Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

March 8, 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**
570 New Park Avenue, West Hartford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the top of the existing 150-foot tower at 570 New Park Avenue in West Hartford, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 1990 (Docket No. 131). Cellco now intends to replace six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same level on the tower. Cellco also intends to replace three (3) existing remote radio heads ("RRHs") and install six (6) new RRHs and one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Ronald Van Winkle, Town Manager for the Town of West Hartford; Todd Dumais, West Hartford's Town Planner; 570 New Park LLC, the owner of the Property; and to Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. Cellco's replacement antennas and new RRHs will be installed on its existing platform at the 147-foot level on the tower.

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

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

4. The 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 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 West Hartford's parcel map and property owner information is included in Attachment 4.

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Ronald Van Winkle, Town Manager
Todd Dumais, Town Planner
570 New Park LLC
Crown Castle
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

SBNHH-1D65B

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

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

Electrical Specifications

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

Electrical Specifications, BASTA*

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

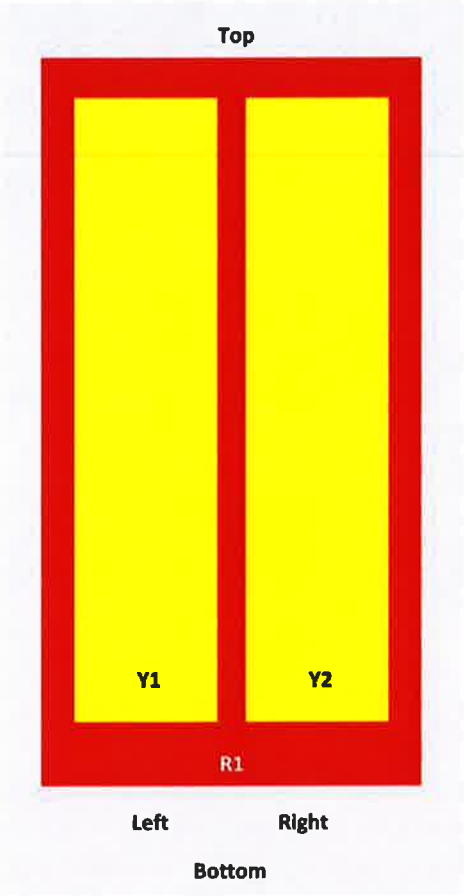
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Array Layout

Product Specifications

SBNHH-1D65B

SBNHH 65



Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	ANxxxxxxxxxxxxxxxx.1
Y1	1695-2360	3-4	2	ANxxxxxxxxxxxxxxxx.2
Y2	1695-2360	5-6		

View from the front of the antenna

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

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

Product Specifications

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and 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	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Depth	180.0 mm | 7.1 in
Net Weight, without mounting kit	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1) | Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male

Packed Dimensions

Length	2025.0 mm | 79.7 in
Width	390.0 mm | 15.4 in
Depth	296.0 mm | 11.7 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

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

Product Specifications

SBNHH-1D65B

Included Products

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

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

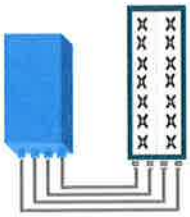
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

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

ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

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

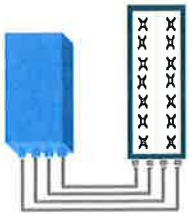
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2) **RX Diversity scheme**	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) **Volume (w/ solar shield) in L** **Weight (w/ solar shield) in kg (lb)**	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range **DC power consumption**	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 580W typical @100% RF load
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B66A RRH4X45

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

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

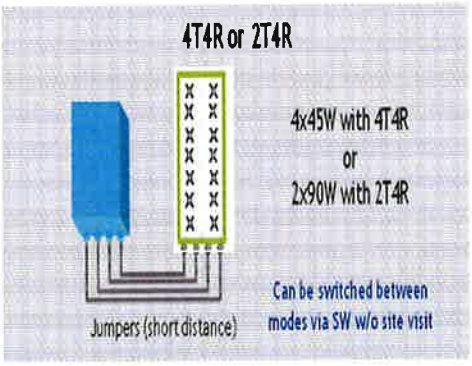
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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

FEATURES

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



BENEFITS

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

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
Sizes (HxWxD) in mm (in.) Volume in Liters Weight in kg (lb) (w/o mounting HW)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) 35.5 (with solar shield) 29.7 (without solar shield) 25.8kg (56.8lb) (with solar shield)
DC voltage range DC power consumption	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure 250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

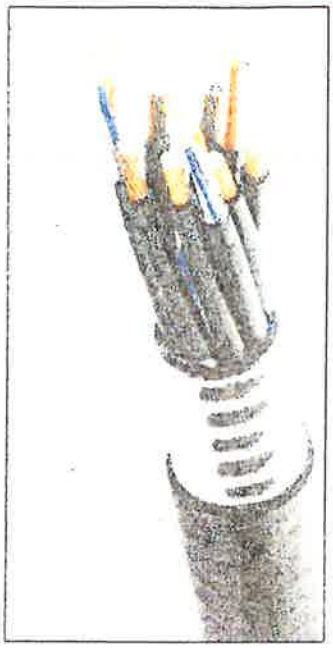


Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

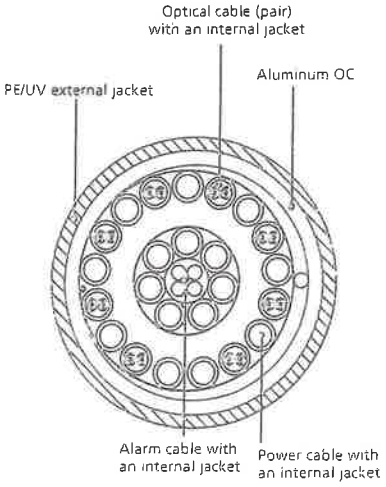


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: West Hartford								
Tower Height: 150Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Sprint CDMA/LTE	7	348	135	1900	0.0526	1.0000	0.53%	
*Sprint CDMA/LTE	1	195	135	850	0.0042	0.5667	0.07%	
*Sprint CDMA/LTE	2	195	135	2500	0.0084	1.0000	0.08%	
*Sensus (CL&P)	1	200	117	940.1125	0.0058	0.6267	0.09%	
*XM Sat Radio	2	302	160	2337.49	0.0092	1.0000	0.09%	
Verizon PCS	**1**	**4900**	**147**	**0.0815**	**1970**	**1.0000**	**8.15%**	
Verizon Cellular	**9**	**382**	**147**	**0.0572**	**869**	**0.5793**	**9.87%**	
Verizon AWS	**1**	**7300**	**147**	**0.1215**	**2145**	**1.0000**	**12.15%**	
Verizon 700	**1**	**2200**	**147**	**0.0366**	**746**	**0.4973**	**7.36%**	
								38.41%
* Source: Siting Council								

ATTACHMENT 3

February 23, 2017

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

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate** **Carrier Site Name:**	 West Hartford, CT
Crown Castle Designation:	**Crown Castle BU Number:** **Crown Castle Site Name:** **Crown Castle JDE Job Number:** **Crown Castle Work Order Number:** **Crown Castle Application Number:**	806370 HRT 099 943226 337987 1364186 None
Engineering Firm Designation:	**B+T Group Project Number:**	99070.004.01
Site Data:	**570 New Park Avenue, West Hartford, Hartford County, CT** **Latitude *41° 44' 10.5"*, Longitude *-72° 43' 14.2"*** **150 Foot - Monopole Tower**	

Dear Charles McGuirt,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1003669.

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

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

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

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

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

Respectfully submitted by:
B+T Engineering, Inc.

Jason Brock, E.I.
Project Engineer

Scott S. Vance, P.E.
Engineer of Record
COA: PEC.0001564 Expires: 02/10/2018

STATE OF CONNECTICUT SCOTT S. VANCE 31627 LICENSED PROFESSIONAL ENGINEER

2/23/17

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft. Monopole tower designed by Valmont in May of 1990. The tower was originally designed for a wind speed of 125 mph per EIA-222-D.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
146.0	147.0	3	Alcatel Lucent	RRH2X60-AWS	1	1-5/8	--
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	RRH2x60-700			
		6	Commscope	SBNHH-1D65B			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			

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
146.0	147.0	**3**	**Alcatel Lucent**	**RRH2x40-AWS**	**6**	**1-1/4**	**3**
		5	**Antel**	**BXA-171063-12CF-EDIN-2**			
		1	**Antel**	**BXA-171063-8BF-2**			
		3	Antel	BXA-70063-6CF-EDIN-4	1 12	1-5/8 1-1/4	1
		3	Antel	BXA-70063-6CF-EDIN-5			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
	146.0	1	--	Platform Mount [LP 713-1]			
137.0	137.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	--	--	1
		6	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
		1	--	Side Arm Mount [SO 102-3]			
134.0	135.0	3	RFS Celwave	APXVSPP18-C-A20	3 1	1-1/4 5/8	1
		3	RFS Celwave	APXVTM14-C-120			
		3	Alcatel Lucent	TD-RRH8x20-25			
	134.0	3	RFS Celwave	IBC1900BB-1			
		3	RFS Celwave	IBC1900HG-2A			
		1	--	Platform Mount [LP 713-1]			
117.0	122.0	1	Antel	BCD-87010	1	7/8	2
	117.0	1	--	Side Arm Mount [SO 702-1]			

