

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

Also admitted in Massachusetts

May 12, 2014

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification
474 Main Street, Monroe, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 160-foot level of the existing 191.5-foot tower at 474 Main Street in Monroe, Connecticut (the “Property”). The tower is owned by Crown Castle. The Council approved Cellco’s use of this tower in 2007. Cellco now intends to modify its facility by adding three (3) model 742 213V01, 2100 MHz antennas, for a total of fifteen (15) antennas, all at the same 160-foot level on the tower. Cellco also intends to install three (3) remote radio heads (“RRHs”) behind its 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable attached to the outside the monopole. 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 Steve Vavrek, First Selectman of the Town of Monroe. A copy of this letter is also being sent to Sprint PCS Global Site Acquisitions, a division of Crown Castle, the owner of the Property.

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



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Melanie A. Bachman

May 12, 2014

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1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's additional three (3) antennas and RRHs will be located at the 160-foot level on the 191.5-foot 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 in Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis Report included in Attachment 3*).

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:

Steve Vavrek, Monroe First Selectman
Sprint PCS Global Site Acquisitions, Division of Crown Castle
Sandy M. Carter



ATTACHMENT 1

KATHREIN SCALA DIVISION

742 213V01

65° Panel Antenna

Kathrein's X-polarized adjustable electrical downtilt antennas offer the wireless carrier the ability to tailor polarization diversity sites for optimum performance. Using variable downtilt, only a few models need be procured to accommodate the needs of widely varying conditions. Remotely controlled downtilt is available as a retrofitable option.

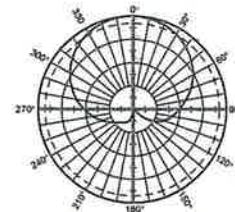
- 0-6° downtilt range.
- UV resistant pulltruded fiberglass radome.
- DC Grounded metallic parts for impulse suppression.
- No moving electrical connections.
- Wideband vector dipole technology.
- Optional remote downtilt Control.
- Will accommodate future 3G / UMTS applications.

General specifications:

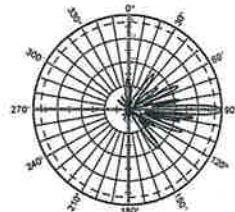
Frequency range	1710–2200 MHz	
VSWR	< 1.5:1	
Impedance	50 ohms	
Intermodulation (2x20w)	IM3: <-150 dBc	
Polarization	+45° and -45°	
Front-to-back ratio (180°±30°)	>30 dB (co-polar) >25 dB (total power)	
Maximum input power	300 watts per input (at 50°C)	
Electrical downtilt continuously adjustable	0–6 degrees	
Connector	2 x 7-16 DIN female	
Isolation	>30 dB	
Cross polar ratio		
Main direction 0°	25 dB (typical)	
Sector ±60°	>10 dB	
Tracking, average	0.5 dB	
Squint	±2.0°	
Weight	19.8 lb (9 kg) 24.3 lb (11 kg) clamps included	
Dimensions	76.9 x 6.1 x 2.8 inches (1954 x 155 x 70 mm)	
Wind load	at 93 mph (150kph)	
Front/Side/Rear	115 lbf / 32 lbf / 115 lbf (510 N) / (140 N) / (510 N)	
Mounting category	M (Medium)	
Wind survival rating*	120 mph (200 kph)	
Shipping dimensions	88 x 6.8 x 3.6 inches (2235 x 172 x 92 mm)	
Shipping weight	28.7 lb (13 kg)	
Mounting	Fixed mounts for 2 to 4.6 inch (50 to 115 mm) OD masts are included and tilt options are available.	

See reverse for order information.

Specifications:	1710–1880 MHz				1850–1990 MHz				1920–2200 MHz			
Gain	19 dBi				19.2 dBi				19.5 dBi			
+45° and -45° polarization horizontal beamwidth	67° (half-power)				65° (half-power)				63° (half-power)			
+45° and -45° polarization vertical beamwidth	4.7° (half-power)				4.5° (half-power)				4.3° (half-power)			
Sidelobe suppression for first sidelobe above main beam	0°	2°	4°	6° T	0°	2°	4°	6° T	0°	2°	4°	6° T
	18	18	16	15 dB	18	18	17	16 dB	18	18	18	18 dB



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization
0°–6° electrical downtilt



11271-B
936.3740/b

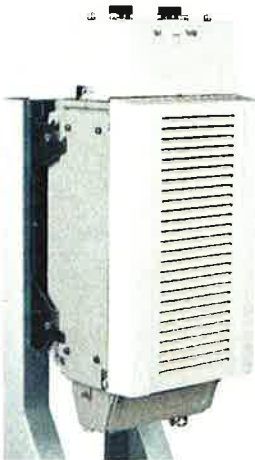


* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.



A distributed eNodeB expands deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-AWS is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

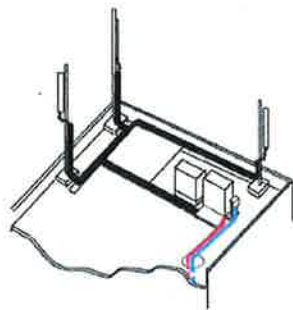
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-AWS is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-AWS is compact and weighs less than 20 kg (44 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

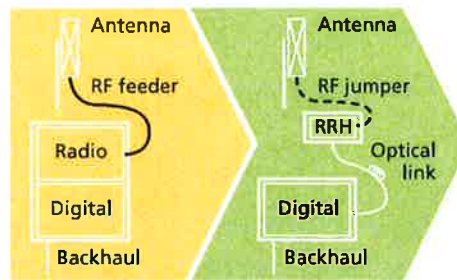
Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-AWS provides more RF power while at the same time consuming less electricity.



Macro

Features

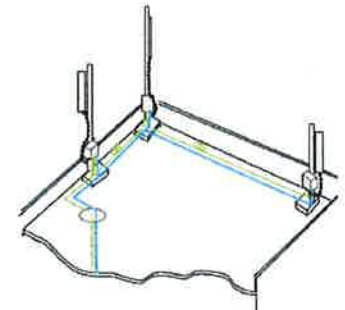
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless)
- Noise-free
- Best-in-class power efficiency, with significantly reduced energy consumption



RRH for space-constrained cell sites

Benefits

- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning



Distributed

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)

- Passive convection cooling (no fans)
- Enclosure protection
 - IP65 (International Protection rating)

RF characteristics

- Frequency band: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port: 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Digital Ports and Alarms

- Two optical ports to support daisy-chaining
- Six external alarms

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

Product Description

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

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

Features/Benefits

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

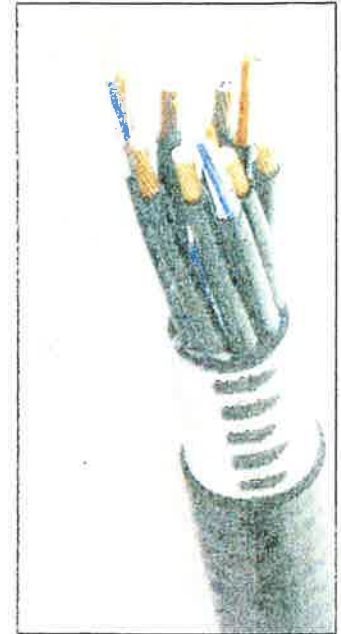


Figure 1: HYBRIFLEX Series

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Physical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	0.68 (0.205)
DC-Resistance Power Cable, 8 4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Other Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[μm]	50/125
Primary Coating (Acrylate)		[μm]	245
Buffer Diameter, Nominal		[μm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL34-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[mm (AWG)]	8 4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Operating Limits			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

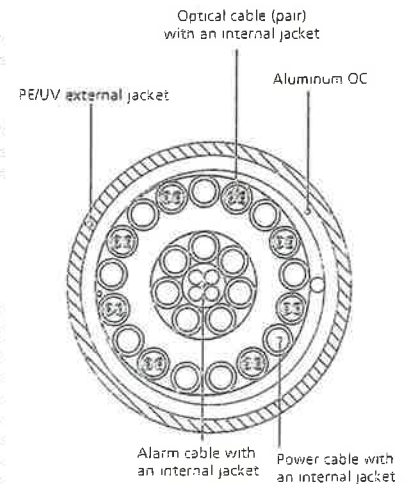


Figure 2: Construction Detail

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

* This data is provisional and subject to change

ATTACHMENT 2

		General		Power		Density							
Site Name: Monroe W Tower Height: 191.5Ft													
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*T-Mobile/V'Stream	8	250.26	195	0.0189	1935	1.0000	1.89%						
*AT&T GSM	1	296	140	0.0054	880	0.5867	0.93%						
*AT&T GSM	6	427	140	0.0470	1900	1.0000	4.70%						
*AT&T UMTS	1	500	140	0.0092	880	0.5867	1.56%						
*AT&T UMTS	1	500	140	0.0092	1900	1.0000	0.92%						
*AT&T LTE	1	500	140	0.0092	740	0.4933	1.86%						
*Sprint CDMA/LTE	2	693	152	0.0216	1900	1.0000	2.16%						
*Sprint CDMA/LTE	1	390	152	0.0061	850	0.5667	1.07%						
Verizon	15	399	160	0.0841	1970	1.0000	8.41%						
Verizon	9	380	160	0.0480	869	0.5793	8.29%						
Verizon	1	1750	160	0.0246	2145	1.0000	2.46%						
Verizon	1	793	160	0.0111	698	0.4653	2.39%						
								36.64%					
* Source: Siting Council													

ATTACHMENT 3

Date: April 01, 2014

Mitzi Parker
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277



FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012

Subject: Structural Analysis Report

Carrier Designation:	Verizon Wireless Co-Locate	
	Carrier Site Name:	Monroe West CT
Crown Castle Designation:	Crown Castle BU Number:	876355
	Crown Castle Site Name:	UPPER STEPNEY - TLC
	Crown Castle JDE Job Number:	255893
	Crown Castle Work Order Number:	732937
	Crown Castle Application Number:	211123 Rev. 0
Engineering Firm Designation:	FDH Engineering, Inc. Project Number:	1426691400
Site Data:	474-480 Main St., MONROE, Fairfield County, CT	
	Latitude 41° 19' 31.99", Longitude -73° 15' 57.05"	
	191.5 Foot - Monopole Tower	

Dear Mitzi Parker,

FDH Engineering, Inc. 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 630927, in accordance with application 211123, revision 0.

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


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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 85 mph fastest mile.


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

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

Respectfully submitted by:


 Mark S. Girgis, EI
 Project Engineer

Reviewed by:


 Bradley R. Newman, PE
 Senior Project Engineer
 CT PE License No. 29630



4/1/14

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1) INTRODUCTION

This tower is a 191.5 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in October of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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
160.0	160.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	-
		3	kathrein	742 213 w/ Mount Pipe			
		1	rfs	DB-B1-6C-8AB-0Z Junction Box			

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
192.0	194.0	12	ems wireless	RV65-18-02DPL2 w/ Mount Pipe	24	1-5/8	1
		6	ericsson	KRY 112 144/1			
	1	crown mounts	T-Arm Mount [TA 602-3]				
160.0	160.0	2	antel	BXA-171063-12BF w/ Mount Pipe	12	1-5/8	1
		1	antel	BXA-171063-8BF-2 w/ Mount Pipe			
		2	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		1	antel	BXA-70063/4CF w/ Mount Pipe			
		4	antel	LPA-80063/6CF w/ Mount Pipe			
		2	antel	LPA-80080/4CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	crown mounts	Platform Mount [LP 303-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
154.0	154.0	3	alcatel lucent	800 MHz RRH	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	crown mounts	Side Arm Mount [SO 102-3]			
150.0	152.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	3	1-1/4	1
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
	150.0	1	crown mounts	Platform Mount [LP 601-1]			
140.0	140.0	1	crown mounts	Platform Mount [LP 403-1]	6 2 1	1-1/4 5/8 3/8	1
		3	ericsson	RRUS-11			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
50.0	52.0	1	kathrein	OG-860/1920/GPS-A	1	1/2	1
	50.0	1	crown mounts	Side Arm Mount [SO 701-1]			

Notes:
 1) Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
191.5	191.5	12	Dapa	48000	-	-
181.5	181.5	12	Dapa	48000	-	-
171.5	171.5	12	Dapa	48000	-	-
161.5	161.5	12	Dapa	48000	-	-
150	150	12	Dapa	48000	-	-
140	140	12	Dapa	48000	-	-
50	50	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Associates, Inc.	1531885	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineering Endeavors, Inc.	1631625	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineering Endeavors, Inc.	1631582	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	191.5 - 172.46	Pole	TP20.46x15.5x0.188	1	-1.763	602.356	25.1	Pass
L2	172.46 - 127.753	Pole	TP31.6x19.282x0.313	2	-11.975	1553.518	61.2	Pass
L3	127.753 - 83.0833	Pole	TP42.19x29.815x0.438	3	-21.618	2908.153	67.0	Pass
L4	83.0833 - 40.4567	Pole	TP52.59x39.847x0.5	4	-34.858	4143.924	64.7	Pass
L5	40.4567 - 0	Pole	TP62x49.727x0.5	5	-39.773	4257.642	67.6	Pass
							Summary	
						Pole (L5)	67.6	Pass
						Rating =	67.6	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	60.0	Pass
1	Base Plate	0	80.8	Pass
1	Base Foundation Soil Interaction	0	56.9	Pass

Structure Rating (max from all components) =	80.8%
---	--------------

Notes:

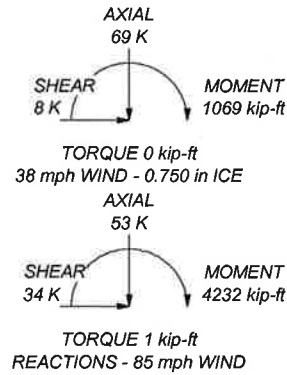
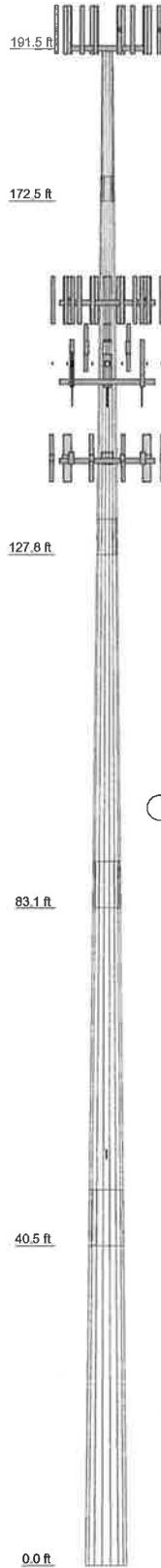
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	Length (ft)	Number of Slides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	19.040	18	0.188	3.083	15.500	20.460		0.7
2	47.790	18	0.313	4.500	19.282	31.600	A572-65	4.1
3	49.170	18	0.438	5.883	29.815	42.190	A572-65	8.3
4	48.460	18	0.500	7.083	38.847	52.590		12.0
5	47.540	18	0.500	49.727	62.000			14.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) RV65-18-02DPL2 w/ Mount Pipe	192	800 MHz RRH	154
(4) RV65-18-02DPL2 w/ Mount Pipe	192	800 MHz RRH	154
(4) RV65-18-02DPL2 w/ Mount Pipe	192	Side Arm Mount [SO 102-3]	154
(2) KRY 112 144/1	192	APXVSP18-C-A20 w/ Mount Pipe	150
(2) KRY 112 144/1	192	APXVSP18-C-A20 w/ Mount Pipe	150
(2) KRY 112 144/1	192	APXVSP18-C-A20 w/ Mount Pipe	150
T-Arm Mount [TA 602-3]	192	(3) ACU-A20-N	150
Lightning Rod	191.5	(3) ACU-A20-N	150
(2) LPA-80063/6CF w/ Mount Pipe	160	(3) ACU-A20-N	150
(2) LPA-80063/6CF w/ Mount Pipe	160	800 EXTERNAL NOTCH FILTER	150
(2) LPA-80080/4CF w/ Mount Pipe	160	800 EXTERNAL NOTCH FILTER	150
BXA-70063-6CF-2 w/ Mount Pipe	160	800 EXTERNAL NOTCH FILTER	150
BXA-70063-6CF-2 w/ Mount Pipe	160	Platform Mount [LP 601-1]	150
BXA-70063/4CF w/ Mount Pipe	160	Empty Mount Pipe	150
BXA-171063-12BF w/ Mount Pipe	160	Empty Mount Pipe	150
BXA-171063-12BF w/ Mount Pipe	160	Empty Mount Pipe	150
BXA-171063-8BF-2 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
742 213 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
742 213 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
742 213 w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
(2) FD9R6004/2C-3L	160	P65-16-XLH-RR w/ Mount Pipe	140
(2) FD9R6004/2C-3L	160	P65-16-XLH-RR w/ Mount Pipe	140
(2) FD9R6004/2C-3L	160	(2) LGP21401	140
RRH2X40-AWS	160	(2) LGP21401	140
RRH2X40-AWS	160	(2) LGP21401	140
RRH2X40-AWS	160	RRUS-11	140
DB-B1-6C-9AB-0Z Junction Box	160	RRUS-11	140
Platform Mount [LP 303-1]	160	RRUS-11	140
PCS 1900MHz 4x45W-65MHz	154	DC6-48-60-18-8F	140
PCS 1900MHz 4x45W-65MHz	154	Platform Mount [LP 403-1]	140
PCS 1900MHz 4x45W-65MHz	154	OG-860/1920/GPS-A	50
800 MHz RRH	154	Side Arm Mount [SO 701-1]	50

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 a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

	FDH Engineering, Inc.		Job: Upper Stepney, BU# 876355		
	6521 Meridien Drive		Project: 1426691400		
	Raleigh, NC 27616		Client: Crown Castle	Drawn by: Mark S. Girgis	App'd:
	Phone: (919) 755-1012		Code: TIA/EIA-222-F	Date: 04/01/14	Scale: NTS
FAX: (919) 755-1031		Path:		Dwg No. E-1	

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Basic wind speed of 85 mph.
- 3) Nominal ice thickness of 0.750 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56 pcf.
- 6) A wind speed of 38 mph is used in combination with ice.
- 7) Temperature drop of 50 °F.
- 8) Deflections calculated using a wind speed of 50 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- 12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check Poles ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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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	191.500- 172.460	19.040	3.083	18	15.500	20.460	0.188	0.750	A572-65 (65 ksi)
L2	172.460- 127.753	47.790	4.500	18	19.282	31.600	0.313	1.250	A572-65 (65 ksi)
L3	127.753- 83.083	49.170	5.833	18	29.815	42.190	0.438	1.750	A572-65 (65 ksi)
L4	83.083-40.457	48.460	7.083	18	39.847	52.590	0.500	2.000	A572-65 (65 ksi)
L5	40.457-0.000	47.540		18	49.727	62.000	0.500	2.000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
---------	----------------	-------------------------	----------------------	---------	---------	------------------------	----------------------	------------------------	---------	-----

