Robinson+Cole

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Also admitted in Massachusetts

January 29, 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**
69 Guinea Road, Stamford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) antennas at the 142-foot level of the existing 160-foot tower at 69 Guinea Road in Stamford, Connecticut (the "Property"). The tower is owned by Crown Atlantic Company LLC ("Crown"). The Council approved Cellco's use of this tower in 1998 (Docket No. 180). Cellco now intends to remove nine (9) of its existing antennas and install six (6) new antennas (three (3) model JAHH-65B-R3B, 700 MHz antennas and three (3) model JAHH-65B-R3B, 2100 MHz antennas), all at the same level on the tower. Cellco also intends to replace three (3) of its existing remote radio heads ("RRHs") and install three (3) new RRHs, all located behind Cellco's replacement antennas, and install one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Stamford's Mayor, David Martin; Ralph Blessing, Stamford's Land Use Bureau Chief; the Girl Scouts of Connecticut, Inc., the owner of the Property; and Crown, the owner of the tower.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRH's will remain at the 142-foot level of the tower.

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

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

4. The 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 behind 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,

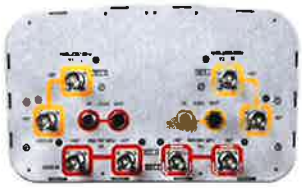
Kenneth C. Baldwin

Enclosures
Copy to:
David Martin, Stamford Mayor
Ralph Blessing, Stamford Land Use Bureau Chief
Girl Scouts of Connecticut, Inc.
Crown
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®



JAHH-65B-R3B

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

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

Electrical Specifications

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.5	15.8	18.0	18.4	18.5	18.8
Beamwidth, Horizontal, degrees	67	65	63	63	65	68
Beamwidth, Vertical, degrees	12.4	10.5	5.7	5.2	4.9	4.4
Beam Tilt, degrees	2–14	2–14	0–10	0–10	0–10	0–10
USLS (First Lobe), dB	18	18	20	20	21	23
Front-to-Back Ratio at 180°, dB	32	34	31	35	36	38
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–787	824–894	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.3	14.9	17.6	18.1	18.2	18.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.5	±0.6	±0.4	±0.5	±0.6
Gain by Beam Tilt, average, dBi	2 ° | 14.3 8 ° | 14.3 14 ° | 14.3	2 ° | 15.0 8 ° | 14.9 14 ° | 15.4	0 ° | 17.2 5 ° | 17.6 10 ° | 17.6	0 ° | 17.6 5 ° | 18.2 10 ° | 18.2	0 ° | 17.7 5 ° | 18.3 10 ° | 18.3	0 ° | 17.9 5 ° | 18.7 10 ° | 18.7
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.4	±4	±2.4	±2.9	±2.7
Beamwidth, Vertical Tolerance, degrees	±0.9	±0.5	±0.3	±0.2	±0.3	±0.1
USLS, beampeak to 20° above beampeak, dB	18	17	17	18	19	18
Front-to-Back Total Power at 180° ± 30°, dB	25	24	26	29	27	29
CPR at Boresight, dB	22	23	20	21	21	24
CPR at Sector, dB	11	12	11	11	11	8

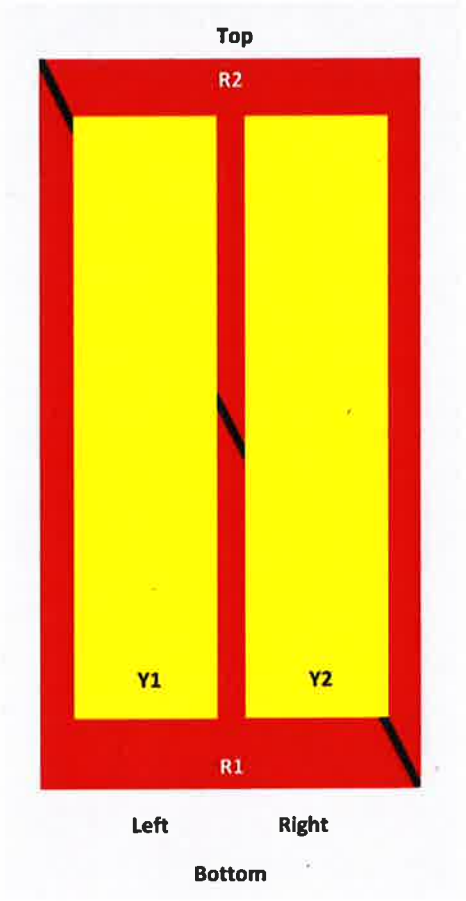
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Product Specifications

JAHH-65B-R3B

Array Layout

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



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	698-798	1-2	1	ANxxxxxxxxxxxxxxx1
R2	824-894	3-4	2	ANxxxxxxxxxxxxxxx2
Y1	1695-2360	5-6	3	ANxxxxxxxxxxxxxxx3
Y2	1695-2360	7-8		

View from the front of the antenna

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

General Specifications

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

Mechanical Specifications

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

Product Specifications

JAHH-65B-R3B

Color	Light gray
Grounding Type	RF connector body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	746.0 N @ 150 km/h 167.7 lbf @ 150 km/h
Wind Loading, lateral	243.0 N @ 150 km/h 54.6 lbf @ 150 km/h
Wind Loading, rear	776.0 N @ 150 km/h 174.5 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

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

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal Bias Tee	Port 1 | Port 5
Internal RET	High band (1) | Low band (2)
Power Consumption, idle state, maximum	2 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

Product Specifications

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.

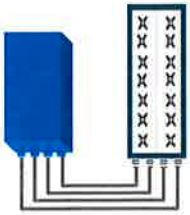
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

Alcatel·Lucent

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

ALCATEL-LUCENT B66A RRH4X45

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

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

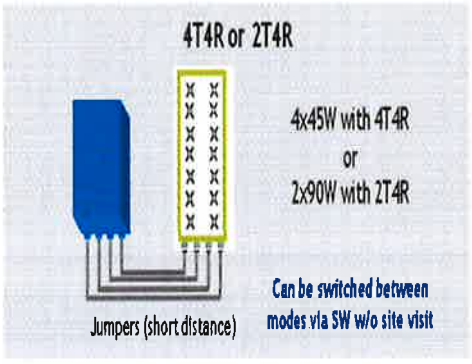
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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

FEATURES

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



BENEFITS

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

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3)	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.) Volume in Liters Weight in kg (lb) (w/o mounting HW)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield) 35.5 (with solar shield) 29.7 (without solar shield) 25.8kg (56.8lb) (with solar shield)
DC voltage range DC power consumption	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure 250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

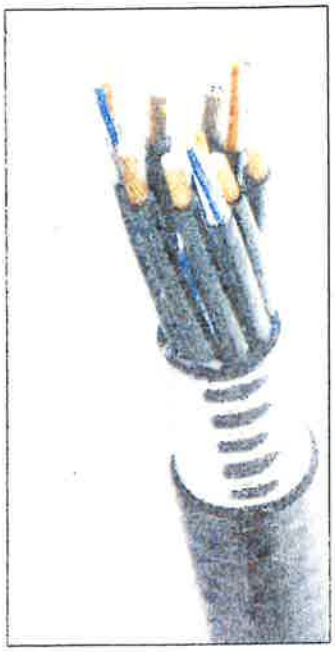


Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

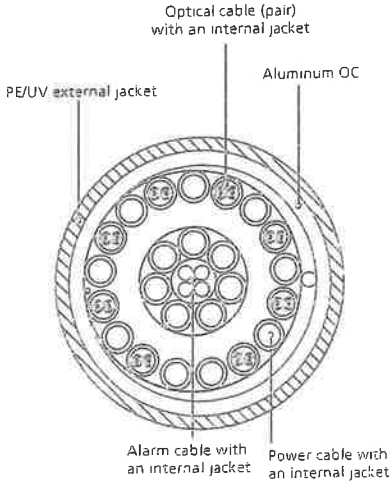


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Riverbnank (Stamford)								
Tower Height: 160'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*T-Mobile	2	2334	118	2100	0.1338	1.0000	1.34%	
*T-Mobile	2	1167	118	1900	0.0669	1.0000	0.67%	
*T-Mobile	2	1167	118	2100	0.0669	1.0000	0.67%	
*T-Mobile	1	865	118	700	0.0248	0.4667	0.53%	
*Sprint	1	438	158	850	0.0068	0.5667	0.12%	
*Sprint	2	438	158	850	0.0136	0.5667	0.24%	
*Sprint	5	623	158	1900	0.0485	1.0000	0.48%	
*Sprint	2	1556	158	1900	0.0484	1.0000	0.48%	
*Sprint	4	778	158	2500	0.0484	1.0000	0.48%	
*Sprint	4	769	158	2500	0.0479	1.0000	0.48%	
*AT&T	2	414	148	850	0.0148	0.5667	0.26%	
*AT&T	2	656	148	1900	0.0234	1.0000	0.23%	
*AT&T	2	414	148	850	0.0148	0.5667	0.26%	
*AT&T	2	1791	148	1900	0.0639	1.0000	0.64%	
*AT&T	2	940	148	700	0.0335	0.4667	0.72%	
*Metricom			98	920	0.0002	0.6133	0.00%	
*Nextel			130		0.0106	0.5720	0.19%	
Verizon PCS	**0**	**5062**	**142**	**0.0000**	**1970**	**1.0000**	**0.00%**	
Verizon Cellular	**3**	**489**	**142**	**0.0262**	**869**	**0.5793**	**4.52%**	
Verizon Cellular	**0**	**3709**	**142**	**0.0000**	**880**	**0.5866**	**0.00%**	
Verizon AWS	**1**	**7770**	**142**	**0.1386**	**2145**	**1.0000**	**13.86%**	
Verizon 700	**1**	**2062**	**142**	**0.0368**	**746**	**0.4973**	**7.39%**	
* Source: Siting Council								**33.6%**

ATTACHMENT 3

Date: **January 2, 2018**

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

Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-8145

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	468411
	Carrier Site Name:	Riverbank, CT
Crown Castle Designation:	**Crown Castle BU Number:**	806953
	Crown Castle Site Name:	BRG 2044 (A) 943097
	Crown Castle JDE Job Number:	474663
	Crown Castle Work Order Number:	1503596
	Crown Castle Application Number:	418635 Rev. 1
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	194393
Site Data:	**69 Guinea RD(Camp Rocky Craig), Stamford, Fairfield County, CT** **Latitude *41° 6' 6.35"*, Longitude *-73° 35' 41.45"*** **160 Foot - Monopole Tower**	

Dear Charles McGuirt,

Black & Veatch Corp. 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 1121135, in accordance with application 418635, revision 1.

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 based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, K_{zt}, of 1.000 and Risk Category II were used in this analysis. Seismic forces have been evaluated based on site class D with spectral response factors S_s of 0.253g and S_1 of 0.070g.

We at *Black & Veatch Corp.* 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: Asmita Phadke / Justin Vibbert

Respectfully submitted by:
Ping Jiang, P.E.
Professional Engineer

Jan 02, 2018

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing and Reserved Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE
Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
4.1) Wind Results
Table 5 - Section Capacity (Summary)
Table 6 – Tower Components vs. Capacity
4.2) Seismic Results
4.3) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by Valmont Microflect in August of 1999. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

The tower has been modified per reinforcement drawings prepared by Aero Solutions LLC in August of 2009. This modification consists of the installation of base plate stiffeners. This modification has not been considered due to a lack of a post modification inspection report.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford & Company in October of 2012. This modification consists of the installation of flat plate reinforcement from 1.75' to 16.75' and 77' to 82'. It also consists of the installation of transition stiffeners. Refer to modification inspection report by Tower Engineering Professionals, Inc. in August of 2013. These modifications were found to be ineffective.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford & Company in April of 2014. This modification consists of the installation of flat plate reinforcement from 12.25' to 32.25', 32.33' to 52.33', and 78.5' to 88.5'. Refer to modification inspection report by Sinnott Gering and Schmitt Towers, Inc. in August of 2014. The 78.5' to 88.5' reinforcements were found to be effective and all others were found to be ineffective.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet. Seismic forces have been evaluated based on site class D with spectral response factors S_s of 0.253g and S_1 of 0.070g.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
139.0	142.0	3	alcatel lucent	B13 RRH 4X30	1	1 5/8	1
		3	alcatel lucent	B66A RRH4X45			
		6	commscope	JAHH-65B-R3B w/ Mount Pipe			

Note:
1) Refer to Appendix B for a detailed coax layout.

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
157.0	158.0	3	alcatel lucent	TD-RRH8x20-25	1 4 1 1 1	1/8 17/64 1/2 5/8 7/8	2
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		1	box enclosures and assembly	BEN-92P			
		3	nokia	FWHR			
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	3	1 1/4	1
	157.0	1	cci tower mounts	Platform Mount [LP 602-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		9	rfs celwave	ACU-A20-N			
154.0	155.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	-	-	1
		3	alcatel lucent	800MHZ RRH			
	154.0	2	cci tower mounts	Pipe Mount [PM 601-3]			
	153.0	3	alcatel lucent	1900MHz RRH (65MHz)			
149.0	151.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	-	-	2
		3	ericsson	RRUS 12 B2/RRUS A2			
		3	powerwave technologies	1001983			
		3	ericsson	RRUS-11	12 2 1 1	1 5/8 5/8 3/8 2" conduit	1
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
	149.0	1	cci tower mounts	Platform Mount [LP 602-1]			
139.0	142.0	6	andrew	DB846F65ZAXY w/ Mount Pipe	12	1 5/8	1
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	powerwave technologies	P65.16.XL.2 w/ Mount Pipe	1 1	1/2 1 1/4	3
		3	alcatel lucent	RRH2X40-AWS			
		6	rfs celwave	FD9R6004/2C-3L			
		3	rymsa wireless	MG D3-800TV w/ Mount Pipe			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
	139.0	1	cci tower mounts	Platform Mount [LP 602-1]	-	-	1
116.0	118.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	6 1	1 5/8 1 1/4	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
	116.0	1	cci tower mounts	Platform Mount [LP 712-1]			
84.0	84.0	1	cci tower mounts	Side Arm Mount [SO 701-1]	-	-	1
		1	gps	GPS_A			
45.0	45.0	1	cci tower mounts	Pipe Mount [PM 601-1]	-	-	1
		1	trimble	BULLET III			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
40.0	40.0	1	andrew	GPS-QBW-20N	-	-	1
		1	cci tower mounts	Pipe Mount [PM 601-1]			

Notes:
1) Existing Equipment.
2) Reserved Equipment.
3) Equipment To Be Removed; Not Considered In This Analysis.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
158	158	9	decibel	DB980H	-	-
148	148	12	swedcom	ALP 110 11-N	-	-
138	138	12	swedcom	ALP 9212-N	-	-
128	128	12	swedcom	ALP 9212-N	-	-
118	118	3	ems wireless	RR90-17-00DP	-	-
108	108	9	allgon	7184.15	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Velocitel	5749621	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont Industries, Inc.	1104113	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont Microflect	823122	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford & Company	3332716	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals, Inc.	4015064	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford & Company	4837035	CCISITES
4-POST-MODIFICATION INSPECTION	Sinnott Gering and Schmitt Towers, Inc.	5577141	CCISITES
4-EXPOSURE CATEGORY/TOPOGRAPHIC FACTOR	Crown Castle	6124352	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Paul J. Ford & Company	6964113	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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The wind loading Exposure Category and Topographic Category for this site have been analyzed and determined by the tower owner. Black & Veatch does not assume any responsibility for its accuracy.
5) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

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

4) ANALYSIS RESULTS

4.1) Wind Results

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20.801x19.6x0.25	Pole	2.6%	Pass
155 - 150	Pole	TP22.002x20.801x0.25	Pole	7.3%	Pass
150 - 145	Pole	TP23.203x22.002x0.25	Pole	15.4%	Pass
145 - 140	Pole	TP24.404x23.203x0.25	Pole	22.2%	Pass
140 - 135	Pole	TP25.605x24.404x0.25	Pole	33.0%	Pass
135 - 130	Pole	TP26.806x25.605x0.25	Pole	41.7%	Pass
130 - 125	Pole	TP28.007x26.806x0.25	Pole	49.4%	Pass
125 - 120	Pole	TP29.208x28.007x0.25	Pole	56.4%	Pass
120 - 116	Pole	TP31.29x29.208x0.25	Pole	61.6%	Pass
116 - 111	Pole	TP30.866x29.668x0.3438	Pole	46.3%	Pass
111 - 106	Pole	TP32.065x30.866x0.3438	Pole	50.6%	Pass
106 - 101	Pole	TP33.263x32.065x0.3438	Pole	54.5%	Pass
101 - 96	Pole	TP34.461x33.263x0.3438	Pole	58.1%	Pass
96 - 91	Pole	TP35.659x34.461x0.3438	Pole	61.3%	Pass
91 - 86	Pole	TP36.857x35.659x0.3438	Pole	64.3%	Pass
86 - 85.75	Pole + Reinf.	TP36.917x36.857x0.5125	Reinf. 2 Tension Rupture	62.7%	Pass
85.75 - 81	Pole + Reinf.	TP38.055x36.917x0.5063	Reinf. 2 Tension Rupture	65.1%	Pass
81 - 80.75	Pole	TP38.115x38.055x0.3438	Pole	67.3%	Pass
80.75 - 79	Pole	TP39.912x38.115x0.3438	Pole	68.3%	Pass

79 - 72.25	Pole	TP39.467x37.847x0.4063	Pole	58.6%	Pass
72.25 - 67.25	Pole	TP40.667x39.467x0.4063	Pole	60.4%	Pass
67.25 - 62.25	Pole	TP41.867x40.667x0.4063	Pole	62.0%	Pass
62.25 - 57.25	Pole	TP43.067x41.867x0.4063	Pole	63.6%	Pass
57.25 - 52.25	Pole	TP44.267x43.067x0.4063	Pole	65.0%	Pass
52.25 - 49.8	Pole	TP44.855x44.267x0.4063	Pole	65.7%	Pass
49.8 - 49.55	Pole	TP44.915x44.855x0.4063	Pole	65.8%	Pass
49.55 - 44.55	Pole	TP46.115x44.915x0.4063	Pole	67.2%	Pass
44.55 - 43	Pole	TP48.088x46.115x0.4063	Pole	67.6%	Pass
43 - 35.33	Pole	TP47.516x45.675x0.4375	Pole	64.3%	Pass
35.33 - 32.25	Pole	TP48.256x47.516x0.4375	Pole	65.0%	Pass
32.25 - 32	Pole	TP48.316x48.256x0.4375	Pole	65.0%	Pass
32 - 27	Pole	TP49.517x48.316x0.4375	Pole	66.0%	Pass
27 - 22	Pole	TP50.717x49.517x0.4375	Pole	67.0%	Pass
22 - 17	Pole	TP51.918x50.717x0.4375	Pole	67.9%	Pass
17 - 15.5	Pole	TP52.278x51.918x0.4375	Pole	68.1%	Pass
15.5 - 15.25	Pole	TP52.338x52.278x0.4375	Pole	68.2%	Pass
15.25 - 14.75	Pole	TP52.458x52.338x0.4375	Pole	68.3%	Pass
14.75 - 14.5	Pole	TP52.518x52.458x0.4375	Pole	68.3%	Pass
14.5 - 9.5	Pole	TP53.719x52.518x0.4375	Pole	69.2%	Pass
9.5 - 4.5	Pole	TP54.919x53.719x0.4375	Pole	70.1%	Pass
4.5 - 0	Pole	TP56x54.919x0.4375	Pole	70.9%	Pass
				Summary	
			Pole	70.9%	Pass
			Reinforcement	65.1%	Pass
			Overall	70.9%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.4	Pass
	Base Plate		42.3	Pass
1	Base Foundation	0	53.5	Pass
	Base Foundation Soil Interaction		65.8	Pass

4.2) Seismic Results

The tower and foundation have been analyzed based on the seismic criteria outlined in Section 2 of this report. Based on the results, seismic loading does not govern the tower and foundation stress. Wind loading governs the tower and foundation stress.