Notes:
1) Existing Equipment
2) Abandoned Equipment; Considered in This Analysis
3) **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)
147	147	3	Celwave	PD10017	--	--
		1	Generic	Platform		
134	134	6	Celwave	PD1132	--	--
		1	Generic	Platform		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	None	--	--
Tower Manufacturer Drawing	Valmont, Drawing No. DC0605Z	260794	CCI Sites
Foundation Mapping	TEP, Project No. 082233	2308022	CCI Sites
Geotech Report	TEP, Project No. 082233.01	2308053	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 01/27/2016	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Mount areas and weights are assumed based on photographs provided.
5) The existing base plate grout was not considered in this analysis.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 96.8333	Pole	TP39.21x26.19x0.313	1	-13.551	2454.690	37.4	Pass
L2	96.8333 - 48	Pole	TP50.55x37.197x0.406	2	-26.274	4133.710	46.7	Pass
L3	48 - 0	Pole	TP61.5x48.022x0.5	3	-49.269	6336.210	48.5	Pass
							Summary	
						Pole (L3)	48.5	Pass
						Rating =	48.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	43.2	Pass
1	Base Plate	Base	29.5	Pass
1	Base Foundation (Structural)	Base	26.4	Pass
1	Base Foundation (Soil Interaction)	Base	60.3	Pass

Structure Rating (max from all components) =	60.3%

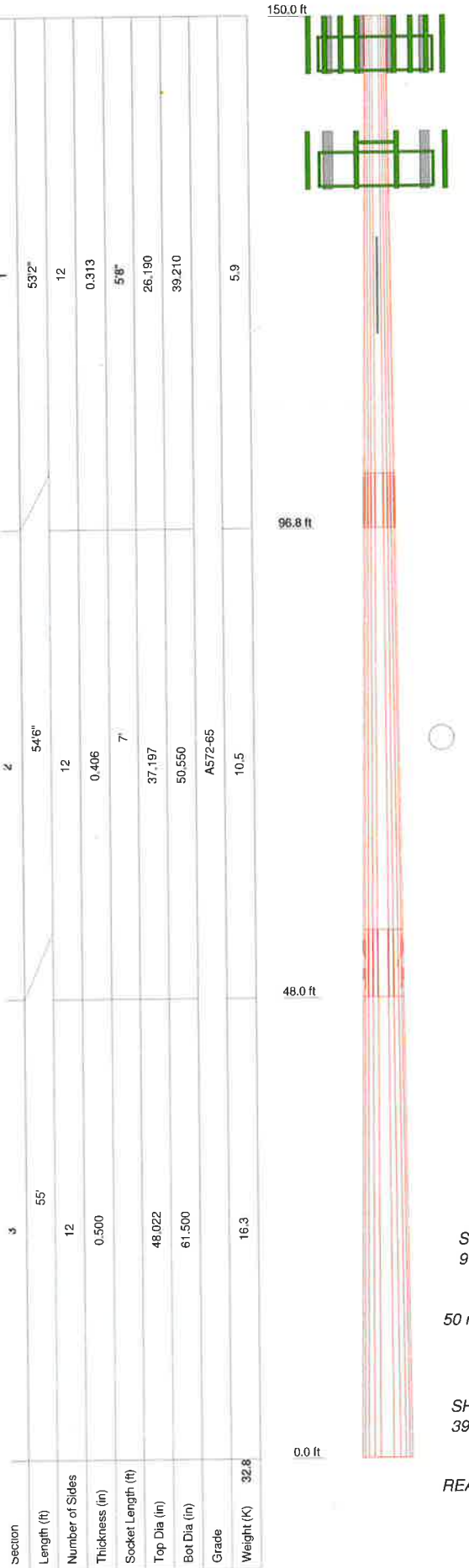
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063-6CF-EDIN-4 w/ Mount Pipe (E)	146	5' x 2" Pipe Mount (E-for TME/Photo)	146
		Platform Mount [LP 713-1] (E)	146
BXA-70063-6CF-EDIN-4 w/ Mount Pipe (E)	146	800MHz 2X50W RRH W/FILTER (E)	137
		800MHz 2X50W RRH W/FILTER (E)	137
BXA-70063-6CF-EDIN-4 w/ Mount Pipe (E)	146	800MHz 2X50W RRH W/FILTER (E)	137
		(2) PCS 1900MHz 4x45W-65MHz (E)	137
BXA-70063-6CF-EDIN-5 w/ Mount Pipe (E)	146	(2) PCS 1900MHz 4x45W-65MHz (E)	137
		(2) PCS 1900MHz 4x45W-65MHz (E)	137
BXA-70063-6CF-EDIN-5 w/ Mount Pipe (E)	146	(2) 4' x 2" Pipe Mount (E-TME/Photo)	137
		(2) 4' x 2" Pipe Mount (E-TME/Photo)	137
BXA-70063-6CF-EDIN-5 w/ Mount Pipe (E)	146	(2) 4' x 2" Pipe Mount (E-TME/Photo)	137
DB-T1-6Z-8AB-0Z (E-Hor.Off./Photo)	146	Side Arm Mount [SO 102-3] (E)	137
(2) SBNHH-1D65B w/ Mount Pipe (P)	146	APXVSPP18-C-A20 w/ Mount Pipe (E)	134
(2) SBNHH-1D65B w/ Mount Pipe (P)	146	APXVSPP18-C-A20 w/ Mount Pipe (E)	134
(2) SBNHH-1D65B w/ Mount Pipe (P)	146	APXVSPP18-C-A20 w/ Mount Pipe (E)	134
RRH2x60-700 (P)	146	APXVTM14-C-120 w/ Mount Pipe (E)	134
RRH2x60-700 (P)	146	APXVTM14-C-120 w/ Mount Pipe (E)	134
RRH2x60-700 (P)	146	APXVTM14-C-120 w/ Mount Pipe (E)	134
RRH2X60-PCS (P)	146	IBC1900HG-2A (E)	134
RRH2X60-PCS (P)	146	IBC1900HG-2A (E)	134
RRH2X60-PCS (P)	146	IBC1900HG-2A (E)	134
RRH2X60-AWS (P)	146	IBC1900BB-1 (E)	134
RRH2X60-AWS (P)	146	IBC1900BB-1 (E)	134
RRH2X60-AWS (P)	146	IBC1900BB-1 (E)	134
DB-T1-6Z-8AB-0Z (P)	146	TD-RRH8x20-25 (E)	134
5' x 2" Pipe Mount (E-For TME/Photo)	146	TD-RRH8x20-25 (E)	134
5' x 2" Pipe Mount (E-For TME/Photo)	146	TD-RRH8x20-25 (E)	134
5' x 2" Pipe Mount (E-For TME/Photo)	146	6' x 2" Mount Pipe (E-Empty/Photo)	134
5' x 2" Pipe Mount (E-1 Dual Pipe/Photo)	146	6' x 2" Mount Pipe (E-Empty/Photo)	134
		6' x 2" Mount Pipe (E-Empty/Photo)	134
5' x 2" Pipe Mount (E-1 Dual Pipe/Photo)	146	Platform Mount [LP 713-1] (E)	134
		BCD-87010 (AB)	117
5' x 2" Pipe Mount (E-1 Dual Pipe/Photo)	146	Side Arm Mount [SO 702-1] (AB)	117
		Side Arm Mount [SO 102-3] (E-Per Photo)	117

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0'
8. TOWER RATING: 48.5%

ALL REACTIONS ARE FACTORED

AXIAL 87 K

SHEAR 9 K *MOMENT 991 kip-ft*

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

AXIAL 49 K

SHEAR 39 K *MOMENT 3758 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 97 mph WIND

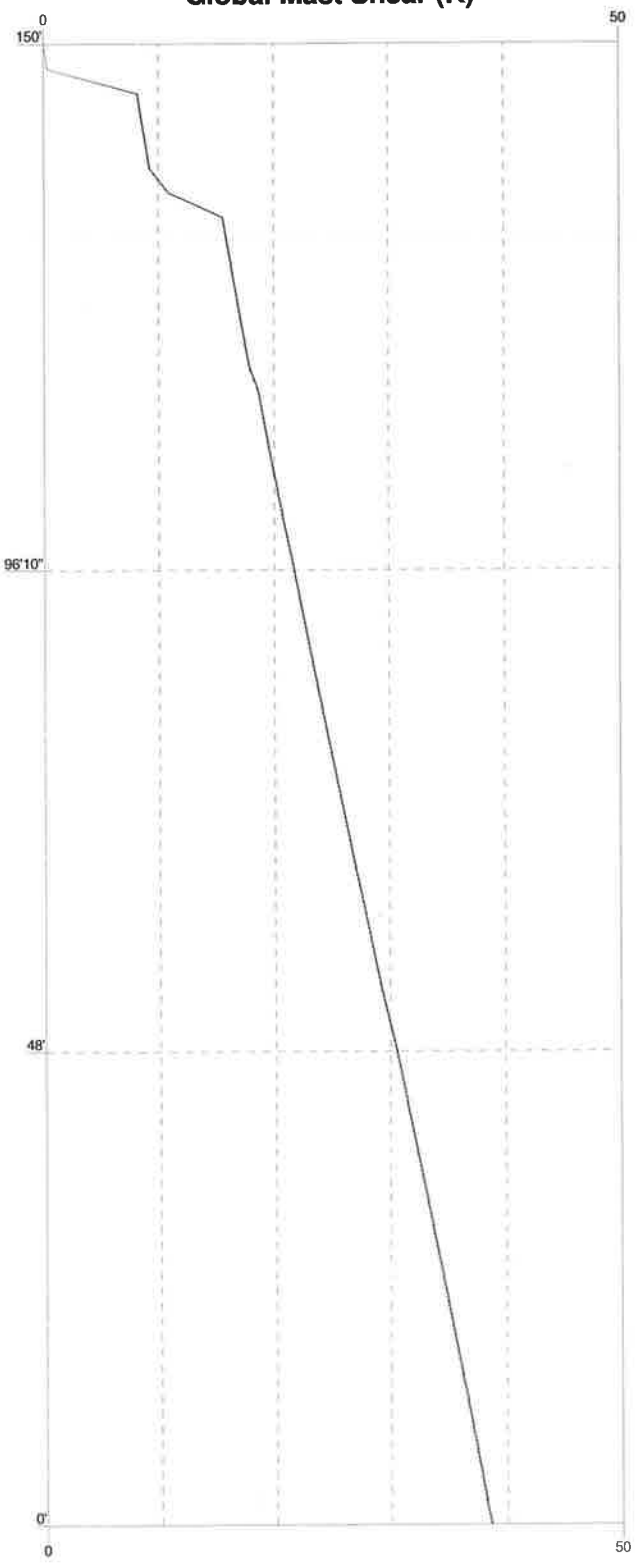
B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 99070.004.01 - HRT 099 943226,CT (BU# 8063
Project:
Client: Crown Castle Drawn by: Vignesh Prabhu K App'd:
Code: TIA-222-G Date: 02/22/17 Scale: NTS
Path: Dwg No. E-1

