.01	C
			B	1	0.6		1	1	40.000			
			C	1	0.6		1	1	40.000			
L2 120.00-80.00	1.00	3.03	A	1	0.65	8	1	1	109.229	0.60	15.06	C
			B	1	0.65		1	1	109.229			
			C	1	0.65		1	1	109.229			
L3 80.00-39.50	1.04	5.97	A	1	0.65	7	1	1	137.430	0.65	16.11	C
			B	1	0.65		1	1	137.430			
			C	1	0.65		1	1	137.430			
L4 39.50-0.00	0.89	8.52	A	1	0.65	5	1	1	159.411	0.63	15.82	C

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
Sum Weight:	3.17	19.42	B	1	0.65		1	1	159.411			
			C	1	0.65		1	1	159.411			
								OTM	139.39	2.10		
									kip-ft			

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1	0.24	1.89	A	1	0.6	8	1	1	40.000	0.22	11.01	C
140.00-120.00			B	1	0.6		1	1	40.000			
			C	1	0.6		1	1	40.000			
L2	1.00	3.03	A	1	0.65	8	1	1	109.229	0.60	15.06	C
120.00-80.00			B	1	0.65		1	1	109.229			
			C	1	0.65		1	1	109.229			
L3	1.04	5.97	A	1	0.65	7	1	1	137.430	0.65	16.11	C
80.00-39.50			B	1	0.65		1	1	137.430			
			C	1	0.65		1	1	137.430			
L4	0.89	8.52	A	1	0.65	5	1	1	159.411	0.63	15.82	C
39.50-0.00			B	1	0.65		1	1	159.411			
			C	1	0.65		1	1	159.411			
Sum Weight:	3.17	19.42						OTM	139.39	2.10		
									kip-ft			

Discrete Appurtenance Pressures - No Ice G_H = 1.100

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Lightning Rod	240.0000	0.03	-0.87	0.50	142.00	1.092	26	0.25	0.25
B13 RRH 4X30	0.0000	0.06	0.00	-5.00	140.00	1.088	25	2.06	1.32
B13 RRH 4X30	120.0000	0.06	4.33	2.50	140.00	1.088	25	2.06	1.32
B13 RRH 4X30	240.0000	0.06	-4.33	2.50	140.00	1.088	25	2.06	1.32
4T4R B5 160W FRIJ	0.0000	0.04	0.00	-5.00	140.00	1.088	25	2.04	0.93
4T4R B5 160W FRIJ	120.0000	0.04	4.33	2.50	140.00	1.088	25	2.04	0.93
4T4R B5 160W FRIJ	240.0000	0.04	-4.33	2.50	140.00	1.088	25	2.04	0.93
B66A RRH4X45	0.0000	0.06	0.00	-5.00	140.00	1.088	25	2.58	1.63
B66A RRH4X45	120.0000	0.06	4.33	2.50	140.00	1.088	25	2.58	1.63
B66A RRH4X45	240.0000	0.06	-4.33	2.50	140.00	1.088	25	2.58	1.63
LPA-80063-6CF-EDIN	0.0000	0.10	0.00	-5.00	140.00	1.088	25	19.94	20.50
w/ Mount Pipe									
LPA-80063-6CF-EDIN	120.0000	0.10	4.33	2.50	140.00	1.088	25	19.94	20.50
w/ Mount Pipe									
LPA-80063-6CF-EDIN	240.0000	0.10	-4.33	2.50	140.00	1.088	25	19.94	20.50
w/ Mount Pipe									
JAHH-65B-R3B w/ Mount Pipe	0.0000	0.18	0.00	-5.00	140.00	1.088	25	18.70	15.29

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _y ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
JAHH-65B-R3B w/ Mount Pipe	120.0000	0.18	4.33	2.50	140.00	1.088	25	18.70	15.29
JAHH-65B-R3B w/ Mount Pipe	240.0000	0.18	-4.33	2.50	140.00	1.088	25	18.70	15.29
RXXDC-3315-PF-48	0.0000	0.06	0.00	-5.00	140.00	1.088	25	6.73	4.38
T-Arm Mount [TA 602-3]	0.0000	0.77	0.00	0.00	139.00	1.086	25	11.59	11.59
RRUS-11	0.0000	0.06	0.00	-5.19	120.00	1.041	24	2.52	1.07
RRUS-11	120.0000	0.06	4.50	2.60	120.00	1.041	24	2.52	1.07
RRUS-11	240.0000	0.06	-4.50	2.60	120.00	1.041	24	2.52	1.07
7770.00 w/ Mount Pipe	0.0000	0.12	0.00	-5.19	120.00	1.041	24	11.49	8.51
7770.00 w/ Mount Pipe	120.0000	0.12	4.50	2.60	120.00	1.041	24	11.49	8.51
7770.00 w/ Mount Pipe	240.0000	0.12	-4.50	2.60	120.00	1.041	24	11.49	8.51
LGP21401	0.0000	0.02	0.00	-5.19	120.00	1.041	24	2.21	0.69
LGP21401	120.0000	0.02	4.50	2.60	120.00	1.041	24	2.21	0.69
LGP21401	240.0000	0.02	-4.50	2.60	120.00	1.041	24	2.21	0.69
P65-17-XLH-RR w/ Mount Pipe	0.0000	0.09	0.00	-5.19	120.00	1.041	24	11.70	8.94
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	120.0000	0.07	4.50	2.60	120.00	1.041	24	8.26	6.30
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	240.0000	0.07	-4.50	2.60	120.00	1.041	24	8.26	6.30
DC6-48-60-18-8F	0.0000	0.03	0.00	-5.19	120.00	1.041	24	1.21	1.21
Sector Mount [SM 901-3]	0.0000	1.26	0.00	0.00	118.00	1.036	24	12.90	12.90
Sum Weight:		4.30							

Discrete Appurtenance Pressures - With Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _y ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
Lightning Rod	240.0000	0.05	-0.87	0.50	142.00	1.092	7	1.35	1.35	1.7332
B13 RRH 4X30	0.0000	0.13	0.00	-5.00	140.00	1.088	7	2.73	1.90	1.7320
B13 RRH 4X30	120.0000	0.13	4.33	2.50	140.00	1.088	7	2.73	1.90	1.7320
B13 RRH 4X30	240.0000	0.13	-4.33	2.50	140.00	1.088	7	2.73	1.90	1.7320
4T4R B5 160W FRUJ	0.0000	0.11	0.00	-5.00	140.00	1.088	7	2.72	1.46	1.7320
4T4R B5 160W FRUJ	120.0000	0.11	4.33	2.50	140.00	1.088	7	2.72	1.46	1.7320
4T4R B5 160W FRUJ	240.0000	0.11	-4.33	2.50	140.00	1.088	7	2.72	1.46	1.7320
B66A RRH4X45	0.0000	0.14	0.00	-5.00	140.00	1.088	7	3.35	2.29	1.7320
B66A RRH4X45	120.0000	0.14	4.33	2.50	140.00	1.088	7	3.35	2.29	1.7320
B66A RRH4X45	240.0000	0.14	-4.33	2.50	140.00	1.088	7	3.35	2.29	1.7320
LPA-80063-6CF-EDIN w/ Mount Pipe	0.0000	0.83	0.00	-5.00	140.00	1.088	7	23.76	27.28	1.7320
LPA-80063-6CF-EDIN w/ Mount Pipe	120.0000	0.83	4.33	2.50	140.00	1.088	7	23.76	27.28	1.7320
LPA-80063-6CF-EDIN w/ Mount Pipe	240.0000	0.83	-4.33	2.50	140.00	1.088	7	23.76	27.28	1.7320
JAHH-65B-R3B w/ Mount Pipe	0.0000	0.78	0.00	-5.00	140.00	1.088	7	22.51	22.14	1.7320
JAHH-65B-R3B w/ Mount Pipe	120.0000	0.78	4.33	2.50	140.00	1.088	7	22.51	22.14	1.7320
JAHH-65B-R3B w/ Mount Pipe	240.0000	0.78	-4.33	2.50	140.00	1.088	7	22.51	22.14	1.7320
RXXDC-3315-PF-48	0.0000	0.30	0.00	-5.00	140.00	1.088	7	8.41	5.86	1.7320
T-Arm Mount [TA 602-3]	0.0000	1.52	0.00	0.00	139.00	1.086	7	24.93	24.93	1.7320

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A A _c Front ft ²	C _A A _c Side ft ²	t _z in
RRUS-11	0.0000	0.13	0.00	-5.19	120.00	1.041	6	3.23	1.59	1.7038
RRUS-11	120.0000	0.13	4.50	2.60	120.00	1.041	6	3.23	1.59	1.7038
RRUS-11	240.0000	0.13	-4.50	2.60	120.00	1.041	6	3.23	1.59	1.7038
7770.00 w/ Mount Pipe	0.0000	0.50	0.00	-5.19	120.00	1.041	6	14.45	13.45	1.7038
7770.00 w/ Mount Pipe	120.0000	0.50	4.50	2.60	120.00	1.041	6	14.45	13.45	1.7038
7770.00 w/ Mount Pipe	240.0000	0.50	-4.50	2.60	120.00	1.041	6	14.45	13.45	1.7038
LGP21401	0.0000	0.10	0.00	-5.19	120.00	1.041	6	3.19	1.41	1.7038
LGP21401	120.0000	0.10	4.50	2.60	120.00	1.041	6	3.19	1.41	1.7038
LGP21401	240.0000	0.10	-4.50	2.60	120.00	1.041	6	3.19	1.41	1.7038
P65-17-XLH-RR w/ Mount Pipe	0.0000	0.43	0.00	-5.19	120.00	1.041	6	14.11	13.62	1.7038
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	120.0000	0.33	4.50	2.60	120.00	1.041	6	10.10	9.64	1.7038
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	240.0000	0.33	-4.50	2.60	120.00	1.041	6	10.10	9.64	1.7038
DC6-48-60-18-8F Sector Mount [SM 901-3]	0.0000	0.12	0.00	-5.19	120.00	1.041	6	2.43	2.43	1.7038
	0.0000	1.85	0.00	0.00	118.00	1.036	6	27.42	27.42	1.7038
Sum Weight:		13.12								