Structure Rating (max from all components) =	70.9%

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

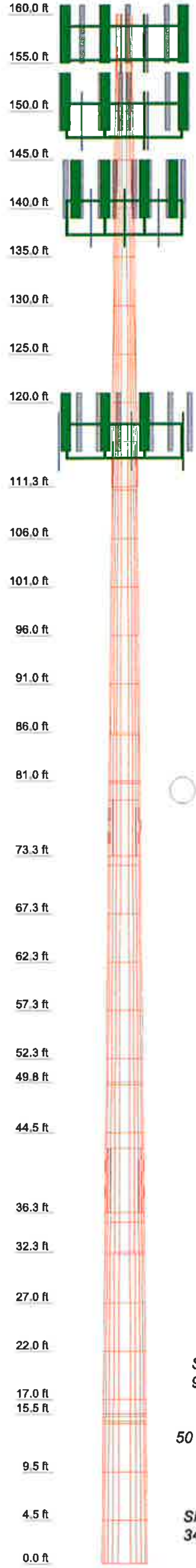
4.3) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	12	0.2500		19.6000	20.8009	A572-65	0.3
2	5.0000	12	0.2500		20.8009	22.0019		0.3
3	5.0000	12	0.2500		22.0019	23.2028		0.3
4	5.0000	12	0.2500		23.2028	24.4038		0.3
5	5.0000	12	0.2500		24.4038	25.6047		0.3
6	5.0000	12	0.2500		25.6047	26.8057		0.4
7	5.0000	12	0.2500		26.8057	28.0066		0.4
8	5.0000	12	0.2500		28.0066	29.2076		0.4
9	[illegible]	12	0.2500	4.6700	29.2076	31.2900		0.7
10	[illegible]	12	[illegible]		[illegible]	[illegible]		0.6
11	5.0000	12	[illegible]		[illegible]	[illegible]		0.6
12	5.0000	12	0.3438		32.0645	33.2626		0.6
13	5.0000	12	0.3438		33.2626	34.4607		0.6
14	5.0000	12	0.3438		34.4607	35.6588		0.7
15	[illegible]	12	[illegible]		[illegible]	[illegible]		0.7
16	[illegible]	12	[illegible]		[illegible]	[illegible]		0.0
17	[illegible]	12	[illegible]		[illegible]	[illegible]		1.0
18	[illegible]	12	[illegible]		[illegible]	[illegible]		0.0
19	[illegible]	12	0.3438	5.7500	[illegible]	[illegible]		1.1
20	[illegible]	12	[illegible]		[illegible]	[illegible]		1.1
21	5.0000	12	[illegible]		[illegible]	40.6668		0.9
22	5.0000	12	0.4063		40.6668	41.8669		0.9
23	5.0000	12	0.4063		41.8669	43.0670		0.9
24	5.0000	12	0.4063		43.0670	44.2670		1.0
25	[illegible]	12	[illegible]		[illegible]	[illegible]		0.0
26	[illegible]	12	[illegible]		[illegible]	[illegible]		0.5
27	[illegible]	12	[illegible]		[illegible]	[illegible]		1.0
28	[illegible]	12	0.4063	6.6700	46.1151	48.0880		1.7
29	[illegible]	12	[illegible]		[illegible]	[illegible]		1.7
30	[illegible]	12	[illegible]		[illegible]	[illegible]		0.1
31	[illegible]	12	[illegible]		[illegible]	[illegible]		0.0
32	[illegible]	12	[illegible]		[illegible]	[illegible]		1.2
33	5.0000	12	0.4375		49.5166	50.7172		1.2
34	5.0000	12	0.4375		50.7172	51.9179		1.2
35–38	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
39	[illegible]	12	[illegible]		[illegible]	[illegible]		1.3
40	5.0000	12	0.4375		53.7188	54.9194		1.3
41	4.5000	12	0.4375		54.9194	56.0000		1.2
								27.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 602-1]	157	RRUS 12 B2/RRUS A2	149
APXVTM14-ALU-I20 w/ Mount Pipe	157	DC6-48-60-18-8F	149
APXVTM14-ALU-I20 w/ Mount Pipe	157	6' x 2" Mount Pipe	149
APXVTM14-ALU-I20 w/ Mount Pipe	157	6' x 2" Mount Pipe	149
APXVSPP18-C-A20 w/ Mount Pipe	157	6' x 2" Mount Pipe	149
APXVSPP18-C-A20 w/ Mount Pipe	157	Platform Mount [LP 602-1]	139
APXVSPP18-C-A20 w/ Mount Pipe	157	(3) 6' x 2" Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	(3) 6' x 2" Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	(3) 6' x 2" Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	(2) DB846F65ZAXY w/ Mount Pipe	139
(3) ACU-A20-N	157	(2) DB846F65ZAXY w/ Mount Pipe	139
(3) ACU-A20-N	157	(2) DB846F65ZAXY w/ Mount Pipe	139
(3) ACU-A20-N	157	JAHH-65B-R3B w/ Mount Pipe	139
FWHR	157	JAHH-65B-R3B w/ Mount Pipe	139
FWHR	157	JAHH-65B-R3B w/ Mount Pipe	139
FWHR	157	JAHH-65B-R3B w/ Mount Pipe	139
BEN-92P	157	JAHH-65B-R3B w/ Mount Pipe	139
(2) TD-RRH8x20-25	157	JAHH-65B-R3B w/ Mount Pipe	139
TD-RRH8x20-25	157	B66A RRH4X45	139
6' x 2" Mount Pipe	157	B66A RRH4X45	139
6' x 2" Mount Pipe	157	B66A RRH4X45	139
6' x 2" Mount Pipe	157	B13 RRH 4X30	139
(2) Pipe Mount [PM 601-3]	154	B13 RRH 4X30	139
800 EXTERNAL NOTCH FILTER	154	B13 RRH 4X30	139
800 EXTERNAL NOTCH FILTER	154	DB-T1-6Z-8AB-0Z	139
800 EXTERNAL NOTCH FILTER	154	Platform Mount [LP 712-1]	116
800MHZ RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
800MHZ RRH	154		
800MHZ RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
1900MHz RRH (65MHz)	154		
1900MHz RRH (65MHz)	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
1900MHz RRH (65MHz)	154		
Platform Mount [LP 602-1]	149	LNX-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149		
7770.00 w/ Mount Pipe	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
HPA-65R-BUU-H6 w/ Mount Pipe	149		
HPA-65R-BUU-H6 w/ Mount Pipe	149	RRUS 11 B12	116
HPA-65R-BUU-H6 w/ Mount Pipe	149	RRUS 11 B12	116
(2) LGP21401	149	RRUS 11 B12	116
(2) LGP21401	149	KRY 112 144/1	116
(2) LGP21401	149	KRY 112 144/1	116
(2) LGP21901	149	KRY 112 144/1	116
(2) LGP21901	149	6' x 2" Mount Pipe	116
(2) LGP21901	149	6' x 2" Mount Pipe	116
1001983	149	6' x 2" Mount Pipe	116
1001983	149	Side Arm Mount [SO 701-1]	84
1001983	149	GPS_A	84
RRUS-11	149	Pipe Mount [PM 601-1]	45
RRUS-11	149	BULLET III	45
RRUS-11	149	Pipe Mount [PM 601-1]	40
RRUS 12 B2/RRUS A2	149	GPS-QBW-20N	40
RRUS 12 B2/RRUS A2	149		

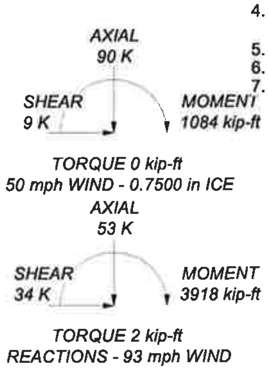
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft

ALL REACTIONS ARE FACTORED



BLACK & VEATCH Building a world of difference.	Black & Veatch Corp. 6800 W. 115th Street, Suite 2292 Overland Park, KS 66211 Phone: (913) 458-2000 FAX: (913) 458-8136

Job: BRG 2044 (A) 943097 (BU #806953)		
Project: 194393 (806953.1503596)		
Client: Crown Castle	Drawn by: Justin D. Vibbert, E.I.T.	App'd:
Code: TIA-222-G	Date: 01/02/18	Scale: N
Path: C:\Users\vib70985\Documents\Verify\806953\updates\A1.eri		Dwg No.

Tower Input Data

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

1) Tower is located in Fairfield County, Connecticut.
2) Basic wind speed of 93 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.0000 ft.
7) Nominal ice thickness of 0.7500 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56.00 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	160.0000-155.0000	5.0000	0.00	12	19.6000	20.8009	0.2500	1.0000	A572-65 (65 ksi)
L2	155.0000-150.0000	5.0000	0.00	12	20.8009	22.0019	0.2500	1.0000	A572-65 (65 ksi)
L3	150.0000-145.0000	5.0000	0.00	12	22.0019	23.2028	0.2500	1.0000	A572-65 (65 ksi)
L4	145.0000-140.0000	5.0000	0.00	12	23.2028	24.4038	0.2500	1.0000	A572-65 (65 ksi)
L5	140.0000-135.0000	5.0000	0.00	12	24.4038	25.6047	0.2500	1.0000	A572-65 (65 ksi)
L6	135.0000-130.0000	5.0000	0.00	12	25.6047	26.8057	0.2500	1.0000	A572-65 (65 ksi)
L7	130.0000-125.0000	5.0000	0.00	12	26.8057	28.0066	0.2500	1.0000	A572-65 (65 ksi)
L8	125.0000-	5.0000	0.00	12	28.0066	29.2076	0.2500	1.0000	A572-65

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
	120.0000								(65 ksi)
L9	120.0000-111.3300	8.6700	4.67	12	29.2076	31.2900	0.2500	1.0000	A572-65 (65 ksi)
L10	111.3300-111.0000	5.0000	0.00	12	29.6683	30.8664	0.3438	1.3750	A572-65 (65 ksi)
L11	111.0000-106.0000	5.0000	0.00	12	30.8664	32.0645	0.3438	1.3750	A572-65 (65 ksi)
L12	106.0000-101.0000	5.0000	0.00	12	32.0645	33.2626	0.3438	1.3750	A572-65 (65 ksi)
L13	101.0000-96.0000	5.0000	0.00	12	33.2626	34.4607	0.3438	1.3750	A572-65 (65 ksi)
L14	96.0000-91.0000	5.0000	0.00	12	34.4607	35.6588	0.3438	1.3750	A572-65 (65 ksi)
L15	91.0000-86.0000	5.0000	0.00	12	35.6588	36.8569	0.3438	1.3750	A572-65 (65 ksi)
L16	86.0000-85.7500	0.2500	0.00	12	36.8569	36.9168	0.5125	2.0500	A572-65 (65 ksi)
L17	85.7500-81.0000	4.7500	0.00	12	36.9168	38.0550	0.5062	2.0250	A572-65 (65 ksi)
L18	81.0000-80.7500	0.2500	0.00	12	38.0550	38.1149	0.3438	1.3750	A572-65 (65 ksi)
L19	80.7500-73.2500	7.5000	5.75	12	38.1149	39.9120	0.3438	1.3750	A572-65 (65 ksi)
L20	73.2500-72.2500	6.7500	0.00	12	37.8467	39.4668	0.4063	1.6250	A572-65 (65 ksi)
L21	72.2500-67.2500	5.0000	0.00	12	39.4668	40.6668	0.4063	1.6250	A572-65 (65 ksi)
L22	67.2500-62.2500	5.0000	0.00	12	40.6668	41.8669	0.4063	1.6250	A572-65 (65 ksi)
L23	62.2500-57.2500	5.0000	0.00	12	41.8669	43.0670	0.4063	1.6250	A572-65 (65 ksi)
L24	57.2500-52.2500	5.0000	0.00	12	43.0670	44.2670	0.4063	1.6250	A572-65 (65 ksi)
L25	52.2500-49.8000	2.4500	0.00	12	44.2670	44.8550	0.4063	1.6250	A572-65 (65 ksi)
L26	49.8000-49.5500	0.2500	0.00	12	44.8550	44.9150	0.4063	1.6250	A572-65 (65 ksi)
L27	49.5500-44.5500	5.0000	0.00	12	44.9150	46.1151	0.4063	1.6250	A572-65 (65 ksi)
L28	44.5500-36.3300	8.2200	6.67	12	46.1151	48.0880	0.4063	1.6250	A572-65 (65 ksi)
L29	36.3300-35.3300	7.6700	0.00	12	45.6746	47.5164	0.4375	1.7500	A572-65 (65 ksi)
L30	35.3300-32.2500	3.0800	0.00	12	47.5164	48.2560	0.4375	1.7500	A572-65 (65 ksi)
L31	32.2500-32.0000	0.2500	0.00	12	48.2560	48.3160	0.4375	1.7500	A572-65 (65 ksi)
L32	32.0000-27.0000	5.0000	0.00	12	48.3160	49.5166	0.4375	1.7500	A572-65 (65 ksi)
L33	27.0000-22.0000	5.0000	0.00	12	49.5166	50.7172	0.4375	1.7500	A572-65 (65 ksi)
L34	22.0000-17.0000	5.0000	0.00	12	50.7172	51.9179	0.4375	1.7500	A572-65 (65 ksi)
L35	17.0000-15.5000	1.5000	0.00	12	51.9179	52.2781	0.4375	1.7500	A572-65 (65 ksi)
L36	15.5000-15.2500	0.2500	0.00	12	52.2781	52.3381	0.4375	1.7500	A572-65 (65 ksi)
L37	15.2500-14.7500	0.5000	0.00	12	52.3381	52.4582	0.4375	1.7500	A572-65 (65 ksi)
L38	14.7500-14.5000	0.2500	0.00	12	52.4582	52.5182	0.4375	1.7500	A572-65 (65 ksi)
L39	14.5000-9.5000	5.0000	0.00	12	52.5182	53.7188	0.4375	1.7500	A572-65 (65 ksi)
L40	9.5000-4.5000	5.0000	0.00	12	53.7188	54.9194	0.4375	1.7500	A572-65 (65 ksi)
L41	4.5000-0.0000	4.5000		12	54.9194	56.0000	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L1	20.2914	15.5768	744.4315	6.9273	10.1528	73.3228	1508.4200	7.6664	4.5828	18.331
	21.5347	16.5435	891.8200	7.3572	10.7749	82.7684	1807.0692	8.1422	4.9047	19.619
L2	21.5347	16.5435	891.8200	7.3572	10.7749	82.7684	1807.0692	8.1422	4.9047	19.619
	22.7780	17.5103	1057.4817	7.7872	11.3970	92.7861	2142.7445	8.6180	5.2265	20.906
L3	22.7780	17.5103	1057.4817	7.7872	11.3970	92.7861	2142.7445	8.6180	5.2265	20.906
	24.0213	18.4770	1242.4842	8.2171	12.0191	103.3761	2517.6097	9.0938	5.5484	22.193
L4	24.0213	18.4770	1242.4842	8.2171	12.0191	103.3761	2517.6097	9.0938	5.5484	22.193
	25.2647	19.4438	1447.8954	8.6471	12.6412	114.5382	2933.8286	9.5696	5.8702	23.481
L5	25.2647	19.4438	1447.8954	8.6471	12.6412	114.5382	2933.8286	9.5696	5.8702	23.481
	26.5080	20.4106	1674.7831	9.0770	13.2632	126.2725	3393.5647	10.0455	6.1921	24.768
L6	26.5080	20.4106	1674.7831	9.0770	13.2632	126.2725	3393.5647	10.0455	6.1921	24.768
	27.7513	21.3773	1924.2153	9.5069	13.8853	138.5789	3898.9819	10.5213	6.5139	26.056
L7	27.7513	21.3773	1924.2153	9.5069	13.8853	138.5789	3898.9819	10.5213	6.5139	26.056
	28.9946	22.3441	2197.2597	9.9369	14.5074	151.4576	4452.2438	10.9971	6.8358	27.343
L8	28.9946	22.3441	2197.2597	9.9369	14.5074	151.4576	4452.2438	10.9971	6.8358	27.343
	30.2379	23.3108	2494.9841	10.3668	15.1295	164.9084	5055.5141	11.4729	7.1576	28.631
L9	30.2379	23.3108	2494.9841	10.3668	15.1295	164.9084	5055.5141	11.4729	7.1576	28.631
	32.3938	24.9872	3072.8897	11.1123	16.2082	189.5883	6226.5076	12.2979	7.7157	30.863
L10	31.8734	32.4586	3562.7009	10.4982	15.3682	231.8231	7218.9979	15.9752	7.0299	20.45
	31.9553	33.7848	4017.4605	10.9271	15.9888	251.2672	8140.4641	16.6278	7.3509	21.385
L11	31.9553	33.7848	4017.4605	10.9271	15.9888	251.2672	8140.4641	16.6278	7.3509	21.385
	33.1956	35.1109	4509.3598	11.3560	16.6094	271.4943	9137.1854	17.2805	7.6720	22.319
L12	33.1956	35.1109	4509.3598	11.3560	16.6094	271.4943	9137.1854	17.2805	7.6720	22.319
	34.4360	36.4370	5039.8565	11.7849	17.2300	292.5043	10212.115 7	17.9332	7.9931	23.253
L13	34.4360	36.4370	5039.8565	11.7849	17.2300	292.5043	10212.115 7	17.9332	7.9931	23.253
	35.6763	37.7632	5610.4086	12.2139	17.8506	314.2974	11368.208 9	18.5859	8.3142	24.187
L14	35.6763	37.7632	5610.4086	12.2139	17.8506	314.2974	11368.208 9	18.5859	8.3142	24.187
	36.9167	39.0893	6222.4739	12.6428	18.4712	336.8735	12608.419 1	19.2386	8.6353	25.121
L15	36.9167	39.0893	6222.4739	12.6428	18.4712	336.8735	12608.419 1	19.2386	8.6353	25.121
	38.1570	40.4155	6877.5101	13.0717	19.0919	360.2326	13935.700 1	19.8913	8.9564	26.055
L16	38.1570	59.9773	10112.231 5	13.0113	19.0919	529.6620	20490.122 6	29.5190	8.5041	16.593
	38.2191	60.0761	10162.316 4	13.0327	19.1229	531.4216	20591.608 1	29.5677	8.5202	16.625
L17	38.2191	59.3537	10043.556 9	13.0350	19.1229	525.2113	20350.969 1	29.2121	8.5369	16.863
	39.3974	61.2091	11015.186 5	13.4424	19.7125	558.7929	22319.754 3	30.1253	8.8420	17.466
L18	39.3974	41.7416	7576.9752	13.5006	19.7125	384.3748	15353.006 0	20.5439	9.2775	26.989
	39.4594	41.8079	7613.1408	13.5221	19.7435	385.6024	15426.287 4	20.5766	9.2935	27.036
L19	39.4594	41.8079	7613.1408	13.5221	19.7435	385.6024	15426.287 4	20.5766	9.2935	27.036
	41.3199	43.7971	8752.3577	14.1654	20.6744	423.3424	17734.649 5	21.5556	9.7752	28.437
L20	40.6105	48.9768	8763.1086	13.4037	19.6046	446.9927	17756.433 7	24.1049	9.0542	22.287
	40.8590	51.0960	9950.6033	13.9837	20.4438	486.7299	20162.620 0	25.1479	9.4883	23.356
L21	40.8590	51.0960	9950.6033	13.9837	20.4438	486.7299	20162.620 0	25.1479	9.4883	23.356
	42.1014	52.6659	10896.208 4	14.4133	21.0654	517.2557	22078.672 4	25.9205	9.8100	24.148
L22	42.1014	52.6659	10896.208 4	14.4133	21.0654	517.2557	22078.672 4	25.9205	9.8100	24.148
	43.3438	54.2357	11899.899 6	14.8429	21.6871	548.7099	24112.422 8	26.6932	10.1316	24.939
L23	43.3438	54.2357	11899.899 6	14.8429	21.6871	548.7099	24112.422 8	26.6932	10.1316	24.939
	44.5862	55.8055	12963.408	15.2725	22.3087	581.0925	26267.379	27.4658	10.4532	25.731

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L24	44.5862	55.8055	12963.4082	15.2725	22.3087	581.0925	26267.3796	27.4658	10.4532	25.731
	45.8286	57.3754	14088.4657	15.7022	22.9303	614.4036	28547.0510	28.2384	10.7748	26.523
L25	45.8286	57.3754	14088.4657	15.7022	22.9303	614.4036	28547.0510	28.2384	10.7748	26.523
	46.4374	58.1446	14662.7368	15.9127	23.2349	631.0649	29710.6800	28.6170	10.9324	26.911
L26	46.4374	58.1446	14662.7368	15.9127	23.2349	631.0649	29710.6800	28.6170	10.9324	26.911
	46.4995	58.2231	14722.1982	15.9341	23.2660	632.7776	29831.1650	28.6556	10.9485	26.95
L27	46.4995	58.2231	14722.1982	15.9341	23.2660	632.7776	29831.1650	28.6556	10.9485	26.95
	47.7419	59.7929	15945.4271	16.3638	23.8876	667.5184	32309.7583	29.4282	11.2701	27.742
L28	47.7419	59.7929	15945.4271	16.3638	23.8876	667.5184	32309.7583	29.4282	11.2701	27.742
	49.7844	62.3737	18100.5493	17.0701	24.9096	726.6500	36676.6202	30.6984	11.7988	29.043
L29	48.9440	63.7278	16645.8031	16.1949	23.6595	703.5582	33728.9099	31.3649	11.0683	25.299
	49.1926	66.3224	18762.8264	16.8542	24.6135	762.2986	38018.5731	32.6419	11.5619	26.427
L30	49.1926	66.3224	18762.8264	16.8542	24.6135	762.2986	38018.5731	32.6419	11.5619	26.427
	49.9583	67.3643	19661.0539	17.1190	24.9966	786.5494	39838.6255	33.1546	11.7601	26.88
L31	49.9583	67.3643	19661.0539	17.1190	24.9966	786.5494	39838.6255	33.1546	11.7601	26.88
	50.0204	67.4488	19735.1943	17.1405	25.0277	788.5345	39988.8541	33.1963	11.7762	26.917
L32	50.0204	67.4488	19735.1943	17.1405	25.0277	788.5345	39988.8541	33.1963	11.7762	26.917
	51.2634	69.1402	21257.4050	17.5703	25.6496	828.7613	43073.2657	34.0287	12.0980	27.652
L33	51.2634	69.1402	21257.4050	17.5703	25.6496	828.7613	43073.2657	34.0287	12.0980	27.652
	52.5064	70.8316	22855.9436	18.0001	26.2715	869.9889	46312.3382	34.8612	12.4197	28.388
L34	52.5064	70.8316	22855.9436	18.0001	26.2715	869.9889	46312.3382	34.8612	12.4197	28.388
	53.7493	72.5230	24532.6772	18.4300	26.8935	912.2173	49709.8552	35.6936	12.7415	29.123
L35	53.7493	72.5230	24532.6772	18.4300	26.8935	912.2173	49709.8552	35.6936	12.7415	29.123
	54.1222	73.0304	25051.2245	18.5589	27.0800	925.0809	50760.5725	35.9433	12.8380	29.344
L36	54.1222	73.0304	25051.2245	18.5589	27.0800	925.0809	50760.5725	35.9433	12.8380	29.344
	54.1844	73.1150	25138.3531	18.5804	27.1111	927.2336	50937.1188	35.9850	12.8541	29.381
L37	54.1844	73.1150	25138.3531	18.5804	27.1111	927.2336	50937.1188	35.9850	12.8541	29.381
	54.3087	73.2841	25313.2160	18.6234	27.1733	931.5465	51291.4383	36.0682	12.8863	29.454
L38	54.3087	73.2841	25313.2160	18.6234	27.1733	931.5465	51291.4383	36.0682	12.8863	29.454
	54.3708	73.3687	25400.9507	18.6449	27.2044	933.7067	51469.2126	36.1098	12.9024	29.491
L39	54.3708	73.3687	25400.9507	18.6449	27.2044	933.7067	51469.2126	36.1098	12.9024	29.491
	55.6138	75.0600	27198.4779	19.0747	27.8263	977.4363	55111.4902	36.9423	13.2241	30.227
L40	55.6138	75.0600	27198.4779	19.0747	27.8263	977.4363	55111.4902	36.9423	13.2241	30.227
	56.8568	76.7514	29078.8683	19.5045	28.4483	1022.1665	58921.6708	37.7747	13.5459	30.962
L41	56.8568	76.7514	29078.8683	19.5045	28.4483	1022.1665	58921.6708	37.7747	13.5459	30.962

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	57.9755	78.2737	30843.6108	19.8914	29.0080	1063.2795	62497.5176	38.5239	13.8355	31.624

