

June 16, 2014

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

Re: **Notice of Exempt Modification – Facility Modification
580 Chapel Street, Thomaston, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 152-foot level on an existing 175-foot tower at 580 Chapel Street in Thomaston, Connecticut (the “Property”). The tower is owned by Crown Castle. Cellco’s use of the tower was approved by the Council in 2003. 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 152-foot level on the tower. Cellco also intends to install three (3) remote radio heads (“RRHs”) behind its new 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable attached to the outside of the monopole. Included in Attachment 1 are specifications for Cellco’s replacement antenna, 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 Edmond V. Mone, First Selectman of the Town of Thomaston. A copy of this letter is also being sent to Susan and Walter MacDonald, the owners 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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1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new antennas and RRHs will be installed at the 152-foot level on the existing 175-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:

Edmond V. Mone, Thomaston First Selectman
Susan and Walter MacDonald
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.

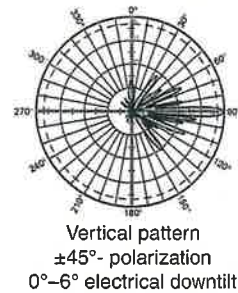
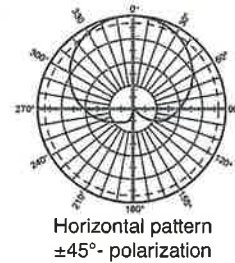
- 0-6° downtilt range.
- UV resistant pulltruded fiberglass radome.
- DC Grounded metallic parts for impulse suppression.
- No moving electrical connections.
- Wideband vector dipole technology.
- Optional remote downtilt Control.
- Will accommodate future 3G / UMTS applications.

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 18 18 16 15 dB	0° 2° 4° 6° T 18 18 17 16 dB	0° 2° 4° 6° T 18 18 18 18 dB



* 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

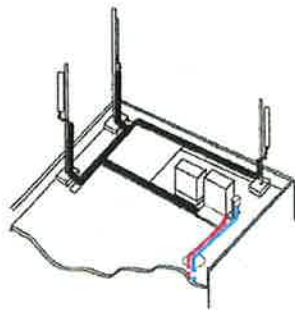
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent 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

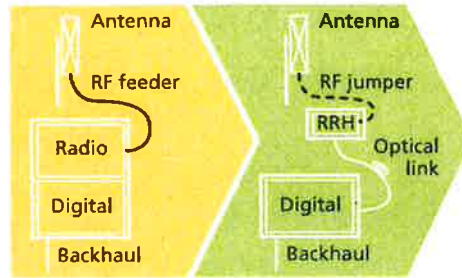
Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation 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

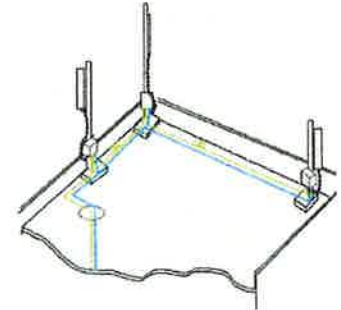
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless)
- Noise-free
- Best-in-class power efficiency, with significantly reduced energy consumption



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 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

Structure			
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
Mechanical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	0.68 (0.205)
DC-Resistance Power Cable, 8 4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Optical Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[μm]	50/125
Primary Coating (Acrylate)		[μm]	245
Buffer Diameter, Nominal		[μm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-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
Environment			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

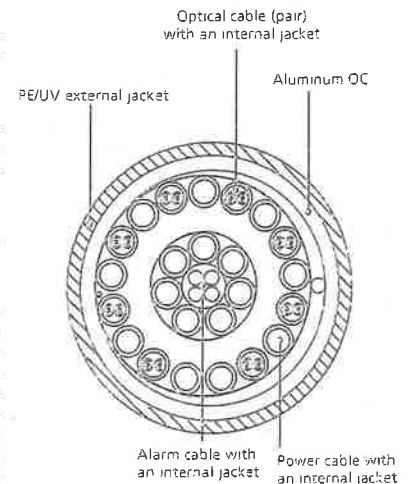


Figure 2: Construction Detail

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

ATTACHMENT 2

ATTACHMENT 3



Date: **March 18, 2014**

Holly Haas
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:	thomaston center
Crown Castle Designation:	Crown Castle BU Number:	823530
	Crown Castle Site Name:	CT364/Chapel St. Monopole
	Crown Castle JDE Job Number:	264264
	Crown Castle Work Order Number:	725396
	Crown Castle Application Number:	213940 Rev. 0
Engineering Firm Designation:	FDH Engineering, Inc. Project Number:	14251J1400
Site Data:	580 Chapel Street, Thomaston, Litchfield County, CT	
	Latitude 41° 39' 48.48", Longitude -73° 4' 27.41"	
	175 Foot - Monopole Tower	

Dear Holly Haas,

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 626232, in accordance with application 213940, revision 0.

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

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

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 80 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:

Jarel Duncan, EI
Project Engineer

Reviewed by:

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



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1) INTRODUCTION

This tower is a 175 ft Monopole tower designed by PiROD in October of 2002. The tower was originally designed for a wind speed of 80 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 80 mph with no ice, 28 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
152.0	152.0	3	alcatel lucent	RRH2x40-AWS	1	1-5/8	-
		3	kathrein	742 213 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			

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	
172.0	175.0	2	andrew	VHLP2.6	-	-	2	
		1	bird technologies group	OA20-67-DIN				
		2	decibel	DB201-F				
	174.0	2	crown mounts	Pipe Mount [PM 601-1]	-	-	2	
		1	crown mounts	Side Arm Mount [SO 305-1]				
	172.0	172.0	1	andrew	ATJB200-A01-007	17	1-5/8 7/8	1
			3	andrew	ETW190VS12UB			
			1	andrew	HP2-102			
			1	crown mounts	Platform Mount [LP 701-1]			
			9	ericsson	AIR 21 w/ Mount Pipe			
			3	ericsson	AIR 33 w/ Mount Pipe			
	170.0	170.0	-	-	-	4	7/8	2
			1	crown mounts	Side Arm Mount [SO 305-1]	-	-	
	168.0	168.0	1	lone star electronics	LS-230C	-	-	-
162.0	162.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	3	1-1/4	1	
		3	alcatel lucent	PCS 1900MHz 2x40W				
		1	crown mounts	Platform Mount [LP 712-1]				
		3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
152.0	152.0	3	antel	BXA-171085-12BF w/ Mount Pipe	18	1-5/8	1
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	antel	LPA-80080/4CF w/ Mount Pipe			
		1	crown mounts	Platform Mount [LP 403-1]			
142.0	142.0	1	andrew	APTDC-BDFDM-DB	2 1	1/2 5/8	2
		1	raycap	DC6-48-60-18-8F			
		6	ericsson	RRUS 11			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	12	1-5/8	1
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP2140X			
115.0	115.0	1	crown mounts	Pipe Mount [PM 501-3]	6	1-5/8	1
		3	rfs celwave	APXV18-206517S-C w/ Mount Pipe			
50.0	50.0	1	crown mounts	Side Arm Mount [SO 701-1]	1	1/2	1
		1	pctel	GPS-TMG-HR-26NCM			