Discrete Appurtenance Pressures - Service G_H = 1.100

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A A _c Front ft ²	C _A A _c Side ft ²
Lightning Rod	240.0000	0.03	-0.87	0.50	142.00	1.092	9	0.25	0.25
B13 RRH 4X30	0.0000	0.06	0.00	-5.00	140.00	1.088	9	2.06	1.32
B13 RRH 4X30	120.0000	0.06	4.33	2.50	140.00	1.088	9	2.06	1.32
B13 RRH 4X30	240.0000	0.06	-4.33	2.50	140.00	1.088	9	2.06	1.32
4T4R B5 160W FRIJ	0.0000	0.04	0.00	-5.00	140.00	1.088	9	2.04	0.93
4T4R B5 160W FRIJ	120.0000	0.04	4.33	2.50	140.00	1.088	9	2.04	0.93
4T4R B5 160W FRIJ	240.0000	0.04	-4.33	2.50	140.00	1.088	9	2.04	0.93
B66A RRH4X45	0.0000	0.06	0.00	-5.00	140.00	1.088	9	2.58	1.63
B66A RRH4X45	120.0000	0.06	4.33	2.50	140.00	1.088	9	2.58	1.63
B66A RRH4X45	240.0000	0.06	-4.33	2.50	140.00	1.088	9	2.58	1.63
LPA-80063-6CF-EDIN w/ Mount Pipe	0.0000	0.10	0.00	-5.00	140.00	1.088	9	19.94	20.50
LPA-80063-6CF-EDIN w/ Mount Pipe	120.0000	0.10	4.33	2.50	140.00	1.088	9	19.94	20.50
LPA-80063-6CF-EDIN w/ Mount Pipe	240.0000	0.10	-4.33	2.50	140.00	1.088	9	19.94	20.50
JAHH-65B-R3B w/ Mount Pipe	0.0000	0.18	0.00	-5.00	140.00	1.088	9	18.70	15.29
JAHH-65B-R3B w/ Mount Pipe	120.0000	0.18	4.33	2.50	140.00	1.088	9	18.70	15.29
JAHH-65B-R3B w/ Mount Pipe	240.0000	0.18	-4.33	2.50	140.00	1.088	9	18.70	15.29
RXXDC-3315-PF-48	0.0000	0.06	0.00	-5.00	140.00	1.088	9	6.73	4.38
T-Arm Mount [TA 602-3]	0.0000	0.77	0.00	0.00	139.00	1.086	9	11.59	11.59
RRUS-11	0.0000	0.06	0.00	-5.19	120.00	1.041	8	2.52	1.07
RRUS-11	120.0000	0.06	4.50	2.60	120.00	1.041	8	2.52	1.07
RRUS-11	240.0000	0.06	-4.50	2.60	120.00	1.041	8	2.52	1.07
7770.00 w/ Mount Pipe	0.0000	0.12	0.00	-5.19	120.00	1.041	8	11.49	8.51
7770.00 w/ Mount Pipe	120.0000	0.12	4.50	2.60	120.00	1.041	8	11.49	8.51
7770.00 w/ Mount Pipe	240.0000	0.12	-4.50	2.60	120.00	1.041	8	11.49	8.51
LGP21401	0.0000	0.02	0.00	-5.19	120.00	1.041	8	2.21	0.69

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _y ft	z ft	K _x	q _x psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
LGP21401	120.0000	0.02	4.50	2.60	120.00	1.041	8	2.21	0.69
LGP21401	240.0000	0.02	-4.50	2.60	120.00	1.041	8	2.21	0.69
P65-17-XLH-RR w/ Mount Pipe	0.0000	0.09	0.00	-5.19	120.00	1.041	8	11.70	8.94
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	120.0000	0.07	4.50	2.60	120.00	1.041	8	8.26	6.30
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	240.0000	0.07	-4.50	2.60	120.00	1.041	8	8.26	6.30
DC6-48-60-18-8F Sector Mount [SM 901-3]	0.0000	0.03	0.00	-5.19	120.00	1.041	8	1.21	1.21
	0.0000	1.26	0.00	0.00	118.00	1.036	8	12.90	12.90
Sum Weight:		4.30							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _y kip-ft	Sum of Torques kip-ft
Leg Weight	19.42					
Bracing Weight	0.00					
Total Member Self-Weight	19.42			-0.53	-0.02	
Total Weight	26.89			-0.53	-0.02	
Wind 0 deg - No Ice		0.00	-11.73	-1145.73	-0.02	-0.01
Wind 30 deg - No Ice		5.83	-10.16	-992.30	-567.45	-0.50
Wind 60 deg - No Ice		10.09	-5.87	-573.13	-982.84	-0.86
Wind 90 deg - No Ice		11.66	0.00	-0.53	-1134.89	-0.99
Wind 120 deg - No Ice		10.09	5.87	572.07	-982.84	-0.86
Wind 150 deg - No Ice		5.83	10.16	991.24	-567.45	-0.49
Wind 180 deg - No Ice		0.00	11.73	1144.67	-0.02	0.01
Wind 210 deg - No Ice		-5.83	10.16	991.24	567.42	0.50
Wind 240 deg - No Ice		-10.09	5.87	572.07	982.81	0.86
Wind 270 deg - No Ice		-11.66	0.00	-0.53	1134.85	0.99
Wind 300 deg - No Ice		-10.09	-5.87	-573.13	982.81	0.86
Wind 330 deg - No Ice		-5.83	-10.16	-992.30	567.42	0.49
Member Ice	10.61					
Total Weight Ice	46.86			-2.32	-0.80	
Wind 0 deg - Ice		0.00	-5.34	-496.23	-0.80	-0.01
Wind 30 deg - Ice		2.66	-4.63	-430.06	-246.57	-0.20
Wind 60 deg - Ice		4.61	-2.67	-249.27	-426.49	-0.33
Wind 90 deg - Ice		5.32	0.00	-2.32	-492.35	-0.38
Wind 120 deg - Ice		4.61	2.67	244.64	-426.49	-0.33
Wind 150 deg - Ice		2.66	4.63	425.43	-246.57	-0.18
Wind 180 deg - Ice		0.00	5.34	491.60	-0.80	0.01
Wind 210 deg - Ice		-2.66	4.63	425.43	244.98	0.20
Wind 240 deg - Ice		-4.61	2.67	244.64	424.90	0.33
Wind 270 deg - Ice		-5.32	0.00	-2.32	490.75	0.38
Wind 300 deg - Ice		-4.61	-2.67	-249.27	424.90	0.33
Wind 330 deg - Ice		-2.66	-4.63	-430.06	244.98	0.18
Total Weight	26.89			-0.53	-0.02	
Wind 0 deg - Service		0.00	-3.93	-384.63	0.03	-0.00
Wind 30 deg - Service		1.95	-3.41	-333.17	-190.28	-0.17
Wind 60 deg - Service		3.39	-1.97	-192.59	-329.60	-0.29
Wind 90 deg - Service		3.91	0.00	-0.54	-380.59	-0.33
Wind 120 deg - Service		3.39	1.97	191.50	-329.60	-0.29
Wind 150 deg - Service		1.95	3.41	332.08	-190.28	-0.16
Wind 180 deg - Service		0.00	3.93	383.54	0.03	0.00

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Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Wind 210 deg - Service		-1.95	3.41	332.08	190.34	0.17
Wind 240 deg - Service		-3.39	1.97	191.50	329.65	0.29
Wind 270 deg - Service		-3.91	0.00	-0.54	380.65	0.33
Wind 300 deg - Service		-3.39	-1.97	-192.59	329.65	0.29
Wind 330 deg - Service		-1.95	-3.41	-333.17	190.34	0.16

Load Combinations

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

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Comb. No.	Description
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	140 - 120	Pole	Max Tension	2	0.00	-0.00	-0.00
			Max. Compression	26	-12.03	-0.04	1.53
			Max. Mx	20	-4.76	131.20	0.32
			Max. My	2	-4.75	0.03	133.44
			Max. Vy	20	-7.19	131.20	0.32
			Max. Vx	2	-7.28	0.03	133.44
			Max. Torque	8			0.90
L2	120 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.59	-0.26	2.75
			Max. Mx	20	-11.46	534.21	0.64
			Max. My	2	-11.45	0.01	541.24
			Max. Vy	20	-12.69	534.21	0.64
			Max. Vx	2	-12.81	0.01	541.24
			Max. Torque	8			1.62
L3	80 - 39.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.18	-0.53	2.62
			Max. Mx	8	-19.52	-1094.46	0.67
			Max. My	2	-19.51	-0.00	1106.45
			Max. Vy	8	15.64	-1094.46	0.67
			Max. Vx	2	-15.76	-0.00	1106.45
			Max. Torque	8			1.61
L4	39.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.08	-0.81	2.47
			Max. Mx	8	-32.26	-1866.95	0.67
			Max. My	2	-32.26	-0.02	1884.45
			Max. Vy	8	18.67	-1866.95	0.67
			Max. Vx	2	-18.79	-0.02	1884.45
			Max. Torque	8			1.61

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	53.08	0.00	-0.00
	Max. H _x	20	32.27	18.65	0.00
	Max. H _z	3	24.20	0.00	18.77
	Max. M _x	2	1884.45	0.00	18.77
	Max. M _z	8	1866.95	-18.65	0.00
	Max. Torsion	8	1.61	-18.65	0.00
	Min. Vert	3	24.20	0.00	18.77
	Min. H _x	8	32.27	-18.65	0.00
	Min. H _z	15	24.20	0.00	-18.77
	Min. M _x	14	-1883.10	0.00	-18.77
	Min. M _z	20	-1866.91	18.65	0.00