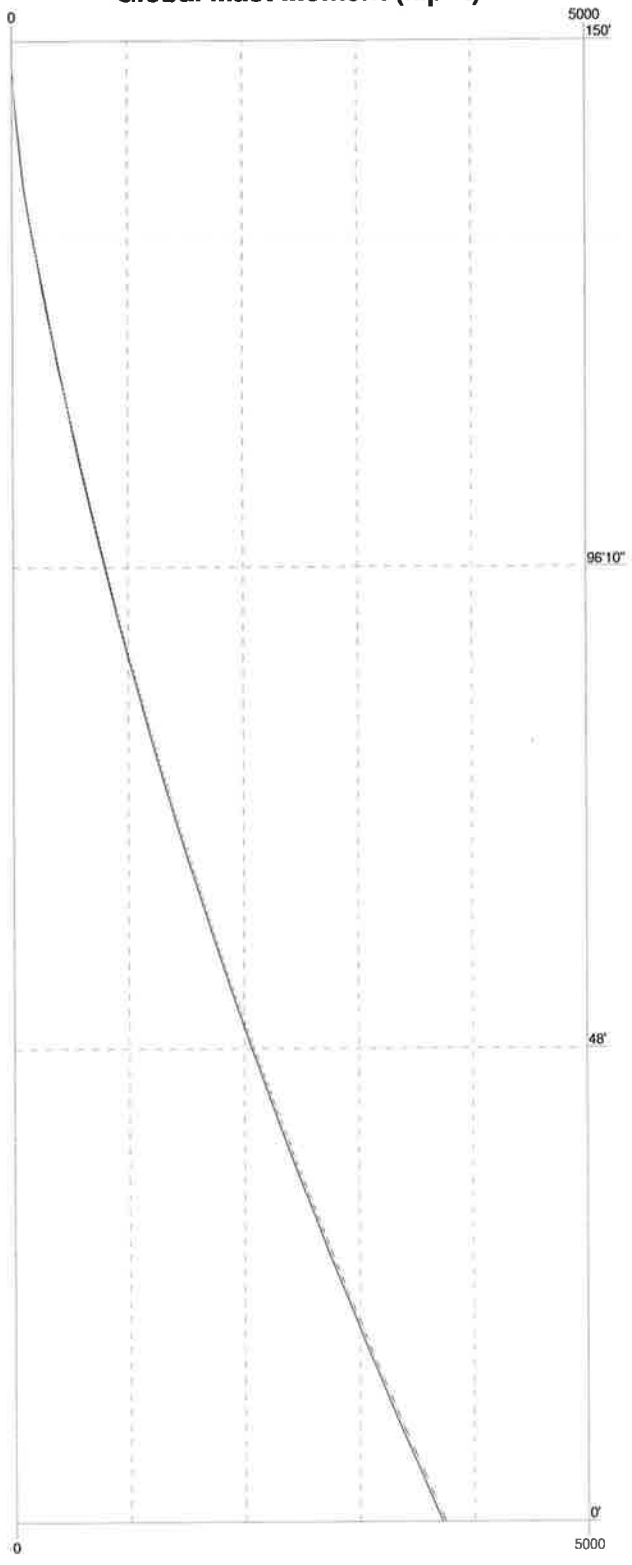
Vx Vz

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



Elevation (ft)

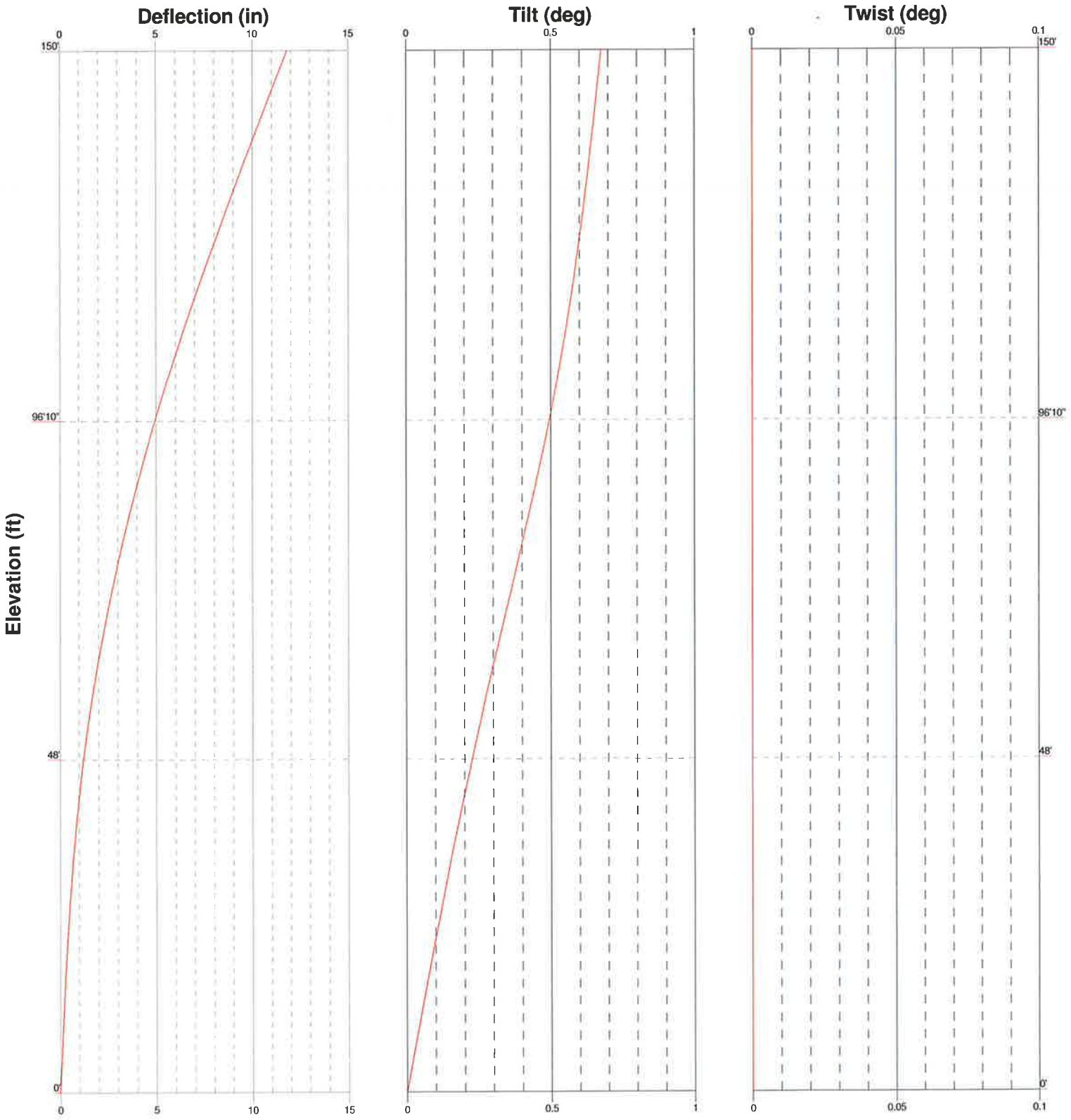
B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 99070.004.01 - HRT 099 943226,CT (BU# 8063			
Project:			
Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:	
Code: TIA-222-G	Date: 02/22/17	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-G - Service - 60 mph