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	15.739	9.113	269.950	5.436	7.874	34.284	540.256	4.557	2.398	12.789
	20.776	12.065	626.423	7.197	10.394	60.270	1253.670	6.033	3.271	17.445
L2	20.386	18.815	855.356	6.734	9.795	87.324	1711.837	9.409	2.844	9.099
	32.087	31.033	3838.018	11.107	16.053	239.087	7681.086	15.520	5.012	16.037
L3	31.425	40.794	4448.064	10.429	15.146	293.678	8901.981	20.401	4.477	10.234
	42.841	57.979	12769.382	14.822	21.433	595.795	25555.567	28.995	6.655	15.212
L4	42.019	62.444	12213.654	13.968	20.242	603.375	24443.379	31.228	6.133	12.266
	53.401	82.667	28338.539	18.492	26.716	1060.744	56714.366	41.341	8.376	16.752
L5	52.351	78.124	23918.500	17.476	25.261	946.836	47868.472	39.069	7.872	15.744
	62.956	97.600	46637.979	21.833	31.496	1480.759	93337.326	48.810	10.032	20.064

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 191.500-172.460				1	1	1		
L2 172.460-127.753				1	1	1		
L3 127.753-83.083				1	1	1		
L4 83.083-40.457				1	1	1		
L5 40.457-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Section	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	klf
Safety Line 3/8	C	Surface Ar (CaAa)	191.500 - 0.000	1	1	-0.020 0.200	0.375		0.000
Climbing Ladder	A	Surface Af (CaAa)	152.000 - 144.000	1	1	-0.030 -0.030	2.500	10.000	0.008
HB158-1-08U8-S8J18(1-5/8")	B	Surface Ar (CaAa)	160.000 - 0.000	1	1	0.450 0.500	1.980		0.001

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _A A _A	Weight
				ft		ft ² /ft	klf
LDF7-50A(1-5/8")	A	No	Inside Pole	191.500 - 0.000	24	No Ice	0.001
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
AVA7-50(1-5/8")	C	No	Inside Pole	160.000 - 0.000	12	No Ice	0.001
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
HB114-1-0813U4-M5J(1 1/4")	A	No	Inside Pole	150.000 - 0.000	3	No Ice	0.001
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} A ft ² /ft	Weight klf
						4" Ice	0.000	0.001
* LDF6-50A(1-1/4")	B	No	Inside Pole	140.000 - 0.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	B	No	Inside Pole	140.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG82ST-BRDA(5/8")	B	No	Inside Pole	140.000 - 0.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
* LDF4-50A(1/2")	A	No	Inside Pole	50.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} A In Face ft ²	C _{AA} A Out Face ft ²	Weight K
L1	191.500-172.460	A	0.000	0.000	0.000	0.000	0.375
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.714	0.000	0.004
L2	172.460-127.753	A	0.000	0.000	3.333	0.000	1.023
		B	0.000	0.000	6.385	0.000	0.099
		C	0.000	0.000	1.677	0.000	0.281
L3	127.753-83.083	A	0.000	0.000	0.000	0.000	1.040
		B	0.000	0.000	8.845	0.000	0.265
		C	0.000	0.000	1.675	0.000	0.385
L4	83.083-40.457	A	0.000	0.000	0.000	0.000	0.994
		B	0.000	0.000	8.440	0.000	0.253
		C	0.000	0.000	1.599	0.000	0.367
L5	40.457-0.000	A	0.000	0.000	0.000	0.000	0.948
		B	0.000	0.000	8.010	0.000	0.240
		C	0.000	0.000	1.517	0.000	0.349

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	191.500-172.460	A	0.920	0.000	0.000	0.000	0.000	0.375
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	4.218	0.000	0.032
L2	172.460-127.753	A	0.898	0.000	0.000	5.787	0.000	1.062
		B		0.000	0.000	12.320	0.000	0.204
		C		0.000	0.000	9.905	0.000	0.346
L3	127.753-83.083	A	0.861	0.000	0.000	0.000	0.000	1.040
		B		0.000	0.000	16.872	0.000	0.406
		C		0.000	0.000	9.702	0.000	0.447
L4	83.083-40.457	A	0.808	0.000	0.000	0.000	0.000	0.994
		B		0.000	0.000	15.784	0.000	0.380
		C		0.000	0.000	8.942	0.000	0.423

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L5	40.457-0.000	A	0.750	0.000	0.000	0.000	0.000	0.948
		B		0.000	0.000	14.549	0.000	0.351
		C		0.000	0.000	8.056	0.000	0.396

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	191.500-172.460	-0.010	0.055	-0.051	0.267
L2	172.460-127.753	-0.168	-0.019	-0.241	0.160
L3	127.753-83.083	0.249	0.184	0.378	0.478
L4	83.083-40.457	0.250	0.185	0.385	0.485
L5	40.457-0.000	0.251	0.186	0.385	0.479

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Lightning Rod	C	From Leg	0.000 0.000 2.000	0.000	191.500	No Ice	0.250	0.250	0.031
						1/2" Ice	0.664	0.664	0.034
						Ice	0.973	0.973	0.039
						1" Ice	1.494	1.494	0.059
						2" Ice	2.683	2.683	0.137
*** (4) RV65-18-02DPL2 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice	3.538	3.294	0.031
						1/2" Ice	3.954	4.020	0.064
						Ice	4.368	4.696	0.103
						1" Ice	5.275	6.098	0.201
						2" Ice	7.316	9.102	0.509
(4) RV65-18-02DPL2 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice	3.538	3.294	0.031
						1/2" Ice	3.954	4.020	0.064
						Ice	4.368	4.696	0.103
						1" Ice	5.275	6.098	0.201
						2" Ice	7.316	9.102	0.509
(4) RV65-18-02DPL2 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice	3.538	3.294	0.031
						1/2" Ice	3.954	4.020	0.064
						Ice	4.368	4.696	0.103
						1" Ice	5.275	6.098	0.201
						2" Ice	7.316	9.102	0.509
(2) KRY 112 144/1	A	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice	0.411	0.189	0.011
						1/2" Ice	0.500	0.256	0.014
						Ice	0.597	0.332	0.018
						1" Ice	0.818	0.510	0.032
						2" Ice	1.363	0.970	0.081
(2) KRY 112 144/1	B	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice	0.411	0.189	0.011
						1/2" Ice	0.500	0.256	0.014
						Ice	0.597	0.332	0.018
						1" Ice	0.818	0.510	0.032
						2" Ice	1.363	0.970	0.081
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
(2) KRY 112 144/1	C	From Leg	4.000	0.000	0.000	192.000	No Ice	0.411	0.189	0.011
							1/2" Ice	0.500	0.256	0.014
							Ice	0.597	0.332	0.018
							1" Ice	0.818	0.510	0.032
							2" Ice	1.363	0.970	0.081
T-Arm Mount [TA 602-3]	C	None	0.000	0.000	192.000	No Ice	11.590	11.590	0.774	
						1/2" Ice	15.440	15.440	0.990	
						Ice	19.290	19.290	1.206	
						1" Ice	26.990	26.990	1.639	
						2" Ice	42.390	42.390	2.503	
*** (2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	160.000	No Ice	10.577	10.671	0.052
							1/2" Ice	11.241	11.932	0.145
							Ice	11.872	12.911	0.246
							1" Ice	13.163	14.921	0.476
							2" Ice	15.866	19.158	1.088
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	160.000	No Ice	10.577	10.671	0.052
							1/2" Ice	11.241	11.932	0.145
							Ice	11.872	12.911	0.246
							1" Ice	13.163	14.921	0.476
							2" Ice	15.866	19.158	1.088
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	160.000	No Ice	2.856	7.227	0.030
							1/2" Ice	3.220	7.922	0.076
							Ice	3.592	8.634	0.128
							1" Ice	4.450	10.112	0.253
							2" Ice	6.318	13.339	0.613
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	160.000	No Ice	7.969	5.801	0.042
							1/2" Ice	8.609	6.953	0.103
							Ice	9.216	7.819	0.171
							1" Ice	10.459	9.601	0.335
							2" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	160.000	No Ice	7.969	5.801	0.042
							1/2" Ice	8.609	6.953	0.103
							Ice	9.216	7.819	0.171
							1" Ice	10.459	9.601	0.335
							2" Ice	13.066	13.366	0.804
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	160.000	No Ice	5.295	3.470	0.027
							1/2" Ice	5.713	4.046	0.068
							Ice	6.141	4.638	0.115
							1" Ice	7.025	5.913	0.228
							2" Ice	8.923	8.881	0.558
BXA-171063-12BF w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	160.000	No Ice	4.971	5.228	0.040
							1/2" Ice	5.521	6.389	0.086
							Ice	6.036	7.261	0.139
							1" Ice	7.091	9.046	0.271
							2" Ice	9.359	12.817	0.671
BXA-171063-12BF w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	160.000	No Ice	4.971	5.228	0.040
							1/2" Ice	5.521	6.389	0.086
							Ice	6.036	7.261	0.139
							1" Ice	7.091	9.046	0.271
							2" Ice	9.359	12.817	0.671
BXA-171063-8BF-2 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	160.000	No Ice	3.179	3.353	0.029
							1/2" Ice	3.555	3.971	0.061
							Ice	3.964	4.595	0.099
							1" Ice	4.853	5.893	0.193

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						Vert
742 213 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	160.000	2" Ice	6.767	8.885	0.488
							4" Ice			
							No Ice	5.373	4.620	0.049
							1/2" Ice	5.950	6.000	0.094
							1" Ice	6.501	6.982	0.146
742 213 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	160.000	2" Ice	9.933	12.794	0.683
							4" Ice			
							No Ice	5.373	4.620	0.049
							1/2" Ice	5.950	6.000	0.094
							1" Ice	6.501	6.982	0.146
742 213 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	160.000	2" Ice	9.933	12.794	0.683
							4" Ice			
							No Ice	5.373	4.620	0.049
							1/2" Ice	5.950	6.000	0.094
							1" Ice	6.501	6.982	0.146
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000	0.000	160.000	2" Ice	9.933	12.794	0.683
							4" Ice			
							No Ice	0.367	0.085	0.003
							1/2" Ice	0.451	0.136	0.005
							1" Ice	0.543	0.196	0.009
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000	0.000	160.000	2" Ice	1.281	0.740	0.063
							4" Ice			
							No Ice	0.367	0.085	0.003
							1/2" Ice	0.451	0.136	0.005
							1" Ice	0.543	0.196	0.009
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	0.000	160.000	2" Ice	1.281	0.740	0.063
							4" Ice			
							No Ice	0.367	0.085	0.003
							1/2" Ice	0.451	0.136	0.005
							1" Ice	0.543	0.196	0.009
RRH2X40-AWS	A	From Leg	4.000	0.000	0.000	160.000	2" Ice	4.615	3.479	0.275
							4" Ice			
							No Ice	2.522	1.589	0.044
							1/2" Ice	2.753	1.795	0.061
							1" Ice	2.993	2.010	0.082
RRH2X40-AWS	B	From Leg	4.000	0.000	0.000	160.000	2" Ice	4.615	3.479	0.275
							4" Ice			
							No Ice	2.522	1.589	0.044
							1/2" Ice	2.753	1.795	0.061
							1" Ice	2.993	2.010	0.082
RRH2X40-AWS	C	From Leg	4.000	0.000	0.000	160.000	2" Ice	4.615	3.479	0.275
							4" Ice			
							No Ice	2.522	1.589	0.044
							1/2" Ice	2.753	1.795	0.061
							1" Ice	2.993	2.010	0.082
DB-B1-6C-8AB-0Z Junction Box	C	From Leg	4.000	0.000	0.000	160.000	2" Ice	8.365	4.373	0.455
							4" Ice			
							No Ice	5.600	2.333	0.044
							1/2" Ice	5.915	2.558	0.080
							1" Ice	6.240	2.791	0.120
Platform Mount [LP 303-1]	C	None			0.000	160.000	2" Ice	8.365	4.373	0.455
							4" Ice			
							No Ice	14.660	14.660	1.250
							1/2" Ice	18.870	18.870	1.481
							Ice	23.080	23.080	1.713

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A		Weight K	
			Horz Lateral ft ft ft	Vert ft ft ft			Front ft ²	Side ft ²		
						1" Ice	31.500	31.500	2.175	
						2" Ice	48.340	48.340	3.101	
						4" Ice				
*** PCS 1900MHz 4x45W-65MHz	A	From Leg	2.000 0.000 0.000		0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	2.709 2.948 3.195 3.716 4.862 4.744	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.000 0.000 0.000		0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	2.709 2.948 3.195 3.716 4.862 4.744	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.000 0.000 0.000		0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	2.709 2.948 3.195 3.716 4.862 4.744	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
800 MHz RRH	A	From Leg	2.000 0.000 0.000		0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	2.490 2.706 2.931 3.407 4.462 3.927	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800 MHz RRH	B	From Leg	2.000 0.000 0.000		0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	2.490 2.706 2.931 3.407 4.462 3.927	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
800 MHz RRH	C	From Leg	2.000 0.000 0.000		0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	2.490 2.706 2.931 3.407 4.462 3.927	2.068 2.271 2.481 2.928 3.927	0.053 0.074 0.098 0.157 0.318
Side Arm Mount [SO 102-3]	C	None			0.000	154.000	No Ice 1/2" Ice 1" 2" 4"	3.000 3.480 3.960 4.920 6.840	3.000 3.480 3.960 4.920 6.840	0.081 0.111 0.141 0.201 0.321
* APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000		0.000	150.000	No Ice 1/2" Ice 1" 2" 4"	8.498 9.149 9.767 11.031 13.679 14.851	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000		0.000	150.000	No Ice 1/2" Ice 1" 2" 4"	8.498 9.149 9.767 11.031 13.679 14.851	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000		0.000	150.000	No Ice 1/2" Ice 1" 2" 4"	8.498 9.149 9.767 11.031 13.679 14.851	6.946 8.127 9.021 10.844 14.851	0.083 0.151 0.227 0.406 0.909

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
(3) ACU-A20-N	A	From Leg	4.000	0.000	150.000	No Ice	0.078	0.136	0.001	
			0.000			1/2"	0.121	0.189	0.002	
			2.000			Ice	0.173	0.251	0.004	
						1" Ice	0.302	0.400	0.012	
						2" Ice	0.665	0.802	0.045	
(3) ACU-A20-N	B	From Leg	4.000	0.000	150.000	No Ice	0.078	0.136	0.001	
			0.000			1/2"	0.121	0.189	0.002	
			2.000			Ice	0.173	0.251	0.004	
						1" Ice	0.302	0.400	0.012	
						2" Ice	0.665	0.802	0.045	
(3) ACU-A20-N	C	From Leg	4.000	0.000	150.000	No Ice	0.078	0.136	0.001	
			0.000			1/2"	0.121	0.189	0.002	
			2.000			Ice	0.173	0.251	0.004	
						1" Ice	0.302	0.400	0.012	
						2" Ice	0.665	0.802	0.045	
800 EXTERNAL NOTCH FILTER	A	From Leg	4.000	0.000	150.000	No Ice	0.770	0.375	0.011	
			0.000			1/2"	0.890	0.465	0.017	
			2.000			Ice	1.018	0.563	0.024	
						1" Ice	1.301	0.787	0.045	
						2" Ice	1.970	1.337	0.114	
800 EXTERNAL NOTCH FILTER	B	From Leg	4.000	0.000	150.000	No Ice	0.770	0.375	0.011	
			0.000			1/2"	0.890	0.465	0.017	
			2.000			Ice	1.018	0.563	0.024	
						1" Ice	1.301	0.787	0.045	
						2" Ice	1.970	1.337	0.114	
800 EXTERNAL NOTCH FILTER	C	From Leg	4.000	0.000	150.000	No Ice	0.770	0.375	0.011	
			0.000			1/2"	0.890	0.465	0.017	
			2.000			Ice	1.018	0.563	0.024	
						1" Ice	1.301	0.787	0.045	
						2" Ice	1.970	1.337	0.114	
Platform Mount [LP 601-1]	C	None		0.000	150.000	No Ice	28.470	28.470	1.122	
						1/2"	33.590	33.590	1.514	
						Ice	38.710	38.710	1.905	
						1" Ice	48.950	48.950	2.689	
						2" Ice	69.430	69.430	4.255	
Empty Mount Pipe	A	From Leg	4.000	0.000	150.000	No Ice	1.400	1.400	0.030	
			0.000			1/2"	2.125	2.125	0.041	
			0.000			Ice	2.681	2.681	0.056	
						1" Ice	3.558	3.558	0.102	
						2" Ice	5.423	5.423	0.256	
Empty Mount Pipe	B	From Leg	4.000	0.000	150.000	No Ice	1.400	1.400	0.030	
			0.000			1/2"	2.125	2.125	0.041	
			0.000			Ice	2.681	2.681	0.056	
						1" Ice	3.558	3.558	0.102	
						2" Ice	5.423	5.423	0.256	
Empty Mount Pipe	C	From Leg	4.000	0.000	150.000	No Ice	1.400	1.400	0.030	
			0.000			1/2"	2.125	2.125	0.041	
			0.000			Ice	2.681	2.681	0.056	
						1" Ice	3.558	3.558	0.102	
						2" Ice	5.423	5.423	0.256	

