

March 1, 2018

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

Re: **Notice of Exempt Modification – Facility Modification
782 Old Clinton Road, Westbrook, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 118-foot level on an existing 160-foot tower at 782 Old Clinton Road in Westbrook, Connecticut (the “Property”). The tower is owned by Crown Castle (“Crown”). Cellco’s use of the tower was approved by the Council in 2001. Cellco now intends to replace six (6) of its existing antennas with three (3) model JAHH-65B-R3B, 700/2100 MHz antennas and three (3) model JAHH-65B-R3B, 850 MHz antennas, all at the same level on the tower. Cellco also intends to remove six (6) remote radio heads (“RRHs”) and install nine (9) new RRHs 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 Westbrook First Selectman, Noel Bishop; Meg Parulis, Westbrook’s Town Planner; Catherine A. Wade, the owner of the Property; and Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. Cellco’s replacement antennas and new RRHs will be installed on its existing platform at the 118-foot level on the tower.

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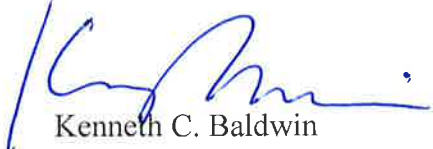
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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels 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 owner of the Property is included in Attachment 5.

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Noel Bishop, Westbrook First Selectman
Meg Parulis, Westbrook Town Planner
Catherine A. Wade
Crown Castle
Tim Parks

ATTACHMENT 1



JAHH-65B-R3B

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

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

Electrical Specifications

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR Return Loss, dB	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port at 50°C, maximum, watts	200	200	300	300	300	250
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

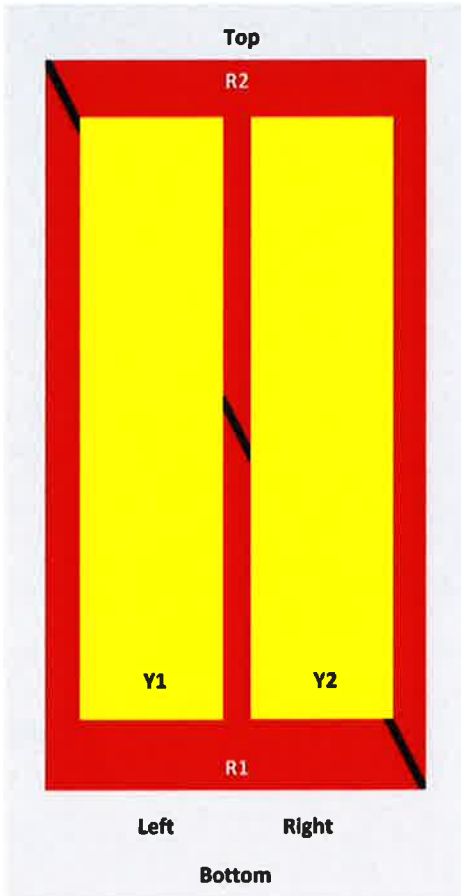
Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2° 14.3	2° 15.0	0° 17.2	0° 17.6	0° 17.7	0° 17.9
	8° 14.3	8° 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.](#)

JAHH-65B-R3B

Array Layout

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



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANXXXXXXXXXXXX1
R2	824-894	3-4	2	ANXXXXXXXXXXXX2
Y1	1695-2360	5-6	3	ANXXXXXXXXXXXX3
Y2	1695-2360	7-8		

View from the front of the antenna

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

General Specifications

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

Mechanical Specifications

RF Connector Quantity, total	8
RF Connector Quantity, low band	4
RF Connector Quantity, high band	4
RF Connector Interface	4.3-10 Female

JAHH-65BR3B

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

Dimensions

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

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

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

Regulatory Compliance/Certifications

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



JAHH-65B-R3B

Included Products

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

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

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

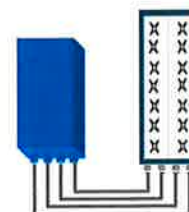


FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

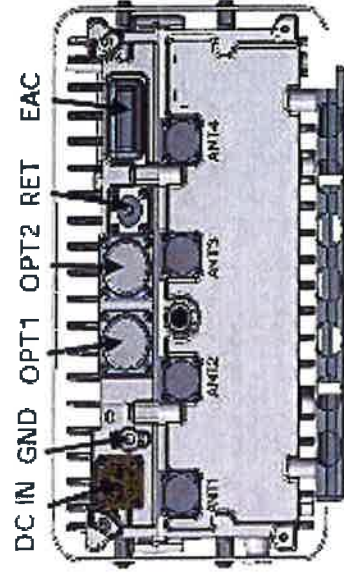
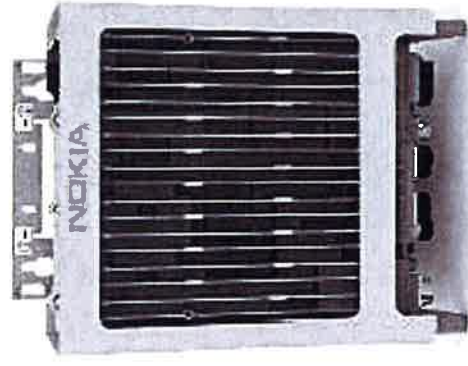
TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (In.)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
Volume in L	38 (with solar shield)
Weight in kg (lb) (w/o mounting HW)	26 (57.2) (with solar shield)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions	-40°C (-40°F) /+55°C (+131°F) 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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AHCA AirScale RRH 4T4R B5 160W

Supported Frequency bands	3GPP band 5
Frequencies	DL 869-894MHz, UL 824-849MHz
Number of TX/RX paths/pipes	4TX/4RX
Instantaneous Bandwidth IBW	25MHz (Full Band)
Occupied Bandwidth OBW	25MHz (Full Band)
Output Power	4T4R @ 40W / 2T4R @ 60W
RF Sharing	LTE, WCDMA, LTE + NB-IoT supported
256 QAM Back Off	No backoff at 40W and 0.8dB at 60W.
Supply Voltage / Voltage Range	DC-48V / -36V to -60V
Typical Power Consumption	365W [50% ETSI Busy Hour Load at 4TX @ 40W]
	529W [100% RF Load at 4 TX @ 40W]
	574W [100% RF Load at 4 TX @ 40W with SBT and AISG CN]
Antenna Ports	4 Ports, 4.3-10+
Optical Ports	2x CPRI 9.8 Gbps
ALD Control Interfaces	AISG3.0 from ANT 1, 2, 3, 4 and RET (power supply ANT1 and ANTS)
Other Interfaces	External Alarm MCR-26 Serial connector (4 inputs, 1 Output) DC Circular Power Connector



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



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.

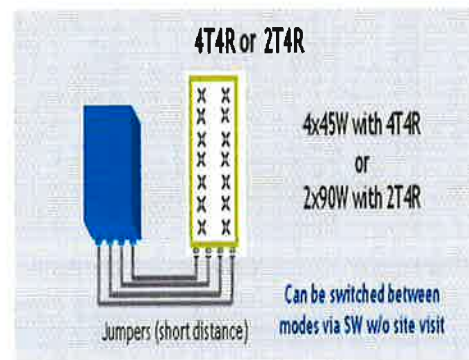
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

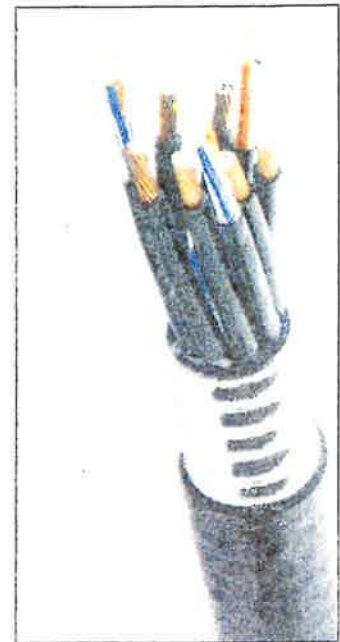


Figure 1: HYBRIFLEX Series

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
Physical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
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)			UL34-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Operating Range			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

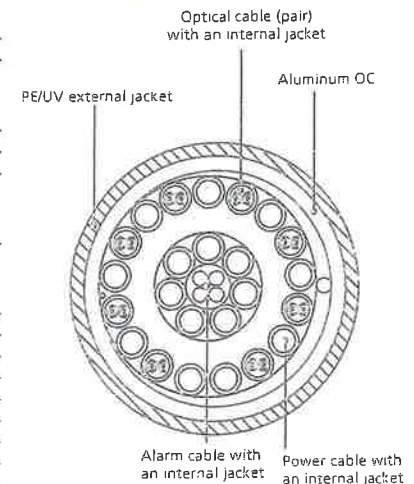


Figure 2: Construction Detail

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

ATTACHMENT 2

Site Name: Westbrook 2 Tower Height: 160'		General	Power	Density				
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Nextel	9	100	152	851	0.0152	0.5673	0.27%	
*Sprint	1	438	160	850	0.0066	0.5667	0.12%	
*Sprint	2	438	160	850	0.0133	0.5667	0.23%	
*Sprint	5	622	160	1900	0.0472	1.0000	0.47%	
*Sprint	2	1556	160	1900	0.0472	1.0000	0.47%	
*Sprint	8	778	160	2500	0.0944	1.0000	0.94%	
*T-Mobile	1	865	145	700	0.0161	0.4667	0.35%	
*T-Mobile	4	1167	145	1900/2100	0.0869	1.0000	0.87%	
*T-Mobile	2	2334	145	1900/2100	0.0869	1.0000	0.87%	
*Pocket (now MetroPCS)	3	631	130	2130	0.0443	1.0000	0.44%	
*AT&T	6	139	96	880	0.0370	0.5867	0.63%	
*AT&T	6	615	96	1900	0.1638	1.0000	1.64%	
*AT&T	1	267	96	880	0.0119	0.5867	0.20%	
*AT&T	1	406	96	1900	0.0180	1.0000	0.18%	
*AT&T	1	793	96	740	0.0352	0.4933	0.71%	
*AT&T	1	1734	96	1900	0.0770	1.0000	0.77%	
VZW PCS	1	5181	118	1970	0.1361	1.0	13.61%	
VZW Cellular	9	400	118	869	0.0946	0.579333	16.32%	
VZW 850 LTE	1	3710	118	869	0.0975	0.579333	16.82%	
VZW AWS	1	7771	118	2145	0.2041	1.0	20.41%	
VZW 700	1	2063	118	746	0.0542	0.497333	10.90%	87.2%
* Source: Siting Council								

ATTACHMENT 3

Date: November 22, 2017

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



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

Subject: Structural Analysis Report

Carrier Designation:	Verizon Wireless Co-Locate	
	Carrier Site Number:	468781
	Carrier Site Name:	Westbrook 2 CT
Crown Castle Designation:	Crown Castle BU Number:	876339
	Crown Castle Site Name:	Pond Meadow Rd. Stable
	Crown Castle JDE Job Number:	454976
	Crown Castle Work Order Number:	1489030
	Crown Castle Application Number:	402477 Rev. 0
Engineering Firm Designation:	TEP Project Number:	25580.144059
Site Data:	782 Old Clinton Road, Westbrook, Middlesex County, CT 06498-1767	
	Latitude 41° 17' 25.70", Longitude -72° 28' 07.90"	
	160 Foot - Monopole Tower	

Dear Charles McGuirt,

Tower Engineering Professionals is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1106627, in accordance with application 402477, revision 0.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code (2012 International Building Code) based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 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 and Risk Category II were used in this analysis.

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

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

Structural analysis prepared by: Dan A. Reidenbach, E.I. / RWT

Respectfully submitted by:

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



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1) INTRODUCTION

This tower is a 160-ft monopole tower designed by Valmont in July of 1998. The tower was originally designed for a wind speed of 85 mph per EIA/TIA-222-F for the appurtenances listed in Table 3. The tower has been modified multiple times in the past to accommodate additional loading. TEP has visited the site multiple times in the past to perform post-modification inspections. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a nominal 3-second gust wind speed of 105 mph with no ice, 50 mph with 0.75 inch ice thickness, and 60 mph under service loads with the following design criteria:

Type of Analysis: **Rigorous Structural Analysis**

Classification of Structure: **Class II**

Exposure Category: **Exposure B**

Topographic Category: **Category 1**

Earthquake Category: **Not Considered**

Earthquake effects may be ignored per this standard for site locations where S_s does not exceed 1.0. (Middlesex County Max $S_s = 0.28$).

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
116.0	118.0	6	Commscope	JAHH-65B-R3B w/ Mount Pipe	2	1-5/8	1
		3	Nokia	AirScale RRH 4T4R B5 160W			
		3	Alcatel Lucent	B13 RRH 4X30			
		3	Alcatel Lucent	B66A RRH4X45			
	2	RFS Celwave	DB-T1-6Z-8AB-0Z				
	116.0	6	RFS Celwave	FD9R6004/2C-3L			

Notes:

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

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
159.0	160.0	3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe	1	1-1/4	1
		3	Alcatel Lucent	TD-RRH8x20-25			
		2	RFS Celwave	APXVSP18-C-A20 w/ Mount Pipe	3	1-1/4	2
	1	RFS Celwave	APXV9ERR18-C-A20 w/ Mount Pipe				
	159.0	1	Tower Mounts	Platform Mount [LP 713-1]			
155.0	156.0	3	Alcatel Lucent	800MHz 2x50W RRH w/ Filter	-	-	2
	155.0	1	Tower Mounts	Side Arm Mount [SO 102-3]			
	154.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
142.0	145.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	2	
		3	Commscope	LNx-6515DS-VTM w/ Mount Pipe				
		3	Ericsson	AIR 21 B4A B2P w/ Mount Pipe				
		3	Ericsson	KRY 112 144/1				
		3	Ericsson	RRUS 11 B12				
	142.0	1	Tower Mounts	Platform Mount [LP 713-1]				
130.0	130.0	3	RFS Celwave	APXV18-206517S-ACU	6	1-5/8	2	
		1	Tower Mounts	Pipe Mount [PM 601-3]				
116.0	118.0	4	Antel	LPA-80063-4CF-EDIN-5 w/ Mount Pipe	6	1-5/8	2	
		2	Antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe				
		3	Alcatel Lucent	RRH2X60-PCS				
			3	Alcatel Lucent	B66A RRH4X45	8	1-5/8	3
	117.0	6	Commscope	SBNHH-1D65B w/ Mount Pipe				
		116.0	1	Tower Mounts	Platform Mount [LP 303-1]	-	-	2
96.0	103.0	1	GPS	GPS_A	12	1-5/8 3/4 1/2 3/8	2	
	98.0	6	Powerwave Technologies	7770.00 w/ Mount Pipe				
		3	KMW Comm.	AM-X-CD-14-65-00T-RET w/ Mount Pipe				
		6	Powerwave Technologies	TT19-08BP111-001				
		1	Raycap	DC6-48-60-18-8F				
		3	Ericsson	RRUS-11				
			3	Ericsson				RRUS 12 B2
	96.0	1	Tower Mounts	T-Arm Mount [TA 602-3]	-	-	2	
92.0	93.0	1	Lucent	KS24019-L112A	1	1/2	2	
	92.0	1	Tower Mounts	Side Arm Mount [SO 701-1]				
87.0	87.0	2	Tower Mounts	Side Arm Mount [SO 701-1]	-	-	2	

Notes:

- 1) Reserved equipment
- 2) Existing equipment
- 3) Existing 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)
157.0	158.0	12	Decibel	DB580H	-	-
150.0	150.0	12	Swedcom	ALP 9212-N	-	-
140.0	140.0	12	Swedcom	ALP 9212-N	-	-
100.0	100.0	2	Generic	15' Whip Antennas	-	-
90.0	90.0	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	FDH Engineering, Inc.	1532966	CCISites
Tower Foundation Drawings	Valmont	1533020	CCISites
Tower Manufacturer Drawings	Valmont	1531985	CCISites
Tower Mapping	BTE Management Group, LLC		
Tower Reinforcement Drawings	Paul J. Ford and Company	3682464	CCISites
Post-Modification Inspection	URS	3682462	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Company	2884023	CCISites
Post-Modification Inspection	Tower Engineering Professionals	2923975	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Company	3366474	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3633208	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Company	3678375	CCISites
Post-Modification Inspection	Tower Engineering Professionals	4023333	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.

RISA-3D, a commercially available analysis software package, was used to model and analyze the foundation. Selected output from the analysis is included in Appendix C.

3.2) Assumptions

- 1) The tower and foundation were built in accordance with the manufacturer's specifications.
- 2) The tower and foundation have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and "Appendix B - Base Level Drawing".
- 4) All tower components are in sufficient condition to carry their full design capacity.
- 5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not analyze antennas supporting mounts as part of this structural analysis report.
- 7) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically, and must be replaced if damaged or cracked. Refer to Crown document PRC-10012, Base Plate Grout Inspection & Classification.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)¹

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP23.3x22.35x0.2188	Pole	4.4%	Pass
155 - 150	Pole	TP24.251x23.3x0.2188	Pole	9.9%	Pass
150 - 145	Pole	TP25.201x24.251x0.2188	Pole	15.1%	Pass
145 - 140	Pole	TP26.152x25.201x0.2188	Pole	23.5%	Pass
140 - 135	Pole	TP27.102x26.152x0.2188	Pole	32.1%	Pass
135 - 130	Pole	TP28.052x27.102x0.2188	Pole	40.3%	Pass
130 - 125	Pole	TP29.003x28.052x0.2188	Pole	48.7%	Pass
125 - 122	Pole	TP30.46x29.003x0.2188	Pole	53.6%	Pass
122 - 117	Pole	TP30.085x29.135x0.2813	Pole	43.4%	Pass
117 - 112	Pole	TP31.035x30.085x0.2813	Pole	51.1%	Pass
112 - 107	Pole	TP31.985x31.035x0.2813	Pole	58.0%	Pass
107 - 102	Pole	TP32.935x31.985x0.2813	Pole	64.5%	Pass
102 - 97	Pole	TP33.885x32.935x0.2813	Pole	70.8%	Pass
97 - 95.83	Pole	TP34.107x33.885x0.2813	Pole	72.7%	Pass
95.83 - 95.58	Pole + Reinf.	TP34.155x34.107x0.3813	Reinf. 8 Tension Rupture	63.4%	Pass
95.58 - 90.58	Pole + Reinf.	TP35.105x34.155x0.3813	Reinf. 8 Tension Rupture	69.2%	Pass
90.58 - 89.83	Pole + Reinf.	TP35.247x35.105x0.375	Reinf. 8 Tension Rupture	70.1%	Pass
89.83 - 89.58	Pole	TP35.295x35.247x0.2813	Pole	81.5%	Pass
89.58 - 88	Pole	TP36.64x35.295x0.2813	Pole	83.7%	Pass
88 - 81.5	Pole	TP36.266x35.033x0.375	Pole	62.9%	Pass
81.5 - 76.5	Pole	TP37.215x36.266x0.375	Pole	66.9%	Pass
76.5 - 74.25	Pole	TP37.642x37.215x0.375	Pole	68.6%	Pass
74.25 - 74	Pole + Reinf.	TP37.689x37.642x0.4875	Reinf. 5 Tension Rupture	66.1%	Pass
74 - 69	Pole + Reinf.	TP38.638x37.689x0.4813	Reinf. 5 Tension Rupture	69.3%	Pass
69 - 64	Pole + Reinf.	TP39.587x38.638x0.475	Reinf. 5 Tension Rupture	72.3%	Pass
64 - 59	Pole + Reinf.	TP40.535x39.587x0.475	Reinf. 5 Tension Rupture	75.2%	Pass
59 - 55.75	Pole + Reinf.	TP41.152x40.535x0.475	Reinf. 5 Tension Rupture	76.9%	Pass
55.75 - 55.5	Pole + Reinf.	TP41.2x41.152x0.6375	Reinf. 4 Tension Rupture	72.3%	Pass
55.5 - 50.5	Pole + Reinf.	TP42.148x41.2x0.6375	Reinf. 4 Tension Rupture	75.1%	Pass
50.5 - 47.75	Pole + Reinf.	TP42.67x42.148x0.6375	Reinf. 4 Tension Rupture	76.5%	Pass
47.75 - 47.5	Pole	TP42.718x42.67x0.375	Pole	86.6%	Pass
47.5 - 47	Pole	TP44.03x42.718x0.375	Pole	86.9%	Pass
47 - 39.58	Pole + Reinf.	TP43.473x42.062x0.7	Reinf. 7 Compression	78.0%	Pass
39.58 - 34.58	Pole + Reinf.	TP44.424x43.473x0.7	Reinf. 7 Compression	80.2%	Pass
34.58 - 29.58	Pole + Reinf.	TP45.374x44.424x0.6875	Reinf. 7 Compression	82.3%	Pass
29.58 - 29.25	Pole + Reinf.	TP45.438x45.374x0.6875	Reinf. 7 Compression	82.4%	Pass
29.25 - 29	Pole	TP45.485x45.438x0.4375	Pole	80.2%	Pass
29 - 28.75	Pole + Reinf.	TP45.533x45.485x0.6375	Reinf. 2 Tension Rupture	79.1%	Pass
28.75 - 23.75	Pole + Reinf.	TP46.484x45.533x0.625	Reinf. 2 Tension Rupture	80.9%	Pass
23.75 - 18.75	Pole + Reinf.	TP47.434x46.484x0.625	Reinf. 2 Tension Rupture	82.6%	Pass
18.75 - 13.75	Pole + Reinf.	TP48.385x47.434x0.625	Reinf. 2 Tension Rupture	84.1%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
13.75 - 13	Pole + Reinf.	TP48.528x48.385x0.625	Reinf. 2 Tension Rupture	84.4%	Pass
13 - 12.75	Pole + Reinf.	TP48.575x48.528x0.7125	Reinf. 2 Tension Rupture	74.8%	Pass
12.75 - 8.25	Pole + Reinf.	TP49.431x48.575x0.7125	Reinf. 2 Tension Rupture	76.1%	Pass
8.25 - 8	Pole + Reinf.	TP49.479x49.431x0.6625	Reinf. 6 Tension Rupture	81.5%	Pass
8 - 3	Pole + Reinf.	TP50.43x49.479x0.6625	Reinf. 6 Tension Rupture	82.9%	Pass
3 - 0	Pole + Reinf.	TP51x50.43x0.65	Reinf. 6 Tension Rupture	83.7%	Pass
				Summary	
			Pole	86.9%	Pass
			Reinforcement	84.4%	Pass
			Overall	86.9%	Pass

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Original Anchor Rods	-	58.1	Pass
1	Reinforcing Anchor Rods	-	50.5	Pass
1	Base Plate	-	36.0	Pass
1	Base Foundation Soil Interaction	-	69.8	Pass
1	Base Foundation Structural	-	52.3	Pass

Structure Rating (max from all components) =	86.9%
---	--------------

Notes:

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

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
2	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
3	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
4	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
5	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
6	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
7	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
8	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
9	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
10	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
11	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
12	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
13	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
14	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
15	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
16	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
17	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
18	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
19	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
20	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
21	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
22	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
23	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
24	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
25	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
26	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
27	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
28	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
29	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
30	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
31	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
32	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
33	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
34	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
35	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
36	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
37	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
38	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
39	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
40	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
41	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
42	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
43	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
44	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
45	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
46	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
47	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
48	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
49	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350
50	5.00	12	0.219	4.67	30.0625	27.102	5.50	22.350

DESIGNED APPURTENANCE LOADING

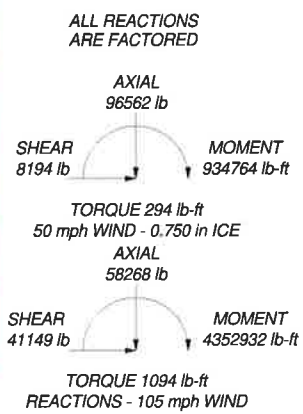
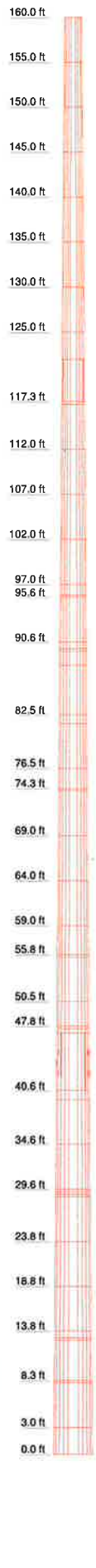
TYPE	ELEVATION	TYPE	ELEVATION
APXVSP18-C-A20 w/ Mount Pipe	159	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	116
APXVERR18-C-A20 w/ Mount Pipe	159	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	116
APXVSP18-C-A20 w/ Mount Pipe	159	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	116
APXVTM14-C-120 w/ Mount Pipe	159	(2) JAHH-65B-R3B w/ Mount Pipe	116
APXVTM14-C-120 w/ Mount Pipe	159	(2) JAHH-65B-R3B w/ Mount Pipe	116
APXVTM14-C-120 w/ Mount Pipe	159	(2) JAHH-65B-R3B w/ Mount Pipe	116
TD-RRH8x20-25	159	AIRSCALE RRH 4T4R B5 160W	116
TD-RRH8x20-25	159	AIRSCALE RRH 4T4R B5 160W	116
TD-RRH8x20-25	159	(2) AIRSCALE RRH 4T4R B5 160W	116
(2) 2.4" Dia. x 6' Mount Pipe	159	(2) FD9R6004/2C-3L	116
(2) 2.4" Dia. x 6' Mount Pipe	159	(2) FD9R6004/2C-3L	116
(2) 2.4" Dia. x 6' Mount Pipe	159	(2) FD9R6004/2C-3L	116
Platform Mount [LP 713-1]	159	B13 RRH 4X30	116
800MHz 2X50W RRH W/FILTER	155	B13 RRH 4X30	116
800MHz 2X50W RRH W/FILTER	155	B13 RRH 4X30	116
800MHz 2X50W RRH W/FILTER	155	B66A RRH4X45	116
PCS 1900MHz 4x45W-65MHz	155	B66A RRH4X45	116
PCS 1900MHz 4x45W-65MHz	155	B66A RRH4X45	116
PCS 1900MHz 4x45W-65MHz	155	(2) DB-T1-6Z-8AB-0Z	116
2.4" Dia x 4-ft Mount Pipe	155	Platform Mount [LP 303-1]	116
2.4" Dia x 4-ft Mount Pipe	155	(2) 7770.00 w/ Mount Pipe	96
2.4" Dia x 4-ft Mount Pipe	155	(2) 7770.00 w/ Mount Pipe	96
Side Arm Mount [SO 102-3]	155	(2) 7770.00 w/ Mount Pipe	96
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	142	GPS_A	96
LNX-6515DS-VTM w/ Mount Pipe	142	(2) TT19-08BP111-001	96
LNX-6515DS-VTM w/ Mount Pipe	142	(2) TT19-08BP111-001	96
LNX-6515DS-VTM w/ Mount Pipe	142	(2) TT19-08BP111-001	96
LNX-6515DS-VTM w/ Mount Pipe	142	DC6-48-60-18-8F	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	RRUS-11	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	RRUS-11	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	RRUS-11	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	RRUS 12 B2	96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	142	RRUS 12 B2	96
KRY 112 144/1	142	2.4" Dia x 4-ft Mount Pipe	96
KRY 112 144/1	142	2.4" Dia x 4-ft Mount Pipe	96
KRY 112 144/1	142	2.4" Dia x 4-ft Mount Pipe	96
RRUS 11 B12	142	T-Arm Mount [TA 602-3]	96
RRUS 11 B12	142	KS24019-L112A	92
RRUS 11 B12	142	2.4" x 2-ft pipe	92
Platform Mount [LP 713-1]	142	Side Arm Mount [SO 701-1]	92
APXV18-206517S-ACU	130	2.4" x 2-ft pipe	87
APXV18-206517S-ACU	130	2.4" x 2-ft pipe	87
APXV18-206517S-ACU	130	Side Arm Mount [SO 701-1]	87
Pipe Mount [PM 601-3]	130	Side Arm Mount [SO 701-1]	87


MATERIAL STRENGTH

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

TOWER DESIGN NOTES

- Tower is located in Middlesex County, Connecticut.
- Tower designed for Exposure B to the TIA-222-G Standard.
- Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
- Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
- Deflections are based upon a 60 mph wind.
- Tower Structure Class II.
- Topographic Category 1 with Crest Height of 0.00 ft
- Equivalent Thickness Model





Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: Pond Meadow Rd. Stable (BU 876339)
Project: **TEP No. 25580.144059**
Client: **Crown Castle** Drawn by: **rwtschetter** App'd:
Code: **TIA-222-G** Date: **11/22/17** Scale: **N**
Path: **Dwg No.**

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	Project TEP No. 25580.144059	Date 08:12:27 11/22/17
	Client Crown Castle	Designed by rwtschetter

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.