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 160.0000-155.0000				1	1	1			
L2 155.0000-150.0000				1	1	1			
L3 150.0000-145.0000				1	1	1			
L4 145.0000-140.0000				1	1	1			
L5 140.0000-135.0000				1	1	1			
L6 135.0000-130.0000				1	1	1			
L7 130.0000-125.0000				1	1	1			
L8 125.0000-120.0000				1	1	1			
L9 120.0000-111.3300				1	1	1			
L10 111.3300-111.0000				1	1	1			
L11 111.0000-106.0000				1	1	1			
L12 106.0000-101.0000				1	1	1			
L13 101.0000-96.0000				1	1	1			
L14 96.0000-91.0000				1	1	1			
L15 91.0000-86.0000				1	1	1			
L16 86.0000-85.7500				1	1	0.97389			
L17 85.7500-81.0000				1	1	0.976446			
L18 81.0000-80.7500				1	1	1			
L19 80.7500-73.2500				1	1	1			
L20 73.2500-72.2500				1	1	1			
L21 72.2500-67.2500				1	1	1			
L22 67.2500-62.2500				1	1	1			
L23 62.2500-57.2500				1	1	1			
L24 57.2500-52.2500				1	1	1			
L25 52.2500-49.8000				1	1	1			
L26 49.8000-49.5500				1	1	1			
L27 49.5500-44.5500				1	1	1			
L28 44.5500-36.3300				1	1	1			
L29 36.3300-35.3300				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L30 35.3300-32.2500				1	1	1			
L31 32.2500-32.0000				1	1	1			
L32 32.0000-27.0000				1	1	1			
L33 27.0000-22.0000				1	1	1			
L34 22.0000-17.0000				1	1	1			
L35 17.0000-15.5000				1	1	1			
L36 15.5000-15.2500				1	1	1			
L37 15.2500-14.7500				1	1	1			
L38 14.7500-14.5000				1	1	1			
L39 14.5000-9.5000				1	1	1			
L40 9.5000-4.5000				1	1	1			
L41 4.5000-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
Safety Line 3/8	A	Surface Ar (CaAa)	160.0000 - 0.0000	1	1	0.000 0.020	0.3750		0.00
****Reinforcement****									
PL0.75x4 Reinforcement - Wind Area	A	Surface Af (CaAa)	16.7500 - 1.7500	1	1	0.000 0.000	4.0000	9.5000	0.00
PL0.75x4 Reinforcement - Wind Area	B	Surface Af (CaAa)	16.7500 - 1.7500	1	1	0.000 0.000	4.0000	9.5000	0.00
PL0.75x4 Reinforcement - Wind Area	C	Surface Af (CaAa)	16.7500 - 1.7500	1	1	0.000 0.000	4.0000	9.5000	0.00
PL0.75x4 Reinforcement - Wind Area	A	Surface Af (CaAa)	82.0000 - 77.0000	1	1	0.000 0.000	4.0000	9.5000	0.00
PL0.75x4 Reinforcement - Wind Area	B	Surface Af (CaAa)	82.0000 - 77.0000	1	1	0.000 0.000	4.0000	9.5000	0.00
PL0.75x4 Reinforcement - Wind Area	C	Surface Af (CaAa)	82.0000 - 77.0000	1	1	0.000 0.000	4.0000	9.5000	0.00
CCI-AFP-060100	A	Surface Af (CaAa)	32.2500 - 12.2500	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	Surface Af (CaAa)	32.2500 - 12.2500	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	C	Surface Af (CaAa)	32.2500 - 12.2500	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	A	Surface Af (CaAa)	52.3300 - 32.3300	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	Surface Af (CaAa)	52.3300 - 32.3300	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	C	Surface Af (CaAa)	52.3300 - 32.3300	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	A	Surface Af (CaAa)	88.5000 - 78.5000	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	Surface Af (CaAa)	88.5000 - 78.5000	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	C	Surface Af (CaAa)	88.5000 - 78.5000	1	1	0.000 0.000	6.0000	14.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-0813U4-M5J(1-1/4)	A	No	Inside Pole	157.0000 - 0.0000	3	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
LDF4-50A(1/2)	A	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
7919A(17/64)	A	No	Inside Pole	157.0000 - 0.0000	4	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
004U8X-32125E2G(1/8)	A	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
HB058-M12-XXXF(5/8)	A	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
TYPE SOOW 12/9(7/8)	A	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
LDF7-50A(1-5/8)	B	No	Inside Pole	116.0000 - 0.0000	6	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
MLE HYBRID 3POWER/6FIBER RL 2(1-1/4)	B	No	Inside Pole	116.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	139.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
561(1-5/8)	C	No	Inside Pole	139.0000 - 0.0000	12	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
2" innerduct conduit	C	No	Inside Pole	149.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
FB-L98B-002-75000(3/8)	C	No	Inside Pole	149.0000 - 0.0000	1	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
WR-VG82ST-BRDA(5/8)	C	No	Inside Pole	149.0000 - 0.0000	2	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00
LCF158-50JA-A0(1-5/8)	C	No	Inside Pole	149.0000 - 0.0000	12	No Ice	0.0000	0.00
						1/2" Ice	0.0000	0.00
						1" Ice	0.0000	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.0000-155.0000	A	0.000	0.000	0.188	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	155.0000-150.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	150.0000-145.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L4	145.0000-140.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.05
L5	140.0000-135.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.12
L6	135.0000-130.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.14

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L7	130.0000-125.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.14
L8	125.0000-120.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.14
L9	120.0000-111.3300	A	0.000	0.000	0.325	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.24
L10	111.3300-111.0000	A	0.000	0.000	0.012	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L11	111.0000-106.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L12	106.0000-101.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L13	101.0000-96.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L14	96.0000-91.0000	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L15	91.0000-86.0000	A	0.000	0.000	2.688	0.000	0.02
		B	0.000	0.000	2.500	0.000	0.03
		C	0.000	0.000	2.500	0.000	0.14
L16	86.0000-85.7500	A	0.000	0.000	0.259	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.01
L17	85.7500-81.0000	A	0.000	0.000	5.595	0.000	0.02
		B	0.000	0.000	5.417	0.000	0.03
		C	0.000	0.000	5.417	0.000	0.13
L18	81.0000-80.7500	A	0.000	0.000	0.426	0.000	0.00
		B	0.000	0.000	0.417	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.01
L19	80.7500-73.2500	A	0.000	0.000	5.031	0.000	0.04
		B	0.000	0.000	4.750	0.000	0.04
		C	0.000	0.000	4.750	0.000	0.21
L20	73.2500-72.2500	A	0.000	0.000	0.037	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.03
L21	72.2500-67.2500	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L22	67.2500-62.2500	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L23	62.2500-57.2500	A	0.000	0.000	0.188	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L24	57.2500-52.2500	A	0.000	0.000	0.268	0.000	0.02
		B	0.000	0.000	0.080	0.000	0.03
		C	0.000	0.000	0.080	0.000	0.14
L25	52.2500-49.8000	A	0.000	0.000	2.542	0.000	0.01
		B	0.000	0.000	2.450	0.000	0.01
		C	0.000	0.000	2.450	0.000	0.07
L26	49.8000-49.5500	A	0.000	0.000	0.259	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.01
L27	49.5500-44.5500	A	0.000	0.000	5.188	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.03
		C	0.000	0.000	5.000	0.000	0.14
L28	44.5500-36.3300	A	0.000	0.000	8.528	0.000	0.04
		B	0.000	0.000	8.220	0.000	0.05
		C	0.000	0.000	8.220	0.000	0.23
L29	36.3300-35.3300	A	0.000	0.000	1.038	0.000	0.00
		B	0.000	0.000	1.000	0.000	0.01
		C	0.000	0.000	1.000	0.000	0.03
L30	35.3300-32.2500	A	0.000	0.000	3.115	0.000	0.01

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	3.000	0.000	0.02
		C	0.000	0.000	3.000	0.000	0.09
L31	32.2500-32.0000	A	0.000	0.000	0.259	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.01
L32	32.0000-27.0000	A	0.000	0.000	5.188	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.03
		C	0.000	0.000	5.000	0.000	0.14
L33	27.0000-22.0000	A	0.000	0.000	5.188	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.03
		C	0.000	0.000	5.000	0.000	0.14
L34	22.0000-17.0000	A	0.000	0.000	5.188	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.03
		C	0.000	0.000	5.000	0.000	0.14
L35	17.0000-15.5000	A	0.000	0.000	2.390	0.000	0.01
		B	0.000	0.000	2.333	0.000	0.01
		C	0.000	0.000	2.333	0.000	0.04
L36	15.5000-15.2500	A	0.000	0.000	0.426	0.000	0.00
		B	0.000	0.000	0.417	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.01
L37	15.2500-14.7500	A	0.000	0.000	0.852	0.000	0.00
		B	0.000	0.000	0.833	0.000	0.00
		C	0.000	0.000	0.833	0.000	0.01
L38	14.7500-14.5000	A	0.000	0.000	0.426	0.000	0.00
		B	0.000	0.000	0.417	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.01
L39	14.5000-9.5000	A	0.000	0.000	5.771	0.000	0.02
		B	0.000	0.000	5.583	0.000	0.03
		C	0.000	0.000	5.583	0.000	0.14
L40	9.5000-4.5000	A	0.000	0.000	3.521	0.000	0.02
		B	0.000	0.000	3.333	0.000	0.03
		C	0.000	0.000	3.333	0.000	0.14
L41	4.5000-0.0000	A	0.000	0.000	2.002	0.000	0.02
		B	0.000	0.000	1.833	0.000	0.03
		C	0.000	0.000	1.833	0.000	0.13

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.0000-155.0000	A	1.754	0.000	0.000	1.941	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	155.0000-150.0000	A	1.748	0.000	0.000	1.936	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	150.0000-145.0000	A	1.742	0.000	0.000	1.930	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04
L4	145.0000-140.0000	A	1.736	0.000	0.000	1.924	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.05
L5	140.0000-135.0000	A	1.730	0.000	0.000	1.918	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.12
L6	135.0000-130.0000	A	1.724	0.000	0.000	1.911	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.14
L7	130.0000-125.0000	A	1.717	0.000	0.000	1.905	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.14
L8	125.0000-120.0000	A	1.710	0.000	0.000	1.898	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.14
L9	120.0000-111.3300	A	1.700	0.000	0.000	3.274	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.24
L10	111.3300-	A	1.694	0.000	0.000	0.125	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
	111.0000	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L11	111.0000-106.0000	A	1.690	0.000	0.000	1.877	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L12	106.0000-101.0000	A	1.682	0.000	0.000	1.869	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L13	101.0000-96.0000	A	1.673	0.000	0.000	1.861	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L14	96.0000-91.0000	A	1.665	0.000	0.000	1.852	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L15	91.0000-86.0000	A	1.655	0.000	0.000	4.569	0.000	0.08
		B		0.000	0.000	2.726	0.000	0.06
		C		0.000	0.000	2.726	0.000	0.17
L16	86.0000-85.7500	A	1.651	0.000	0.000	0.364	0.000	0.01
		B		0.000	0.000	0.273	0.000	0.00
		C		0.000	0.000	0.273	0.000	0.01
L17	85.7500-81.0000	A	1.646	0.000	0.000	7.647	0.000	0.11
		B		0.000	0.000	5.905	0.000	0.10
		C		0.000	0.000	5.905	0.000	0.20
L18	81.0000-80.7500	A	1.641	0.000	0.000	0.546	0.000	0.01
		B		0.000	0.000	0.455	0.000	0.01
		C		0.000	0.000	0.455	0.000	0.01
L19	80.7500-73.2500	A	1.633	0.000	0.000	7.911	0.000	0.13
		B		0.000	0.000	5.181	0.000	0.11
		C		0.000	0.000	5.181	0.000	0.28
L20	73.2500-72.2500	A	1.623	0.000	0.000	0.364	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.03
L21	72.2500-67.2500	A	1.617	0.000	0.000	1.804	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L22	67.2500-62.2500	A	1.605	0.000	0.000	1.792	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L23	62.2500-57.2500	A	1.592	0.000	0.000	1.779	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.14
L24	57.2500-52.2500	A	1.578	0.000	0.000	1.871	0.000	0.04
		B		0.000	0.000	0.105	0.000	0.03
		C		0.000	0.000	0.105	0.000	0.14
L25	52.2500-49.8000	A	1.567	0.000	0.000	4.077	0.000	0.05
		B		0.000	0.000	3.218	0.000	0.04
		C		0.000	0.000	3.218	0.000	0.10
L26	49.8000-49.5500	A	1.563	0.000	0.000	0.416	0.000	0.01
		B		0.000	0.000	0.328	0.000	0.00
		C		0.000	0.000	0.328	0.000	0.01
L27	49.5500-44.5500	A	1.554	0.000	0.000	8.296	0.000	0.10
		B		0.000	0.000	6.554	0.000	0.09
		C		0.000	0.000	6.554	0.000	0.20
L28	44.5500-36.3300	A	1.531	0.000	0.000	13.561	0.000	0.17
		B		0.000	0.000	10.736	0.000	0.14
		C		0.000	0.000	10.736	0.000	0.33
L29	36.3300-35.3300	A	1.512	0.000	0.000	1.650	0.000	0.02
		B		0.000	0.000	1.306	0.000	0.02
		C		0.000	0.000	1.306	0.000	0.04
L30	35.3300-32.2500	A	1.504	0.000	0.000	4.944	0.000	0.06
		B		0.000	0.000	3.902	0.000	0.05
		C		0.000	0.000	3.902	0.000	0.12
L31	32.2500-32.0000	A	1.496	0.000	0.000	0.409	0.000	0.00
		B		0.000	0.000	0.325	0.000	0.00
		C		0.000	0.000	0.325	0.000	0.01
L32	32.0000-27.0000	A	1.483	0.000	0.000	8.154	0.000	0.10
		B		0.000	0.000	6.483	0.000	0.08
		C		0.000	0.000	6.483	0.000	0.20
L33	27.0000-22.0000	A	1.456	0.000	0.000	8.099	0.000	0.10
		B		0.000	0.000	6.456	0.000	0.08

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	6.456	0.000	0.20
L34	22.0000-17.0000	A	1.423	0.000	0.000	8.034	0.000	0.09
		B		0.000	0.000	6.423	0.000	0.08
		C		0.000	0.000	6.423	0.000	0.19
L35	17.0000-15.5000	A	1.397	0.000	0.000	3.577	0.000	0.04
		B		0.000	0.000	3.102	0.000	0.03
		C		0.000	0.000	3.102	0.000	0.07
L36	15.5000-15.2500	A	1.390	0.000	0.000	0.634	0.000	0.01
		B		0.000	0.000	0.556	0.000	0.01
		C		0.000	0.000	0.556	0.000	0.01
L37	15.2500-14.7500	A	1.386	0.000	0.000	1.268	0.000	0.01
		B		0.000	0.000	1.111	0.000	0.01
		C		0.000	0.000	1.111	0.000	0.02
L38	14.7500-14.5000	A	1.383	0.000	0.000	0.633	0.000	0.01
		B		0.000	0.000	0.555	0.000	0.01
		C		0.000	0.000	0.555	0.000	0.01
L39	14.5000-9.5000	A	1.356	0.000	0.000	9.092	0.000	0.10
		B		0.000	0.000	7.549	0.000	0.09
		C		0.000	0.000	7.549	0.000	0.20
L40	9.5000-4.5000	A	1.284	0.000	0.000	6.090	0.000	0.07
		B		0.000	0.000	4.618	0.000	0.06
		C		0.000	0.000	4.618	0.000	0.18
L41	4.5000-0.0000	A	1.146	0.000	0.000	3.664	0.000	0.05
		B		0.000	0.000	2.464	0.000	0.04
		C		0.000	0.000	2.464	0.000	0.14

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.0000-155.0000	-0.0463	-0.0281	-0.3525	-0.2135
L2	155.0000-150.0000	-0.0463	-0.0281	-0.3570	-0.2162
L3	150.0000-145.0000	-0.0464	-0.0281	-0.3610	-0.2187
L4	145.0000-140.0000	-0.0464	-0.0281	-0.3646	-0.2208
L5	140.0000-135.0000	-0.0464	-0.0281	-0.3679	-0.2228
L6	135.0000-130.0000	-0.0464	-0.0281	-0.3707	-0.2245
L7	130.0000-125.0000	-0.0464	-0.0281	-0.3732	-0.2260
L8	125.0000-120.0000	-0.0464	-0.0281	-0.3754	-0.2274
L9	120.0000-111.3300	-0.0464	-0.0281	-0.3780	-0.2289
L10	111.3300-111.0000	-0.0464	-0.0281	-0.3793	-0.2297
L11	111.0000-106.0000	-0.0464	-0.0281	-0.3791	-0.2296
L12	106.0000-101.0000	-0.0464	-0.0281	-0.3803	-0.2303
L13	101.0000-96.0000	-0.0464	-0.0281	-0.3814	-0.2310
L14	96.0000-91.0000	-0.0464	-0.0281	-0.3821	-0.2314
L15	91.0000-86.0000	-0.0315	-0.0191	-0.2669	-0.1617
L16	86.0000-85.7500	-0.0240	-0.0145	-0.2064	-0.1250
L17	85.7500-81.0000	-0.0227	-0.0137	-0.1952	-0.1182
L18	81.0000-80.7500	-0.0185	-0.0112	-0.1603	-0.0971
L19	80.7500-73.2500	-0.0298	-0.0180	-0.2524	-0.1528
L20	73.2500-72.2500	-0.0464	-0.0281	-0.3836	-0.2323
L21	72.2500-67.2500	-0.0464	-0.0281	-0.3817	-0.2312
L22	67.2500-62.2500	-0.0464	-0.0281	-0.3812	-0.2309
L23	62.2500-57.2500	-0.0464	-0.0281	-0.3804	-0.2304
L24	57.2500-52.2500	-0.0458	-0.0278	-0.3739	-0.2265
L25	52.2500-49.8000	-0.0262	-0.0159	-0.2008	-0.1216
L26	49.8000-49.5500	-0.0263	-0.0159	-0.2012	-0.1218

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L27	49.5500-44.5500	-0.0264	-0.0160	-0.2019	-0.1223
L28	44.5500-36.3300	-0.0268	-0.0162	-0.2033	-0.1231
L29	36.3300-35.3300	-0.0269	-0.0163	-0.2039	-0.1235
L30	35.3300-32.2500	-0.0273	-0.0165	-0.2048	-0.1240
L31	32.2500-32.0000	-0.0271	-0.0164	-0.2025	-0.1227
L32	32.0000-27.0000	-0.0272	-0.0165	-0.2026	-0.1227
L33	27.0000-22.0000	-0.0275	-0.0167	-0.2024	-0.1226
L34	22.0000-17.0000	-0.0278	-0.0168	-0.2014	-0.1220
L35	17.0000-15.5000	-0.0229	-0.0139	-0.1581	-0.0958
L36	15.5000-15.2500	-0.0221	-0.0134	-0.1515	-0.0918
L37	15.2500-14.7500	-0.0221	-0.0134	-0.1514	-0.0917
L38	14.7500-14.5000	-0.0222	-0.0134	-0.1513	-0.0916
L39	14.5000-9.5000	-0.0269	-0.0163	-0.1830	-0.1108
L40	9.5000-4.5000	-0.0326	-0.0198	-0.2161	-0.1309
L41	4.5000-0.0000	-0.0370	-0.0224	-0.2313	-0.1401