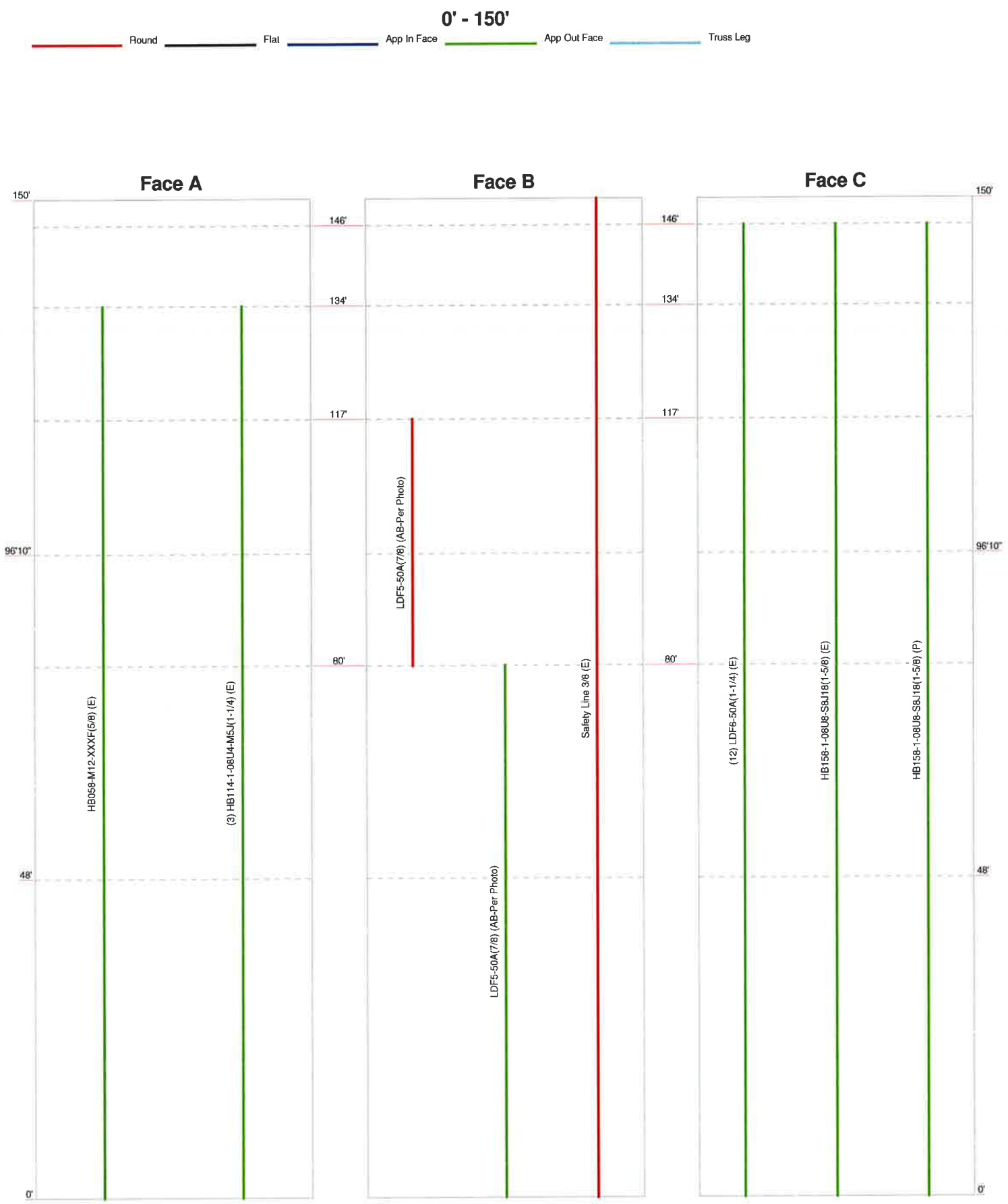
Maximum Values



B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***99070.004.01 - HRT 099 943226,CT (BU# 8063***		
Project:			
Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:	
Code: TIA-222-G	Date: 02/22/17	Scale: NTS	
Path:		Dwg No. E-5	



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 99070.004.01 - HRT 099 943226,CT (BU# 8063			
Project:			
Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:	
Code: TIA-222-G	Date: 02/22/17	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0'.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150'-96'10"	53'2"	5'8"	12	26.190	39.210	0.313	1.250	A572-65 (65 ksi)
L2	96'10"-48'	54'6"	7'	12	37.197	50.550	0.406	1.625	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	48'-0'	55'		12	48.022	61.500	0.500	2.000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	27.114	26.039	2225.660	9.264	13.566	164.057	4509.790	12.816	6.181	19.781
	40.593	39.141	7558.871	13.925	20.311	372.161	15316.321	19.264	9.671	30.946
L2	39.947	48.127	8314.982	13.171	19.268	431.539	16848.408	23.687	8.880	21.859
	52.333	65.594	21051.625	17.951	26.185	803.960	42656.300	32.284	12.459	30.667
L3	51.492	76.511	22055.095	17.013	24.876	886.614	44689.601	37.656	11.530	23.06
	63.669	98.210	46644.596	21.838	31.857	1464.187	94514.596	48.336	15.142	30.284

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150'-96'10"				1	1	1			
L2 96'10"-48'				1	1	1			
L3 48'-0'				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
V									
LDF5-50A(7/8) (AB-Per Photo)	B	Surface Ar (CaAa)	117' - 80'	1	1	-0.180 -0.150	1.090		0.000
V									
Safety Line 3/8 (E)	B	Surface Ar (CaAa)	150' - 0'	1	1	0.000 0.010	0.375		0.000
V									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF6-50A(1-1/4) (E)	C	No	Inside Pole	146' - 0'	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HB158-1-08U8-S8J18(1-5/8) (E)	C	No	Inside Pole	146' - 0'	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	146' - 0'	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
(P)						1" Ice	0.000	0.001
V								
HB058-M12-XXXF(5/8) (E)	A	No	Inside Pole	134' - 0'	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
HB114-1-08U4-M5J(1-1/4) (E)	A	No	Inside Pole	134' - 0'	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
LDF5-50A(7/8) (AB-Per Photo)	B	No	Inside Pole	80' - 0'	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
V								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150'-96'10"	A	0.000	0.000	0.000	0.000	0.129
		B	0.000	0.000	4.192	0.000	0.018
		C	0.000	0.000	0.000	0.000	0.482
L2	96'10"-48'	A	0.000	0.000	0.000	0.000	0.170
		B	0.000	0.000	3.666	0.000	0.027
		C	0.000	0.000	0.000	0.000	0.479
L3	48'-0'	A	0.000	0.000	0.000	0.000	0.167
		B	0.000	0.000	1.800	0.000	0.026
		C	0.000	0.000	0.000	0.000	0.470

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150'-96'10"	A	2.279	0.000	0.000	0.000	0.000	0.129
		B		0.000	0.000	37.621	0.000	0.601
		C		0.000	0.000	0.000	0.000	0.482
L2	96'10"-48'	A	2.162	0.000	0.000	0.000	0.000	0.170
		B		0.000	0.000	33.601	0.000	0.546
		C		0.000	0.000	0.000	0.000	0.479
L3	48'-0'	A	1.939	0.000	0.000	0.000	0.000	0.167
		B		0.000	0.000	22.551	0.000	0.348
		C		0.000	0.000	0.000	0.000	0.470

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150'-96'10"	0.090	-0.078	0.622	-0.454
L2	96'10"-48'	0.079	-0.065	0.625	-0.435
L3	48'-0'	0.047	-0.027	0.509	-0.287

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	9	LDF5-50A(7/8)	96.83 - 117.00	1.0000	1.0000
L1	12	Safety Line 3/8	96.83 - 150.00	1.0000	1.0000
L2	12	Safety Line 3/8	48.00 - 96.83	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-70063-6CF-EDIN-4 w/ Mount Pipe (E)	A	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	7.806 8.357 8.872	5.398 6.546 7.409	0.042 0.101 0.168
BXA-70063-6CF-EDIN-4 w/ Mount Pipe (E)	B	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	7.806 8.357 8.872	5.398 6.546 7.409	0.042 0.101 0.168
BXA-70063-6CF-EDIN-4 w/ Mount Pipe (E)	C	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	7.806 8.357 8.872	5.398 6.546 7.409	0.042 0.101 0.168
BXA-70063-6CF-EDIN-5 w/ Mount Pipe (E)	A	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	7.806 8.357 8.872	5.801 6.953 7.819	0.042 0.103 0.171
BXA-70063-6CF-EDIN-5 w/ Mount Pipe (E)	B	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	7.806 8.357 8.872	5.801 6.953 7.819	0.042 0.103 0.171
BXA-70063-6CF-EDIN-5 w/ Mount Pipe (E)	C	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	7.806 8.357 8.872	5.801 6.953 7.819	0.042 0.103 0.171
DB-T1-6Z-8AB-0Z (E-Hor.Off./Photo)	B	From Leg	1.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	4.800 5.070 5.348	2.000 2.193 2.393	0.044 0.080 0.120
(2) SBNHH-1D65B w/ Mount Pipe (P)	A	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	8.397 8.960 9.490	7.071 8.260 9.170	0.066 0.135 0.212
(2) SBNHH-1D65B w/ Mount Pipe (P)	B	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	8.397 8.960 9.490	7.071 8.260 9.170	0.066 0.135 0.212
(2) SBNHH-1D65B w/ Mount Pipe (P)	C	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	8.397 8.960 9.490	7.071 8.260 9.170	0.066 0.135 0.212
RRH2x60-700 (P)	A	From Leg	4.000 0' 1'	0.000	146'	No Ice 1/2" Ice 1" Ice	3.500 3.761 4.029	1.816 2.052 2.289	0.060 0.083 0.109
RRH2x60-700	B	From Leg	4.000	0.000	146'	No Ice	3.500	1.816	0.060