Basic wind speed of 105 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.750 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.

Equivalent Thickness Model.

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
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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	160.00-155.00	5.00	0.000	12	22.350	23.300	0.219	0.875	A572-65 (65 ksi)
L2	155.00-150.00	5.00	0.000	12	23.300	24.251	0.219	0.875	A572-65

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Pond Meadow Rd. Stable (BU 876339)	Page 2 of 42
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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	150.00-145.00	5.00	0.000	12	24.251	25.201	0.219	0.875	(65 ksi) A572-65
L4	145.00-140.00	5.00	0.000	12	25.201	26.152	0.219	0.875	(65 ksi) A572-65
L5	140.00-135.00	5.00	0.000	12	26.152	27.102	0.219	0.875	(65 ksi) A572-65
L6	135.00-130.00	5.00	0.000	12	27.102	28.052	0.219	0.875	(65 ksi) A572-65
L7	130.00-125.00	5.00	0.000	12	28.052	29.003	0.219	0.875	(65 ksi) A572-65
L8	125.00-117.33	7.67	4.667	12	29.003	30.460	0.219	0.875	(65 ksi) A572-65
L9	117.33-117.00	5.00	0.000	12	29.135	30.085	0.281	1.125	(65 ksi) A572-65
L10	117.00-112.00	5.00	0.000	12	30.085	31.035	0.281	1.125	(65 ksi) A572-65
L11	112.00-107.00	5.00	0.000	12	31.035	31.985	0.281	1.125	(65 ksi) A572-65
L12	107.00-102.00	5.00	0.000	12	31.985	32.935	0.281	1.125	(65 ksi) A572-65
L13	102.00-97.00	5.00	0.000	12	32.935	33.885	0.281	1.125	(65 ksi) A572-65
L14	97.00-95.83	1.17	0.000	12	33.885	34.107	0.281	1.125	(65 ksi) A572-65
L15	95.83-95.58	0.25	0.000	12	34.107	34.155	0.381	1.525	(65 ksi) A572-65
L16	95.58-90.58	5.00	0.000	12	34.155	35.105	0.381	1.525	(65 ksi) A572-65
L17	90.58-89.83	0.75	0.000	12	35.105	35.247	0.375	1.500	(65 ksi) A572-65
L18	89.83-89.58	0.25	0.000	12	35.247	35.295	0.281	1.125	(65 ksi) A572-65
L19	89.58-82.50	7.08	5.500	12	35.295	36.640	0.281	1.125	(65 ksi) A572-65
L20	82.50-81.50	6.50	0.000	12	35.033	36.266	0.375	1.500	(65 ksi) A572-65
L21	81.50-76.50	5.00	0.000	12	36.266	37.215	0.375	1.500	(65 ksi) A572-65
L22	76.50-74.25	2.25	0.000	12	37.215	37.642	0.375	1.500	(65 ksi) A572-65
L23	74.25-74.00	0.25	0.000	12	37.642	37.689	0.487	1.950	(65 ksi) A572-65
L24	74.00-69.00	5.00	0.000	12	37.689	38.638	0.481	1.925	(65 ksi) A572-65
L25	69.00-64.00	5.00	0.000	12	38.638	39.587	0.475	1.900	(65 ksi) A572-65
L26	64.00-59.00	5.00	0.000	12	39.587	40.535	0.475	1.900	(65 ksi) A572-65
L27	59.00-55.75	3.25	0.000	12	40.535	41.152	0.475	1.900	(65 ksi) A572-65
L28	55.75-55.50	0.25	0.000	12	41.152	41.200	0.637	2.550	(65 ksi) A572-65
L29	55.50-50.50	5.00	0.000	12	41.200	42.148	0.637	2.550	(65 ksi) A572-65
L30	50.50-47.75	2.75	0.000	12	42.148	42.670	0.637	2.550	(65 ksi) A572-65
L31	47.75-47.50	0.25	0.000	12	42.670	42.718	0.375	1.500	(65 ksi) A572-65
L32	47.50-40.58	6.92	6.417	12	42.718	44.030	0.375	1.500	(65 ksi) 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
L33	40.58-39.58	7.42	0.000	12	42.062	43.473	0.700	2.800	A572-65 (65 ksi)
L34	39.58-34.58	5.00	0.000	12	43.473	44.424	0.700	2.800	A572-65 (65 ksi)
L35	34.58-29.58	5.00	0.000	12	44.424	45.374	0.688	2.750	A572-65 (65 ksi)
L36	29.58-29.25	0.33	0.000	12	45.374	45.438	0.688	2.750	A572-65 (65 ksi)
L37	29.25-29.00	0.25	0.000	12	45.438	45.485	0.438	1.750	A572-65 (65 ksi)
L38	29.00-28.75	0.25	0.000	12	45.485	45.533	0.637	2.550	A572-65 (65 ksi)
L39	28.75-23.75	5.00	0.000	12	45.533	46.484	0.625	2.500	A572-65 (65 ksi)
L40	23.75-18.75	5.00	0.000	12	46.484	47.434	0.625	2.500	A572-65 (65 ksi)
L41	18.75-13.75	5.00	0.000	12	47.434	48.385	0.625	2.500	A572-65 (65 ksi)
L42	13.75-13.00	0.75	0.000	12	48.385	48.528	0.625	2.500	A572-65 (65 ksi)
L43	13.00-12.75	0.25	0.000	12	48.528	48.575	0.713	2.850	A572-65 (65 ksi)
L44	12.75-8.25	4.50	0.000	12	48.575	49.431	0.713	2.850	A572-65 (65 ksi)
L45	8.25-8.00	0.25	0.000	12	49.431	49.479	0.662	2.650	A572-65 (65 ksi)
L46	8.00-3.00	5.00	0.000	12	49.479	50.430	0.662	2.650	A572-65 (65 ksi)
L47	3.00-0.00	3.00		12	50.430	51.000	0.650	2.600	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	23.138	15.589	974.558	7.923	11.577	84.178	1974.719	7.672	5.404	24.702
	24.122	16.258	1105.579	8.263	12.070	91.600	2240.203	8.002	5.658	25.866
L2	24.122	16.258	1105.579	8.263	12.070	91.600	2240.203	8.002	5.658	25.866
	25.106	16.928	1247.847	8.603	12.562	99.336	2528.476	8.331	5.913	27.031
L3	25.106	16.928	1247.847	8.603	12.562	99.336	2528.476	8.331	5.913	27.031
	26.090	17.597	1401.824	8.944	13.054	107.385	2840.476	8.661	6.168	28.195
L4	26.090	17.597	1401.824	8.944	13.054	107.385	2840.476	8.661	6.168	28.195
	27.074	18.266	1567.974	9.284	13.547	115.747	3177.140	8.990	6.422	29.359
L5	27.074	18.266	1567.974	9.284	13.547	115.747	3177.140	8.990	6.422	29.359
	28.058	18.936	1746.759	9.624	14.039	124.424	3539.407	9.320	6.677	30.524
L6	28.058	18.936	1746.759	9.624	14.039	124.424	3539.407	9.320	6.677	30.524
	29.042	19.605	1938.643	9.964	14.531	133.413	3928.215	9.649	6.932	31.688
L7	29.042	19.605	1938.643	9.964	14.531	133.413	3928.215	9.649	6.932	31.688
	30.026	20.275	2144.088	10.305	15.023	142.716	4344.504	9.979	7.186	32.852
L8	30.026	20.275	2144.088	10.305	15.023	142.716	4344.504	9.979	7.186	32.852
	31.535	21.301	2486.504	10.826	15.778	157.590	5038.330	10.484	7.577	34.638
L9	31.081	26.131	2776.913	10.330	15.092	183.997	5626.779	12.861	7.055	25.083
	31.147	26.991	3060.307	10.670	15.584	196.372	6201.012	13.284	7.309	25.988
L10	31.147	26.991	3060.307	10.670	15.584	196.372	6201.012	13.284	7.309	25.988
	32.130	27.852	3362.354	11.010	16.076	209.150	6813.041	13.708	7.564	26.893
L11	32.130	27.852	3362.354	11.010	16.076	209.150	6813.041	13.708	7.564	26.893

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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
	33.114	28.712	3683.649	11.350	16.568	222.330	7464.071	14.131	7.818	27.798
L12	33.114	28.712	3683.649	11.350	16.568	222.330	7464.071	14.131	7.818	27.798
	34.097	29.572	4024.786	11.690	17.060	235.913	8155.307	14.555	8.073	28.704
L13	34.097	29.572	4024.786	11.690	17.060	235.913	8155.307	14.555	8.073	28.704
	35.081	30.433	4386.360	12.030	17.553	249.899	8887.954	14.978	8.327	29.609
L14	35.081	30.433	4386.360	12.030	17.553	249.899	8887.954	14.978	8.327	29.609
	35.311	30.634	4473.983	12.110	17.668	253.230	9065.502	15.077	8.387	29.821
L15	35.311	41.403	6011.104	12.074	17.668	340.232	12180.126	20.377	8.119	21.296
	35.360	41.461	6036.536	12.091	17.692	341.196	12231.659	20.406	8.132	21.329
L16	35.360	41.461	6036.536	12.091	17.692	341.196	12231.659	20.406	8.132	21.329
	36.343	42.628	6560.359	12.431	18.184	360.770	13293.067	20.980	8.386	21.997
L17	36.343	41.936	6456.297	12.433	18.184	355.047	13082.209	20.640	8.403	22.408
	36.491	42.108	6536.091	12.484	18.258	357.982	13243.893	20.724	8.441	22.51
L18	36.491	31.666	4941.711	12.518	18.258	270.658	10013.246	15.585	8.693	30.907
	36.540	31.709	4961.876	12.535	18.283	271.397	10054.106	15.606	8.705	30.952
L19	36.540	31.709	4961.876	12.535	18.283	271.397	10054.106	15.606	8.705	30.952
	37.933	32.927	5555.987	13.016	18.980	292.736	11257.935	16.206	9.066	32.234
L20	37.349	41.849	6416.043	12.407	18.147	353.562	13000.642	20.597	8.384	22.357
	37.545	43.338	7125.711	12.849	18.786	379.314	14438.622	21.330	8.714	23.238
L21	37.545	43.338	7125.711	12.849	18.786	379.314	14438.622	21.330	8.714	23.238
	38.528	44.484	7705.877	13.189	19.277	399.740	15614.195	21.894	8.969	23.916
L22	38.528	44.484	7705.877	13.189	19.277	399.740	15614.195	21.894	8.969	23.916
	38.970	44.999	7976.909	13.341	19.498	409.106	16163.379	22.147	9.083	24.221
L23	38.970	58.323	10276.350	13.301	19.498	527.036	20822.672	28.705	8.781	18.013
	39.019	58.397	10315.763	13.318	19.523	528.391	20902.532	28.741	8.794	18.039
L24	39.019	57.658	10188.643	13.320	19.523	521.880	20644.953	28.378	8.811	18.308
	40.001	59.128	10988.086	13.660	20.014	549.009	22264.842	29.101	9.065	18.837
L25	40.001	58.370	10850.714	13.662	20.014	542.145	21986.488	28.728	9.082	19.12
	40.983	59.821	11680.275	14.002	20.506	569.606	23667.405	29.442	9.336	19.655
L26	40.983	59.821	11680.275	14.002	20.506	569.606	23667.405	29.442	9.336	19.655
	41.965	61.272	12551.076	14.342	20.997	597.746	25431.882	30.156	9.590	20.19
L27	41.965	61.272	12551.076	14.342	20.997	597.746	25431.882	30.156	9.590	20.19
	42.604	62.216	13139.684	14.562	21.317	616.401	26624.563	30.621	9.756	20.538
L28	42.604	83.166	17424.335	14.504	21.317	817.400	35306.428	40.932	9.320	14.62
	42.653	83.264	17485.613	14.521	21.341	819.330	35430.593	40.980	9.333	14.64
L29	42.653	83.264	17485.613	14.521	21.341	819.330	35430.593	40.980	9.333	14.64
	43.635	85.211	18741.524	14.861	21.833	858.411	37975.409	41.938	9.587	15.039
L30	43.635	85.211	18741.524	14.861	21.833	858.411	37975.409	41.938	9.587	15.039
	44.175	86.282	19457.228	15.048	22.103	880.293	39425.620	42.466	9.727	15.258
L31	44.175	51.071	11661.206	15.142	22.103	527.582	23628.764	25.136	10.431	27.815
	44.224	51.129	11700.487	15.159	22.128	528.771	23708.360	25.164	10.443	27.849
L32	44.224	51.129	11700.487	15.159	22.128	528.771	23708.360	25.164	10.443	27.849
	45.583	52.713	12822.570	15.628	22.808	562.207	25982.003	25.944	10.795	28.787
L33	44.809	93.231	20359.059	14.808	21.788	934.402	41252.974	45.885	9.397	13.424
	45.006	96.410	22513.468	15.313	22.519	999.759	45618.391	47.450	9.775	13.964
L34	45.006	96.410	22513.468	15.313	22.519	999.759	45618.391	47.450	9.775	13.964
	45.991	98.553	24048.462	15.653	23.011	1045.066	48728.703	48.505	10.030	14.328
L35	45.991	98.553	24048.462	15.653	23.011	1045.066	48728.703	48.505	10.030	14.328
	46.975	98.926	25214.775	15.998	23.504	1072.789	51091.970	48.688	10.318	15.008
L36	46.975	98.926	25214.775	15.998	23.504	1072.789	51091.970	48.688	10.318	15.008
	47.041	99.066	25322.227	16.021	23.537	1075.858	51309.696	48.757	10.335	15.032
L37	47.041	63.394	16385.723	16.110	23.537	696.175	33201.918	31.201	11.005	25.154
	47.090	63.461	16437.710	16.127	23.561	697.654	33307.257	31.234	11.018	25.183
L38	47.090	92.061	23634.484	16.056	23.561	1003.102	47889.872	45.310	10.482	16.442
	47.139	92.159	23709.724	16.073	23.586	1005.245	48042.329	45.358	10.494	16.462
L39	47.139	90.377	23264.249	16.077	23.586	986.357	47139.675	44.481	10.528	16.844
	48.123	92.291	24773.434	16.417	24.079	1028.859	50197.693	45.423	10.783	17.252
L40	48.123	92.291	24773.434	16.417	24.079	1028.859	50197.693	45.423	10.783	17.252
	49.108	94.204	26346.516	16.758	24.571	1072.258	53385.184	46.364	11.037	17.66
L41	49.108	94.204	26346.516	16.758	24.571	1072.258	53385.184	46.364	11.037	17.66
	50.092	96.118	27984.819	17.098	25.064	1116.553	56704.831	47.306	11.292	18.068
L42	50.092	96.118	27984.819	17.098	25.064	1116.553	56704.831	47.306	11.292	18.068

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in							
L23				1	1	0.977341			
74.25-74.00									
L24				1	1	0.98463			
74.00-69.00									
L25				1	1	0.992377			
69.00-64.00									
L26				1	1	0.987572			
64.00-59.00									
L27				1	1	0.984569			
59.00-55.75									
L28				1	1	0.973156			
55.75-55.50									
L29				1	1	0.964358			
55.50-50.50									
L30				1	1	0.959689			
50.50-47.75									
L31				1	1	1			
47.75-47.50									
L32				1	1	1			
47.50-40.58									
L33				1	1	0.973563			
40.58-39.58									
L34				1	1	0.965983			
39.58-34.58									
L35				1	1	0.975884			
34.58-29.58									
L36				1	1	0.975403			
29.58-29.25									
L37				1	1	1			
29.25-29.00									
L38				1	1	0.96948			
29.00-28.75									
L39				1	1	0.982611			
28.75-23.75									
L40				1	1	0.976871			
23.75-18.75									
L41				1	1	0.971359			
18.75-13.75									
L42				1	1	0.970551			
13.75-13.00									
L43				1	1	1.01684			
13.00-12.75									
L44 12.75-8.25				1	1	1.00976			
L45 8.25-8.00				1	1	1.07693			
L46 8.00-3.00				1	1	1.06897			
L47 3.00-0.00				1	1	1.08454			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Step Pegs (5/8" SR) 7-in. w/30" step	A	Surface Ar (CaAa)	160.00 - 0.00	1	1	-0.250	0.350		0.487
Safety Line 3/8	A	Surface Ar	160.00 - 0.00	1	1	-0.250	0.375		0.220

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Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A(1-5/8)	A	(CaAa) Surface Ar	96.00 - 0.00	12	6	-0.250 0.500	1.980		0.820
PL 1.25x6.875	B	(CaAa) Surface Ar	31.25 - 2.00	1	1	0.250 0.250	1.250		0.000
PL 1.25x6.875	C	(CaAa) Surface Ar	31.25 - 2.00	1	1	0.000 0.000	1.250		0.000
PL 1.25x5.25	B	(CaAa) Surface Ar	58.00 - 31.25	1	1	0.250 0.250	1.250		0.000
PL 1.25x5.25	C	(CaAa) Surface Ar	58.00 - 31.25	1	1	0.000 0.000	1.250		0.000
Crown 1x4	B	(CaAa) Surface Ar	76.00 - 58.00	1	1	0.250 0.250	1.000		0.000
Crown 1x4	C	(CaAa) Surface Ar	76.00 - 58.00	1	1	0.000 0.000	1.000		0.000

Sabre (PL 1 x 6)	A	(CaAa) Surface Ar	15.00 - 5.00	1	1	-0.250 -0.250	1.000		0.000
Sabre (PL 1 x 6)	A	(CaAa) Surface Ar	15.00 - 5.00	1	1	0.500 0.500	1.000		0.000
*									
Sabre (PL 1 x 4.5)	A	(CaAa) Surface Ar	44.25 - 29.25	1	1	-0.250 -0.250	1.000		0.000
Sabre (PL 1 x 4.5)	A	(CaAa) Surface Ar	44.25 - 29.25	1	1	0.500 0.500	1.000		0.000
*									
Sabre (PL 1 x 6)	A	(CaAa) Surface Ar	90.00 - 87.83	1	1	0.500 0.500	1.000		0.000
Sabre (PL 1 x 6)	B	(CaAa) Surface Ar	90.00 - 87.83	1	1	0.250 0.250	1.000		0.000
Sabre (PL 1 x 6)	C	(CaAa) Surface Ar	90.00 - 87.83	1	1	0.000 0.000	1.000		0.000

HSS6x6x1/4	A	(CaAa) Surface Af	102.00 - 90.00	1	1	0.500 0.500	6.000	18.000	18.990
HSS6x6x1/4	B	(CaAa) Surface Af	102.00 - 90.00	1	1	0.250 0.250	6.000	18.000	18.990
HSS6x6x1/4	C	(CaAa) Surface Af	102.00 - 90.00	1	1	0.000 0.000	6.000	18.000	18.990
HSS6x6x1/4	A	(CaAa) Surface Af	102.00 - 90.00	1	1	-0.250 -0.250	6.000	18.000	18.990

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
** 159' **								
HB114-21U3M12-XXX F(1-1/4)	C	No	Inside Pole	159.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.220 1.220 1.220
HB114-1-08U4-M5J(1-1/4)	C	No	Inside Pole	159.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.080 1.080 1.080
** 142' **								
AL7-50(1-5/8)	C	No	Inside Pole	142.00 - 0.00	6	No Ice 1/2" Ice	0.00 0.00	0.520 0.520

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A		Weight plf
						ft ² /ft	plf	
LDF7-50A(1-5/8)	C	No	Inside Pole	142.00 - 0.00	6	1" Ice	0.00	0.520
						No Ice	0.00	0.820
						1/2" Ice	0.00	0.820
MLE Hybrid 9Power/18Fiber RL 2(1-5/8) ** 130' **	C	No	Inside Pole	142.00 - 0.00	1	1" Ice	0.00	0.820
						No Ice	0.00	1.070
						1/2" Ice	0.00	1.070
AVA7-50(1-5/8)	B	No	Inside Pole	130.00 - 0.00	6	No Ice	0.00	0.700
						1/2" Ice	0.00	0.700
						1" Ice	0.00	0.700
** 116' ** HB158-1-08U8-S8J18(1-5/8)	A	No	Inside Pole	116.00 - 0.00	2	No Ice	0.00	1.300
						1/2" Ice	0.00	1.300
						1" Ice	0.00	1.300
LDF7-50A(1-5/8)	A	No	Inside Pole	116.00 - 0.00	6	No Ice	0.00	0.820
						1/2" Ice	0.00	0.820
						1" Ice	0.00	0.820
** 96' ** 2" Flexible Conduit	B	No	Inside Pole	96.00 - 0.00	1	No Ice	0.00	0.340
						1/2" Ice	0.00	0.340
						1" Ice	0.00	0.340
FB-L98B-034-XXX(3/8)	A	No	CaAa (Out Of Face)	96.00 - 0.00	1	No Ice	0.00	0.057
						1/2" Ice	0.00	0.603
						1" Ice	0.00	1.760
LDF4-50A(1/2)	B	No	Inside Pole	96.00 - 0.00	1	No Ice	0.00	0.150
						1/2" Ice	0.00	0.150
						1" Ice	0.00	0.150
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	96.00 - 0.00	2	No Ice	0.00	0.584
						1/2" Ice	0.00	0.584
						1" Ice	0.00	0.584
** 92' ** LDF4-50A(1/2)	A	No	CaAa (Out Of Face)	92.00 - 0.00	1	No Ice	0.00	0.150
						1/2" Ice	0.00	0.837
						1" Ice	0.00	2.135
** Mod Plates ** PL 1.25x6.25	A	No	CaAa (Out Of Face)	9.00 - 2.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
PL 1.25x6.875	A	No	CaAa (Out Of Face)	31.25 - 5.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
* PL 1.25x5.25	A	No	CaAa (Out Of Face)	58.00 - 31.25	1	No Ice	0.00	0.000
						1/2" Ice	0.00	23.330
						1" Ice	0.00	24.675
*** Crown 1x4	A	No	CaAa (Out Of Face)	76.00 - 46.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Crown 1x4	B	No	CaAa (Out Of Face)	58.00 - 46.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Crown 1x4	C	No	CaAa (Out Of Face)	58.00 - 46.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Sabre (PL 1 x 6)	C	No	CaAa (Out Of Face)	15.00 - 5.00	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
						1" Ice	0.00	0.000
Sabre (PL 1 x 4.5)	C	No	CaAa (Out Of Face)	44.25 - 29.25	1	No Ice	0.00	0.000
						1/2" Ice	0.00	0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	plf	
Sabre (PL 1 x 6)	A	No	CaAa (Out Of Face)	97.83 - 90.00	1	1" Ice	0.00	0.000
						No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
Sabre (PL 1 x 6)	B	No	CaAa (Out Of Face)	97.83 - 90.00	1	1" Ice	0.00	0.000
						No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
Sabre (PL 1 x 6)	C	No	CaAa (Out Of Face)	97.83 - 90.00	1	1" Ice	0.00	0.000
						No Ice	0.00	0.000
						1/2" Ice	0.00	0.000
HSS6x6x1/4	A	No	CaAa (Out Of Face)	102.00 - 90.00	1	1" Ice	0.00	0.000
						No Ice	0.00	18.990
						1/2" Ice	0.00	24.050
HSS6x6x1/4	B	No	CaAa (Out Of Face)	102.00 - 90.00	1	1" Ice	0.00	25.904
						No Ice	0.00	18.990
						1/2" Ice	0.00	24.050
HSS6x6x1/4	C	No	CaAa (Out Of Face)	102.00 - 90.00	1	1" Ice	0.00	25.904
						No Ice	0.00	18.990
						1/2" Ice	0.00	24.050
HSS6x6x1/4	A	No	CaAa (Out Of Face)	102.00 - 90.00	1	1" Ice	0.00	25.904
						No Ice	0.00	18.990
						1/2" Ice	0.00	24.050
						1" Ice	0.00	25.904