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	17	Safety Line 3/8	155.00 - 160.00	1.0000	1.0000
L2	17	Safety Line 3/8	150.00 - 155.00	1.0000	1.0000
L3	17	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L4	17	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L5	17	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L6	17	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L7	17	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L8	17	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L9	17	Safety Line 3/8	111.33 - 120.00	1.0000	1.0000
L11	17	Safety Line 3/8	106.00 - 111.00	1.0000	1.0000
L12	17	Safety Line 3/8	101.00 - 106.00	1.0000	1.0000
L13	17	Safety Line 3/8	96.00 - 101.00	1.0000	1.0000
L14	17	Safety Line 3/8	91.00 - 96.00	1.0000	1.0000
L15	17	Safety Line 3/8	86.00 - 91.00	1.0000	1.0000
L15	31	CCI-AFP-060100	86.00 - 88.50	1.0000	1.0000
L15	32	CCI-AFP-060100	86.00 - 88.50	1.0000	1.0000
L15	33	CCI-AFP-060100	86.00 - 88.50	1.0000	1.0000
L16	17	Safety Line 3/8	85.75 - 86.00	1.0000	1.0000
L16	31	CCI-AFP-060100	85.75 - 86.00	1.0000	1.0000
L16	32	CCI-AFP-060100	85.75 - 86.00	1.0000	1.0000
L16	33	CCI-AFP-060100	85.75 - 86.00	1.0000	1.0000
L17	17	Safety Line 3/8	81.00 - 85.75	1.0000	1.0000
L17	22	PL0.75x4 Reinforcement - Wind Area	81.00 - 82.00	1.0000	1.0000
L17	23	PL0.75x4 Reinforcement - Wind Area	81.00 - 82.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	24	PL0.75x4 Reinforcement - Wind Area	81.00 - 82.00	1.0000	1.0000
L17	31	CCI-AFP-060100	81.00 - 85.75	1.0000	1.0000
L17	32	CCI-AFP-060100	81.00 - 85.75	1.0000	1.0000
L17	33	CCI-AFP-060100	81.00 - 85.75	1.0000	1.0000
L18	17	Safety Line 3/8	80.75 - 81.00	1.0000	1.0000
L18	22	PL0.75x4 Reinforcement - Wind Area	80.75 - 81.00	1.0000	1.0000
L18	23	PL0.75x4 Reinforcement - Wind Area	80.75 - 81.00	1.0000	1.0000
L18	24	PL0.75x4 Reinforcement - Wind Area	80.75 - 81.00	1.0000	1.0000
L18	31	CCI-AFP-060100	80.75 - 81.00	1.0000	1.0000
L18	32	CCI-AFP-060100	80.75 - 81.00	1.0000	1.0000
L18	33	CCI-AFP-060100	80.75 - 81.00	1.0000	1.0000
L19	17	Safety Line 3/8	73.25 - 80.75	1.0000	1.0000
L19	22	PL0.75x4 Reinforcement - Wind Area	77.00 - 80.75	1.0000	1.0000
L19	23	PL0.75x4 Reinforcement - Wind Area	77.00 - 80.75	1.0000	1.0000
L19	24	PL0.75x4 Reinforcement - Wind Area	77.00 - 80.75	1.0000	1.0000
L19	31	CCI-AFP-060100	78.50 - 80.75	1.0000	1.0000
L19	32	CCI-AFP-060100	78.50 - 80.75	1.0000	1.0000
L19	33	CCI-AFP-060100	78.50 - 80.75	1.0000	1.0000
L21	17	Safety Line 3/8	67.25 - 72.25	1.0000	1.0000
L22	17	Safety Line 3/8	62.25 - 67.25	1.0000	1.0000
L23	17	Safety Line 3/8	57.25 - 62.25	1.0000	1.0000
L24	17	Safety Line 3/8	52.25 - 57.25	1.0000	1.0000
L24	28	CCI-AFP-060100	52.25 - 52.33	1.0000	1.0000
L24	29	CCI-AFP-060100	52.25 - 52.33	1.0000	1.0000
L24	30	CCI-AFP-060100	52.25 - 52.33	1.0000	1.0000
L25	17	Safety Line 3/8	49.80 - 52.25	1.0000	1.0000
L25	28	CCI-AFP-060100	49.80 - 52.25	1.0000	1.0000
L25	29	CCI-AFP-060100	49.80 - 52.25	1.0000	1.0000
L25	30	CCI-AFP-060100	49.80 - 52.25	1.0000	1.0000
L26	17	Safety Line 3/8	49.55 - 49.80	1.0000	1.0000
L26	28	CCI-AFP-060100	49.55 - 49.80	1.0000	1.0000
L26	29	CCI-AFP-060100	49.55 - 49.80	1.0000	1.0000
L26	30	CCI-AFP-060100	49.55 - 49.80	1.0000	1.0000
L27	17	Safety Line 3/8	44.55 - 49.55	1.0000	1.0000
L27	28	CCI-AFP-060100	44.55 - 49.55	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	29	CCI-AFP-060100	44.55 - 49.55	1.0000	1.0000
L27	30	CCI-AFP-060100	44.55 - 49.55	1.0000	1.0000
L28	17	Safety Line 3/8	36.33 - 44.55	1.0000	1.0000
L28	28	CCI-AFP-060100	36.33 - 44.55	1.0000	1.0000
L28	29	CCI-AFP-060100	36.33 - 44.55	1.0000	1.0000
L28	30	CCI-AFP-060100	36.33 - 44.55	1.0000	1.0000
L30	17	Safety Line 3/8	32.25 - 35.33	1.0000	1.0000
L30	28	CCI-AFP-060100	32.33 - 35.33	1.0000	1.0000
L30	29	CCI-AFP-060100	32.33 - 35.33	1.0000	1.0000
L30	30	CCI-AFP-060100	32.33 - 35.33	1.0000	1.0000
L31	17	Safety Line 3/8	32.00 - 32.25	1.0000	1.0000
L31	25	CCI-AFP-060100	32.00 - 32.25	1.0000	1.0000
L31	26	CCI-AFP-060100	32.00 - 32.25	1.0000	1.0000
L31	27	CCI-AFP-060100	32.00 - 32.25	1.0000	1.0000
L32	17	Safety Line 3/8	27.00 - 32.00	1.0000	1.0000
L32	25	CCI-AFP-060100	27.00 - 32.00	1.0000	1.0000
L32	26	CCI-AFP-060100	27.00 - 32.00	1.0000	1.0000
L32	27	CCI-AFP-060100	27.00 - 32.00	1.0000	1.0000
L33	17	Safety Line 3/8	22.00 - 27.00	1.0000	1.0000
L33	25	CCI-AFP-060100	22.00 - 27.00	1.0000	1.0000
L33	26	CCI-AFP-060100	22.00 - 27.00	1.0000	1.0000
L33	27	CCI-AFP-060100	22.00 - 27.00	1.0000	1.0000
L34	17	Safety Line 3/8	17.00 - 22.00	1.0000	1.0000
L34	25	CCI-AFP-060100	17.00 - 22.00	1.0000	1.0000
L34	26	CCI-AFP-060100	17.00 - 22.00	1.0000	1.0000
L34	27	CCI-AFP-060100	17.00 - 22.00	1.0000	1.0000
L35	17	Safety Line 3/8	15.50 - 17.00	1.0000	1.0000
L35	19	PL0.75x4 Reinforcement - Wind Area	15.50 - 16.75	1.0000	1.0000
L35	20	PL0.75x4 Reinforcement - Wind Area	15.50 - 16.75	1.0000	1.0000
L35	21	PL0.75x4 Reinforcement - Wind Area	15.50 - 16.75	1.0000	1.0000
L35	25	CCI-AFP-060100	15.50 - 17.00	1.0000	1.0000
L35	26	CCI-AFP-060100	15.50 - 17.00	1.0000	1.0000
L35	27	CCI-AFP-060100	15.50 - 17.00	1.0000	1.0000
L36	17	Safety Line 3/8	15.25 - 15.50	1.0000	1.0000
L36	19	PL0.75x4 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L36	20	PL0.75x4 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000
L36	21	PL0.75x4 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000
L36	25	CCI-AFP-060100	15.25 - 15.50	1.0000	1.0000
L36	26	CCI-AFP-060100	15.25 - 15.50	1.0000	1.0000
L36	27	CCI-AFP-060100	15.25 - 15.50	1.0000	1.0000
L37	17	Safety Line 3/8	14.75 - 15.25	1.0000	1.0000
L37	19	PL0.75x4 Reinforcement - Wind Area	14.75 - 15.25	1.0000	1.0000
L37	20	PL0.75x4 Reinforcement - Wind Area	14.75 - 15.25	1.0000	1.0000
L37	21	PL0.75x4 Reinforcement - Wind Area	14.75 - 15.25	1.0000	1.0000
L37	25	CCI-AFP-060100	14.75 - 15.25	1.0000	1.0000
L37	26	CCI-AFP-060100	14.75 - 15.25	1.0000	1.0000
L37	27	CCI-AFP-060100	14.75 - 15.25	1.0000	1.0000
L38	17	Safety Line 3/8	14.50 - 14.75	1.0000	1.0000
L38	19	PL0.75x4 Reinforcement - Wind Area	14.50 - 14.75	1.0000	1.0000
L38	20	PL0.75x4 Reinforcement - Wind Area	14.50 - 14.75	1.0000	1.0000
L38	21	PL0.75x4 Reinforcement - Wind Area	14.50 - 14.75	1.0000	1.0000
L38	25	CCI-AFP-060100	14.50 - 14.75	1.0000	1.0000
L38	26	CCI-AFP-060100	14.50 - 14.75	1.0000	1.0000
L38	27	CCI-AFP-060100	14.50 - 14.75	1.0000	1.0000
L39	17	Safety Line 3/8	9.50 - 14.50	1.0000	1.0000
L39	19	PL0.75x4 Reinforcement - Wind Area	9.50 - 14.50	1.0000	1.0000
L39	20	PL0.75x4 Reinforcement - Wind Area	9.50 - 14.50	1.0000	1.0000
L39	21	PL0.75x4 Reinforcement - Wind Area	9.50 - 14.50	1.0000	1.0000
L39	25	CCI-AFP-060100	12.25 - 14.50	1.0000	1.0000
L39	26	CCI-AFP-060100	12.25 - 14.50	1.0000	1.0000
L39	27	CCI-AFP-060100	12.25 - 14.50	1.0000	1.0000
L40	17	Safety Line 3/8	4.50 - 9.50	1.0000	1.0000
L40	19	PL0.75x4 Reinforcement - Wind Area	4.50 - 9.50	1.0000	1.0000
L40	20	PL0.75x4 Reinforcement - Wind Area	4.50 - 9.50	1.0000	1.0000
L40	21	PL0.75x4 Reinforcement - Wind Area	4.50 - 9.50	1.0000	1.0000
L41	17	Safety Line 3/8	0.00 - 4.50	1.0000	1.0000
L41	19	PL0.75x4 Reinforcement - Wind Area	1.75 - 4.50	1.0000	1.0000
L41	20	PL0.75x4 Reinforcement - Wind Area	1.75 - 4.50	1.0000	1.0000
L41	21	PL0.75x4 Reinforcement - Wind Area	1.75 - 4.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 602-1]	A	None		0.00	157.0000	No Ice	32.0300	32.0300	1.34
						1/2" Ice	38.7100	38.7100	1.80
						1" Ice	45.3900	45.3900	2.26
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Face	3.0000 -6.00 1.00	-20.00	157.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						1" Ice	7.4733	6.4723	0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Face	3.0000 6.00 1.00	0.00	157.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						1" Ice	7.4733	6.4723	0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Face	3.0000 -6.00 1.00	-20.00	157.0000	No Ice	6.5799	4.9591	0.08
						1/2" Ice	7.0306	5.7544	0.13
						1" Ice	7.4733	6.4723	0.19
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	3.0000 -2.00 1.00	0.00	157.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	3.0000 2.00 1.00	-20.00	157.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	3.0000 2.00 1.00	0.00	157.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
LLPX310R-V1 w/ Mount Pipe	A	From Face	3.0000 2.00 1.00	0.00	157.0000	No Ice	4.5378	2.9834	0.05
						1/2" Ice	4.8914	3.5263	0.08
						1" Ice	5.2539	4.0859	0.13
LLPX310R-V1 w/ Mount Pipe	B	From Face	3.0000 -6.00 1.00	-20.00	157.0000	No Ice	4.5378	2.9834	0.05
						1/2" Ice	4.8914	3.5263	0.08
						1" Ice	5.2539	4.0859	0.13
LLPX310R-V1 w/ Mount Pipe	C	From Face	3.0000 6.00 1.00	0.00	157.0000	No Ice	4.5378	2.9834	0.05
						1/2" Ice	4.8914	3.5263	0.08
						1" Ice	5.2539	4.0859	0.13
(3) ACU-A20-N	A	From Face	3.0000 0.00 0.00	0.00	157.0000	No Ice	0.0667	0.1167	0.00
						1/2" Ice	0.1037	0.1620	0.00
						1" Ice	0.1481	0.2148	0.00
(3) ACU-A20-N	B	From Face	3.0000 0.00 0.00	0.00	157.0000	No Ice	0.0667	0.1167	0.00
						1/2" Ice	0.1037	0.1620	0.00
						1" Ice	0.1481	0.2148	0.00
(3) ACU-A20-N	C	From Face	3.0000 0.00 0.00	0.00	157.0000	No Ice	0.0667	0.1167	0.00
						1/2" Ice	0.1037	0.1620	0.00
						1" Ice	0.1481	0.2148	0.00
FWHR	A	From Face	3.0000 0.00 1.00	0.00	157.0000	No Ice	1.0350	0.5082	0.03
						1/2" Ice	1.1637	0.6007	0.04
						1" Ice	1.2999	0.7006	0.05
FWHR	B	From Face	3.0000 0.00 1.00	0.00	157.0000	No Ice	1.0350	0.5082	0.03
						1/2" Ice	1.1637	0.6007	0.04
						1" Ice	1.2999	0.7006	0.05
FWHR	C	From Face	3.0000 0.00 1.00	0.00	157.0000	No Ice	1.0350	0.5082	0.03
						1/2" Ice	1.1637	0.6007	0.04
						1" Ice	1.2999	0.7006	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
BEN-92P	A	From Face	3.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	0.6453 0.7474 0.8569	0.4198 0.5067 0.6009	0.00 0.01 0.02
(2) TD-RRH8x20-25	A	From Face	3.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	B	From Face	3.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
6' x 2" Mount Pipe	A	From Face	3.0000 6.00 0.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Face	3.0000 -2.00 0.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Face	3.0000 -2.00 0.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
***									
(2) Pipe Mount [PM 601-3]	C	None		0.00	154.0000	No Ice 1/2" Ice 1" Ice	4.3900 5.4800 6.5700	4.3900 5.4800 6.5700	0.20 0.24 0.28
800 EXTERNAL NOTCH FILTER	A	From Face	1.0000 0.00 1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Face	1.0000 0.00 1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	C	From Face	1.0000 0.00 1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800MHZ RRH	A	From Face	1.0000 0.00 1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	B	From Face	1.0000 0.00 1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	C	From Face	1.0000 0.00 1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
1900MHz RRH (65MHz)	A	From Face	1.0000 0.00 -1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.06 0.08 0.11
1900MHz RRH (65MHz)	B	From Face	1.0000 0.00 -1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.06 0.08 0.11
1900MHz RRH (65MHz)	C	From Face	1.0000 0.00 -1.00	0.00	154.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*****									
Platform Mount [LP 602-1]	A	None		0.00	149.0000	No Ice	32.0300	32.0300	1.34
						1/2" Ice	38.7100	38.7100	1.80
						1" Ice	45.3900	45.3900	2.26
7770.00 w/ Mount Pipe	A	From Face	3.0000 -6.00 2.00	23.00	149.0000	No Ice	5.7460	4.2543	0.06
						1/2" Ice	6.1791	5.0137	0.10
						1" Ice	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	B	From Face	3.0000 -6.00 2.00	23.00	149.0000	No Ice	5.7460	4.2543	0.06
						1/2" Ice	6.1791	5.0137	0.10
						1" Ice	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	C	From Face	3.0000 -6.00 2.00	23.00	149.0000	No Ice	5.7460	4.2543	0.06
						1/2" Ice	6.1791	5.0137	0.10
						1" Ice	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	A	From Face	3.0000 2.00 2.00	30.00	149.0000	No Ice	5.7460	4.2543	0.06
						1/2" Ice	6.1791	5.0137	0.10
						1" Ice	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	B	From Face	3.0000 2.00 2.00	30.00	149.0000	No Ice	5.7460	4.2543	0.06
						1/2" Ice	6.1791	5.0137	0.10
						1" Ice	6.6067	5.7109	0.16
7770.00 w/ Mount Pipe	C	From Face	3.0000 2.00 2.00	30.00	149.0000	No Ice	5.7460	4.2543	0.06
						1/2" Ice	6.1791	5.0137	0.10
						1" Ice	6.6067	5.7109	0.16
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Face	3.0000 6.00 2.00	23.00	149.0000	No Ice	9.8953	8.1125	0.08
						1/2" Ice	10.4700	9.3041	0.16
						1" Ice	11.0098	10.2095	0.25
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Face	3.0000 6.00 2.00	23.00	149.0000	No Ice	9.8953	8.1125	0.08
						1/2" Ice	10.4700	9.3041	0.16
						1" Ice	11.0098	10.2095	0.25
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Face	3.0000 6.00 2.00	23.00	149.0000	No Ice	9.8953	8.1125	0.08
						1/2" Ice	10.4700	9.3041	0.16
						1" Ice	11.0098	10.2095	0.25
(2) LGP21401	A	From Face	3.0000 0.00 2.00	0.00	149.0000	No Ice	1.1040	0.3471	0.01
						1/2" Ice	1.2388	0.4422	0.02
						1" Ice	1.3810	0.5444	0.03
(2) LGP21401	B	From Face	3.0000 0.00 2.00	0.00	149.0000	No Ice	1.1040	0.3471	0.01
						1/2" Ice	1.2388	0.4422	0.02
						1" Ice	1.3810	0.5444	0.03
(2) LGP21401	C	From Face	3.0000 0.00 2.00	0.00	149.0000	No Ice	1.1040	0.3471	0.01
						1/2" Ice	1.2388	0.4422	0.02
						1" Ice	1.3810	0.5444	0.03
(2) LGP21901	A	From Face	3.0000 0.00 2.00	0.00	149.0000	No Ice	0.2310	0.1575	0.01
						1/2" Ice	0.2941	0.2129	0.01
						1" Ice	0.3647	0.2756	0.01
(2) LGP21901	B	From Face	3.0000 0.00 2.00	0.00	149.0000	No Ice	0.2310	0.1575	0.01
						1/2" Ice	0.2941	0.2129	0.01
						1" Ice	0.3647	0.2756	0.01
(2) LGP21901	C	From Face	3.0000 0.00 2.00	0.00	149.0000	No Ice	0.2310	0.1575	0.01
						1/2" Ice	0.2941	0.2129	0.01
						1" Ice	0.3647	0.2756	0.01
1001983	A	From Face	3.0000	0.00	149.0000	No Ice	0.1758	0.0833	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	0.2317	0.1264	0.00
			2.00			Ice	0.2950	0.1778	0.01
						1" Ice			
1001983	B	From Face	3.0000	0.00	149.0000	No Ice	0.1758	0.0833	0.00
			0.00			1/2"	0.2317	0.1264	0.00
			2.00			Ice	0.2950	0.1778	0.01
						1" Ice			
1001983	C	From Face	3.0000	0.00	149.0000	No Ice	0.1758	0.0833	0.00
			0.00			1/2"	0.2317	0.1264	0.00
			2.00			Ice	0.2950	0.1778	0.01
						1" Ice			
RRUS-11	A	From Face	3.0000	0.00	149.0000	No Ice	2.7845	1.1872	0.05
			0.00			1/2"	2.9919	1.3342	0.07
			2.00			Ice	3.2066	1.4897	0.09
						1" Ice			
RRUS-11	B	From Face	3.0000	0.00	149.0000	No Ice	2.7845	1.1872	0.05
			0.00			1/2"	2.9919	1.3342	0.07
			2.00			Ice	3.2066	1.4897	0.09
						1" Ice			
RRUS-11	C	From Face	3.0000	0.00	149.0000	No Ice	2.7845	1.1872	0.05
			0.00			1/2"	2.9919	1.3342	0.07
			2.00			Ice	3.2066	1.4897	0.09
						1" Ice			
RRUS 12 B2/RRUS A2	A	From Face	3.0000	0.00	149.0000	No Ice	3.1450	1.8496	0.07
			0.00			1/2"	3.3648	2.0271	0.10
			2.00			Ice	3.5920	2.2120	0.13
						1" Ice			
RRUS 12 B2/RRUS A2	B	From Face	3.0000	0.00	149.0000	No Ice	3.1450	1.8496	0.07
			0.00			1/2"	3.3648	2.0271	0.10
			2.00			Ice	3.5920	2.2120	0.13
						1" Ice			
RRUS 12 B2/RRUS A2	C	From Face	3.0000	0.00	149.0000	No Ice	3.1450	1.8496	0.07
			0.00			1/2"	3.3648	2.0271	0.10
			2.00			Ice	3.5920	2.2120	0.13
						1" Ice			
DC6-48-60-18-8F	A	From Face	1.0000	0.00	149.0000	No Ice	0.9167	0.9167	0.02
			0.00			1/2"	1.4583	1.4583	0.04
			2.00			Ice	1.6431	1.6431	0.06
						1" Ice			
6' x 2" Mount Pipe	A	From Face	3.0000	0.00	149.0000	No Ice	1.4250	1.4250	0.02
			-2.00			1/2"	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
6' x 2" Mount Pipe	B	From Face	3.0000	0.00	149.0000	No Ice	1.4250	1.4250	0.02
			-2.00			1/2"	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
6' x 2" Mount Pipe	C	From Face	3.0000	0.00	149.0000	No Ice	1.4250	1.4250	0.02
			-2.00			1/2"	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
***									
Platform Mount [LP 602-1]	A	None		0.00	139.0000	No Ice	32.0300	32.0300	1.34
						1/2"	38.7100	38.7100	1.80
						Ice	45.3900	45.3900	2.26
						1" Ice			
(3) 6' x 2" Mount Pipe	A	From Face	3.0000	0.00	139.0000	No Ice	1.4250	1.4250	0.02
			0.00			1/2"	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
(3) 6' x 2" Mount Pipe	B	From Face	3.0000	0.00	139.0000	No Ice	1.4250	1.4250	0.02
			0.00			1/2"	1.9250	1.9250	0.03
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
(3) 6' x 2" Mount Pipe	C	From Face	3.0000	0.00	139.0000	No Ice	1.4250	1.4250	0.02
			0.00			1/2"	1.9250	1.9250	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice			
(2) DB846F65ZAXY w/ Mount Pipe	A	From Face	3.0000	30.00	139.0000	No Ice	7.2708	7.8208	0.05
			0.00			1/2"	7.8325	9.0097	0.11
			3.00			Ice	8.3480	9.9124	0.19
						1" Ice			
(2) DB846F65ZAXY w/ Mount Pipe	B	From Face	3.0000	30.00	139.0000	No Ice	7.2708	7.8208	0.05
			0.00			1/2"	7.8325	9.0097	0.11
			3.00			Ice	8.3480	9.9124	0.19
						1" Ice			
(2) DB846F65ZAXY w/ Mount Pipe	C	From Face	3.0000	30.00	139.0000	No Ice	7.2708	7.8208	0.05
			0.00			1/2"	7.8325	9.0097	0.11
			3.00			Ice	8.3480	9.9124	0.19
						1" Ice			
JAHH-65B-R3B w/ Mount Pipe	A	From Face	3.0000	30.00	139.0000	No Ice	9.3508	7.6458	0.09
			-2.00			1/2"	9.9205	8.8331	0.16
			3.00			Ice	10.4552	9.7341	0.25
						1" Ice			
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.0000	30.00	139.0000	No Ice	9.3508	7.6458	0.09
			-2.00			1/2"	9.9205	8.8331	0.16
			3.00			Ice	10.4552	9.7341	0.25
						1" Ice			
JAHH-65B-R3B w/ Mount Pipe	C	From Face	3.0000	20.00	139.0000	No Ice	9.3508	7.6458	0.09
			-2.00			1/2"	9.9205	8.8331	0.16
			3.00			Ice	10.4552	9.7341	0.25
						1" Ice			
JAHH-65B-R3B w/ Mount Pipe	A	From Face	3.0000	30.00	139.0000	No Ice	9.3508	7.6458	0.09
			2.00			1/2"	9.9205	8.8331	0.16
			3.00			Ice	10.4552	9.7341	0.25
						1" Ice			
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.0000	30.00	139.0000	No Ice	9.3508	7.6458	0.09
			2.00			1/2"	9.9205	8.8331	0.16
			3.00			Ice	10.4552	9.7341	0.25
						1" Ice			
JAHH-65B-R3B w/ Mount Pipe	C	From Face	3.0000	20.00	139.0000	No Ice	9.3508	7.6458	0.09
			2.00			1/2"	9.9205	8.8331	0.16
			3.00			Ice	10.4552	9.7341	0.25
						1" Ice			
B66A RRH4X45	A	From Face	3.0000	0.00	139.0000	No Ice	2.5800	1.6296	0.06
			0.00			1/2"	2.7937	1.8106	0.08
			3.00			Ice	3.0148	1.9986	0.10
						1" Ice			
B66A RRH4X45	B	From Face	3.0000	0.00	139.0000	No Ice	2.5800	1.6296	0.06
			0.00			1/2"	2.7937	1.8106	0.08
			3.00			Ice	3.0148	1.9986	0.10
						1" Ice			
B66A RRH4X45	C	From Face	3.0000	0.00	139.0000	No Ice	2.5800	1.6296	0.06
			0.00			1/2"	2.7937	1.8106	0.08
			3.00			Ice	3.0148	1.9986	0.10
						1" Ice			
B13 RRH 4X30	A	From Face	3.0000	0.00	139.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2"	2.2405	1.4754	0.07
			3.00			Ice	2.4333	1.6376	0.09
						1" Ice			
B13 RRH 4X30	B	From Face	3.0000	0.00	139.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2"	2.2405	1.4754	0.07
			3.00			Ice	2.4333	1.6376	0.09
						1" Ice			
B13 RRH 4X30	C	From Face	3.0000	0.00	139.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2"	2.2405	1.4754	0.07
			3.00			Ice	2.4333	1.6376	0.09
						1" Ice			
DB-T1-6Z-8AB-0Z	B	From Face	3.0000	0.00	139.0000	No Ice	4.8000	2.0000	0.04
			0.00			1/2"	5.0704	2.1926	0.08
			3.00			Ice	5.3481	2.3926	0.12
						1" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
Platform Mount [LP 712-1]	A	None		0.00	116.0000	No Ice	24.5300	24.5300	1.34
						1/2" Ice	29.9400	29.9400	1.65
						1" Ice	35.3500	35.3500	1.96
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	3.0000 -2.00 2.00	0.00	116.0000	No Ice	6.3166	5.6315	0.11
						1/2" Ice	6.7618	6.4123	0.17
						1" Ice	7.1999	7.1167	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	3.0000 -2.00 2.00	0.00	116.0000	No Ice	6.3166	5.6315	0.11
						1/2" Ice	6.7618	6.4123	0.17
						1" Ice	7.1999	7.1167	0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	3.0000 -2.00 2.00	10.00	116.0000	No Ice	6.3166	5.6315	0.11
						1/2" Ice	6.7618	6.4123	0.17
						1" Ice	7.1999	7.1167	0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Face	3.0000 2.00 2.00	0.00	116.0000	No Ice	11.6828	9.8418	0.08
						1/2" Ice	12.4043	11.3657	0.17
						1" Ice	13.1351	12.9138	0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Face	3.0000 2.00 2.00	0.00	116.0000	No Ice	11.6828	9.8418	0.08
						1/2" Ice	12.4043	11.3657	0.17
						1" Ice	13.1351	12.9138	0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Face	3.0000 2.00 2.00	10.00	116.0000	No Ice	11.6828	9.8418	0.08
						1/2" Ice	12.4043	11.3657	0.17
						1" Ice	13.1351	12.9138	0.27
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	3.0000 6.00 2.00	0.00	116.0000	No Ice	6.3292	5.6424	0.11
						1/2" Ice	6.7751	6.4259	0.17
						1" Ice	7.2137	7.1313	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	3.0000 6.00 2.00	0.00	116.0000	No Ice	6.3292	5.6424	0.11
						1/2" Ice	6.7751	6.4259	0.17
						1" Ice	7.2137	7.1313	0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	3.0000 6.00 2.00	10.00	116.0000	No Ice	6.3292	5.6424	0.11
						1/2" Ice	6.7751	6.4259	0.17
						1" Ice	7.2137	7.1313	0.23
RRUS 11 B12	A	From Face	3.0000 0.00 2.00	0.00	116.0000	No Ice	2.8333	1.1821	0.05
						1/2" Ice	3.0426	1.3299	0.07
						1" Ice	3.2593	1.4848	0.10
RRUS 11 B12	B	From Face	3.0000 0.00 2.00	0.00	116.0000	No Ice	2.8333	1.1821	0.05
						1/2" Ice	3.0426	1.3299	0.07
						1" Ice	3.2593	1.4848	0.10
RRUS 11 B12	C	From Face	3.0000 0.00 2.00	0.00	116.0000	No Ice	2.8333	1.1821	0.05
						1/2" Ice	3.0426	1.3299	0.07
						1" Ice	3.2593	1.4848	0.10
KRY 112 144/1	A	From Face	3.0000 0.00 2.00	0.00	116.0000	No Ice	0.3500	0.1750	0.01
						1/2" Ice	0.4259	0.2343	0.01
						1" Ice	0.5093	0.3009	0.02
KRY 112 144/1	B	From Face	3.0000 0.00 2.00	0.00	116.0000	No Ice	0.3500	0.1750	0.01
						1/2" Ice	0.4259	0.2343	0.01
						1" Ice	0.5093	0.3009	0.02
KRY 112 144/1	C	From Face	3.0000 0.00 2.00	0.00	116.0000	No Ice	0.3500	0.1750	0.01
						1/2" Ice	0.4259	0.2343	0.01
						1" Ice	0.5093	0.3009	0.02
6' x 2" Mount Pipe	A	From Face	3.0000	0.00	116.0000	No Ice	1.4250	1.4250	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-6.00			1/2" Ice	1.9250	1.9250	0.03
			0.00			1" Ice	2.2939	2.2939	0.05
6' x 2" Mount Pipe	B	From Face	3.0000	0.00	116.0000	No Ice	1.4250	1.4250	0.02
			-6.00			1/2" Ice	1.9250	1.9250	0.03
			0.00			1" Ice	2.2939	2.2939	0.05
6' x 2" Mount Pipe	C	From Face	3.0000	0.00	116.0000	No Ice	1.4250	1.4250	0.02
			-6.00			1/2" Ice	1.9250	1.9250	0.03
			0.00			1" Ice	2.2939	2.2939	0.05
***									
Side Arm Mount [SO 701-1]	C	From Face	0.0000	0.00	84.0000	No Ice	0.8500	1.6700	0.07
			0.00			1/2" Ice	1.1400	2.3400	0.08
			0.00			1" Ice	1.4300	3.0100	0.09
GPS_A	C	From Face	3.0000	0.00	84.0000	No Ice	0.2550	0.2550	0.00
			0.00			1/2" Ice	0.3205	0.3205	0.00
			0.00			1" Ice	0.3934	0.3934	0.01
***									
Pipe Mount [PM 601-1]	A	From Face	0.0000	0.00	45.0000	No Ice	3.0000	0.9000	0.07
			0.00			1/2" Ice	3.7400	1.1200	0.08
			0.00			1" Ice	4.4800	1.3400	0.09
BULLET III	A	From Face	1.0000	0.00	45.0000	No Ice	0.0774	0.0774	0.00
			0.00			1/2" Ice	0.1184	0.1184	0.00
			0.00			1" Ice	0.1680	0.1680	0.00
***									
Pipe Mount [PM 601-1]	A	From Face	0.0000	0.00	40.0000	No Ice	3.0000	0.9000	0.07
			0.00			1/2" Ice	3.7400	1.1200	0.08
			0.00			1" Ice	4.4800	1.3400	0.09
GPS-QBW-20N	A	From Face	1.0000	0.00	40.0000	No Ice	0.1292	0.1292	0.00
			0.00			1/2" Ice	0.1779	0.1779	0.00
			0.00			1" Ice	0.2340	0.2340	0.00
***									