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Torsion	20	-1.61	18.65	0.00

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	26.89	0.00	-0.00	-0.53	-0.02	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	32.27	-0.00	-18.77	-1884.45	-0.02	-0.01
0.9 Dead+1.6 Wind 0 deg - No Ice	24.20	-0.00	-18.77	-1870.81	-0.02	-0.01
1.2 Dead+1.6 Wind 30 deg - No Ice	32.27	9.33	-16.26	-1632.26	-933.49	-0.82
0.9 Dead+1.6 Wind 30 deg - No Ice	24.20	9.33	-16.26	-1620.37	-926.80	-0.81
1.2 Dead+1.6 Wind 60 deg - No Ice	32.27	16.15	-9.39	-942.67	-1616.85	-1.40
0.9 Dead+1.6 Wind 60 deg - No Ice	24.20	16.15	-9.39	-935.74	-1605.25	-1.39
1.2 Dead+1.6 Wind 90 deg - No Ice	32.27	18.65	-0.00	-0.67	-1866.95	-1.61
0.9 Dead+1.6 Wind 90 deg - No Ice	24.20	18.65	-0.00	-0.49	-1853.53	-1.60
1.2 Dead+1.6 Wind 120 deg - No Ice	32.27	16.15	9.39	941.34	-1616.85	-1.39
0.9 Dead+1.6 Wind 120 deg - No Ice	24.20	16.15	9.39	934.75	-1605.25	-1.38
1.2 Dead+1.6 Wind 150 deg - No Ice	32.27	9.33	16.26	1630.92	-933.49	-0.79
0.9 Dead+1.6 Wind 150 deg - No Ice	24.20	9.33	16.26	1619.38	-926.79	-0.79
1.2 Dead+1.6 Wind 180 deg - No Ice	32.27	-0.00	18.77	1883.10	-0.02	0.01
0.9 Dead+1.6 Wind 180 deg - No Ice	24.20	-0.00	18.77	1869.82	-0.02	0.01
1.2 Dead+1.6 Wind 210 deg - No Ice	32.27	-9.33	16.26	1630.92	933.45	0.81
0.9 Dead+1.6 Wind 210 deg - No Ice	24.20	-9.33	16.26	1619.38	926.76	0.81
1.2 Dead+1.6 Wind 240 deg - No Ice	32.27	-16.15	9.39	941.34	1616.81	1.40
0.9 Dead+1.6 Wind 240 deg - No Ice	24.20	-16.15	9.39	934.75	1605.22	1.39
1.2 Dead+1.6 Wind 270 deg - No Ice	32.27	-18.65	-0.00	-0.67	1866.91	1.61
0.9 Dead+1.6 Wind 270 deg - No Ice	24.20	-18.65	-0.00	-0.49	1853.50	1.60
1.2 Dead+1.6 Wind 300 deg - No Ice	32.27	-16.15	-9.39	-942.67	1616.81	1.39
0.9 Dead+1.6 Wind 300 deg - No Ice	24.20	-16.15	-9.39	-935.74	1605.22	1.38
1.2 Dead+1.6 Wind 330 deg - No Ice	32.27	-9.33	-16.26	-1632.26	933.45	0.80
0.9 Dead+1.6 Wind 330 deg - No Ice	24.20	-9.33	-16.26	-1620.37	926.77	0.79
1.2 Dead+1.0 Ice+1.0 Temp	53.08	-0.00	0.00	-2.47	-0.81	-0.00

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Load Combination	Vertical K	Shear _x K	Shear _y K	Overturning Moment, M _x kip-ft	Overturning Moment, M _y kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	53.08	-0.00	-5.34	-525.69	-0.85	-0.01
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	53.08	2.66	-4.63	-455.62	-261.06	-0.22
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	53.08	4.61	-2.67	-264.21	-451.55	-0.37
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	53.08	5.32	0.00	-2.74	-521.27	-0.42
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	53.08	4.61	2.67	258.74	-451.55	-0.36
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	53.08	2.66	4.63	450.15	-261.06	-0.20
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	53.08	-0.00	5.34	520.21	-0.85	0.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	53.08	-2.66	4.63	450.15	259.36	0.22
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	53.08	-4.61	2.67	258.74	449.84	0.37
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	53.08	-5.32	0.00	-2.74	519.56	0.42
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	53.08	-4.61	-2.67	-264.21	449.84	0.36
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	53.08	-2.66	-4.63	-455.62	259.36	0.20
Dead+Wind 0 deg - Service	26.89	0.00	-3.93	-393.71	-0.02	-0.00
Dead+Wind 30 deg - Service	26.89	1.95	-3.41	-341.04	-194.81	-0.17
Dead+Wind 60 deg - Service	26.89	3.38	-1.97	-197.13	-337.42	-0.29
Dead+Wind 90 deg - Service	26.89	3.91	0.00	-0.56	-389.61	-0.34
Dead+Wind 120 deg - Service	26.89	3.38	1.97	196.02	-337.42	-0.29
Dead+Wind 150 deg - Service	26.89	1.95	3.41	339.92	-194.81	-0.17
Dead+Wind 180 deg - Service	26.89	0.00	3.93	392.60	-0.02	0.00
Dead+Wind 210 deg - Service	26.89	-1.95	3.41	339.92	194.78	0.17
Dead+Wind 240 deg - Service	26.89	-3.38	1.97	196.02	337.38	0.29
Dead+Wind 270 deg - Service	26.89	-3.91	0.00	-0.56	389.58	0.34
Dead+Wind 300 deg - Service	26.89	-3.38	-1.97	-197.13	337.38	0.29
Dead+Wind 330 deg - Service	26.89	-1.95	-3.41	-341.04	194.78	0.17

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-26.89	0.00	0.00	26.89	0.00	0.000%
2	0.00	-32.27	-18.77	0.00	32.27	18.77	0.005%
3	0.00	-24.20	-18.77	0.00	24.20	18.77	0.004%
4	9.33	-32.27	-16.26	-9.33	32.27	16.26	0.000%
5	9.33	-24.20	-16.26	-9.33	24.20	16.26	0.000%
6	16.15	-32.27	-9.39	-16.15	32.27	9.39	0.000%
7	16.15	-24.20	-9.39	-16.15	24.20	9.39	0.000%
8	18.65	-32.27	0.00	-18.65	32.27	0.00	0.001%
9	18.65	-24.20	0.00	-18.65	24.20	0.00	0.002%
10	16.15	-32.27	9.39	-16.15	32.27	-9.39	0.000%
11	16.15	-24.20	9.39	-16.15	24.20	-9.39	0.000%
12	9.33	-32.27	16.26	-9.33	32.27	-16.26	0.000%
13	9.33	-24.20	16.26	-9.33	24.20	-16.26	0.000%
14	0.00	-32.27	18.77	0.00	32.27	-18.77	0.005%
15	0.00	-24.20	18.77	0.00	24.20	-18.77	0.004%
16	-9.33	-32.27	16.26	9.33	32.27	-16.26	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
17	-9.33	-24.20	16.26	9.33	24.20	-16.26	0.000%
18	-16.15	-32.27	9.39	16.15	32.27	-9.39	0.000%
19	-16.15	-24.20	9.39	16.15	24.20	-9.39	0.000%
20	-18.65	-32.27	0.00	18.65	32.27	0.00	0.001%
21	-18.65	-24.20	0.00	18.65	24.20	0.00	0.002%
22	-16.15	-32.27	-9.39	16.15	32.27	9.39	0.000%
23	-16.15	-24.20	-9.39	16.15	24.20	9.39	0.000%
24	-9.33	-32.27	-16.26	9.33	32.27	16.26	0.000%
25	-9.33	-24.20	-16.26	9.33	24.20	16.26	0.000%
26	0.00	-53.08	0.00	0.00	53.08	-0.00	0.002%
27	0.00	-53.08	-5.34	0.00	53.08	5.34	0.001%
28	2.66	-53.08	-4.63	-2.66	53.08	4.63	0.001%
29	4.61	-53.08	-2.67	-4.61	53.08	2.67	0.001%
30	5.32	-53.08	0.00	-5.32	53.08	-0.00	0.001%
31	4.61	-53.08	2.67	-4.61	53.08	-2.67	0.001%
32	2.66	-53.08	4.63	-2.66	53.08	-4.63	0.001%
33	0.00	-53.08	5.34	0.00	53.08	-5.34	0.001%
34	-2.66	-53.08	4.63	2.66	53.08	-4.63	0.001%
35	-4.61	-53.08	2.67	4.61	53.08	-2.67	0.001%
36	-5.32	-53.08	0.00	5.32	53.08	-0.00	0.001%
37	-4.61	-53.08	-2.67	4.61	53.08	2.67	0.001%
38	-2.66	-53.08	-4.63	2.66	53.08	4.63	0.001%
39	0.00	-26.89	-3.93	-0.00	26.89	3.93	0.003%
40	1.95	-26.89	-3.41	-1.95	26.89	3.41	0.003%
41	3.39	-26.89	-1.97	-3.38	26.89	1.97	0.003%
42	3.91	-26.89	0.00	-3.91	26.89	-0.00	0.003%
43	3.39	-26.89	1.97	-3.38	26.89	-1.97	0.003%
44	1.95	-26.89	3.41	-1.95	26.89	-3.41	0.003%
45	0.00	-26.89	3.93	-0.00	26.89	-3.93	0.003%
46	-1.95	-26.89	3.41	1.95	26.89	-3.41	0.003%
47	-3.39	-26.89	1.97	3.38	26.89	-1.97	0.003%
48	-3.91	-26.89	0.00	3.91	26.89	-0.00	0.003%
49	-3.39	-26.89	-1.97	3.38	26.89	1.97	0.003%
50	-1.95	-26.89	-3.41	1.95	26.89	3.41	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.0000001	0.0000001
2	Yes	14	0.00006995	0.00008447
3	Yes	14	0.00004899	0.00007257
4	Yes	18	0.0000001	0.00008554
5	Yes	18	0.0000001	0.00006703
6	Yes	18	0.0000001	0.00009454
7	Yes	18	0.0000001	0.00007429
8	Yes	16	0.0000001	0.00007081
9	Yes	15	0.0000001	0.00012923
10	Yes	18	0.0000001	0.00008298
11	Yes	18	0.0000001	0.00006512
12	Yes	18	0.0000001	0.00009183
13	Yes	18	0.0000001	0.00007215
14	Yes	14	0.00006995	0.00008434
15	Yes	14	0.00004899	0.00007248
16	Yes	18	0.0000001	0.00009194
17	Yes	18	0.0000001	0.00007223

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18	Yes	18	0.0000001	0.00008295
19	Yes	18	0.0000001	0.00006509
20	Yes	16	0.0000001	0.00007082
21	Yes	15	0.0000001	0.00012923
22	Yes	18	0.0000001	0.00009449
23	Yes	18	0.0000001	0.00007425
24	Yes	18	0.0000001	0.00008564
25	Yes	18	0.0000001	0.00006710
26	Yes	7	0.0000001	0.00002096
27	Yes	15	0.0000001	0.00010858
28	Yes	15	0.0000001	0.00014129
29	Yes	15	0.0000001	0.00014547
30	Yes	15	0.0000001	0.00010871
31	Yes	15	0.0000001	0.00013627
32	Yes	15	0.0000001	0.00013956
33	Yes	15	0.0000001	0.00010588
34	Yes	15	0.0000001	0.00013916
35	Yes	15	0.0000001	0.00013578
36	Yes	15	0.0000001	0.00010831
37	Yes	15	0.0000001	0.00014479
38	Yes	15	0.0000001	0.00014077
39	Yes	13	0.0000001	0.00004840
40	Yes	13	0.0000001	0.00005359
41	Yes	13	0.0000001	0.00007526
42	Yes	13	0.0000001	0.00005866
43	Yes	13	0.0000001	0.00005256
44	Yes	13	0.0000001	0.00006679
45	Yes	13	0.0000001	0.00004809
46	Yes	13	0.0000001	0.00006708
47	Yes	13	0.0000001	0.00005259
48	Yes	13	0.0000001	0.00005866
49	Yes	13	0.0000001	0.00007510
50	Yes	13	0.0000001	0.00005368