7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	6.119	4.254	0.055	
			0.000			1/2"	6.626	5.014	0.103	
			0.000			Ice	7.128	5.711	0.157	
						1" Ice	8.164	7.155	0.287	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			Horz Lateral ft	Vert ft						
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	2" Ice	10.360	10.412	0.665
							4" Ice			
							No Ice	6.119	4.254	0.055
							1/2" Ice	6.626	5.014	0.103
							1" Ice	7.128	5.711	0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	2" Ice	10.360	10.412	0.665
							4" Ice			
							No Ice	6.119	4.254	0.055
							1/2" Ice	6.626	5.014	0.103
							1" Ice	7.128	5.711	0.157
P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	2" Ice	10.360	10.412	0.665
							4" Ice			
							No Ice	8.637	6.362	0.079
							1/2" Ice	9.290	7.538	0.144
							1" Ice	9.910	8.427	0.218
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	1" Ice	11.176	10.239	0.393
							2" Ice	13.829	14.099	0.886
							4" Ice			
							No Ice	8.637	6.362	0.079
							1/2" Ice	9.290	7.538	0.144
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	Ice	9.910	8.427	0.218
							1" Ice	11.176	10.239	0.393
							2" Ice	13.829	14.099	0.886
							4" Ice			
							No Ice	8.637	6.362	0.079
(2) LGP21401	A	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	1/2" Ice	9.290	7.538	0.144
							Ice	9.910	8.427	0.218
							1" Ice	11.176	10.239	0.393
							2" Ice	13.829	14.099	0.886
							4" Ice			
(2) LGP21401	B	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	No Ice	1.288	0.233	0.014
							1/2" Ice	1.445	0.313	0.021
							Ice	1.611	0.403	0.030
							1" Ice	1.969	0.608	0.055
							2" Ice	2.788	1.121	0.135
(2) LGP21401	C	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	4" Ice			
							No Ice	1.288	0.233	0.014
							1/2" Ice	1.445	0.313	0.021
							Ice	1.611	0.403	0.030
							1" Ice	1.969	0.608	0.055
RRUS-11	A	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	2" Ice	2.788	1.121	0.135
							4" Ice			
							No Ice	2.942	1.246	0.055
							1/2" Ice	3.172	1.412	0.074
							Ice	3.410	1.587	0.097
RRUS-11	B	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	1" Ice	3.913	1.963	0.151
							2" Ice	5.023	2.819	0.302
							4" Ice			
							No Ice	2.942	1.246	0.055
							1/2" Ice	3.172	1.412	0.074
RRUS-11	C	From Leg	4.000 0.000 0.000	0.000	0.000	140.000	Ice	3.410	1.587	0.097
							1" Ice	3.913	1.963	0.151
							2" Ice	5.023	2.819	0.302
							4" Ice			
							No Ice	2.942	1.246	0.055

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
DC6-48-60-18-8F	C	From Leg	4.000 0.000 0.000	0.000	140.000	1" Ice	3.913	1.963	0.151
						2" Ice	5.023	2.819	0.302
						4" Ice			
						No Ice	2.567	4.317	0.033
						1/2"	2.798	4.596	0.064
						Ice	3.038	4.885	0.099
						1" Ice	3.543	5.488	0.181
Platform Mount [LP 403-1]	C	None		0.000	140.000	2" Ice	4.658	6.797	0.397
						4" Ice			
						No Ice	18.850	18.850	1.500
						1/2"	24.300	24.300	1.797
						Ice	29.750	29.750	2.093
						1" Ice	40.650	40.650	2.686
						2" Ice	62.450	62.450	3.872
*** OG-860/1920/GPS-A	A	From Leg	2.000 0.000 2.000	0.000	50.000	4" Ice			
						No Ice	0.329	0.404	0.002
						1/2"	0.434	0.514	0.005
						Ice	0.548	0.632	0.010
						1" Ice	0.802	0.894	0.024
						2" Ice	1.414	1.521	0.079
						4" Ice			
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	50.000	No Ice	0.850	1.670	0.065
						1/2"	1.140	2.340	0.079
						Ice	1.430	3.010	0.093
						1" Ice	2.010	4.350	0.121
						2" Ice	3.170	7.030	0.177
						4" Ice			

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K _Z	q _Z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 191.500-172.460	181.542	1.628	0.030	28.528	A	0.000	28.528	28.528	100.00	0.000	0.000
					B	0.000	28.528		100.00	0.000	0.000
					C	0.000	28.528		100.00	0.714	0.000
L2 172.460-127.753	148.680	1.537	0.028	96.262	A	0.000	96.262	96.262	100.00	3.333	0.000
					B	0.000	96.262		100.00	6.385	0.000
					C	0.000	96.262		100.00	1.677	0.000
L3 127.753-83.083	104.611	1.39	0.026	136.127	A	0.000	136.127	136.127	100.00	0.000	0.000
					B	0.000	136.127		100.00	8.845	0.000
					C	0.000	136.127		100.00	1.675	0.000
L4 83.083-40.457	61.453	1.194	0.022	166.903	A	0.000	166.903	166.903	100.00	0.000	0.000
					B	0.000	166.903		100.00	8.440	0.000
					C	0.000	166.903		100.00	1.599	0.000
L5 40.457-0.000	19.608	1	0.018	191.421	A	0.000	191.421	191.421	100.00	0.000	0.000
					B	0.000	191.421		100.00	8.010	0.000
					C	0.000	191.421		100.00	1.517	0.000

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_z	q_z ksf	t_z in	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
L1 191.500-172.460	181.542	1.628	0.006	0.920	31.449	A	0.000	31.449	31.449	100.00	0.000	0.000
						B	0.000	31.449	31.449	100.00	0.000	0.000
						C	0.000	31.449	31.449	100.00	4.218	0.000
L2 172.460-127.753	148.680	1.537	0.006	0.898	103.119	A	0.000	103.119	103.119	100.00	5.787	0.000
						B	0.000	103.119	103.119	100.00	12.320	0.000
						C	0.000	103.119	103.119	100.00	9.905	0.000
L3 127.753-83.083	104.611	1.39	0.005	0.861	142.817	A	0.000	142.817	142.817	100.00	0.000	0.000
						B	0.000	142.817	142.817	100.00	16.872	0.000
						C	0.000	142.817	142.817	100.00	9.702	0.000
L4 83.083-40.457	61.453	1.194	0.004	0.808	173.022	A	0.000	173.022	173.022	100.00	0.000	0.000
						B	0.000	173.022	173.022	100.00	15.784	0.000
						C	0.000	173.022	173.022	100.00	8.942	0.000
L5 40.457-0.000	19.608	1	0.004	0.750	196.869	A	0.000	196.869	196.869	100.00	0.000	0.000
						B	0.000	196.869	196.869	100.00	14.549	0.000
						C	0.000	196.869	196.869	100.00	8.056	0.000

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_z	q_z ksf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
L1 191.500-172.460	181.542	1.628	0.010	28.528	A	0.000	28.528	28.528	100.00	0.000	0.000
					B	0.000	28.528	28.528	100.00	0.000	0.000
					C	0.000	28.528	28.528	100.00	0.714	0.000
L2 172.460-127.753	148.680	1.537	0.010	96.262	A	0.000	96.262	96.262	100.00	3.333	0.000
					B	0.000	96.262	96.262	100.00	6.385	0.000
					C	0.000	96.262	96.262	100.00	1.677	0.000
L3 127.753-83.083	104.611	1.39	0.009	136.127	A	0.000	136.127	136.127	100.00	0.000	0.000
					B	0.000	136.127	136.127	100.00	8.845	0.000
					C	0.000	136.127	136.127	100.00	1.675	0.000
L4 83.083-40.457	61.453	1.194	0.008	166.903	A	0.000	166.903	166.903	100.00	0.000	0.000
					B	0.000	166.903	166.903	100.00	8.440	0.000
					C	0.000	166.903	166.903	100.00	1.599	0.000
L5 40.457-0.000	19.608	1	0.006	191.421	A	0.000	191.421	191.421	100.00	0.000	0.000
					B	0.000	191.421	191.421	100.00	8.010	0.000
					C	0.000	191.421	191.421	100.00	1.517	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C_F	R_R	D_F	D_R	A_E ft ²	F K	w klf	Ctrl. Face
L1 191.500-172.460	0.379	0.686	A	1	0.65	1	1	1	28.528	0.980	0.051	C
			B	1	0.65	1	1	1	28.528			
			C	1	0.65	1	1	1	28.528			
L2 172.460-127.753	1.402	4.053	A	1	0.65	1	1	1	96.262	3.551	0.079	C
			B	1	0.65	1	1	1	96.262			
			C	1	0.65	1	1	1	96.262			
L3 127.753-83.083	1.690	8.263	A	1	0.65	1	1	1	136.127	4.294	0.096	C
			B	1	0.65	1	1	1	136.127			
			C	1	0.65	1	1	1	136.127			
L4 83.083-40.457	1.614	11.964	A	1	0.65	1	1	1	166.903	4.400	0.103	C
			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L5 40.457-0.000	1.537	14.213	A	1	0.65	1	1	1	191.421	4.187	0.103	C
			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.622	39.180						OTM	1507.543 kip-ft	17.412		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.379	0.686	A	1	0.65	1	1	1	28.528	0.980	0.051	C
			B	1	0.65	1	1	1	28.528			
			C	1	0.65	1	1	1	28.528			
L2 172.460-127.753	1.402	4.053	A	1	0.65	1	1	1	96.262	3.551	0.079	C
			B	1	0.65	1	1	1	96.262			
			C	1	0.65	1	1	1	96.262			
L3 127.753-83.083	1.690	8.263	A	1	0.65	1	1	1	136.127	4.294	0.096	C
			B	1	0.65	1	1	1	136.127			
			C	1	0.65	1	1	1	136.127			
L4 83.083-40.457	1.614	11.964	A	1	0.65	1	1	1	166.903	4.400	0.103	C
			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5 40.457-0.000	1.537	14.213	A	1	0.65	1	1	1	191.421	4.187	0.103	C
			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.622	39.180						OTM	1507.543 kip-ft	17.412		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.379	0.686	A	1	0.65	1	1	1	28.528	0.980	0.051	C
			B	1	0.65	1	1	1	28.528			
			C	1	0.65	1	1	1	28.528			
L2 172.460-127.753	1.402	4.053	A	1	0.65	1	1	1	96.262	3.551	0.079	C
			B	1	0.65	1	1	1	96.262			
			C	1	0.65	1	1	1	96.262			
L3 127.753-83.083	1.690	8.263	A	1	0.65	1	1	1	136.127	4.294	0.096	C
			B	1	0.65	1	1	1	136.127			
			C	1	0.65	1	1	1	136.127			
L4 83.083-40.457	1.614	11.964	A	1	0.65	1	1	1	166.903	4.400	0.103	C
			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5 40.457-0.000	1.537	14.213	A	1	0.65	1	1	1	191.421	4.187	0.103	C
			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.622	39.180						OTM	1507.543 kip-ft	17.412		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.407	1.095	A	1	0.65	1	1	1	31.449	0.246	0.013	C
			B	1	0.65	1	1	31.449				
			C	1	0.65	1	1	31.449				
L2 172.460-127.753	1.611	5.379	A	1	0.65	1	1	1	103.119	0.893	0.020	C
			B	1	0.65	1	1	103.119				
			C	1	0.65	1	1	103.119				
L3 127.753-83.083	1.894	10.041	A	1	0.65	1	1	1	142.817	1.013	0.023	C
			B	1	0.65	1	1	142.817				
			C	1	0.65	1	1	142.817				
L4 83.083-40.457	1.797	13.996	A	1	0.65	1	1	1	173.022	0.997	0.023	C
			B	1	0.65	1	1	173.022				
			C	1	0.65	1	1	173.022				
L5 40.457-0.000	1.695	16.368	A	1	0.65	1	1	1	196.869	0.921	0.023	C
			B	1	0.65	1	1	196.869				
			C	1	0.65	1	1	196.869				
Sum Weight:	7.404	46.879						OTM	362.629 kip-ft	4.069		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.407	1.095	A	1	0.65	1	1	1	31.449	0.246	0.013	C
			B	1	0.65	1	1	31.449				
			C	1	0.65	1	1	31.449				
L2 172.460-127.753	1.611	5.379	A	1	0.65	1	1	1	103.119	0.893	0.020	C
			B	1	0.65	1	1	103.119				
			C	1	0.65	1	1	103.119				
L3 127.753-83.083	1.894	10.041	A	1	0.65	1	1	1	142.817	1.013	0.023	C
			B	1	0.65	1	1	142.817				
			C	1	0.65	1	1	142.817				
L4 83.083-40.457	1.797	13.996	A	1	0.65	1	1	1	173.022	0.997	0.023	C
			B	1	0.65	1	1	173.022				
			C	1	0.65	1	1	173.022				
L5 40.457-0.000	1.695	16.368	A	1	0.65	1	1	1	196.869	0.921	0.023	C
			B	1	0.65	1	1	196.869				
			C	1	0.65	1	1	196.869				
Sum Weight:	7.404	46.879						OTM	362.629 kip-ft	4.069		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.407	1.095	A	1	0.65	1	1	1	31.449	0.246	0.013	C
			B	1	0.65	1	1	31.449				
			C	1	0.65	1	1	31.449				
L2 172.460-127.753	1.611	5.379	A	1	0.65	1	1	1	103.119	0.893	0.020	C
			B	1	0.65	1	1	103.119				
			C	1	0.65	1	1	103.119				
L3 127.753-83.083	1.894	10.041	A	1	0.65	1	1	1	142.817	1.013	0.023	C
			B	1	0.65	1	1	142.817				
			C	1	0.65	1	1	142.817				
L4 83.083-40.457	1.797	13.996	A	1	0.65	1	1	1	173.022	0.997	0.023	C
			B	1	0.65	1	1	173.022				
			C	1	0.65	1	1	173.022				

Section Elevation	Add Weight	Self Weight	Face	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L5 40.457-0.000	1.695	16.368	A	1	0.65	1	1	1	196.869	0.921	0.023	C
			B	1	0.65	1	1	1	196.869			
			C	1	0.65	1	1	1	196.869			
Sum Weight:	7.404	46.879						OTM	362.629 kip-ft	4.069		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	Face	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.379	0.686	A	1	0.65	1	1	1	28.528	0.339	0.018	C
			B	1	0.65	1	1	1	28.528			
			C	1	0.65	1	1	1	28.528			
L2 172.460-127.753	1.402	4.053	A	1	0.65	1	1	1	96.262	1.229	0.027	C
			B	1	0.65	1	1	1	96.262			
			C	1	0.65	1	1	1	96.262			
L3 127.753-83.083	1.690	8.263	A	1	0.65	1	1	1	136.127	1.486	0.033	C
			B	1	0.65	1	1	1	136.127			
			C	1	0.65	1	1	1	136.127			
L4 83.083-40.457	1.614	11.964	A	1	0.65	1	1	1	166.903	1.523	0.036	C
			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5 40.457-0.000	1.537	14.213	A	1	0.65	1	1	1	191.421	1.449	0.036	C
			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.622	39.180						OTM	521.641 kip-ft	6.025		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	Face	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.379	0.686	A	1	0.65	1	1	1	28.528	0.339	0.018	C
			B	1	0.65	1	1	1	28.528			
			C	1	0.65	1	1	1	28.528			
L2 172.460-127.753	1.402	4.053	A	1	0.65	1	1	1	96.262	1.229	0.027	C
			B	1	0.65	1	1	1	96.262			
			C	1	0.65	1	1	1	96.262			
L3 127.753-83.083	1.690	8.263	A	1	0.65	1	1	1	136.127	1.486	0.033	C
			B	1	0.65	1	1	1	136.127			
			C	1	0.65	1	1	1	136.127			
L4 83.083-40.457	1.614	11.964	A	1	0.65	1	1	1	166.903	1.523	0.036	C
			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5 40.457-0.000	1.537	14.213	A	1	0.65	1	1	1	191.421	1.449	0.036	C
			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.622	39.180						OTM	521.641 kip-ft	6.025		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	kif	
L1 191.500-172.460	0.379	0.686	A	1	0.65	1	1	1	28.528	0.339	0.018	C
			B	1	0.65	1	1	1	28.528			
			C	1	0.65	1	1	1	28.528			
L2 172.460-127.753	1.402	4.053	A	1	0.65	1	1	1	96.262	1.229	0.027	C
			B	1	0.65	1	1	1	96.262			
			C	1	0.65	1	1	1	96.262			
L3 127.753-83.083	1.690	8.263	A	1	0.65	1	1	1	136.127	1.486	0.033	C
			B	1	0.65	1	1	1	136.127			
			C	1	0.65	1	1	1	136.127			
L4 83.083-40.457	1.614	11.964	A	1	0.65	1	1	1	166.903	1.523	0.036	C
			B	1	0.65	1	1	1	166.903			
			C	1	0.65	1	1	1	166.903			
L5 40.457-0.000	1.537	14.213	A	1	0.65	1	1	1	191.421	1.449	0.036	C
			B	1	0.65	1	1	1	191.421			
			C	1	0.65	1	1	1	191.421			
Sum Weight:	6.622	39.180						OTM	521.641 kip-ft	6.025		

Discrete Appurtenance Pressures - No Ice $G_H = 1.690$

Description	Aiming Azimuth	Weight	Offset _x	Offset _z	z	K _z	q _z	C _{AAc} Front	C _{AAc} Side
	°	K	ft	ft	ft		ksf	ft ²	ft ²
Lightning Rod	240.000	0.031	-0.559	0.323	193.500	1.658	0.031	0.250	0.250
RV65-18-02DPL2 w/ Mount Pipe	0.000	0.124	0.000	-4.646	194.000	1.659	0.031	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	120.000	0.124	4.023	2.323	194.000	1.659	0.031	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	240.000	0.124	-4.023	2.323	194.000	1.659	0.031	14.150	13.175
KRY 112 144/1	0.000	0.022	0.000	-4.646	194.000	1.659	0.031	0.822	0.377
KRY 112 144/1	120.000	0.022	4.023	2.323	194.000	1.659	0.031	0.822	0.377
KRY 112 144/1	240.000	0.022	-4.023	2.323	194.000	1.659	0.031	0.822	0.377
T-Arm Mount [TA 602-3]	0.000	0.774	0.000	0.000	192.000	1.654	0.031	11.590	11.590
LPA-80063/6CF w/ Mount Pipe	0.000	0.104	0.000	-4.970	160.000	1.570	0.029	21.154	21.341
LPA-80063/6CF w/ Mount Pipe	120.000	0.104	4.304	2.485	160.000	1.570	0.029	21.154	21.341
LPA-80080/4CF w/ Mount Pipe	240.000	0.060	-4.304	2.485	160.000	1.570	0.029	5.712	14.455
BXA-70063-6CF-2 w/ Mount Pipe	0.000	0.042	0.000	-4.970	160.000	1.570	0.029	7.969	5.801
BXA-70063-6CF-2 w/ Mount Pipe	120.000	0.042	4.304	2.485	160.000	1.570	0.029	7.969	5.801
BXA-70063/4CF w/ Mount Pipe	240.000	0.027	-4.304	2.485	160.000	1.570	0.029	5.295	3.470
BXA-171063-12BF w/ Mount Pipe	0.000	0.040	0.000	-4.970	160.000	1.570	0.029	4.971	5.228
BXA-171063-12BF w/ Mount Pipe	120.000	0.040	4.304	2.485	160.000	1.570	0.029	4.971	5.228
BXA-171063-8BF-2 w/ Mount Pipe	240.000	0.029	-4.304	2.485	160.000	1.570	0.029	3.179	3.353
742 213 w/ Mount Pipe	0.000	0.049	0.000	-4.970	160.000	1.570	0.029	5.373	4.620
742 213 w/ Mount Pipe	120.000	0.049	4.304	2.485	160.000	1.570	0.029	5.373	4.620
742 213 w/ Mount Pipe	240.000	0.049	-4.304	2.485	160.000	1.570	0.029	5.373	4.620
FD9R6004/2C-3L	0.000	0.006	0.000	-4.970	160.000	1.570	0.029	0.733	0.169
FD9R6004/2C-3L	120.000	0.006	4.304	2.485	160.000	1.570	0.029	0.733	0.169
FD9R6004/2C-3L	240.000	0.006	-4.304	2.485	160.000	1.570	0.029	0.733	0.169
RRH2X40-AWS	0.000	0.044	0.000	-4.970	160.000	1.570	0.029	2.522	1.589
RRH2X40-AWS	120.000	0.044	4.304	2.485	160.000	1.570	0.029	2.522	1.589
RRH2X40-AWS	240.000	0.044	-4.304	2.485	160.000	1.570	0.029	2.522	1.589
DB-B1-6C-8AB-0Z	240.000	0.044	-4.304	2.485	160.000	1.570	0.029	5.600	2.333
Junction Box									