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

Comb. No.	Description
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 155	Pole	Max Tension	45	0.00	-0.00	0.00
			Max. Compression	26	-7.75	1.02	-1.34
			Max. Mx	20	-2.67	12.11	0.05
			Max. My	14	-2.68	0.11	-11.73
			Max. Vy	20	-4.61	12.11	0.05
			Max. Vx	14	4.50	0.11	-11.73
			Max. Torque	22			1.77
L2	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.25	1.05	-1.34
			Max. Mx	20	-3.81	39.93	0.26
			Max. My	14	-3.82	-0.09	-38.97
			Max. Vy	20	-5.96	39.93	0.26
			Max. Vx	14	5.84	-0.09	-38.97
			Max. Torque	22			1.77
L3	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.89	1.24	-1.24
			Max. Mx	20	-6.75	93.12	0.48
			Max. My	14	-6.77	-0.27	-91.50
			Max. Vy	20	-10.69	93.12	0.48
			Max. Vx	14	10.57	-0.27	-91.50
			Max. Torque	22			1.77
L4	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.66	1.27	-1.24
			Max. Mx	20	-7.20	147.68	0.68
			Max. My	14	-7.22	-0.47	-145.47
			Max. Vy	20	-11.14	147.68	0.68
			Max. Vx	14	11.02	-0.47	-145.47
			Max. Torque	22			1.76
L5	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.02	0.62	-0.84
			Max. Mx	20	-10.53	237.63	0.76
			Max. My	14	-10.55	-0.64	-234.77
			Max. Vy	20	-17.22	237.63	0.76
			Max. Vx	14	17.08	-0.64	-234.77
			Max. Torque	22			1.76

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.97	0.65	-0.84
			Max. Mx	20	-11.17	324.88	0.83
			Max. My	14	-11.19	-0.72	-321.32
			Max. Vy	20	-17.69	324.88	0.83
			Max. Vx	14	17.55	-0.72	-321.32
			Max. Torque	20			1.53
L7	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.95	0.68	-0.83
			Max. Mx	20	-11.84	414.47	0.90
			Max. My	14	-11.87	-0.79	-410.22
			Max. Vy	20	-18.16	414.47	0.90
			Max. Vx	14	18.02	-0.79	-410.22
			Max. Torque	20			1.53
L8	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.96	0.70	-0.81
			Max. Mx	20	-12.55	506.43	0.97
			Max. My	14	-12.57	-0.86	-501.50
			Max. Vy	20	-18.64	506.43	0.97
			Max. Vx	14	18.50	-0.86	-501.50
			Max. Torque	20			1.53
L9	120 - 111.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.80	0.72	-0.80
			Max. Mx	20	-13.15	581.73	1.02
			Max. My	14	-13.17	-0.92	-576.24
			Max. Vy	20	-19.02	581.73	1.02
			Max. Vx	14	18.89	-0.92	-576.24
			Max. Torque	20			1.53
L10	111.33 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.79	0.75	-0.78
			Max. Mx	20	-17.20	700.93	0.97
			Max. My	14	-17.22	-0.87	-694.69
			Max. Vy	20	-23.21	700.93	0.97
			Max. Vx	14	23.06	-0.87	-694.69
			Max. Torque	20			1.51
L11	111 - 106	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.10	0.77	-0.77
			Max. Mx	20	-18.19	818.20	0.96
			Max. My	14	-18.21	-0.86	-811.23
			Max. Vy	20	-23.71	818.20	0.96
			Max. Vx	14	23.57	-0.86	-811.23
			Max. Torque	20			1.51
L12	106 - 101	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.44	0.80	-0.75
			Max. Mx	20	-19.21	937.99	0.94
			Max. My	14	-19.24	-0.85	-930.30
			Max. Vy	20	-24.22	937.99	0.94
			Max. Vx	14	24.08	-0.85	-930.30
			Max. Torque	20			1.51
L13	101 - 96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.83	0.82	-0.74
			Max. Mx	20	-20.27	1060.32	0.93
			Max. My	14	-20.30	-0.84	-1051.90
			Max. Vy	20	-24.73	1060.32	0.93
			Max. Vx	14	24.59	-0.84	-1051.90
			Max. Torque	20			1.51
L14	96 - 91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.24	0.85	-0.72
			Max. Mx	20	-21.37	1185.21	0.92
			Max. My	14	-21.39	-0.83	-1176.05
			Max. Vy	20	-25.24	1185.21	0.92
			Max. Vx	14	25.10	-0.83	-1176.05
			Max. Torque	20			1.51
L15	91 - 86	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.80	0.88	-0.70
			Max. Mx	20	-22.50	1312.64	0.91
			Max. My	14	-22.51	-0.82	-1302.77
			Max. Vy	20	-25.75	1312.64	0.91
			Max. Vx	14	25.61	-0.82	-1302.77
			Max. Torque	20			1.51

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L16	86 - 85.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.90	0.88	-0.70
			Max. Mx	20	-22.58	1319.08	0.91
			Max. My	14	-22.60	-0.82	-1309.17
			Max. Vy	20	-25.78	1319.08	0.91
			Max. Vx	14	25.63	-0.82	-1309.17
			Max. Torque	20			1.51
L17	85.75 - 81	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.02	0.91	-0.97
			Max. Mx	20	-24.05	1442.99	0.78
			Max. My	14	-24.07	-0.81	-1432.43
			Max. Vy	20	-26.39	1442.99	0.78
			Max. Vx	14	26.22	-0.81	-1432.43
			Max. Torque	20			1.63
L18	81 - 80.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.11	0.91	-0.97
			Max. Mx	20	-24.12	1449.59	0.78
			Max. My	14	-24.14	-0.81	-1438.98
			Max. Vy	20	-26.41	1449.59	0.78
			Max. Vx	14	26.24	-0.81	-1438.98
			Max. Torque	20			1.63
L19	80.75 - 73.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.69	0.92	-0.96
			Max. Mx	20	-24.51	1495.96	0.77
			Max. My	14	-24.53	-0.80	-1485.05
			Max. Vy	20	-26.61	1495.96	0.77
			Max. Vx	14	26.43	-0.80	-1485.05
			Max. Torque	20			1.63
L20	73.25 - 72.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.61	0.96	-0.93
			Max. Mx	20	-27.27	1678.27	0.76
			Max. My	14	-27.29	-0.79	-1666.18
			Max. Vy	20	-27.42	1678.27	0.76
			Max. Vx	14	27.25	-0.79	-1666.18
			Max. Torque	20			1.63
L21	72.25 - 67.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.35	0.99	-0.92
			Max. Mx	20	-28.65	1816.61	0.75
			Max. My	14	-28.67	-0.78	-1803.65
			Max. Vy	20	-27.94	1816.61	0.75
			Max. Vx	14	27.77	-0.78	-1803.65
			Max. Torque	20			1.63
L22	67.25 - 62.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.12	1.02	-0.90
			Max. Mx	20	-30.06	1957.53	0.74
			Max. My	14	-30.07	-0.77	-1943.70
			Max. Vy	20	-28.45	1957.53	0.74
			Max. Vx	14	28.28	-0.77	-1943.70
			Max. Torque	20			1.63
L23	62.25 - 57.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.93	1.05	-0.88
			Max. Mx	20	-31.51	2101.00	0.73
			Max. My	14	-31.52	-0.75	-2086.31
			Max. Vy	20	-28.96	2101.00	0.73
			Max. Vx	14	28.79	-0.75	-2086.31
			Max. Torque	20			1.63
L24	57.25 - 52.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.78	1.09	-0.86
			Max. Mx	20	-32.99	2247.00	0.72
			Max. My	14	-33.00	-0.74	-2231.44
			Max. Vy	20	-29.46	2247.00	0.72
			Max. Vx	14	29.29	-0.74	-2231.44
			Max. Torque	20			1.63
L25	52.25 - 49.8	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-64.79	1.10	-0.85
			Max. Mx	20	-33.72	2319.45	0.71
			Max. My	14	-33.73	-0.74	-2303.47
			Max. Vy	20	-29.71	2319.45	0.71
			Max. Vx	14	29.54	-0.74	-2303.47
			Max. Torque	20			1.63
L26	49.8 - 49.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.90	1.10	-0.85
			Max. Mx	20	-33.81	2326.87	0.71
			Max. My	14	-33.82	-0.74	-2310.85
			Max. Vy	20	-29.72	2326.87	0.71
			Max. Vx	14	29.55	-0.74	-2310.85
			Max. Torque	20			1.63
L27	49.55 - 44.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.12	1.35	-0.70
			Max. Mx	20	-35.41	2476.81	0.78
			Max. My	14	-35.42	-0.60	-2459.72
			Max. Vy	20	-30.22	2476.81	0.78
			Max. Vx	14	30.05	-0.60	-2459.72
			Max. Torque	20			1.63
L28	44.55 - 36.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.78	1.36	-0.70
			Max. Mx	20	-35.89	2523.74	0.77
			Max. My	14	-35.90	-0.59	-2506.39
			Max. Vy	20	-30.37	2523.74	0.77
			Max. Vx	14	30.20	-0.59	-2506.39
			Max. Torque	20			1.63
L29	36.33 - 35.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.60	1.65	-0.53
			Max. Mx	20	-40.11	2760.08	0.84
			Max. My	14	-40.12	-0.44	-2741.20
			Max. Vy	20	-31.23	2760.08	0.84
			Max. Vx	14	31.06	-0.44	-2741.20
			Max. Torque	20			1.63
L30	35.33 - 32.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.98	1.66	-0.52
			Max. Mx	20	-41.15	2856.64	0.83
			Max. My	14	-41.16	-0.43	-2837.24
			Max. Vy	20	-31.50	2856.64	0.83
			Max. Vx	14	31.33	-0.43	-2837.24
			Max. Torque	20			1.63
L31	32.25 - 32	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.09	1.67	-0.52
			Max. Mx	20	-41.25	2864.52	0.83
			Max. My	14	-41.26	-0.43	-2845.07
			Max. Vy	20	-31.52	2864.52	0.83
			Max. Vx	14	31.35	-0.43	-2845.07
			Max. Torque	20			1.63
L32	32 - 27	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.37	1.70	-0.50
			Max. Mx	20	-42.97	3023.14	0.82
			Max. My	14	-42.97	-0.42	-3002.84
			Max. Vy	20	-31.95	3023.14	0.82
			Max. Vx	14	31.78	-0.42	-3002.84
			Max. Torque	20			1.63
L33	27 - 22	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.68	1.73	-0.48
			Max. Mx	20	-44.73	3183.92	0.82
			Max. My	14	-44.73	-0.41	-3162.76
			Max. Vy	20	-32.39	3183.92	0.82
			Max. Vx	14	32.22	-0.41	-3162.76
			Max. Torque	20			1.63
L34	22 - 17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.03	1.76	-0.46
			Max. Mx	20	-46.53	3346.88	0.81
			Max. My	14	-46.53	-0.39	-3324.88

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-32.83	3346.88	0.81
			Max. Vx	14	32.66	-0.39	-3324.88
			Max. Torque	20			1.63
L35	17 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.76	1.77	-0.46
			Max. Mx	20	-47.07	3396.19	0.81
			Max. My	14	-47.07	-0.39	-3373.94
			Max. Vy	20	-32.97	3396.19	0.81
			Max. Vx	14	32.80	-0.39	-3373.94
			Max. Torque	20			1.63
L36	15.5 - 15.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.89	1.77	-0.46
			Max. Mx	20	-47.17	3404.43	0.81
			Max. My	14	-47.18	-0.39	-3382.14
			Max. Vy	20	-32.97	3404.43	0.81
			Max. Vx	14	32.80	-0.39	-3382.14
			Max. Torque	20			1.63
L37	15.25 - 14.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.13	1.78	-0.45
			Max. Mx	20	-47.35	3420.93	0.80
			Max. My	14	-47.36	-0.39	-3398.55
			Max. Vy	20	-33.02	3420.93	0.80
			Max. Vx	14	32.85	-0.39	-3398.55
			Max. Torque	20			1.63
L38	14.75 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.26	1.78	-0.45
			Max. Mx	20	-47.45	3429.18	0.80
			Max. My	14	-47.45	-0.39	-3406.77
			Max. Vy	20	-33.04	3429.18	0.80
			Max. Vx	14	32.87	-0.39	-3406.77
			Max. Torque	20			1.63
L39	14.5 - 9.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.66	1.81	-0.44
			Max. Mx	20	-49.29	3595.47	0.80
			Max. My	14	-49.29	-0.37	-3572.21
			Max. Vy	20	-33.50	3595.47	0.80
			Max. Vx	14	33.33	-0.37	-3572.21
			Max. Torque	20			1.63
L40	9.5 - 4.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.01	1.83	-0.42
			Max. Mx	20	-51.18	3764.00	0.79
			Max. My	14	-51.18	-0.36	-3739.91
			Max. Vy	20	-33.95	3764.00	0.79
			Max. Vx	14	33.78	-0.36	-3739.91
			Max. Torque	20			1.63
L41	4.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.07	1.86	-0.41
			Max. Mx	20	-52.90	3917.62	0.78
			Max. My	14	-52.90	-0.35	-3892.79
			Max. Vy	20	-34.36	3917.62	0.78
			Max. Vx	14	34.20	-0.35	-3892.79
			Max. Torque	20			1.63

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	90.07	0.00	-0.00
	Max. H_x	20	52.92	34.34	-0.00
	Max. H_z	2	52.92	-0.00	34.18
	Max. M_x	2	3892.61	-0.00	34.18
	Max. M_z	8	3916.61	-34.34	0.00
	Max. Torsion	20	1.63	34.34	-0.00
	Min. Vert	13	39.69	-17.17	-29.60
	Min. H_x	8	52.92	-34.34	0.00
	Min. H_z	14	52.92	0.00	-34.18

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. M_x	14	-3892.79	0.00	-34.18
	Min. M_z	20	-3917.62	34.34	-0.00
	Min. Torsion	8	-1.61	-34.34	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	44.10	0.00	0.00	0.06	0.40	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	52.92	0.00	-34.18	-3892.61	1.36	-0.26
0.9 Dead+1.6 Wind 0 deg - No Ice	39.69	0.00	-34.18	-3849.11	1.21	-0.25
1.2 Dead+1.6 Wind 30 deg - No Ice	52.92	17.17	-29.60	-3370.65	-1957.34	0.58
0.9 Dead+1.6 Wind 30 deg - No Ice	39.69	17.17	-29.60	-3332.99	-1935.58	0.59
1.2 Dead+1.6 Wind 60 deg - No Ice	52.92	29.74	-17.09	-1945.50	-3391.41	1.27
0.9 Dead+1.6 Wind 60 deg - No Ice	39.69	29.74	-17.09	-1923.78	-3353.60	1.26
1.2 Dead+1.6 Wind 90 deg - No Ice	52.92	34.34	-0.00	0.93	-3916.61	1.61
0.9 Dead+1.6 Wind 90 deg - No Ice	39.69	34.34	-0.00	0.88	-3872.92	1.61
1.2 Dead+1.6 Wind 120 deg - No Ice	52.92	29.74	17.09	1947.13	-3392.27	1.53
0.9 Dead+1.6 Wind 120 deg - No Ice	39.69	29.74	17.09	1925.33	-3354.43	1.53
1.2 Dead+1.6 Wind 150 deg - No Ice	52.92	17.17	29.60	3371.66	-1958.83	1.04
0.9 Dead+1.6 Wind 150 deg - No Ice	39.69	17.17	29.60	3333.94	-1937.03	1.04
1.2 Dead+1.6 Wind 180 deg - No Ice	52.92	-0.00	34.18	3892.79	-0.35	0.27
0.9 Dead+1.6 Wind 180 deg - No Ice	39.69	-0.00	34.18	3849.24	-0.46	0.27
1.2 Dead+1.6 Wind 210 deg - No Ice	52.92	-17.17	29.60	3370.82	1958.37	-0.58
0.9 Dead+1.6 Wind 210 deg - No Ice	39.69	-17.17	29.60	3333.12	1936.34	-0.58
1.2 Dead+1.6 Wind 240 deg - No Ice	52.92	-29.74	17.09	1945.66	3392.44	-1.27
0.9 Dead+1.6 Wind 240 deg - No Ice	39.69	-29.74	17.09	1923.89	3354.36	-1.27
1.2 Dead+1.6 Wind 270 deg - No Ice	52.92	-34.34	0.00	-0.78	3917.62	-1.63
0.9 Dead+1.6 Wind 270 deg - No Ice	39.69	-34.34	0.00	-0.78	3873.67	-1.63
1.2 Dead+1.6 Wind 300 deg - No Ice	52.92	-29.74	-17.09	-1946.98	3393.26	-1.54
0.9 Dead+1.6 Wind 300 deg - No Ice	39.69	-29.74	-17.09	-1925.22	3355.17	-1.54
1.2 Dead+1.6 Wind 330 deg - No Ice	52.92	-17.17	-29.60	-3371.49	1959.83	-1.04
0.9 Dead+1.6 Wind 330 deg - No Ice	39.69	-17.17	-29.60	-3333.81	1937.76	-1.03
1.2 Dead+1.0 Ice+1.0 Temp	90.07	-0.00	0.00	0.41	1.86	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	90.07	-0.00	-8.69	-1074.35	2.57	-0.10
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	90.07	4.37	-7.52	-930.08	-538.71	0.09
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	90.07	7.57	-4.34	-536.46	-935.10	0.25
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	90.07	8.74	0.00	1.04	-1080.38	0.35
1.2 Dead+1.0 Wind 120	90.07	7.57	4.35	538.40	-935.63	0.35

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	90.07	4.37	7.52	931.64	-539.63	0.26
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	90.07	0.00	8.69	1075.38	1.52	0.10
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	90.07	-4.37	7.52	931.11	542.81	-0.09
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	90.07	-7.57	4.34	537.49	939.19	-0.25
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	90.07	-8.74	-0.00	-0.01	1084.47	-0.35
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	90.07	-7.57	-4.35	-537.37	939.72	-0.35
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	90.07	-4.37	-7.52	-930.61	543.72	-0.26
Dead+Wind 0 deg - Service	44.10	0.00	-7.96	-900.51	0.62	-0.06
Dead+Wind 30 deg - Service	44.10	4.00	-6.89	-779.76	-452.54	0.14
Dead+Wind 60 deg - Service	44.10	6.92	-3.98	-450.05	-784.32	0.30
Dead+Wind 90 deg - Service	44.10	7.99	-0.00	0.27	-905.83	0.38
Dead+Wind 120 deg - Service	44.10	6.92	3.98	450.54	-784.52	0.36
Dead+Wind 150 deg - Service	44.10	4.00	6.89	780.10	-452.88	0.24
Dead+Wind 180 deg - Service	44.10	-0.00	7.96	900.66	0.22	0.06
Dead+Wind 210 deg - Service	44.10	-4.00	6.89	779.91	453.38	-0.14
Dead+Wind 240 deg - Service	44.10	-6.92	3.98	450.20	785.16	-0.30
Dead+Wind 270 deg - Service	44.10	-7.99	0.00	-0.12	906.67	-0.38
Dead+Wind 300 deg - Service	44.10	-6.92	-3.98	-450.39	785.36	-0.36
Dead+Wind 330 deg - Service	44.10	-4.00	-6.89	-779.95	453.72	-0.24