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
			ft ²	ft ²	ft ²	ft ²	lb
L1	160.00-155.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	17.84
L2	155.00-150.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	22.30
L3	150.00-145.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	22.30
L4	145.00-140.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	40.52
L5	140.00-135.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	67.85
L6	135.00-130.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	67.85
L7	130.00-125.00	A	0.000	0.000	0.362	0.000	3.54
		B	0.000	0.000	0.000	0.000	21.00
		C	0.000	0.000	0.000	0.000	67.85
L8	125.00-117.33	A	0.000	0.000	0.556	0.000	5.42
		B	0.000	0.000	0.000	0.000	32.20
		C	0.000	0.000	0.000	0.000	104.04
L9	117.33-117.00	A	0.000	0.000	0.024	0.000	0.24
		B	0.000	0.000	0.000	0.000	1.40
		C	0.000	0.000	0.000	0.000	4.52
L10	117.00-112.00	A	0.000	0.000	0.362	0.000	33.61
		B	0.000	0.000	0.000	0.000	21.00

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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 lb
L11	112.00-107.00	C	0.000	0.000	0.000	0.000	67.85
		A	0.000	0.000	0.362	0.000	41.13
		B	0.000	0.000	0.000	0.000	21.00
		C	0.000	0.000	0.000	0.000	67.85
L12	107.00-102.00	A	0.000	0.000	0.362	0.000	41.13
		B	0.000	0.000	0.000	0.000	21.00
		C	0.000	0.000	0.000	0.000	67.85
L13	102.00-97.00	A	0.000	0.000	10.363	0.000	420.93
		B	0.000	0.000	5.000	0.000	210.90
		C	0.000	0.000	5.000	0.000	257.75
L14	97.00-95.83	A	0.000	0.000	2.627	0.000	100.18
		B	0.000	0.000	1.170	0.000	49.63
		C	0.000	0.000	1.170	0.000	60.31
L15	95.83-95.58	A	0.000	0.000	0.815	0.000	23.52
		B	0.000	0.000	0.250	0.000	10.96
		C	0.000	0.000	0.250	0.000	12.89
L16	95.58-90.58	A	0.000	0.000	16.302	0.000	470.63
		B	0.000	0.000	5.000	0.000	219.19
		C	0.000	0.000	5.000	0.000	257.75
L17	90.58-89.83	A	0.000	0.000	2.122	0.000	57.76
		B	0.000	0.000	0.597	0.000	26.42
		C	0.000	0.000	0.597	0.000	32.21
L18	89.83-89.58	A	0.000	0.000	0.340	0.000	4.57
		B	0.000	0.000	0.025	0.000	1.46
		C	0.000	0.000	0.025	0.000	3.39
L19	89.58-82.50	A	0.000	0.000	9.099	0.000	129.38
		B	0.000	0.000	0.175	0.000	41.47
		C	0.000	0.000	0.175	0.000	96.08
L20	82.50-81.50	A	0.000	0.000	1.261	0.000	18.27
		B	0.000	0.000	0.000	0.000	5.86
		C	0.000	0.000	0.000	0.000	13.57
L21	81.50-76.50	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.000	0.000	29.29
		C	0.000	0.000	0.000	0.000	67.85
L22	76.50-74.25	A	0.000	0.000	2.836	0.000	41.12
		B	0.000	0.000	0.175	0.000	13.18
		C	0.000	0.000	0.175	0.000	30.53
L23	74.25-74.00	A	0.000	0.000	0.315	0.000	4.57
		B	0.000	0.000	0.025	0.000	1.46
		C	0.000	0.000	0.025	0.000	3.39
L24	74.00-69.00	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.500	0.000	29.29
		C	0.000	0.000	0.500	0.000	67.85
L25	69.00-64.00	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.500	0.000	29.29
		C	0.000	0.000	0.500	0.000	67.85
L26	64.00-59.00	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.500	0.000	29.29
		C	0.000	0.000	0.500	0.000	67.85
L27	59.00-55.75	A	0.000	0.000	4.097	0.000	59.39
		B	0.000	0.000	0.381	0.000	19.04
		C	0.000	0.000	0.381	0.000	44.10
L28	55.75-55.50	A	0.000	0.000	0.315	0.000	4.57
		B	0.000	0.000	0.031	0.000	1.46
		C	0.000	0.000	0.031	0.000	3.39
L29	55.50-50.50	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L30	50.50-47.75	A	0.000	0.000	3.466	0.000	50.25
		B	0.000	0.000	0.344	0.000	16.11
		C	0.000	0.000	0.344	0.000	37.32

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L31	47.75-47.50	A	0.000	0.000	0.315	0.000	4.57
		B	0.000	0.000	0.031	0.000	1.46
		C	0.000	0.000	0.031	0.000	3.39
L32	47.50-40.58	A	0.000	0.000	9.452	0.000	126.40
		B	0.000	0.000	0.865	0.000	40.52
		C	0.000	0.000	0.865	0.000	93.86
L33	40.58-39.58	A	0.000	0.000	1.460	0.000	18.27
		B	0.000	0.000	0.125	0.000	5.86
		C	0.000	0.000	0.125	0.000	13.57
L34	39.58-34.58	A	0.000	0.000	7.302	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L35	34.58-29.58	A	0.000	0.000	7.302	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L36	29.58-29.25	A	0.000	0.000	0.487	0.000	6.09
		B	0.000	0.000	0.042	0.000	1.95
		C	0.000	0.000	0.042	0.000	4.52
L37	29.25-29.00	A	0.000	0.000	0.315	0.000	4.57
		B	0.000	0.000	0.031	0.000	1.46
		C	0.000	0.000	0.031	0.000	3.39
L38	29.00-28.75	A	0.000	0.000	0.315	0.000	4.57
		B	0.000	0.000	0.031	0.000	1.46
		C	0.000	0.000	0.031	0.000	3.39
L39	28.75-23.75	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L40	23.75-18.75	A	0.000	0.000	6.303	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L41	18.75-13.75	A	0.000	0.000	6.553	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L42	13.75-13.00	A	0.000	0.000	1.095	0.000	13.71
		B	0.000	0.000	0.094	0.000	4.39
		C	0.000	0.000	0.094	0.000	10.18
L43	13.00-12.75	A	0.000	0.000	0.365	0.000	4.57
		B	0.000	0.000	0.031	0.000	1.46
		C	0.000	0.000	0.031	0.000	3.39
L44	12.75-8.25	A	0.000	0.000	6.572	0.000	82.23
		B	0.000	0.000	0.563	0.000	26.36
		C	0.000	0.000	0.563	0.000	61.06
L45	8.25-8.00	A	0.000	0.000	0.365	0.000	4.57
		B	0.000	0.000	0.031	0.000	1.46
		C	0.000	0.000	0.031	0.000	3.39
L46	8.00-3.00	A	0.000	0.000	6.902	0.000	91.37
		B	0.000	0.000	0.625	0.000	29.29
		C	0.000	0.000	0.625	0.000	67.85
L47	3.00-0.00	A	0.000	0.000	3.781	0.000	54.82
		B	0.000	0.000	0.125	0.000	17.57
		C	0.000	0.000	0.125	0.000	40.71

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	160.00-155.00	A	1.754	0.000	0.000	3.870	0.000	48.88

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_P ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	17.84
L2	155.00-150.00	A	1.748	0.000	0.000	3.859	0.000	48.61
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	22.30
L3	150.00-145.00	A	1.742	0.000	0.000	3.847	0.000	48.34
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	22.30
L4	145.00-140.00	A	1.736	0.000	0.000	3.835	0.000	48.06
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	40.52
L5	140.00-135.00	A	1.730	0.000	0.000	3.823	0.000	47.77
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	67.85
L6	135.00-130.00	A	1.724	0.000	0.000	3.810	0.000	47.47
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	67.85
L7	130.00-125.00	A	1.717	0.000	0.000	3.797	0.000	47.16
		B		0.000	0.000	0.000	0.000	21.00
		C		0.000	0.000	0.000	0.000	67.85
L8	125.00-117.33	A	1.708	0.000	0.000	5.795	0.000	71.69
		B		0.000	0.000	0.000	0.000	32.20
		C		0.000	0.000	0.000	0.000	104.04
L9	117.33-117.00	A	1.703	0.000	0.000	0.252	0.000	3.12
		B		0.000	0.000	0.000	0.000	1.40
		C		0.000	0.000	0.000	0.000	4.52
L10	117.00-112.00	A	1.699	0.000	0.000	3.760	0.000	76.39
		B		0.000	0.000	0.000	0.000	21.00
		C		0.000	0.000	0.000	0.000	67.85
L11	112.00-107.00	A	1.691	0.000	0.000	3.745	0.000	83.56
		B		0.000	0.000	0.000	0.000	21.00
		C		0.000	0.000	0.000	0.000	67.85
L12	107.00-102.00	A	1.683	0.000	0.000	3.729	0.000	83.20
		B		0.000	0.000	0.000	0.000	21.00
		C		0.000	0.000	0.000	0.000	67.85
L13	102.00-97.00	A	1.675	0.000	0.000	15.283	0.000	746.32
		B		0.000	0.000	5.785	0.000	352.74
		C		0.000	0.000	5.785	0.000	399.59
L14	97.00-95.83	A	1.670	0.000	0.000	3.896	0.000	181.28
		B		0.000	0.000	1.353	0.000	82.70
		C		0.000	0.000	1.353	0.000	93.38
L15	95.83-95.58	A	1.669	0.000	0.000	1.239	0.000	47.44
		B		0.000	0.000	0.289	0.000	18.02
		C		0.000	0.000	0.289	0.000	19.95
L16	95.58-90.58	A	1.664	0.000	0.000	24.754	0.000	954.44
		B		0.000	0.000	5.780	0.000	359.91
		C		0.000	0.000	5.780	0.000	398.47
L17	90.58-89.83	A	1.659	0.000	0.000	3.366	0.000	124.07
		B		0.000	0.000	0.719	0.000	43.60
		C		0.000	0.000	0.719	0.000	49.38
L18	89.83-89.58	A	1.658	0.000	0.000	0.730	0.000	16.86
		B		0.000	0.000	0.072	0.000	2.81
		C		0.000	0.000	0.072	0.000	4.74
L19	89.58-82.50	A	1.651	0.000	0.000	19.124	0.000	447.18
		B		0.000	0.000	0.499	0.000	50.83
		C		0.000	0.000	0.499	0.000	105.43
L20	82.50-81.50	A	1.643	0.000	0.000	2.631	0.000	61.84
		B		0.000	0.000	0.000	0.000	5.86
		C		0.000	0.000	0.000	0.000	13.57
L21	81.50-76.50	A	1.637	0.000	0.000	13.107	0.000	306.87
		B		0.000	0.000	0.000	0.000	29.29

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	Client Crown Castle	Designed by rwtscetter

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 lb
L22	76.50-74.25	C		0.000	0.000	0.000	0.000	67.85
		A	1.629	0.000	0.000	5.887	0.000	137.52
		B		0.000	0.000	0.745	0.000	22.34
		C		0.000	0.000	0.745	0.000	39.69
L23	74.25-74.00	A	1.626	0.000	0.000	0.654	0.000	15.26
		B		0.000	0.000	0.106	0.000	2.77
		C		0.000	0.000	0.106	0.000	4.70
L24	74.00-69.00	A	1.621	0.000	0.000	13.054	0.000	304.19
		B		0.000	0.000	2.121	0.000	55.23
		C		0.000	0.000	2.121	0.000	93.79
L25	69.00-64.00	A	1.609	0.000	0.000	13.016	0.000	302.26
		B		0.000	0.000	2.109	0.000	54.93
		C		0.000	0.000	2.109	0.000	93.49
L26	64.00-59.00	A	1.596	0.000	0.000	12.976	0.000	300.20
		B		0.000	0.000	2.096	0.000	54.61
		C		0.000	0.000	2.096	0.000	93.17
L27	59.00-55.75	A	1.585	0.000	0.000	8.411	0.000	254.38
		B		0.000	0.000	1.412	0.000	36.40
		C		0.000	0.000	1.412	0.000	61.47
L28	55.75-55.50	A	1.580	0.000	0.000	0.646	0.000	21.59
		B		0.000	0.000	0.110	0.000	2.83
		C		0.000	0.000	0.110	0.000	4.76
L29	55.50-50.50	A	1.573	0.000	0.000	12.899	0.000	430.39
		B		0.000	0.000	2.198	0.000	56.41
		C		0.000	0.000	2.198	0.000	94.97
L30	50.50-47.75	A	1.561	0.000	0.000	7.073	0.000	235.53
		B		0.000	0.000	1.202	0.000	30.85
		C		0.000	0.000	1.202	0.000	52.06
L31	47.75-47.50	A	1.556	0.000	0.000	0.642	0.000	21.37
		B		0.000	0.000	0.109	0.000	2.80
		C		0.000	0.000	0.109	0.000	4.73
L32	47.50-40.58	A	1.544	0.000	0.000	20.711	0.000	623.31
		B		0.000	0.000	3.000	0.000	76.97
		C		0.000	0.000	3.000	0.000	130.31
L33	40.58-39.58	A	1.529	0.000	0.000	3.379	0.000	94.63
		B		0.000	0.000	0.434	0.000	11.13
		C		0.000	0.000	0.434	0.000	18.84
L34	39.58-34.58	A	1.518	0.000	0.000	16.755	0.000	467.08
		B		0.000	0.000	2.143	0.000	54.95
		C		0.000	0.000	2.143	0.000	93.51
L35	34.58-29.58	A	1.496	0.000	0.000	16.640	0.000	417.89
		B		0.000	0.000	2.121	0.000	54.38
		C		0.000	0.000	2.121	0.000	92.94
L36	29.58-29.25	A	1.483	0.000	0.000	1.105	0.000	21.79
		B		0.000	0.000	0.141	0.000	3.60
		C		0.000	0.000	0.141	0.000	6.17
L37	29.25-29.00	A	1.481	0.000	0.000	0.630	0.000	14.08
		B		0.000	0.000	0.105	0.000	2.70
		C		0.000	0.000	0.105	0.000	4.63
L38	29.00-28.75	A	1.480	0.000	0.000	0.630	0.000	14.07
		B		0.000	0.000	0.105	0.000	2.70
		C		0.000	0.000	0.105	0.000	4.63
L39	28.75-23.75	A	1.466	0.000	0.000	12.552	0.000	279.13
		B		0.000	0.000	2.091	0.000	53.61
		C		0.000	0.000	2.091	0.000	92.17
L40	23.75-18.75	A	1.435	0.000	0.000	12.452	0.000	274.26
		B		0.000	0.000	2.060	0.000	52.84
		C		0.000	0.000	2.060	0.000	91.40
L41	18.75-13.75	A	1.397	0.000	0.000	13.278	0.000	278.50
		B		0.000	0.000	2.022	0.000	51.89
		C		0.000	0.000	2.022	0.000	90.45

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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 lb
L42	13.75-13.00	A	1.370	0.000	0.000	2.397	0.000	45.56
		B		0.000	0.000	0.299	0.000	7.68
		C		0.000	0.000	0.299	0.000	13.47
L43	13.00-12.75	A	1.365	0.000	0.000	0.798	0.000	15.14
		B		0.000	0.000	0.100	0.000	2.56
		C		0.000	0.000	0.100	0.000	4.48
L44	12.75-8.25	A	1.338	0.000	0.000	14.229	0.000	267.45
		B		0.000	0.000	1.766	0.000	45.39
		C		0.000	0.000	1.766	0.000	80.09
L45	8.25-8.00	A	1.304	0.000	0.000	0.782	0.000	14.52
		B		0.000	0.000	0.096	0.000	2.48
		C		0.000	0.000	0.096	0.000	4.41
L46	8.00-3.00	A	1.254	0.000	0.000	13.967	0.000	266.85
		B		0.000	0.000	1.879	0.000	48.47
		C		0.000	0.000	1.879	0.000	87.03
L47	3.00-0.00	A	1.101	0.000	0.000	6.819	0.000	134.04
		B		0.000	0.000	0.345	0.000	20.74
		C		0.000	0.000	0.345	0.000	43.87

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	160.00-155.00	-0.103	0.000	-0.739	0.000
L2	155.00-150.00	-0.103	0.000	-0.748	0.000
L3	150.00-145.00	-0.103	0.000	-0.756	0.000
L4	145.00-140.00	-0.103	0.000	-0.763	0.000
L5	140.00-135.00	-0.103	0.000	-0.770	0.000
L6	135.00-130.00	-0.103	0.000	-0.776	0.000
L7	130.00-125.00	-0.103	0.000	-0.782	0.000
L8	125.00-117.33	-0.103	0.000	-0.789	0.000
L9	117.33-117.00	-0.103	0.000	-0.791	0.000
L10	117.00-112.00	-0.103	0.000	-0.792	0.000
L11	112.00-107.00	-0.103	0.000	-0.796	0.000
L12	107.00-102.00	-0.104	0.000	-0.800	0.000
L13	102.00-97.00	0.556	0.600	0.199	0.566
L14	97.00-95.83	0.549	0.478	0.194	0.402
L15	95.83-95.58	0.482	-0.169	0.156	-0.370
L16	95.58-90.58	0.486	-0.170	0.159	-0.372
L17	90.58-89.83	0.426	-0.324	0.092	-0.517
L18	89.83-89.58	0.028	-1.266	-0.265	-1.246
L19	89.58-82.50	-0.049	-1.336	-0.437	-1.377
L20	82.50-81.50	-0.076	-1.360	-0.501	-1.424
L21	81.50-76.50	-0.076	-1.364	-0.502	-1.434
L22	76.50-74.25	0.007	-1.243	-0.246	-1.103
L23	74.25-74.00	0.029	-1.210	-0.181	-1.019
L24	74.00-69.00	0.030	-1.213	-0.182	-1.026
L25	69.00-64.00	0.030	-1.219	-0.183	-1.040
L26	64.00-59.00	0.030	-1.225	-0.185	-1.053
L27	59.00-55.75	0.048	-1.203	-0.172	-1.046
L28	55.75-55.50	0.057	-1.193	-0.167	-1.043
L29	55.50-50.50	0.057	-1.196	-0.167	-1.050
L30	50.50-47.75	0.057	-1.200	-0.167	-1.060
L31	47.75-47.50	0.057	-1.202	-0.168	-1.064
L32	47.50-40.58	0.001	-1.237	-0.302	-1.161
L33	40.58-39.58	-0.047	-1.263	-0.408	-1.230

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
		in	in	Ice in	Ice in
L34	39.58-34.58	-0.047	-1.267	-0.407	-1.240
L35	34.58-29.58	-0.047	-1.273	-0.408	-1.255
L36	29.58-29.25	-0.047	-1.276	-0.408	-1.263
L37	29.25-29.00	0.058	-1.217	-0.166	-1.105
L38	29.00-28.75	0.058	-1.217	-0.166	-1.105
L39	28.75-23.75	0.058	-1.219	-0.165	-1.113
L40	23.75-18.75	0.058	-1.224	-0.163	-1.127
L41	18.75-13.75	0.031	-1.245	-0.227	-1.186
L42	13.75-13.00	-0.048	-1.294	-0.403	-1.313
L43	13.00-12.75	-0.048	-1.295	-0.402	-1.315
L44	12.75-8.25	-0.048	-1.298	-0.399	-1.323
L45	8.25-8.00	-0.049	-1.300	-0.394	-1.331
L46	8.00-3.00	-0.006	-1.277	-0.295	-1.281
L47	3.00-0.00	-0.034	-1.373	-0.334	-1.488