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 120	12.039	39	0.7684	0.0032
L2	120 - 80	8.875	39	0.7284	0.0026
L3	84.5 - 39.5	4.263	39	0.4879	0.0010
L4	45 - 0	1.188	39	0.2416	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	Lightning Rod	39	12.039	0.7684	0.0032	44985
139.00	B13 RRH 4X30	39	11.877	0.7674	0.0032	44985
118.00	RRUS-11	39	8.575	0.7200	0.0025	11109

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Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 120	57.569	2	3.6706	0.0154
L2	120 - 80	42.461	2	3.4819	0.0122
L3	84.5 - 39.5	20.407	2	2.3356	0.0047
L4	45 - 0	5.688	2	1.1568	0.0016

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	Lightning Rod	2	57.569	3.6706	0.0154	9558
139.00	B13 RRH 4X30	2	56.797	3.6657	0.0152	9558
118.00	RRUS-11	2	41.028	3.4421	0.0118	2357

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 P _u / φP _n
L1	140 - 139	TP24x24x0.375	20.00	0.00	0.0	27.8325	-0.25	876.73	0.000
	139 - 138					27.8325	-2.49	876.73	0.003
	138 - 137					27.8325	-2.61	876.73	0.003
	137 - 136					27.8325	-2.73	876.73	0.003
	136 - 135					27.8325	-2.86	876.73	0.003
	135 - 134					27.8325	-2.98	876.73	0.003
	134 - 133					27.8325	-3.11	876.73	0.004
	133 - 132					27.8325	-3.23	876.73	0.004
	132 - 131					27.8325	-3.36	876.73	0.004
	131 - 130					27.8325	-3.49	876.73	0.004
	130 - 129					27.8325	-3.61	876.73	0.004
	129 - 128					27.8325	-3.74	876.73	0.004
	128 - 127					27.8325	-3.86	876.73	0.004
	127 - 126					27.8325	-3.99	876.73	0.005
	126 - 125					27.8325	-4.12	876.73	0.005
	125 - 124					27.8325	-4.24	876.73	0.005
124 - 123	27.8325	-4.37	876.73	0.005					
123 - 122	27.8325	-4.49	876.73	0.005					
122 - 121	27.8325	-4.62	876.73	0.005					
121 - 120	27.8325	-4.75	876.73	0.005					
L2	120 - 118.132	TP36.379x28.163x0.2188	40.00	0.00	0.0	19.6730	-4.95	1353.82	0.004
	118.132 - 116.263					19.9395	-7.52	1365.65	0.006
	116.263 - 114.395					20.2060	-7.73	1377.30	0.006

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u φP _n
L4	50.8333 - 48.8889	TP51.75x42.5062x0.375	45.00	0.00	0.0	41.6784	-18.70	2829.38	0.007
	48.8889 - 46.9444					42.0746	-19.11	2846.26	0.007
	46.9444 - 45.45					42.4708	-19.51	2862.94	0.007
	45 - 39.5					43.5914	-10.04	2909.12	0.003
	45 - 39.5					51.4914	-11.76	3678.77	0.003
	39.5 - 37.4211					51.9997	-22.32	3704.06	0.006
	37.4211 - 35.3421					52.5080	-22.83	3729.12	0.006
	35.3421 - 33.2632					53.0163	-23.35	3753.98	0.006
	33.2632 - 31.1842					53.5246	-23.87	3778.61	0.006
	31.1842 - 29.1053					54.0329	-24.40	3803.03	0.006
	29.1053 - 27.0263					54.5412	-24.93	3827.24	0.007
	27.0263 - 24.9474					55.0495	-25.47	3851.23	0.007
	24.9474 - 22.8684					55.5578	-26.01	3875.00	0.007
	22.8684 - 20.7895					56.0661	-26.55	3898.56	0.007
	20.7895 - 18.7105					56.5744	-27.10	3921.90	0.007
	18.7105 - 16.6316					57.0827	-27.66	3945.02	0.007
	16.6316 - 14.5526					57.5910	-28.22	3967.93	0.007
	14.5526 - 12.4737					58.0993	-28.78	3990.63	0.007
	12.4737 - 10.3947					58.6076	-29.35	4013.11	0.007
	10.3947 - 8.31579					59.1159	-29.92	4035.37	0.007
	8.31579 - 6.23684					59.6242	-30.50	4057.42	0.008
	6.23684 - 4.15789					60.1325	-31.08	4079.25	0.008
	4.15789 - 2.07895					60.6408	-31.67	4100.87	0.008
	2.07895 - 0					61.1491	-32.26	4122.27	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio M _{ux} φM _{ux}	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio M _{uy} φM _{uy}
L1	140 - 139	TP24x24x0.375	0.10	538.74	0.000	0.00	538.74	0.000
	139 - 138		11.99	538.74	0.022	0.00	538.74	0.000
	138 - 137		18.22	538.74	0.034	0.00	538.74	0.000
	137 - 136		24.52	538.74	0.046	0.00	538.74	0.000
	136 - 135		30.88	538.74	0.057	0.00	538.74	0.000
	135 - 134		37.30	538.74	0.069	0.00	538.74	0.000
	134 - 133		43.78	538.74	0.081	0.00	538.74	0.000

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Section No.	Elevation ft	Size	M_{ux}	ϕM_{ux}	Ratio	M_{uy}	ϕM_{uy}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{ux}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{uy}}$
	133 - 132		50.31	538.74	0.093	0.00	538.74	0.000
	132 - 131		56.91	538.74	0.106	0.00	538.74	0.000
	131 - 130		63.57	538.74	0.118	0.00	538.74	0.000
	130 - 129		70.29	538.74	0.130	0.00	538.74	0.000
	129 - 128		77.07	538.74	0.143	0.00	538.74	0.000
	128 - 127		83.91	538.74	0.156	0.00	538.74	0.000
	127 - 126		90.81	538.74	0.169	0.00	538.74	0.000
	126 - 125		97.76	538.74	0.181	0.00	538.74	0.000
	125 - 124		104.78	538.74	0.194	0.00	538.74	0.000
	124 - 123		111.85	538.74	0.208	0.00	538.74	0.000
	123 - 122		118.99	538.74	0.221	0.00	538.74	0.000
	122 - 121		126.18	538.74	0.234	0.00	538.74	0.000
	121 - 120		133.44	538.74	0.248	0.00	538.74	0.000
L2	120 - 118.132	TP36.379x28.163x0.2188	147.16	788.73	0.187	0.00	788.73	0.000
	118.132 - 116.263		171.15	806.48	0.212	0.00	806.48	0.000
	116.263 - 114.395		190.92	824.31	0.232	0.00	824.31	0.000
	114.395 - 112.526		210.94	842.23	0.250	0.00	842.23	0.000
	112.526 - 110.658		231.20	860.22	0.269	0.00	860.22	0.000
	110.658 - 108.789		251.71	878.27	0.287	0.00	878.27	0.000
	108.789 - 106.921		272.47	896.41	0.304	0.00	896.41	0.000
	106.921 - 105.053		293.48	914.60	0.321	0.00	914.60	0.000
	105.053 - 103.184		314.74	932.85	0.337	0.00	932.85	0.000
	103.184 - 101.316		336.25	951.15	0.354	0.00	951.15	0.000
	101.316 - 99.4474		358.01	969.51	0.369	0.00	969.51	0.000
	99.4474 - 97.5789		380.03	987.91	0.385	0.00	987.91	0.000
	97.5789 - 95.7105		402.29	1006.36	0.400	0.00	1006.36	0.000
	95.7105 - 93.8421		424.81	1024.84	0.415	0.00	1024.84	0.000
	93.8421 - 91.9737		447.59	1043.36	0.429	0.00	1043.36	0.000
	91.9737 - 90.1053		470.62	1061.90	0.443	0.00	1061.90	0.000
	90.1053 - 88.2368		493.90	1080.47	0.457	0.00	1080.47	0.000
	88.2368 - 86.3684		517.45	1099.07	0.471	0.00	1099.07	0.000
	86.3684 - 84.5		541.24	1117.68	0.484	0.00	1117.68	0.000
L3	84.5 - 80	TP44.261x35.0171x0.3125	253.61	1162.55	0.218	0.00	1162.55	0.000
	84.5 - 80		346.11	1854.63	0.187	0.00	1854.63	0.000
	80 - 78.0556		625.51	1890.33	0.331	0.00	1890.33	0.000
	78.0556 - 76.1111		651.57	1926.22	0.338	0.00	1926.22	0.000
	76.1111 - 74.1667		677.91	1962.29	0.345	0.00	1962.29	0.000
	74.1667 - 72.2222		704.54	1998.55	0.353	0.00	1998.55	0.000
	72.2222 - 70.2778		731.45	2034.97	0.359	0.00	2034.97	0.000

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	70.2778 - 68.3333		758.63	2071.57	0.366	0.00	2071.57	0.000
	68.3333 - 66.3889		786.10	2108.32	0.373	0.00	2108.32	0.000
	66.3889 - 64.4444		813.84	2145.24	0.379	0.00	2145.24	0.000
	64.4444 - 62.5		841.86	2182.32	0.386	0.00	2182.32	0.000
	62.5 - 60.5556		870.16	2219.54	0.392	0.00	2219.54	0.000
	60.5556 - 58.6111		898.73	2256.92	0.398	0.00	2256.92	0.000
	58.6111 - 56.6667		927.58	2294.43	0.404	0.00	2294.43	0.000
	56.6667 - 54.7222		956.71	2332.07	0.410	0.00	2332.07	0.000
	54.7222 - 52.7778		986.11	2369.86	0.416	0.00	2369.86	0.000
	52.7778 - 50.8333		1015.78	2407.77	0.422	0.00	2407.77	0.000
	50.8333 - 48.8889		1045.73	2445.79	0.428	0.00	2445.79	0.000
	48.8889 - 46.9444		1075.96	2483.94	0.433	0.00	2483.94	0.000
	46.9444 - 45		1106.45	2522.21	0.439	0.00	2522.21	0.000
L4	45 - 39.5	TP51.75x42.5062x0.375	557.19	2631.00	0.212	0.00	2631.00	0.000
	45 - 39.5		637.13	3269.97	0.195	0.00	3269.97	0.000
	39.5 - 37.4211		1228.14	3325.22	0.369	0.00	3325.22	0.000
	37.4211 - 35.3421		1262.22	3380.73	0.373	0.00	3380.73	0.000
	35.3421 - 33.2632		1296.59	3436.48	0.377	0.00	3436.48	0.000
	33.2632 - 31.1842		1331.22	3492.47	0.381	0.00	3492.47	0.000
	31.1842 - 29.1053		1366.14	3548.70	0.385	0.00	3548.70	0.000
	29.1053 - 27.0263		1401.33	3605.16	0.389	0.00	3605.16	0.000
	27.0263 - 24.9474		1436.80	3661.84	0.392	0.00	3661.84	0.000
	24.9474 - 22.8684		1472.55	3718.74	0.396	0.00	3718.74	0.000
	22.8684 - 20.7895		1508.58	3775.85	0.400	0.00	3775.85	0.000
	20.7895 - 18.7105		1544.88	3833.17	0.403	0.00	3833.17	0.000
	18.7105 - 16.6316		1581.47	3890.68	0.406	0.00	3890.68	0.000
	16.6316 - 14.5526		1618.34	3948.39	0.410	0.00	3948.39	0.000
	14.5526 - 12.4737		1655.50	4006.29	0.413	0.00	4006.29	0.000
	12.4737 - 10.3947		1692.94	4064.38	0.417	0.00	4064.38	0.000
	10.3947 - 8.31579		1730.67	4122.64	0.420	0.00	4122.64	0.000
	8.31579 - 6.23684		1768.68	4181.07	0.423	0.00	4181.07	0.000
	6.23684 - 4.15789		1806.98	4239.67	0.426	0.00	4239.67	0.000
	4.15789 - 2.07895		1845.57	4298.43	0.429	0.00	4298.43	0.000