Description	Aiming	Weight	Offset _x	Offset _z	z	K _z	q _z	C _{AAc}	C _{AAc}
	Azimuth °	K	ft	ft	ft		ksf	Front ft ²	Side ft ²
Platform Mount [LP 303-1]	0.000	1.250	0.000	0.000	160.000	1.570	0.029	14.660	14.660
PCS 1900MHz 4x45W-65MHz	0.000	0.060	0.000	-3.035	154.000	1.553	0.029	2.709	2.611
PCS 1900MHz 4x45W-65MHz	120.000	0.060	2.628	1.517	154.000	1.553	0.029	2.709	2.611
PCS 1900MHz 4x45W-65MHz	240.000	0.060	-2.628	1.517	154.000	1.553	0.029	2.709	2.611
800 MHz RRH	0.000	0.053	0.000	-3.035	154.000	1.553	0.029	2.490	2.068
800 MHz RRH	120.000	0.053	2.628	1.517	154.000	1.553	0.029	2.490	2.068
800 MHz RRH	240.000	0.053	-2.628	1.517	154.000	1.553	0.029	2.490	2.068
Side Arm Mount [SO 102-3]	0.000	0.081	0.000	0.000	154.000	1.553	0.029	3.000	3.000
APXVSP18-C-A20 w/ Mount Pipe	120.000	0.083	4.397	2.539	152.000	1.547	0.029	8.498	6.946
APXVSP18-C-A20 w/ Mount Pipe	240.000	0.083	-4.397	2.539	152.000	1.547	0.029	8.498	6.946
APXVSP18-C-A20 w/ Mount Pipe	0.000	0.083	0.000	-5.078	152.000	1.547	0.029	8.498	6.946
ACU-A20-N	0.000	0.003	0.000	-5.078	152.000	1.547	0.029	0.233	0.408
ACU-A20-N	120.000	0.003	4.397	2.539	152.000	1.547	0.029	0.233	0.408
ACU-A20-N	240.000	0.003	-4.397	2.539	152.000	1.547	0.029	0.233	0.408
800 EXTERNAL NOTCH FILTER	0.000	0.011	0.000	-5.078	152.000	1.547	0.029	0.770	0.375
800 EXTERNAL NOTCH FILTER	120.000	0.011	4.397	2.539	152.000	1.547	0.029	0.770	0.375
800 EXTERNAL NOTCH FILTER	240.000	0.011	-4.397	2.539	152.000	1.547	0.029	0.770	0.375
Platform Mount [LP 601-1]	0.000	1.122	0.000	0.000	150.000	1.541	0.029	28.470	28.470
Empty Mount Pipe	0.000	0.030	0.000	-5.078	150.000	1.541	0.029	1.400	1.400
Empty Mount Pipe	120.000	0.030	4.397	2.539	150.000	1.541	0.029	1.400	1.400
Empty Mount Pipe	240.000	0.030	-4.397	2.539	150.000	1.541	0.029	1.400	1.400
7770.00 w/ Mount Pipe	0.000	0.055	0.000	-5.185	140.000	1.511	0.028	6.119	4.254
7770.00 w/ Mount Pipe	120.000	0.055	4.490	2.593	140.000	1.511	0.028	6.119	4.254
7770.00 w/ Mount Pipe	240.000	0.055	-4.490	2.593	140.000	1.511	0.028	6.119	4.254
P65-16-XLH-RR w/ Mount Pipe	0.000	0.079	0.000	-5.185	140.000	1.511	0.028	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	120.000	0.079	4.490	2.593	140.000	1.511	0.028	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	240.000	0.079	-4.490	2.593	140.000	1.511	0.028	8.637	6.362
LGP21401	0.000	0.028	0.000	-5.185	140.000	1.511	0.028	2.576	0.465
LGP21401	120.000	0.028	4.490	2.593	140.000	1.511	0.028	2.576	0.465
LGP21401	240.000	0.028	-4.490	2.593	140.000	1.511	0.028	2.576	0.465
RRUS-11	0.000	0.055	0.000	-5.185	140.000	1.511	0.028	2.942	1.246
RRUS-11	120.000	0.055	4.490	2.593	140.000	1.511	0.028	2.942	1.246
RRUS-11	240.000	0.055	-4.490	2.593	140.000	1.511	0.028	2.942	1.246
DC6-48-60-18-8F	240.000	0.033	-4.490	2.593	140.000	1.511	0.028	2.567	4.317
Platform Mount [LP 403-1]	0.000	1.500	0.000	0.000	140.000	1.511	0.028	18.850	18.850
OG-860/1920/GPS-A	0.000	0.002	0.000	-4.087	52.000	1.139	0.021	0.329	0.404
Side Arm Mount [SO 701-1]	0.000	0.065	0.000	-3.587	50.000	1.126	0.021	0.850	1.670
Sum Weight:		7.496							

Discrete Appurtenance Pressures - With Ice $G_H = 1.690$

Description	Aiming	Weight	Offset _x	Offset _z	z	K _z	q _z	C _{AAc}	C _{AAc}	t _z
	Azimuth °	K	ft	ft	ft		ksf	Front ft ²	Side ft ²	in
Lightning Rod	240.000	0.038	-0.559	0.323	193.500	1.658	0.006	0.927	0.927	0.926
RV65-18-02DPL2 w/ Mount Pipe	0.000	0.389	0.000	-4.646	194.000	1.659	0.006	17.229	18.388	0.926
RV65-18-02DPL2 w/	120.000	0.389	4.023	2.323	194.000	1.659	0.006	17.229	18.388	0.926

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
Mount Pipe										
RV65-18-02DPL2 w/ Mount Pipe	240.000	0.389	-4.023	2.323	194.000	1.659	0.006	17.229	18.388	0.926
KRY 112 144/1	0.000	0.036	0.000	-4.646	194.000	1.659	0.006	1.166	0.642	0.926
KRY 112 144/1	120.000	0.036	4.023	2.323	194.000	1.659	0.006	1.166	0.642	0.926
KRY 112 144/1	240.000	0.036	-4.023	2.323	194.000	1.659	0.006	1.166	0.642	0.926
T-Arm Mount [TA 602-3]	0.000	1.175	0.000	0.000	192.000	1.654	0.006	18.724	18.724	0.926
LPA-80063/6CF w/ Mount Pipe	0.000	0.453	0.000	-4.970	160.000	1.570	0.006	23.508	25.455	0.906
LPA-80063/6CF w/ Mount Pipe	120.000	0.453	4.304	2.485	160.000	1.570	0.006	23.508	25.455	0.906
LPA-80080/4CF w/ Mount Pipe	240.000	0.237	-4.304	2.485	160.000	1.570	0.006	7.045	17.001	0.906
BXA-70063-6CF-2 w/ Mount Pipe	0.000	0.159	0.000	-4.970	160.000	1.570	0.006	9.102	7.657	0.906
BXA-70063-6CF-2 w/ Mount Pipe	120.000	0.159	4.304	2.485	160.000	1.570	0.006	9.102	7.657	0.906
BXA-70063/4CF w/ Mount Pipe	240.000	0.106	-4.304	2.485	160.000	1.570	0.006	6.061	4.527	0.906
BXA-171063-12BF w/ Mount Pipe	0.000	0.129	0.000	-4.970	160.000	1.570	0.006	5.940	7.098	0.906
BXA-171063-12BF w/ Mount Pipe	120.000	0.129	4.304	2.485	160.000	1.570	0.006	5.940	7.098	0.906
BXA-171063-8BF-2 w/ Mount Pipe	240.000	0.092	-4.304	2.485	160.000	1.570	0.006	3.887	4.478	0.906
742 213 w/ Mount Pipe	0.000	0.136	0.000	-4.970	160.000	1.570	0.006	6.398	6.798	0.906
742 213 w/ Mount Pipe	120.000	0.136	4.304	2.485	160.000	1.570	0.006	6.398	6.798	0.906
742 213 w/ Mount Pipe	240.000	0.136	-4.304	2.485	160.000	1.570	0.006	6.398	6.798	0.906
FD9R6004/2C-3L	0.000	0.016	0.000	-4.970	160.000	1.570	0.006	1.052	0.370	0.906
FD9R6004/2C-3L	120.000	0.016	4.304	2.485	160.000	1.570	0.006	1.052	0.370	0.906
FD9R6004/2C-3L	240.000	0.016	-4.304	2.485	160.000	1.570	0.006	1.052	0.370	0.906
RRH2X40-AWS	0.000	0.078	0.000	-4.970	160.000	1.570	0.006	2.948	1.970	0.906
RRH2X40-AWS	120.000	0.078	4.304	2.485	160.000	1.570	0.006	2.948	1.970	0.906
RRH2X40-AWS	240.000	0.078	-4.304	2.485	160.000	1.570	0.006	2.948	1.970	0.906
DB-B1-6C-8AB-0Z	240.000	0.113	-4.304	2.485	160.000	1.570	0.006	6.179	2.748	0.906
Junction Box										
Platform Mount [LP 303-1]	0.000	1.669	0.000	0.000	160.000	1.570	0.006	22.292	22.292	0.906
PCS 1900MHz 4x45W-65MHz	0.000	0.104	0.000	-3.035	154.000	1.553	0.006	3.147	3.045	0.902
PCS 1900MHz 4x45W-65MHz	120.000	0.104	2.628	1.517	154.000	1.553	0.006	3.147	3.045	0.902
PCS 1900MHz 4x45W-65MHz	240.000	0.104	-2.628	1.517	154.000	1.553	0.006	3.147	3.045	0.902
800 MHz RRH	0.000	0.094	0.000	-3.035	154.000	1.553	0.006	2.887	2.440	0.902
800 MHz RRH	120.000	0.094	2.628	1.517	154.000	1.553	0.006	2.887	2.440	0.902
800 MHz RRH	240.000	0.094	-2.628	1.517	154.000	1.553	0.006	2.887	2.440	0.902
Side Arm Mount [SO 102-3]	0.000	0.135	0.000	0.000	154.000	1.553	0.006	3.866	3.866	0.902
APXVSP18-C-A20 w/ Mount Pipe	120.000	0.211	4.397	2.539	152.000	1.547	0.006	9.643	8.841	0.899
APXVSP18-C-A20 w/ Mount Pipe	240.000	0.211	-4.397	2.539	152.000	1.547	0.006	9.643	8.841	0.899
APXVSP18-C-A20 w/ Mount Pipe	0.000	0.211	0.000	-5.078	152.000	1.547	0.006	9.643	8.841	0.899
ACU-A20-N	0.000	0.012	0.000	-5.078	152.000	1.547	0.006	0.487	0.715	0.899
ACU-A20-N	120.000	0.012	4.397	2.539	152.000	1.547	0.006	0.487	0.715	0.899
ACU-A20-N	240.000	0.012	-4.397	2.539	152.000	1.547	0.006	0.487	0.715	0.899
800 EXTERNAL NOTCH FILTER	0.000	0.023	0.000	-5.078	152.000	1.547	0.006	0.992	0.544	0.899
800 EXTERNAL NOTCH FILTER	120.000	0.023	4.397	2.539	152.000	1.547	0.006	0.992	0.544	0.899
800 EXTERNAL NOTCH FILTER	240.000	0.023	-4.397	2.539	152.000	1.547	0.006	0.992	0.544	0.899
Platform Mount [LP 601-1]	0.000	1.827	0.000	0.000	150.000	1.541	0.006	37.680	37.680	0.899
Empty Mount Pipe	0.000	0.053	0.000	-5.078	150.000	1.541	0.006	2.569	2.569	0.899
Empty Mount Pipe	120.000	0.053	4.397	2.539	150.000	1.541	0.006	2.569	2.569	0.899

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _{AAC} Front ft ²	C _{AAC} Side ft ²	t _z in
Empty Mount Pipe	240.000	0.053	-4.397	2.539	150.000	1.541	0.006	2.569	2.569	0.899
7770.00 w/ Mount Pipe	0.000	0.145	0.000	-5.185	140.000	1.511	0.005	7.020	5.560	0.892
7770.00 w/ Mount Pipe	120.000	0.145	4.490	2.593	140.000	1.511	0.005	7.020	5.560	0.892
7770.00 w/ Mount Pipe	240.000	0.145	-4.490	2.593	140.000	1.511	0.005	7.020	5.560	0.892
P65-16-XLH-RR w/ Mount Pipe	0.000	0.202	0.000	-5.185	140.000	1.511	0.005	9.776	8.235	0.892
P65-16-XLH-RR w/ Mount Pipe	120.000	0.202	4.490	2.593	140.000	1.511	0.005	9.776	8.235	0.892
P65-16-XLH-RR w/ Mount Pipe	240.000	0.202	-4.490	2.593	140.000	1.511	0.005	9.776	8.235	0.892
LGP21401	0.000	0.057	0.000	-5.185	140.000	1.511	0.005	3.151	0.767	0.892
LGP21401	120.000	0.057	4.490	2.593	140.000	1.511	0.005	3.151	0.767	0.892
LGP21401	240.000	0.057	-4.490	2.593	140.000	1.511	0.005	3.151	0.767	0.892
RRUS-11	0.000	0.092	0.000	-5.185	140.000	1.511	0.005	3.359	1.550	0.892
RRUS-11	120.000	0.092	4.490	2.593	140.000	1.511	0.005	3.359	1.550	0.892
RRUS-11	240.000	0.092	-4.490	2.593	140.000	1.511	0.005	3.359	1.550	0.892
DC6-48-60-18-8F	240.000	0.092	-4.490	2.593	140.000	1.511	0.005	2.986	4.823	0.892
Platform Mount [LP 403-1]	0.000	2.029	0.000	0.000	140.000	1.511	0.005	28.573	28.573	0.892
OG-860/1920/GPS-A	0.000	0.008	0.000	-4.087	52.000	1.139	0.004	0.500	0.582	0.788
Side Arm Mount [SO 701-1]	0.000	0.087	0.000	-3.587	50.000	1.126	0.004	1.307	2.726	0.788
Sum Weight:		14.032								

Discrete Appurtenance Pressures - Service G_H = 1.690

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Lightning Rod	240.000	0.031	-0.559	0.323	193.500	1.658	0.011	0.250	0.250
RV65-18-02DPL2 w/ Mount Pipe	0.000	0.124	0.000	-4.646	194.000	1.659	0.011	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	120.000	0.124	4.023	2.323	194.000	1.659	0.011	14.150	13.175
RV65-18-02DPL2 w/ Mount Pipe	240.000	0.124	-4.023	2.323	194.000	1.659	0.011	14.150	13.175
KRY 112 144/1	0.000	0.022	0.000	-4.646	194.000	1.659	0.011	0.822	0.377
KRY 112 144/1	120.000	0.022	4.023	2.323	194.000	1.659	0.011	0.822	0.377
KRY 112 144/1	240.000	0.022	-4.023	2.323	194.000	1.659	0.011	0.822	0.377
T-Arm Mount [TA 602-3]	0.000	0.774	0.000	0.000	192.000	1.654	0.011	11.590	11.590
LPA-80063/6CF w/ Mount Pipe	0.000	0.104	0.000	-4.970	160.000	1.570	0.010	21.154	21.341
LPA-80063/6CF w/ Mount Pipe	120.000	0.104	4.304	2.485	160.000	1.570	0.010	21.154	21.341
LPA-80080/4CF w/ Mount Pipe	240.000	0.060	-4.304	2.485	160.000	1.570	0.010	5.712	14.455
BXA-70063-6CF-2 w/ Mount Pipe	0.000	0.042	0.000	-4.970	160.000	1.570	0.010	7.969	5.801
BXA-70063-6CF-2 w/ Mount Pipe	120.000	0.042	4.304	2.485	160.000	1.570	0.010	7.969	5.801
BXA-70063/4CF w/ Mount Pipe	240.000	0.027	-4.304	2.485	160.000	1.570	0.010	5.295	3.470
BXA-171063-12BF w/ Mount Pipe	0.000	0.040	0.000	-4.970	160.000	1.570	0.010	4.971	5.228
BXA-171063-12BF w/ Mount Pipe	120.000	0.040	4.304	2.485	160.000	1.570	0.010	4.971	5.228
BXA-171063-8BF-2 w/ Mount Pipe	240.000	0.029	-4.304	2.485	160.000	1.570	0.010	3.179	3.353
742 213 w/ Mount Pipe	0.000	0.049	0.000	-4.970	160.000	1.570	0.010	5.373	4.620
742 213 w/ Mount Pipe	120.000	0.049	4.304	2.485	160.000	1.570	0.010	5.373	4.620
742 213 w/ Mount Pipe	240.000	0.049	-4.304	2.485	160.000	1.570	0.010	5.373	4.620
FD9R6004/2C-3L	0.000	0.006	0.000	-4.970	160.000	1.570	0.010	0.733	0.169
FD9R6004/2C-3L	120.000	0.006	4.304	2.485	160.000	1.570	0.010	0.733	0.169
FD9R6004/2C-3L	240.000	0.006	-4.304	2.485	160.000	1.570	0.010	0.733	0.169