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	Step Pegs (5/8" SR) 7-in. w/30" step	155.00 - 160.00	1.0000	1.0000
L1	2	Safety Line 3/8	155.00 - 160.00	1.0000	1.0000
L2	1	Step Pegs (5/8" SR) 7-in. w/30" step	150.00 - 155.00	1.0000	1.0000
L2	2	Safety Line 3/8	150.00 - 155.00	1.0000	1.0000
L3	1	Step Pegs (5/8" SR) 7-in. w/30" step	145.00 - 150.00	1.0000	1.0000
L3	2	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L4	1	Step Pegs (5/8" SR) 7-in. w/30" step	140.00 - 145.00	1.0000	1.0000
L4	2	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L5	1	Step Pegs (5/8" SR) 7-in. w/30" step	135.00 - 140.00	1.0000	1.0000
L5	2	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L6	1	Step Pegs (5/8" SR) 7-in. w/30" step	130.00 - 135.00	1.0000	1.0000
L6	2	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L7	1	Step Pegs (5/8" SR) 7-in. w/30" step	125.00 - 130.00	1.0000	1.0000
L7	2	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L8	1	Step Pegs (5/8" SR) 7-in. w/30" step	117.33 - 125.00	1.0000	1.0000
L8	2	Safety Line 3/8	117.33 - 125.00	1.0000	1.0000
L10	1	Step Pegs (5/8" SR) 7-in. w/30" step	112.00 - 117.00	1.0000	1.0000
L10	2	Safety Line 3/8	112.00 - 117.00	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L11	1	Step Pegs (5/8" SR) 7-in.	107.00 -	1.0000	1.0000
		w/30" step	112.00		
L11	2	Safety Line 3/8	107.00 -	1.0000	1.0000
			112.00		
L12	1	Step Pegs (5/8" SR) 7-in.	102.00 -	1.0000	1.0000
		w/30" step	107.00		
L12	2	Safety Line 3/8	102.00 -	1.0000	1.0000
			107.00		
L13	1	Step Pegs (5/8" SR) 7-in.	97.00 - 102.00	1.0000	1.0000
		w/30" step			
L13	2	Safety Line 3/8	97.00 - 102.00	1.0000	1.0000
L13	55	HSS6x6x1/4	97.00 - 102.00	1.0000	1.0000
L13	57	HSS6x6x1/4	97.00 - 102.00	1.0000	1.0000
L13	59	HSS6x6x1/4	97.00 - 102.00	1.0000	1.0000
L13	61	HSS6x6x1/4	97.00 - 102.00	1.0000	1.0000
L14	1	Step Pegs (5/8" SR) 7-in.	95.83 - 97.00	1.0000	1.0000
		w/30" step			
L14	2	Safety Line 3/8	95.83 - 97.00	1.0000	1.0000
L14	21	LDF7-50A(1-5/8)	95.83 - 96.00	1.0000	1.0000
L14	55	HSS6x6x1/4	95.83 - 97.00	1.0000	1.0000
L14	57	HSS6x6x1/4	95.83 - 97.00	1.0000	1.0000
L14	59	HSS6x6x1/4	95.83 - 97.00	1.0000	1.0000
L14	61	HSS6x6x1/4	95.83 - 97.00	1.0000	1.0000
L15	1	Step Pegs (5/8" SR) 7-in.	95.58 - 95.83	1.0000	1.0000
		w/30" step			
L15	2	Safety Line 3/8	95.58 - 95.83	1.0000	1.0000
L15	21	LDF7-50A(1-5/8)	95.58 - 95.83	1.0000	1.0000
L15	55	HSS6x6x1/4	95.58 - 95.83	1.0000	1.0000
L15	57	HSS6x6x1/4	95.58 - 95.83	1.0000	1.0000
L15	59	HSS6x6x1/4	95.58 - 95.83	1.0000	1.0000
L15	61	HSS6x6x1/4	95.58 - 95.83	1.0000	1.0000
L16	1	Step Pegs (5/8" SR) 7-in.	90.58 - 95.58	1.0000	1.0000
		w/30" step			
L16	2	Safety Line 3/8	90.58 - 95.58	1.0000	1.0000
L16	21	LDF7-50A(1-5/8)	90.58 - 95.58	1.0000	1.0000
L16	55	HSS6x6x1/4	90.58 - 95.58	1.0000	1.0000
L16	57	HSS6x6x1/4	90.58 - 95.58	1.0000	1.0000
L16	59	HSS6x6x1/4	90.58 - 95.58	1.0000	1.0000
L16	61	HSS6x6x1/4	90.58 - 95.58	1.0000	1.0000
L17	1	Step Pegs (5/8" SR) 7-in.	89.83 - 90.58	1.0000	1.0000
		w/30" step			
L17	2	Safety Line 3/8	89.83 - 90.58	1.0000	1.0000
L17	21	LDF7-50A(1-5/8)	89.83 - 90.58	1.0000	1.0000
L17	48	Sabre (PL 1 x 6)	89.83 - 90.00	1.0000	1.0000
L17	50	Sabre (PL 1 x 6)	89.83 - 90.00	1.0000	1.0000
L17	52	Sabre (PL 1 x 6)	89.83 - 90.00	1.0000	1.0000
L17	55	HSS6x6x1/4	90.00 - 90.58	1.0000	1.0000
L17	57	HSS6x6x1/4	90.00 - 90.58	1.0000	1.0000
L17	59	HSS6x6x1/4	90.00 - 90.58	1.0000	1.0000
L17	61	HSS6x6x1/4	90.00 - 90.58	1.0000	1.0000
L18	1	Step Pegs (5/8" SR) 7-in.	89.58 - 89.83	1.0000	1.0000
		w/30" step			
L18	2	Safety Line 3/8	89.58 - 89.83	1.0000	1.0000
L18	21	LDF7-50A(1-5/8)	89.58 - 89.83	1.0000	1.0000
L18	48	Sabre (PL 1 x 6)	89.58 - 89.83	1.0000	1.0000
L18	50	Sabre (PL 1 x 6)	89.58 - 89.83	1.0000	1.0000
L18	52	Sabre (PL 1 x 6)	89.58 - 89.83	1.0000	1.0000
L19	1	Step Pegs (5/8" SR) 7-in.	82.50 - 89.58	1.0000	1.0000
		w/30" step			
L19	2	Safety Line 3/8	82.50 - 89.58	1.0000	1.0000
L19	21	LDF7-50A(1-5/8)	82.50 - 89.58	1.0000	1.0000
L19	48	Sabre (PL 1 x 6)	87.83 - 89.58	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L19	50	Sabre (PL 1 x 6)	87.83 - 89.58	1.0000	1.0000
L19	52	Sabre (PL 1 x 6)	87.83 - 89.58	1.0000	1.0000
L21	1	Step Pegs (5/8" SR) 7-in. w/30" step	76.50 - 81.50	1.0000	1.0000
L21	2	Safety Line 3/8	76.50 - 81.50	1.0000	1.0000
L21	21	LDF7-50A(1-5/8)	76.50 - 81.50	1.0000	1.0000
L22	1	Step Pegs (5/8" SR) 7-in. w/30" step	74.25 - 76.50	1.0000	1.0000
L22	2	Safety Line 3/8	74.25 - 76.50	1.0000	1.0000
L22	21	LDF7-50A(1-5/8)	74.25 - 76.50	1.0000	1.0000
L22	36	Crown 1x4	74.25 - 76.00	1.0000	1.0000
L22	38	Crown 1x4	74.25 - 76.00	1.0000	1.0000
L23	1	Step Pegs (5/8" SR) 7-in. w/30" step	74.00 - 74.25	1.0000	1.0000
L23	2	Safety Line 3/8	74.00 - 74.25	1.0000	1.0000
L23	21	LDF7-50A(1-5/8)	74.00 - 74.25	1.0000	1.0000
L23	36	Crown 1x4	74.00 - 74.25	1.0000	1.0000
L23	38	Crown 1x4	74.00 - 74.25	1.0000	1.0000
L24	1	Step Pegs (5/8" SR) 7-in. w/30" step	69.00 - 74.00	1.0000	1.0000
L24	2	Safety Line 3/8	69.00 - 74.00	1.0000	1.0000
L24	21	LDF7-50A(1-5/8)	69.00 - 74.00	1.0000	1.0000
L24	36	Crown 1x4	69.00 - 74.00	1.0000	1.0000
L24	38	Crown 1x4	69.00 - 74.00	1.0000	1.0000
L25	1	Step Pegs (5/8" SR) 7-in. w/30" step	64.00 - 69.00	1.0000	1.0000
L25	2	Safety Line 3/8	64.00 - 69.00	1.0000	1.0000
L25	21	LDF7-50A(1-5/8)	64.00 - 69.00	1.0000	1.0000
L25	36	Crown 1x4	64.00 - 69.00	1.0000	1.0000
L25	38	Crown 1x4	64.00 - 69.00	1.0000	1.0000
L26	1	Step Pegs (5/8" SR) 7-in. w/30" step	59.00 - 64.00	1.0000	1.0000
L26	2	Safety Line 3/8	59.00 - 64.00	1.0000	1.0000
L26	21	LDF7-50A(1-5/8)	59.00 - 64.00	1.0000	1.0000
L26	36	Crown 1x4	59.00 - 64.00	1.0000	1.0000
L26	38	Crown 1x4	59.00 - 64.00	1.0000	1.0000
L27	1	Step Pegs (5/8" SR) 7-in. w/30" step	55.75 - 59.00	1.0000	1.0000
L27	2	Safety Line 3/8	55.75 - 59.00	1.0000	1.0000
L27	21	LDF7-50A(1-5/8)	55.75 - 59.00	1.0000	1.0000
L27	31	PL 1.25x5.25	55.75 - 58.00	1.0000	1.0000
L27	32	PL 1.25x5.25	55.75 - 58.00	1.0000	1.0000
L27	36	Crown 1x4	58.00 - 59.00	1.0000	1.0000
L27	38	Crown 1x4	58.00 - 59.00	1.0000	1.0000
L28	1	Step Pegs (5/8" SR) 7-in. w/30" step	55.50 - 55.75	1.0000	1.0000
L28	2	Safety Line 3/8	55.50 - 55.75	1.0000	1.0000
L28	21	LDF7-50A(1-5/8)	55.50 - 55.75	1.0000	1.0000
L28	31	PL 1.25x5.25	55.50 - 55.75	1.0000	1.0000
L28	32	PL 1.25x5.25	55.50 - 55.75	1.0000	1.0000
L29	1	Step Pegs (5/8" SR) 7-in. w/30" step	50.50 - 55.50	1.0000	1.0000
L29	2	Safety Line 3/8	50.50 - 55.50	1.0000	1.0000
L29	21	LDF7-50A(1-5/8)	50.50 - 55.50	1.0000	1.0000
L29	31	PL 1.25x5.25	50.50 - 55.50	1.0000	1.0000
L29	32	PL 1.25x5.25	50.50 - 55.50	1.0000	1.0000
L30	1	Step Pegs (5/8" SR) 7-in. w/30" step	47.75 - 50.50	1.0000	1.0000
L30	2	Safety Line 3/8	47.75 - 50.50	1.0000	1.0000
L30	21	LDF7-50A(1-5/8)	47.75 - 50.50	1.0000	1.0000
L30	31	PL 1.25x5.25	47.75 - 50.50	1.0000	1.0000
L30	32	PL 1.25x5.25	47.75 - 50.50	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L31	1	Step Pegs (5/8" SR) 7-in. w/30" step	47.50 - 47.75	1.0000	1.0000
L31	2	Safety Line 3/8	47.50 - 47.75	1.0000	1.0000
L31	21	LDF7-50A(1-5/8)	47.50 - 47.75	1.0000	1.0000
L31	31	PL 1.25x5.25	47.50 - 47.75	1.0000	1.0000
L31	32	PL 1.25x5.25	47.50 - 47.75	1.0000	1.0000
L32	1	Step Pegs (5/8" SR) 7-in. w/30" step	40.58 - 47.50	1.0000	1.0000
L32	2	Safety Line 3/8	40.58 - 47.50	1.0000	1.0000
L32	21	LDF7-50A(1-5/8)	40.58 - 47.50	1.0000	1.0000
L32	31	PL 1.25x5.25	40.58 - 47.50	1.0000	1.0000
L32	32	PL 1.25x5.25	40.58 - 47.50	1.0000	1.0000
L32	44	Sabre (PL 1 x 4.5)	40.58 - 44.25	1.0000	1.0000
L32	45	Sabre (PL 1 x 4.5)	40.58 - 44.25	1.0000	1.0000
L34	1	Step Pegs (5/8" SR) 7-in. w/30" step	34.58 - 39.58	1.0000	1.0000
L34	2	Safety Line 3/8	34.58 - 39.58	1.0000	1.0000
L34	21	LDF7-50A(1-5/8)	34.58 - 39.58	1.0000	1.0000
L34	31	PL 1.25x5.25	34.58 - 39.58	1.0000	1.0000
L34	32	PL 1.25x5.25	34.58 - 39.58	1.0000	1.0000
L34	44	Sabre (PL 1 x 4.5)	34.58 - 39.58	1.0000	1.0000
L34	45	Sabre (PL 1 x 4.5)	34.58 - 39.58	1.0000	1.0000
L35	1	Step Pegs (5/8" SR) 7-in. w/30" step	29.58 - 34.58	1.0000	1.0000
L35	2	Safety Line 3/8	29.58 - 34.58	1.0000	1.0000
L35	21	LDF7-50A(1-5/8)	29.58 - 34.58	1.0000	1.0000
L35	26	PL 1.25x6.875	29.58 - 31.25	1.0000	1.0000
L35	27	PL 1.25x6.875	29.58 - 31.25	1.0000	1.0000
L35	31	PL 1.25x5.25	31.25 - 34.58	1.0000	1.0000
L35	32	PL 1.25x5.25	31.25 - 34.58	1.0000	1.0000
L35	44	Sabre (PL 1 x 4.5)	29.58 - 34.58	1.0000	1.0000
L35	45	Sabre (PL 1 x 4.5)	29.58 - 34.58	1.0000	1.0000
L36	1	Step Pegs (5/8" SR) 7-in. w/30" step	29.25 - 29.58	1.0000	1.0000
L36	2	Safety Line 3/8	29.25 - 29.58	1.0000	1.0000
L36	21	LDF7-50A(1-5/8)	29.25 - 29.58	1.0000	1.0000
L36	26	PL 1.25x6.875	29.25 - 29.58	1.0000	1.0000
L36	27	PL 1.25x6.875	29.25 - 29.58	1.0000	1.0000
L36	44	Sabre (PL 1 x 4.5)	29.25 - 29.58	1.0000	1.0000
L36	45	Sabre (PL 1 x 4.5)	29.25 - 29.58	1.0000	1.0000
L37	1	Step Pegs (5/8" SR) 7-in. w/30" step	29.00 - 29.25	1.0000	1.0000
L37	2	Safety Line 3/8	29.00 - 29.25	1.0000	1.0000
L37	21	LDF7-50A(1-5/8)	29.00 - 29.25	1.0000	1.0000
L37	26	PL 1.25x6.875	29.00 - 29.25	1.0000	1.0000
L37	27	PL 1.25x6.875	29.00 - 29.25	1.0000	1.0000
L38	1	Step Pegs (5/8" SR) 7-in. w/30" step	28.75 - 29.00	1.0000	1.0000
L38	2	Safety Line 3/8	28.75 - 29.00	1.0000	1.0000
L38	21	LDF7-50A(1-5/8)	28.75 - 29.00	1.0000	1.0000
L38	26	PL 1.25x6.875	28.75 - 29.00	1.0000	1.0000
L38	27	PL 1.25x6.875	28.75 - 29.00	1.0000	1.0000
L39	1	Step Pegs (5/8" SR) 7-in. w/30" step	23.75 - 28.75	1.0000	1.0000
L39	2	Safety Line 3/8	23.75 - 28.75	1.0000	1.0000
L39	21	LDF7-50A(1-5/8)	23.75 - 28.75	1.0000	1.0000
L39	26	PL 1.25x6.875	23.75 - 28.75	1.0000	1.0000
L39	27	PL 1.25x6.875	23.75 - 28.75	1.0000	1.0000
L40	1	Step Pegs (5/8" SR) 7-in. w/30" step	18.75 - 23.75	1.0000	1.0000
L40	2	Safety Line 3/8	18.75 - 23.75	1.0000	1.0000
L40	21	LDF7-50A(1-5/8)	18.75 - 23.75	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L40	26	PL 1.25x6.875	18.75 - 23.75	1.0000	1.0000
L40	27	PL 1.25x6.875	18.75 - 23.75	1.0000	1.0000
L41	1	Step Pegs (5/8" SR) 7-in. w/30" step	13.75 - 18.75	1.0000	1.0000
L41	2	Safety Line 3/8	13.75 - 18.75	1.0000	1.0000
L41	21	LDF7-50A(1-5/8)	13.75 - 18.75	1.0000	1.0000
L41	26	PL 1.25x6.875	13.75 - 18.75	1.0000	1.0000
L41	27	PL 1.25x6.875	13.75 - 18.75	1.0000	1.0000
L41	40	Sabre (PL 1 x 6)	13.75 - 15.00	1.0000	1.0000
L41	41	Sabre (PL 1 x 6)	13.75 - 15.00	1.0000	1.0000
L42	1	Step Pegs (5/8" SR) 7-in. w/30" step	13.00 - 13.75	1.0000	1.0000
L42	2	Safety Line 3/8	13.00 - 13.75	1.0000	1.0000
L42	21	LDF7-50A(1-5/8)	13.00 - 13.75	1.0000	1.0000
L42	26	PL 1.25x6.875	13.00 - 13.75	1.0000	1.0000
L42	27	PL 1.25x6.875	13.00 - 13.75	1.0000	1.0000
L42	40	Sabre (PL 1 x 6)	13.00 - 13.75	1.0000	1.0000
L42	41	Sabre (PL 1 x 6)	13.00 - 13.75	1.0000	1.0000
L43	1	Step Pegs (5/8" SR) 7-in. w/30" step	12.75 - 13.00	1.0000	1.0000
L43	2	Safety Line 3/8	12.75 - 13.00	1.0000	1.0000
L43	21	LDF7-50A(1-5/8)	12.75 - 13.00	1.0000	1.0000
L43	26	PL 1.25x6.875	12.75 - 13.00	1.0000	1.0000
L43	27	PL 1.25x6.875	12.75 - 13.00	1.0000	1.0000
L43	40	Sabre (PL 1 x 6)	12.75 - 13.00	1.0000	1.0000
L43	41	Sabre (PL 1 x 6)	12.75 - 13.00	1.0000	1.0000
L44	1	Step Pegs (5/8" SR) 7-in. w/30" step	8.25 - 12.75	1.0000	1.0000
L44	2	Safety Line 3/8	8.25 - 12.75	1.0000	1.0000
L44	21	LDF7-50A(1-5/8)	8.25 - 12.75	1.0000	1.0000
L44	26	PL 1.25x6.875	8.25 - 12.75	1.0000	1.0000
L44	27	PL 1.25x6.875	8.25 - 12.75	1.0000	1.0000
L44	40	Sabre (PL 1 x 6)	8.25 - 12.75	1.0000	1.0000
L44	41	Sabre (PL 1 x 6)	8.25 - 12.75	1.0000	1.0000
L45	1	Step Pegs (5/8" SR) 7-in. w/30" step	8.00 - 8.25	1.0000	1.0000
L45	2	Safety Line 3/8	8.00 - 8.25	1.0000	1.0000
L45	21	LDF7-50A(1-5/8)	8.00 - 8.25	1.0000	1.0000
L45	26	PL 1.25x6.875	8.00 - 8.25	1.0000	1.0000
L45	27	PL 1.25x6.875	8.00 - 8.25	1.0000	1.0000
L45	40	Sabre (PL 1 x 6)	8.00 - 8.25	1.0000	1.0000
L45	41	Sabre (PL 1 x 6)	8.00 - 8.25	1.0000	1.0000
L46	1	Step Pegs (5/8" SR) 7-in. w/30" step	3.00 - 8.00	1.0000	1.0000
L46	2	Safety Line 3/8	3.00 - 8.00	1.0000	1.0000
L46	21	LDF7-50A(1-5/8)	3.00 - 8.00	1.0000	1.0000
L46	26	PL 1.25x6.875	3.00 - 8.00	1.0000	1.0000
L46	27	PL 1.25x6.875	3.00 - 8.00	1.0000	1.0000
L46	40	Sabre (PL 1 x 6)	5.00 - 8.00	1.0000	1.0000
L46	41	Sabre (PL 1 x 6)	5.00 - 8.00	1.0000	1.0000
L47	1	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 3.00	1.0000	1.0000
L47	2	Safety Line 3/8	0.00 - 3.00	1.0000	1.0000
L47	21	LDF7-50A(1-5/8)	0.00 - 3.00	1.0000	1.0000
L47	26	PL 1.25x6.875	2.00 - 3.00	1.0000	1.0000
L47	27	PL 1.25x6.875	2.00 - 3.00	1.0000	1.0000

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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
** 159' **								
APXVSP18-C-A20 w/ Mount Pipe	A	From Centroid-Face	4.00 0.000 1.000	10.000	159.00	No Ice 8.26 1/2" Ice 8.82 1" Ice 9.35	6.95 8.13 9.02	82.55 150.56 226.53
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Centroid-Face	4.00 0.000 1.000	10.000	159.00	No Ice 8.26 1/2" Ice 8.82 1" Ice 9.35	7.47 8.66 9.56	87.55 158.03 236.54
APXVSP18-C-A20 w/ Mount Pipe	C	From Centroid-Face	4.00 0.000 1.000	0.000	159.00	No Ice 8.26 1/2" Ice 8.82 1" Ice 9.35	6.95 8.13 9.02	82.55 150.56 226.53
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Face	4.00 -6.000 1.000	10.000	159.00	No Ice 6.34 1/2" Ice 6.72 1" Ice 7.10	3.61 3.97 4.33	56.20 95.73 140.32
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Face	4.00 -6.000 1.000	10.000	159.00	No Ice 6.34 1/2" Ice 6.72 1" Ice 7.10	3.61 3.97 4.33	56.20 95.73 140.32
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Face	4.00 -6.000 1.000	0.000	159.00	No Ice 6.34 1/2" Ice 6.72 1" Ice 7.10	3.61 3.97 4.33	56.20 95.73 140.32
TD-RRH8x20-25	A	From Centroid-Face	4.00 -6.000 1.000	10.000	159.00	No Ice 4.05 1/2" Ice 4.30 1" Ice 4.56	1.53 1.71 1.90	70.00 97.15 127.83
TD-RRH8x20-25	B	From Centroid-Face	4.00 -6.000 1.000	10.000	159.00	No Ice 4.05 1/2" Ice 4.30 1" Ice 4.56	1.53 1.71 1.90	70.00 97.15 127.83
TD-RRH8x20-25	C	From Centroid-Face	4.00 -6.000 1.000	0.000	159.00	No Ice 4.05 1/2" Ice 4.30 1" Ice 4.56	1.53 1.71 1.90	70.00 97.15 127.83
(2) 2.4" Dia. x 6' Mount Pipe	A	From Centroid-Face	4.00 0.000 0.000	0.000	159.00	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.32	1.43 1.93 2.32	21.90 37.81 55.56
(2) 2.4" Dia. x 6' Mount Pipe	B	From Centroid-Face	4.00 0.000 0.000	0.000	159.00	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.32	1.43 1.93 2.32	21.90 37.81 55.56
(2) 2.4" Dia. x 6' Mount Pipe	C	From Centroid-Face	4.00 0.000 0.000	0.000	159.00	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.32	1.43 1.93 2.32	21.90 37.81 55.56
Platform Mount [LP 713-1]	C	None		0.000	159.00	No Ice 31.27 1/2" Ice 39.68 1" Ice 48.09	31.27 39.68 48.09	1510.00 1929.00 2348.00
** 155' **								
800MHz 2X50W RRH W/FILTER	A	From Face	2.00 0.000 1.000	10.000	155.00	No Ice 2.06 1/2" Ice 2.24 1" Ice 2.43	1.93 2.11 2.29	64.00 86.12 111.30
800MHz 2X50W RRH W/FILTER	B	From Face	2.00 0.000 1.000	10.000	155.00	No Ice 2.06 1/2" Ice 2.24 1" Ice 2.43	1.93 2.11 2.29	64.00 86.12 111.30
800MHz 2X50W RRH W/FILTER	C	From Face	2.00 0.000 1.000	0.000	155.00	No Ice 2.06 1/2" Ice 2.24 1" Ice 2.43	1.93 2.11 2.29	64.00 86.12 111.30
PCS 1900MHz 4x45W-65MHz	A	From Face	2.00 0.000	10.000	155.00	No Ice 2.32 1/2" Ice 2.53	2.24 2.44	60.00 83.13

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Pond Meadow Rd. Stable (BU 876339)	Page	21 of 42
	Project	TEP No. 25580.144059	Date	08:12:27 11/22/17
	Client	Crown Castle	Designed by	rwtscsetter

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
PCS 1900MHz 4x45W-65MHz	B	From Face	-1.000		10.000	155.00	1" Ice	2.74	2.65	109.50
			2.00				No Ice	2.32	2.24	60.00
			0.000				1/2" Ice	2.53	2.44	83.13
PCS 1900MHz 4x45W-65MHz	C	From Face	-1.000		0.000	155.00	1" Ice	2.74	2.65	109.50
			2.00				No Ice	2.32	2.24	60.00
			0.000				1/2" Ice	2.53	2.44	83.13
2.4" Dia x 4-ft Mount Pipe	A	From Face	-1.000		0.000	155.00	1" Ice	2.74	2.65	109.50
			1.00				No Ice	0.87	0.87	14.64
			0.000				1/2" Ice	1.12	1.12	22.02
2.4" Dia x 4-ft Mount Pipe	B	From Face	0.000		0.000	155.00	1" Ice	1.37	1.37	32.24
			1.00				No Ice	0.87	0.87	14.64
			0.000				1/2" Ice	1.12	1.12	22.02
2.4" Dia x 4-ft Mount Pipe	C	From Face	0.000		0.000	155.00	1" Ice	1.37	1.37	32.24
			1.00				No Ice	0.87	0.87	14.64
			0.000				1/2" Ice	1.12	1.12	22.02
Side Arm Mount [SO 102-3]	C	None	0.000		0.000	155.00	1" Ice	1.37	1.37	32.24
							No Ice	3.00	3.00	81.00
							1/2" Ice	3.48	3.48	111.00
** 142' **										
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Centroid-Fa ce	4.00		-20.000	142.00	No Ice	6.33	5.64	112.18
			-6.000				1/2" Ice	6.78	6.43	169.02
			3.000				1" Ice	7.21	7.13	232.59
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Centroid-Fa ce	4.00		10.000	142.00	No Ice	6.33	5.64	112.18
			-6.000				1/2" Ice	6.78	6.43	169.02
			3.000				1" Ice	7.21	7.13	232.59
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Centroid-Fa ce	4.00		20.000	142.00	No Ice	6.33	5.64	112.18
			-6.000				1/2" Ice	6.78	6.43	169.02
			3.000				1" Ice	7.21	7.13	232.59
LNX-6515DS-VTM w/ Mount Pipe	A	From Centroid-Fa ce	4.00		-20.000	142.00	No Ice	11.68	9.84	83.27
			0.000				1/2" Ice	12.40	11.37	172.93
			3.000				1" Ice	13.14	12.91	272.55
LNX-6515DS-VTM w/ Mount Pipe	B	From Centroid-Fa ce	4.00		10.000	142.00	No Ice	11.68	9.84	83.27
			0.000				1/2" Ice	12.40	11.37	172.93
			3.000				1" Ice	13.14	12.91	272.55
LNX-6515DS-VTM w/ Mount Pipe	C	From Centroid-Fa ce	4.00		20.000	142.00	No Ice	11.68	9.84	83.27
			0.000				1/2" Ice	12.40	11.37	172.93
			3.000				1" Ice	13.14	12.91	272.55
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Centroid-Fa ce	4.00		-20.000	142.00	No Ice	6.33	5.64	112.18
			6.000				1/2" Ice	6.78	6.43	169.02
			3.000				1" Ice	7.21	7.13	232.59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Centroid-Fa ce	4.00		10.000	142.00	No Ice	6.33	5.64	112.18
			6.000				1/2" Ice	6.78	6.43	169.02
			3.000				1" Ice	7.21	7.13	232.59
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Centroid-Fa ce	4.00		20.000	142.00	No Ice	6.33	5.64	112.18
			6.000				1/2" Ice	6.78	6.43	169.02
			3.000				1" Ice	7.21	7.13	232.59
KRY 112 144/1	A	From Centroid-Fa ce	4.00		-20.000	142.00	No Ice	0.35	0.16	11.02
			-6.000				1/2" Ice	0.43	0.22	14.12
			3.000				1" Ice	0.51	0.28	18.44
KRY 112 144/1	B	From Centroid-Fa ce	4.00		10.000	142.00	No Ice	0.35	0.16	11.02
			-6.000				1/2" Ice	0.43	0.22	14.12
			3.000				1" Ice	0.51	0.28	18.44
KRY 112 144/1	C	From Centroid-Fa ce	4.00		20.000	142.00	No Ice	0.35	0.16	11.02
			-6.000				1/2" Ice	0.43	0.22	14.12
			3.000				1" Ice	0.51	0.28	18.44
RRUS 11 B12	A	From	4.00		-20.000	142.00	No Ice	2.79	1.19	50.70

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	Project	TEP No. 25580.144059	Date	08:12:27 11/22/17
	Client	Crown Castle	Designed by	rwtscetter

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	lb	
RRUS 11 B12	B	Centroid-Fa	0.000			1/2" Ice	3.00	1.34	71.57	
		ce	3.000			1" Ice	3.21	1.50	95.48	
		From	4.00		10.000	142.00	No Ice	2.79	1.19	50.70
RRUS 11 B12	C	Centroid-Fa	0.000			1/2" Ice	3.00	1.34	71.57	
		ce	3.000			1" Ice	3.21	1.50	95.48	
		From	4.00		20.000	142.00	No Ice	2.79	1.19	50.70
Platform Mount [LP 713-1]	C	Centroid-Fa	0.000			1/2" Ice	3.00	1.34	71.57	
		ce	3.000			1" Ice	3.21	1.50	95.48	
		None			0.000	142.00	No Ice	31.27	31.27	1510.00
						1/2" Ice	39.68	39.68	1929.00	
						1" Ice	48.09	48.09	2348.00	
** 130' **										
APXV18-206517S-ACU	A	From Leg	1.00		30.000	130.00	No Ice	5.17	3.04	26.40
			0.000				1/2" Ice	5.62	3.47	53.00
			0.000				1" Ice	6.08	3.91	85.10
APXV18-206517S-ACU	B	From Leg	1.00		30.000	130.00	No Ice	5.17	3.04	26.40
			0.000				1/2" Ice	5.62	3.47	53.00
			0.000				1" Ice	6.08	3.91	85.10
APXV18-206517S-ACU	C	From Leg	1.00		30.000	130.00	No Ice	5.17	3.04	26.40
			0.000				1/2" Ice	5.62	3.47	53.00
			0.000				1" Ice	6.08	3.91	85.10
Pipe Mount [PM 601-3]	C	None			0.000	130.00	No Ice	4.39	4.39	195.00
							1/2" Ice	5.48	5.48	237.41
							1" Ice	6.57	6.57	279.82
** 116' **										
(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	A	From	3.00		-30.000	116.00	No Ice	7.24	7.21	38.07
		Centroid-Fa	0.000				1/2" Ice	7.71	7.91	103.63
		ce	2.000				1" Ice	8.19	8.62	175.76
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	B	From	3.00		-30.000	116.00	No Ice	2.86	6.57	30.01
		Centroid-Fa	0.000				1/2" Ice	3.22	7.19	76.24
		ce	2.000				1" Ice	3.59	7.84	128.40
(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	C	From	3.00		-20.000	116.00	No Ice	7.24	7.21	38.07
		Centroid-Fa	0.000				1/2" Ice	7.71	7.91	103.63
		ce	2.000				1" Ice	8.19	8.62	175.76
(2) JAHH-65B-R3B w/ Mount Pipe	A	From	3.00		-30.000	116.00	No Ice	9.35	7.65	86.15
		Centroid-Fa	0.000				1/2" Ice	9.92	8.83	162.72
		ce	2.000				1" Ice	10.46	9.73	247.46
(2) JAHH-65B-R3B w/ Mount Pipe	B	From	3.00		-30.000	116.00	No Ice	9.35	7.65	86.15
		Centroid-Fa	0.000				1/2" Ice	9.92	8.83	162.72
		ce	2.000				1" Ice	10.46	9.73	247.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From	3.00		-20.000	116.00	No Ice	9.35	7.65	86.15
		Centroid-Fa	0.000				1/2" Ice	9.92	8.83	162.72
		ce	2.000				1" Ice	10.46	9.73	247.46
AIRSCALE RRH 4T4R B5 160W	A	From	3.00		-30.000	116.00	No Ice	1.50	0.84	35.27
		Centroid-Fa	-6.000				1/2" Ice	1.67	0.97	46.56
		ce	2.000				1" Ice	1.84	1.11	60.09
AIRSCALE RRH 4T4R B5 160W	B	From	3.00		-30.000	116.00	No Ice	1.50	0.84	35.27
		Centroid-Fa	-6.000				1/2" Ice	1.67	0.97	46.56
		ce	2.000				1" Ice	1.84	1.11	60.09
(2) AIRSCALE RRH 4T4R B5 160W	C	From	3.00		-20.000	116.00	No Ice	1.50	0.84	35.27
		Centroid-Fa	0.000				1/2" Ice	1.67	0.97	46.56
		ce	2.000				1" Ice	1.84	1.11	60.09
(2) FD9R6004/2C-3L	A	From	3.00		-30.000	116.00	No Ice	0.31	0.08	3.10
		Centroid-Fa	-2.000				1/2" Ice	0.39	0.12	5.40
		ce	0.000				1" Ice	0.47	0.17	8.79
(2) FD9R6004/2C-3L	B	From	3.00		-30.000	116.00	No Ice	0.31	0.08	3.10
		Centroid-Fa	-2.000				1/2" Ice	0.39	0.12	5.40