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(P)			0'			1/2" Ice	3.761	2.052	0.083
			1'			1" Ice	4.029	2.289	0.109
RRH2x60-700	C	From Leg	4.000	0.000	146'	No Ice	3.500	1.816	0.060
(P)			0'			1/2" Ice	3.761	2.052	0.083
			1'			1" Ice	4.029	2.289	0.109
RRH2X60-PCS	A	From Leg	4.000	0.000	146'	No Ice	2.200	1.723	0.055
(P)			0'			1/2" Ice	2.393	1.901	0.075
			1'			1" Ice	2.593	2.087	0.099
RRH2X60-PCS	B	From Leg	4.000	0.000	146'	No Ice	2.200	1.723	0.055
(P)			0'			1/2" Ice	2.393	1.901	0.075
			1'			1" Ice	2.593	2.087	0.099
RRH2X60-PCS	C	From Leg	4.000	0.000	146'	No Ice	2.200	1.723	0.055
(P)			0'			1/2" Ice	2.393	1.901	0.075
			1'			1" Ice	2.593	2.087	0.099
RRH2X60-AWS	A	From Leg	4.000	0.000	146'	No Ice	3.500	1.816	0.060
(P)			0'			1/2" Ice	3.761	2.052	0.083
			1'			1" Ice	4.029	2.289	0.109
RRH2X60-AWS	B	From Leg	4.000	0.000	146'	No Ice	3.500	1.816	0.060
(P)			0'			1/2" Ice	3.761	2.052	0.083
			1'			1" Ice	4.029	2.289	0.109
RRH2X60-AWS	C	From Leg	4.000	0.000	146'	No Ice	3.500	1.816	0.060
(P)			0'			1/2" Ice	3.761	2.052	0.083
			1'			1" Ice	4.029	2.289	0.109
DB-T1-6Z-8AB-0Z	B	From Leg	4.000	0.000	146'	No Ice	4.800	2.000	0.044
(P)			0'			1/2" Ice	5.070	2.193	0.080
			1'			1" Ice	5.348	2.393	0.120
5' x 2" Pipe Mount	A	From Leg	4.000	0.000	146'	No Ice	1.000	1.000	0.029
(E-For TME/Photo)			0'			1/2" Ice	1.393	1.393	0.037
			0'			1" Ice	1.703	1.703	0.048
5' x 2" Pipe Mount	B	From Leg	4.000	0.000	146'	No Ice	1.000	1.000	0.029
(E-For TME/Photo)			0'			1/2" Ice	1.393	1.393	0.037
			0'			1" Ice	1.703	1.703	0.048
5' x 2" Pipe Mount	C	From Leg	4.000	0.000	146'	No Ice	1.000	1.000	0.029
(E-For TME/Photo)			0'			1/2" Ice	1.393	1.393	0.037
			0'			1" Ice	1.703	1.703	0.048
5' x 2" Pipe Mount	A	From Leg	4.000	0.000	146'	No Ice	0.000	1.000	0.029
(E-1 Dual Pipe/Photo)			0'			1/2" Ice	0.000	1.393	0.037
			0'			1" Ice	0.000	1.703	0.048
5' x 2" Pipe Mount	B	From Leg	4.000	0.000	146'	No Ice	0.000	1.000	0.029
(E-1 Dual Pipe/Photo)			0'			1/2" Ice	0.000	1.393	0.037
			0'			1" Ice	0.000	1.703	0.048
5' x 2" Pipe Mount	C	From Leg	4.000	0.000	146'	No Ice	0.000	1.000	0.029
(E-1 Dual Pipe/Photo)			0'			1/2" Ice	0.000	1.393	0.037
			0'			1" Ice	0.000	1.703	0.048
5' x 2" Pipe Mount	B	From Leg	1.000	0.000	146'	No Ice	1.000	1.000	0.029
(E-for TME/Photo)			0'			1/2" Ice	1.393	1.393	0.037
			0'			1" Ice	1.703	1.703	0.048
Platform Mount [LP 713-1]	C	None		0.000	146'	No Ice	31.270	31.270	1.510
(E)						1/2" Ice	39.680	39.680	1.929
						1" Ice	48.090	48.090	2.348
v									
800MHz 2X50W RRH	A	From Leg	2.000	0.000	137'	No Ice	2.058	1.932	0.064
W/FILTER			0'			1/2" Ice	2.240	2.109	0.086
(E)			0'			1" Ice	2.429	2.293	0.111
800MHz 2X50W RRH	B	From Leg	2.000	0.000	137'	No Ice	2.058	1.932	0.064
W/FILTER			0'			1/2" Ice	2.240	2.109	0.086
(E)			0'			1" Ice	2.429	2.293	0.111

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800MHz 2X50W RRH W/FILTER (E)	C	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	2.058 2.240 2.429	1.932 2.109 2.293	0.064 0.086 0.111
(2) PCS 1900MHz 4x45W-65MHz (E)	A	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.060 0.083 0.110
(2) PCS 1900MHz 4x45W-65MHz (E)	B	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.060 0.083 0.110
(2) PCS 1900MHz 4x45W-65MHz (E)	C	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.060 0.083 0.110
(2) 4' x 2" Pipe Mount (E-TME/Photo)	A	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
(2) 4' x 2" Pipe Mount (E-TME/Photo)	B	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
(2) 4' x 2" Pipe Mount (E-TME/Photo)	C	From Leg	2.000 0' 0'	0.000	137'	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
Side Arm Mount [SO 102-3] (E)	C	None		0.000	137'	No Ice 1/2" Ice 1" Ice	3.000 3.480 3.960	3.000 3.480 3.960	0.081 0.111 0.141
V									
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVTM14-C-120 w/ Mount Pipe (E)	A	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.131 0.193
APXVTM14-C-120 w/ Mount Pipe (E)	B	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.131 0.193
APXVTM14-C-120 w/ Mount Pipe (E)	C	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	6.580 7.031 7.473	4.959 5.754 6.472	0.077 0.131 0.193
IBC1900HG-2A (E)	A	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	0.966 1.091 1.223	0.463 0.558 0.660	0.022 0.030 0.039
IBC1900HG-2A (E)	B	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	0.966 1.091 1.223	0.463 0.558 0.660	0.022 0.030 0.039
IBC1900HG-2A (E)	C	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	0.966 1.091 1.223	0.463 0.558 0.660	0.022 0.030 0.039
IBC1900BB-1 (E)	A	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	0.966 1.091 1.223	0.463 0.558 0.660	0.022 0.030 0.039
IBC1900BB-1 (E)	B	From Leg	4.000 0'	0.000	134'	No Ice 1/2" Ice	0.966 1.091	0.463 0.558	0.022 0.030

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	1.223	0.660	0.039
IBC1900BB-1 (E)	C	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	0.966 1.091 1.223	0.463 0.558 0.660	0.022 0.030 0.039
TD-RRH8x20-25 (E)	A	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8x20-25 (E)	B	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8x20-25 (E)	C	From Leg	4.000 0' 1'	0.000	134'	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
6' x 2" Mount Pipe (E-Empty/Photo)	A	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
6' x 2" Mount Pipe (E-Empty/Photo)	B	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
6' x 2" Mount Pipe (E-Empty/Photo)	C	From Leg	4.000 0' 0'	0.000	134'	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
Platform Mount [LP 713-1] (E)	C	None		0.000	134'	No Ice 1/2" Ice 1" Ice	31.270 39.680 48.090	31.270 39.680 48.090	1.510 1.929 2.348
V									
BCD-87010 (AB)	A	From Leg	6.000 0' 5'	0.000	117'	No Ice 1/2" Ice 1" Ice	2.903 4.050 5.213	2.903 4.050 5.213	0.027 0.048 0.077
Side Arm Mount [SO 702-1] (AB)	A	From Leg	3.000 0' 0'	0.000	117'	No Ice 1/2" Ice 1" Ice	1.000 1.250 1.500	1.430 2.050 2.670	0.027 0.038 0.049
Side Arm Mount [SO 102-3] (E-Per Photo)	C	None		0.000	117'	No Ice 1/2" Ice 1" Ice	3.000 3.480 3.960	3.000 3.480 3.960	0.081 0.111 0.141
V									

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

Comb. No.	Description
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
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	150 - 96.8333	Pole	Max Tension	30	0.000	0.002	-0.000
			Max. Compression	26	-35.672	-2.579	1.270
			Max. Mx	8	-13.556	-687.612	-4.740
			Max. My	2	-13.569	4.479	681.384
			Max. Vy	8	20.759	-687.612	-4.740
			Max. Vx	2	-20.608	4.479	681.384
			Max. Torque	22			-1.281
L2	96.8333 - 48	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.228	-3.334	1.806
			Max. Mx	8	-26.277	-1873.009	-9.950
			Max. My	2	-26.284	9.685	1859.615
			Max. Vy	8	29.243	-1873.009	-9.950
			Max. Vx	2	-29.093	9.685	1859.615

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	22			-1.280
L3	48 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.573	-4.127	2.270
			Max. Mx	8	-49.269	-3749.988	-15.925
			Max. My	2	-49.269	15.647	3728.396
			Max. Vy	8	38.675	-3749.988	-15.925
			Max. Vx	2	-38.528	15.647	3728.396
			Max. Torque	22			-1.279