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-44.10	0.00	0.00	44.10	0.00	0.000%
2	0.00	-52.92	-34.18	-0.00	52.92	34.18	0.000%
3	0.00	-39.69	-34.18	-0.00	39.69	34.18	0.000%
4	17.17	-52.92	-29.60	-17.17	52.92	29.60	0.000%
5	17.17	-39.69	-29.60	-17.17	39.69	29.60	0.000%
6	29.74	-52.92	-17.09	-29.74	52.92	17.09	0.000%
7	29.74	-39.69	-17.09	-29.74	39.69	17.09	0.000%
8	34.34	-52.92	-0.00	-34.34	52.92	0.00	0.000%
9	34.34	-39.69	-0.00	-34.34	39.69	0.00	0.000%
10	29.74	-52.92	17.09	-29.74	52.92	-17.09	0.000%
11	29.74	-39.69	17.09	-29.74	39.69	-17.09	0.000%
12	17.17	-52.92	29.60	-17.17	52.92	-29.60	0.000%
13	17.17	-39.69	29.60	-17.17	39.69	-29.60	0.000%
14	-0.00	-52.92	34.18	0.00	52.92	-34.18	0.000%
15	-0.00	-39.69	34.18	0.00	39.69	-34.18	0.000%
16	-17.17	-52.92	29.60	17.17	52.92	-29.60	0.000%
17	-17.17	-39.69	29.60	17.17	39.69	-29.60	0.000%
18	-29.74	-52.92	17.09	29.74	52.92	-17.09	0.000%
19	-29.74	-39.69	17.09	29.74	39.69	-17.09	0.000%
20	-34.34	-52.92	0.00	34.34	52.92	-0.00	0.000%
21	-34.34	-39.69	0.00	34.34	39.69	-0.00	0.000%
22	-29.74	-52.92	-17.09	29.74	52.92	17.09	0.000%
23	-29.74	-39.69	-17.09	29.74	39.69	17.09	0.000%
24	-17.17	-52.92	-29.60	17.17	52.92	29.60	0.000%
25	-17.17	-39.69	-29.60	17.17	39.69	29.60	0.000%
26	0.00	-90.07	0.00	0.00	90.07	-0.00	0.000%
27	-0.00	-90.07	-8.69	0.00	90.07	8.69	0.000%
28	4.37	-90.07	-7.52	-4.37	90.07	7.52	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
29	7.57	-90.07	-4.34	-7.57	90.07	4.34	0.000%
30	8.74	-90.07	0.00	-8.74	90.07	-0.00	0.000%
31	7.57	-90.07	4.35	-7.57	90.07	-4.35	0.000%
32	4.37	-90.07	7.52	-4.37	90.07	-7.52	0.000%
33	0.00	-90.07	8.69	-0.00	90.07	-8.69	0.000%
34	-4.37	-90.07	7.52	4.37	90.07	-7.52	0.000%
35	-7.57	-90.07	4.34	7.57	90.07	-4.34	0.000%
36	-8.74	-90.07	-0.00	8.74	90.07	0.00	0.000%
37	-7.57	-90.07	-4.35	7.57	90.07	4.35	0.000%
38	-4.37	-90.07	-7.52	4.37	90.07	7.52	0.000%
39	0.00	-44.10	-7.96	-0.00	44.10	7.96	0.000%
40	4.00	-44.10	-6.89	-4.00	44.10	6.89	0.000%
41	6.92	-44.10	-3.98	-6.92	44.10	3.98	0.000%
42	7.99	-44.10	-0.00	-7.99	44.10	0.00	0.000%
43	6.92	-44.10	3.98	-6.92	44.10	-3.98	0.000%
44	4.00	-44.10	6.89	-4.00	44.10	-6.89	0.000%
45	-0.00	-44.10	7.96	0.00	44.10	-7.96	0.000%
46	-4.00	-44.10	6.89	4.00	44.10	-6.89	0.000%
47	-6.92	-44.10	3.98	6.92	44.10	-3.98	0.000%
48	-7.99	-44.10	0.00	7.99	44.10	-0.00	0.000%
49	-6.92	-44.10	-3.98	6.92	44.10	3.98	0.000%
50	-4.00	-44.10	-6.89	4.00	44.10	6.89	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	0.00022983
3	Yes	5	0.00000001	0.00008594
4	Yes	6	0.00000001	0.00070308
5	Yes	6	0.00000001	0.00022339
6	Yes	6	0.00000001	0.00068628
7	Yes	6	0.00000001	0.00021714
8	Yes	5	0.00000001	0.00058313
9	Yes	5	0.00000001	0.00026448
10	Yes	6	0.00000001	0.00071525
11	Yes	6	0.00000001	0.00022732
12	Yes	6	0.00000001	0.00068876
13	Yes	6	0.00000001	0.00021803
14	Yes	5	0.00000001	0.00022194
15	Yes	5	0.00000001	0.00008159
16	Yes	6	0.00000001	0.00069267
17	Yes	6	0.00000001	0.00021953
18	Yes	6	0.00000001	0.00071183
19	Yes	6	0.00000001	0.00022624
20	Yes	5	0.00000001	0.00056593
21	Yes	5	0.00000001	0.00025656
22	Yes	6	0.00000001	0.00068500
23	Yes	6	0.00000001	0.00021646
24	Yes	6	0.00000001	0.00070915
25	Yes	6	0.00000001	0.00022532
26	Yes	4	0.00000001	0.00005035
27	Yes	7	0.00000001	0.00014350
28	Yes	7	0.00000001	0.00017585
29	Yes	7	0.00000001	0.00017590
30	Yes	7	0.00000001	0.00014455
31	Yes	7	0.00000001	0.00017772
32	Yes	7	0.00000001	0.00017642
33	Yes	7	0.00000001	0.00014410
34	Yes	7	0.00000001	0.00017721
35	Yes	7	0.00000001	0.00017815
36	Yes	7	0.00000001	0.00017986
37	Yes	7	0.00000001	0.00017701
38	Yes	7	0.00000001	0.00017734
39	Yes	4	0.00000001	0.00089812
40	Yes	5	0.00000001	0.00022578
41	Yes	5	0.00000001	0.00021221
42	Yes	5	0.00000001	0.00005316

43	Yes	5	0.00000001	0.00023683
44	Yes	5	0.00000001	0.00021414
45	Yes	4	0.00000001	0.00089819
46	Yes	5	0.00000001	0.00021736
47	Yes	5	0.00000001	0.00023394
48	Yes	5	0.00000001	0.00005309
49	Yes	5	0.00000001	0.00021153
50	Yes	5	0.00000001	0.00023126

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	25.43	48	1.45	0.01
L2	155 - 150	23.91	48	1.45	0.00
L3	150 - 145	22.40	48	1.44	0.00
L4	145 - 140	20.90	48	1.42	0.00
L5	140 - 135	19.42	48	1.39	0.00
L6	135 - 130	17.98	48	1.35	0.00
L7	130 - 125	16.59	48	1.30	0.00
L8	125 - 120	15.26	48	1.24	0.00
L9	120 - 111.33	13.99	48	1.18	0.00
L10	116 - 111	13.02	48	1.12	0.00
L11	111 - 106	11.86	48	1.09	0.00
L12	106 - 101	10.75	48	1.03	0.00
L13	101 - 96	9.70	48	0.97	0.00
L14	96 - 91	8.71	48	0.91	0.00
L15	91 - 86	7.79	48	0.85	0.00
L16	86 - 85.75	6.94	48	0.79	0.00
L17	85.75 - 81	6.90	48	0.78	0.00
L18	81 - 80.75	6.14	48	0.74	0.00
L19	80.75 - 73.25	6.10	48	0.74	0.00
L20	79 - 72.25	5.83	48	0.72	0.00
L21	72.25 - 67.25	4.85	48	0.67	0.00
L22	67.25 - 62.25	4.17	48	0.62	0.00
L23	62.25 - 57.25	3.55	48	0.56	0.00
L24	57.25 - 52.25	2.99	48	0.51	0.00
L25	52.25 - 49.8	2.49	48	0.46	0.00
L26	49.8 - 49.55	2.26	48	0.43	0.00
L27	49.55 - 44.55	2.24	48	0.43	0.00
L28	44.55 - 36.33	1.82	48	0.38	0.00
L29	43 - 35.33	1.70	48	0.36	0.00
L30	35.33 - 32.25	1.15	48	0.32	0.00
L31	32.25 - 32	0.95	48	0.29	0.00
L32	32 - 27	0.94	48	0.29	0.00
L33	27 - 22	0.66	48	0.24	0.00
L34	22 - 17	0.44	48	0.19	0.00
L35	17 - 15.5	0.26	48	0.15	0.00
L36	15.5 - 15.25	0.22	48	0.13	0.00
L37	15.25 - 14.75	0.21	48	0.13	0.00
L38	14.75 - 14.5	0.19	48	0.13	0.00
L39	14.5 - 9.5	0.19	48	0.12	0.00
L40	9.5 - 4.5	0.08	48	0.08	0.00
L41	4.5 - 0	0.02	48	0.04	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.0000	Platform Mount [LP 602-1]	48	24.52	1.45	0.01	59728
154.0000	(2) Pipe Mount [PM 601-3]	48	23.61	1.45	0.00	46347
149.0000	Platform Mount [LP 602-1]	48	22.10	1.44	0.00	18312
139.0000	Platform Mount [LP 602-1]	48	19.13	1.39	0.00	7756
116.0000	Platform Mount [LP 712-1]	48	13.02	1.12	0.00	5807
84.0000	Side Arm Mount [SO 701-1]	48	6.61	0.77	0.00	5948
45.0000	Pipe Mount [PM 601-1]	48	1.85	0.38	0.00	6339
40.0000	Pipe Mount [PM 601-1]	48	1.47	0.34	0.00	9440

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	109.92	20	6.28	0.02
L2	155 - 150	103.36	20	6.28	0.02
L3	150 - 145	96.81	20	6.24	0.02
L4	145 - 140	90.33	20	6.16	0.01
L5	140 - 135	83.95	20	6.03	0.01
L6	135 - 130	77.73	20	5.86	0.01
L7	130 - 125	71.72	20	5.63	0.01
L8	125 - 120	65.96	20	5.38	0.01
L9	120 - 111.33	60.48	20	5.10	0.01
L10	116 - 111	56.31	20	4.86	0.01
L11	111 - 106	51.29	20	4.72	0.01
L12	106 - 101	46.48	20	4.47	0.00
L13	101 - 96	41.95	20	4.21	0.00
L14	96 - 91	37.68	20	3.94	0.00
L15	91 - 86	33.70	20	3.67	0.00
L16	86 - 85.75	30.00	20	3.40	0.00
L17	85.75 - 81	29.83	20	3.39	0.00
L18	81 - 80.75	26.55	20	3.21	0.00
L19	80.75 - 73.25	26.38	20	3.20	0.00
L20	79 - 72.25	25.22	20	3.10	0.00
L21	72.25 - 67.25	20.96	20	2.91	0.00
L22	67.25 - 62.25	18.04	20	2.67	0.00
L23	62.25 - 57.25	15.37	20	2.43	0.00
L24	57.25 - 52.25	12.94	20	2.20	0.00
L25	52.25 - 49.8	10.76	20	1.97	0.00
L26	49.8 - 49.55	9.77	20	1.86	0.00
L27	49.55 - 44.55	9.68	20	1.85	0.00
L28	44.55 - 36.33	7.85	20	1.63	0.00
L29	43 - 35.33	7.34	20	1.56	0.00
L30	35.33 - 32.25	4.96	20	1.38	0.00
L31	32.25 - 32	4.12	20	1.25	0.00
L32	32 - 27	4.05	20	1.24	0.00
L33	27 - 22	2.86	20	1.03	0.00
L34	22 - 17	1.89	20	0.83	0.00
L35	17 - 15.5	1.12	20	0.64	0.00
L36	15.5 - 15.25	0.93	20	0.58	0.00
L37	15.25 - 14.75	0.90	20	0.57	0.00
L38	14.75 - 14.5	0.84	20	0.55	0.00
L39	14.5 - 9.5	0.81	20	0.54	0.00
L40	9.5 - 4.5	0.35	20	0.35	0.00
L41	4.5 - 0	0.08	20	0.16	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.0000	Platform Mount [LP 602-1]	20	105.98	6.28	0.02	14897
154.0000	(2) Pipe Mount [PM 601-3]	20	102.05	6.27	0.02	11431
149.0000	Platform Mount [LP 602-1]	20	95.51	6.23	0.02	4393
139.0000	Platform Mount [LP 602-1]	20	82.69	6.00	0.01	1836
116.0000	Platform Mount [LP 712-1]	20	56.31	4.86	0.01	1361
84.0000	Side Arm Mount [SO 701-1]	20	28.60	3.33	0.00	1383
45.0000	Pipe Mount [PM 601-1]	20	8.01	1.65	0.00	1467
40.0000	Pipe Mount [PM 601-1]	20	6.37	1.48	0.00	2184