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	Client Crown Castle	Designed by rwtscetter

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
(2) FD9R6004/2C-3L	C	ce	0.000				1" Ice	0.47	0.17	8.79
		From	3.00		-20.000	116.00	No Ice	0.31	0.08	3.10
		Centroid-Fa	-2.000				1/2" Ice	0.39	0.12	5.40
B13 RRH 4X30	A	ce	0.000				1" Ice	0.47	0.17	8.79
		From	3.00		-30.000	116.00	No Ice	2.06	1.32	55.60
		Centroid-Fa	-2.000				1/2" Ice	2.24	1.48	72.88
B13 RRH 4X30	B	ce	2.000				1" Ice	2.43	1.64	92.95
		From	3.00		-30.000	116.00	No Ice	2.06	1.32	55.60
		Centroid-Fa	-2.000				1/2" Ice	2.24	1.48	72.88
B13 RRH 4X30	C	ce	2.000				1" Ice	2.43	1.64	92.95
		From	3.00		-20.000	116.00	No Ice	2.06	1.32	55.60
		Centroid-Fa	-2.000				1/2" Ice	2.24	1.48	72.88
B66A RRH4X45	A	ce	2.000				1" Ice	2.43	1.64	92.95
		From	3.00		-30.000	116.00	No Ice	2.54	1.61	56.80
		Centroid-Fa	2.000				1/2" Ice	2.75	1.79	76.92
B66A RRH4X45	B	ce	2.000				1" Ice	2.97	1.98	100.15
		From	3.00		-30.000	116.00	No Ice	2.54	1.61	56.80
		Centroid-Fa	2.000				1/2" Ice	2.75	1.79	76.92
B66A RRH4X45	C	ce	2.000				1" Ice	2.97	1.98	100.15
		From	3.00		-20.000	116.00	No Ice	2.54	1.61	56.80
		Centroid-Fa	2.000				1/2" Ice	2.75	1.79	76.92
(2) DB-T1-6Z-8AB-0Z	C	ce	2.000				1" Ice	2.97	1.98	100.15
		From	3.00		-20.000	116.00	No Ice	4.80	2.00	44.00
		Centroid-Fa	0.000				1/2" Ice	5.07	2.19	80.13
Platform Mount [LP 303-1]	C	ce	2.000				1" Ice	5.35	2.39	120.22
		None			0.000	116.00	No Ice	14.66	14.66	1250.00
							1/2" Ice	18.87	18.87	1481.33
						1" Ice	23.08	23.08	1712.66	
** 96' **										
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00		23.000	96.00	No Ice	5.75	4.25	55.38
			0.000				1/2" Ice	6.18	5.01	102.81
			2.000				1" Ice	6.61	5.71	156.64
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00		23.000	96.00	No Ice	5.75	4.25	55.38
			0.000				1/2" Ice	6.18	5.01	102.81
			2.000				1" Ice	6.61	5.71	156.64
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00		23.000	96.00	No Ice	5.75	4.25	55.38
			0.000				1/2" Ice	6.18	5.01	102.81
			2.000				1" Ice	6.61	5.71	156.64
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Leg	4.00		23.000	96.00	No Ice	5.23	4.02	49.05
			0.000				1/2" Ice	5.62	4.63	94.28
			2.000				1" Ice	6.01	5.26	145.44
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Leg	4.00		23.000	96.00	No Ice	5.23	4.02	49.05
			0.000				1/2" Ice	5.62	4.63	94.28
			2.000				1" Ice	6.01	5.26	145.44
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.00		23.000	96.00	No Ice	5.23	4.02	49.05
			0.000				1/2" Ice	5.62	4.63	94.28
			2.000				1" Ice	6.01	5.26	145.44
GPS_A	C	From Leg	4.00		0.000	96.00	No Ice	0.26	0.26	0.87
			0.000				1/2" Ice	0.32	0.32	4.66
			7.000				1" Ice	0.39	0.39	9.76
(2) TT19-08BP111-001	A	From Leg	4.00		23.000	96.00	No Ice	0.55	0.45	16.00
			0.000				1/2" Ice	0.65	0.53	21.80
			2.000				1" Ice	0.75	0.63	29.22
(2) TT19-08BP111-001	B	From Leg	4.00		23.000	96.00	No Ice	0.55	0.45	16.00
			0.000				1/2" Ice	0.65	0.53	21.80
			2.000				1" Ice	0.75	0.63	29.22
(2) TT19-08BP111-001	C	From Leg	4.00		23.000	96.00	No Ice	0.55	0.45	16.00

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	Project	TEP No. 25580.144059	Date	08:12:27 11/22/17
	Client	Crown Castle	Designed by	rwtscetter

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
			0.000			1/2" Ice	0.65	0.53	21.80
			2.000			1" Ice	0.75	0.63	29.22
DC6-48-60-18-8F	A	From Leg	4.00		23.000	No Ice	1.21	1.21	32.80
			0.000			1/2" Ice	1.89	1.89	54.76
			2.000			1" Ice	2.11	2.11	79.58
RRUS-11	A	From Leg	2.00		23.000	No Ice	2.79	1.19	50.00
			0.000			1/2" Ice	3.00	1.34	70.87
			2.000			1" Ice	3.21	1.50	94.78
RRUS-11	B	From Leg	2.00		23.000	No Ice	2.79	1.19	50.00
			0.000			1/2" Ice	3.00	1.34	70.87
			2.000			1" Ice	3.21	1.50	94.78
RRUS-11	C	From Leg	2.00		23.000	No Ice	2.79	1.19	50.00
			0.000			1/2" Ice	3.00	1.34	70.87
			2.000			1" Ice	3.21	1.50	94.78
RRUS 12 B2	A	From Leg	2.00		23.000	No Ice	3.14	1.28	49.38
			0.000			1/2" Ice	3.36	1.43	72.57
			2.000			1" Ice	3.59	1.60	98.95
RRUS 12 B2	B	From Leg	2.00		23.000	No Ice	3.14	1.28	49.38
			0.000			1/2" Ice	3.36	1.43	72.57
			2.000			1" Ice	3.59	1.60	98.95
RRUS 12 B2	C	From Leg	2.00		23.000	No Ice	3.14	1.28	49.38
			0.000			1/2" Ice	3.36	1.43	72.57
			2.000			1" Ice	3.59	1.60	98.95
2.4" Dia x 4-ft Mount Pipe	A	From Leg	2.00		0.000	No Ice	0.87	0.87	14.64
			0.000			1/2" Ice	1.12	1.12	22.02
			0.000			1" Ice	1.37	1.37	32.24
2.4" Dia x 4-ft Mount Pipe	B	From Leg	2.00		0.000	No Ice	0.87	0.87	14.64
			0.000			1/2" Ice	1.12	1.12	22.02
			0.000			1" Ice	1.37	1.37	32.24
2.4" Dia x 4-ft Mount Pipe	C	From Leg	2.00		0.000	No Ice	0.87	0.87	14.64
			0.000			1/2" Ice	1.12	1.12	22.02
			0.000			1" Ice	1.37	1.37	32.24
T-Arm Mount [TA 602-3]	C	None			0.000	No Ice	11.59	11.59	774.30
						1/2" Ice	15.44	15.44	990.35
						1" Ice	19.29	19.29	1206.41
** 92' **									
KS24019-L112A	C	From Leg	3.00		0.000	No Ice	0.08	0.08	5.00
			0.000			1/2" Ice	0.13	0.13	6.25
			1.000			1" Ice	0.19	0.19	8.26
2.4" x 2-ft pipe	C	From Leg	3.00		0.000	No Ice	0.35	0.35	7.32
			0.000			1/2" Ice	0.48	0.48	11.16
			0.000			1" Ice	0.64	0.64	16.61
Side Arm Mount [SO 701-1]	C	From Leg	1.50		0.000	No Ice	0.85	1.67	65.00
			0.000			1/2" Ice	1.14	2.34	79.00
			0.000			1" Ice	1.43	3.01	93.00
** 87' **									
2.4" x 2-ft pipe	B	From Leg	3.00		0.000	No Ice	0.35	0.35	7.32
			0.000			1/2" Ice	0.48	0.48	11.16
			0.000			1" Ice	0.64	0.64	16.61
2.4" x 2-ft pipe	A	From Face	3.00		0.000	No Ice	0.35	0.35	7.32
			0.000			1/2" Ice	0.48	0.48	11.16
			0.000			1" Ice	0.64	0.64	16.61
Side Arm Mount [SO 701-1]	B	From Leg	1.50		0.000	No Ice	0.85	1.67	65.00
			0.000			1/2" Ice	1.14	2.34	79.00
			0.000			1" Ice	1.43	3.01	93.00
Side Arm Mount [SO 701-1]	A	From Face	1.50		0.000	No Ice	0.85	1.67	65.00
			0.000			1/2" Ice	1.14	2.34	79.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
*****			0.000		1" Ice	1.43	3.01	93.00

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

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Comb. No.	Description
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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	160 - 155	Pole	Max Tension	42	0.00	0.00	-0.02
			Max. Compression	26	-6942.50	-0.51	30.23
			Max. Mx	8	-2546.89	-21800.77	-335.27
			Max. My	2	-2547.49	290.47	21977.93
			Max. Vy	20	-5105.61	21767.89	292.08
			Max. Vx	14	5141.28	-336.91	-21953.90
			Max. Torque	20			-335.55
L2	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9026.20	54.59	30.68
			Max. Mx	8	-3367.84	-53063.57	-657.55
			Max. My	2	-3369.77	620.73	53423.43
			Max. Vy	20	-6549.30	53039.68	618.68
			Max. Vx	14	6584.71	-655.54	-53399.43
			Max. Torque	20			-336.38
L3	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9743.18	111.75	31.15
			Max. Mx	8	-3699.09	-87266.24	-979.99
			Max. My	2	-3701.67	951.91	87807.28
			Max. Vy	20	-7138.04	87251.75	945.41
			Max. Vx	14	7173.11	-973.55	-87783.32
			Max. Torque	20			-336.36
L4	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17883.57	172.72	31.76
			Max. Mx	8	-6697.67	-144308.36	-847.35
			Max. My	2	-6725.64	828.34	144050.85
			Max. Vy	20	-12860.30	144304.14	756.23
			Max. Vx	14	12698.39	-775.24	-144027.08
			Max. Torque	10			685.94
L5	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18700.41	238.28	32.58
			Max. Mx	20	-7134.37	210128.03	599.59
			Max. My	2	-7162.88	678.20	209059.42
			Max. Vy	20	-13473.51	210128.03	599.59
			Max. Vx	14	13311.20	-606.76	-209035.65
			Max. Torque	10			685.90
L6	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19539.66	305.58	33.38
			Max. Mx	20	-7596.12	279036.98	442.65
			Max. My	2	-7624.46	529.10	277151.03
			Max. Vy	20	-14095.39	279036.98	442.65
			Max. Vx	14	13932.74	-438.02	-277127.29
			Max. Torque	10			685.77
L7	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21253.65	375.01	34.22
			Max. Mx	20	-8368.30	354796.07	286.09
			Max. My	2	-8396.93	381.86	352089.77
			Max. Vy	20	-15470.54	354796.07	286.09

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L8	125 - 117.333	Pole	Max. Vx	14	15307.34	-269.32	-352066.08
			Max. Torque	10			685.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21798.69	417.83	34.71
			Max. Mx	20	-8689.30	401768.27	192.07
			Max. My	2	-8717.57	294.14	398568.95
			Max. Vy	20	-15850.16	401768.27	192.07
			Max. Vx	14	15686.80	-167.98	-398545.28
L9	117.333 - 117	Pole	Max. Torque	10			685.53
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23547.42	489.72	35.57
			Max. Mx	20	-9721.24	482783.40	36.53
			Max. My	2	-9749.43	149.48	478759.98
			Max. Vy	20	-16557.00	482783.40	36.53
			Max. Vx	14	16392.89	0.24	-478736.38
			Max. Torque	10			685.46
L10	117 - 112	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32716.32	1517.50	-1636.59
			Max. Mx	20	-13069.66	597515.55	528.68
			Max. My	14	-13092.87	-687.87	-593427.91
			Max. Vy	20	-22548.16	597515.55	528.68
			Max. Vx	2	-22487.46	1300.74	592506.46
			Max. Torque	2			793.74
			Max Tension	1	0.00	0.00	0.00
L11	112 - 107	Pole	Max. Compression	26	-33843.71	1579.47	-1636.59
			Max. Mx	20	-13851.48	711845.32	1270.31
			Max. My	14	-13874.32	-1415.80	-707447.95
			Max. Vy	20	-23195.42	711845.32	1270.31
			Max. Vx	2	-23134.55	2053.29	706526.89
			Max. Torque	2			793.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34996.58	1642.81	-1636.59
L12	107 - 102	Pole	Max. Mx	20	-14664.72	829407.54	2012.36
			Max. My	14	-14687.14	-2144.56	-824698.99
			Max. Vy	20	-23842.75	829407.54	2012.36
			Max. Vx	2	-23781.73	2805.57	823778.80
			Max. Torque	2			792.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37653.66	1438.47	-1659.85
			Max. Mx	20	-16408.59	950537.64	2755.17
L13	102 - 97	Pole	Max. My	14	-16430.72	-3033.01	-945673.01
			Max. Vy	20	-24686.90	950537.64	2755.17
			Max. Vx	2	-24625.07	3399.33	944754.23
			Max. Torque	2			792.35
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43647.59	1483.29	-1027.64
			Max. Mx	20	-18687.60	984571.24	3127.83
			Max. My	14	-18711.94	-3239.76	-979451.70
L14	97 - 95.83	Pole	Max. Vy	20	-27912.04	984571.24	3127.83
			Max. Vx	2	-27848.67	3539.84	978960.01
			Max. Torque	16			-902.58
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43810.86	1473.05	-1012.00
			Max. Mx	20	-18810.55	991545.90	3170.03
			Max. My	14	-18835.75	-3284.41	-986411.72
			Max. Vy	20	-27961.34	991545.90	3170.03
L15	95.83 - 95.58	Pole	Max. Vx	2	-27883.66	3569.82	985929.52
			Max. Torque	16			-902.49
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47256.65	1744.44	-964.57
			Max. Mx	20	-21066.35	1134436.71	3896.11
			Max. My	14			
			Max. Vy	20			
			Max. Vx	2			
L16	95.58 - 90.58	Pole	Max. Torque	16			-902.49
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47256.65	1744.44	-964.57
			Max. Mx	20	-21066.35	1134436.71	3896.11

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L17	90.58 - 89.83	Pole	Max. My	14	-21108.54	-3966.00	-1128183.38
			Max. Vy	20	-29199.56	1134436.71	3896.11
			Max. Vx	2	-28855.49	4424.27	1127599.69
			Max. Torque	2			1097.44
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47706.24	1720.44	-910.22
			Max. Mx	20	-21369.03	1156373.54	4034.72
			Max. My	14	-21413.63	-4107.69	-1149849.62
L18	89.83 - 89.58	Pole	Max. Vy	20	-29363.83	1156373.54	4034.72
			Max. Vx	2	-28977.41	4530.60	1149295.69
			Max. Torque	2			1097.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47784.05	1721.86	-891.12
			Max. Mx	20	-21423.92	1163717.72	4081.13
			Max. My	14	-21468.67	-4148.47	-1157091.11
			L19	89.58 - 82.5	Pole	Max. Vy	20
Max. Vx	2	-29005.27				4572.58	1156547.12
Max. Torque	2						1097.17
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-48258.95				1740.00	-768.76
Max. Mx	20	-21717.51				1210323.08	4374.53
Max. My	14	-21762.56				-4406.10	-1203032.80
L20	82.5 - 81.5	Pole				Max. Vy	20
			Max. Vx	2	-29213.99	4837.17	1202552.80
			Max. Torque	2			1097.08
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51956.85	1817.31	-264.91
			Max. Mx	20	-24107.45	1406733.91	5407.80
			Max. My	14	-24151.18	-5291.53	-1396713.90
			L21	81.5 - 76.5	Pole	Max. Vy	20
Max. Vx	2	-30316.15				5751.83	1396497.78
Max. Torque	2						1097.62
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-53688.39				1885.67	127.23
Max. Mx	20	-25343.72				1561917.02	6179.55
Max. My	14	-25385.23				-5948.70	-1549699.81
L22	76.5 - 74.25	Pole				Max. Vy	20
			Max. Vx	2	-30945.52	6429.63	1549690.77
			Max. Torque	2			1097.52
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54495.25	1902.08	291.35
			Max. Mx	20	-25908.24	1632805.12	6527.18
			Max. My	2	-25948.70	6734.05	1619651.16
			Max. Vy	20	-31669.81	1632805.12	6527.18
L23	74.25 - 74	Pole	Max. Vx	2	-31227.60	6734.05	1619651.16
			Max. Torque	2			1096.99
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54598.09	1903.63	309.22
			Max. Mx	20	-25997.06	1640723.77	6565.90
			Max. My	2	-26037.21	6767.97	1627463.81
			Max. Vy	20	-31694.41	1640723.77	6565.90
			Max. Vx	2	-31249.44	6767.97	1627463.81
L24	74 - 69	Pole	Max. Torque	2			1096.81
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56666.55	1930.95	669.65

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	20	-27478.91	1800954.84	7339.45
			Max. My	2	-27519.34	7443.58	1785435.70
			Max. Vy	20	-32411.18	1800954.84	7339.45
			Max. Vx	2	-31912.71	7443.58	1785435.70
			Max. Torque	2			1096.77
L25	69 - 64	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58762.46	1958.81	1036.37
			Max. Mx	20	-29003.71	1964688.43	8114.44
			Max. My	2	-29043.30	8118.01	1946660.97
			Max. Vy	20	-33103.79	1964688.43	8114.44
			Max. Vx	2	-32558.22	8118.01	1946660.97
			Max. Torque	2			1096.38
L26	64 - 59	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60885.30	1986.98	1409.12
			Max. Mx	20	-30560.16	2131836.93	8890.47
			Max. My	2	-30598.12	8790.88	2111083.37
			Max. Vy	20	-33778.66	2131836.93	8890.47
			Max. Vx	2	-33192.20	8790.88	2111083.37
			Max. Torque	2			1096.02
L27	59 - 55.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62342.54	2003.40	1755.56
			Max. Mx	20	-31587.77	2242284.34	9395.31
			Max. My	2	-31624.51	9227.31	2219646.45
			Max. Vy	20	-34213.82	2242284.34	9395.31
			Max. Vx	2	-33598.41	9227.31	2219646.45
			Max. Torque	2			1095.67
L28	55.75 - 55.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62477.43	2004.78	1785.84
			Max. Mx	20	-31698.86	2250839.05	9434.20
			Max. My	2	-31735.18	9260.89	2228052.33
			Max. Vy	20	-34238.25	2250839.05	9434.20
			Max. Vx	2	-33620.61	9260.89	2228052.33
			Max. Torque	2			1095.49
L29	55.5 - 50.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65181.31	2028.67	2396.44
			Max. Mx	20	-33660.47	2423767.43	10211.93
			Max. My	2	-33695.64	9931.39	2397891.50
			Max. Vy	20	-34945.34	2423767.43	10211.93
			Max. Vx	2	-34284.25	9931.39	2397891.50
			Max. Torque	2			1095.46
L30	50.5 - 47.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66680.88	2041.95	2736.55
			Max. Mx	20	-34753.81	2520357.73	10640.28
			Max. My	2	-34788.10	10299.75	2492694.66
			Max. Vy	20	-35325.54	2520357.73	10640.28
			Max. Vx	2	-34643.14	10299.75	2492694.66
			Max. Torque	2			1095.23
L31	47.75 - 47.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66785.38	2043.24	2767.62
			Max. Mx	20	-34836.57	2529189.37	10679.23
			Max. My	2	-34870.31	10333.14	2501360.98
			Max. Vy	20	-35344.82	2529189.37	10679.23
			Max. Vx	2	-34660.73	10333.14	2501360.98
			Max. Torque	2			1095.14
L32	47.5 - 40.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66997.12	2047.98	2832.80
			Max. Mx	20	-34975.72	2546874.37	10757.27
			Max. My	2	-35009.22	10399.99	2518713.66
			Max. Vy	20	-35407.51	2546874.37	10757.27
			Max. Vx	2	-34717.82	10399.99	2518713.66
			Max. Torque	2			1095.11

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L33	40.5833 - 39.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73300.88	2123.22	3803.83
			Max. Mx	20	-39548.31	2813611.30	11915.32
			Max. My	2	-39581.18	11392.92	2780180.08
			Max. Vy	20	-36525.25	2813611.30	11915.32
			Max. Vx	2	-35745.64	11392.92	2780180.08
			Max. Torque	2			1094.92
L34	39.5833 - 34.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76308.67	2190.79	4477.94
			Max. Mx	20	-41792.71	2997842.49	12696.44
			Max. My	2	-41823.72	12060.94	2960446.34
			Max. Vy	20	-37190.01	2997842.49	12696.44
			Max. Vx	2	-36338.22	12060.94	2960446.34
			Max. Torque	2			1094.88
L35	34.5833 - 29.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79296.13	2258.20	5076.86
			Max. Mx	20	-44070.96	3185306.73	13478.15
			Max. My	2	-44099.34	12727.22	3143605.41
			Max. Vy	20	-37819.76	3185306.73	13478.15
			Max. Vx	2	-36903.17	12727.22	3143605.41
			Max. Torque	2			1094.71
L36	29.5833 - 29.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79490.66	2262.75	5105.91
			Max. Mx	20	-44232.36	3197916.08	13530.27
			Max. My	2	-44260.25	12771.53	3155916.31
			Max. Vy	20	-37851.81	3197916.08	13530.27
			Max. Vx	2	-36931.25	12771.53	3155916.31
			Max. Torque	2			1094.57
L37	29.25 - 29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79600.47	2263.93	5125.53
			Max. Mx	20	-44316.30	3207381.21	13569.36
			Max. My	2	-44343.90	12804.76	3165157.00
			Max. Vy	20	-37877.08	3207381.21	13569.36
			Max. Vx	2	-36955.58	12804.76	3165157.00
			Max. Torque	2			1094.56
L38	29 - 28.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79736.68	2265.15	5145.15
			Max. Mx	20	-44425.89	3216852.83	13608.46
			Max. My	2	-44453.23	12838.01	3174403.93
			Max. Vy	20	-37903.35	3216852.83	13608.46
			Max. Vx	2	-36980.91	12838.01	3174403.93
			Max. Torque	2			1094.55
L39	28.75 - 23.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82467.37	2288.62	5538.94
			Max. Mx	20	-46593.40	3407737.67	14390.20
			Max. My	2	-46616.70	13501.62	3360751.58
			Max. Vy	20	-38467.92	3407737.67	14390.20
			Max. Vx	2	-37528.37	13501.62	3360751.58
			Max. Torque	2			1094.53
L40	23.75 - 18.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85218.25	2311.84	5934.34
			Max. Mx	20	-48801.64	3601379.09	15171.59
			Max. My	2	-48820.27	14162.58	3549784.12
			Max. Vy	20	-39017.96	3601379.09	15171.59
			Max. Vx	2	-38065.79	14162.58	3549784.12
			Max. Torque	2			1094.39
L41	18.75 - 13.75	Pole	Max Tension	1	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L42	13.75 - 13	Pole	Max. Compression	26	-87995.41	2345.01	6340.17
			Max. Mx	20	-51040.54	3797784.18	15952.36
			Max. My	2	-51054.35	14820.72	3741504.70
			Max. Vy	20	-39574.60	3797784.18	15952.36
			Max. Vx	2	-38603.85	14820.72	3741504.70
			Max. Torque	2			1094.27
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88418.03	2354.48	6405.43
			Max. Mx	20	-51382.96	3827486.44	16069.40
			Max. My	2	-51395.94	14919.15	3770494.87
L43	13 - 12.75	Pole	Max. Vy	20	-39658.17	3827486.44	16069.40
			Max. Vx	2	-38680.42	14919.15	3770494.87
			Max. Torque	2			1094.19
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88577.35	2357.67	6427.16
			Max. Mx	20	-51520.82	3837402.00	16108.40
			Max. My	2	-51533.32	14951.92	3780171.90
			Max. Vy	20	-39679.82	3837402.00	16108.40
			Max. Vx	2	-38699.86	14951.92	3780171.90
			Max. Torque	2			1094.18
L44	12.75 - 8.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91439.33	2412.87	6815.48
			Max. Mx	20	-53871.51	4017176.73	16810.41
			Max. My	2	-53880.55	15541.46	3955558.08
			Max. Vy	20	-40238.72	4017176.73	16810.41
			Max. Vx	2	-39218.16	15541.46	3955558.08
			Max. Torque	2			1094.17
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91597.78	2415.88	6836.82
			Max. Mx	20	-54013.59	4027236.10	16849.38
L45	8.25 - 8	Pole	Max. My	2	-54021.98	15574.06	3965368.37
			Max. Vy	20	-40254.97	4027236.10	16849.38
			Max. Vx	2	-39232.49	15574.06	3965368.37
			Max. Torque	2			1094.14
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94734.72	2457.63	7240.23
			Max. Mx	20	-56649.92	4229930.14	17628.52
			Max. My	2	-56653.64	16226.05	4163017.20
			Max. Vy	20	-40841.22	4229930.14	17628.52
			Max. Vx	2	-39794.72	16226.05	4163017.20
L46	8 - 3	Pole	Max. Torque	2			1094.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96562.44	2481.36	7466.99
			Max. Mx	20	-58255.26	4352894.38	18095.41
			Max. My	2	-58255.80	16615.59	4282922.19
			Max. Vy	20	-41167.42	4352894.38	18095.41
			Max. Vx	2	-40122.63	16615.59	4282922.19
			Max. Torque	2			1094.10
			Max. Compression	26	-96562.44	2481.36	7466.99
			Max. Mx	20	-58255.26	4352894.38	18095.41
L47	3 - 0	Pole	Max. My	2	-58255.80	16615.59	4282922.19
			Max. Vy	20	-41167.42	4352894.38	18095.41
			Max. Vx	2	-40122.63	16615.59	4282922.19
			Max. Torque	2			1094.10
			Max. Compression	26	-96562.44	2481.36	7466.99
			Max. Mx	20	-58255.26	4352894.38	18095.41
			Max. My	2	-58255.80	16615.59	4282922.19
			Max. Vy	20	-41167.42	4352894.38	18095.41
			Max. Vx	2	-40122.63	16615.59	4282922.19
			Max. Torque	2			1094.10