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
RRH2X40-AWS	0.000	0.044	0.000	-4.970	160.000	1.570	0.010	2.522	1.589
RRH2X40-AWS	120.000	0.044	4.304	2.485	160.000	1.570	0.010	2.522	1.589
RRH2X40-AWS	240.000	0.044	-4.304	2.485	160.000	1.570	0.010	2.522	1.589
DB-B1-6C-8AB-0Z	240.000	0.044	-4.304	2.485	160.000	1.570	0.010	5.600	2.333
Junction Box									
Platform Mount [LP 303-1]	0.000	1.250	0.000	0.000	160.000	1.570	0.010	14.660	14.660
PCS 1900MHz 4x45W-65MHz	0.000	0.060	0.000	-3.035	154.000	1.553	0.010	2.709	2.611
PCS 1900MHz 4x45W-65MHz	120.000	0.060	2.628	1.517	154.000	1.553	0.010	2.709	2.611
PCS 1900MHz 4x45W-65MHz	240.000	0.060	-2.628	1.517	154.000	1.553	0.010	2.709	2.611
800 MHz RRH	0.000	0.053	0.000	-3.035	154.000	1.553	0.010	2.490	2.068
800 MHz RRH	120.000	0.053	2.628	1.517	154.000	1.553	0.010	2.490	2.068
800 MHz RRH	240.000	0.053	-2.628	1.517	154.000	1.553	0.010	2.490	2.068
Side Arm Mount [SO 102-3]	0.000	0.081	0.000	0.000	154.000	1.553	0.010	3.000	3.000
APXVSP18-C-A20 w/ Mount Pipe	120.000	0.083	4.397	2.539	152.000	1.547	0.010	8.498	6.946
APXVSP18-C-A20 w/ Mount Pipe	240.000	0.083	-4.397	2.539	152.000	1.547	0.010	8.498	6.946
APXVSP18-C-A20 w/ Mount Pipe	0.000	0.083	0.000	-5.078	152.000	1.547	0.010	8.498	6.946
ACU-A20-N	0.000	0.003	0.000	-5.078	152.000	1.547	0.010	0.233	0.408
ACU-A20-N	120.000	0.003	4.397	2.539	152.000	1.547	0.010	0.233	0.408
ACU-A20-N	240.000	0.003	-4.397	2.539	152.000	1.547	0.010	0.233	0.408
800 EXTERNAL NOTCH FILTER	0.000	0.011	0.000	-5.078	152.000	1.547	0.010	0.770	0.375
800 EXTERNAL NOTCH FILTER	120.000	0.011	4.397	2.539	152.000	1.547	0.010	0.770	0.375
800 EXTERNAL NOTCH FILTER	240.000	0.011	-4.397	2.539	152.000	1.547	0.010	0.770	0.375
Platform Mount [LP 601-1]	0.000	1.122	0.000	0.000	150.000	1.541	0.010	28.470	28.470
Empty Mount Pipe	0.000	0.030	0.000	-5.078	150.000	1.541	0.010	1.400	1.400
Empty Mount Pipe	120.000	0.030	4.397	2.539	150.000	1.541	0.010	1.400	1.400
Empty Mount Pipe	240.000	0.030	-4.397	2.539	150.000	1.541	0.010	1.400	1.400
7770.00 w/ Mount Pipe	0.000	0.055	0.000	-5.185	140.000	1.511	0.010	6.119	4.254
7770.00 w/ Mount Pipe	120.000	0.055	4.490	2.593	140.000	1.511	0.010	6.119	4.254
7770.00 w/ Mount Pipe	240.000	0.055	-4.490	2.593	140.000	1.511	0.010	6.119	4.254
P65-16-XLH-RR w/ Mount Pipe	0.000	0.079	0.000	-5.185	140.000	1.511	0.010	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	120.000	0.079	4.490	2.593	140.000	1.511	0.010	8.637	6.362
P65-16-XLH-RR w/ Mount Pipe	240.000	0.079	-4.490	2.593	140.000	1.511	0.010	8.637	6.362
LGP21401	0.000	0.028	0.000	-5.185	140.000	1.511	0.010	2.576	0.465
LGP21401	120.000	0.028	4.490	2.593	140.000	1.511	0.010	2.576	0.465
LGP21401	240.000	0.028	-4.490	2.593	140.000	1.511	0.010	2.576	0.465
RRUS-11	0.000	0.055	0.000	-5.185	140.000	1.511	0.010	2.942	1.246
RRUS-11	120.000	0.055	4.490	2.593	140.000	1.511	0.010	2.942	1.246
RRUS-11	240.000	0.055	-4.490	2.593	140.000	1.511	0.010	2.942	1.246
DC6-48-60-18-8F	240.000	0.033	-4.490	2.593	140.000	1.511	0.010	2.567	4.317
Platform Mount [LP 403-1]	0.000	1.500	0.000	0.000	140.000	1.511	0.010	18.850	18.850
OG-860/1920/GPS-A	0.000	0.002	0.000	-4.087	52.000	1.139	0.007	0.329	0.404
Side Arm Mount [SO 701-1]	0.000	0.065	0.000	-3.587	50.000	1.126	0.007	0.850	1.670
Sum Weight:		7.496							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight	39.180					
Bracing Weight	0.000					
Total Member Self-Weight	39.180			-0.082	-0.038	
Total Weight	53.298			-0.082	-0.038	
Wind 0 deg - No Ice		-0.154	-33.576	-4085.647	23.837	1.145
Wind 30 deg - No Ice		16.582	-29.001	-3526.347	-2009.151	0.688
Wind 60 deg - No Ice		28.874	-16.655	-2022.188	-3503.799	0.046
Wind 90 deg - No Ice		33.430	0.154	23.794	-4059.618	-0.608
Wind 120 deg - No Ice		29.028	16.921	2063.377	-3527.675	-1.099
Wind 150 deg - No Ice		16.848	29.154	3550.059	-2050.504	-1.296
Wind 180 deg - No Ice		0.154	33.576	4085.483	-23.913	-1.145
Wind 210 deg - No Ice		-16.582	29.001	3526.184	2009.075	-0.688
Wind 240 deg - No Ice		-28.874	16.655	2022.024	3503.723	-0.046
Wind 270 deg - No Ice		-33.430	-0.154	-23.957	4059.541	0.608
Wind 300 deg - No Ice		-29.028	-16.921	-2063.541	3527.599	1.099
Wind 330 deg - No Ice		-16.848	-29.154	-3550.222	2050.428	1.296
Member Ice	7.699					
Total Weight Ice	68.315			0.290	-1.060	
Wind 0 deg - Ice		-0.024	-8.142	-1013.362	2.579	0.343
Wind 30 deg - Ice		4.042	-7.039	-875.739	-502.893	0.245
Wind 60 deg - Ice		7.024	-4.050	-503.384	-873.899	0.081
Wind 90 deg - Ice		8.125	0.024	3.929	-1011.028	-0.104
Wind 120 deg - Ice		7.048	4.091	510.267	-877.538	-0.261
Wind 150 deg - Ice		4.083	7.063	879.958	-509.195	-0.349
Wind 180 deg - Ice		0.024	8.142	1013.942	-4.699	-0.343
Wind 210 deg - Ice		-4.042	7.039	876.319	500.773	-0.245
Wind 240 deg - Ice		-7.024	4.050	503.965	871.779	-0.081
Wind 270 deg - Ice		-8.125	-0.024	-3.349	1008.909	0.104
Wind 300 deg - Ice		-7.048	-4.091	-509.687	875.418	0.261
Wind 330 deg - Ice		-4.083	-7.063	-879.378	507.076	0.349
Total Weight	53.298			-0.082	-0.038	
Wind 0 deg - Service		-0.053	-11.618	-1413.901	8.315	0.396
Wind 30 deg - Service		5.738	-10.035	-1220.371	-695.141	0.238
Wind 60 deg - Service		9.991	-5.763	-699.901	-1212.321	0.016
Wind 90 deg - Service		11.567	0.053	8.051	-1404.645	-0.210
Wind 120 deg - Service		10.044	5.855	713.789	-1220.582	-0.380
Wind 150 deg - Service		5.830	10.088	1228.212	-709.450	-0.448
Wind 180 deg - Service		0.053	11.618	1413.480	-8.208	-0.396
Wind 210 deg - Service		-5.738	10.035	1219.951	695.248	-0.238
Wind 240 deg - Service		-9.991	5.763	699.480	1212.428	-0.016
Wind 270 deg - Service		-11.567	-0.053	-8.472	1404.752	0.210
Wind 300 deg - Service		-10.044	-5.855	-714.210	1220.689	0.380
Wind 330 deg - Service		-5.830	-10.088	-1228.633	709.558	0.448

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp

Comb. No.	Description
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	191.5 - 172.46	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-3.732	0.025	-0.033
			Max. Mx	11	-1.762	59.606	0.009
			Max. My	8	-1.760	-0.008	-59.614
			Max. Vy	11	-3.821	59.606	0.009
			Max. Vx	2	-3.822	0.021	59.589
			Max. Torque	12			0.016
L2	172.46 - 127.753	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-21.759	-0.179	0.227
			Max. Mx	11	-11.830	573.671	3.731
			Max. My	2	-11.805	3.985	577.735
			Max. Vy	11	-20.984	573.671	3.731
			Max. Vx	2	-21.167	3.985	577.735
			Max. Torque	13			-2.098
L3	127.753 - 83.0833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-33.024	-0.384	0.008
			Max. Mx	11	-21.446	1572.519	10.648
			Max. My	8	-21.429	-10.456	-1584.576
			Max. Vy	11	-25.143	1572.519	10.648
			Max. Vx	2	-25.327	10.855	1584.572
			Max. Torque	13			-1.054
L4	83.0833 - 40.4567	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-48.207	-0.676	0.072
			Max. Mx	11	-34.679	2698.281	17.428
			Max. My	2	-34.671	17.359	2718.125
			Max. Vy	11	-29.265	2698.281	17.428
			Max. Vx	2	-29.416	17.359	2718.125
			Max. Torque	7			1.230
L5	40.4567 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-69.241	-1.060	-0.290
			Max. Mx	5	-53.282	-4190.287	-24.619
			Max. My	2	-53.282	24.677	4217.191
			Max. Vy	5	33.455	-4190.287	-24.619
			Max. Vx	2	-33.601	24.677	4217.191

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	7			1.281

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	20	69.241	-4.083	-7.063
	Max. H _x	11	53.298	33.430	0.154
	Max. H _z	2	53.298	0.154	33.576
	Max. M _x	2	4217.191	0.154	33.576
	Max. M _z	5	4190.287	-33.430	-0.154
	Max. Torsion	7	1.281	-16.848	-29.154
	Min. Vert	1	53.298	0.000	0.000
	Min. H _x	5	53.298	-33.430	-0.154
	Min. H _z	8	53.298	-0.154	-33.576
	Min. M _x	8	-4217.021	-0.154	-33.576
	Min. M _z	11	-4190.225	33.430	0.154
	Min. Torsion	13	-1.281	16.848	29.154

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	53.298	0.000	0.000	-0.082	-0.038	0.000
Dead+Wind 0 deg - No Ice	53.298	-0.154	-33.576	-4217.191	24.677	1.136
Dead+Wind 30 deg - No Ice	53.298	16.582	-29.001	-3639.925	-2073.767	0.684
Dead+Wind 60 deg - No Ice	53.298	28.874	-16.655	-2087.303	-3616.585	0.047
Dead+Wind 90 deg - No Ice	53.298	33.430	0.154	24.619	-4190.287	-0.603
Dead+Wind 120 deg - No Ice	53.298	29.028	16.921	2129.869	-3641.192	-1.089
Dead+Wind 150 deg - No Ice	53.298	16.848	29.154	3664.367	-2116.493	-1.281
Dead+Wind 180 deg - No Ice	53.298	0.154	33.576	4217.021	-24.722	-1.129
Dead+Wind 210 deg - No Ice	53.298	-16.582	29.001	3639.749	2073.715	-0.678
Dead+Wind 240 deg - No Ice	53.298	-28.874	16.655	2087.132	3616.523	-0.047
Dead+Wind 270 deg - No Ice	53.298	-33.430	-0.154	-24.780	4190.225	0.597
Dead+Wind 300 deg - No Ice	53.298	-29.028	-16.921	-2130.024	3641.138	1.083
Dead+Wind 330 deg - No Ice	53.298	-16.848	-29.154	-3664.526	2116.448	1.281
Dead+Ice+Temp	69.241	0.000	0.000	0.290	-1.060	0.000
Dead+Wind 0 deg+Ice+Temp	69.241	-0.024	-8.142	-1065.724	2.716	0.337
Dead+Wind 30 deg+Ice+Temp	69.241	4.042	-7.039	-920.988	-528.852	0.242
Dead+Wind 60 deg+Ice+Temp	69.241	7.024	-4.050	-529.396	-919.016	0.081
Dead+Wind 90 deg+Ice+Temp	69.241	8.125	0.024	4.124	-1063.229	-0.100
Dead+Wind 120 deg+Ice+Temp	69.241	7.048	4.091	536.615	-922.851	-0.255
Dead+Wind 150 deg+Ice+Temp	69.241	4.083	7.063	925.397	-535.497	-0.342
Dead+Wind 180 deg+Ice+Temp	69.241	0.024	8.142	1066.296	-4.957	-0.336
Dead+Wind 210 deg+Ice+Temp	69.241	-4.042	7.039	921.560	526.610	-0.241
Dead+Wind 240 deg+Ice+Temp	69.241	-7.024	4.050	529.969	916.773	-0.081
Dead+Wind 270 deg+Ice+Temp	69.241	-8.125	-0.024	-3.550	1060.987	0.100
Dead+Wind 300 deg+Ice+Temp	69.241	-7.048	-4.091	-536.041	920.610	0.255

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+Wind 330 deg+Ice+Temp	69.241	-4.083	-7.063	-924.823	533.256	0.342
Dead+Wind 0 deg - Service	53.298	-0.053	-11.618	-1460.748	8.527	0.396
Dead+Wind 30 deg - Service	53.298	5.738	-10.035	-1260.781	-718.290	0.238
Dead+Wind 60 deg - Service	53.298	9.991	-5.763	-723.009	-1252.652	0.016
Dead+Wind 90 deg - Service	53.298	11.567	0.053	8.471	-1451.371	-0.210
Dead+Wind 120 deg - Service	53.298	10.044	5.855	737.657	-1261.203	-0.380
Dead+Wind 150 deg - Service	53.298	5.830	10.088	1269.163	-733.107	-0.447
Dead+Wind 180 deg - Service	53.298	0.053	11.618	1460.578	-8.585	-0.395
Dead+Wind 210 deg - Service	53.298	-5.738	10.035	1260.610	718.232	-0.237
Dead+Wind 240 deg - Service	53.298	-9.991	5.763	722.839	1252.592	-0.016
Dead+Wind 270 deg - Service	53.298	-11.567	-0.053	-8.641	1451.311	0.209
Dead+Wind 300 deg - Service	53.298	-10.044	-5.855	-737.825	1261.144	0.379
Dead+Wind 330 deg - Service	53.298	-5.830	-10.088	-1269.333	733.049	0.447

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-53.298	0.000	0.000	53.298	0.000	0.000%
2	-0.154	-53.298	-33.576	0.154	53.298	33.576	0.000%
3	16.582	-53.298	-29.001	-16.582	53.298	29.001	0.000%
4	28.874	-53.298	-16.655	-28.874	53.298	16.655	0.000%
5	33.430	-53.298	0.154	-33.430	53.298	-0.154	0.000%
6	29.028	-53.298	16.921	-29.028	53.298	-16.921	0.000%
7	16.848	-53.298	29.154	-16.848	53.298	-29.154	0.000%
8	0.154	-53.298	33.576	-0.154	53.298	-33.576	0.000%
9	-16.582	-53.298	29.001	16.582	53.298	-29.001	0.000%
10	-28.874	-53.298	16.655	28.874	53.298	-16.655	0.000%
11	-33.430	-53.298	-0.154	33.430	53.298	0.154	0.000%
12	-29.028	-53.298	-16.921	29.028	53.298	16.921	0.000%
13	-16.848	-53.298	-29.154	16.848	53.298	29.154	0.000%
14	0.000	-69.241	0.000	0.000	69.241	0.000	0.000%
15	-0.024	-69.241	-8.142	0.024	69.241	8.142	0.000%
16	4.042	-69.241	-7.039	-4.042	69.241	7.039	0.000%
17	7.024	-69.241	-4.050	-7.024	69.241	4.050	0.000%
18	8.125	-69.241	0.024	-8.125	69.241	-0.024	0.000%
19	7.048	-69.241	4.091	-7.048	69.241	-4.091	0.000%
20	4.083	-69.241	7.063	-4.083	69.241	-7.063	0.000%
21	0.024	-69.241	8.142	-0.024	69.241	-8.142	0.000%
22	-4.042	-69.241	7.039	4.042	69.241	-7.039	0.000%
23	-7.024	-69.241	4.050	7.024	69.241	-4.050	0.000%
24	-8.125	-69.241	-0.024	8.125	69.241	0.024	0.000%
25	-7.048	-69.241	-4.091	7.048	69.241	4.091	0.000%
26	-4.083	-69.241	-7.063	4.083	69.241	7.063	0.000%
27	-0.053	-53.298	-11.618	0.053	53.298	11.618	0.000%
28	5.738	-53.298	-10.035	-5.738	53.298	10.035	0.000%
29	9.991	-53.298	-5.763	-9.991	53.298	5.763	0.000%
30	11.567	-53.298	0.053	-11.567	53.298	-0.053	0.000%
31	10.044	-53.298	5.855	-10.044	53.298	-5.855	0.000%
32	5.830	-53.298	10.088	-5.830	53.298	-10.088	0.000%
33	0.053	-53.298	11.618	-0.053	53.298	-11.618	0.000%
34	-5.738	-53.298	10.035	5.738	53.298	-10.035	0.000%
35	-9.991	-53.298	5.763	9.991	53.298	-5.763	0.000%
36	-11.567	-53.298	-0.053	11.567	53.298	0.053	0.000%
37	-10.044	-53.298	-5.855	10.044	53.298	5.855	0.000%
38	-5.830	-53.298	-10.088	5.830	53.298	10.088	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00027906
3	Yes	5	0.00000001	0.00038742
4	Yes	5	0.00000001	0.00038157
5	Yes	4	0.00000001	0.00016078
6	Yes	5	0.00000001	0.00038402
7	Yes	5	0.00000001	0.00040241
8	Yes	4	0.00000001	0.00057097
9	Yes	5	0.00000001	0.00037751
10	Yes	5	0.00000001	0.00038196
11	Yes	4	0.00000001	0.00040448
12	Yes	5	0.00000001	0.00040030
13	Yes	5	0.00000001	0.00038337
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00011790
16	Yes	5	0.00000001	0.00013901
17	Yes	5	0.00000001	0.00013838
18	Yes	5	0.00000001	0.00011747
19	Yes	5	0.00000001	0.00013931
20	Yes	5	0.00000001	0.00014060
21	Yes	5	0.00000001	0.00011787
22	Yes	5	0.00000001	0.00013793
23	Yes	5	0.00000001	0.00013807
24	Yes	5	0.00000001	0.00011719
25	Yes	5	0.00000001	0.00013996
26	Yes	5	0.00000001	0.00013916
27	Yes	4	0.00000001	0.00007484
28	Yes	4	0.00000001	0.00066670
29	Yes	4	0.00000001	0.00064456
30	Yes	4	0.00000001	0.00005573
31	Yes	4	0.00000001	0.00064190
32	Yes	4	0.00000001	0.00071104
33	Yes	4	0.00000001	0.00008941
34	Yes	4	0.00000001	0.00062985
35	Yes	4	0.00000001	0.00064615
36	Yes	4	0.00000001	0.00006656
37	Yes	4	0.00000001	0.00070337
38	Yes	4	0.00000001	0.00064017