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	160 - 155 (1)	TP20.8009x19.6x0.25	5.0000	0.0000	0.0	16.5435	-2.67	1219.42	0.002
L2	155 - 150 (2)	TP22.0019x20.8009x0.25	5.0000	0.0000	0.0	17.5103	-3.81	1290.68	0.003
L3	150 - 145 (3)	TP23.2028x22.0019x0.25	5.0000	0.0000	0.0	18.4770	-6.75	1338.82	0.005
L4	145 - 140 (4)	TP24.4038x23.2028x0.25	5.0000	0.0000	0.0	19.4438	-7.20	1384.30	0.005
L5	140 - 135 (5)	TP25.6047x24.4038x0.25	5.0000	0.0000	0.0	20.4106	-10.53	1427.33	0.007
L6	135 - 130 (6)	TP26.8057x25.6047x0.25	5.0000	0.0000	0.0	21.3773	-11.17	1467.92	0.008
L7	130 - 125 (7)	TP28.0066x26.8057x0.25	5.0000	0.0000	0.0	22.3441	-11.84	1506.07	0.008
L8	125 - 120 (8)	TP29.2076x28.0066x0.25	5.0000	0.0000	0.0	23.3108	-12.55	1541.78	0.008
L9	120 - 111.33 (9)	TP31.29x29.2076x0.25	8.6700	0.0000	0.0	24.0842	-13.15	1568.58	0.008
L10	111.33 - 111 (10)	TP30.8664x29.6683x0.3438	5.0000	0.0000	0.0	33.7848	-17.20	2474.82	0.007
L11	111 - 106 (11)	TP32.0645x30.8664x0.3438	5.0000	0.0000	0.0	35.1109	-18.19	2539.77	0.007
L12	106 - 101 (12)	TP33.2626x32.0645x0.3438	5.0000	0.0000	0.0	36.4370	-19.21	2602.29	0.007
L13	101 - 96 (13)	TP34.4607x33.2626x0.3438	5.0000	0.0000	0.0	37.7632	-20.27	2662.38	0.008
L14	96 - 91 (14)	TP35.6588x34.4607x0.3438	5.0000	0.0000	0.0	39.0893	-21.37	2720.03	0.008
L15	91 - 86 (15)	TP36.8569x35.6588x0.3438	5.0000	0.0000	0.0	40.4155	-22.50	2775.25	0.008
L16	86 - 85.75 (16)	TP36.9168x36.8569x0.5125	0.2500	0.0000	0.0	60.0761	-22.58	4428.21	0.005
L17	85.75 - 81 (17)	TP38.055x36.9168x0.5063	4.7500	0.0000	0.0	61.2091	-24.05	4511.72	0.005
L18	81 - 80.75 (18)	TP38.1149x38.055x0.3438	0.2500	0.0000	0.0	41.8079	-24.12	2830.62	0.009
L19	80.75 - 73.25 (19)	TP39.912x38.1149x0.3438	7.5000	0.0000	0.0	42.2720	-24.51	2848.48	0.009
L20	73.25 - 72.25 (20)	TP39.4668x37.8467x0.4063	6.7500	0.0000	0.0	51.0961	-27.27	3644.04	0.007
L21	72.25 - 67.25 (21)	TP40.6668x39.4668x0.4063	5.0000	0.0000	0.0	52.6659	-28.65	3715.07	0.008
L22	67.25 - 62.25 (22)	TP41.8669x40.6668x0.4063	5.0000	0.0000	0.0	54.2357	-30.06	3783.66	0.008
L23	62.25 - 57.25 (23)	TP43.067x41.8669x0.4063	5.0000	0.0000	0.0	55.8055	-31.51	3849.81	0.008
L24	57.25 - 52.25 (24)	TP44.267x43.067x0.4063	5.0000	0.0000	0.0	57.3754	-32.99	3913.52	0.008
L25	52.25 - 49.8 (25)	TP44.855x44.267x0.4063	2.4500	0.0000	0.0	58.1446	-33.72	3943.85	0.009
L26	49.8 - 49.55 (26)	TP44.915x44.855x0.4063	0.2500	0.0000	0.0	58.2231	-33.81	3946.91	0.009
L27	49.55 - 44.55 (27)	TP46.1151x44.915x0.4063	5.0000	0.0000	0.0	59.7929	-35.41	4006.86	0.009
L28	44.55 - 36.33 (28)	TP48.088x46.1151x0.4063	8.2200	0.0000	0.0	60.2795	-35.89	4024.95	0.009
L29	36.33 - 35.33 (29)	TP47.5164x45.6746x0.4375	7.6700	0.0000	0.0	66.3224	-40.11	4530.00	0.009
L30	35.33 - 32.25 (30)	TP48.256x47.5164x0.4375	3.0800	0.0000	0.0	67.3643	-41.15	4571.21	0.009
L31	32.25 - 32 (31)	TP48.316x48.256x0.4375	0.2500	0.0000	0.0	67.4488	-41.25	4574.51	0.009
L32	32 - 27 (32)	TP49.5166x48.316x0.4375	5.0000	0.0000	0.0	69.1402	-42.97	4639.31	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L33	27 - 22 (33)	TP50.7172x49.5166x0.4375	5.0000	0.0000	0.0	70.8316	-44.73	4701.67	0.010
L34	22 - 17 (34)	TP51.9179x50.7172x0.4375	5.0000	0.0000	0.0	72.5230	-46.53	4761.58	0.010
L35	17 - 15.5 (35)	TP52.2781x51.9179x0.4375	1.5000	0.0000	0.0	73.0304	-47.07	4779.08	0.010
L36	15.5 - 15.25 (36)	TP52.3381x52.2781x0.4375	0.2500	0.0000	0.0	73.1150	-47.17	4781.97	0.010
L37	15.25 - 14.75 (37)	TP52.4582x52.3381x0.4375	0.5000	0.0000	0.0	73.2841	-47.35	4787.74	0.010
L38	14.75 - 14.5 (38)	TP52.5182x52.4582x0.4375	0.2500	0.0000	0.0	73.3687	-47.45	4790.62	0.010
L39	14.5 - 9.5 (39)	TP53.7188x52.5182x0.4375	5.0000	0.0000	0.0	75.0601	-49.29	4846.87	0.010
L40	9.5 - 4.5 (40)	TP54.9194x53.7188x0.4375	5.0000	0.0000	0.0	76.7514	-51.18	4900.68	0.010
L41	4.5 - 0 (41)	TP56x54.9194x0.4375	4.5000	0.0000	0.0	78.2737	-52.90	4947.02	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 155 (1)	TP20.8009x19.6x0.25	12.11	508.40	0.024	0.00	508.40	0.000
L2	155 - 150 (2)	TP22.0019x20.8009x0.25	39.93	569.94	0.070	0.00	569.94	0.000
L3	150 - 145 (3)	TP23.2028x22.0019x0.25	93.12	624.21	0.149	0.00	624.21	0.000
L4	145 - 140 (4)	TP24.4038x23.2028x0.25	147.69	679.54	0.217	0.00	679.54	0.000
L5	140 - 135 (5)	TP25.6047x24.4038x0.25	237.63	735.87	0.323	0.00	735.87	0.000
L6	135 - 130 (6)	TP26.8057x25.6047x0.25	324.88	792.99	0.410	0.00	792.99	0.000
L7	130 - 125 (7)	TP28.0066x26.8057x0.25	414.47	850.73	0.487	0.00	850.73	0.000
L8	125 - 120 (8)	TP29.2076x28.0066x0.25	506.44	908.92	0.557	0.00	908.92	0.000
L9	120 - 111.33 (9)	TP31.29x29.2076x0.25	581.73	955.67	0.609	0.00	955.67	0.000
L10	111.33 - 111 (10)	TP30.8664x29.6683x0.3438	700.93	1533.83	0.457	0.00	1533.83	0.000
L11	111 - 106 (11)	TP32.0645x30.8664x0.3438	818.20	1636.56	0.500	0.00	1636.56	0.000
L12	106 - 101 (12)	TP33.2626x32.0645x0.3438	937.99	1740.86	0.539	0.00	1740.86	0.000
L13	101 - 96 (13)	TP34.4607x33.2626x0.3438	1060.33	1846.55	0.574	0.00	1846.55	0.000
L14	96 - 91 (14)	TP35.6588x34.4607x0.3438	1185.21	1953.44	0.607	0.00	1953.44	0.000
L15	91 - 86 (15)	TP36.8569x35.6588x0.3438	1312.64	2061.38	0.637	0.00	2061.38	0.000
L16	86 - 85.75 (16)	TP36.9168x36.8569x0.5125	1319.08	3264.26	0.404	0.00	3264.26	0.000
L17	85.75 - 81 (17)	TP38.055x36.9168x0.5063	1442.99	3432.38	0.420	0.00	3432.38	0.000
L18	81 - 80.75 (18)	TP38.1149x38.055x0.3438	1449.59	2175.62	0.666	0.00	2175.62	0.000
L19	80.75 - 73.25 (19)	TP39.912x38.1149x0.3438	1495.97	2213.87	0.676	0.00	2213.87	0.000
L20	73.25 - 72.25 (20)	TP39.4668x37.8467x0.4063	1678.27	2892.69	0.580	0.00	2892.69	0.000
L21	72.25 - 67.25 (21)	TP40.6668x39.4668x0.4063	1816.62	3040.62	0.597	0.00	3040.62	0.000
L22	67.25 - 62.25 (22)	TP41.8669x40.6668x0.4063	1957.53	3189.98	0.614	0.00	3189.98	0.000
L23	62.25 - 57.25 (23)	TP43.067x41.8669x0.4063	2101.00	3340.62	0.629	0.00	3340.62	0.000
L24	57.25 - 52.25 (24)	TP44.267x43.067x0.4063	2246.99	3492.32	0.643	0.00	3492.32	0.000
L25	52.25 - 49.8 (25)	TP44.855x44.267x0.4063	2319.44	3567.01	0.650	0.00	3567.01	0.000
L26	49.8 - 49.55	TP44.915x44.855x0.4063	2326.88	3574.63	0.651	0.00	3574.63	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L27	49.55 - 44.55 (26)	TP46.1151x44.915x0.4063	2476.81	3727.67	0.664	0.00	3727.67	0.000
L28	44.55 - 36.33 (27)	TP48.088x46.1151x0.4063	2523.74	3775.24	0.668	0.00	3775.24	0.000
L29	36.33 - 35.33 (28)	TP47.5164x45.6746x0.4375	2760.08	4338.93	0.636	0.00	4338.93	0.000
L30	35.33 - 32.25 (29)	TP48.256x47.5164x0.4375	2856.64	4447.81	0.642	0.00	4447.81	0.000
L31	32.25 - 32 (30)	TP48.316x48.256x0.4375	2864.52	4456.66	0.643	0.00	4456.66	0.000
L32	32 - 27 (31)	TP49.5166x48.316x0.4375	3023.14	4634.16	0.652	0.00	4634.16	0.000
L33	27 - 22 (32)	TP50.7172x49.5166x0.4375	3183.92	4812.35	0.662	0.00	4812.35	0.000
L34	22 - 17 (33)	TP51.9179x50.7172x0.4375	3346.88	4991.06	0.671	0.00	4991.06	0.000
L35	17 - 15.5 (34)	TP52.2781x51.9179x0.4375	3396.19	5044.74	0.673	0.00	5044.74	0.000
L36	15.5 - 15.25 (35)	TP52.3381x52.2781x0.4375	3404.43	5053.69	0.674	0.00	5053.69	0.000
L37	15.25 - 14.75 (36)	TP52.4582x52.3381x0.4375	3420.93	5071.59	0.675	0.00	5071.59	0.000
L38	14.75 - 14.5 (37)	TP52.5182x52.4582x0.4375	3429.18	5080.55	0.675	0.00	5080.55	0.000
L39	14.5 - 9.5 (38)	TP53.7188x52.5182x0.4375	3595.47	5259.68	0.684	0.00	5259.68	0.000
L40	9.5 - 4.5 (39)	TP54.9194x53.7188x0.4375	3764.00	5438.89	0.692	0.00	5438.89	0.000
L41	4.5 - 0 (40)	TP56x54.9194x0.4375	3917.63	5600.07	0.700	0.00	5600.07	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 155 (1)	TP20.8009x19.6x0.25	4.61	609.71	0.008	1.75	1030.88	0.002
L2	155 - 150 (2)	TP22.0019x20.8009x0.25	5.96	645.34	0.009	1.75	1155.66	0.002
L3	150 - 145 (3)	TP23.2028x22.0019x0.25	10.69	669.41	0.016	1.72	1265.70	0.001
L4	145 - 140 (4)	TP24.4038x23.2028x0.25	11.14	692.15	0.016	1.72	1377.90	0.001
L5	140 - 135 (5)	TP25.6047x24.4038x0.25	17.22	713.67	0.024	1.53	1492.10	0.001
L6	135 - 130 (6)	TP26.8057x25.6047x0.25	17.69	733.96	0.024	1.53	1607.93	0.001
L7	130 - 125 (7)	TP28.0066x26.8057x0.25	18.16	753.04	0.024	1.53	1725.03	0.001
L8	125 - 120 (8)	TP29.2076x28.0066x0.25	18.64	770.89	0.024	1.53	1843.01	0.001
L9	120 - 111.33 (9)	TP31.29x29.2076x0.25	19.02	784.29	0.024	1.53	1937.79	0.001
L10	111.33 - 111 (10)	TP30.8664x29.6683x0.3438	23.21	1237.41	0.019	1.51	3110.13	0.000
L11	111 - 106 (11)	TP32.0645x30.8664x0.3438	23.71	1269.89	0.019	1.51	3318.43	0.000
L12	106 - 101 (12)	TP33.2626x32.0645x0.3438	24.22	1301.14	0.019	1.51	3529.92	0.000
L13	101 - 96 (13)	TP34.4607x33.2626x0.3438	24.73	1331.19	0.019	1.51	3744.22	0.000
L14	96 - 91 (14)	TP35.6588x34.4607x0.3438	25.24	1360.02	0.019	1.51	3960.97	0.000
L15	91 - 86 (15)	TP36.8569x35.6588x0.3438	25.75	1387.63	0.019	1.51	4179.82	0.000
L16	86 - 85.75 (16)	TP36.9168x36.8569x0.5125	25.78	2214.11	0.012	1.51	6618.89	0.000
L17	85.75 - 81 (17)	TP38.055x36.9168x0.5063	26.39	2255.86	0.012	1.63	6959.81	0.000
L18	81 - 80.75 (18)	TP38.1149x38.055x0.3438	26.41	1415.31	0.019	1.63	4411.47	0.000
L19	80.75 - 73.25 (19)	TP39.912x38.1149x0.3438	26.61	1424.24	0.019	1.63	4489.02	0.000
L20	73.25 - 72.25	TP39.4668x37.8467x0.40	27.42	1822.02	0.015	1.63	5865.48	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	(20)	63						
L21	72.25 - 67.25	TP40.6668x39.4668x0.40	27.94	1857.54	0.015	1.63	6165.42	0.000
	(21)	63						
L22	67.25 - 62.25	TP41.8669x40.6668x0.40	28.45	1891.83	0.015	1.63	6468.29	0.000
	(22)	63						
L23	62.25 - 57.25	TP43.067x41.8669x0.406	28.96	1924.91	0.015	1.63	6773.72	0.000
	(23)	3						
L24	57.25 - 52.25	TP44.267x43.067x0.4063	29.46	1956.76	0.015	1.63	7081.34	0.000
	(24)							
L25	52.25 - 49.8	TP44.855x44.267x0.4063	29.71	1971.92	0.015	1.63	7232.77	0.000
	(25)							
L26	49.8 - 49.55	TP44.915x44.855x0.4063	29.72	1973.45	0.015	1.63	7248.25	0.000
	(26)							
L27	49.55 - 44.55	TP46.1151x44.915x0.406	30.22	2003.43	0.015	1.63	7558.54	0.000
	(27)	3						
L28	44.55 - 36.33	TP48.088x46.1151x0.406	30.37	2012.48	0.015	1.63	7655.00	0.000
	(28)	3						
L29	36.33 - 35.33	TP47.5164x45.6746x0.43	31.23	2265.00	0.014	1.63	8798.00	0.000
	(29)	75						
L30	35.33 - 32.25	TP48.256x47.5164x0.437	31.50	2285.60	0.014	1.63	9018.75	0.000
	(30)	5						
L31	32.25 - 32	TP48.316x48.256x0.4375	31.52	2287.26	0.014	1.63	9036.75	0.000
	(31)							
L32	32 - 27 (32)	TP49.5166x48.316x0.437	31.95	2319.65	0.014	1.63	9396.67	0.000
		5						
L33	27 - 22 (33)	TP50.7172x49.5166x0.43	32.39	2350.83	0.014	1.63	9757.92	0.000
		75						
L34	22 - 17 (34)	TP51.9179x50.7172x0.43	32.83	2380.79	0.014	1.63	10120.33	0.000
		75						
L35	17 - 15.5 (35)	TP52.2781x51.9179x0.43	32.97	2389.54	0.014	1.63	10229.17	0.000
		75						
L36	15.5 - 15.25	TP52.3381x52.2781x0.43	32.97	2390.99	0.014	1.63	10247.33	0.000
	(36)	75						
L37	15.25 - 14.75	TP52.4582x52.3381x0.43	33.02	2393.87	0.014	1.63	10283.58	0.000
	(37)	75						
L38	14.75 - 14.5	TP52.5182x52.4582x0.43	33.04	2395.31	0.014	1.63	10301.75	0.000
	(38)	75						
L39	14.5 - 9.5 (39)	TP53.7188x52.5182x0.43	33.50	2423.44	0.014	1.63	10665.00	0.000
		75						
L40	9.5 - 4.5 (40)	TP54.9194x53.7188x0.43	33.95	2450.34	0.014	1.63	11028.33	0.000
		75						
L41	4.5 - 0 (41)	TP56x54.9194x0.4375	34.36	2473.51	0.014	1.63	11355.25	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 155 (1)	0.002	0.024	0.000	0.008	0.002	0.026	1.000	4.8.2
L2	155 - 150 (2)	0.003	0.070	0.000	0.009	0.002	0.073	1.000	4.8.2
L3	150 - 145 (3)	0.005	0.149	0.000	0.016	0.001	0.155	1.000	4.8.2
L4	145 - 140 (4)	0.005	0.217	0.000	0.016	0.001	0.223	1.000	4.8.2
L5	140 - 135 (5)	0.007	0.323	0.000	0.024	0.001	0.331	1.000	4.8.2
L6	135 - 130 (6)	0.008	0.410	0.000	0.024	0.001	0.418	1.000	4.8.2
L7	130 - 125 (7)	0.008	0.487	0.000	0.024	0.001	0.496	1.000	4.8.2
L8	125 - 120 (8)	0.008	0.557	0.000	0.024	0.001	0.566	1.000	4.8.2
L9	120 - 111.33	0.008	0.609	0.000	0.024	0.001	0.618	1.000	4.8.2
	(9)								
L10	111.33 - 111	0.007	0.457	0.000	0.019	0.000	0.464	1.000	4.8.2
	(10)								
L11	111 - 106 (11)	0.007	0.500	0.000	0.019	0.000	0.507	1.000	4.8.2
L12	106 - 101 (12)	0.007	0.539	0.000	0.019	0.000	0.547	1.000	4.8.2
L13	101 - 96 (13)	0.008	0.574	0.000	0.019	0.000	0.582	1.000	4.8.2
L14	96 - 91 (14)	0.008	0.607	0.000	0.019	0.000	0.615	1.000	4.8.2
L15	91 - 86 (15)	0.008	0.637	0.000	0.019	0.000	0.645	1.000	4.8.2
L16	86 - 85.75	0.005	0.404	0.000	0.012	0.000	0.409	1.000	4.8.2
	(16)								

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L17	85.75 - 81 (17)	0.005	0.420	0.000	0.012	0.000	0.426	1.000	4.8.2
L18	81 - 80.75 (18)	0.009	0.666	0.000	0.019	0.000	0.675	1.000	4.8.2
L19	80.75 - 73.25 (19)	0.009	0.676	0.000	0.019	0.000	0.685	1.000	4.8.2
L20	73.25 - 72.25 (20)	0.007	0.580	0.000	0.015	0.000	0.588	1.000	4.8.2
L21	72.25 - 67.25 (21)	0.008	0.597	0.000	0.015	0.000	0.605	1.000	4.8.2
L22	67.25 - 62.25 (22)	0.008	0.614	0.000	0.015	0.000	0.622	1.000	4.8.2
L23	62.25 - 57.25 (23)	0.008	0.629	0.000	0.015	0.000	0.637	1.000	4.8.2
L24	57.25 - 52.25 (24)	0.008	0.643	0.000	0.015	0.000	0.652	1.000	4.8.2
L25	52.25 - 49.8 (25)	0.009	0.650	0.000	0.015	0.000	0.659	1.000	4.8.2
L26	49.8 - 49.55 (26)	0.009	0.651	0.000	0.015	0.000	0.660	1.000	4.8.2
L27	49.55 - 44.55 (27)	0.009	0.664	0.000	0.015	0.000	0.674	1.000	4.8.2
L28	44.55 - 36.33 (28)	0.009	0.668	0.000	0.015	0.000	0.678	1.000	4.8.2
L29	36.33 - 35.33 (29)	0.009	0.636	0.000	0.014	0.000	0.645	1.000	4.8.2
L30	35.33 - 32.25 (30)	0.009	0.642	0.000	0.014	0.000	0.651	1.000	4.8.2
L31	32.25 - 32 (31)	0.009	0.643	0.000	0.014	0.000	0.652	1.000	4.8.2
L32	32 - 27 (32)	0.009	0.652	0.000	0.014	0.000	0.662	1.000	4.8.2
L33	27 - 22 (33)	0.010	0.662	0.000	0.014	0.000	0.671	1.000	4.8.2
L34	22 - 17 (34)	0.010	0.671	0.000	0.014	0.000	0.681	1.000	4.8.2
L35	17 - 15.5 (35)	0.010	0.673	0.000	0.014	0.000	0.683	1.000	4.8.2
L36	15.5 - 15.25 (36)	0.010	0.674	0.000	0.014	0.000	0.684	1.000	4.8.2
L37	15.25 - 14.75 (37)	0.010	0.675	0.000	0.014	0.000	0.685	1.000	4.8.2
L38	14.75 - 14.5 (38)	0.010	0.675	0.000	0.014	0.000	0.685	1.000	4.8.2
L39	14.5 - 9.5 (39)	0.010	0.684	0.000	0.014	0.000	0.694	1.000	4.8.2
L40	9.5 - 4.5 (40)	0.010	0.692	0.000	0.014	0.000	0.703	1.000	4.8.2
L41	4.5 - 0 (41)	0.011	0.700	0.000	0.014	0.000	0.710	1.000	4.8.2

Section Capacity Table

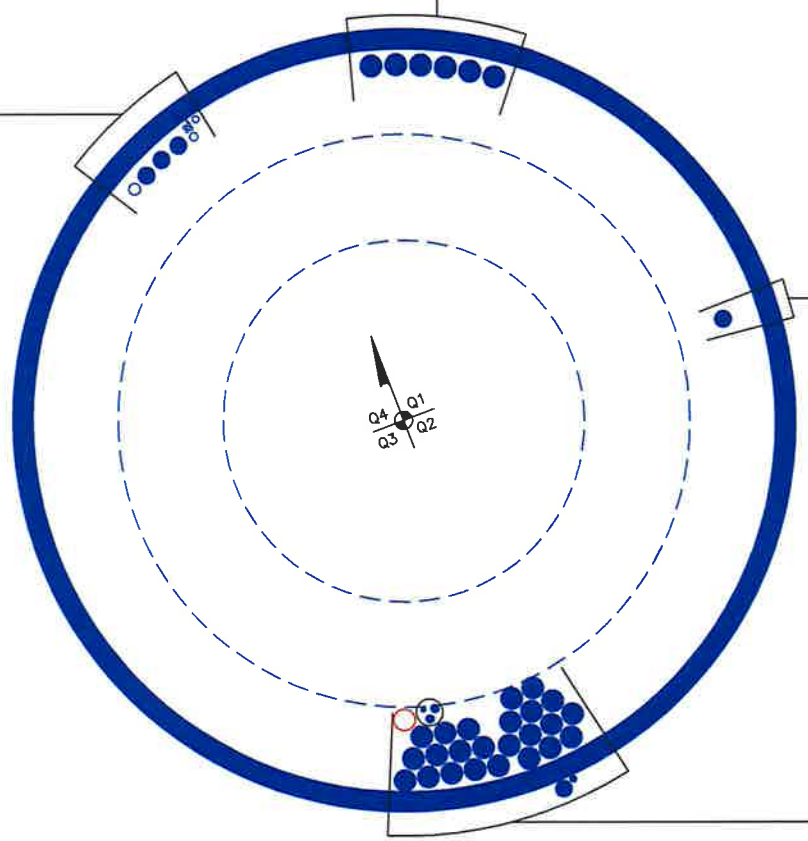
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 155	Pole	TP20.8009x19.6x0.25	1	-2.67	1219.42	2.6	Pass
L2	155 - 150	Pole	TP22.0019x20.8009x0.25	2	-3.81	1290.68	7.3	Pass
L3	150 - 145	Pole	TP23.2028x22.0019x0.25	3	-6.75	1338.82	15.5	Pass
L4	145 - 140	Pole	TP24.4038x23.2028x0.25	4	-7.20	1384.30	22.3	Pass
L5	140 - 135	Pole	TP25.6047x24.4038x0.25	5	-10.53	1427.33	33.1	Pass
L6	135 - 130	Pole	TP26.8057x25.6047x0.25	6	-11.17	1467.92	41.8	Pass
L7	130 - 125	Pole	TP28.0066x26.8057x0.25	7	-11.84	1506.07	49.6	Pass
L8	125 - 120	Pole	TP29.2076x28.0066x0.25	8	-12.55	1541.78	56.6	Pass
L9	120 - 111.33	Pole	TP31.29x29.2076x0.25	9	-13.15	1568.58	61.8	Pass
L10	111.33 - 111	Pole	TP30.8664x29.6683x0.3438	10	-17.20	2474.82	46.4	Pass
L11	111 - 106	Pole	TP32.0645x30.8664x0.3438	11	-18.19	2539.77	50.7	Pass
L12	106 - 101	Pole	TP33.2626x32.0645x0.3438	12	-19.21	2602.29	54.7	Pass
L13	101 - 96	Pole	TP34.4607x33.2626x0.3438	13	-20.27	2662.38	58.2	Pass
L14	96 - 91	Pole	TP35.6588x34.4607x0.3438	14	-21.37	2720.03	61.5	Pass
L15	91 - 86	Pole	TP36.8569x35.6588x0.3438	15	-22.50	2775.25	64.5	Pass
L16	86 - 85.75	Pole	TP36.9168x36.8569x0.5125	16	-22.58	4428.21	40.9	Pass
L17	85.75 - 81	Pole	TP38.055x36.9168x0.5063	17	-24.05	4511.72	42.6	Pass
L18	81 - 80.75	Pole	TP38.1149x38.055x0.3438	18	-24.12	2830.62	67.5	Pass
L19	80.75 - 73.25	Pole	TP39.912x38.1149x0.3438	19	-24.51	2848.48	68.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L20	73.25 - 72.25	Pole	TP39.4668x37.8467x0.4063	20	-27.27	3644.04	58.8	Pass
L21	72.25 - 67.25	Pole	TP40.6668x39.4668x0.4063	21	-28.65	3715.07	60.5	Pass
L22	67.25 - 62.25	Pole	TP41.8669x40.6668x0.4063	22	-30.06	3783.66	62.2	Pass
L23	62.25 - 57.25	Pole	TP43.067x41.8669x0.4063	23	-31.51	3849.81	63.7	Pass
L24	57.25 - 52.25	Pole	TP44.267x43.067x0.4063	24	-32.99	3913.52	65.2	Pass
L25	52.25 - 49.8	Pole	TP44.855x44.267x0.4063	25	-33.72	3943.85	65.9	Pass
L26	49.8 - 49.55	Pole	TP44.915x44.855x0.4063	26	-33.81	3946.91	66.0	Pass
L27	49.55 - 44.55	Pole	TP46.1151x44.915x0.4063	27	-35.41	4006.86	67.4	Pass
L28	44.55 - 36.33	Pole	TP48.088x46.1151x0.4063	28	-35.89	4024.95	67.8	Pass
L29	36.33 - 35.33	Pole	TP47.5164x45.6746x0.4375	29	-40.11	4530.00	64.5	Pass
L30	35.33 - 32.25	Pole	TP48.256x47.5164x0.4375	30	-41.15	4571.21	65.1	Pass
L31	32.25 - 32	Pole	TP48.316x48.256x0.4375	31	-41.25	4574.51	65.2	Pass
L32	32 - 27	Pole	TP49.5166x48.316x0.4375	32	-42.97	4639.31	66.2	Pass
L33	27 - 22	Pole	TP50.7172x49.5166x0.4375	33	-44.73	4701.67	67.1	Pass
L34	22 - 17	Pole	TP51.9179x50.7172x0.4375	34	-46.53	4761.58	68.1	Pass
L35	17 - 15.5	Pole	TP52.2781x51.9179x0.4375	35	-47.07	4779.08	68.3	Pass
L36	15.5 - 15.25	Pole	TP52.3381x52.2781x0.4375	36	-47.17	4781.97	68.4	Pass
L37	15.25 - 14.75	Pole	TP52.4582x52.3381x0.4375	37	-47.35	4787.74	68.5	Pass
L38	14.75 - 14.5	Pole	TP52.5182x52.4582x0.4375	38	-47.45	4790.62	68.5	Pass
L39	14.5 - 9.5	Pole	TP53.7188x52.5182x0.4375	39	-49.29	4846.87	69.4	Pass
L40	9.5 - 4.5	Pole	TP54.9194x53.7188x0.4375	40	-51.18	4900.68	70.3	Pass
L41	4.5 - 0	Pole	TP56x54.9194x0.4375	41	-52.90	4947.02	71.0	Pass
							Summary	
						Pole (L41)	71.0	Pass
						RATING =	**71.0**	**Pass**

NOTE: The above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.