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	96562.44	0.00	0.00
	Max. H _x	20	58268.34	41148.91	128.01
	Max. H _z	2	58268.34	128.01	40104.41

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. M _x	2	4282922.19	128.01	40104.41
	Max. M _z	8	4352125.87	-41148.91	-128.01
	Max. Torsion	2	1094.10	128.01	40104.41
	Min. Vert	19	43701.26	34380.53	-19778.48
	Min. H _x	8	58268.34	-41148.91	-128.01
	Min. H _z	14	58268.34	-128.01	-40104.41
	Min. M _x	14	-4279201.35	-128.01	-40104.41
	Min. M _z	20	-4352894.38	41148.91	128.01
	Min. Torsion	14	-1091.09	-128.01	-40104.41

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	48556.95	0.00	0.00	-1526.62	305.25	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	58268.34	-128.01	-40104.41	-4282922.19	16615.50	-1094.10
0.9 Dead+1.6 Wind 0 deg - No Ice	43701.26	-128.01	-40104.41	-4244087.82	16371.33	-1090.13
1.2 Dead+1.6 Wind 30 deg - No Ice	58268.34	19775.70	-34385.34	-3673513.29	-2112551.92	-1022.13
0.9 Dead+1.6 Wind 30 deg - No Ice	43701.26	19775.70	-34385.34	-3640085.12	-2093661.22	-1023.08
1.2 Dead+1.6 Wind 60 deg - No Ice	58268.34	34380.53	-19778.48	-2112305.08	-3675544.62	-686.17
0.9 Dead+1.6 Wind 60 deg - No Ice	43701.26	34380.53	-19778.48	-2092891.36	-3642608.44	-691.62
1.2 Dead+1.6 Wind 90 deg - No Ice	58268.34	41148.91	128.01	14377.94	-4352125.87	-209.99
0.9 Dead+1.6 Wind 90 deg - No Ice	43701.26	41148.91	128.01	14702.70	-4313407.00	-218.43
1.2 Dead+1.6 Wind 120 deg - No Ice	58268.34	34508.55	20000.20	2136672.91	-3691716.06	378.01
0.9 Dead+1.6 Wind 120 deg - No Ice	43701.26	34508.55	20000.20	2117949.65	-3658637.08	369.00
1.2 Dead+1.6 Wind 150 deg - No Ice	58268.34	19997.43	34513.35	3685965.99	-2140637.26	841.89
0.9 Dead+1.6 Wind 150 deg - No Ice	43701.26	19997.43	34513.35	3653336.57	-2121495.82	834.50
1.2 Dead+1.6 Wind 180 deg - No Ice	58268.34	128.01	40104.41	4279201.35	-15858.73	1091.09
0.9 Dead+1.6 Wind 180 deg - No Ice	43701.26	128.01	40104.41	4241309.00	-15811.22	1087.12
1.2 Dead+1.6 Wind 210 deg - No Ice	58268.34	-19775.70	34385.34	3669798.19	2113310.51	1049.05
0.9 Dead+1.6 Wind 210 deg - No Ice	43701.26	-19775.70	34385.34	3637310.50	2094222.64	1049.59
1.2 Dead+1.6 Wind 240 deg - No Ice	58268.34	-34380.53	19778.48	2108591.43	3676309.09	715.85
0.9 Dead+1.6 Wind 240 deg - No Ice	43701.26	-34380.53	19778.48	2090117.83	3643174.16	720.91
1.2 Dead+1.6 Wind 270 deg - No Ice	58268.34	-41148.91	-128.01	-18095.39	4352894.38	212.93
0.9 Dead+1.6 Wind 270 deg - No Ice	43701.26	-41148.91	-128.01	-17478.99	4313975.70	221.38
1.2 Dead+1.6 Wind 300 deg - No Ice	58268.34	-34508.55	-20000.20	-2140396.70	3692482.90	-405.17

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Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
No Ice						
0.9 Dead+1.6 Wind 300 deg - No Ice	43701.26	-34508.55	-20000.20	-2120730.58	3659204.59	-395.75
1.2 Dead+1.6 Wind 330 deg - No Ice	58268.34	-19997.43	-34513.35	-3689691.24	2141398.23	-871.83
0.9 Dead+1.6 Wind 330 deg - No Ice	43701.26	-19997.43	-34513.35	-3656118.60	2122059.04	-864.02
1.2 Dead+1.0 Ice+1.0 Temp	96562.44	-0.00	-0.00	-7466.99	2481.36	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	96562.44	-29.12	-8117.17	-934738.82	6895.25	-293.21
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	96562.44	3951.76	-6900.62	-796807.51	-448772.48	-213.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	96562.44	6873.77	-3967.26	-460878.29	-783473.61	-75.75
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	96562.44	8194.01	29.12	-3532.30	-924444.98	68.49
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	96562.44	6902.90	4017.70	452684.36	-787686.47	216.20
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	96562.44	4002.20	6929.74	785529.32	-456070.14	292.71
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	96562.44	29.12	8117.17	919248.57	-1531.44	291.20
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	96562.44	-3951.76	6900.62	781317.25	454136.99	212.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	96562.44	-6873.77	3967.26	445387.49	788838.49	76.39
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	96562.44	-8194.01	-29.12	-11959.00	929809.52	-67.12
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	96562.44	-6902.90	-4017.70	-468175.78	793050.37	-215.82
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	96562.44	-4002.20	-6929.74	-801020.19	461433.68	-293.99
Dead+Wind 0 deg - Service	48556.95	-23.37	-7323.04	-779586.44	3269.53	-200.83
Dead+Wind 30 deg - Service	48556.95	3611.03	-6278.74	-668817.64	-383673.84	-190.58
Dead+Wind 60 deg - Service	48556.95	6277.86	-3611.54	-385092.65	-667726.52	-129.59
Dead+Wind 90 deg - Service	48556.95	7513.77	23.37	1402.67	-790740.59	-34.19
Dead+Wind 120 deg - Service	48556.95	6301.24	3652.02	387107.13	-670676.76	70.24
Dead+Wind 150 deg - Service	48556.95	3651.52	6302.12	668671.89	-388784.28	156.23
Dead+Wind 180 deg - Service	48556.95	23.37	7323.04	776490.39	-2631.79	200.72
Dead+Wind 210 deg - Service	48556.95	-3611.03	6278.74	665721.75	384311.63	191.45
Dead+Wind 240 deg - Service	48556.95	-6277.86	3611.54	381996.80	668364.47	130.56
Dead+Wind 270 deg - Service	48556.95	-7513.77	-23.37	-4498.64	791378.66	34.29
Dead+Wind 300 deg - Service	48556.95	-6301.24	-3652.02	-390203.26	671314.78	-71.13
Dead+Wind 330 deg - Service	48556.95	-3651.52	-6302.12	-671768.06	389422.14	-157.22

Solution Summary

Load Comb.	Sum of Applied Forces				Sum of Reactions		% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-48556.95	0.00	0.00	48556.95	0.00	0.000%
2	-128.01	-58268.34	-40104.41	128.01	58268.34	40104.41	0.000%
3	-128.01	-43701.26	-40104.41	128.01	43701.26	40104.41	0.000%
4	19775.70	-58268.34	-34385.34	-19775.70	58268.34	34385.34	0.000%
5	19775.70	-43701.26	-34385.34	-19775.70	43701.26	34385.34	0.000%
6	34380.53	-58268.34	-19778.48	-34380.53	58268.34	19778.48	0.000%
7	34380.53	-43701.26	-19778.48	-34380.53	43701.26	19778.48	0.000%
8	41148.91	-58268.34	128.01	-41148.91	58268.34	-128.01	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
9	41148.91	-43701.26	128.01	-41148.91	43701.26	-128.01	0.000%
10	34508.55	-58268.34	20000.20	-34508.55	58268.34	-20000.20	0.000%
11	34508.55	-43701.26	20000.20	-34508.55	43701.26	-20000.20	0.000%
12	19997.43	-58268.34	34513.35	-19997.43	58268.34	-34513.35	0.000%
13	19997.43	-43701.26	34513.35	-19997.43	43701.26	-34513.35	0.000%
14	128.01	-58268.34	40104.41	-128.01	58268.34	-40104.41	0.000%
15	128.01	-43701.26	40104.41	-128.01	43701.26	-40104.41	0.000%
16	-19775.70	-58268.34	34385.34	19775.70	58268.34	-34385.34	0.000%
17	-19775.70	-43701.26	34385.34	19775.70	43701.26	-34385.34	0.000%
18	-34380.53	-58268.34	19778.48	34380.53	58268.34	-19778.48	0.000%
19	-34380.53	-43701.26	19778.48	34380.53	43701.26	-19778.48	0.000%
20	-41148.91	-58268.34	-128.01	41148.91	58268.34	128.01	0.000%
21	-41148.91	-43701.26	-128.01	41148.91	43701.26	128.01	0.000%
22	-34508.55	-58268.34	-20000.20	34508.55	58268.34	20000.20	0.000%
23	-34508.55	-43701.26	-20000.20	34508.55	43701.26	20000.20	0.000%
24	-19997.43	-58268.34	-34513.35	19997.43	58268.34	34513.35	0.000%
25	-19997.43	-43701.26	-34513.35	19997.43	43701.26	34513.35	0.000%
26	0.00	-96562.44	0.00	0.00	96562.44	0.00	0.000%
27	-29.12	-96562.44	-8117.16	29.12	96562.44	8117.17	0.000%
28	3951.75	-96562.44	-6900.61	-3951.76	96562.44	6900.62	0.000%
29	6873.76	-96562.44	-3967.25	-6873.77	96562.44	3967.26	0.000%
30	8194.00	-96562.44	29.12	-8194.01	96562.44	-29.12	0.000%
31	6902.89	-96562.44	4017.70	-6902.90	96562.44	-4017.70	0.000%
32	4002.20	-96562.44	6929.73	-4002.20	96562.44	-6929.74	0.000%
33	29.12	-96562.44	8117.16	-29.12	96562.44	-8117.17	0.000%
34	-3951.75	-96562.44	6900.61	3951.76	96562.44	-6900.62	0.000%
35	-6873.76	-96562.44	3967.25	6873.77	96562.44	-3967.26	0.000%
36	-8194.00	-96562.44	-29.12	8194.01	96562.44	29.12	0.000%
37	-6902.89	-96562.44	-4017.70	6902.90	96562.44	4017.70	0.000%
38	-4002.20	-96562.44	-6929.73	4002.20	96562.44	6929.74	0.000%
39	-23.37	-48556.95	-7323.04	23.37	48556.95	7323.04	0.000%
40	3611.03	-48556.95	-6278.74	-3611.03	48556.95	6278.74	0.000%
41	6277.86	-48556.95	-3611.54	-6277.86	48556.95	3611.54	0.000%
42	7513.76	-48556.95	23.37	-7513.77	48556.95	-23.37	0.000%
43	6301.24	-48556.95	3652.02	-6301.24	48556.95	-3652.02	0.000%
44	3651.52	-48556.95	6302.12	-3651.52	48556.95	-6302.12	0.000%
45	23.37	-48556.95	7323.04	-23.37	48556.95	-7323.04	0.000%
46	-3611.03	-48556.95	6278.74	3611.03	48556.95	-6278.74	0.000%
47	-6277.86	-48556.95	3611.54	6277.86	48556.95	-3611.54	0.000%
48	-7513.76	-48556.95	-23.37	7513.77	48556.95	23.37	0.000%
49	-6301.24	-48556.95	-3652.02	6301.24	48556.95	3652.02	0.000%
50	-3651.52	-48556.95	-6302.12	3651.52	48556.95	6302.12	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00027036
3	Yes	5	0.00000001	0.00011741
4	Yes	6	0.00000001	0.00027681
5	Yes	6	0.00000001	0.00008483
6	Yes	6	0.00000001	0.00028423
7	Yes	6	0.00000001	0.00008741
8	Yes	5	0.00000001	0.00011275
9	Yes	5	0.00000001	0.00003884

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10	Yes	6	0.00000001	0.00028637
11	Yes	6	0.00000001	0.00008768
12	Yes	6	0.00000001	0.00028155
13	Yes	6	0.00000001	0.00008603
14	Yes	5	0.00000001	0.00015604
15	Yes	5	0.00000001	0.00006302
16	Yes	6	0.00000001	0.00028524
17	Yes	6	0.00000001	0.00008779
18	Yes	6	0.00000001	0.00027821
19	Yes	6	0.00000001	0.00008528
20	Yes	5	0.00000001	0.00015701
21	Yes	5	0.00000001	0.00006255
22	Yes	6	0.00000001	0.00028392
23	Yes	6	0.00000001	0.00008680
24	Yes	6	0.00000001	0.00028835
25	Yes	6	0.00000001	0.00008836
26	Yes	4	0.00000001	0.00011497
27	Yes	6	0.00000001	0.00037501
28	Yes	6	0.00000001	0.00040906
29	Yes	6	0.00000001	0.00040873
30	Yes	6	0.00000001	0.00037108
31	Yes	6	0.00000001	0.00041154
32	Yes	6	0.00000001	0.00041131
33	Yes	6	0.00000001	0.00037292
34	Yes	6	0.00000001	0.00041072
35	Yes	6	0.00000001	0.00041003
36	Yes	6	0.00000001	0.00037469
37	Yes	6	0.00000001	0.00041658
38	Yes	6	0.00000001	0.00041785
39	Yes	4	0.00000001	0.00052628
40	Yes	5	0.00000001	0.00006242
41	Yes	5	0.00000001	0.00006673
42	Yes	4	0.00000001	0.00049827
43	Yes	5	0.00000001	0.00006679
44	Yes	5	0.00000001	0.00006407
45	Yes	4	0.00000001	0.00051785
46	Yes	5	0.00000001	0.00006751
47	Yes	5	0.00000001	0.00006308
48	Yes	4	0.00000001	0.00050084
49	Yes	5	0.00000001	0.00006548
50	Yes	5	0.00000001	0.00006834

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	19.725	48	1.116	0.001
L2	155 - 150	18.557	48	1.114	0.001
L3	150 - 145	17.394	48	1.106	0.001
L4	145 - 140	16.242	48	1.092	0.001
L5	140 - 135	15.108	48	1.073	0.001
L6	135 - 130	13.998	48	1.046	0.001
L7	130 - 125	12.920	48	1.011	0.001
L8	125 - 117.333	11.882	48	0.971	0.001
L9	122 - 117	11.279	48	0.945	0.001
L10	117 - 112	10.301	48	0.922	0.001
L11	112 - 107	9.358	48	0.879	0.001
L12	107 - 102	8.463	48	0.831	0.001
L13	102 - 97	7.620	48	0.779	0.001

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L14	97 - 95.83	6.832	48	0.724	0.000
L15	95.83 - 90.58	6.657	48	0.711	0.000
L16	95.58 - 90.58	6.619	48	0.709	0.000
L17	90.58 - 89.83	5.899	48	0.665	0.000
L18	89.83 - 89.58	5.795	48	0.659	0.000
L19	89.58 - 82.5	5.761	48	0.656	0.000
L20	88 - 81.5	5.547	48	0.636	0.000
L21	81.5 - 76.5	4.706	48	0.596	0.000
L22	76.5 - 74.25	4.109	48	0.544	0.000
L23	74.25 - 74	3.858	48	0.520	0.000
L24	74 - 69	3.831	48	0.518	0.000
L25	69 - 64	3.310	48	0.476	0.000
L26	64 - 59	2.834	48	0.433	0.000
L27	59 - 55.75	2.403	48	0.389	0.000
L28	55.75 - 55.5	2.148	48	0.361	0.000
L29	55.5 - 50.5	2.129	48	0.359	0.000
L30	50.5 - 47.75	1.770	48	0.326	0.000
L31	47.75 - 47.5	1.588	48	0.307	0.000
L32	47.5 - 40.5833	1.572	48	0.305	0.000
L33	47 - 39.5833	1.540	48	0.299	0.000
L34	39.5833 - 34.5833	1.099	48	0.266	0.000
L35	34.5833 - 29.5833	0.837	48	0.234	0.000
L36	29.5833 - 29.25	0.609	48	0.201	0.000
L37	29.25 - 29	0.595	48	0.199	0.000
L38	29 - 28.75	0.584	48	0.197	0.000
L39	28.75 - 23.75	0.574	48	0.195	0.000
L40	23.75 - 18.75	0.389	48	0.159	0.000
L41	18.75 - 13.75	0.240	48	0.124	0.000
L42	13.75 - 13	0.129	48	0.089	0.000
L43	13 - 12.75	0.115	48	0.083	0.000
L44	12.75 - 8.25	0.111	48	0.082	0.000
L45	8.25 - 8	0.047	48	0.054	0.000
L46	8 - 3	0.044	48	0.053	0.000
L47	3 - 0	0.006	48	0.020	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	APXVSPP18-C-A20 w/ Mount Pipe	48	19.491	1.116	0.001	54285
155.00	800MHz 2X50W RRH W/FILTER	48	18.557	1.114	0.001	54285
142.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	15.559	1.082	0.001	13958
130.00	APXV18-206517S-ACU	48	12.920	1.011	0.001	7712
116.00	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	48	10.109	0.915	0.001	7970
96.00	(2) 7770.00 w/ Mount Pipe	48	6.682	0.713	0.000	5769
92.00	KS24019-L112A	48	6.099	0.678	0.000	6274
87.00	2.4" x 2-ft pipe	48	5.414	0.627	0.000	7629

Maximum Tower Deflections - Design Wind

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	108.474	20	6.147	0.006
L2	155 - 150	102.053	20	6.134	0.006
L3	150 - 145	95.662	20	6.089	0.005
L4	145 - 140	89.334	20	6.015	0.005
L5	140 - 135	83.098	20	5.908	0.004
L6	135 - 130	76.998	20	5.757	0.004
L7	130 - 125	71.075	20	5.568	0.004
L8	125 - 117.333	65.366	20	5.348	0.004
L9	122 - 117	62.056	20	5.201	0.004
L10	117 - 112	56.677	20	5.076	0.004
L11	112 - 107	51.490	20	4.837	0.004
L12	107 - 102	46.567	20	4.573	0.003
L13	102 - 97	41.930	20	4.288	0.003
L14	97 - 95.83	37.599	20	3.988	0.003
L15	95.83 - 95.58	36.632	20	3.916	0.003
L16	95.58 - 90.58	36.427	20	3.904	0.003
L17	90.58 - 89.83	32.466	20	3.664	0.002
L18	89.83 - 89.58	31.894	20	3.627	0.002
L19	89.58 - 82.5	31.705	20	3.610	0.002
L20	88 - 81.5	30.528	20	3.504	0.002
L21	81.5 - 76.5	25.897	20	3.280	0.002
L22	76.5 - 74.25	22.612	20	2.995	0.002
L23	74.25 - 74	21.232	20	2.865	0.002
L24	74 - 69	21.082	20	2.853	0.002
L25	69 - 64	18.216	20	2.622	0.001
L26	64 - 59	15.595	20	2.385	0.001
L27	59 - 55.75	13.224	20	2.144	0.001
L28	55.75 - 55.5	11.819	20	1.987	0.001
L29	55.5 - 50.5	11.715	20	1.977	0.001
L30	50.5 - 47.75	9.740	20	1.794	0.001
L31	47.75 - 47.5	8.737	20	1.693	0.001
L32	47.5 - 40.5833	8.648	20	1.677	0.001
L33	47 - 39.5833	8.474	20	1.646	0.001
L34	39.5833 - 34.5833	6.047	20	1.466	0.001
L35	34.5833 - 29.5833	4.605	20	1.289	0.000
L36	29.5833 - 29.25	3.350	20	1.109	0.000
L37	29.25 - 29	3.273	20	1.097	0.000
L38	29 - 28.75	3.216	20	1.083	0.000
L39	28.75 - 23.75	3.159	20	1.073	0.000
L40	23.75 - 18.75	2.138	20	0.877	0.000
L41	18.75 - 13.75	1.322	20	0.682	0.000
L42	13.75 - 13	0.710	20	0.488	0.000
L43	13 - 12.75	0.635	20	0.459	0.000
L44	12.75 - 8.25	0.611	20	0.451	0.000
L45	8.25 - 8	0.258	20	0.298	0.000
L46	8 - 3	0.243	20	0.289	0.000
L47	3 - 0	0.034	20	0.109	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.00	APXVSP18-C-A20 w/ Mount Pipe	20	107.189	6.146	0.006	10122
155.00	800MHz 2X50W RRH W/FILTER	20	102.053	6.134	0.006	10122
142.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	20	85.579	5.956	0.005	2597

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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
130.00	APXV18-206517S-ACU	20	71.075	5.568	0.004	1426
116.00	(2) LPA-80063-4CF-EDIN-5 w/ Mount Pipe	20	55.622	5.040	0.004	1470
96.00	(2) 7770.00 w/ Mount Pipe	20	36.771	3.925	0.003	1057
92.00	KS24019-L112A	20	33.565	3.730	0.002	1149
87.00	2.4" x 2-ft pipe	20	29.795	3.452	0.002	1396

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio P _u /φP _n
	ft		ft	ft		in ²	lb	lb	
L1	160 - 155 (1)	TP23.3x22.35x0.219	5.00	0.00	0.0	16.258	-2542.62	1119430.00	0.002
L2	155 - 150 (2)	TP24.251x23.3x0.219	5.00	0.00	0.0	16.928	-3364.78	1146170.00	0.003
L3	150 - 145 (3)	TP25.201x24.251x0.219	5.00	0.00	0.0	17.597	-3696.79	1171390.00	0.003
L4	145 - 140 (4)	TP26.152x25.201x0.219	5.00	0.00	0.0	18.266	-6713.97	1195070.00	0.006
L5	140 - 135 (5)	TP27.102x26.152x0.219	5.00	0.00	0.0	18.936	-7151.50	1217230.00	0.006
L6	135 - 130 (6)	TP28.052x27.102x0.219	5.00	0.00	0.0	19.605	-7596.12	1237850.00	0.006
L7	130 - 125 (7)	TP29.003x28.052x0.219	5.00	0.00	0.0	20.275	-8368.30	1256950.00	0.007
L8	125 - 117.333 (8)	TP30.46x29.003x0.219	7.67	0.00	0.0	20.676	-8689.30	1267670.00	0.007
L9	117.333 - 117 (9)	TP30.085x29.135x0.281	5.00	0.00	0.0	26.991	-9721.24	1855220.00	0.005
L10	117 - 112 (10)	TP31.035x30.085x0.281	5.00	0.00	0.0	27.852	-13069.70	1889600.00	0.007
L11	112 - 107 (11)	TP31.985x31.035x0.281	5.00	0.00	0.0	28.712	-13851.50	1922460.00	0.007
L12	107 - 102 (12)	TP32.935x31.985x0.281	5.00	0.00	0.0	29.572	-14674.00	1953790.00	0.008
L13	102 - 97 (13)	TP33.885x32.935x0.281	5.00	0.00	0.0	30.433	-16429.10	1983580.00	0.008
L14	97 - 95.83 (14)	TP34.107x33.885x0.281	1.17	0.00	0.0	30.634	-18712.00	1990340.00	0.009
L15	95.83 - 95.58 (15)	TP34.155x34.107x0.381	0.25	0.00	0.0	41.461	-18836.40	3039410.00	0.006
L16	95.58 - 90.58 (16)	TP35.105x34.155x0.381	5.00	0.00	0.0	42.628	-21066.30	3096950.00	0.007
L17	90.58 - 89.83 (17)	TP35.247x35.105x0.375	0.75	0.00	0.0	42.108	-21369.00	3038020.00	0.007
L18	89.83 - 89.58 (18)	TP35.295x35.247x0.281	0.25	0.00	0.0	31.709	-21423.90	2024990.00	0.011
L19	89.58 - 82.5 (19)	TP36.64x35.295x0.281	7.08	0.00	0.0	31.981	-21717.50	2033370.00	0.011
L20	82.5 - 81.5 (20)	TP36.266x35.033x0.375	6.50	0.00	0.0	43.338	-24107.40	3095790.00	0.008
L21	81.5 - 76.5 (21)	TP37.215x36.266x0.375	5.00	0.00	0.0	44.484	-25343.70	3148020.00	0.008
L22	76.5 - 74.25 (22)	TP37.642x37.215x0.375	2.25	0.00	0.0	45.000	-25908.20	3171030.00	0.008
L23	74.25 - 74 (23)	TP37.689x37.642x0.488	0.25	0.00	0.0	58.397	-25997.10	4304460.00	0.006
L24	74 - 69 (24)	TP38.638x37.689x0.481	5.00	0.00	0.0	59.128	-27478.90	4358360.00	0.006
L25	69 - 64 (25)	TP39.587x38.638x0.475	5.00	0.00	0.0	59.821	-29003.70	4409420.00	0.007
L26	64 - 59 (26)	TP40.535x39.587x0.475	5.00	0.00	0.0	61.272	-30560.20	4516390.00	0.007
L27	59 - 55.75 (27)	TP41.152x40.535x0.475	3.25	0.00	0.0	62.216	-31587.80	4585910.00	0.007
L28	55.75 - 55.5 (28)	TP41.2x41.152x0.638	0.25	0.00	0.0	83.264	-31698.90	6137370.00	0.005
L29	55.5 - 50.5 (29)	TP42.148x41.2x0.638	5.00	0.00	0.0	85.211	-33660.50	6280920.00	0.005
L30	50.5 - 47.75 (30)	TP42.67x42.148x0.638	2.75	0.00	0.0	86.282	-34753.80	6359880.00	0.005