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	191.5 - 172.46	41.298	38	2.050	0.004
L2	175.543 - 127.753	34.607	38	1.934	0.004
L3	132.253 - 83.0833	18.827	38	1.461	0.001
L4	88.9167 - 40.4567	8.053	38	0.886	0.001
L5	47.54 - 0	2.256	38	0.437	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.000	(4) RV65-18-02DPL2 w/ Mount Pipe	38	41.298	2.050	0.004	22640
191.500	Lightning Rod	38	41.298	2.050	0.004	22640
160.000	(2) LPA-80063/6CF w/ Mount Pipe	38	28.451	1.789	0.003	5586
154.000	PCS 1900MHz 4x45W-65MHz	38	26.207	1.725	0.003	5157
150.000	APXVSPP18-C-A20 w/ Mount Pipe	38	24.758	1.680	0.003	4906
140.000	7770.00 w/ Mount Pipe	38	21.310	1.560	0.002	4374
50.000	OG-860/1920/GPS-A	38	2.480	0.461	0.000	4721

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	191.5 - 172.46	118.922	13	5.909	0.012
L2	175.543 - 127.753	99.685	13	5.574	0.012
L3	132.253 - 83.0833	54.282	13	4.215	0.004
L4	88.9167 - 40.4567	23.235	13	2.556	0.001
L5	47.54 - 0	6.512	13	1.261	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.000	(4) RV65-18-02DPL2 w/ Mount Pipe	13	118.922	5.909	0.012	8013
191.500	Lightning Rod	13	118.922	5.909	0.012	8013
160.000	(2) LPA-80063/6CF w/ Mount Pipe	13	81.981	5.159	0.010	1971
154.000	PCS 1900MHz 4x45W-65MHz	13	75.527	4.974	0.008	1819
150.000	APXVSPP18-C-A20 w/ Mount Pipe	13	71.356	4.844	0.007	1730
140.000	7770.00 w/ Mount Pipe	13	61.433	4.499	0.005	1539
50.000	OG-860/1920/GPS-A	13	7.158	1.330	0.001	1638

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	191.5 - 190.436	TP20.46x15.5x0.188	19.040	0.000	0.0	39.0000	9.278	-0.999	361.833	0.003
	190.436 - 189.372					39.0000	9.443	-1.049	368.265	0.003
	189.372 - 188.309					39.0000	9.608	-1.100	374.697	0.003

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
	188.309 -					39.0000	9.773	-1.152	381.129	0.003
	187.245 -									
	187.245 -					39.0000	9.937	-1.204	387.561	0.003
	186.181 -									
	186.181 -					39.0000	10.102	-1.257	393.993	0.003
	185.117 -									
	185.117 -					39.0000	10.267	-1.310	400.424	0.003
	184.054 -									
	184.054 -					39.0000	10.432	-1.364	406.856	0.003
	182.99 -									
	182.99 -					39.0000	10.597	-1.419	413.288	0.003
	181.926 -									
	181.926 -					39.0000	10.762	-1.475	419.720	0.004
	180.862 -									
	180.862 -					39.0000	10.927	-1.529	426.152	0.004
	179.798 -									
	179.798 -					39.0000	11.092	-1.586	432.584	0.004
	178.735 -									
	178.735 -					39.0000	11.257	-1.643	439.016	0.004
	177.671 -									
	177.671 -					39.0000	11.422	-1.701	445.448	0.004
	176.607 -									
	176.607 -					39.0000	11.587	-1.760	451.880	0.004
	175.543 -									
	175.543 -					39.0000	12.065	-0.825	470.522	0.002
L2	175.543 -	TP31.6x19.282x0.313	47.790	0.000	0.0	39.0000	19.603	-1.305	764.534	0.002
	172.46 -									
	172.46 -					39.0000	20.174	-2.340	786.806	0.003
	170.226 -									
	170.226 -					39.0000	20.746	-2.554	809.078	0.003
	167.993 -									
	167.993 -					39.0000	21.317	-2.772	831.350	0.003
	165.759 -									
	165.759 -					39.0000	21.888	-2.995	853.622	0.004
	163.525 -									
	163.525 -					39.0000	22.459	-3.222	875.894	0.004
	161.291 -									
	161.291 -					39.0000	23.030	-4.947	898.166	0.006
	159.058 -									
	159.058 -					39.0000	23.601	-5.189	920.438	0.006
	156.824 -									
	156.824 -					39.0000	24.172	-5.437	942.710	0.006
	154.59 -									
	154.59 -					39.0000	24.743	-6.033	964.982	0.006
	152.357 -									
	152.357 -					39.0000	25.314	-6.293	987.254	0.006
	150.123 -									
	150.123 -					39.0000	25.885	-7.814	1009.530	0.008
	147.889 -									
	147.889 -					39.0000	26.456	-8.090	1031.800	0.008
	145.656 -									
	145.656 -					39.0000	27.027	-8.372	1054.070	0.008
	143.422 -									
	143.422 -					39.0000	27.598	-8.659	1076.340	0.008
	141.188 -									
	141.188 -					39.0000	28.170	-10.858	1098.610	0.010
	138.954 -									
	138.954 -					39.0000	28.741	-11.164	1120.890	0.010
	136.721 -									
	136.721 -					39.0000	29.312	-11.475	1143.160	0.010
	134.487 -									
	134.487 -					39.0000	29.883	-11.793	1165.430	0.010
	132.253 -									
	132.253 -					39.0000	31.033	-5.546	1210.300	0.005
	127.753 -									
L3	132.253 -	TP42.19x29.815x0.438	49.170	0.000	0.0	39.0000	42.367	-7.495	1652.320	0.005
	127.753 -									
	127.753 -					39.0000	43.121	-13.456	1681.730	0.008

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
	125.596									
	125.596 - 123.438					39.0000	43.875	-13.876	1711.130	0.008
	123.438 - 121.281					39.0000	44.629	-14.301	1740.540	0.008
	121.281 - 119.123					39.0000	45.383	-14.733	1769.950	0.008
	119.123 - 116.965					39.0000	46.137	-15.171	1799.360	0.008
	116.965 - 114.808					39.0000	46.891	-15.616	1828.760	0.009
	114.808 - 112.65					39.0000	47.645	-16.066	1858.170	0.009
	112.65 - 110.493					39.0000	48.400	-16.523	1887.580	0.009
	110.493 - 108.335					39.0000	49.153	-16.986	1916.990	0.009
	108.335 - 106.177					39.0000	49.908	-17.455	1946.400	0.009
	106.177 - 104.02					39.0000	50.662	-17.930	1975.800	0.009
	104.02 - 101.862					39.0000	51.416	-18.410	2005.210	0.009
	101.862 - 99.7046					39.0000	52.170	-18.898	2034.620	0.009
	99.7046 - 97.547					39.0000	52.924	-19.390	2064.030	0.009
	97.547 - 95.3894					39.0000	53.678	-19.889	2093.430	0.010
	95.3894 - 93.2319					39.0000	54.432	-20.394	2122.840	0.010
	93.2319 - 91.0743					39.0000	55.186	-20.905	2152.250	0.010
	91.0743 - 88.9167					39.0000	55.940	-21.421	2181.660	0.010
	88.9167 - 83.0833					39.0000	57.979	-11.408	2261.160	0.005
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	48.460	0.000	0.0	39.0000	64.878	-12.642	2530.240	0.005
	83.0833 - 81.1087					39.0000	65.702	-24.596	2562.380	0.010
	81.1087 - 79.1341					39.0000	66.526	-25.139	2594.510	0.010
	79.1341 - 77.1594					39.0000	67.350	-25.688	2626.650	0.010
	77.1594 - 75.1848					39.0000	68.174	-26.243	2658.790	0.010
	75.1848 - 73.2102					39.0000	68.998	-26.803	2690.930	0.010
	73.2102 - 71.2356					39.0000	69.822	-27.369	2723.070	0.010
	71.2356 - 69.2609					39.0000	70.646	-27.940	2755.200	0.010
	69.2609 - 67.2863					39.0000	71.470	-28.517	2787.340	0.010
	67.2863 - 65.3117					39.0000	72.294	-29.100	2819.480	0.010
	65.3117 - 63.337					39.0000	73.118	-29.689	2851.620	0.010
	63.337 - 61.3624					39.0000	73.942	-30.283	2883.760	0.011
	61.3624 - 59.3878					39.0000	74.767	-30.883	2915.890	0.011
	59.3878 - 57.4131					39.0000	75.591	-31.488	2948.030	0.011
	57.4131 - 55.4385					39.0000	76.415	-32.100	2980.170	0.011
	55.4385 - 53.4639					39.0000	77.239	-32.717	3012.310	0.011

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L5	53.4639 - 51.4893	TP62x49.727x0.5	47.540	0.000	0.0	39.0000	78.063	-33.339	3044.450	0.011
	51.4893 - 49.5146					39.0000	78.887	-34.033	3076.580	0.011
	49.5146 - 47.54					39.0000	79.711	-34.667	3108.720	0.011
	47.54 - 40.4567					39.0000	82.667	-19.676	3224.010	0.006
	40.4567 - 47.54					39.0000	81.026	-19.161	3160.010	0.006
	40.4567 - 38.3274					39.0000	81.898	-39.550	3194.030	0.012
	38.3274 - 36.1981					39.0000	82.771	-40.259	3228.050	0.012
	36.1981 - 34.0688					39.0000	83.643	-40.974	3262.070	0.013
	34.0688 - 31.9395					39.0000	83.643	-41.009	3262.070	0.013
	31.9395 - 29.8102					39.0000	84.515	-41.730	3296.090	0.013
	29.8102 - 27.6809					39.0000	85.388	-42.458	3330.110	0.013
	27.6809 - 25.5516					39.0000	86.260	-43.192	3364.140	0.013
	25.5516 - 23.4223					39.0000	87.132	-43.932	3398.160	0.013
	23.4223 - 21.293					39.0000	88.005	-44.679	3432.180	0.013
	21.293 - 19.1637					39.0000	88.877	-45.432	3466.200	0.013
	19.1637 - 17.0344					39.0000	89.749	-46.191	3500.220	0.013
	17.0344 - 14.9051					39.0000	90.622	-46.957	3534.250	0.013
	14.9051 - 12.7758					39.0000	91.494	-47.729	3568.270	0.013
	12.7758 - 10.6465					39.0000	92.366	-48.508	3602.290	0.013
	10.6465 - 8.51719					39.0000	93.239	-49.293	3636.310	0.014
	8.51719 - 6.38789					39.0000	94.111	-50.085	3670.330	0.014
	6.38789 - 4.2586					39.0000	94.983	-50.882	3704.350	0.014
	4.2586 - 2.1293					39.0000	95.856	-51.687	3738.380	0.014
	2.1293 - 0					39.0000	96.728	-52.497	3772.400	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$	
L1	191.5 - 190.436	TP20.46x15.5x0.188	9.050	3.0555	39.000	0.078	0.000	0.0000	39.000	0.000	
	190.436 - 189.372		12.265	3.9966	39.000	0.102	0.000	0.0000	39.000	0.000	
	189.372 - 188.309		15.537	4.8896	39.000	0.125	0.000	0.0000	39.000	0.000	
	188.309 - 187.245		18.868	5.7379	39.000	0.147	0.000	0.0000	39.000	0.000	
	187.245 - 186.181		22.257	6.5447	39.000	0.168	0.000	0.0000	39.000	0.000	
	186.181 - 185.117		25.707	7.3130	39.000	0.188	0.000	0.0000	39.000	0.000	
						0				0	
						0				0	
						0				0	
						0				0	
						0				0	

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	185.117 - 184.054		29.218	8.0455	39.000	0.206	0.000	0.0000	39.000	0.000
	184.054 - 182.99		32.791	8.7447	39.000	0.224	0.000	0.0000	39.000	0.000
	182.99 - 181.926		36.427	9.4127	39.000	0.241	0.000	0.0000	39.000	0.000
	181.926 - 180.862		40.127	10.051	39.000	0.258	0.000	0.0000	39.000	0.000
	180.862 - 179.798		43.892	10.663	39.000	0.273	0.000	0.0000	39.000	0.000
	179.798 - 178.735		47.723	11.250	39.000	0.288	0.000	0.0000	39.000	0.000
	178.735 - 177.671		51.619	11.813	39.000	0.303	0.000	0.0000	39.000	0.000
	177.671 - 176.607		55.583	12.354	39.000	0.317	0.000	0.0000	39.000	0.000
	176.607 - 175.543		59.614	12.873	39.000	0.330	0.000	0.0000	39.000	0.000
	175.543 - 172.46		28.232	5.6211	39.000	0.144	0.000	0.0000	39.000	0.000
L2	175.543 - 172.46	TP31.6x19.282x0.313	43.492	5.5020	39.000	0.141	0.000	0.0000	39.000	0.000
	172.46 - 170.226		80.925	9.6618	39.000	0.248	0.000	0.0000	39.000	0.000
	170.226 - 167.993		90.498	10.213	39.000	0.262	0.000	0.0000	39.000	0.000
	167.993 - 165.759		100.44	10.733	39.000	0.275	0.000	0.0000	39.000	0.000
	165.759 - 163.525		110.78	11.223	39.000	0.288	0.000	0.0000	39.000	0.000
	163.525 - 161.291		121.51	11.688	39.000	0.300	0.000	0.0000	39.000	0.000
	161.291 - 159.058		138.71	12.685	39.000	0.325	0.000	0.0000	39.000	0.000
	159.058 - 156.824		164.65	14.333	39.000	0.368	0.000	0.0000	39.000	0.000
	156.824 - 154.59		191.00	15.845	39.000	0.406	0.000	0.0000	39.000	0.000
	154.59 - 152.357		219.24	17.353	39.000	0.445	0.000	0.0000	39.000	0.000
	152.357 - 150.123		248.43	18.781	39.000	0.482	0.000	0.0000	39.000	0.000
	150.123 - 147.889		286.76	20.727	39.000	0.531	0.000	0.0000	39.000	0.000
	147.889 - 145.656		323.38	22.370	39.000	0.574	0.000	0.0000	39.000	0.000
	145.656 - 143.422		360.43	23.885	39.000	0.612	0.000	0.0000	39.000	0.000
	143.422 - 141.188		397.92	25.284	39.000	0.648	0.000	0.0000	39.000	0.000
	141.188 - 138.954		439.59	26.804	39.000	0.687	0.000	0.0000	39.000	0.000
	138.954 - 136.721		485.94	28.458	39.000	0.730	0.000	0.0000	39.000	0.000
	136.721 - 134.487		532.73	29.988	39.000	0.769	0.000	0.0000	39.000	0.000
	134.487 - 132.253		579.97	31.406	39.000	0.805	0.000	0.0000	39.000	0.000
	132.253 - 127.753		294.54	14.783	39.000	0.379	0.000	0.0000	39.000	0.000
L3	132.253 - 127.753	TP42.19x29.815x0.438	382.15	14.469	39.000	0.371	0.000	0.0000	39.000	0.000
	127.753 - 125.596		723.80	26.449	39.000	0.678	0.000	0.0000	39.000	0.000
	125.596 - 123.438		771.32	27.218	39.000	0.698	0.000	0.0000	39.000	0.000
	123.438 - 121.281		819.26	27.935	39.000	0.716	0.000	0.0000	39.000	0.000
	121.281 -		867.64	28.603	39.000	0.733	0.000	0.0000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	119.123		2	2	0				0	
	119.123 - 116.965		916.43	29.226	39.000	0.749	0.000	0.0000	39.000	0.000
	116.965 - 114.808		3	0	0			0	0	
	116.965 - 114.808		965.65	29.807	39.000	0.764	0.000	0.0000	39.000	0.000
	114.808 - 112.65		8	2	0			0	0	
	114.808 - 112.65		1015.3	30.349	39.000	0.778	0.000	0.0000	39.000	0.000
	112.65 - 110.493		17	8	0			0	0	
	112.65 - 110.493		1065.4	30.856	39.000	0.791	0.000	0.0000	39.000	0.000
	110.493 - 108.335		17	5	0			0	0	
	110.493 - 108.335		1115.9	31.330	39.000	0.803	0.000	0.0000	39.000	0.000
	108.335 - 106.177		42	0	0			0	0	
	108.335 - 106.177		1166.9	31.772	39.000	0.815	0.000	0.0000	39.000	0.000
	106.177 - 104.02		17	6	0			0	0	
	106.177 - 104.02		1218.3	32.186	39.000	0.825	0.000	0.0000	39.000	0.000
	104.02 - 101.862		25	6	0			0	0	
	104.02 - 101.862		1270.1	32.573	39.000	0.835	0.000	0.0000	39.000	0.000
	101.862 - 99.7046		83	9	0			0	0	
	101.862 - 99.7046		1322.4	32.936	39.000	0.845	0.000	0.0000	39.000	0.000
	99.7046 - 97.547		83	3	0			0	0	
	99.7046 - 97.547		1375.2	33.275	39.000	0.853	0.000	0.0000	39.000	0.000
	97.547 - 95.3894		42	7	0			0	0	
	97.547 - 95.3894		1428.4	33.593	39.000	0.861	0.000	0.0000	39.000	0.000
	95.3894 - 93.2319		42	4	0			0	0	
	95.3894 - 93.2319		1482.1	33.891	39.000	0.869	0.000	0.0000	39.000	0.000
	93.2319 - 91.0743		00	1	0			0	0	
	93.2319 - 91.0743		1536.2	34.170	39.000	0.876	0.000	0.0000	39.000	0.000
	91.0743 - 88.9167		17	0	0			0	0	
	91.0743 - 88.9167		1590.7	34.431	39.000	0.883	0.000	0.0000	39.000	0.000
	88.9167 - 83.0833		92	3	0			0	0	
	88.9167 - 83.0833		841.58	16.950	39.000	0.435	0.000	0.0000	39.000	0.000
L4	83.0833 - 81.1087	TP52.59x39.847x0.5	3	5	0			0	0	
	83.0833 - 81.1087		899.37	16.561	39.000	0.425	0.000	0.0000	39.000	0.000
	81.1087 - 79.1341		5	9	0			0	0	
	81.1087 - 79.1341		1792.6	32.183	39.000	0.825	0.000	0.0000	39.000	0.000
	79.1341 - 77.1594		50	8	0			0	0	
	79.1341 - 77.1594		1844.7	32.298	39.000	0.828	0.000	0.0000	39.000	0.000
	77.1594 - 75.1848		08	2	0			0	0	
	77.1594 - 75.1848		1897.1	32.403	39.000	0.831	0.000	0.0000	39.000	0.000
	75.1848 - 73.2102		33	6	0			0	0	
	75.1848 - 73.2102		1949.9	32.500	39.000	0.833	0.000	0.0000	39.000	0.000
	73.2102 - 71.2356		25	5	0			0	0	
	73.2102 - 71.2356		2003.0	32.589	39.000	0.836	0.000	0.0000	39.000	0.000
	71.2356 - 69.2609		92	4	0			0	0	
	71.2356 - 69.2609		2056.6	32.670	39.000	0.838	0.000	0.0000	39.000	0.000
	69.2609 - 67.2863		17	8	0			0	0	
	69.2609 - 67.2863		2110.5	32.745	39.000	0.840	0.000	0.0000	39.000	0.000
	67.2863 - 65.3117		17	1	0			0	0	
	67.2863 - 65.3117		2164.7	32.812	39.000	0.841	0.000	0.0000	39.000	0.000
	65.3117 - 63.337		92	8	0			0	0	
	65.3117 - 63.337		2219.4	32.874	39.000	0.843	0.000	0.0000	39.000	0.000
	63.337 - 61.3624		25	3	0			0	0	
	63.337 - 61.3624		2274.4	32.930	39.000	0.844	0.000	0.0000	39.000	0.000
	61.3624 - 59.3878		33	0	0			0	0	
	61.3624 - 59.3878		2329.8	32.980	39.000	0.846	0.000	0.0000	39.000	0.000
	59.3878 - 57.4131		08	1	0			0	0	
	59.3878 - 57.4131		2385.5	33.025	39.000	0.847	0.000	0.0000	39.000	0.000
	57.4131 - 55.4385		50	0	0			0	0	
	57.4131 - 55.4385		2441.6	33.065	39.000	0.848	0.000	0.0000	39.000	0.000
	55.4385 - 53.4639		58	1	0			0	0	
	55.4385 - 53.4639		2498.1	33.100	39.000	0.849	0.000	0.0000	39.000	0.000
	53.4639 - 51.4893		42	5	0			0	0	
	53.4639 - 51.4893		2554.9	33.131	39.000	0.850	0.000	0.0000	39.000	0.000
	51.4893 - 49.5146		92	6	0			0	0	
	51.4893 - 49.5146		2612.2	33.158	39.000	0.850	0.000	0.0000	39.000	0.000
	49.5146 - 47.54		08	7	0			0	0	
	49.5146 - 47.54		2670.0	33.185	39.000	0.851	0.000	0.0000	39.000	0.000
	47.54		50	1	0			0	0	
	47.54		2728.1	33.205	39.000	0.851	0.000	0.0000	39.000	0.000
			08	8	0			0	0	