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	86.573	-9.414	-0.020
	Max. H_x	20	49.289	38.650	0.107
	Max. H_z	2	49.289	0.107	38.503
	Max. M_x	2	3728.396	0.107	38.503
	Max. M_z	8	3749.988	-38.650	-0.107
	Max. Torsion	10	1.278	-33.525	-19.344
	Min. Vert	17	36.966	19.232	-33.291
	Min. H_x	8	49.289	-38.650	-0.107
	Min. H_z	14	49.289	-0.107	-38.503
	Min. M_x	14	-3727.965	-0.107	-38.503
	Min. M_z	20	-3749.004	38.650	0.107
	Min. Torsion	22	-1.278	33.525	19.344

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	41.074	0.000	0.000	-0.175	-0.396	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	49.289	-0.107	-38.503	-3728.396	15.647	0.627
0.9 Dead+1.6 Wind 0 deg - No Ice	36.966	-0.107	-38.503	-3709.526	15.676	0.629
1.2 Dead+1.6 Wind 30 deg - No Ice	49.289	19.232	-33.291	-3220.855	-1861.281	-0.015
0.9 Dead+1.6 Wind 30 deg - No Ice	36.966	19.232	-33.291	-3204.553	-1851.768	-0.012
1.2 Dead+1.6 Wind 60 deg - No Ice	49.289	33.418	-19.159	-1850.328	-3239.602	-0.653
0.9 Dead+1.6 Wind 60 deg - No Ice	36.966	33.418	-19.159	-1840.950	-3223.119	-0.650
1.2 Dead+1.6 Wind 90 deg - No Ice	49.289	38.650	0.107	15.925	-3749.988	-1.115
0.9 Dead+1.6 Wind 90 deg - No Ice	36.966	38.650	0.107	15.882	-3730.920	-1.113
1.2 Dead+1.6 Wind 120 deg - No Ice	49.289	33.525	19.344	1877.837	-3255.711	-1.278
0.9 Dead+1.6 Wind 120 deg - No Ice	36.966	33.525	19.344	1868.399	-3239.131	-1.278

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.6 Wind 150 deg - No Ice	49.289	19.418	33.398	3236.536	-1889.216	-1.099
0.9 Dead+1.6 Wind 150 deg - No Ice	36.966	19.418	33.398	3220.247	-1879.534	-1.100
1.2 Dead+1.6 Wind 180 deg - No Ice	49.289	0.107	38.503	3727.965	-16.630	-0.625
0.9 Dead+1.6 Wind 180 deg - No Ice	36.966	0.107	38.503	3709.204	-16.406	-0.628
1.2 Dead+1.6 Wind 210 deg - No Ice	49.289	-19.232	33.291	3220.424	1860.296	0.015
0.9 Dead+1.6 Wind 210 deg - No Ice	36.966	-19.232	33.291	3204.232	1851.036	0.012
1.2 Dead+1.6 Wind 240 deg - No Ice	49.289	-33.418	19.159	1849.899	3238.616	0.651
0.9 Dead+1.6 Wind 240 deg - No Ice	36.966	-33.418	19.159	1840.631	3222.386	0.649
1.2 Dead+1.6 Wind 270 deg - No Ice	49.289	-38.650	-0.107	-16.352	3749.004	1.114
0.9 Dead+1.6 Wind 270 deg - No Ice	36.966	-38.650	-0.107	-16.199	3730.188	1.112
1.2 Dead+1.6 Wind 300 deg - No Ice	49.289	-33.525	-19.344	-1878.264	3254.729	1.278
0.9 Dead+1.6 Wind 300 deg - No Ice	36.966	-33.525	-19.344	-1868.717	3238.402	1.278
1.2 Dead+1.6 Wind 330 deg - No Ice	49.289	-19.418	-33.398	-3236.966	1888.235	1.100
0.9 Dead+1.6 Wind 330 deg - No Ice	36.966	-19.418	-33.398	-3220.567	1878.805	1.101
1.2 Dead+1.0 Ice+1.0 Temp	86.573	0.000	-0.000	-2.270	-4.127	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	86.573	-0.020	-9.372	-983.659	-1.189	0.160
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	86.573	4.690	-8.107	-850.628	-495.188	-0.141
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	86.573	8.143	-4.669	-490.307	-857.659	-0.404
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	86.573	9.414	0.020	0.756	-991.476	-0.559
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	86.573	8.163	4.704	490.980	-860.785	-0.563
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	86.573	4.724	8.127	849.010	-500.605	-0.417
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	86.573	0.020	9.372	978.914	-7.445	-0.160
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	86.573	-4.690	8.107	845.883	486.554	0.141
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	86.573	-8.143	4.669	485.562	849.025	0.404
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	86.573	-9.414	-0.020	-5.500	982.843	0.558
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	86.573	-8.163	-4.704	-495.724	852.153	0.563
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	86.573	-4.724	-8.127	-853.756	491.972	0.417
Dead+Wind 0 deg - Service	41.074	-0.023	-8.238	-795.502	3.032	0.135
Dead+Wind 30 deg - Service	41.074	4.115	-7.123	-687.228	-397.365	-0.003
Dead+Wind 60 deg - Service	41.074	7.150	-4.099	-394.860	-691.399	-0.140
Dead+Wind 90 deg - Service	41.074	8.270	0.023	3.262	-800.281	-0.239
Dead+Wind 120 deg - Service	41.074	7.173	4.139	400.462	-694.839	-0.274
Dead+Wind 150 deg - Service	41.074	4.155	7.146	690.311	-403.325	-0.236
Dead+Wind 180 deg - Service	41.074	0.023	8.238	795.143	-3.850	-0.135
Dead+Wind 210 deg - Service	41.074	-4.115	7.123	686.870	396.547	0.003

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg - Service	41.074	-7.150	4.099	394.502	690.580	0.139
Dead+Wind 270 deg - Service	41.074	-8.270	-0.023	-3.620	799.463	0.239
Dead+Wind 300 deg - Service	41.074	-7.173	-4.139	-400.820	694.021	0.274
Dead+Wind 330 deg - Service	41.074	-4.155	-7.146	-690.669	402.507	0.236

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-41.074	0.000	0.000	41.074	0.000	0.000%
2	-0.107	-49.289	-38.503	0.107	49.289	38.503	0.000%
3	-0.107	-36.966	-38.503	0.107	36.966	38.503	0.000%
4	19.232	-49.289	-33.291	-19.232	49.289	33.291	0.000%
5	19.232	-36.966	-33.291	-19.232	36.966	33.291	0.000%
6	33.418	-49.289	-19.159	-33.418	49.289	19.159	0.000%
7	33.418	-36.966	-19.159	-33.418	36.966	19.159	0.000%
8	38.650	-49.289	0.107	-38.650	49.289	-0.107	0.000%
9	38.650	-36.966	0.107	-38.650	36.966	-0.107	0.000%
10	33.525	-49.289	19.344	-33.525	49.289	-19.344	0.000%
11	33.525	-36.966	19.344	-33.525	36.966	-19.344	0.000%
12	19.418	-49.289	33.398	-19.418	49.289	-33.398	0.000%
13	19.418	-36.966	33.398	-19.418	36.966	-33.398	0.000%
14	0.107	-49.289	38.503	-0.107	49.289	-38.503	0.000%
15	0.107	-36.966	38.503	-0.107	36.966	-38.503	0.000%
16	-19.232	-49.289	33.291	19.232	49.289	-33.291	0.000%
17	-19.232	-36.966	33.291	19.232	36.966	-33.291	0.000%
18	-33.418	-49.289	19.159	33.418	49.289	-19.159	0.000%
19	-33.418	-36.966	19.159	33.418	36.966	-19.159	0.000%
20	-38.650	-49.289	-0.107	38.650	49.289	0.107	0.000%
21	-38.650	-36.966	-0.107	38.650	36.966	0.107	0.000%
22	-33.525	-49.289	-19.344	33.525	49.289	19.344	0.000%
23	-33.525	-36.966	-19.344	33.525	36.966	19.344	0.000%
24	-19.418	-49.289	-33.398	19.418	49.289	33.398	0.000%
25	-19.418	-36.966	-33.398	19.418	36.966	33.398	0.000%
26	0.000	-86.573	0.000	-0.000	86.573	0.000	0.000%
27	-0.020	-86.573	-9.372	0.020	86.573	9.372	0.000%
28	4.690	-86.573	-8.107	-4.690	86.573	8.107	0.000%
29	8.143	-86.573	-4.669	-8.143	86.573	4.669	0.000%
30	9.414	-86.573	0.020	-9.414	86.573	-0.020	0.000%
31	8.163	-86.573	4.704	-8.163	86.573	-4.704	0.000%
32	4.724	-86.573	8.127	-4.724	86.573	-8.127	0.000%
33	0.020	-86.573	9.372	-0.020	86.573	-9.372	0.000%
34	-4.690	-86.573	8.107	4.690	86.573	-8.107	0.000%
35	-8.143	-86.573	4.669	8.143	86.573	-4.669	0.000%
36	-9.414	-86.573	-0.020	9.414	86.573	0.020	0.000%
37	-8.163	-86.573	-4.704	8.163	86.573	4.704	0.000%
38	-4.724	-86.573	-8.127	4.724	86.573	8.127	0.000%
39	-0.023	-41.074	-8.238	0.023	41.074	8.238	0.000%
40	4.115	-41.074	-7.123	-4.115	41.074	7.123	0.000%
41	7.150	-41.074	-4.099	-7.150	41.074	4.099	0.000%
42	8.270	-41.074	0.023	-8.270	41.074	-0.023	0.000%
43	7.173	-41.074	4.139	-7.173	41.074	-4.139	0.000%
44	4.155	-41.074	7.146	-4.155	41.074	-7.146	0.000%
45	0.023	-41.074	8.238	-0.023	41.074	-8.238	0.000%
46	-4.115	-41.074	7.123	4.115	41.074	-7.123	0.000%
47	-7.150	-41.074	4.099	7.150	41.074	-4.099	0.000%
48	-8.270	-41.074	-0.023	8.270	41.074	0.023	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
49	-7.173	-41.074	-4.139	7.173	41.074	4.139	0.000%
50	-4.155	-41.074	-7.146	4.155	41.074	7.146	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00003212
3	Yes	4	0.00000001	0.00001875
4	Yes	5	0.00000001	0.00002885
5	Yes	4	0.00000001	0.00071939
6	Yes	5	0.00000001	0.00002924
7	Yes	4	0.00000001	0.00072873
8	Yes	4	0.00000001	0.00004607
9	Yes	4	0.00000001	0.00002796
10	Yes	5	0.00000001	0.00002876
11	Yes	4	0.00000001	0.00071756
12	Yes	5	0.00000001	0.00003034
13	Yes	4	0.00000001	0.00075661
14	Yes	4	0.00000001	0.00005637
15	Yes	4	0.00000001	0.00003452
16	Yes	5	0.00000001	0.00002867
17	Yes	4	0.00000001	0.00071505
18	Yes	5	0.00000001	0.00002843
19	Yes	4	0.00000001	0.00070904
20	Yes	4	0.00000001	0.00007222
21	Yes	4	0.00000001	0.00004459
22	Yes	5	0.00000001	0.00003049
23	Yes	4	0.00000001	0.00076036
24	Yes	5	0.00000001	0.00002877
25	Yes	4	0.00000001	0.00071794
26	Yes	4	0.00000001	0.00000214
27	Yes	4	0.00000001	0.00081010
28	Yes	4	0.00000001	0.00088815
29	Yes	4	0.00000001	0.00089324
30	Yes	4	0.00000001	0.00081947
31	Yes	4	0.00000001	0.00089338
32	Yes	4	0.00000001	0.00089234
33	Yes	4	0.00000001	0.00080472
34	Yes	4	0.00000001	0.00087312
35	Yes	4	0.00000001	0.00087353
36	Yes	4	0.00000001	0.00080702
37	Yes	4	0.00000001	0.00088902
38	Yes	4	0.00000001	0.00088473
39	Yes	4	0.00000001	0.00000477
40	Yes	4	0.00000001	0.00001693
41	Yes	4	0.00000001	0.00001757
42	Yes	4	0.00000001	0.00000524
43	Yes	4	0.00000001	0.00001615
44	Yes	4	0.00000001	0.00001887
45	Yes	4	0.00000001	0.00000491
46	Yes	4	0.00000001	0.00001658
47	Yes	4	0.00000001	0.00001616
48	Yes	4	0.00000001	0.00000542
49	Yes	4	0.00000001	0.00001909