Notes:

- 1) Existing Equipment
- 2) Reserved 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)
172	172	12	andrew	RR65-19-00XP	12	1-5/8
162	162	12	andrew	RR65-19-00XP	12	1-5/8
152	152	12	andrew	RR65-19-00XP	12	1-5/8
142	142	12	andrew	RR65-19-00XP	12	1-5/8
125	125	3	generic	Whip Antennas	3	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	ATC	3462674	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PIROD	3464631	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PIROD	3462695	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.
- 5) Base plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

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	175 - 164.25	Pole	TP26x22x0.25	1	-4.25	1017.41	9.1	Pass
L2	164.25 - 129.67	Pole	TP34.0625x24.4135x0.3125	2	-14.35	1689.48	52.7	Pass
L3	129.67 - 96	Pole	TP41.75x32.452x0.375	3	-21.64	2488.54	70.3	Pass
L4	96 - 63.17	Pole	TP49.0625x39.8421x0.375	4	-30.12	2928.99	83.9	Pass
L5	63.17 - 31.17	Pole	TP56.125x46.9602x0.375	5	-39.79	3355.16	91.2	Pass
L6	31.17 - 0	Pole	TP62.9375x53.8475x0.375	6	-52.24	3684.96	99.9	Pass
							Summary	
						Pole (L6)	99.9	Pass
						Rating =	99.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	89.2	Pass
1,2	Base Plate	0	OK	Pass
1	Base Foundation Soil Interaction	0	99.6	Pass

Structure Rating (max from all components) =	99.9%
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Notes:

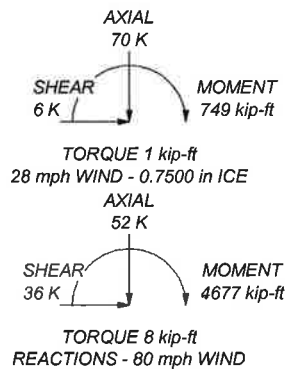
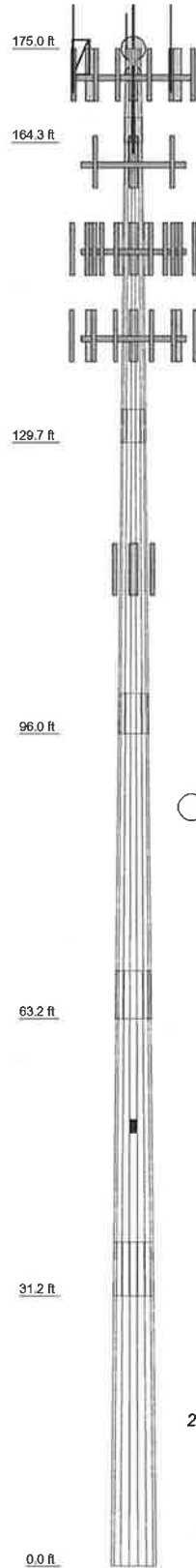
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Base plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.75	18	0.2500	2.92	22.0000	26.0000	A572-65	0.7
2	37.50	18	0.3125	3.63	24.4135	34.0825	A572-65	3.7
3	37.50	18	0.3750	4.67	32.4520	41.7500	A572-65	5.6
4	37.50	18	0.3750	5.50	39.8421	49.0625	A572-65	6.7
5	37.50	18	0.3750	6.25	46.9602	56.1250	A572-65	7.8
6	37.42	18	0.3750	53.8475	62.8375		A572-65	8.8
								33.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	175	BXA-171085-12BF w/ Mount Pipe	152
ATJB200-A01-007	172	BXA-70063-6CF-2 w/ Mount Pipe	152
ETW190VS12UB	172	(2) LPA-80080/4CF W/Mount Pipe	152
DB201-F	172	RRH2x40-AWS	152
(2) AIR 21 w/ Mount Pipe	172	742 213 w/ Mount Pipe	152
(3) AIR 21 w/ Mount Pipe	172	DB-T1-6Z-8AB-0Z	152
AIR 33 w/ Mount Pipe	172	RRH2x40-AWS	152
ETW190VS12UB	172	742 213 w/ Mount Pipe	152
DB201-F	172	RRH2x40-AWS	152
(2) AIR 21 w/ Mount Pipe	172	742 213 w/ Mount Pipe	152
AIR 33 w/ Mount Pipe	172	Platform Mount (LP 403-1)	152
ETW190VS12UB	172	BXA-171085-12BF w/ Mount Pipe	152
(2) AIR 21 w/ Mount Pipe	172	BXA-70063-6CF-2 w/ Mount Pipe	152
AIR 33 w/ Mount Pipe	172	(2) LPA-80080/4CF W/Mount Pipe	152
OA20-67-DIN	172	AM-X-CD-16-65-00T-RET w/ Mount Pipe	142
LS-230C	172		
6x2.5" Pipe Mount	172	(2) 7770.00 w/ Mount Pipe	142
Pipe Mount (PM 601-1)	172	(2) LGP2140X	142
Pipe Mount (PM 601-1)	172	(2) RRUS 11	142
Side Arm Mount (SO 305-1)	172	AM-X-CD-16-65-00T-RET w/ Mount Pipe	142
Side Arm Mount (SO 305-1)	172		
Platform Mount (LP 701-1)	172	(2) 7770.00 w/ Mount Pipe	142
HP2-102	172	(2) LGP2140X	142
VHLP2.6	172	APTDC-BDFDM-DB	142
VHLP2.6	172	(2) RRUS 11	142
800MHz 2X50W RRH W/FILTER	162	AM-X-CD-16-65-00T-RET w/ Mount Pipe	142
PCS 1900MHz 2x40W	162		
APXVSP18-C-A20 w/ Mount Pipe	162	DC6-18-60-18-8F	142
800MHz 2X50W RRH W/FILTER	162	Empty Pipe Mount	142
PCS 1900MHz 2x40W	162	Empty Pipe Mount	142
APXVSP18-C-A20 w/ Mount Pipe	162	Empty Pipe Mount	142
(2) Empty Pipe Mount	162	Platform Mount (LP 303-1)	142
(2) Empty Pipe Mount	162	(2) 7770.00 w/ Mount Pipe	142
(2) Empty Pipe Mount	162	(2) LGP2140X	142
Platform Mount (LP 712-1)	162	(2) RRUS 11	142
800MHz 2X50W RRH W/FILTER	162	Pipe Mount (PM 501-3)	115
PCS 1900MHz 2x40W	162	APXV18-206517S-C w/ Mount Pipe	115
APXVSP18-C-A20 w/ Mount Pipe	162	APXV18-206517S-C w/ Mount Pipe	115
BXA-171085-12BF w/ Mount Pipe	152	APXV18-206517S-C w/ Mount Pipe	115
BXA-70063-6CF-2 w/ Mount Pipe	152	Side Arm Mount (SO 701-1)	50
(2) LPA-80080/4CF W/Mount Pipe	152	GPS-TMG-HR-26NCM	50

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 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.
5. TOWER RATING: 99.9%

 Tower Analysis	FDH Engineering, Inc. 6521 Meriden Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031		Job: BU:# 823530 CT364/CHAPEL ST. MONOPOLE
	Project: 14251J1400		Client: Crown Castle
	Drawn by: Jarel Duncan		App'd:
	Code: TIA/EIA-222-F		Date: 03/18/14
	Path:		Scale: NTS Dwg No. E-1

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Tower Input Data

There is a pole section.