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Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M_{uy} kip-ft	ϕM_{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
	2.07895 - 0		1884.44	4357.34	0.432	0.00	4357.34	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	140 - 139	TP24x24x0.375	0.04	438.36	0.000	0.00	849.76	0.000
	139 - 138		6.21	438.36	0.014	0.01	849.76	0.000
	138 - 137		6.27	438.36	0.014	0.01	849.76	0.000
	137 - 136		6.33	438.36	0.014	0.01	849.76	0.000
	136 - 135		6.39	438.36	0.015	0.01	849.76	0.000
	135 - 134		6.45	438.36	0.015	0.01	849.76	0.000
	134 - 133		6.51	438.36	0.015	0.01	849.76	0.000
	133 - 132		6.57	438.36	0.015	0.01	849.76	0.000
	132 - 131		6.63	438.36	0.015	0.01	849.76	0.000
	131 - 130		6.69	438.36	0.015	0.01	849.76	0.000
	130 - 129		6.75	438.36	0.015	0.01	849.76	0.000
	129 - 128		6.81	438.36	0.016	0.01	849.76	0.000
	128 - 127		6.87	438.36	0.016	0.01	849.76	0.000
	127 - 126		6.93	438.36	0.016	0.01	849.76	0.000
	126 - 125		6.99	438.36	0.016	0.01	849.76	0.000
	125 - 124		7.05	438.36	0.016	0.01	849.76	0.000
	124 - 123		7.11	438.36	0.016	0.01	849.76	0.000
	123 - 122		7.17	438.36	0.016	0.01	849.76	0.000
	122 - 121		7.22	438.36	0.016	0.01	849.76	0.000
	121 - 120		7.28	438.36	0.017	0.01	849.76	0.000
L2	120 - 118.132	TP36.379x28.163x0.2188	7.42	676.91	0.011	0.01	1579.38	0.000
	118.132 - 116.263		10.52	682.82	0.015	0.01	1614.93	0.000
	116.263 - 114.395		10.65	688.65	0.015	0.01	1650.64	0.000
	114.395 - 112.526		10.78	694.39	0.016	0.01	1686.52	0.000
	112.526 - 110.658		10.92	700.04	0.016	0.01	1722.54	0.000
	110.658 - 108.789		11.05	705.60	0.016	0.01	1758.71	0.000
	108.789 - 106.921		11.18	711.08	0.016	0.01	1795.01	0.000
	106.921 - 105.053		11.32	716.47	0.016	0.01	1831.43	0.000
	105.053 - 103.184		11.45	721.77	0.016	0.01	1867.97	0.000
	103.184 - 101.316		11.59	726.99	0.016	0.01	1904.63	0.000
	101.316 - 99.4474		11.72	732.12	0.016	0.01	1941.39	0.000
	99.4474 - 97.5789		11.86	737.16	0.016	0.01	1978.24	0.000
	97.5789 - 95.7105		11.99	742.11	0.016	0.01	2015.18	0.000
	95.7105 - 93.8421		12.13	746.98	0.016	0.01	2052.18	0.000
	93.8421 - 91.9737		12.26	751.76	0.016	0.01	2089.27	0.000

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	91.9737 - 90.1053		12.40	756.46	0.016	0.01	2126.40	0.000
	90.1053 - 88.2368		12.54	761.06	0.016	0.01	2163.59	0.000
	88.2368 - 86.3684		12.68	765.58	0.017	0.01	2200.82	0.000
	86.3684 - 84.5		12.81	770.01	0.017	0.01	2238.09	0.000
	84.5 - 80		5.68	780.33	0.007	0.00	2327.94	0.000
L3	84.5 - 80	TP44.261x35.0171x0.3125	7.51	1266.85	0.006	0.01	3713.81	0.000
	80 - 78.0556		13.34	1276.80	0.010	0.01	3785.29	0.000
	78.0556 - 76.1111		13.48	1286.65	0.010	0.01	3857.16	0.000
	76.1111 - 74.1667		13.63	1296.41	0.011	0.01	3929.39	0.000
	74.1667 - 72.2222		13.77	1306.07	0.011	0.01	4001.98	0.000
	72.2222 - 70.2778		13.92	1315.64	0.011	0.01	4074.92	0.000
	70.2778 - 68.3333		14.06	1325.12	0.011	0.01	4148.20	0.000
	68.3333 - 66.3889		14.20	1334.50	0.011	0.01	4221.81	0.000
	66.3889 - 64.4444		14.35	1343.79	0.011	0.01	4295.73	0.000
	64.4444 - 62.5		14.49	1352.98	0.011	0.01	4369.98	0.000
	62.5 - 60.5556		14.63	1362.08	0.011	0.01	4444.52	0.000
	60.5556 - 58.6111		14.78	1362.08	0.011	0.01	4519.35	0.000
	58.6111 - 56.6667		14.92	1371.08	0.011	0.01	4594.47	0.000
	56.6667 - 54.7222		15.06	1379.99	0.011	0.01	4669.86	0.000
	54.7222 - 52.7778		15.20	1388.81	0.011	0.01	4745.51	0.000
	52.7778 - 50.8333		15.34	1397.53	0.011	0.01	4821.42	0.000
	50.8333 - 48.8889		15.48	1406.16	0.011	0.01	4897.57	0.000
	48.8889 - 46.9444		15.62	1414.69	0.011	0.01	4973.97	0.000
	46.9444 - 45		15.76	1423.13	0.011	0.01	5050.58	0.000
	45 - 39.5		7.68	1431.47	0.005	0.01	5268.44	0.000
L4	45 - 39.5	TP51.75x42.5062x0.375	8.54	1839.39	0.005	0.01	6547.93	0.000
	39.5 - 37.4211		16.34	1839.39	0.009	0.01	6658.58	0.000
	37.4211 - 35.3421		16.47	1852.03	0.009	0.01	6769.73	0.000
	35.3421 - 33.2632		16.61	1864.56	0.009	0.01	6881.37	0.000
	33.2632 - 31.1842		16.74	1876.99	0.009	0.01	6993.49	0.000
	31.1842 - 29.1053		16.87	1889.31	0.009	0.01	7106.08	0.000
	29.1053 - 27.0263		17.01	1901.52	0.009	0.01	7219.14	0.000
	27.0263 - 24.9474		17.14	1913.62	0.009	0.01	7332.64	0.000
	24.9474 - 22.8684		17.28	1925.61	0.009	0.01	7446.57	0.000
	22.8684 - 20.7895		17.41	1937.50	0.009	0.01	7560.93	0.000

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	20.7895 - 18.7105		17.55	1949.28	0.009	0.01	7675.71	0.000
	18.7105 - 16.6316		17.68	1972.51	0.009	0.01	7790.88	0.000
	16.6316 - 14.5526		17.82	1983.97	0.009	0.01	7906.44	0.000
	14.5526 - 12.4737		17.96	1995.31	0.009	0.01	8022.38	0.000
	12.4737 - 10.3947		18.09	2006.55	0.009	0.01	8138.69	0.000
	10.3947 - 8.31579		18.23	2017.69	0.009	0.01	8255.36	0.000
	8.31579 - 6.23684		18.37	2028.71	0.009	0.01	8372.33	0.000
	6.23684 - 4.15789		18.51	2039.63	0.009	0.01	8489.75	0.000
	4.15789 - 2.07895		18.65	2050.43	0.009	0.01	8607.33	0.000
	2.07895 - 0		18.79	2061.13	0.009	0.01	8725.33	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 139	0.000	0.000	0.000	0.000	0.000	0.000	1.000	4.8.2 ✓
	139 - 138	0.003	0.022	0.000	0.014	0.000	0.025	1.000	4.8.2 ✓
	138 - 137	0.003	0.034	0.000	0.014	0.000	0.037	1.000	4.8.2 ✓
	137 - 136	0.003	0.046	0.000	0.014	0.000	0.049	1.000	4.8.2 ✓
	136 - 135	0.003	0.057	0.000	0.015	0.000	0.061	1.000	4.8.2 ✓
	135 - 134	0.003	0.069	0.000	0.015	0.000	0.073	1.000	4.8.2 ✓
	134 - 133	0.004	0.081	0.000	0.015	0.000	0.085	1.000	4.8.2 ✓
	133 - 132	0.004	0.093	0.000	0.015	0.000	0.097	1.000	4.8.2 ✓
	132 - 131	0.004	0.106	0.000	0.015	0.000	0.110	1.000	4.8.2 ✓
	131 - 130	0.004	0.118	0.000	0.015	0.000	0.122	1.000	4.8.2 ✓
	130 - 129	0.004	0.130	0.000	0.015	0.000	0.135	1.000	4.8.2 ✓
	129 - 128	0.004	0.143	0.000	0.016	0.000	0.148	1.000	4.8.2 ✓
	128 - 127	0.004	0.156	0.000	0.016	0.000	0.160	1.000	4.8.2 ✓

tnxTower

FDH Velocitel
 6521 Meridien Drive, Suite 107
 Raleigh, North Carolina 27616
 Phone: 9197551012
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Client	Crown Castle	Designed by	AMiller