50	Yes	4	0.00000001	0.00001616

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 96.8333	11.798	43	0.679	0.001
L2	102.5 - 48	5.563	43	0.520	0.001
L3	55 - 0	1.579	43	0.262	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
146'	BXA-70063-6CF-EDIN-4 w/ Mount Pipe	43	11.236	0.668	0.001	98329
137'	800MHz 2X50W RRH W/FILTER	43	9.981	0.642	0.001	37819
134'	APXVSPP18-C-A20 w/ Mount Pipe	43	9.567	0.634	0.001	30728
117'	BCD-87010	43	7.310	0.579	0.001	14898

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 96.8333	55.283	10	3.180	0.004
L2	102.5 - 48	26.080	10	2.439	0.002
L3	55 - 0	7.403	10	1.229	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
146'	BXA-70063-6CF-EDIN-4 w/ Mount Pipe	10	52.653	3.129	0.004	21131
137'	800MHz 2X50W RRH W/FILTER	10	46.775	3.011	0.004	8127
134'	APXVSPP18-C-A20 w/ Mount Pipe	10	44.838	2.970	0.003	6602
117'	BCD-87010	10	34.262	2.713	0.003	3199

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 96.8333 (1)	TP39.21x26.19x0.313	53'2"	0'	0.0	37.744	-13.551	2454.690	0.006
L2	96.8333 - 48 (2)	TP50.55x37.197x0.406	54'6"	0'	0.0	63.351	-26.274	4133.710	0.006
L3	48 - 0 (3)	TP61.5x48.022x0.5	55'	0'	0.0	98.210	-49.269	6336.210	0.008

Pole Bending Design Data

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 $\frac{M_{uy}}{\phi M_{uy}}$
L1	150 - 96.8333 (1)	TP39.21x26.19x0.313	690.201	1875.050	0.368	0.000	1875.050	0.000
L2	96.8333 - 48 (2)	TP50.55x37.197x0.406	1878.333	4076.525	0.461	0.000	4076.525	0.000
L3	48 - 0 (3)	TP61.5x48.022x0.5	3758.450	7872.067	0.477	0.000	7872.067	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 96.8333 (1)	TP39.21x26.19x0.313	20.817	1227.340	0.017	1.280	3802.017	0.000
L2	96.8333 - 48 (2)	TP50.55x37.197x0.406	29.301	2066.860	0.014	1.279	8265.917	0.000
L3	48 - 0 (3)	TP61.5x48.022x0.5	38.731	3168.100	0.012	1.278	15962.083	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 96.8333 (1)	0.006	0.368	0.000	0.017	0.000	0.374 ✔	1.000	4.8.2 ✔
L2	96.8333 - 48 (2)	0.006	0.461	0.000	0.014	0.000	0.467 ✔	1.000	4.8.2 ✔
L3	48 - 0 (3)	0.008	0.477	0.000	0.012	0.000	0.485 ✔	1.000	4.8.2 ✔

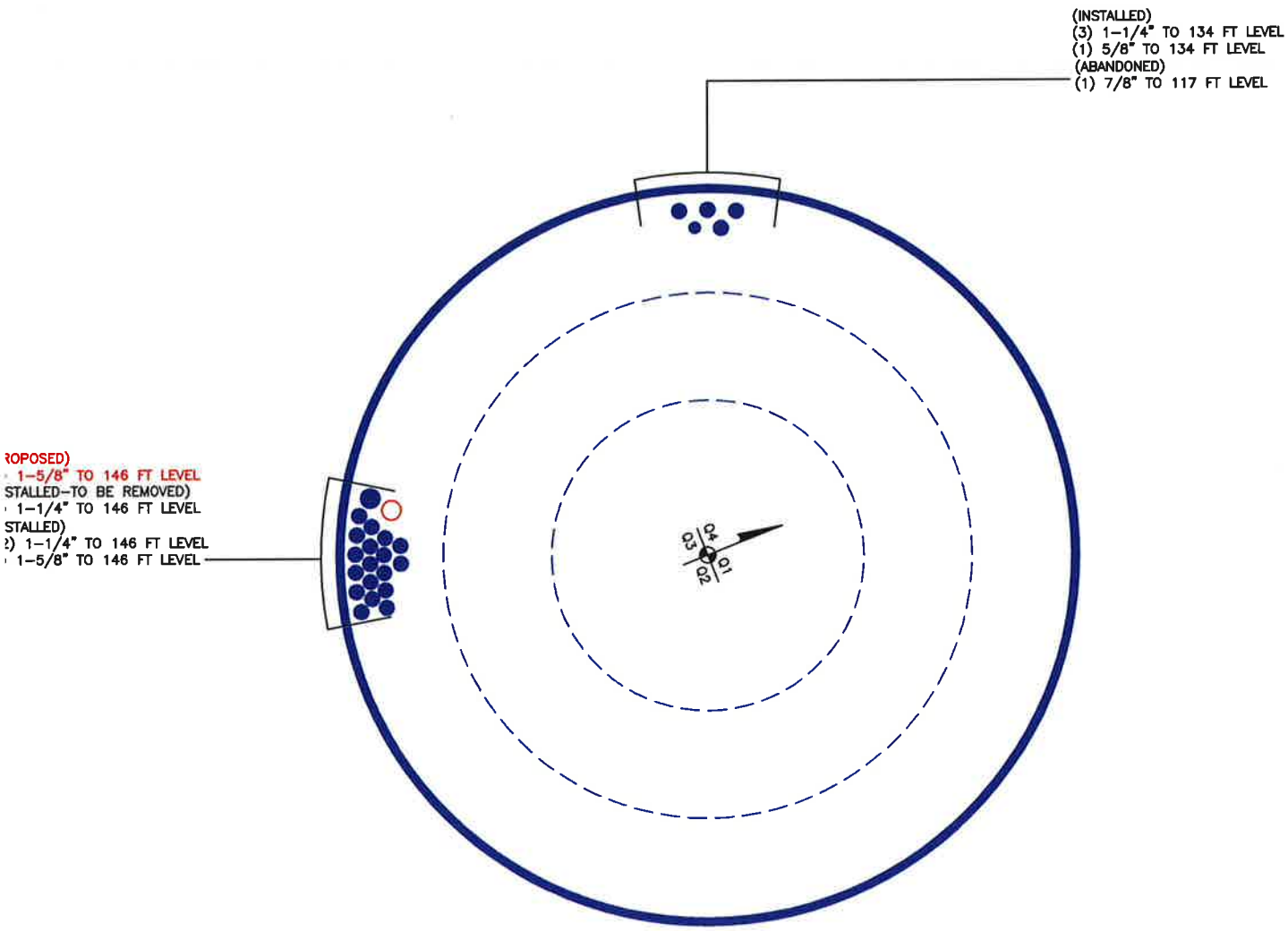
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 96.8333	Pole	TP39.21x26.19x0.313	1	-13.551	2454.690	37.4	Pass
L2	96.8333 - 48	Pole	TP50.55x37.197x0.406	2	-26.274	4133.710	46.7	Pass
L3	48 - 0	Pole	TP61.5x48.022x0.5	3	-49.269	6336.210	48.5	Pass
							Summary	
						Pole (L3)	48.5	Pass
						RATING =	**48.5**	**Pass**