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

The following design criteria apply:

Tower is located in Litchfield County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 28 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

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 <input checked="" type="checkbox"/> Use Code Stress Ratios <input checked="" type="checkbox"/> Use Code Safety Factors - Guys <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> Assume Rigid Index Plate <input checked="" type="checkbox"/> Use Clear Spans For Wind Area <input checked="" type="checkbox"/> Use Clear Spans For KL/r Retension Guys To Initial Tension <input checked="" type="checkbox"/> Bypass Mast Stability Checks <input checked="" type="checkbox"/> Use Azimuth Dish Coefficients <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> Consider Feedline Torque Include Angle Block Shear Check Poles <input checked="" type="checkbox"/> Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

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	175.00-164.25	10.75	2.92	18	22.0000	26.0000	0.2500	1.0000	A572-65 (65 ksi)
L2	164.25-129.67	37.50	3.83	18	24.4135	34.0625	0.3125	1.2500	A572-65 (65 ksi)
L3	129.67-96.00	37.50	4.67	18	32.4520	41.7500	0.3750	1.5000	A572-65 (65 ksi)
L4	96.00-63.17	37.50	5.50	18	39.8421	49.0625	0.3750	1.5000	A572-65 (65 ksi)
L5	63.17-31.17	37.50	6.25	18	46.9602	56.1250	0.3750	1.5000	A572-65

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Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade (65 ksi) A572-65 (65 ksi)
L6	31.17-0.00	37.42		18	53.8475	62.9375	0.3750	1.5000	

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	26.4011	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
L2	25.5530	23.9052	1754.2801	8.5559	12.4021	141.4508	3510.8685	11.9549	3.7468	11.99
	34.5880	33.4758	4817.4335	11.9812	17.3038	278.4040	9641.2058	16.7411	5.4450	17.424
L3	33.9169	38.1797	4963.1505	11.3873	16.4856	301.0593	9932.8316	19.0935	5.0516	13.471
	42.3941	49.2466	10650.9822	14.6881	21.2090	502.1916	21315.9793	24.6280	6.6880	17.835
L4	41.6227	46.9757	9244.4482	14.0108	20.2398	456.7464	18501.0604	23.4923	6.3522	16.939
	49.8194	57.9503	17355.1378	17.2841	24.9238	696.3293	34733.1119	28.9807	7.9750	21.267
L5	49.0495	55.4480	15202.6318	16.5377	23.8558	637.2728	30425.2677	27.7293	7.6050	20.28
	56.9908	66.3564	26056.1506	19.7913	28.5115	913.8821	52146.5865	33.1845	9.2180	24.581
L6	56.2199	63.6457	22991.5269	18.9827	27.3545	840.5012	46013.3066	31.8289	8.8172	23.512
	63.9084	74.4650	36822.8946	22.2097	31.9722	1151.7142	73694.2417	37.2396	10.4170	27.779

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in
L1				1	1	1		
175.00-164.25				1	1	1		
L2				1	1	1		
164.25-129.67				1	1	1		
L3				1	1	1		
129.67-96.00				1	1	1		
L4				1	1	1		
96.00-63.17				1	1	1		
L5				1	1	1		
63.17-31.17				1	1	1		
L6				1	1	1		
31.17-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}	Weight klf
						ft ² /ft	
**							
AVA5-50(7/8")	A	No	Inside Pole	172.00 - 8.00	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00
LDF7-50A(1-5/8")	A	No	Inside Pole	172.00 - 8.00	17	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	klf	
AVA5-50(7/8")	A	No	Inside Pole	172.00 - 8.00	4	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
**								
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	115.00 - 8.00	3	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	162.00 - 115.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	162.00 - 115.00	1	No Ice	0.15	0.00
						1/2" Ice	0.25	0.00
						1" Ice	0.35	0.00
						2" Ice	0.55	0.00
						4" Ice	0.95	0.00
**								
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	152.00 - 8.00	1	No Ice	0.20	0.00
						1/2" Ice	0.30	0.00
						1" Ice	0.40	0.00
						2" Ice	0.60	0.01
						4" Ice	1.00	0.03
LDF7-50A(1-5/8")	A	No	Inside Pole	152.00 - 8.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
LDF7-50A(1-5/8")	C	No	Inside Pole	152.00 - 8.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
**								
LDF7-50A(1-5/8")	B	No	Inside Pole	142.00 - 8.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
AMR-S304(5/8)	B	No	Inside Pole	142.00 - 8.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
FSJ4P-50B-40(1/2")	B	No	Inside Pole	142.00 - 8.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
**								
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	115.00 - 8.00	1	No Ice	0.20	0.00
						1/2" Ice	0.30	0.00
						1" Ice	0.40	0.00
						2" Ice	0.60	0.01
						4" Ice	1.00	0.03
LDF7-50A(1-5/8")	C	No	Inside Pole	115.00 - 8.00	5	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight
						In Face	Out Face	klf
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
						4" Ice	0.00	0.00
** LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	50.00 - 8.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.01
						4" Ice	0.00	0.02
** ** Safety Line 3/8	C	No	CaAa (Out Of Face)	175.00 - 8.00	1	No Ice	0.04	0.00
						1/2" Ice	0.14	0.00
						1" Ice	0.24	0.00
						2" Ice	0.44	0.00
						4" Ice	0.84	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight K
			ft ²	ft ²	ft ²	ft ²	
L1	175.00-164.25	A	0.000	0.000	0.000	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.403	0.00
L2	164.25-129.67	A	0.000	0.000	0.000	4.421	0.67
		B	0.000	0.000	0.000	0.000	0.13
		C	0.000	0.000	0.000	6.275	0.30
L3	129.67-96.00	A	0.000	0.000	0.000	6.667	0.72
		B	0.000	0.000	0.000	0.000	0.35
		C	0.000	0.000	0.000	7.284	0.53
L4	96.00-63.17	A	0.000	0.000	0.000	6.500	0.71
		B	0.000	0.000	0.000	0.000	0.34
		C	0.000	0.000	0.000	7.731	0.60
L5	63.17-31.17	A	0.000	0.000	0.000	6.336	0.69
		B	0.000	0.000	0.000	0.000	0.33
		C	0.000	0.000	0.000	7.536	0.59
L6	31.17-0.00	A	0.000	0.000	0.000	4.588	0.50
		B	0.000	0.000	0.000	0.000	0.24
		C	0.000	0.000	0.000	5.457	0.43

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight K
				ft ²	ft ²	ft ²	ft ²	
L1	175.00-164.25	A	0.913	0.000	0.000	0.000	0.000	0.12
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.365	0.01
L2	164.25-129.67	A	0.897	0.000	0.000	0.000	8.498	0.75
		B		0.000	0.000	0.000	0.000	0.13
		C		0.000	0.000	0.000	18.490	0.33
L3	129.67-96.00	A	0.869	0.000	0.000	0.000	12.705	0.83
		B		0.000	0.000	0.000	0.000	0.35
		C		0.000	0.000	0.000	19.361	0.62