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
	127 - 126	0.005	0.169	0.000	0.016	0.000	0.173	1.000	4.8.2 ✓
	126 - 125	0.005	0.181	0.000	0.016	0.000	0.186	1.000	4.8.2 ✓
	125 - 124	0.005	0.194	0.000	0.016	0.000	0.200	1.000	4.8.2 ✓
	124 - 123	0.005	0.208	0.000	0.016	0.000	0.213	1.000	4.8.2 ✓
	123 - 122	0.005	0.221	0.000	0.016	0.000	0.226	1.000	4.8.2 ✓
	122 - 121	0.005	0.234	0.000	0.016	0.000	0.240	1.000	4.8.2 ✓
	121 - 120	0.005	0.248	0.000	0.017	0.000	0.253	1.000	4.8.2 ✓
L2	120 - 118.132	0.004	0.187	0.000	0.011	0.000	0.190	1.000	4.8.2 ✓
	118.132 - 116.263	0.006	0.212	0.000	0.015	0.000	0.218	1.000	4.8.2 ✓
	116.263 - 114.395	0.006	0.232	0.000	0.015	0.000	0.237	1.000	4.8.2 ✓
	114.395 - 112.526	0.006	0.250	0.000	0.016	0.000	0.256	1.000	4.8.2 ✓
	112.526 - 110.658	0.006	0.269	0.000	0.016	0.000	0.275	1.000	4.8.2 ✓
	110.658 - 108.789	0.006	0.287	0.000	0.016	0.000	0.293	1.000	4.8.2 ✓
	108.789 - 106.921	0.006	0.304	0.000	0.016	0.000	0.310	1.000	4.8.2 ✓
	106.921 - 105.053	0.006	0.321	0.000	0.016	0.000	0.327	1.000	4.8.2 ✓
	105.053 - 103.184	0.006	0.337	0.000	0.016	0.000	0.344	1.000	4.8.2 ✓
	103.184 - 101.316	0.006	0.354	0.000	0.016	0.000	0.360	1.000	4.8.2 ✓
	101.316 - 99.4474	0.006	0.369	0.000	0.016	0.000	0.376	1.000	4.8.2 ✓
	99.4474 - 97.5789	0.007	0.385	0.000	0.016	0.000	0.392	1.000	4.8.2 ✓
	97.5789 - 95.7105	0.007	0.400	0.000	0.016	0.000	0.407	1.000	4.8.2 ✓
	95.7105 - 93.8421	0.007	0.415	0.000	0.016	0.000	0.422	1.000	4.8.2 ✓
	93.8421 - 91.9737	0.007	0.429	0.000	0.016	0.000	0.436	1.000	4.8.2 ✓
	91.9737 - 90.1053	0.007	0.443	0.000	0.016	0.000	0.451	1.000	4.8.2 ✓
	90.1053 - 88.2368	0.007	0.457	0.000	0.016	0.000	0.465	1.000	4.8.2 ✓
	88.2368 - 86.3684	0.007	0.471	0.000	0.017	0.000	0.478	1.000	4.8.2 ✓
	86.3684 - 84.5	0.007	0.484	0.000	0.017	0.000	0.492	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	84.5 - 80	0.003	0.218	0.000	0.007	0.000	0.222	1.000	4.8.2 ✓
L3	84.5 - 80	0.003	0.187	0.000	0.006	0.000	0.190	1.000	4.8.2 ✓
	80 - 78.0556	0.005	0.331	0.000	0.010	0.000	0.336	1.000	4.8.2 ✓
	78.0556 - 76.1111	0.005	0.338	0.000	0.010	0.000	0.344	1.000	4.8.2 ✓
	76.1111 - 74.1667	0.005	0.345	0.000	0.011	0.000	0.351	1.000	4.8.2 ✓
	74.1667 - 72.2222	0.005	0.353	0.000	0.011	0.000	0.358	1.000	4.8.2 ✓
	72.2222 - 70.2778	0.005	0.359	0.000	0.011	0.000	0.365	1.000	4.8.2 ✓
	70.2778 - 68.3333	0.006	0.366	0.000	0.011	0.000	0.372	1.000	4.8.2 ✓
	68.3333 - 66.3889	0.006	0.373	0.000	0.011	0.000	0.379	1.000	4.8.2 ✓
	66.3889 - 64.4444	0.006	0.379	0.000	0.011	0.000	0.385	1.000	4.8.2 ✓
	64.4444 - 62.5	0.006	0.386	0.000	0.011	0.000	0.392	1.000	4.8.2 ✓
	62.5 - 60.5556	0.006	0.392	0.000	0.011	0.000	0.398	1.000	4.8.2 ✓
	60.5556 - 58.6111	0.006	0.398	0.000	0.011	0.000	0.404	1.000	4.8.2 ✓
	58.6111 - 56.6667	0.006	0.404	0.000	0.011	0.000	0.411	1.000	4.8.2 ✓
	56.6667 - 54.7222	0.006	0.410	0.000	0.011	0.000	0.417	1.000	4.8.2 ✓
	54.7222 - 52.7778	0.006	0.416	0.000	0.011	0.000	0.423	1.000	4.8.2 ✓
	52.7778 - 50.8333	0.007	0.422	0.000	0.011	0.000	0.429	1.000	4.8.2 ✓
	50.8333 - 48.8889	0.007	0.428	0.000	0.011	0.000	0.434	1.000	4.8.2 ✓
	48.8889 - 46.9444	0.007	0.433	0.000	0.011	0.000	0.440	1.000	4.8.2 ✓
	46.9444 - 45	0.007	0.439	0.000	0.011	0.000	0.446	1.000	4.8.2 ✓
	45 - 39.5	0.003	0.212	0.000	0.005	0.000	0.215	1.000	4.8.2 ✓
L4	45 - 39.5	0.003	0.195	0.000	0.005	0.000	0.198	1.000	4.8.2 ✓
	39.5 - 37.4211	0.006	0.369	0.000	0.009	0.000	0.375	1.000	4.8.2 ✓
	37.4211 - 35.3421	0.006	0.373	0.000	0.009	0.000	0.380	1.000	4.8.2 ✓
	35.3421 - 33.2632	0.006	0.377	0.000	0.009	0.000	0.384	1.000	4.8.2 ✓
	33.2632 - 31.1842	0.006	0.381	0.000	0.009	0.000	0.388	1.000	4.8.2 ✓

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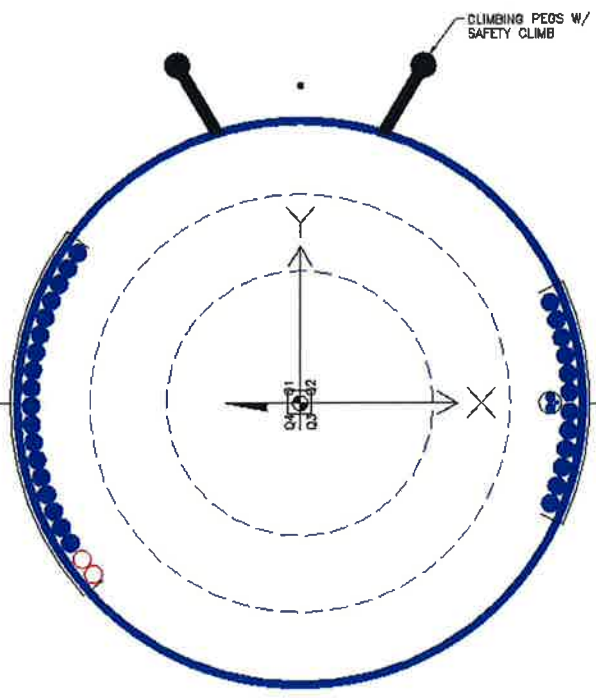
Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
	31.1842 - 29.1053	0.006	0.385	0.000	0.009	0.000	0.391	1.000	4.8.2 ✓
	29.1053 - 27.0263	0.007	0.389	0.000	0.009	0.000	0.395	1.000	4.8.2 ✓
	27.0263 - 24.9474	0.007	0.392	0.000	0.009	0.000	0.399	1.000	4.8.2 ✓
	24.9474 - 22.8684	0.007	0.396	0.000	0.009	0.000	0.403	1.000	4.8.2 ✓
	22.8684 - 20.7895	0.007	0.400	0.000	0.009	0.000	0.406	1.000	4.8.2 ✓
	20.7895 - 18.7105	0.007	0.403	0.000	0.009	0.000	0.410	1.000	4.8.2 ✓
	18.7105 - 16.6316	0.007	0.406	0.000	0.009	0.000	0.414	1.000	4.8.2 ✓
	16.6316 - 14.5526	0.007	0.410	0.000	0.009	0.000	0.417	1.000	4.8.2 ✓
	14.5526 - 12.4737	0.007	0.413	0.000	0.009	0.000	0.421	1.000	4.8.2 ✓
	12.4737 - 10.3947	0.007	0.417	0.000	0.009	0.000	0.424	1.000	4.8.2 ✓
	10.3947 - 8.31579	0.007	0.420	0.000	0.009	0.000	0.427	1.000	4.8.2 ✓
	8.31579 - 6.23684	0.008	0.423	0.000	0.009	0.000	0.431	1.000	4.8.2 ✓
	6.23684 - 4.15789	0.008	0.426	0.000	0.009	0.000	0.434	1.000	4.8.2 ✓
	4.15789 - 2.07895	0.008	0.429	0.000	0.009	0.000	0.437	1.000	4.8.2 ✓
	2.07895 - 0	0.008	0.432	0.000	0.009	0.000	0.440	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	140 - 120	Pole	TP24x24x0.375	1	-4.75	876.73	25.3	Pass
L2	120 - 80	Pole	TP36.379x28.163x0.2188	2	-11.45	1540.02	49.2	Pass
L3	80 - 39.5	Pole	TP44.261x35.0171x0.3125	3	-19.51	2862.94	44.6	Pass
L4	39.5 - 0	Pole	TP51.75x42.5062x0.375	4	-32.26	4122.27	44.0	Pass
Summary								
Pole (L2)							49.2	Pass
RATING =							49.2	Pass

<p>tnxTower</p>	<p>Job 845994_East Hampton - Young Street</p>	<p>Page 32 of 32</p>
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<p>Program Version: 18.0.0.1 File://fdh-server/projects/2017 Effective - Client Jobs/CROWNC_Crown Castle USA Inc/CT/845994_East Hampton Young Street/17QISX1400-845994_ZW/R.0/Analysis/ReportedTower/845994_East Hampton Young Street</p>	<p>Client Crown Castle</p>	<p>Designed by AMiller</p>

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED)
 (2) 1-5/8" TO 139 FT LEVEL
 (INSTALLED—TO BE REMOVED)
 (6) 1-5/8" TO 139 FT LEVEL
 (INSTALLED)
 (12) 1-5/8" TO 139 FT LEVEL