Program Version 7.0.5.1

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806370

APPENDIX C

ADDITIONAL CALCULATIONS

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

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

Site Data

BU#: *806370*
Site Name: *HRT 099 943226, CT*
App #: *None*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	70.17	in

Plate Data		
Diam:	76.17	in
Thick:	3	in
Grade:	60	ksi
Single-Rod B-eff:	8.24	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:	61.5	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	3758	ft-kips
Axial, Pu:	49	kips
Shear, Vu:	39	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Results

		Rigid
Max Rod (Cu+ Vu/ή):	112.4 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	43.2% Pass	

Base Plate Results Flexural Check

		Rigid
Base Plate Stress:	15.9 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	29.5% Pass	Y.L. Length: 33.79

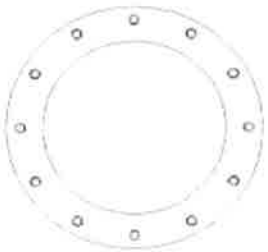
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

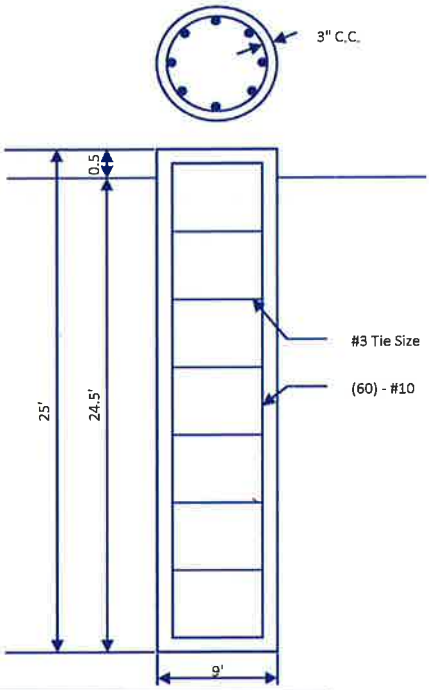
CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 22-02-2017

BU:	806370
Site Name:	HRT 099 943226, CT
App Number:	None
Work Order:	1364186

CROWN CASTLE

Monopole Drilled Pier



Input

Criteria

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

Forces

Compression	49 kips
Shear	39 kips
Moment	3758 k-ft
Swelling Force	0 kips

Foundation Dimensions

Pier Diameter:	9 ft
Ext. above grade:	0.5 ft
Depth below grade:	24.5 ft

Material Properties

Number of Rebar:	60
Rebar Size:	10
Tie Size	3
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	3 in

Soil Profile: Soil Properties

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	4.5	0	4.5	100			0	0	0	
2	0.5	4.5	5	100	300	30	0	0	0	
3	9	5	14	100	300	30	0.8	0.8	0	
4	1	14	15	36	100	23	0.8	0.8	0	
5	9.5	15	24.5	36	100	23	0.6	0.6	6	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	5.86 ft
Max Moment, Mu:	4006.24 k-ft
Soil Safety Factor:	2.20
Safety Factor Req'd:	1.33
RATING:	60.3%

Soil Axial Capacity

Skin Friction (k):	290.52 kips
End Bearing (k):	286.28 kips
Comp. Capacity (k), ϕCn:	576.80 kips
Comp. (k), Cu:	49.00 kips
RATING:	8.5%

Concrete/Steel Check

Mu (from soil analysis)	4006.24 k-ft
ϕMn	15188.15 k-ft
RATING:	26.4%

rho provided	0.83	
rho required	0.33	OK
Rebar Spacing	3.96	
Spacing required	20.32	OK
Dev. Length required	18.39	
Dev. Length provided	55.65	OK

Overall Foundation Rating: 60.3%

ATTACHMENT 4

Property Information

Property ID	3776 2 570 0001
Location	570 NEW PARK AVENUE
Owner	570 NEW PARK LLC

TOWN OF WEST HARTFORD

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of West Hartford, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 5/1/2016
Properties updated Daily

570 NEW PARK AVENUE

Location	570 NEW PARK AVENUE	**Mblu**	H14/ 3776/ 570/ /
Parcel ID	3776 2 570 0001	**Owner**	570 NEW PARK LLC
Assessment	$511,140	**Appraisal**	$730,200
Vision Id #	19109	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$379,900	$350,300	$730,200
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$265,930	$245,210	$511,140

Owner of Record

Owner 570 NEW PARK LLC
Co-Owner
Address C/O MICHAEL REINER
PO BOX 271763
WEST HARTFORD, CT 06127

Sale Price $550,000
Certificate 1
Book & Page 4487/ 322
Sale Date 05/25/2010
Instrument Q

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
570 NEW PARK LLC	$550,000	1	4487/ 322	Q	05/25/2010
CONNECTICUT TAR AND ASPHALT SERVICE INC	$0	1	4487/ 321	25	05/25/2010
CONN TAR & ASPHALT SERVICE INC	$30,670	1	2940/ 34	U	08/02/2002
CONN TAR & ASPHALT SERVICE INC	$0	1	322/ 42	U	

Building Information

Building 1 : Section 1

Year Built: 1929
Living Area: 2,698
Replacement Cost: $106,986
Building Percent Good: 41

Replacement Cost
Less Depreciation: $43,900

Building Attributes	
Field	**Description**
STYLE	Storage Area
MODEL	Comm/Ind
Grade	C 0.80
Stories:	1
Occupancy	
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	None
Heating Fuel	Typical
Heating Type	Steam - No Blr
AC Type	None
As Built Use	MLTR
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Masonry
Plumbing	LIGHT
Ceiling	Not Applicable
Group	IND
Wall Height	15
Adjustment	

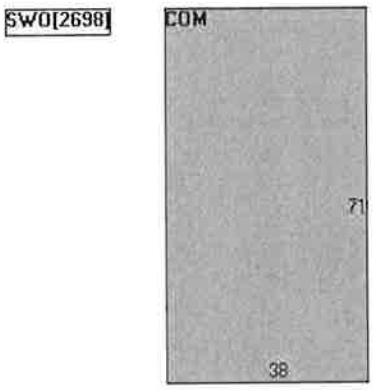
Building 2 : Section 1

Year Built: 1966
Living Area: 936
Replacement Cost: $170,951
Building Percent Good:

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//\00\01

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
SWO	STORAGE/WHSE/DIST	2,698	2,698
COM	COMMERCIAL - NV	2,698	0
		5,396	2,698

Replacement Cost
Less Depreciation: $250,000

Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	B 1.00
Stories:	1
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	Shed
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	Carpet
Heating Fuel	Typical
Heating Type	Steam Boiler
AC Type	None
As Built Use	TSGR
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Acoustic Panel
Group	IND
Wall Height	13
Adjustment	

Building 3 : Section 1

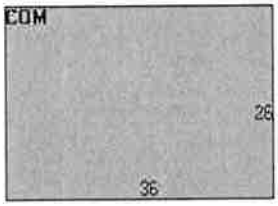
Year Built: 1929
Living Area: 4,798
Replacement Cost: $190,280
Building Percent Good: 41

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout

SWO[364]
SWO[572]



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
TEL	TELEPHONE BUILDING	936	936
		936	936

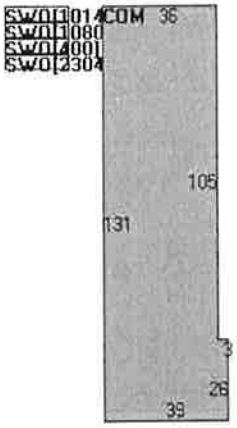
Replacement Cost
Less Depreciation: $78,000

Building Attributes : Bldg 3 of 3	
Field	**Description**
STYLE	Light Manufacturing
MODEL	Comm/Ind
Grade	C 0.80
Stories:	1
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	Brick Veneer
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	Asphalt
Heating Fuel	Typical
Heating Type	Forced Hot Air
AC Type	Not Applicable
As Built Use	LMAN
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	00
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Acoustic Panel
Group	IND
Wall Height	11
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
SWO	STORAGE/WHSE/DIST	4,798	4,798
COM	COMMERCIAL - NV	4,794	0
		9,592	4,798

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	201
Description	Commercial
Zone	IG
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.96
Frontage	
Depth	
Assessed Value	$245,210
Appraised Value	$350,300

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CLP4	Paving, Asphalt			10000 SF	$8,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$379,900	$350,300	$730,200
2015	$104,400	$429,900	$534,300
2014	$104,400	$429,900	$534,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$265,930	$245,210	$511,140
2015	$73,080	$300,930	$374,010
2014	$73,080	$300,930	$374,010