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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
L4	96.00-63.17	A	0.833	0.000	0.000	0.000	12.205	0.81
		B		0.000	0.000	0.000	0.000	0.34
		C		0.000	0.000	0.000	19.141	0.73
L5	63.17-31.17	A	0.783	0.000	0.000	0.000	11.669	0.78
		B		0.000	0.000	0.000	0.000	0.33
		C		0.000	0.000	0.000	18.202	0.74
L6	31.17-0.00	A	0.750	0.000	0.000	0.000	8.215	0.56
		B		0.000	0.000	0.000	0.000	0.24
		C		0.000	0.000	0.000	12.712	0.54

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	175.00-164.25	-0.0478	0.0276	-0.2410	0.1391
L2	164.25-129.67	-0.2111	-0.0576	-0.5070	0.0110
L3	129.67-96.00	-0.2496	-0.1182	-0.5537	-0.0990
L4	96.00-63.17	-0.2742	-0.1079	-0.5857	-0.0931
L5	63.17-31.17	-0.2782	-0.1095	-0.5928	-0.0966
L6	31.17-0.00	-0.2099	-0.0826	-0.4482	-0.0757

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Lightning Rod	C	From Leg	0.00	0.0000	175.00	No Ice	0.25	0.25	0.03
			0.00			1/2" Ice	0.66	0.66	0.03
			2.00			1" Ice	0.97	0.97	0.04
						2" Ice	1.49	1.49	0.06
						4" Ice	2.68	2.68	0.14
** **									
ATJB200-A01-007	A	From Leg	4.00	-20.0000	172.00	No Ice	0.44	0.14	0.00
			0.00			1/2" Ice	0.53	0.21	0.01
			0.00			1" Ice	0.63	0.28	0.01
						2" Ice	0.86	0.45	0.02
						4" Ice	1.42	0.90	0.07
ETW190VS12UB	A	From Leg	4.00	70.0000	172.00	No Ice	0.66	0.37	0.01
			0.00			1/2" Ice	0.78	0.46	0.02
			0.00			1" Ice	0.90	0.56	0.03
						2" Ice	1.17	0.80	0.04
						4" Ice	1.82	1.36	0.11
DB201-F	A	From Leg	4.00	0.0000	172.00	No Ice	0.40	0.40	0.01
			0.00			1/2" Ice	0.72	0.72	0.01
						1" Ice	1.04	1.04	0.02
			3.00			2" Ice	1.68	1.68	0.02

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Lateral			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
(2) AIR 21 w/ Mount Pipe	A	From Leg	4.00	-20.0000	172.00	4" Ice	2.96	2.96	0.03
						No Ice	6.75	5.70	0.10
						1/2" Ice	7.31	6.62	0.16
						1" Ice	7.84	7.41	0.23
						2" Ice	8.95	9.04	0.38
(3) AIR 21 w/ Mount Pipe	A	From Leg	4.00	70.0000	172.00	4" Ice	11.28	12.52	0.80
						No Ice	6.75	5.70	0.10
						1/2" Ice	7.31	6.62	0.16
						1" Ice	7.84	7.41	0.23
						2" Ice	8.95	9.04	0.38
AIR 33 w/ Mount Pipe	A	From Leg	4.00	-20.0000	172.00	4" Ice	11.28	12.52	0.80
						No Ice	6.54	5.82	0.13
						1/2" Ice	7.04	6.63	0.19
						1" Ice	7.54	7.39	0.25
						2" Ice	8.58	8.96	0.40
ETW190VS12UB	B	From Leg	4.00	40.0000	172.00	4" Ice	10.78	12.32	0.82
						No Ice	0.66	0.37	0.01
						1/2" Ice	0.78	0.46	0.02
						1" Ice	0.90	0.56	0.03
						2" Ice	1.17	0.80	0.04
DB201-F	B	From Leg	4.00	60.0000	172.00	4" Ice	1.82	1.36	0.11
						No Ice	0.40	0.40	0.01
						1/2" Ice	0.72	0.72	0.01
						1" Ice	1.04	1.04	0.02
						2" Ice	1.68	1.68	0.02
(2) AIR 21 w/ Mount Pipe	B	From Leg	4.00	40.0000	172.00	4" Ice	2.96	2.96	0.03
						No Ice	6.75	5.70	0.10
						1/2" Ice	7.31	6.62	0.16
						1" Ice	7.84	7.41	0.23
						2" Ice	8.95	9.04	0.38
AIR 33 w/ Mount Pipe	B	From Leg	4.00	60.0000	172.00	4" Ice	11.28	12.52	0.80
						No Ice	6.54	5.82	0.13
						1/2" Ice	7.04	6.63	0.19
						1" Ice	7.54	7.39	0.25
						2" Ice	8.58	8.96	0.40
ETW190VS12UB	C	From Leg	4.00	10.0000	172.00	4" Ice	10.78	12.32	0.82
						No Ice	0.66	0.37	0.01
						1/2" Ice	0.78	0.46	0.02
						1" Ice	0.90	0.56	0.03
						2" Ice	1.17	0.80	0.04
(2) AIR 21 w/ Mount Pipe	C	From Leg	4.00	10.0000	172.00	4" Ice	1.82	1.36	0.11
						No Ice	6.75	5.70	0.10
						1/2" Ice	7.31	6.62	0.16
						1" Ice	7.84	7.41	0.23
						2" Ice	8.95	9.04	0.38
AIR 33 w/ Mount Pipe	C	From Leg	4.00	10.0000	172.00	4" Ice	11.28	12.52	0.80
						No Ice	6.54	5.82	0.13
						1/2" Ice	7.04	6.63	0.19
						1" Ice	7.54	7.39	0.25
						2" Ice	8.58	8.96	0.40
OA20-67-DIN	C	From Leg	7.00	60.0000	172.00	4" Ice	10.78	12.32	0.82
						No Ice	1.80	1.80	0.01
						1/2" Ice	2.50	2.50	0.01
						1" Ice	4.00	4.00	0.01
						2" Ice	5.50	5.50	0.02
LS-230C	C	From Face	7.00	60.0000	172.00	4" Ice	7.00	7.00	0.03
						No Ice	1.61	1.61	0.01