(INSTALLED—IN CONDUIT)
 (1) 3/8" TO 118 FT LEVEL
 (2) 7/8" TO 118 FT LEVEL
 (INSTALLED)
 (12) 1-5/8" TO 118 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

FDH Velocitel -- 6521 Meriden Drive, Raleigh, NC 27616 -- Ph. 919.755.1012 -- Fax 919.755.1031

MONOPOLE PAD AND PIER STEEL CHECKS

Project & Site Details

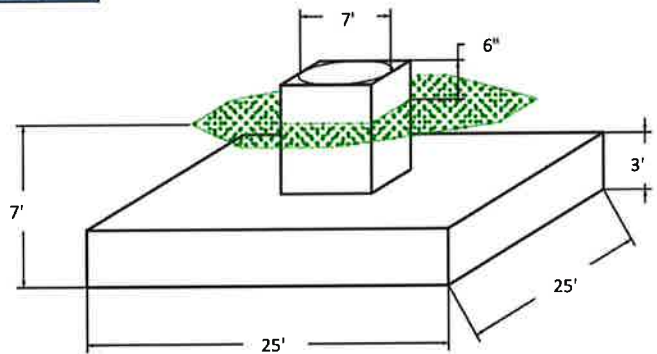
Project No.	17QISX1400	Rev.	0
Project Name	East Hampton - Young Street		
Site ID	845994		
Date	Monday, July 24, 2017		
Code	ANSI/TIA-222-G		
Overstress Capacity	105%		

tnx Reactions

Moment, M	1,884	kip-ft
Shear, V	19	k
Axial, P	32	k

Foundation Details

Pier Above Grade, E	0.5	ft
Pad Depth Below Grade, D	7.0	ft
Pad Width, W	25.0	ft
Pad Thickness, T	3.0	ft
Pier Shape	Square	-
Pier Diameter, D_p	7.0	ft
Density of Soil, γ_s	0.115	kcf
Density of Concrete, γ_c	0.150	kcf

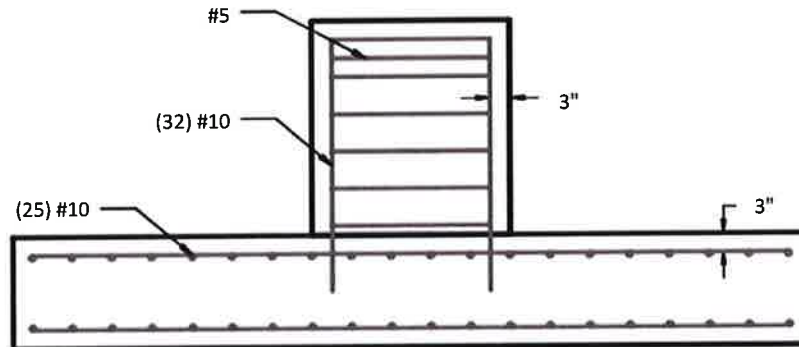


Pad Steel Details

Horiz. Bar Size	#10	-
Pad Bar Diameter, d_b	1.27	in
Number of pad bars, n	25	-
Strength of Concrete, f_c'	3,000	psi
Clear Cover, cc	3.0	in
Yield Strength of Steel, F_y	60	ksi

Pier Steel Details

Vertical Bar Size	#10	-
Pier Bar Diameter, d_v	1.27	in
Number of pier bars, n_v	32	-
Tie Size	#5	-
Tie Bar Diameter, d_t	0.625	in
Clear Cover, cc	3.0	in



Pad Steel Checks

Pad Shear	12.9%	PASS
Two-Way Shear	10.9%	PASS
Pad Flexure	14.9%	PASS
Steel Yielding	OK	

Pier Steel Checks

Pier Compression	0.3%	PASS
Applied Moment, M_u	1969.50	k-ft
LPILE Nominal Moment Capacity	95,851	k-in
ϕM_n	7188.84	k-ft
Pier Flexure	27.4%	PASS

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: 845994
Site Name: East Hampton - Young Street

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	2.75	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	7	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	25	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	7	ft
Concrete Density:	150	pcf
Pier Cross Section Area:	49.00	ft^2
Pier Height:	4.50	ft
Soil (above pad) Height:	4.00	ft

Soil Parameters		
Unit Weight, γ :	115	pcf
Ultimate Bearing Capacity, q_n :	30	ksf
Strength Reduct. factor, ϕ :	0.75	
Angle of Friction, Φ :	31.5	degrees
Undrained Shear Strength, C_u :	0	ksf
Allowable Bearing: $\phi * q_n$:	22.50	ksf
Passive Pres. Coeff., K_p :	3.19	

Forces/Moments due to Wind and Lateral Soil		
Minimum of ($\phi * \text{Ultimate Pad Passive Force, } V_u$):	19.0	kips
Pad Force Location Above D:	1.36	ft
ϕ (Passive Pressure Moment):	25.91	ft-kips
Factored O.T. M(WL), "1.6W":	2030.9	ft-kips
Factored OT (MW-Msoil), M1	2004.95	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	2.45	ft
Sum of Soil Wedges Wt:	22.93	kips
Soil Wedges ecc, K1:	12.13	ft
Ftg+Soil above Pad wt:	579.3	kips
Unfactored (Total ftg-soil Wt):	602.21	kips
1.2D. No Soil Wedges.	727.14	kips
0.9D. With Soil Wedges	565.99	kips

Resistance due to Cohesion (Vertical)		
$\phi * (1/2 * C_u) \text{ (Total Vert. Planes)}$	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, P Du:	32	kips
Factored WL Shear, V_u :	19	kips
Factored WL Moment, M_u :	1884	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	32	kips
0.90	0.9D+1.6W, Pu:	24	kips
1.00	Vu:	19	kips
	Mu:	1884	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	727.14	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2004.95	ft-kips

Orthogonal Direction:

$$ecc1 = M1/P1 = 2.76 \text{ ft}$$

$$Orthogonal qu = 1.68 \text{ ksf}$$

$$qu/\phi * q_n \text{ Ratio} = 7.5\% \text{ Pass}$$

Diagonal Direction:

$$ecc2 = (0.707M1)/P1 = 1.95 \text{ ft}$$

$$Diagonal qu = 1.63 \text{ ksf}$$

$$qu/\phi * q_n \text{ Ratio} = 7.3\% \text{ Pass}$$

<-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	565.99	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	1754.63	ft-kips

$$Orthogonal ecc3 = M2/P2 = 3.10 \text{ ft}$$

$$Ortho Non Bearing Length, NBL = 6.20 \text{ ft}$$

$$Orthogonal qu = 1.35 \text{ ksf}$$

$$Diagonal qu = 1.33 \text{ ksf}$$

Max Reaction Moment (ft-kips) so that $qu = \phi * q_n = 100\%$ Capacity Rating

Actual M:	1884.00		
M Orthogonal:	7079.88	26.6%	Pass
M Diagonal:	7079.88	26.6%	Pass

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

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

Site Data

BU#: 845994

Site Name: East Hampton - Young Street

App #: 378414

Anchor Rod Data

Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, F_y :	75	ksi
Strength, F_u :	100	ksi
Bolt Circle:	59	in
Anchor Spacing:	6	in

Plate Data

W=Side:	57	in
Thick:	3	in
Grade:	55	ksi
Clip Distance:	10	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	51.75	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, M_u :	1884	ft-kips
Factored Axial, P_u :	32	kips
Factored Shear, V_u :	19	kips

Anchor Rod Results

TIA G --> Max Rod $(C_u + V_u/\eta)$: 100.2 Kips
 Axial Design Strength, $\Phi \cdot F_u \cdot A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 38.5% **Pass**

Base Plate Results

Base Plate Stress: 16.9 ksi
 PL Design Bending Strength, $\Phi \cdot F_y$: 49.5 ksi
 Base Plate Stress Ratio: 34.2% **Pass**

Flexural Check

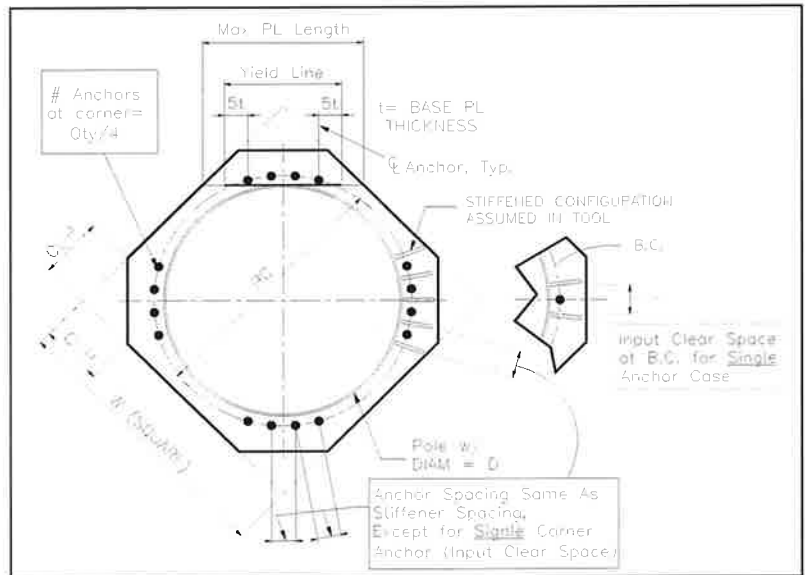
PL Ref. Data

Yield Line (in):	28.86
Max PL Length:	28.86

N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A
Pole Results
 Pole Punching Shear Check: N/A



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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: 845994
 Site Name: East Hampton - Young Stre
 App #: 378414
 top plate

Pole Manufacturer: Other

Bolt Data

Qty:	16	
Diameter (in.):	0.75	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	100	<-- Disregard
N/A:	75	<-- Disregard
Circle (in.):	33	

Plate Data

Diam:	37	in
Thick, t:	1.75	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.71	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:	24	in
Thick:	0.375	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions

Mu	133.44	ft-kips
Axial, Pu:	4.75	kips
Shear, Vu:	7.28	kips
Elevation:	120	feet
Top plate		

If No stiffeners, Criteria: TIA G <-Only Applicable to Unstiffened Cases

Flange Bolt Results

Bolt Tension Capacity, $\phi^*T_n, B1$:	30.06 kips
Adjusted ϕ^*T_n (due to $V_u=V_u/Q_t$), B:	30.05 kips
Max Bolt <u>directly</u> applied Tu:	11.83 Kips
Min. PL "tc" for B cap. w/o Pry:	1.341 in
Min PL "treq" for actual T w/ Pry:	0.622 in
Min PL "t1" for actual T w/o Pry:	0.841 in
T allowable w/o Prying:	30.06 kips
Prying Force, q:	0.00 kips
Total Bolt Tension=Tu+q:	11.83 kips
Non-Prying Bolt Stress Ratio, Tu/B:	39.4% Pass