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
L31	47.75 - 47.5 (31)	TP42.718x42.67x0.375	0.25	0.00	0.0	51.129	-34836.60	3420880.00	0.010
L32	47.5 - 40.5833 (32)	TP44.03x42.718x0.375	6.92	0.00	0.0	51.243	-34975.70	3425130.00	0.010
L33	40.5833 - 39.5833 (33)	TP43.473x42.062x0.7	7.42	0.00	0.0	96.410	-39548.30	7106370.00	0.006
L34	39.5833 - 34.5833 (34)	TP44.424x43.473x0.7	5.00	0.00	0.0	98.553	-41792.70	7264340.00	0.006
L35	34.5833 - 29.5833 (35)	TP45.374x44.424x0.688	5.00	0.00	0.0	98.926	-44071.00	7291810.00	0.006
L36	29.5833 - 29.25 (36)	TP45.438x45.374x0.688	0.33	0.00	0.0	99.066	-44232.40	7302150.00	0.006
L37	29.25 - 29 (37)	TP45.485x45.438x0.438	0.25	0.00	0.0	63.461	-44316.30	4412070.00	0.010
L38	29 - 28.75 (38)	TP45.533x45.485x0.638	0.25	0.00	0.0	92.159	-44425.90	6793040.00	0.007
L39	28.75 - 23.75 (39)	TP46.484x45.533x0.625	5.00	0.00	0.0	92.291	-46593.40	6802740.00	0.007
L40	23.75 - 18.75 (40)	TP47.434x46.484x0.625	5.00	0.00	0.0	94.204	-48801.60	6943780.00	0.007
L41	18.75 - 13.75 (41)	TP48.385x47.434x0.625	5.00	0.00	0.0	96.118	-51040.50	7084830.00	0.007
L42	13.75 - 13 (42)	TP48.528x48.385x0.625	0.75	0.00	0.0	96.405	-51383.00	7105980.00	0.007
L43	13 - 12.75 (43)	TP48.575x48.528x0.713	0.25	0.00	0.0	109.810	-51520.80	8094060.00	0.006
L44	12.75 - 8.25 (44)	TP49.431x48.575x0.713	4.50	0.00	0.0	111.773	-53871.50	8238770.00	0.007
L45	8.25 - 8 (45)	TP49.479x49.431x0.663	0.25	0.00	0.0	104.137	-54013.60	7675950.00	0.007
L46	8 - 3 (46)	TP50.43x49.479x0.663	5.00	0.00	0.0	106.165	-56649.90	7825460.00	0.007
L47	3 - 0 (47)	TP51x50.43x0.65	3.00	0.00	0.0	105.383	-58255.30	7767750.00	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} lb-ft	φM _{ux} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} lb-ft	φM _{uy} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	160 - 155 (1)	TP23.3x22.35x0.219	22188.00	525581.67	0.042	0.00	525581.67	0.000
L2	155 - 150 (2)	TP24.251x23.3x0.219	53861.75	560505.00	0.096	0.00	560505.00	0.000
L3	150 - 145 (3)	TP25.201x24.251x0.219	88473.33	595694.17	0.149	0.00	595694.17	0.000
L4	145 - 140 (4)	TP26.152x25.201x0.219	144874.17	631060.00	0.230	0.00	631060.00	0.000
L5	140 - 135 (5)	TP27.102x26.152x0.219	210328.33	666511.67	0.316	0.00	666511.67	0.000
L6	135 - 130 (6)	TP28.052x27.102x0.219	279037.50	701960.83	0.398	0.00	701960.83	0.000
L7	130 - 125 (7)	TP29.003x28.052x0.219	354795.83	737316.67	0.481	0.00	737316.67	0.000
L8	125 - 117.333 (8)	TP30.46x29.003x0.219	401768.33	758449.17	0.530	0.00	758449.17	0.000
L9	117.333 - 117 (9)	TP30.085x29.135x0.281	482783.33	1124783.33	0.429	0.00	1124783.33	0.000
L10	117 - 112 (10)	TP31.035x30.085x0.281	597515.83	1182483.33	0.505	0.00	1182483.33	0.000
L11	112 - 107 (11)	TP31.985x31.035x0.281	711846.67	1240541.67	0.574	0.00	1240541.67	0.000
L12	107 - 102 (12)	TP32.935x31.985x0.281	829688.33	1298866.67	0.639	0.00	1298866.67	0.000
L13	102 - 97 (13)	TP33.885x32.935x0.281	951125.00	1357358.33	0.701	0.00	1357358.33	0.000
L14	97 - 95.83 (14)	TP34.107x33.885x0.281	985091.67	1371066.67	0.718	0.00	1371066.67	0.000
L15	95.83 - 95.58 (15)	TP34.155x34.107x0.381	992050.00	2084333.33	0.476	0.00	2084333.33	0.000
L16	95.58 - 90.58 (16)	TP35.105x34.155x0.381	1134441.67	2184200.00	0.519	0.00	2184200.00	0.000
L17	90.58 - 89.83 (17)	TP35.247x35.105x0.375	1156383.33	2152300.00	0.537	0.00	2152300.00	0.000
L18	89.83 - 89.58	TP35.295x35.247x0.281	1163725.00	1444308.33	0.806	0.00	1444308.33	0.000

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Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{ux} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M_{uy} lb-ft	ϕM_{uy} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L19	(18) 89.58 - 82.5	TP36.64x35.295x0.281	1210333.33	1462816.67	0.827	0.00	1462816.67	0.000
L20	(19) 82.5 - 81.5 (20)	TP36.266x35.033x0.375	1406741.67	2257966.67	0.623	0.00	2257966.67	0.000
L21	81.5 - 76.5 (21)	TP37.215x36.266x0.375	1561933.33	2357383.33	0.663	0.00	2357383.33	0.000
L22	76.5 - 74.25 (22)	TP37.642x37.215x0.375	1632816.67	2402408.33	0.680	0.00	2402408.33	0.000
L23	74.25 - 74 (23)	TP37.689x37.642x0.488	1640733.33	3245641.67	0.506	0.00	3245641.67	0.000
L24	74 - 69 (24)	TP38.638x37.689x0.481	1800966.67	3372283.33	0.534	0.00	3372283.33	0.000
L25	69 - 64 (25)	TP39.587x38.638x0.475	1964708.33	3498808.33	0.562	0.00	3498808.33	0.000
L26	64 - 59 (26)	TP40.535x39.587x0.475	2131858.33	3671658.33	0.581	0.00	3671658.33	0.000
L27	59 - 55.75 (27)	TP41.152x40.535x0.475	2242300.00	3786241.67	0.592	0.00	3786241.67	0.000
L28	55.75 - 55.5 (28)	TP41.2x41.152x0.638	2250858.33	5032733.33	0.447	0.00	5032733.33	0.000
L29	55.5 - 50.5 (29)	TP42.148x41.2x0.638	2423791.67	5272791.67	0.460	0.00	5272791.67	0.000
L30	50.5 - 47.75 (30)	TP42.67x42.148x0.638	2520383.33	5407200.00	0.466	0.00	5407200.00	0.000
L31	47.75 - 47.5 (31)	TP42.718x42.67x0.375	2529208.33	2948225.00	0.858	0.00	2948225.00	0.000
L32	47.5 - 40.5833 (32)	TP44.03x42.718x0.375	2546900.00	2958558.33	0.861	0.00	2958558.33	0.000
L33	40.5833 - 39.5833 (33)	TP43.473x42.062x0.7	2813633.33	6141016.67	0.458	0.00	6141016.67	0.000
L34	39.5833 - 34.5833 (34)	TP44.424x43.473x0.7	2997866.67	6419316.67	0.467	0.00	6419316.67	0.000
L35	34.5833 - 29.5833 (35)	TP45.374x44.424x0.688	3185333.33	6589608.00	0.483	0.00	6589608.00	0.000
L36	29.5833 - 29.25 (36)	TP45.438x45.374x0.688	3197941.67	6608458.00	0.484	0.00	6608458.00	0.000
L37	29.25 - 29 (37)	TP45.485x45.438x0.438	3207408.33	4041975.00	0.794	0.00	4041975.00	0.000
L38	29 - 28.75 (38)	TP45.533x45.485x0.638	3216883.33	6174716.67	0.521	0.00	6174716.67	0.000
L39	28.75 - 23.75 (39)	TP46.484x45.533x0.625	3407766.67	6319766.67	0.539	0.00	6319766.67	0.000
L40	23.75 - 18.75 (40)	TP47.434x46.484x0.625	3601408.33	6586341.33	0.547	0.00	6586341.33	0.000
L41	18.75 - 13.75 (41)	TP48.385x47.434x0.625	3797816.67	6858424.67	0.554	0.00	6858424.67	0.000
L42	13.75 - 13 (42)	TP48.528x48.385x0.625	3827516.67	6899716.67	0.555	0.00	6899716.67	0.000
L43	13 - 12.75 (43)	TP48.575x48.528x0.713	3837433.33	7838333.33	0.490	0.00	7838333.33	0.000
L44	12.75 - 8.25 (44)	TP49.431x48.575x0.713	4017208.33	8123208.00	0.495	0.00	8123208.00	0.000
L45	8.25 - 8 (45)	TP49.479x49.431x0.663	4027275.00	7591316.67	0.531	0.00	7591316.67	0.000
L46	8 - 3 (46)	TP50.43x49.479x0.663	4229966.67	7891924.67	0.536	0.00	7891924.67	0.000
L47	3 - 0 (47)	TP51x50.43x0.65	4352933.33	7928641.33	0.549	0.00	7928641.33	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 155 (1)	TP23.3x22.35x0.219	5185.39	559713.00	0.009	100.10	1065716.67	0.000
L2	155 - 150 (2)	TP24.251x23.3x0.219	6630.02	573086.00	0.012	96.57	1136533.33	0.000
L3	150 - 145 (3)	TP25.201x24.251x0.219	7218.41	585693.00	0.012	96.57	1207883.33	0.000
L4	145 - 140 (4)	TP26.152x25.201x0.219	12787.10	597536.00	0.021	613.39	1279591.67	0.000
L5	140 - 135 (5)	TP27.102x26.152x0.219	13399.90	608613.00	0.022	613.28	1351475.00	0.000
L6	135 - 130 (6)	TP28.052x27.102x0.219	14095.40	618926.00	0.023	603.40	1423358.33	0.000

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	Client	Crown Castle	Designed by	rwtschetter

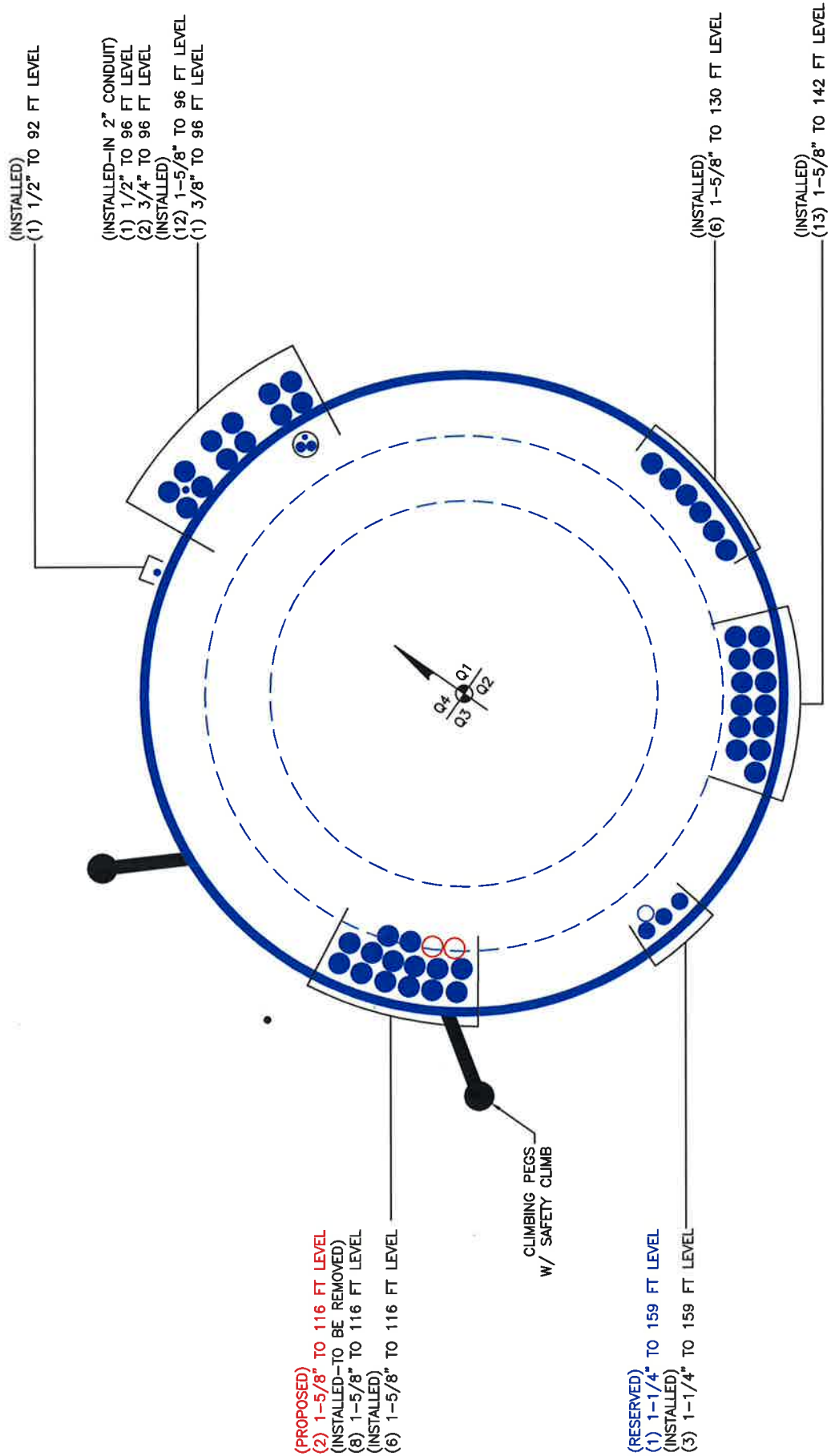
Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L7	130 - 125 (7)	TP29.003x28.052x0.219	15470.60	628473.00	0.025	603.18	1495050.00	0.000
L8	125 - 117.333 (8)	TP30.46x29.003x0.219	15850.20	633834.00	0.025	603.03	1537900.00	0.000
L9	117.333 - 117 (9)	TP30.085x29.135x0.281	16557.00	927610.00	0.018	602.90	2280708.33	0.000
L10	117 - 112 (10)	TP31.035x30.085x0.281	22548.70	944802.00	0.024	110.41	2397708.33	0.000
L11	112 - 107 (11)	TP31.985x31.035x0.281	23195.90	961230.00	0.024	110.28	2515433.33	0.000
L12	107 - 102 (12)	TP32.935x31.985x0.281	23943.70	976893.00	0.025	314.06	2633691.67	0.000
L13	102 - 97 (13)	TP33.885x32.935x0.281	24652.20	991792.00	0.025	286.98	2752308.33	0.000
L14	97 - 95.83 (14)	TP34.107x33.885x0.281	27844.50	995168.00	0.028	313.88	2780091.67	0.000
L15	95.83 - 95.58 (15)	TP34.155x34.107x0.381	27874.80	1519700.00	0.018	145.39	4226383.33	0.000
L16	95.58 - 90.58 (16)	TP35.105x34.155x0.381	29200.00	1548480.00	0.019	205.82	4428875.00	0.000
L17	90.58 - 89.83 (17)	TP35.247x35.105x0.375	29364.30	1519010.00	0.019	212.74	4364191.67	0.000
L18	89.83 - 89.58 (18)	TP35.295x35.247x0.281	29398.10	1012490.00	0.029	212.72	2928608.33	0.000
L19	89.58 - 82.5 (19)	TP36.64x35.295x0.281	29618.70	1016680.00	0.029	212.73	2966141.67	0.000
L20	82.5 - 81.5 (20)	TP36.266x35.033x0.375	30729.40	1547900.00	0.020	213.64	4578458.33	0.000
L21	81.5 - 76.5 (21)	TP37.215x36.266x0.375	31367.20	1574010.00	0.020	213.53	4780041.67	0.000
L22	76.5 - 74.25 (22)	TP37.642x37.215x0.375	31670.10	1585510.00	0.020	213.49	4871341.67	0.000
L23	74.25 - 74 (23)	TP37.689x37.642x0.488	31694.70	2152230.00	0.015	213.47	6581150.00	0.000
L24	74 - 69 (24)	TP38.638x37.689x0.481	32411.50	2179180.00	0.015	213.40	6837941.33	0.000
L25	69 - 64 (25)	TP39.587x38.638x0.475	33104.10	2204710.00	0.015	213.32	7094491.33	0.000
L26	64 - 59 (26)	TP40.535x39.587x0.475	33778.90	2258190.00	0.015	213.25	7444974.67	0.000
L27	59 - 55.75 (27)	TP41.152x40.535x0.475	34214.10	2292960.00	0.015	213.21	7677316.67	0.000
L28	55.75 - 55.5 (28)	TP41.2x41.152x0.638	34238.50	3068680.00	0.011	213.20	10204833.33	0.000
L29	55.5 - 50.5 (29)	TP42.148x41.2x0.638	34945.60	3140460.00	0.011	213.16	10691583.33	0.000
L30	50.5 - 47.75 (30)	TP42.67x42.148x0.638	35325.80	3179940.00	0.011	213.14	10964083.33	0.000
L31	47.75 - 47.5 (31)	TP42.718x42.67x0.375	35345.10	1710440.00	0.021	213.13	5978074.67	0.000
L32	47.5 - 40.5833 (32)	TP44.03x42.718x0.375	35407.80	1712570.00	0.021	213.13	5999033.33	0.000
L33	40.5833 - 39.5833 (33)	TP43.473x42.062x0.7	36525.50	3553190.00	0.010	213.09	12452082.67	0.000
L34	39.5833 - 34.5833 (34)	TP44.424x43.473x0.7	37190.20	3632170.00	0.010	213.06	13016416.00	0.000
L35	34.5833 - 29.5833 (35)	TP45.374x44.424x0.688	37820.00	3645900.00	0.010	213.03	13361666.67	0.000
L36	29.5833 - 29.25 (36)	TP45.438x45.374x0.688	37852.00	3651080.00	0.010	213.02	13399916.00	0.000
L37	29.25 - 29 (37)	TP45.485x45.438x0.438	37877.30	2206040.00	0.017	213.02	8195866.67	0.000
L38	29 - 28.75 (38)	TP45.533x45.485x0.638	37903.60	3396520.00	0.011	213.02	12520416.00	0.000
L39	28.75 - 23.75 (39)	TP46.484x45.533x0.625	38468.10	3401370.00	0.011	212.99	12814500.00	0.000
L40	23.75 - 18.75 (40)	TP47.434x46.484x0.625	39018.20	3471890.00	0.011	212.97	13355082.67	0.000
L41	18.75 - 13.75 (41)	TP48.385x47.434x0.625	39574.80	3542410.00	0.011	212.95	13906749.33	0.000
L42	13.75 - 13 (42)	TP48.528x48.385x0.625	39658.40	3552990.00	0.011	212.95	13990500.00	0.000
L43	13 - 12.75 (43)	TP48.575x48.528x0.713	39680.00	4047030.00	0.010	212.95	15893666.67	0.000
L44	12.75 - 8.25 (44)	TP49.431x48.575x0.713	40238.90	4119390.00	0.010	212.94	16471333.33	0.000
L45	8.25 - 8 (45)	TP49.479x49.431x0.663	40255.20	3837980.00	0.010	212.94	15392833.33	0.000
L46	8 - 3 (46)	TP50.43x49.479x0.663	40841.40	3912730.00	0.010	212.93	16002333.33	0.000

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Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L47	3 - 0 (47)	TP51x50.43x0.65	41167.60	3883870.00	0.011	212.93	16076833.33	0.000

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APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Pole Geometry

Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
160	42.66667	4.66667	12	22.35	30.46	0.21875	0.875	A572-65
122	39.5	5.5	12	29.14	36.64	0.28125	1.125	A572-65
88	47.41667	6.41667	12	35.03	44.03	0.375	1.5	A572-65
47	47	0	12	42.06	51	0.4375	1.75	A572-65

Reinforcement Configuration

Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
0	8.25	plate	WPL 1.25x6.25 (65ksi)	1								x				
0	29	plate	WPL 1.25x6.875 (65ksi)	2			x									x
8.25	29	plate	PL 1.25x6.875 (65ksi)	1							x					
29	55.75	plate	PL 1.25x5.25 (65ksi)	3			x				x					x
47.75	74.25	plate	ISP-UR-0754	3			x			x						x
0	13	plate	MS-600 (1.1875")	3			x									
29.25	42.75	plate	MS-450 (1.1875")	3			x									
89.83	95.83	plate	MS-600 (1.1875")	3				x								x

Reinforcement Details

B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _w (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
6.25	1.25	7.8125	0.625	n/a	33.000	19.000	6.209	1.2205	A572-65
6.875	1.25	8.59375	0.625	n/a	54.000	18.000	6.990	1.2205	A572-65
6.875	1.25	8.59375	0.625	39.000	54.000	18.000	6.990	1.2205	A572-65
5.25	1.25	6.5625	0.625	n/a	27.000	22.000	4.959	1.2205	A572-65
4	1	4	0.5	21.000	21.000	20.000	2.750	1.1875	A514-GR100
6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft):

#	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (In)	Bottom Diameter (In)	Wall Thickness (In)	Tapered Pole Grade	Weight Multiplier
1	160 - 155	5		12	22.350	23.300	0.21875	A572-65	1.000
2	155 - 150	5		12	23.300	24.251	0.21875	A572-65	1.000
3	150 - 145	5		12	24.251	25.201	0.21875	A572-65	1.000
4	145 - 140	5		12	25.201	26.152	0.21875	A572-65	1.000
5	140 - 135	5		12	26.152	27.102	0.21875	A572-65	1.000
6	135 - 130	5		12	27.102	28.052	0.21875	A572-65	1.000
7	130 - 125	5		12	28.052	29.003	0.21875	A572-65	1.000
8	125 - 122	7.666667	4.666667	12	29.003	30.460	0.21875	A572-65	1.000
9	122 - 117	5		12	29.135	30.085	0.28125	A572-65	1.000
10	117 - 112	5		12	30.085	31.035	0.28125	A572-65	1.000
11	112 - 107	5		12	31.035	31.985	0.28125	A572-65	1.000
12	107 - 102	5		12	31.985	32.935	0.28125	A572-65	1.000
13	102 - 97	5		12	32.935	33.885	0.28125	A572-65	1.000
14	97 - 95.83	1.17		12	33.885	34.107	0.28125	A572-65	1.000
15	95.83 - 95.58	0.25		12	34.107	34.155	0.38125	A572-65	1.175
16	95.58 - 90.58	5		12	34.155	35.105	0.38125	A572-65	1.163
17	90.58 - 89.83	0.75		12	35.105	35.247	0.375	A572-65	1.180
18	89.83 - 89.58	0.25		12	35.247	35.295	0.28125	A572-65	1.000
19	89.58 - 88	7.08	5.5	12	35.295	36.640	0.28125	A572-65	1.000
20	88 - 81.5	6.5		12	35.033	36.266	0.375	A572-65	1.000
21	81.5 - 76.5	5		12	36.266	37.215	0.375	A572-65	1.000
22	76.5 - 74.25	2.25		12	37.215	37.642	0.375	A572-65	1.000
23	74.25 - 74	0.25		12	37.642	37.689	0.4875	A572-65	0.977
24	74 - 69	5		12	37.689	38.638	0.48125	A572-65	0.985
25	69 - 64	5		12	38.638	39.587	0.475	A572-65	0.992
26	64 - 59	5		12	39.587	40.535	0.475	A572-65	0.988
27	59 - 55.75	3.25		12	40.535	41.152	0.475	A572-65	0.985
28	55.75 - 55.5	0.25		12	41.152	41.200	0.6375	A572-65	0.973
29	55.5 - 50.5	5		12	41.200	42.148	0.6375	A572-65	0.964
30	50.5 - 47.75	2.75		12	42.148	42.670	0.6375	A572-65	0.960
31	47.75 - 47.5	0.25		12	42.670	42.718	0.375	A572-65	1.000
32	47.5 - 47	6.916667	6.416667	12	42.718	44.030	0.375	A572-65	1.000
33	47 - 39.58333	7.416667		12	42.062	43.473	0.7	A572-65	0.974
34	39.58333 - 34.58333	5		12	43.473	44.424	0.7	A572-65	0.966
35	34.58333 - 29.58333	5		12	44.424	45.374	0.6875	A572-65	0.976
36	29.58333 - 29.25	0.333333		12	45.374	45.438	0.6875	A572-65	0.975
37	29.25 - 29	0.25		12	45.438	45.485	0.4375	A572-65	1.000
38	29 - 28.75	0.25		12	45.485	45.533	0.6375	A572-65	0.969
39	28.75 - 23.75	5		12	45.533	46.484	0.625	A572-65	0.983
40	23.75 - 18.75	5		12	46.484	47.434	0.625	A572-65	0.977
41	18.75 - 13.75	5		12	47.434	48.385	0.625	A572-65	0.971
42	13.75 - 13	0.75		12	48.385	48.528	0.625	A572-65	0.971
43	13 - 12.75	0.25		12	48.528	48.575	0.7125	A572-65	1.017
44	12.75 - 8.25	4.5		12	48.575	49.431	0.7125	A572-65	1.010
45	8.25 - 8	0.25		12	49.431	49.479	0.6625	A572-65	1.077
46	8 - 3	5		12	49.479	50.430	0.6625	A572-65	1.069
47	3 - 0	3		12	50.430	51.000	0.65	A572-65	1.085