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.00						
			-4.00			1/2" Ice	2.34	2.34	0.02
						1" Ice	2.80	2.80	0.04
						2" Ice	3.68	3.68	0.09
						4" Ice	5.55	5.55	0.25
6'x2.5" Pipe Mount	A	From Leg	4.00		0.0000	No Ice	1.44	1.44	0.03
			0.00			1/2" Ice	1.93	1.93	0.04
			0.00			1" Ice	2.30	2.30	0.06
						2" Ice	3.07	3.07	0.10
						4" Ice	4.71	4.71	0.24
Pipe Mount [PM 601-1]	A	From Leg	5.00		-20.0000	No Ice	3.00	0.90	0.07
			0.00			1/2" Ice	3.74	1.12	0.08
			2.00			1" Ice	4.48	1.34	0.09
						2" Ice	5.96	1.78	0.12
						4" Ice	8.92	2.66	0.18
Pipe Mount [PM 601-1]	A	From Leg	5.00		-6.0000	No Ice	3.00	0.90	0.07
			0.00			1/2" Ice	3.74	1.12	0.08
			2.00			1" Ice	4.48	1.34	0.09
						2" Ice	5.96	1.78	0.12
						4" Ice	8.92	2.66	0.18
Side Arm Mount [SO 305-1]	C	From Leg	6.00		60.0000	No Ice	0.94	1.41	0.03
			0.00			1/2" Ice	1.48	2.17	0.04
			2.00			1" Ice	2.02	2.93	0.06
						2" Ice	3.10	4.45	0.08
						4" Ice	5.26	7.49	0.14
Side Arm Mount [SO 305-1]	C	From Face	6.00		60.0000	No Ice	0.94	1.41	0.03
			0.00			1/2" Ice	1.48	2.17	0.04
			-2.00			1" Ice	2.02	2.93	0.06
						2" Ice	3.10	4.45	0.08
						4" Ice	5.26	7.49	0.14
Platform Mount [LP 701-1]	C	None			0.0000	No Ice	59.15	59.15	2.75
						1/2" Ice	71.12	71.12	3.42
						1" Ice	83.09	83.09	4.10
						2" Ice	107.03	107.03	5.45
						4" Ice	154.91	154.91	8.15
**									
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00		-20.0000	No Ice	2.40	2.25	0.06
			0.00			1/2" Ice	2.61	2.46	0.09
			0.00			1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
PCS 1900MHz 2x40W	A	From Leg	4.00		-20.0000	No Ice	2.74	1.46	0.04
			0.00			1/2" Ice	2.97	1.65	0.06
			0.00			1" Ice	3.21	1.84	0.08
						2" Ice	3.71	2.27	0.14
						4" Ice	4.82	3.22	0.28
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.00		-20.0000	No Ice	8.50	6.95	0.08
			0.00			1/2" Ice	9.15	8.13	0.15
			0.00			1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00		-10.0000	No Ice	2.40	2.25	0.06
			0.00			1/2" Ice	2.61	2.46	0.09
			0.00			1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
PCS 1900MHz 2x40W	B	From Leg	4.00		-10.0000	No Ice	2.74	1.46	0.04
			0.00			1/2" Ice	2.97	1.65	0.06

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz	Lateral					
			0.00						
						1" Ice	3.21	1.84	0.08
						2" Ice	3.71	2.27	0.14
						4" Ice	4.82	3.22	0.28
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	-10.0000	162.00	No Ice	8.50	6.95	0.08
			0.00			1/2" Ice	9.15	8.13	0.15
			0.00			1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00	-20.0000	162.00	No Ice	2.40	2.25	0.06
			0.00			1/2" Ice	2.61	2.46	0.09
			0.00			1" Ice	2.83	2.68	0.11
						2" Ice	3.30	3.13	0.17
						4" Ice	4.34	4.15	0.34
PCS 1900MHz 2x40W	C	From Leg	4.00	-20.0000	162.00	No Ice	2.74	1.46	0.04
			0.00			1/2" Ice	2.97	1.65	0.06
			0.00			1" Ice	3.21	1.84	0.08
						2" Ice	3.71	2.27	0.14
						4" Ice	4.82	3.22	0.28
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	-20.0000	162.00	No Ice	8.50	6.95	0.08
			0.00			1/2" Ice	9.15	8.13	0.15
			0.00			1" Ice	9.77	9.02	0.23
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
(2) Empty Pipe Mount	A	From Face	4.00	0.0000	162.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
(2) Empty Pipe Mount	B	From Face	4.00	0.0000	162.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
(2) Empty Pipe Mount	C	From Face	4.00	0.0000	162.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
						4" Ice	3.93	3.93	0.20
Platform Mount [LP 712-1]	C	None		0.0000	162.00	No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96
						2" Ice	46.17	46.17	2.58
						4" Ice	67.81	67.81	3.82
**									
BXA-171085-12BF w/ Mount Pipe	A	From Leg	4.00	0.0000	152.00	No Ice	4.97	5.23	0.04
			0.00			1/2" Ice	5.52	6.39	0.09
			0.00			1" Ice	6.04	7.26	0.14
						2" Ice	7.09	9.05	0.27
						4" Ice	9.36	12.82	0.67
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	152.00	No Ice	7.97	5.80	0.04
			0.00			1/2" Ice	8.61	6.95	0.10
			0.00			1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
(2) LPA-80080/4CF W/Mount Pipe	A	From Leg	4.00	0.0000	152.00	No Ice	2.62	6.06	0.01
			0.00			1/2" Ice	2.92	6.45	0.05
			0.00			1" Ice	3.23	6.86	0.08

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
BXA-171085-12BF w/ Mount Pipe	B	From Leg	4.00	0.0000	152.00	2" Ice	3.96	7.69	0.17
						4" Ice	5.53	9.47	0.41
						No Ice	4.97	5.23	0.04
						1/2" Ice	5.52	6.39	0.09
						1" Ice	6.04	7.26	0.14
						2" Ice	7.09	9.05	0.27
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	152.00	4" Ice	9.36	12.82	0.67
						No Ice	7.97	5.80	0.04
						1/2" Ice	8.61	6.95	0.10
						1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
(2) LPA-80080/4CF W/Mount Pipe	B	From Leg	4.00	0.0000	152.00	No Ice	2.62	6.06	0.01
						1/2" Ice	2.92	6.45	0.05
						1" Ice	3.23	6.86	0.08
						2" Ice	3.96	7.69	0.17
						4" Ice	5.53	9.47	0.41
						No Ice	4.97	5.23	0.04
BXA-171085-12BF w/ Mount Pipe	C	From Leg	4.00	0.0000	152.00	1/2" Ice	5.52	6.39	0.09
						1" Ice	6.04	7.26	0.14
						2" Ice	7.09	9.05	0.27
						4" Ice	9.36	12.82	0.67
						No Ice	7.97	5.80	0.04
						1/2" Ice	8.61	6.95	0.10
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	152.00	1" Ice	9.22	7.82	0.17
						2" Ice	10.46	9.60	0.34
						4" Ice	13.07	13.37	0.80
						No Ice	2.62	6.06	0.01
						1/2" Ice	2.92	6.45	0.05
						1" Ice	3.23	6.86	0.08
(2) LPA-80080/4CF W/Mount Pipe	C	From Leg	4.00	0.0000	152.00	2" Ice	3.96	7.69	0.17
						4" Ice	5.53	9.47	0.41
						No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
RRH2x40-AWS	A	From Leg	4.00	0.0000	152.00	4" Ice	4.61	3.48	0.28
						No Ice	5.37	4.62	0.05
						1/2" Ice	5.95	6.00	0.09
						1" Ice	6.50	6.98	0.15
						2" Ice	7.61	8.85	0.28
						4" Ice	9.93	12.79	0.68
742 213 w/ Mount Pipe	A	From Leg	4.00	0.0000	152.00	No Ice	5.60	2.33	0.04
						1/2" Ice	5.92	2.56	0.08
						1" Ice	6.24	2.79	0.12
						2" Ice	6.91	3.28	0.21
						4" Ice	8.37	4.37	0.45
						No Ice	2.52	1.59	0.04
RRH2x40-AWS	B	From Leg	4.00	0.0000	152.00	1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
						No Ice	5.37	4.62	0.05
						1/2" Ice	5.95	6.00	0.09
742 213 w/ Mount Pipe	B	From Leg	4.00	0.0000	152.00	1" Ice	6.50	6.98	0.15
						2" Ice	7.61	8.85	0.28
						4" Ice	9.93	12.79	0.68
						No Ice	5.37	4.62	0.05
						1/2" Ice	5.95	6.00	0.09
						1" Ice	6.50	6.98	0.15