Exterior Flange Plate Results

Flexural Check	6.5 ksi
Compression Side Plate Stress:	45.0 ksi
Allowable Plate Stress:	14.5% Pass
Compression Plate Stress Ratio:	12.6% Pass
Tension Side Stress Ratio, $(treq/t)^2$:	12.6% Pass

n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, $f_b/F_b+(f_v/F_v)^2$:	n/a
Plate Tension+Shear, $f_t/F_t+(f_v/F_v)^2$:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Bolt Threads:

X-Excluded
$\phi V_n = \phi(0.55 A_b F_u)$
$\phi = 0.75, \phi^* V_n$ (kips):
21.87

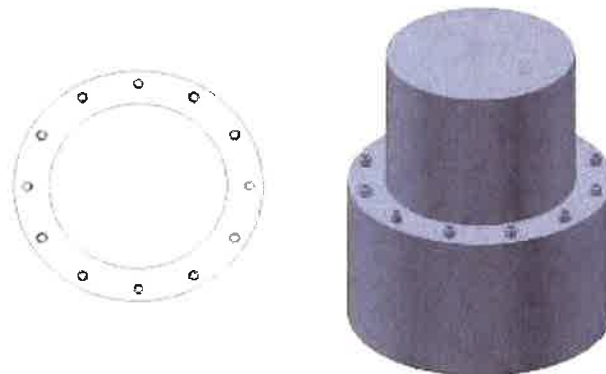
Rigid

$\phi^* T_n$
$\phi T_n [(1-(V_u/\phi V_n)^2)^{0.5}]$

$\alpha < 0$ case

Rigid

TIA G
$\phi^* F_y$
Comp. Y.L. Length:
22.65



* 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

ATTACHMENT 4

151 young

Search Results

Parcel Details

151 YOUNG ST



KIELY KEVIN G + KIM S

151 YOUNG ST
EAST HAMPTON, CT 6424

Parcel ID: 13/32/7-1
Lot Size: Ac
Sale Price: \$

Links	Abutters
Parcel Details	Bing Bird's Eye
Photo	Add Parcel
Google Map	Remove Parcel
Abutter Distance:	Print Labels
Adjacent	Export List

- Adjacent
- 50 ft
- 100 ft
- 200 ft
- 300 ft
- 400 ft
- 500 ft

Find Abutters

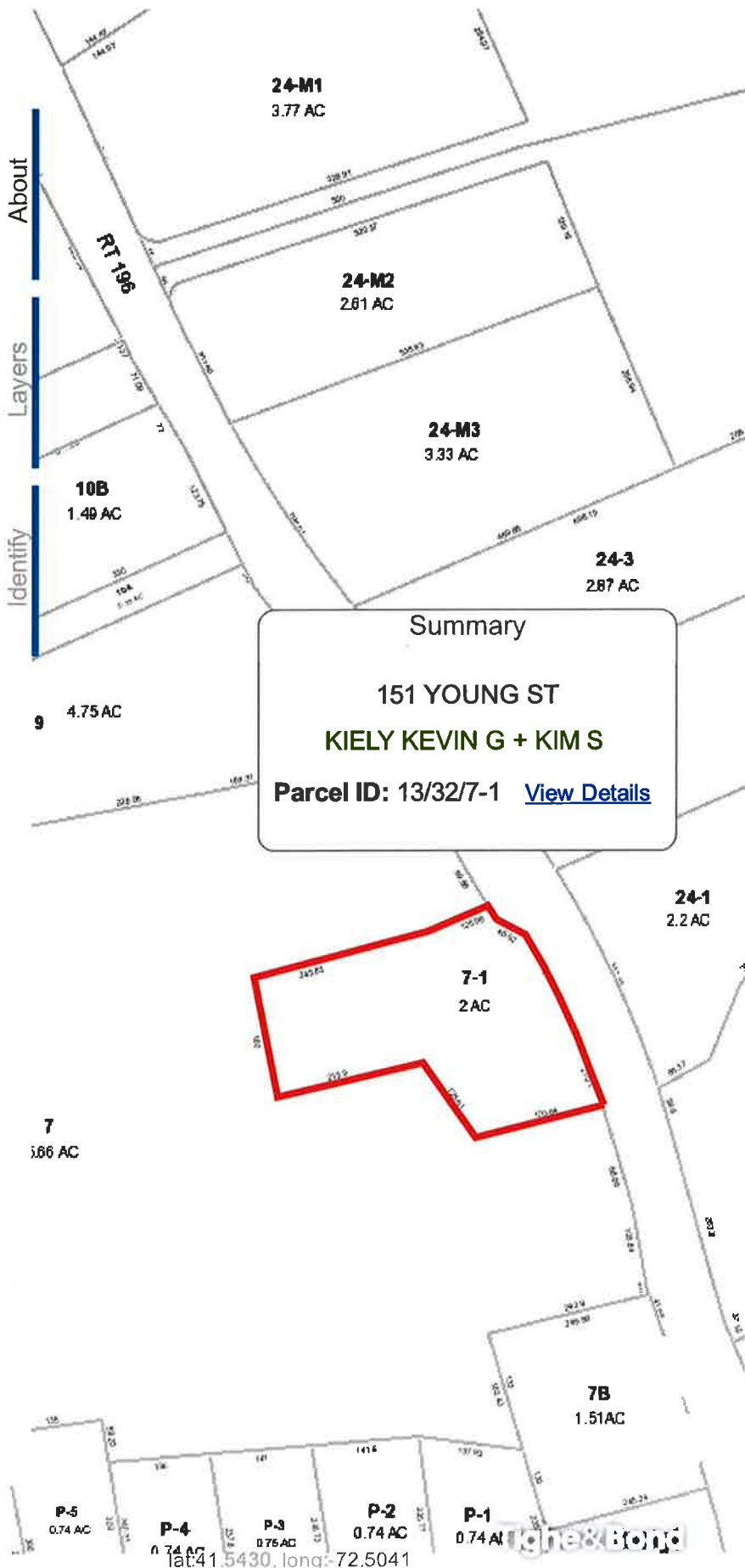
Clear Abutters

Lot 7

Unit 1

GIS_ID 13-32-7- Scroll

Building Value 4 .



Summary

151 YOUNG ST

KIELY KEVIN G + KIM S

Parcel ID: 13/32/7-1 [View Details](#)

Email Map Link

P-8 P-7 P-6

P-5 0.74 AC P-4 0.74 AC P-3 0.75 AC P-2 0.74 AC P-1 0.74 AC

lat:41.5430, long:-72.5041



151 YOUNG ST

Location 151 YOUNG ST

Mblu 13/ 32/ 7/ 1/

Acct# R02394

Owner KIELY KEVIN G + KIM S

Assessment \$353,910

Appraisal \$505,570

PID 2270

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$414,610	\$90,960	\$505,570

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$290,230	\$63,680	\$353,910

Owner of Record

Owner KIELY KEVIN G + KIM S
Co-Owner
Address 151 YOUNG ST
EAST HAMPTON, CT 06424

Sale Price \$0
Certificate
Book & Page 150/ 331
Sale Date 08/27/1980
Instrument 29

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
KIELY KEVIN G + KIM S	\$0		150/ 331	29	08/27/1980

Building Information

Building 1 : Section 1

Year Built: 1710
Living Area: 3,704
Replacement Cost: \$376,914
Building Percent 84
Good:
Replacement Cost
Less Depreciation: \$316,610

Building Attributes	
Field	Description

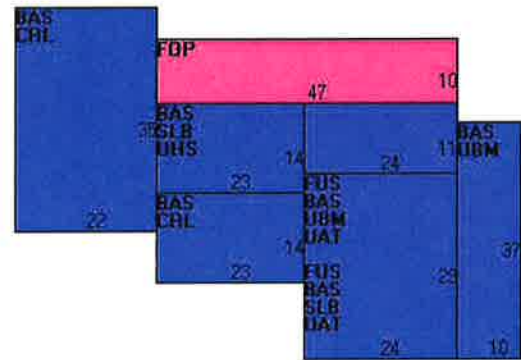
Style	Family Duplex
Model	Residential
Grade:	B+
Story Height	2 Stories
Foundation	Stone
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable
Roof Cover	Wood Shingle
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	5 Bedrooms
Total Bthrms:	3
Total Half Baths:	0
# Extra Fixtures	1
Total Rooms:	9
Bath Style:	Average
Kitchen Style:	Average
Fireplace	0
Fin Basement	0
Fin Bsmt Qual	
Bsmt. Garages	0
Gas Fireplace	Gas

Building Photo



(<http://images.vgsi.com/photos/EastHamptonCTPhotos//\00\00>)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	2,744	2,744
FUS	Finished Upper Story	960	960
CRL	Crawl Space	1,092	0
FOP	Framed Open Porch	470	0
SLB	Slab	586	0
UAT	Unfinished Attic	960	0
UBM	Unfin Basement	1,066	0
UHS	Unfinished Half Story	322	0
		8,200	3,704

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land**Land Use**

Use Code 101
Description Single Family
Zone R-4
Neighborhood 200
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 2
Frontage
Depth
Assessed Value \$63,680
Appraised Value \$90,960

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
BRN1	Barn 1 Story	FR	Frame	1672 S.F.	\$49,660	1
SPL1	InGround Pool			512 S.F.	\$13,820	1
GAR1	Garage	FR	Frame	950 S.F.	\$21,380	1
SHD1	Shed	FR	Frame	100 S.F.	\$1,500	1
BRN8	Pole Barn	FR	Frame	529 S.F.	\$11,640	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$414,610	\$90,960	\$505,570
2014	\$477,290	\$100,510	\$577,800
2012	\$477,290	\$100,510	\$577,800

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$290,230	\$63,680	\$353,910
2014	\$334,100	\$70,360	\$404,460
2012	\$334,100	\$70,360	\$404,460

ATTACHMENT 5



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			
Postmaster, per (name of receiving employee)		JP				
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift	
1.	Michael Mascalco, Town Manager Town of East Hampton 20 East High Street East Hampton, CT 06424					
2.	Jeremy DeCarli, Planning and Zoning Official Town of East Hampton 20 East High Street East Hampton, CT 06424					
3.	Kevin and Kim Kiely 151 Young Street East Hampton, CT 06424					
4.						
5.						
6.						