TNX Section Forces

Increment (ft):		TNX Output		
	5	P _u (K)	M _{ux} (kip-ft)	V _u (K)
	Section Height (ft)			
1	160 - 155	2.54	22.19	5.19
2	155 - 150	3.36	53.86	6.63
3	150 - 145	3.70	88.47	7.22
4	145 - 140	6.71	144.87	12.79
5	140 - 135	7.15	210.33	13.40
6	135 - 130	7.60	279.04	14.10
7	130 - 125	8.37	354.80	15.47
8	125 - 122	8.69	401.77	15.85
9	122 - 117	9.72	482.78	16.56
10	117 - 112	13.07	597.52	22.55
11	112 - 107	13.85	711.85	23.20
12	107 - 102	14.67	829.69	23.94
13	102 - 97	16.43	951.12	24.65
14	97 - 95.83	18.71	985.09	27.84
15	95.83 - 95.58	18.84	992.05	27.87
16	95.58 - 90.58	21.07	1134.44	29.20
17	90.58 - 89.83	21.37	1156.38	29.36
18	89.83 - 89.58	21.42	1163.72	29.40
19	89.58 - 88	21.72	1210.33	29.62
20	88 - 81.5	24.11	1406.74	30.73
21	81.5 - 76.5	25.34	1561.93	31.37
22	76.5 - 74.25	25.91	1632.82	31.67
23	74.25 - 74	26.00	1640.74	31.69
24	74 - 69	27.48	1800.97	32.41
25	69 - 64	29.00	1964.71	33.10
26	64 - 59	30.56	2131.86	33.78
27	59 - 55.75	31.59	2242.30	34.21
28	55.75 - 55.5	31.70	2250.86	34.24
29	55.5 - 50.5	33.66	2423.79	34.95
30	50.5 - 47.75	34.75	2520.38	35.33
31	47.75 - 47.5	34.84	2529.21	35.35
32	47.5 - 47	34.98	2546.90	35.41
33	47 - 39.5833	39.55	2813.64	36.53
34	39.5833 - 34.5833	41.79	2997.87	37.19
35	34.5833 - 29.5833	44.07	3185.34	37.82
36	29.5833 - 29.25	44.23	3197.94	37.85
37	29.25 - 29	44.32	3207.41	37.88
38	29 - 28.75	44.43	3216.88	37.90
39	28.75 - 23.75	46.59	3407.77	38.47
40	23.75 - 18.75	48.80	3601.41	39.02
41	18.75 - 13.75	51.04	3797.82	39.57
42	13.75 - 13	51.38	3827.52	39.66
43	13 - 12.75	51.52	3837.44	39.68
44	12.75 - 8.25	53.87	4017.21	40.24
45	8.25 - 8	54.01	4027.27	40.26
46	8 - 3	56.65	4229.97	40.84
47	3 - 0	58.26	4352.93	41.17

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP23.3x22.35x0.2188	Pole	4.4%	Pass
155 - 150	Pole	TP24.251x23.3x0.2188	Pole	9.9%	Pass
150 - 145	Pole	TP25.201x24.251x0.2188	Pole	15.1%	Pass
145 - 140	Pole	TP26.152x25.201x0.2188	Pole	23.5%	Pass
140 - 135	Pole	TP27.102x26.152x0.2188	Pole	32.1%	Pass
135 - 130	Pole	TP28.052x27.102x0.2188	Pole	40.3%	Pass
130 - 125	Pole	TP29.003x28.052x0.2188	Pole	48.7%	Pass
125 - 122	Pole	TP30.46x29.003x0.2188	Pole	53.6%	Pass
122 - 117	Pole	TP30.085x29.135x0.2813	Pole	43.4%	Pass
117 - 112	Pole	TP31.035x30.085x0.2813	Pole	51.1%	Pass
112 - 107	Pole	TP31.985x31.035x0.2813	Pole	58.0%	Pass
107 - 102	Pole	TP32.935x31.985x0.2813	Pole	64.5%	Pass
102 - 97	Pole	TP33.885x32.935x0.2813	Pole	70.8%	Pass
97 - 95.83	Pole	TP34.107x33.885x0.2813	Pole	72.7%	Pass
95.83 - 95.58	Pole + Reinf.	TP34.155x34.107x0.3813	Reinf. 8 Tension Rupture	63.4%	Pass
95.58 - 90.58	Pole + Reinf.	TP35.105x34.155x0.3813	Reinf. 8 Tension Rupture	69.2%	Pass
90.58 - 89.83	Pole + Reinf.	TP35.247x35.105x0.375	Reinf. 8 Tension Rupture	70.1%	Pass
89.83 - 89.58	Pole	TP35.295x35.247x0.2813	Pole	81.5%	Pass
89.58 - 88	Pole	TP36.64x35.295x0.2813	Pole	83.7%	Pass
88 - 81.5	Pole	TP36.266x35.033x0.375	Pole	62.9%	Pass
81.5 - 76.5	Pole	TP37.215x36.266x0.375	Pole	66.9%	Pass
76.5 - 74.25	Pole	TP37.642x37.215x0.375	Pole	68.6%	Pass
74.25 - 74	Pole + Reinf.	TP37.689x37.642x0.4875	Reinf. 5 Tension Rupture	66.1%	Pass
74 - 69	Pole + Reinf.	TP38.638x37.689x0.4813	Reinf. 5 Tension Rupture	69.3%	Pass
69 - 64	Pole + Reinf.	TP39.587x38.638x0.475	Reinf. 5 Tension Rupture	72.3%	Pass
64 - 59	Pole + Reinf.	TP40.535x39.587x0.475	Reinf. 5 Tension Rupture	75.2%	Pass
59 - 55.75	Pole + Reinf.	TP41.152x40.535x0.475	Reinf. 5 Tension Rupture	76.9%	Pass
55.75 - 55.5	Pole + Reinf.	TP41.2x41.152x0.6375	Reinf. 4 Tension Rupture	72.3%	Pass
55.5 - 50.5	Pole + Reinf.	TP42.148x41.2x0.6375	Reinf. 4 Tension Rupture	75.1%	Pass
50.5 - 47.75	Pole + Reinf.	TP42.67x42.148x0.6375	Reinf. 4 Tension Rupture	76.5%	Pass
47.75 - 47.5	Pole	TP42.718x42.67x0.375	Pole	86.6%	Pass
47.5 - 47	Pole	TP44.03x42.718x0.375	Pole	86.9%	Pass
47 - 39.58	Pole + Reinf.	TP43.473x42.062x0.7	Reinf. 7 Compression	78.0%	Pass
39.58 - 34.58	Pole + Reinf.	TP44.424x43.473x0.7	Reinf. 7 Compression	80.2%	Pass
34.58 - 29.58	Pole + Reinf.	TP45.374x44.424x0.6875	Reinf. 7 Compression	82.3%	Pass
29.58 - 29.25	Pole + Reinf.	TP45.438x45.374x0.6875	Reinf. 7 Compression	82.4%	Pass
29.25 - 29	Pole	TP45.485x45.438x0.4375	Pole	80.2%	Pass
29 - 28.75	Pole + Reinf.	TP45.533x45.485x0.6375	Reinf. 2 Tension Rupture	79.1%	Pass
28.75 - 23.75	Pole + Reinf.	TP46.484x45.533x0.625	Reinf. 2 Tension Rupture	80.9%	Pass
23.75 - 18.75	Pole + Reinf.	TP47.434x46.484x0.625	Reinf. 2 Tension Rupture	82.6%	Pass
18.75 - 13.75	Pole + Reinf.	TP48.385x47.434x0.625	Reinf. 2 Tension Rupture	84.1%	Pass
13.75 - 13	Pole + Reinf.	TP48.528x48.385x0.625	Reinf. 2 Tension Rupture	84.4%	Pass
13 - 12.75	Pole + Reinf.	TP48.575x48.528x0.7125	Reinf. 2 Tension Rupture	74.8%	Pass
12.75 - 8.25	Pole + Reinf.	TP49.431x48.575x0.7125	Reinf. 2 Tension Rupture	76.1%	Pass
8.25 - 8	Pole + Reinf.	TP49.479x49.431x0.6625	Reinf. 6 Tension Rupture	81.5%	Pass
8 - 3	Pole + Reinf.	TP50.43x49.479x0.6625	Reinf. 6 Tension Rupture	82.9%	Pass
3 - 0	Pole + Reinf.	TP51x50.43x0.65	Reinf. 6 Tension Rupture	83.7%	Pass
				Summary	
			Pole	86.9%	Pass
			Reinforcement	84.4%	Pass
			Overall	86.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity								
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8
160 - 155	1107	n/a	1107	16.23	n/a	16.23	4.4%								
155 - 150	1250	n/a	1250	16.90	n/a	16.90	9.9%								
150 - 145	1404	n/a	1404	17.57	n/a	17.57	15.1%								
145 - 140	1570	n/a	1570	18.24	n/a	18.24	23.5%								
140 - 135	1749	n/a	1749	18.91	n/a	18.91	32.1%								
135 - 130	1941	n/a	1941	19.58	n/a	19.58	40.3%								
130 - 125	2147	n/a	2147	20.25	n/a	20.25	48.7%								
125 - 122	2277	n/a	2277	20.65	n/a	20.65	53.6%								
122 - 117	3064	n/a	3064	26.95	n/a	26.95	43.4%								
117 - 112	3367	n/a	3367	27.81	n/a	27.81	51.1%								
112 - 107	3689	n/a	3689	28.67	n/a	28.67	58.0%								
107 - 102	4030	n/a	4030	29.53	n/a	29.53	64.5%								
102 - 97	4392	n/a	4392	30.39	n/a	30.39	70.8%								
97 - 95.83	4480	n/a	4480	30.59	n/a	30.59	72.7%								
95.83 - 95.58	4643	1518	6160	30.63	18.00	48.63	58.0%								63.4%
95.58 - 90.58	5039	1604	6643	31.49	18.00	49.49	63.9%								69.2%
90.58 - 89.83	5100	1617	6717	31.62	18.00	49.62	64.8%								70.1%
89.83 - 89.58	4969	n/a	4969	31.66	n/a	31.66	81.5%								
89.58 - 88	5097	n/a	5097	31.94	n/a	31.94	83.7%								
88 - 81.5	7135	n/a	7135	43.28	n/a	43.28	62.9%								
81.5 - 76.5	7716	n/a	7716	44.42	n/a	44.42	66.9%								
76.5 - 74.25	7988	n/a	7988	44.94	n/a	44.94	68.6%								
74.25 - 74	8018	2254	10272	44.99	12.00	56.99	52.0%					66.1%			
74 - 69	8646	2365	11011	46.14	12.00	58.14	55.1%					89.3%			
69 - 64	9305	2479	11784	47.28	12.00	59.28	58.1%					72.3%			
64 - 59	9997	2596	12593	48.42	12.00	60.42	60.9%					75.2%			
59 - 55.75	10464	2674	13138	49.17	12.00	61.17	62.8%					76.9%			
55.75 - 55.5	10501	7138	17639	49.23	31.69	80.91	47.1%				72.3%	57.6%			
55.5 - 50.5	11250	7460	18710	50.37	31.69	82.06	49.4%				75.1%	59.8%			
50.5 - 47.75	11677	7640	19317	51.00	31.69	82.69	50.6%				78.5%	61.0%			
47.75 - 47.5	11716	n/a	11716	51.06	n/a	51.06	86.6%								
47.5 - 47	11795	n/a	11795	51.17	n/a	51.17	86.9%								
47 - 39.58	14351	8296	22647	60.54	33.19	93.73	48.5%				74.2%			78.0%	
39.58 - 34.58	15323	8651	23975	61.88	33.19	95.06	48.2%				76.3%			80.2%	
34.58 - 29.58	16339	9015	25353	63.21	33.19	96.40	49.9%				78.3%			82.3%	
29.58 - 29.25	16408	9039	25447	63.30	33.19	96.49	50.0%				78.4%			82.4%	
29.25 - 29	16460	n/a	16460	63.37	n/a	63.37	80.2%								
29 - 28.75	16512	7106	23618	63.44	25.78	89.22	54.3%		79.1%	79.1%					
28.75 - 23.75	17579	7395	24974	64.77	25.78	90.56	56.0%		80.9%	80.9%					
23.75 - 18.75	18690	7691	26381	66.11	25.78	91.89	57.7%		82.6%	82.6%					
18.75 - 13.75	19848	7992	27840	67.45	25.78	93.23	59.3%		84.1%	84.1%					
13.75 - 13	20025	8038	28063	67.65	25.78	93.43	59.6%		84.4%	84.4%					
13 - 12.75	20113	12356	32469	67.72	43.78	111.50	54.0%		74.8%	72.1%				72.6%	
12.75 - 8.25	21204	12782	33987	68.92	43.78	112.70	55.4%		76.1%	73.4%				73.9%	
8.25 - 8	21243	10504	31747	68.99	43.00	111.99	59.4%	72.5%	77.8%					81.5%	
8 - 3	22503	10899	33401	70.33	43.00	113.33	60.9%	73.9%	79.1%					82.9%	
3 - 0	23282	11139	34421	71.13	43.00	114.13	61.8%	74.6%	79.9%					83.7%	

Note: Section capacity checked in 5 degree increments.

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#:	876339
Site Name:	Pond Meadow Rd. Stable
App #:	402477 Rev. 0
Pole Manufacturer:	Other

Reactions		
Mu:	2870.91	ft-kips
Axial, Pu:		kips
Shear, Vu:		kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	59.3	in

Anchor Rod Results
Max Rod (Cu): 145.2 Kips

Rigid
AISC LRFD
φ*Tn

Plate Data		
Diam:	65.3	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	10.25	in

Base Plate Results
Base Plate Stress: 19.4 ksi
Allowable Plate Stress: 54.0 ksi
Base Plate Stress Ratio: 36.0% **Pass**

Flexural Check

Rigid
AISC LRFD
φ*Fy
Y.L. Length:
30.26

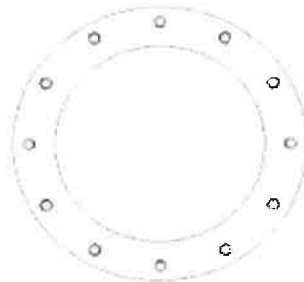
Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

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

Pole Results
Pole Punching Shear Check: n/a

Pole Data		
Diam:	51	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

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

Pier and Pad Foundation



BU # : 876339
Site Name: Pond Meadow Rd.
App. Number: 402477 Rev. 0

TIA-222 Revision: G
Tower Type: Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	58.268	kips
Base Shear, V_{u_comp} :	41.149	kips
Moment, M_u :	4352.932	ft-kips
Tower Height, H :	160	ft
BP Dist. Above Fdn, bp_{dist} :	0	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
<i>Lateral (Sliding) (kips)</i>	337.97	41.15	12.2%	Pass
<i>Bearing Pressure (ksf)</i>	23.19	5.29	22.8%	Pass
<i>Overtuning (kip*ft)</i>	6714.55	4688.98	69.8%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	8672.09	4538.10	52.3%	Pass
<i>Pier Compression (kip)</i>	24494.62	89.44	0.4%	Pass
<i>Pad Flexure (kip*ft)</i>	6349.69	2114.06	33.3%	Pass
<i>Pad Shear - 1-way (kips)</i>	1018.15	334.93	32.9%	Pass
<i>Pad Shear - 2-way (ksi)</i>	0.19	0.00	0.0%	Pass

Soil Rating: 69.8%
Structural Rating: 52.3%

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	7.0	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	11	
Pier Rebar Quantity, mc :	36	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

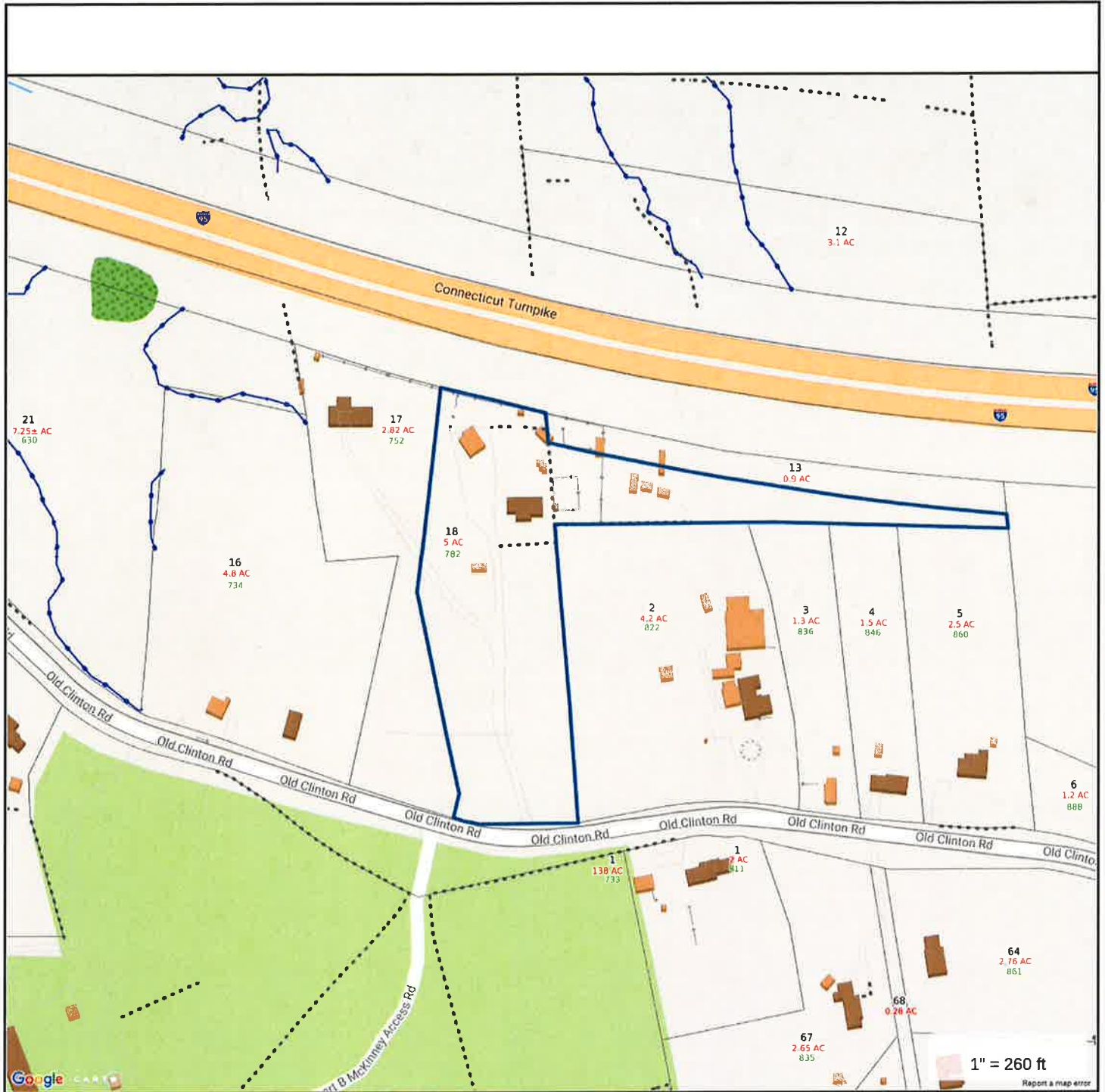
Pad Properties		
Depth, D :	7.7	ft
Pad Width, W :	23.0	ft
Pad Thickness, T :	3.7	ft
Pad Rebar Size, Sp :	11	
Pad Rebar Quantity, mp :	24	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60000	psi
Concrete Compressive Strength, $F'c$:	4000	psi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Net Bearing, Q_{net} :	30.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	33	degrees
SPT Blow Count, N_{blows} :	20	
Base Friction, μ :	0.45	
Neglected Depth, N :	3.3	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, gw :	None	ft

<--Toggle between Gross and Net

ATTACHMENT 4



Property Information

Property ID 169/018
Location 782 OLD CLINTON RD
Owner WADE CATHERINE A



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

Town of Westbrook, 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 July 2016
 Properties updated 02/28/2018

782 OLD CLINTON RD

Location 782 OLD CLINTON RD

Mblu 169 / 018 / /

Acct# 169/018

Owner WADE CATHERINE A

Assessment \$476,430

Appraisal \$681,630

PID 1175

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$566,890	\$114,740	\$681,630

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$402,120	\$74,310	\$476,430

Owner of Record

Owner WADE CATHERINE A
Co-Owner
Address 782 OLD CLINTON RD
WESTBROOK, CT 06498

Sale Price \$0
Certificate
Book & Page 162/ 83
Sale Date 11/10/1993
Instrument 25

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
WADE CATHERINE A	\$0		162/ 83	25	11/10/1993

Building Information

Building 1 : Section 1

Year Built: 1946
Living Area: 3,142
Replacement Cost: \$281,163
Building Percent 58
Good:
Replacement Cost
Less Depreciation: \$163,070

Building Attributes	
Field	Description

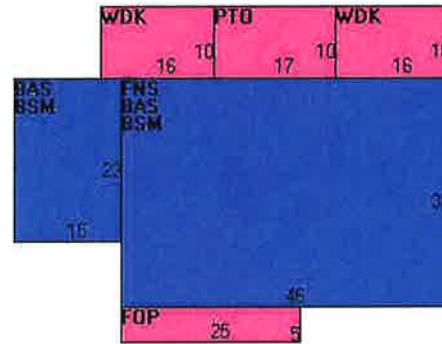
Style	Colonial
Model	Residential
Grade:	C+
Stories	1.9
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	7
Full Bthrms:	3
Half Baths:	0
Extra Fixtures	3
Total Rooms:	10
Bath Style:	Modern
Kitchen Style:	Average
Extra Kitchens	0
Fireplace(s)	1
Gas Fireplace(s)	0
Stacks	1
Bsmnt Garage(s)	0
Callback	
Fin Bsmnt	0
Bsmnt Heat	
Int Vs Ext	Same

Building Photo



(<http://images.vgsi.com/photos2/WestbrookCTPhotos//\00\00\!>)

Building Layout



(<http://images.vgsi.com/photos2/WestbrookCTPhotos//Sketches>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,817	1,817
FNS	Finished 90% Story	1,472	1,325
BSM	Basement	1,817	0
FOP	Open Porch	125	0
PTO	Patio	170	0
WDK	Deck	320	0
		5,721	3,142

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 101
Description Res Dwelling
Zone RR
Neighborhood 0045
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 5
Depth
Assessed Value \$74,310
Appraised Value \$114,740

Special Land			
Land Use Code	Land Use Description	Units	Unit Type
712	490 Tillable C	2	AC

Outbuildings

Outbuildings							Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #	Comment
FGR1	Garage			868 S.F.	\$10,850	1	2CGAR
TCB	Telecomm Bldg			216 UNITS	\$59,400	1	TELCOMM BLDG
TCS	Telecomm Site			700 UNITS	\$269,500	1	TELCOMM SITE
SPL1	Inground Pool - Typical			512 S.F.	\$4,610	1	IG POOL
SHD1	Shed			180 S.F.	\$1,800	1	SHED 2
BRN1	1 Story Barn			360 S.F.	\$5,400	1	
STB	Stable			310 S.F.	\$6,980	1	
LNT	Lean To			264 S.F.	\$660	1	
SHD1	Shed			140 S.F.	\$1,400	1	
GAZ	Gazebo			77 S.F.	\$770	1	
TCM	Telecomm			100 S.F.&HGT	\$2,450	1	SPRINT
TCM	Telecomm			1 S.F.&HGT	\$10,000	1	VERIZEN
TCM	Telecomm			3 S.F.&HGT	\$10,000	1	3 NEW ANTENNAS & 1 FIBRE CAB
TCM	Telecomm			1 S.F.&HGT	\$10,000	1	ADD 3 ANT;3 RADIOHEADS;CABLE
TCM	Telecomm			1 S.F.&HGT	\$10,000	1	RPLC PANELS-ADD RADIO HEADS

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$556,890	\$114,740	\$671,630
2015	\$662,200	\$112,010	\$774,210
2014	\$657,580	\$112,010	\$769,590

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$395,120	\$74,310	\$469,430
2015	\$463,550	\$72,490	\$536,040

2014	\$460,310	\$72,490	\$532,800
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ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender

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

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of Pieces Listed by Sender

3

TOTAL NO.
of Pieces Received at Post Office™

3

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03/01/2018

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Special Handling

Parcel Airlift

1. Noel Bishop, First Selectman
Town of Westbrook
866 Boston Post Road
Westbrook, CT 06498

2. Meg Parulis, AICP, Town Planner
Town of Westbrook
866 Boston Post Road
Westbrook, CT 06498

3. Catherine A. Wade
782 Old Clinton Road
Westbrook, CT 06498