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
RRH2x40-AWS	C	From Leg	4.00	0.0000	152.00	No Ice	2.52	1.59	0.04
			0.00			1/2" Ice	2.75	1.80	0.06
			0.00			1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
742 213 w/ Mount Pipe	C	From Leg	4.00	0.0000	152.00	No Ice	5.37	4.62	0.05
			0.00			1/2" Ice	5.95	6.00	0.09
			0.00			1" Ice	6.50	6.98	0.15
						2" Ice	7.61	8.85	0.28
Platform Mount [LP 403-1]	C	None		0.0000	152.00	4" Ice	9.93	12.79	0.68
						No Ice	18.85	18.85	1.50
						1/2" Ice	24.30	24.30	1.80
						1" Ice	29.75	29.75	2.09
** (2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	30.0000	142.00	2" Ice	40.65	40.65	2.69
			0.00			4" Ice	62.45	62.45	3.87
			0.00			No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
(2) LGP2140X	A	From Leg	4.00	30.0000	142.00	1" Ice	7.13	5.71	0.16
			0.00			2" Ice	8.16	7.16	0.29
			0.00			4" Ice	10.36	10.41	0.66
						No Ice	1.26	0.38	0.01
(2) RRUS 11	A	From Leg	4.00	30.0000	142.00	1/2" Ice	1.42	0.49	0.02
			0.00			1" Ice	1.58	0.62	0.03
			0.00			2" Ice	1.94	0.89	0.05
						4" Ice	2.75	1.54	0.13
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00	30.0000	142.00	No Ice	3.25	1.37	0.05
			0.00			1/2" Ice	3.49	1.55	0.07
			0.00			1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	30.0000	142.00	4" Ice	5.43	3.04	0.31
			0.00			No Ice	8.50	6.30	0.07
			0.00			1/2" Ice	9.15	7.48	0.14
						1" Ice	9.77	8.37	0.21
(2) LGP2140X	B	From Leg	4.00	30.0000	142.00	2" Ice	11.03	10.18	0.38
			0.00			4" Ice	13.68	14.02	0.87
			0.00			No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10
(2) RRUS 11	B	From Leg	4.00	30.0000	142.00	1" Ice	7.13	5.71	0.16
			0.00			2" Ice	8.16	7.16	0.29
			0.00			4" Ice	10.36	10.41	0.66
						No Ice	1.26	0.38	0.01
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	30.0000	142.00	1/2" Ice	1.42	0.49	0.02
			0.00			1" Ice	1.58	0.62	0.03
			0.00			2" Ice	1.94	0.89	0.05
						4" Ice	2.75	1.54	0.13
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	30.0000	142.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.10
						2" Ice	4.27	2.14	0.15
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	30.0000	142.00	4" Ice	5.43	3.04	0.31
			0.00			No Ice	8.50	6.30	0.07
			0.00			1/2" Ice	9.15	7.48	0.14
						1" Ice	9.77	8.37	0.21
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	30.0000	142.00	2" Ice	11.03	10.18	0.38
						4" Ice	13.68	14.02	0.87
						No Ice	6.12	4.25	0.06
						1/2" Ice	6.63	5.01	0.10

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.00						0.10
			0.00			1/2" Ice	6.63	5.01	0.16
						1" Ice	7.13	5.71	0.29
						2" Ice	8.16	7.16	0.66
						4" Ice	10.36	10.41	0.01
(2) LGP2140X	C	From Leg	4.00		30.0000	No Ice	1.26	0.38	0.02
			0.00			1/2" Ice	1.42	0.49	0.03
			0.00			1" Ice	1.58	0.62	0.05
						2" Ice	1.94	0.89	0.13
						4" Ice	2.75	1.54	0.00
APTDC-BDFDM-DB	C	From Leg	4.00		30.0000	No Ice	0.06	0.12	0.00
			0.00			1/2" Ice	0.09	0.17	0.00
			0.00			1" Ice	0.14	0.22	0.01
						2" Ice	0.26	0.36	0.04
						4" Ice	0.60	0.75	0.05
(2) RRUS 11	C	From Leg	4.00		30.0000	No Ice	3.25	1.37	0.07
			0.00			1/2" Ice	3.49	1.55	0.10
			0.00			1" Ice	3.74	1.74	0.15
						2" Ice	4.27	2.14	0.31
						4" Ice	5.43	3.04	0.07
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00		30.0000	No Ice	8.50	6.30	0.14
			0.00			1/2" Ice	9.15	7.48	0.21
			0.00			1" Ice	9.77	8.37	0.38
						2" Ice	11.03	10.18	0.87
						4" Ice	13.68	14.02	0.03
DC6-48-60-18-8F	C	From Leg	4.00		30.0000	No Ice	2.57	4.32	0.06
			0.00			1/2" Ice	2.80	4.60	0.10
			0.00			1" Ice	3.04	4.88	0.18
						2" Ice	3.54	5.49	0.40
						4" Ice	4.66	6.80	0.02
Empty Pipe Mount	A	From Leg	4.00		0.0000	No Ice	1.20	1.20	0.03
			0.00			1/2" Ice	1.50	1.50	0.04
			0.00			1" Ice	1.81	1.81	0.08
						2" Ice	2.47	2.47	0.20
						4" Ice	3.93	3.93	0.02
Empty Pipe Mount	B	From Leg	4.00		0.0000	No Ice	1.20	1.20	0.03
			0.00			1/2" Ice	1.50	1.50	0.04
			0.00			1" Ice	1.81	1.81	0.08
						2" Ice	2.47	2.47	0.20
						4" Ice	3.93	3.93	0.02
Empty Pipe Mount	C	From Leg	4.00		0.0000	No Ice	1.20	1.20	0.03
			0.00			1/2" Ice	1.50	1.50	0.04
			0.00			1" Ice	1.81	1.81	0.08
						2" Ice	2.47	2.47	0.20
						4" Ice	3.93	3.93	0.20
Platform Mount [LP 303-1]	C	None			0.0000	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
**									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00		30.0000	No Ice	5.40	4.70	0.05
			0.00			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
						2" Ice	7.55	8.51	0.28
						4" Ice	9.92	12.28	0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00		30.0000	No Ice	5.40	4.70	0.05
			0.00			1/2" Ice	5.96	5.86	0.10