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$	
L5	47.54 - 40.4567	TP62x49.727x0.5	1514.3	17.131	39.000	0.439	0.000	0.0000	39.000	0.000	
	47.54 - 40.4567		67	8	0	0	0.000	0.0000	39.000	0.000	
	40.4567 - 38.3274		1425.4	16.788	39.000	0.430	0.000	0.0000	39.000	0.000	
	38.3274 - 36.1981		17	5	0	0	0.000	0.0000	39.000	0.000	
	36.1981 - 34.0688		3004.4	34.632	39.000	0.888	0.000	0.0000	39.000	0.000	
	34.0688 - 31.9395		17	5	0	0	0.000	0.0000	39.000	0.000	
	31.9395 - 29.8102		3069.4	34.636	39.000	0.888	0.000	0.0000	39.000	0.000	
	29.8102 - 27.6809		08	3	0	0	0.000	0.0000	39.000	0.000	
	27.6809 - 25.5516		3134.7	34.636	39.000	0.888	0.000	0.0000	39.000	0.000	
	25.5516 - 23.4223		67	4	0	0	0.000	0.0000	39.000	0.000	
	23.4223 - 21.293		3134.7	34.636	39.000	0.888	0.000	0.0000	39.000	0.000	
	21.293 - 19.1637		67	4	0	0	0.000	0.0000	39.000	0.000	
	19.1637 - 17.0344		3200.4	34.632	39.000	0.888	0.000	0.0000	39.000	0.000	
	17.0344 - 14.9051		83	9	0	0	0.000	0.0000	39.000	0.000	
	14.9051 - 12.7758		3266.5	34.626	39.000	0.888	0.000	0.0000	39.000	0.000	
	12.7758 - 10.6465		75	2	0	0	0.000	0.0000	39.000	0.000	
	10.6465 - 8.51719		3333.0	34.616	39.000	0.888	0.000	0.0000	39.000	0.000	
	8.51719 - 6.38789		33	5	0	0	0.000	0.0000	39.000	0.000	
	6.38789 - 4.2586		3399.8	34.603	39.000	0.887	0.000	0.0000	39.000	0.000	
	4.2586 - 2.1293		67	9	0	0	0.000	0.0000	39.000	0.000	
	2.1293 - 0		23.4223	3467.0	34.588	39.000	0.887	0.000	0.0000	39.000	0.000
			21.293	75	8	0	0	0.000	0.0000	39.000	0.000
			19.1637	3534.6	34.571	39.000	0.886	0.000	0.0000	39.000	0.000
			17.0344	58	2	0	0	0.000	0.0000	39.000	0.000
			14.9051	3602.6	34.551	39.000	0.886	0.000	0.0000	39.000	0.000
			12.7758	25	3	0	0	0.000	0.0000	39.000	0.000
			10.6465	3670.9	34.529	39.000	0.885	0.000	0.0000	39.000	0.000
			8.51719	75	3	0	0	0.000	0.0000	39.000	0.000
			6.38789	3739.7	34.505	39.000	0.885	0.000	0.0000	39.000	0.000
			4.2586	00	4	0	0	0.000	0.0000	39.000	0.000
	2.1293	3808.8	34.479	39.000	0.884	0.000	0.0000	39.000	0.000		
	0	25	6	0	0	0.000	0.0000	39.000	0.000		
		3878.3	34.452	39.000	0.883	0.000	0.0000	39.000	0.000		
		33	2	0	0	0.000	0.0000	39.000	0.000		
		3948.2	34.423	39.000	0.883	0.000	0.0000	39.000	0.000		
		33	3	0	0	0.000	0.0000	39.000	0.000		
		4018.5	34.392	39.000	0.882	0.000	0.0000	39.000	0.000		
		25	9	0	0	0.000	0.0000	39.000	0.000		
		4089.2	34.361	39.000	0.881	0.000	0.0000	39.000	0.000		
		17	2	0	0	0.000	0.0000	39.000	0.000		
		4160.3	34.328	39.000	0.880	0.000	0.0000	39.000	0.000		
		08	3	0	0	0.000	0.0000	39.000	0.000		

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	191.5 - 190.436	TP20.46x15.5x0.188	2.996	0.3229	26.000	0.025	0.000	0.0000	26.000	0.000
	190.436 - 189.372		3.049	0.3229	26.000	0.025	0.000	0.0001	26.000	0.000
	189.372 - 188.309		3.104	0.3231	26.000	0.025	0.001	0.0001	26.000	0.000
	188.309 - 187.245		3.159	0.3233	26.000	0.025	0.001	0.0001	26.000	0.000
	187.245 - 186.181		3.215	0.3235	26.000	0.025	0.001	0.0001	26.000	0.000
	186.181 - 185.117		3.272	0.3239	26.000	0.025	0.001	0.0002	26.000	0.000
	185.117 - 184.054		3.330	0.3244	26.000	0.025	0.008	0.0011	26.000	0.000
	184.054 - 182.99		3.389	0.3249	26.000	0.025	0.008	0.0010	26.000	0.000
	182.99 - 182.99		3.448	0.3254	26.000	0.025	0.008	0.0010	26.000	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	181.926				0				0	
	181.926 - 180.862		3.509	0.3260	26.000	0.025	0.008	0.0009	26.000	0.000
	180.862 - 179.798				0				0	
	179.798 - 178.735		3.570	0.3267	26.000	0.025	0.013	0.0015	26.000	0.000
	178.735 - 177.671				0				0	
	177.671 - 176.607		3.632	0.3274	26.000	0.025	0.013	0.0015	26.000	0.000
	176.607 - 175.543				0				0	
	175.543 - 174.46		3.695	0.3282	26.000	0.025	0.013	0.0014	26.000	0.000
	174.46 - 170.226				0				0	
	170.226 - 167.993		3.758	0.3290	26.000	0.025	0.013	0.0014	26.000	0.000
	167.993 - 165.759				0				0	
	165.759 - 163.525		3.822	0.3299	26.000	0.025	0.013	0.0014	26.000	0.000
	163.525 - 161.291				0				0	
	161.291 - 159.058		1.642	0.1361	26.000	0.010	0.005	0.0005	26.000	0.000
L2	159.058 - 156.824	TP31.6x19.282x0.313	2.393	0.1221	26.000	0.009	0.008	0.0005	26.000	0.000
	156.824 - 154.59				0				0	
	154.59 - 152.357		4.199	0.2081	26.000	0.016	0.017	0.0010	26.000	0.000
	152.357 - 150.123				0				0	
	150.123 - 147.889		4.366	0.2105	26.000	0.016	0.018	0.0010	26.000	0.000
	147.889 - 145.656				0				0	
	145.656 - 143.422		4.537	0.2128	26.000	0.016	0.019	0.0010	26.000	0.000
	143.422 - 141.188				0				0	
	141.188 - 138.954		4.711	0.2152	26.000	0.017	0.020	0.0010	26.000	0.000
	138.954 - 136.721				0				0	
	136.721 - 134.487		4.888	0.2177	26.000	0.017	0.021	0.0010	26.000	0.000
	134.487 - 132.253				0				0	
	132.253 - 127.753		11.521	0.5003	26.000	0.038	2.098	0.0931	26.000	0.004
	127.753 - 125.596				0				0	
	125.596 - 123.438		11.703	0.4959	26.000	0.038	2.098	0.0887	26.000	0.003
	123.438 - 121.281				0				0	
	121.281 - 119.123		11.889	0.4918	26.000	0.038	2.096	0.0844	26.000	0.003
	119.123 - 116.965				0				0	
	116.965 - 114.808		12.975	0.5244	26.000	0.040	2.094	0.0805	26.000	0.003
					0				0	
			13.165	0.5201	26.000	0.040	2.092	0.0768	26.000	0.003
					0				0	
			16.300	0.6297	26.000	0.048	2.090	0.0734	26.000	0.003
					0				0	
			16.494	0.6234	26.000	0.048	2.087	0.0702	26.000	0.003
					0				0	
			16.689	0.6175	26.000	0.047	2.085	0.0672	26.000	0.003
					0				0	
			16.887	0.6119	26.000	0.047	2.083	0.0644	26.000	0.002
					0				0	
			20.656	0.7333	26.000	0.056	2.080	0.0617	26.000	0.002
					0				0	
			20.855	0.7256	26.000	0.056	1.031	0.0294	26.000	0.001
					0				0	
			21.056	0.7183	26.000	0.055	1.028	0.0282	26.000	0.001
					0				0	
			21.259	0.7114	26.000	0.055	1.026	0.0270	26.000	0.001
					0				0	
			9.582	0.3088	26.000	0.024	0.447	0.0109	26.000	0.000
L3	132.253 - 127.753	TP42.19x29.815x0.438	12.165	0.2871	26.000	0.022	0.577	0.0106	26.000	0.000
	127.753 - 125.596				0				0	
	125.596 - 123.438		21.940	0.5088	26.000	0.039	1.021	0.0181	26.000	0.001
	123.438 - 121.281				0				0	
	121.281 - 119.123		22.136	0.5045	26.000	0.039	1.022	0.0175	26.000	0.001
	119.123 - 116.965				0				0	
	116.965 - 114.808		22.333	0.5004	26.000	0.038	1.024	0.0169	26.000	0.001
					0				0	
			22.531	0.4965	26.000	0.038	1.026	0.0164	26.000	0.001
					0				0	
			22.730	0.4927	26.000	0.038	1.028	0.0159	26.000	0.001
					0				0	
			22.930	0.4890	26.000	0.038	1.030	0.0154	26.000	0.001
					0				0	

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	114.808 - 112.65		23.131	0.4855	26.000	0.037	1.031	0.0150	26.000	0.001
	112.65 - 110.493		23.334	0.4821	26.000	0.037	1.033	0.0145	26.000	0.001
	110.493 - 108.335		23.537	0.4789	26.000	0.037	1.035	0.0141	26.000	0.001
	108.335 - 106.177		23.742	0.4757	26.000	0.037	1.037	0.0137	26.000	0.001
	106.177 - 104.02		23.948	0.4727	26.000	0.036	1.039	0.0133	26.000	0.001
	104.02 - 101.862		24.154	0.4698	26.000	0.036	1.041	0.0130	26.000	0.000
	101.862 - 99.7046		24.363	0.4670	26.000	0.036	1.043	0.0126	26.000	0.000
	99.7046 - 97.547		24.572	0.4643	26.000	0.036	1.045	0.0123	26.000	0.000
	97.547 - 95.3894		24.782	0.4617	26.000	0.036	1.047	0.0120	26.000	0.000
	95.3894 - 93.2319		24.993	0.4592	26.000	0.035	1.050	0.0117	26.000	0.000
	93.2319 - 91.0743		25.206	0.4567	26.000	0.035	1.052	0.0114	26.000	0.000
	91.0743 - 88.9167		25.419	0.4544	26.000	0.035	1.054	0.0111	26.000	0.000
	88.9167 - 83.0833		12.781	0.2205	26.000	0.017	0.514	0.0050	26.000	0.000
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	13.329	0.2054	26.000	0.016	0.546	0.0049	26.000	0.000
	83.0833 - 81.1087		26.288	0.4001	26.000	0.031	1.062	0.0093	26.000	0.000
	81.1087 - 79.1341		26.475	0.3980	26.000	0.031	1.064	0.0091	26.000	0.000
	79.1341 - 77.1594		26.662	0.3959	26.000	0.030	1.066	0.0088	26.000	0.000
	77.1594 - 75.1848		26.848	0.3938	26.000	0.030	1.068	0.0087	26.000	0.000
	75.1848 - 73.2102		27.035	0.3918	26.000	0.030	1.070	0.0085	26.000	0.000
	73.2102 - 71.2356		27.222	0.3899	26.000	0.030	1.072	0.0083	26.000	0.000
	71.2356 - 69.2609		27.409	0.3880	26.000	0.030	1.074	0.0081	26.000	0.000
	69.2609 - 67.2863		27.595	0.3861	26.000	0.030	1.076	0.0079	26.000	0.000
	67.2863 - 65.3117		27.782	0.3843	26.000	0.030	1.078	0.0078	26.000	0.000
	65.3117 - 63.337		27.969	0.3825	26.000	0.029	1.080	0.0076	26.000	0.000
	63.337 - 61.3624		28.156	0.3808	26.000	0.029	1.082	0.0074	26.000	0.000
	61.3624 - 59.3878		28.343	0.3791	26.000	0.029	1.084	0.0073	26.000	0.000
	59.3878 - 57.4131		28.530	0.3774	26.000	0.029	1.086	0.0072	26.000	0.000
	57.4131 - 55.4385		28.717	0.3758	26.000	0.029	1.088	0.0070	26.000	0.000
	55.4385 - 53.4639		28.904	0.3742	26.000	0.029	1.090	0.0069	26.000	0.000
	53.4639 - 51.4893		29.091	0.3727	26.000	0.029	1.092	0.0067	26.000	0.000
	51.4893 - 49.5146		29.329	0.3718	26.000	0.029	1.228	0.0074	26.000	0.000
	49.5146 - 47.54		29.516	0.3703	26.000	0.028	1.230	0.0073	26.000	0.000
	47.54 - 40.4567		15.798	0.1911	26.000	0.015	0.640	0.0035	26.000	0.000
L5	47.54 - 40.4567	TP62x49.727x0.5	14.512	0.1791	26.000	0.014	0.599	0.0034	26.000	0.000
	40.4567 -		30.464	0.3720	26.000	0.029	1.240	0.0070	26.000	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	38.3274				0				0	
	38.3274 - 36.1981		30.634	0.3701	26.000	0.028	1.242	0.0068	26.000	0.000
	36.1981 - 34.0688				0				0	
	34.0688 - 31.9395		30.806	0.3683	26.000	0.028	1.244	0.0067	26.000	0.000
	31.9395 - 29.8102				0				0	
	29.8102 - 27.6809		30.978	0.3704	26.000	0.028	1.246	0.0067	26.000	0.000
	27.6809 - 25.5516				0				0	
	25.5516 - 23.4223		31.151	0.3686	26.000	0.028	1.248	0.0066	26.000	0.000
	23.4223 - 21.293				0				0	
	21.293 - 19.1637		31.326	0.3669	26.000	0.028	1.251	0.0065	26.000	0.000
	19.1637 - 17.0344				0				0	
	17.0344 - 14.9051		31.502	0.3652	26.000	0.028	1.253	0.0063	26.000	0.000
	14.9051 - 12.7758				0				0	
	12.7758 - 10.6465		31.679	0.3636	26.000	0.028	1.255	0.0062	26.000	0.000
	10.6465 - 8.51719				0				0	
	8.51719 - 6.38789		31.857	0.3620	26.000	0.028	1.257	0.0061	26.000	0.000
	6.38789 - 4.2586				0				0	
	4.2586 - 2.1293		32.036	0.3605	26.000	0.027	1.259	0.0060	26.000	0.000
	2.1293 - 0				0				0	
			32.216	0.3590	26.000	0.027	1.262	0.0059	26.000	0.000
					0				0	
			32.398	0.3575	26.000	0.027	1.264	0.0058	26.000	0.000
					0				0	
			32.580	0.3561	26.000	0.027	1.266	0.0057	26.000	0.000
					0				0	
			32.764	0.3547	26.000	0.027	1.269	0.0056	26.000	0.000
					0				0	
			32.948	0.3534	26.000	0.027	1.271	0.0055	26.000	0.000
					0				0	
			33.134	0.3521	26.000	0.027	1.273	0.0054	26.000	0.000
					0				0	
			33.321	0.3508	26.000	0.027	1.276	0.0053	26.000	0.000
					0				0	
			33.509	0.3496	26.000	0.027	1.278	0.0052	26.000	0.000
					0				0	
			33.698	0.3484	26.000	0.027	1.281	0.0052	26.000	0.000
					0				0	

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
L1	191.5 - 190.436	0.003	0.078	0.000	0.025	0.000	0.081	1.333	H1-3+VT
	190.436 - 189.372	0.003	0.102	0.000	0.025	0.000	0.105	1.333	H1-3+VT
	189.372 - 188.309	0.003	0.125	0.000	0.025	0.000	0.128	1.333	H1-3+VT
	188.309 - 187.245	0.003	0.147	0.000	0.025	0.000	0.150	1.333	H1-3+VT
	187.245 - 186.181	0.003	0.168	0.000	0.025	0.000	0.171	1.333	H1-3+VT
	186.181 - 185.117	0.003	0.188	0.000	0.025	0.000	0.191	1.333	H1-3+VT
	185.117 - 184.054	0.003	0.206	0.000	0.025	0.000	0.210	1.333	H1-3+VT
	184.054 - 182.99	0.003	0.224	0.000	0.025	0.000	0.228	1.333	H1-3+VT
	182.99 - 181.926	0.003	0.241	0.000	0.025	0.000	0.245	1.333	H1-3+VT
	181.926 - 180.862	0.004	0.258	0.000	0.025	0.000	0.261	1.333	H1-3+VT