APPENDIX B

BASE LEVEL DRAWING



(RESERVED)
(1) 1/8" TO 157 FT LEVEL
(4) 17/64" TO 157 FT LEVEL
(1) 1/2" TO 157 FT LEVEL
(1) 5/8" TO 157 FT LEVEL
(1) 7/8" TO 157 FT LEVEL
(INSTALLED)
(3) 1-1/4" TO 157 FT LEVEL

(INSTALLED)
(6) 1-5/8" TO 116 FT LEVEL

(INSTALLED)
(1) 1-1/4" TO 116 FT LEVEL

(PROPOSED)
(1) 1-5/8" TO 139 FT LEVEL
(INSTALLED-TO BE REMOVED)
(1) 1/2" TO 139 FT LEVEL
(1) 1-1/4" TO 139 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 139 FT LEVEL

(INSTALLED-IN 2" CONDUIT)
(1) 3/8" TO 149 FT LEVEL
(2) 5/8" TO 149 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 149 FT LEVEL

BUSINESS UNIT: 806953 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole
per TIA-222- G

Site BU: 806953
Work Order: 1503596

CROWN CASTLE

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
1	160	48.67	4.67	12	19.6	31.29	0.25	1	A572-65
2	116	42.75	5.75	12	29.67	39.912	0.34375	1.375	A572-65
3	79	42.67	6.67	12	37.85	48.088	0.40625	1.625	A572-65
4	43	43	0	12	45.67	56	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
1	78.25	81	plate	MK SR2													
2	81	86	plate	CCI-AFP-060100	3		E				E				E		
3	32.25	49.8	plate	CCI-AFP-060100													
4	14.75	32.25	plate	CCI-AFP-060100													
5	0	15.5	plate	MK SR1													
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A572-65
2	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
3	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
5	4	0.75	3	0.375	15.000	15.000	15.000	2.063	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	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	19.600	20.801	0.25	A572-65	1.000
2	155 - 150	5		12	20.801	22.002	0.25	A572-65	1.000
3	150 - 145	5		12	22.002	23.203	0.25	A572-65	1.000
4	145 - 140	5		12	23.203	24.404	0.25	A572-65	1.000
5	140 - 135	5		12	24.404	25.605	0.25	A572-65	1.000
6	135 - 130	5		12	25.605	26.806	0.25	A572-65	1.000
7	130 - 125	5		12	26.806	28.007	0.25	A572-65	1.000
8	125 - 120	5		12	28.007	29.208	0.25	A572-65	1.000
9	120 - 116	8.67	4.67	12	29.208	31.290	0.25	A572-65	1.000
10	116 - 111	5		12	29.668	30.866	0.34375	A572-65	1.000
11	111 - 106	5		12	30.866	32.065	0.34375	A572-65	1.000
12	106 - 101	5		12	32.065	33.263	0.34375	A572-65	1.000
13	101 - 96	5		12	33.263	34.461	0.34375	A572-65	1.000
14	96 - 91	5		12	34.461	35.659	0.34375	A572-65	1.000
15	91 - 86	5		12	35.659	36.857	0.34375	A572-65	1.000
16	86 - 85.75	0.25		12	36.857	36.917	0.5125	A572-65	0.974
17	85.75 - 81	4.75		12	36.917	38.055	0.50625	A572-65	0.976
18	81 - 80.75	0.25		12	38.055	38.115	0.34375	A572-65	1.000
19	80.75 - 79	7.5	5.75	12	38.115	39.912	0.34375	A572-65	1.000
20	79 - 72.25	6.75		12	37.847	39.467	0.40625	A572-65	1.000
21	72.25 - 67.25	5		12	39.467	40.667	0.40625	A572-65	1.000
22	67.25 - 62.25	5		12	40.667	41.867	0.40625	A572-65	1.000
23	62.25 - 57.25	5		12	41.867	43.067	0.40625	A572-65	1.000
24	57.25 - 52.25	5		12	43.067	44.267	0.40625	A572-65	1.000
25	52.25 - 49.8	2.45		12	44.267	44.855	0.40625	A572-65	1.000
26	49.8 - 49.55	0.25		12	44.855	44.915	0.40625	A572-65	1.000
27	49.55 - 44.55	5		12	44.915	46.115	0.40625	A572-65	1.000
28	44.55 - 43	8.22	6.67	12	46.115	48.088	0.40625	A572-65	1.000
29	43 - 35.33	7.67		12	45.675	47.516	0.4375	A572-65	1.000
30	35.33 - 32.25	3.08		12	47.516	48.256	0.4375	A572-65	1.000
31	32.25 - 32	0.25		12	48.256	48.316	0.4375	A572-65	1.000
32	32 - 27	5		12	48.316	49.517	0.4375	A572-65	1.000
33	27 - 22	5		12	49.517	50.717	0.4375	A572-65	1.000
34	22 - 17	5		12	50.717	51.918	0.4375	A572-65	1.000
35	17 - 15.5	1.5		12	51.918	52.278	0.4375	A572-65	1.000
36	15.5 - 15.25	0.25		12	52.278	52.338	0.4375	A572-65	1.000
37	15.25 - 14.75	0.5		12	52.338	52.458	0.4375	A572-65	1.000
38	14.75 - 14.5	0.25		12	52.458	52.518	0.4375	A572-65	1.000
39	14.5 - 9.5	5		12	52.518	53.719	0.4375	A572-65	1.000
40	9.5 - 4.5	5		12	53.719	54.919	0.4375	A572-65	1.000
41	4.5 - 0	4.5		12	54.919	56.000	0.4375	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	160 - 155	2.67	12.11	4.61
2	155 - 150	3.81	39.93	5.96
3	150 - 145	6.75	93.12	10.69
4	145 - 140	7.20	147.69	11.14
5	140 - 135	10.53	237.63	17.22
6	135 - 130	11.17	324.88	17.69
7	130 - 125	11.84	414.47	18.16
8	125 - 120	12.55	506.43	18.64
9	120 - 116	13.15	581.73	19.02
10	116 - 111	17.20	700.93	23.21
11	111 - 106	18.19	818.20	23.71
12	106 - 101	19.21	937.99	24.22
13	101 - 96	20.27	1060.32	24.73
14	96 - 91	21.37	1185.21	25.24
15	91 - 86	22.50	1312.64	25.75
16	86 - 85.75	22.58	1319.08	25.78
17	85.75 - 81	24.05	1442.99	26.39
18	81 - 80.75	24.12	1449.59	26.41
19	80.75 - 79	24.51	1495.96	26.61
20	79 - 72.25	27.27	1678.27	27.42
21	72.25 - 67.25	28.65	1816.61	27.94
22	67.25 - 62.25	30.06	1957.53	28.45
23	62.25 - 57.25	31.51	2101.00	28.96
24	57.25 - 52.25	32.99	2247.00	29.46
25	52.25 - 49.8	33.72	2319.45	29.71
26	49.8 - 49.55	33.81	2326.87	29.72
27	49.55 - 44.55	35.41	2476.81	30.22
28	44.55 - 43	35.89	2523.74	30.37
29	43 - 35.33	40.11	2760.08	31.23
30	35.33 - 32.25	41.15	2856.64	31.50
31	32.25 - 32	41.25	2864.52	31.52
32	32 - 27	42.97	3023.14	31.95
33	27 - 22	44.73	3183.92	32.39
34	22 - 17	46.53	3346.88	32.83
35	17 - 15.5	47.07	3396.19	32.97
36	15.5 - 15.25	47.17	3404.43	32.97
37	15.25 - 14.75	47.35	3420.93	33.02
38	14.75 - 14.5	47.45	3429.18	33.04
39	14.5 - 9.5	49.29	3595.47	33.50
40	9.5 - 4.5	51.18	3764.00	33.95
41	4.5 - 0	52.90	3917.62	34.36

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20.801x19.6x0.25	Pole	2.6%	Pass
155 - 150	Pole	TP22.002x20.801x0.25	Pole	7.3%	Pass
150 - 145	Pole	TP23.203x22.002x0.25	Pole	15.4%	Pass
145 - 140	Pole	TP24.404x23.203x0.25	Pole	22.2%	Pass
140 - 135	Pole	TP25.605x24.404x0.25	Pole	33.0%	Pass
135 - 130	Pole	TP26.806x25.605x0.25	Pole	41.7%	Pass
130 - 125	Pole	TP28.007x26.806x0.25	Pole	49.4%	Pass
125 - 120	Pole	TP29.208x28.007x0.25	Pole	56.4%	Pass
120 - 116	Pole	TP31.29x29.208x0.25	Pole	61.6%	Pass
116 - 111	Pole	TP30.866x29.668x0.3438	Pole	46.3%	Pass
111 - 106	Pole	TP32.065x30.866x0.3438	Pole	50.6%	Pass
106 - 101	Pole	TP33.263x32.065x0.3438	Pole	54.5%	Pass
101 - 96	Pole	TP34.461x33.263x0.3438	Pole	58.1%	Pass
96 - 91	Pole	TP35.659x34.461x0.3438	Pole	61.3%	Pass
91 - 86	Pole	TP36.857x35.659x0.3438	Pole	64.3%	Pass
86 - 85.75	Pole + Reinf.	TP36.917x36.857x0.5125	Reinf. 2 Tension Rupture	62.7%	Pass
85.75 - 81	Pole + Reinf.	TP38.055x36.917x0.5063	Reinf. 2 Tension Rupture	65.1%	Pass
81 - 80.75	Pole	TP38.115x38.055x0.3438	Pole	67.3%	Pass
80.75 - 79	Pole	TP39.912x38.115x0.3438	Pole	68.3%	Pass
79 - 72.25	Pole	TP39.467x37.847x0.4063	Pole	58.6%	Pass
72.25 - 67.25	Pole	TP40.667x39.467x0.4063	Pole	60.4%	Pass
67.25 - 62.25	Pole	TP41.867x40.667x0.4063	Pole	62.0%	Pass
62.25 - 57.25	Pole	TP43.067x41.867x0.4063	Pole	63.6%	Pass
57.25 - 52.25	Pole	TP44.267x43.067x0.4063	Pole	65.0%	Pass
52.25 - 49.8	Pole	TP44.855x44.267x0.4063	Pole	65.7%	Pass
49.8 - 49.55	Pole	TP44.915x44.855x0.4063	Pole	65.8%	Pass
49.55 - 44.55	Pole	TP46.115x44.915x0.4063	Pole	67.2%	Pass
44.55 - 43	Pole	TP48.088x46.115x0.4063	Pole	67.6%	Pass
43 - 35.33	Pole	TP47.516x45.675x0.4375	Pole	64.3%	Pass
35.33 - 32.25	Pole	TP48.256x47.516x0.4375	Pole	65.0%	Pass
32.25 - 32	Pole	TP48.316x48.256x0.4375	Pole	65.0%	Pass
32 - 27	Pole	TP49.517x48.316x0.4375	Pole	66.0%	Pass
27 - 22	Pole	TP50.717x49.517x0.4375	Pole	67.0%	Pass
22 - 17	Pole	TP51.918x50.717x0.4375	Pole	67.9%	Pass
17 - 15.5	Pole	TP52.278x51.918x0.4375	Pole	68.1%	Pass
15.5 - 15.25	Pole	TP52.338x52.278x0.4375	Pole	68.2%	Pass
15.25 - 14.75	Pole	TP52.458x52.338x0.4375	Pole	68.3%	Pass
14.75 - 14.5	Pole	TP52.518x52.458x0.4375	Pole	68.3%	Pass
14.5 - 9.5	Pole	TP53.719x52.518x0.4375	Pole	69.2%	Pass
9.5 - 4.5	Pole	TP54.919x53.719x0.4375	Pole	70.1%	Pass
4.5 - 0	Pole	TP56x54.919x0.4375	Pole	70.9%	Pass
				Summary	
			Pole	70.9%	Pass
			Reinforcement	65.1%	Pass
			Overall	70.9%	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
160 - 155	893	n/a	893	16.52	n/a	16.52	2.6%					
155 - 150	1059	n/a	1059	17.49	n/a	17.49	7.3%					
150 - 145	1244	n/a	1244	18.45	n/a	18.45	15.4%					
145 - 140	1450	n/a	1450	19.42	n/a	19.42	22.2%					
140 - 135	1677	n/a	1677	20.38	n/a	20.38	33.0%					
135 - 130	1927	n/a	1927	21.35	n/a	21.35	41.7%					
130 - 125	2200	n/a	2200	22.31	n/a	22.31	49.4%					
125 - 120	2498	n/a	2498	23.28	n/a	23.28	56.4%					
120 - 116	2755	n/a	2755	24.05	n/a	24.05	61.6%					
116 - 111	4023	n/a	4023	33.74	n/a	33.74	46.3%					
111 - 106	4515	n/a	4515	35.06	n/a	35.06	50.6%					
106 - 101	5047	n/a	5047	36.38	n/a	36.38	54.5%					
101 - 96	5618	n/a	5618	37.71	n/a	37.71	58.1%					
96 - 91	6231	n/a	6231	39.03	n/a	39.03	61.3%					
91 - 86	6887	n/a	6887	40.36	n/a	40.36	64.3%					
86 - 85.75	6921	3263	10183	40.42	18.00	58.42	42.4%		62.7%			
85.75 - 81	7587	3460	11047	41.68	18.00	59.68	44.7%		65.1%			
81 - 80.75	7623	n/a	7623	41.75	n/a	41.75	67.3%					
80.75 - 79	7880	n/a	7880	42.21	n/a	42.21	68.3%					
79 - 72.25	9964	n/a	9964	51.02	n/a	51.02	58.6%					
72.25 - 67.25	10911	n/a	10911	52.59	n/a	52.59	60.4%					
67.25 - 62.25	11916	n/a	11916	54.16	n/a	54.16	62.0%					
62.25 - 57.25	12981	n/a	12981	55.73	n/a	55.73	63.6%					
57.25 - 52.25	14107	n/a	14107	57.29	n/a	57.29	65.0%					
52.25 - 49.8	14682	n/a	14682	58.06	n/a	58.06	65.7%					
49.8 - 49.55	14742	n/a	14742	58.14	n/a	58.14	65.8%					
49.55 - 44.55	15967	n/a	15967	59.71	n/a	59.71	67.2%					
44.55 - 43	16360	n/a	16360	60.19	n/a	60.19	67.6%					
43 - 35.33	18788	n/a	18788	66.23	n/a	66.23	64.3%					
35.33 - 32.25	19688	n/a	19688	67.27	n/a	67.27	65.0%					
32.25 - 32	19762	n/a	19762	67.35	n/a	67.35	65.0%					
32 - 27	21286	n/a	21286	69.04	n/a	69.04	66.0%					
27 - 22	22887	n/a	22887	70.73	n/a	70.73	67.0%					
22 - 17	24566	n/a	24566	72.42	n/a	72.42	67.9%					
17 - 15.5	25085	n/a	25085	72.93	n/a	72.93	68.1%					
15.5 - 15.25	25172	n/a	25172	73.01	n/a	73.01	68.2%					
15.25 - 14.75	25347	n/a	25347	73.18	n/a	73.18	68.3%					
14.75 - 14.5	25435	n/a	25435	73.26	n/a	73.26	68.3%					
14.5 - 9.5	27235	n/a	27235	74.95	n/a	74.95	69.2%					
9.5 - 4.5	29118	n/a	29118	76.64	n/a	76.64	70.1%					
4.5 - 0	30885	n/a	30885	78.16	n/a	78.16	70.9%					

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#: *806953*
Site Name: *BRG 2044 (A) 943097*
App #: *418635 Rev 1*

Pole Manufacturer:	Other

Reactions		
Mu:	3918	ft-kips
Axial, Pu:	53	kips
Shear, Vu:	34	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	64.48	in

Plate Data		
Diam:	70.48	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	9.00	in

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

Pole Data		
Diam:	56	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	151.9 Kips	Rigid
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	AISC LRFD
Anchor Rod Stress Ratio:	58.4% **Pass**	φ*Tn

Base Plate Results

	Flexural Check	
Base Plate Stress:	22.9 ksi	Rigid
Allowable Plate Stress:	54.0 ksi	AISC LRFD
Base Plate Stress Ratio:	42.3% **Pass**	φ*Fy
		Y.L. Length: 31.96

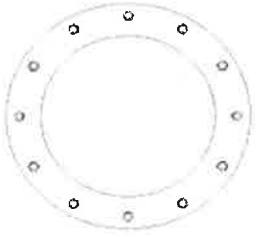
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

Pier and Pad Foundation

BU # :	806953
Site Name:	BRG 2044 (A) 94
App. Number:	418635 Rev 1

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?: ☑

Superstructure Analysis Reactions		
Compression, P_{comp}:	52.9	kips
Base Shear, Vu_comp:	34.4	kips
Moment, M_u:	3917.6	ft-kips
Tower Height, **H**:	160	ft
BP Dist. Above Fdn, bp_{dist}:	6	in
Bolt Circle / Bearing Plate Width, **BC**:	64.48	in

Foundation Analysis Checks	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	193.92	34.40	**17.7%**	**Pass**
Bearing Pressure (ksf)	30.34	3.64	**12.0%**	**Pass**
*Overturning (kip*ft)*	6240.58	4106.80	**65.8%**	**Pass**
*Pad Flexure (kip*ft)*	3525.71	1887.84	**53.5%**	**Pass**
Pad Shear - 1-way (kips)	1642.74	218.63	**13.3%**	**Pass**
Pad Shear - 2-way (ksi)	0.19	0.00	**1.0%**	**Pass**

Soil Rating:	**65.8%**
Structural Rating:	**53.5%**

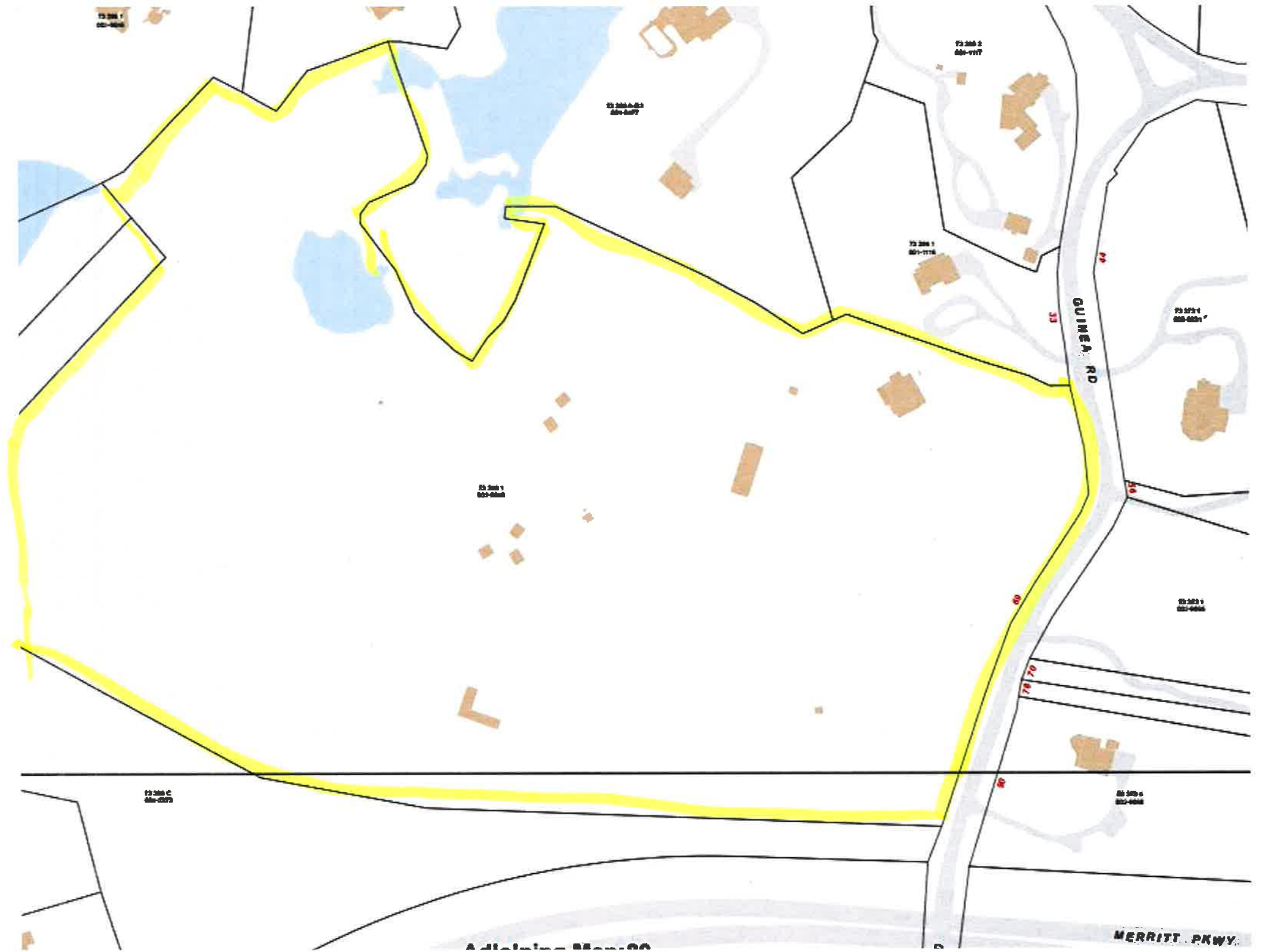
Pad Properties		
Depth, **D**:	3.5	ft
Pad Width, **W**:	26.0	ft
Pad Thickness, **T**:	5.0	ft
Pad Rebar Size, **Sp**:	8	
Pad Rebar Quantity, **mp**:	18	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	130	pcf
Ultimate Net Bearing, Qnet:	40.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	40	degrees
SPT Blow Count, N_{blows}:	100	
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.30	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	n/a	ft

<--Toggle between Gross and Net

ATTACHMENT 4


GUINEA RD
MERRITT PKWY

69 GUINEA ROAD

Location	69 GUINEA ROAD	**Mblu**	002/ 6848/ / /
Acct#	002-6848	**Owner**	GIRL SCOUTS OF CONNECTICUT INC
Assessment	$1,028,420	**Appraisal**	$1,469,120
PID	24323	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$461,570	$1,007,550	$1,469,120

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$323,130	$705,290	$1,028,420

Owner of Record

Owner	GIRL SCOUTS OF CONNECTICUT INC	**Sale Price**	$0
Co-Owner		**Book & Page**	9322/ 308
Address	340 WASHINGTON STREET HARTFORD, CT 06106-3317	**Sale Date**	04/16/2008
		Instrument	25

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
GIRL SCOUTS OF CONNECTICUT INC	$0	9322/ 308	25	04/16/2008
GIRL SCOUT COUNCIL SW CT INC	$0	4405/ 321		05/12/1995
SOUTHWESTERN CT GIRL SCT	$0	1035/ 131	25	12/29/1964

Building Information

Building 1 : Section 1

Year Built: 1963
Living Area: 1,960

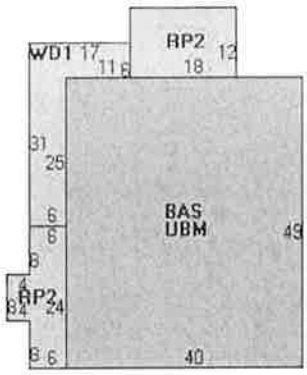
Building Attributes	
Field	**Description**
Style	Ranch

Stories:	1 Story
Occupancy	1
Exterior Wall 1	Cement fiberbd
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Electric
Heat Type:	Electr Basebrd
AC Type:	Central
Total Bedrooms:	00
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	3
Total Rooms:	4
Fireplace Msnry.	
Fpl. Gas/Prefab	1
Fpl. Outdoor	
Fpl. Addnl. Open	
Bsmt. Garage	

Building Photo

(http://images.vgsi.com/photos/StamfordCTPhotos//\00\11\94/

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,960	1,960
RP2	Porch Covered	392	0
UBM	Basement, Unfinished	1,960	0
WD1	Deck, Wood	252	0
		4,564	1,960

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
RP2	Porch Coverd	1056 S.F	$28,050	1
RP2	Porch Coverd	756 S.F	$20,080	1
RP2	Porch Coverd	672 S.F	$17,850	1
RP2	Porch Coverd	216 S.F	$5,740	1
RP2	Porch Coverd	176 S.F	$4,670	1

Land

Land Use

Use Code	901
Description	Exmpt Res MDL-01
Zone	RA3
Neighborhood	1100
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	16.86
Depth	
Assessed Value	$705,290
Appraised Value	$1,007,550

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FC1	Shed Wood			240 S.F.	$2,880	1
MS1	Misc Structure			528 S.F.	$3,170	1
WD1	Wood Deck			252 S.F.	$5,480	1
CEL1	Cell Tower			1 SITES	$146,250	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$438,650	$995,580	$1,434,230
2015	$438,650	$995,580	$1,434,230
2014	$438,650	$995,580	$1,434,230

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$307,060	$696,910	$1,003,970
2015	$307,060	$696,910	$1,003,970
2014	$307,060	$696,910	$1,003,970

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		3	neopost 01/29/2018 US POSTAGE $002.38⁰ ZIP 06103 041L12203380 OLD STATE HOUSE STATION 06103 JAN 29 2018 USPS
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	David Martin, Mayor City of Stamford 888 Washington Boulevard Stamford, CT 06901				
2.	Ralph Blessing, Land Use Bureau Chief City of Stamford 888 Washington Boulevard Stamford, CT 06901				
3.	Girl Scouts of Connecticut, Inc. 340 Washington Street Hartford, CT 06106				
4.					
5.					
6.					