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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 175.00-164.25	169.48	1.596	0	21.500	A	0.000	21.500	21.500	100.00	0.000	0.000
					B	0.000	21.500	100.00	0.000	0.000	
					C	0.000	21.500	100.00	0.000	0.403	
L2 164.25-129.67	146.24	1.53	0	85.337	A	0.000	85.337	85.337	100.00	0.000	4.421
					B	0.000	85.337	100.00	0.000	0.000	
					C	0.000	85.337	100.00	0.000	6.275	
L3 129.67-96.00	112.39	1.419	0	105.431	A	0.000	105.431	105.431	100.00	0.000	6.667
					B	0.000	105.431	100.00	0.000	0.000	
					C	0.000	105.431	100.00	0.000	7.284	
L4 96.00-63.17	79.34	1.285	0	123.185	A	0.000	123.185	123.185	100.00	0.000	6.500
					B	0.000	123.185	100.00	0.000	0.000	
					C	0.000	123.185	100.00	0.000	7.731	
L5 63.17-31.17	47.16	1.107	0	139.239	A	0.000	139.239	139.239	100.00	0.000	6.336
					B	0.000	139.239	100.00	0.000	0.000	
					C	0.000	139.239	100.00	0.000	7.536	
L6 31.17-0.00	15.25	1	0	153.646	A	0.000	153.646	153.646	100.00	0.000	4.588
					B	0.000	153.646	100.00	0.000	0.000	
					C	0.000	153.646	100.00	0.000	5.457	

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_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 175.00-164.25	169.48	1.596	0	0.9127	23.135	A	0.000	23.135	23.135	100.00	0.000	0.000
						B	0.000	23.135	100.00	0.000	0.000	
						C	0.000	23.135	100.00	0.000	2.365	
L2 164.25-129.67	146.24	1.53	0	0.8967	90.597	A	0.000	90.597	90.597	100.00	0.000	8.498
						B	0.000	90.597	100.00	0.000	0.000	
						C	0.000	90.597	100.00	0.000	18.490	
L3 129.67-96.00	112.39	1.419	0	0.8688	110.463	A	0.000	110.463	110.463	100.00	0.000	12.705
						B	0.000	110.463	100.00	0.000	0.000	
						C	0.000	110.463	100.00	0.000	19.361	
L4 96.00-63.17	79.34	1.285	0	0.8333	127.939	A	0.000	127.939	127.939	100.00	0.000	12.205
						B	0.000	127.939	100.00	0.000	0.000	
						C	0.000	127.939	100.00	0.000	19.141	
L5 63.17-31.17	47.16	1.107	0	0.7828	143.683	A	0.000	143.683	143.683	100.00	0.000	11.669
						B	0.000	143.683	100.00	0.000	0.000	
						C	0.000	143.683	100.00	0.000	18.202	
L6 31.17-0.00	15.25	1	0	0.7500	157.713	A	0.000	157.713	157.713	100.00	0.000	8.215
						B	0.000	157.713	100.00	0.000	0.000	
						C	0.000	157.713	100.00	0.000	12.712	

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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_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 175.00-164.25	169.48	1.596	0	21.500	A	0.000	21.500	21.500	100.00	0.000	0.000
					B	0.000	21.500	100.00	0.000	0.000	
					C	0.000	21.500	100.00	0.000	0.403	
L2 164.25-129.67	146.24	1.53	0	85.337	A	0.000	85.337	85.337	100.00	0.000	4.421
					B	0.000	85.337	100.00	0.000	0.000	
					C	0.000	85.337	100.00	0.000	6.275	
L3 129.67-96.00	112.39	1.419	0	105.431	A	0.000	105.431	105.431	100.00	0.000	6.667
					B	0.000	105.431	100.00	0.000	0.000	
					C	0.000	105.431	100.00	0.000	7.284	
L4 96.00-63.17	79.34	1.285	0	123.185	A	0.000	123.185	123.185	100.00	0.000	6.500
					B	0.000	123.185	100.00	0.000	0.000	
					C	0.000	123.185	100.00	0.000	7.731	
L5 63.17-31.17	47.16	1.107	0	139.239	A	0.000	139.239	139.239	100.00	0.000	6.336
					B	0.000	139.239	100.00	0.000	0.000	
					C	0.000	139.239	100.00	0.000	7.536	
L6 31.17-0.00	15.25	1	0	153.646	A	0.000	153.646	153.646	100.00	0.000	4.588
					B	0.000	153.646	100.00	0.000	0.000	
					C	0.000	153.646	100.00	0.000	5.457	

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 175.00-164.25	0.12	0.69	A	1	0.65	1	1	1	21.500	0.64	0.06	C
			B	1	0.65	1	1	21.500				
			C	1	0.65	1	1	21.500				
L2 164.25-129.67	1.10	3.66	A	1	0.65	1	1	1	85.337	2.80	0.08	C
			B	1	0.65	1	1	85.337				
			C	1	0.65	1	1	85.337				
L3 129.67-96.00	1.60	5.58	A	1	0.65	1	1	1	105.431	3.24	0.10	C
			B	1	0.65	1	1	105.431				
			C	1	0.65	1	1	105.431				
L4 96.00-63.17	1.64	6.69	A	1	0.65	1	1	1	123.185	3.35	0.10	C
			B	1	0.65	1	1	123.185				
			C	1	0.65	1	1	123.185				
L5 63.17-31.17	1.60	7.77	A	1	0.65	1	1	1	139.239	3.18	0.10	C
			B	1	0.65	1	1	139.239				
			C	1	0.65	1	1	139.239				
L6 31.17-0.00	1.16	8.79	A	1	0.65	1	1	1	153.646	3.04	0.10	C
			B	1	0.65	1	1	153.646				
			C	1	0.65	1	1	153.646				
Sum Weight:	7.23	33.19						OTM	1343.49 kip-ft	16.25		

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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	k/ft	
L1 175.00-164.25	0.12	0.69	A	1	0.65	1	1	1	21.500	0.64	0.06	C
			B	1	0.65	1	1	1	21.500			
			C	1	0.65	1	1	1	21.500			
L2 164.25-129.67	1.10	3.66	A	1	0.65	1	1	1	85.337	2.80	0.08	C
			B	1	0.65	1	1	1	85.337			
			C	1	0.65	1	1	1	85.337			
L3 129.67-96.00	1.60	5.58	A	1	0.65	1	1	1	105.431	3.24	0.10	C
			B	1	0.65	1	1	1	105.431			
			C	1	0.65	1	1	1	105.431			
L4 96.00-63.17	1.64	6.69	A	1	0.65	1	1	1	123.185	3.35	0.10	C
			B	1	0.65	1	1	1	123.185			
			C	1	0.65	1	1	1	123.185			
L5 63.17-31.17	1.60	7.77	A	1	0.65	1	1	1	139.239	3.18	0.10	C
			B	1	0.65	1	1	1	139.239			
			C	1	0.65	1	1	1	139.239			
L6 31.17-0.00	1.16	8.79	A	1	0.65	1	1	1	153.646	3.04	0.10	C
			B	1	0.65	1	1	1	153.646			
			C	1	0.65	1	1	1	153.646			
Sum Weight:	7.23	33.19						OTM	1343.49 kip-ft	16.25		