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
L2	180.862 - 179.798	0.004	0.273	0.000	0.025	0.000	0.277	1.333	H1-3+VT
	179.798 - 178.735	0.004	0.288	0.000	0.025	0.000	0.292	1.333	H1-3+VT
	178.735 - 177.671	0.004	0.303	0.000	0.025	0.000	0.307	1.333	H1-3+VT
	177.671 - 176.607	0.004	0.317	0.000	0.025	0.000	0.321	1.333	H1-3+VT
	176.607 - 175.543	0.004	0.330	0.000	0.025	0.000	0.334	1.333	H1-3+VT
	175.543 - 172.46	0.002	0.144	0.000	0.010	0.000	0.146	1.333	H1-3+VT
	175.543 - 172.46	0.002	0.141	0.000	0.009	0.000	0.143	1.333	H1-3+VT
	172.46 - 170.226	0.003	0.248	0.000	0.016	0.000	0.251	1.333	H1-3+VT
	170.226 - 167.993	0.003	0.262	0.000	0.016	0.000	0.265	1.333	H1-3+VT
	167.993 - 165.759	0.003	0.275	0.000	0.016	0.000	0.279	1.333	H1-3+VT
	165.759 - 163.525	0.004	0.288	0.000	0.017	0.000	0.291	1.333	H1-3+VT
	163.525 - 161.291	0.004	0.300	0.000	0.017	0.000	0.303	1.333	H1-3+VT
	161.291 - 159.058	0.006	0.325	0.000	0.038	0.004	0.331	1.333	H1-3+VT
	159.058 - 156.824	0.006	0.368	0.000	0.038	0.003	0.374	1.333	H1-3+VT
	156.824 - 154.59	0.006	0.406	0.000	0.038	0.003	0.413	1.333	H1-3+VT
	154.59 - 152.357	0.006	0.445	0.000	0.040	0.003	0.452	1.333	H1-3+VT
	152.357 - 150.123	0.006	0.482	0.000	0.040	0.003	0.488	1.333	H1-3+VT
	150.123 - 147.889	0.008	0.531	0.000	0.048	0.003	0.540	1.333	H1-3+VT
	147.889 - 145.656	0.008	0.574	0.000	0.048	0.003	0.582	1.333	H1-3+VT
	145.656 - 143.422	0.008	0.612	0.000	0.047	0.003	0.621	1.333	H1-3+VT
	143.422 - 141.188	0.008	0.648	0.000	0.047	0.002	0.657	1.333	H1-3+VT
	141.188 - 138.954	0.010	0.687	0.000	0.056	0.002	0.698	1.333	H1-3+VT
	138.954 - 136.721	0.010	0.730	0.000	0.056	0.001	0.741	1.333	H1-3+VT
	136.721 - 134.487	0.010	0.769	0.000	0.055	0.001	0.780	1.333	H1-3+VT
	134.487 - 132.253	0.010	0.805	0.000	0.055	0.001	0.816	1.333	H1-3+VT
	132.253 - 127.753	0.005	0.379	0.000	0.024	0.000	0.384	1.333	H1-3+VT
	132.253 - 127.753	0.005	0.371	0.000	0.022	0.000	0.376	1.333	H1-3+VT
	127.753 - 125.596	0.008	0.678	0.000	0.039	0.001	0.687	1.333	H1-3+VT
	125.596 - 123.438	0.008	0.698	0.000	0.039	0.001	0.706	1.333	H1-3+VT
	123.438 - 121.281	0.008	0.716	0.000	0.038	0.001	0.725	1.333	H1-3+VT
	121.281 - 119.123	0.008	0.733	0.000	0.038	0.001	0.742	1.333	H1-3+VT
	119.123 - 116.965	0.008	0.749	0.000	0.038	0.001	0.758	1.333	H1-3+VT
116.965 - 114.808	0.009	0.764	0.000	0.038	0.001	0.773	1.333	H1-3+VT	
114.808 - 112.65	0.009	0.778	0.000	0.037	0.001	0.787	1.333	H1-3+VT	
112.65 - 112.65	0.009	0.791	0.000	0.037	0.001	0.800	1.333	H1-3+VT	

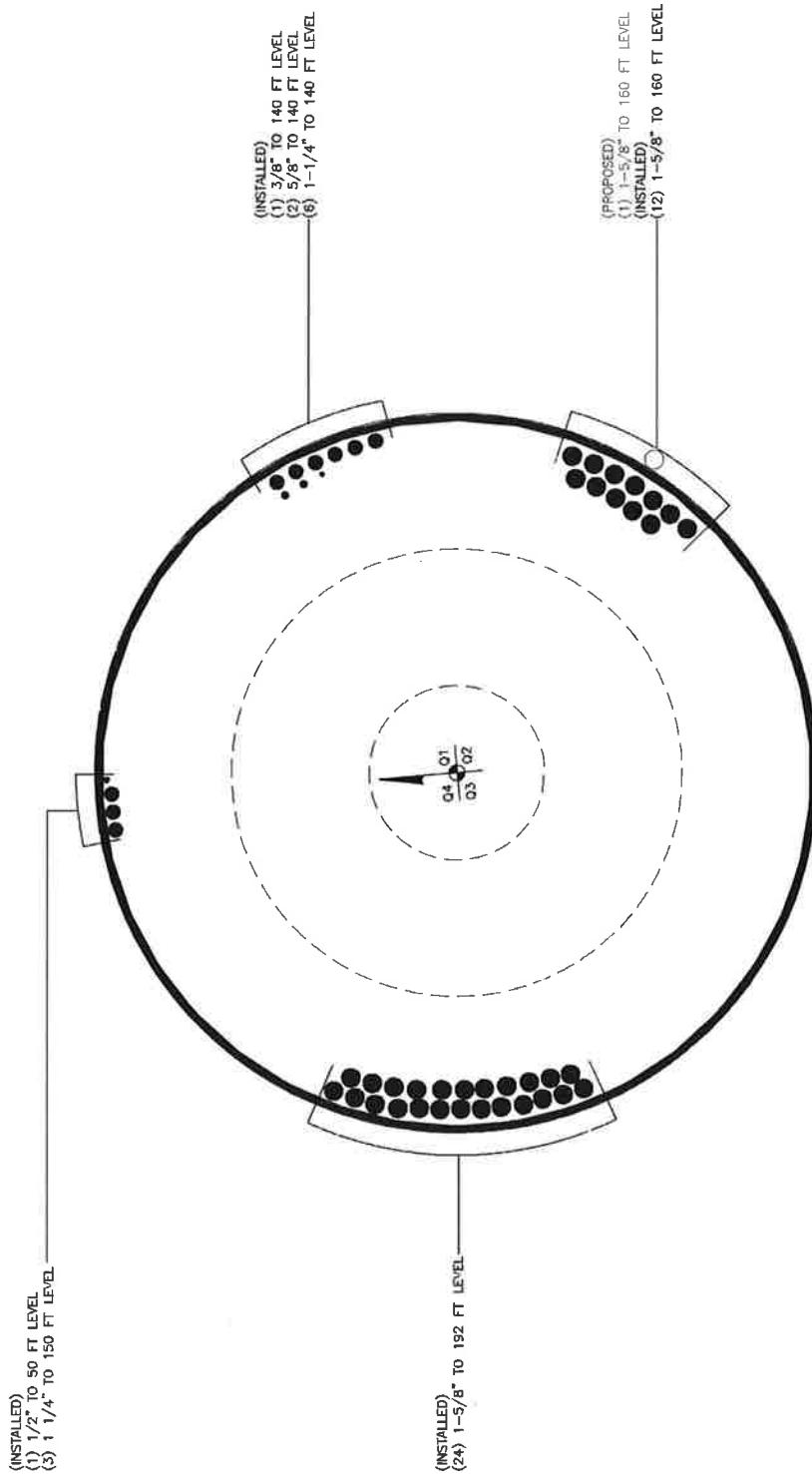
Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
	110.493								
	110.493 - 108.335	0.009	0.803	0.000	0.037	0.001	0.813	1.333	H1-3+VT
	108.335 - 106.177	0.009	0.815	0.000	0.037	0.001	0.824	1.333	H1-3+VT
	106.177 - 104.02	0.009	0.825	0.000	0.036	0.001	0.835	1.333	H1-3+VT
	104.02 - 101.862	0.009	0.835	0.000	0.036	0.000	0.845	1.333	H1-3+VT
	101.862 - 99.7046	0.009	0.845	0.000	0.036	0.000	0.854	1.333	H1-3+VT
	99.7046 - 97.547	0.009	0.853	0.000	0.036	0.000	0.863	1.333	H1-3+VT
	97.547 - 95.3894	0.010	0.861	0.000	0.036	0.000	0.871	1.333	H1-3+VT
	95.3894 - 93.2319	0.010	0.869	0.000	0.035	0.000	0.879	1.333	H1-3+VT
	93.2319 - 91.0743	0.010	0.876	0.000	0.035	0.000	0.886	1.333	H1-3+VT
	91.0743 - 88.9167	0.010	0.883	0.000	0.035	0.000	0.893	1.333	H1-3+VT
	88.9167 - 83.0833	0.005	0.435	0.000	0.017	0.000	0.440	1.333	H1-3+VT
L4	88.9167 - 83.0833	0.005	0.425	0.000	0.016	0.000	0.430	1.333	H1-3+VT
	83.0833 - 81.1087	0.010	0.825	0.000	0.031	0.000	0.835	1.333	H1-3+VT
	81.1087 - 79.1341	0.010	0.828	0.000	0.031	0.000	0.838	1.333	H1-3+VT
	79.1341 - 77.1594	0.010	0.831	0.000	0.030	0.000	0.841	1.333	H1-3+VT
	77.1594 - 75.1848	0.010	0.833	0.000	0.030	0.000	0.843	1.333	H1-3+VT
	75.1848 - 73.2102	0.010	0.836	0.000	0.030	0.000	0.846	1.333	H1-3+VT
	73.2102 - 71.2356	0.010	0.838	0.000	0.030	0.000	0.848	1.333	H1-3+VT
	71.2356 - 69.2609	0.010	0.840	0.000	0.030	0.000	0.850	1.333	H1-3+VT
	69.2609 - 67.2863	0.010	0.841	0.000	0.030	0.000	0.852	1.333	H1-3+VT
	67.2863 - 65.3117	0.010	0.843	0.000	0.030	0.000	0.853	1.333	H1-3+VT
	65.3117 - 63.337	0.010	0.844	0.000	0.029	0.000	0.855	1.333	H1-3+VT
	63.337 - 61.3624	0.011	0.846	0.000	0.029	0.000	0.856	1.333	H1-3+VT
	61.3624 - 59.3878	0.011	0.847	0.000	0.029	0.000	0.858	1.333	H1-3+VT
	59.3878 - 57.4131	0.011	0.848	0.000	0.029	0.000	0.859	1.333	H1-3+VT
	57.4131 - 55.4385	0.011	0.849	0.000	0.029	0.000	0.860	1.333	H1-3+VT
	55.4385 - 53.4639	0.011	0.850	0.000	0.029	0.000	0.861	1.333	H1-3+VT
	53.4639 - 51.4893	0.011	0.850	0.000	0.029	0.000	0.861	1.333	H1-3+VT
	51.4893 - 49.5146	0.011	0.851	0.000	0.029	0.000	0.862	1.333	H1-3+VT
	49.5146 - 47.54	0.011	0.851	0.000	0.028	0.000	0.863	1.333	H1-3+VT
	47.54 - 40.4567	0.006	0.439	0.000	0.015	0.000	0.445	1.333	H1-3+VT
L5	47.54 - 40.4567	0.006	0.430	0.000	0.014	0.000	0.437	1.333	H1-3+VT
	40.4567 - 38.3274	0.012	0.888	0.000	0.029	0.000	0.901	1.333	H1-3+VT
	38.3274 - 36.1981	0.012	0.888	0.000	0.028	0.000	0.901	1.333	H1-3+VT

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
	36.1981 - 34.0688	0.013	0.888	0.000	0.028	0.000	0.901	1.333	H1-3+VT
	34.0688 - 31.9395	0.013	0.888	0.000	0.028	0.000	0.901	1.333	H1-3+VT
	31.9395 - 29.8102	0.013	0.888	0.000	0.028	0.000	0.901	1.333	H1-3+VT
	29.8102 - 27.6809	0.013	0.888	0.000	0.028	0.000	0.901	1.333	H1-3+VT
	27.6809 - 25.5516	0.013	0.888	0.000	0.028	0.000	0.901	1.333	H1-3+VT
	25.5516 - 23.4223	0.013	0.887	0.000	0.028	0.000	0.900	1.333	H1-3+VT
	23.4223 - 21.293	0.013	0.887	0.000	0.028	0.000	0.900	1.333	H1-3+VT
	21.293 - 19.1637	0.013	0.886	0.000	0.027	0.000	0.900	1.333	H1-3+VT
	19.1637 - 17.0344	0.013	0.886	0.000	0.027	0.000	0.899	1.333	H1-3+VT
	17.0344 - 14.9051	0.013	0.885	0.000	0.027	0.000	0.899	1.333	H1-3+VT
	14.9051 - 12.7758	0.013	0.885	0.000	0.027	0.000	0.898	1.333	H1-3+VT
	12.7758 - 10.6465	0.013	0.884	0.000	0.027	0.000	0.898	1.333	H1-3+VT
	10.6465 - 8.51719	0.014	0.883	0.000	0.027	0.000	0.897	1.333	H1-3+VT
	8.51719 - 6.38789	0.014	0.883	0.000	0.027	0.000	0.896	1.333	H1-3+VT
	6.38789 - 4.2586	0.014	0.882	0.000	0.027	0.000	0.896	1.333	H1-3+VT
	4.2586 - 2.1293	0.014	0.881	0.000	0.027	0.000	0.895	1.333	H1-3+VT
	2.1293 - 0	0.014	0.880	0.000	0.027	0.000	0.894	1.333	H1-3+VT

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
L1	191.5 - 172.46	Pole	TP20.46x15.5x0.188	1	-1.760	602.356	25.1	Pass	
L2	172.46 - 127.753	Pole	TP31.6x19.282x0.313	2	-11.793	1553.518	61.2	Pass	
L3	127.753 - 83.0833	Pole	TP42.19x29.815x0.438	3	-21.421	2908.153	67.0	Pass	
L4	83.0833 - 40.4567	Pole	TP52.59x39.847x0.5	4	-34.667	4143.924	64.7	Pass	
L5	40.4567 - 0	Pole	TP62x49.727x0.5	5	-41.009	4348.339	67.6	Pass	
							Summary		
							Pole (L5)	67.6	Pass
							RATING =	67.6	Pass

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 876355 TOWER ID: C_BASELEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data	
Project No.:	1426691400
Site Name:	Upper Stepney
Site ID:	876355
Pole Manufacturer:	Other

Reactions		
Moment:	4232	ft-kips
Axial:	53	kips
Shear:	34	kips

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	71	in

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

Anchor Rod Results
 Maximum Rod Tension: 117.0 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 60.0% Pass

Rigid
Service, ASD
Fty*ASIF

Plate Data		
Diam:	77	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.20	in

Base Plate Results
 Base Plate Stress: 48.5 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 80.8% Pass

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
34.60

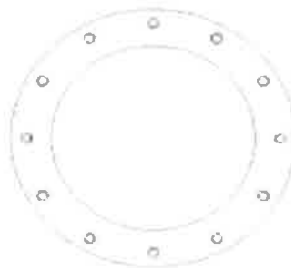
Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

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

Pole Results
 Pole Punching Shear Check: n/a

Pole Data		
Diam:	62	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor	
ASIF:	1.333



* 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

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

Site Data

BU#: 876355
Site Name: Upper Stepney
App #: 211123, Rev. 0

Enter Load Factors Below:

For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Pad & Pier Data

Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	5	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	30	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	7.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	56.25	ft^2
Pier Height:	3.00	ft
Soil (above pad) Height:	2.00	ft

Soil Parameters

Unit Weight, γ :	170.0	pcf
Ultimate Bearing Capacity, q_n :	24.00	ksf
Strength Reduct. factor, ϕ :	0.75	
Angle of Friction, Φ :	30.0	degrees
Undrained Shear Strength, C_u :	0.00	ksf
Allowable Bearing: $\phi * q_n$:	18.00	ksf
Passive Pres. Coeff., K_p :	3.00	

Forces/Moments due to Wind and Lateral Soil

Minimum of ($\phi * \text{Ultimate Pad Passive Force, } V_u$):	45.9	kips
Pad Force Location Above D:	1.29	ft
ϕ (Passive Pressure Moment):	59.01	ft-kips
Factored O.T. M(WL), "1.6W":	5988.6	ft-kips
Factored OT (MW-Msoil), M1	5929.59	ft-kips

Resistance due to Foundation Gravity

Soil Wedge Projection grade, a:	1.15	ft
Sum of Soil Wedges Wt:	12.66	kips
Soil Wedges ecc, K1:	10.98	ft
Ftg+Soil above Pad wt:	717.2	kips
Unfactored (Total ftg-soil Wt):	729.85	kips
1.2D. No Soil Wedges.	924.23	kips
0.9D. With Soil Wedges	704.56	kips

Resistance due to Cohesion (Vertical)

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

Monopole Base Reaction Forces

TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	53	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	34	kips
Unfactored WL Moment, M:	4232	ft-kips

Load Factor Shaft Factored Loads

Load Factor	Shaft Factored Loads	
1.20	1.2D+1.6W, Pu:	63.6 kips
0.90	0.9D+1.6W, Pu:	47.7 kips
1.35	Vu:	45.9 kips
	Mu:	5713.2 ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	924.23	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	5929.59	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 6.42 ft
 Orthogonal qu = 1.91 ksf
 qu/ $\phi * q_n$ Ratio = 10.59% Pass

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 4.54 ft
 Diagonal qu = 2.11 ksf
 qu/ $\phi * q_n$ Ratio = 11.72% Pass

<-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	704.56	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	5804.48	ft-kips

Orthogonal ecc3 = M2/P2 = 8.24 ft
 Ortho Non Bearing Length, NBL = 16.48 ft
 Orthogonal qu = 1.74 ksf
 Diagonal qu = 2.09 ksf

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

Actual M:	4232.00		
M Orthogonal:	7439.91	56.88%	Pass
M Diagonal:	7439.91	56.88%	Pass