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	k/ft	
L1 175.00-164.25	0.12	0.69	A	1	0.65	1	1	1	21.500	0.64	0.06	C
			B	1	0.65	1	1	1	21.500			
			C	1	0.65	1	1	1	21.500			
L2 164.25-129.67	1.10	3.66	A	1	0.65	1	1	1	85.337	2.80	0.08	C
			B	1	0.65	1	1	1	85.337			
			C	1	0.65	1	1	1	85.337			
L3 129.67-96.00	1.60	5.58	A	1	0.65	1	1	1	105.431	3.24	0.10	C
			B	1	0.65	1	1	1	105.431			
			C	1	0.65	1	1	1	105.431			
L4 96.00-63.17	1.64	6.69	A	1	0.65	1	1	1	123.185	3.35	0.10	C
			B	1	0.65	1	1	1	123.185			
			C	1	0.65	1	1	1	123.185			
L5 63.17-31.17	1.60	7.77	A	1	0.65	1	1	1	139.239	3.18	0.10	C
			B	1	0.65	1	1	1	139.239			
			C	1	0.65	1	1	1	139.239			
L6 31.17-0.00	1.16	8.79	A	1	0.65	1	1	1	153.646	3.04	0.10	C
			B	1	0.65	1	1	1	153.646			
			C	1	0.65	1	1	1	153.646			
Sum Weight:	7.23	33.19						OTM	1343.49 kip-ft	16.25		

Tower Forces - With Ice - Wind Normal To Face

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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	klf	
L1 175.00-164.25	0.13	0.99	A	1	0.65	1	1	1	23.135	0.09	0.01	C
			B	1	0.65	1	1	1	23.135			
			C	1	0.65	1	1	1	23.135			
L2 164.25-129.67	1.20	4.83	A	1	0.65	1	1	1	90.597	0.45	0.01	C
			B	1	0.65	1	1	1	90.597			
			C	1	0.65	1	1	1	90.597			
L3 129.67-96.00	1.80	6.97	A	1	0.65	1	1	1	110.463	0.50	0.01	C
			B	1	0.65	1	1	1	110.463			
			C	1	0.65	1	1	1	110.463			
L4 96.00-63.17	1.88	8.24	A	1	0.65	1	1	1	127.939	0.50	0.02	C
			B	1	0.65	1	1	1	127.939			
			C	1	0.65	1	1	1	127.939			
L5 63.17-31.17	1.85	9.41	A	1	0.65	1	1	1	143.683	0.46	0.01	C
			B	1	0.65	1	1	1	143.683			
			C	1	0.65	1	1	1	143.683			
L6 31.17-0.00	1.34	10.52	A	1	0.65	1	1	1	157.713	0.42	0.01	C
			B	1	0.65	1	1	1	157.713			
			C	1	0.65	1	1	1	157.713			
Sum Weight:	8.20	40.96						OTM	204.86 kip-ft	2.42		

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	klf	
L1 175.00-164.25	0.13	0.99	A	1	0.65	1	1	1	23.135	0.09	0.01	C
			B	1	0.65	1	1	1	23.135			
			C	1	0.65	1	1	1	23.135			
L2 164.25-129.67	1.20	4.83	A	1	0.65	1	1	1	90.597	0.45	0.01	C
			B	1	0.65	1	1	1	90.597			
			C	1	0.65	1	1	1	90.597			
L3 129.67-96.00	1.80	6.97	A	1	0.65	1	1	1	110.463	0.50	0.01	C
			B	1	0.65	1	1	1	110.463			
			C	1	0.65	1	1	1	110.463			
L4 96.00-63.17	1.88	8.24	A	1	0.65	1	1	1	127.939	0.50	0.02	C
			B	1	0.65	1	1	1	127.939			
			C	1	0.65	1	1	1	127.939			
L5 63.17-31.17	1.85	9.41	A	1	0.65	1	1	1	143.683	0.46	0.01	C
			B	1	0.65	1	1	1	143.683			
			C	1	0.65	1	1	1	143.683			
L6 31.17-0.00	1.34	10.52	A	1	0.65	1	1	1	157.713	0.42	0.01	C
			B	1	0.65	1	1	1	157.713			
			C	1	0.65	1	1	1	157.713			
Sum Weight:	8.20	40.96						OTM	204.86 kip-ft	2.42		

Tower Forces - With Ice - Wind 90 To Face

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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	klf	
L1 175.00-164.25	0.13	0.99	A	1	0.65	1	1	1	23.135	0.09	0.01	C
			B	1	0.65	1	1	1	23.135			
			C	1	0.65	1	1	1	23.135			
L2 164.25-129.67	1.20	4.83	A	1	0.65	1	1	1	90.597	0.45	0.01	C
			B	1	0.65	1	1	1	90.597			
			C	1	0.65	1	1	1	90.597			
L3 129.67-96.00	1.80	6.97	A	1	0.65	1	1	1	110.463	0.50	0.01	C
			B	1	0.65	1	1	1	110.463			
			C	1	0.65	1	1	1	110.463			
L4 96.00-63.17	1.88	8.24	A	1	0.65	1	1	1	127.939	0.50	0.02	C
			B	1	0.65	1	1	1	127.939			
			C	1	0.65	1	1	1	127.939			
L5 63.17-31.17	1.85	9.41	A	1	0.65	1	1	1	143.683	0.46	0.01	C
			B	1	0.65	1	1	1	143.683			
			C	1	0.65	1	1	1	143.683			
L6 31.17-0.00	1.34	10.52	A	1	0.65	1	1	1	157.713	0.42	0.01	C
			B	1	0.65	1	1	1	157.713			
			C	1	0.65	1	1	1	157.713			
Sum Weight:	8.20	40.96						OTM	204.86 kip-ft	2.42		

Tower Forces - Service - 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	klf	
L1 175.00-164.25	0.12	0.69	A	1	0.65	1	1	1	21.500	0.25	0.02	C
			B	1	0.65	1	1	1	21.500			
			C	1	0.65	1	1	1	21.500			
L2 164.25-129.67	1.10	3.66	A	1	0.65	1	1	1	85.337	1.09	0.03	C
			B	1	0.65	1	1	1	85.337			
			C	1	0.65	1	1	1	85.337			
L3 129.67-96.00	1.60	5.58	A	1	0.65	1	1	1	105.431	1.26	0.04	C
			B	1	0.65	1	1	1	105.431			
			C	1	0.65	1	1	1	105.431			
L4 96.00-63.17	1.64	6.69	A	1	0.65	1	1	1	123.185	1.31	0.04	C
			B	1	0.65	1	1	1	123.185			
			C	1	0.65	1	1	1	123.185			
L5 63.17-31.17	1.60	7.77	A	1	0.65	1	1	1	139.239	1.24	0.04	C
			B	1	0.65	1	1	1	139.239			
			C	1	0.65	1	1	1	139.239			
L6 31.17-0.00	1.16	8.79	A	1	0.65	1	1	1	153.646	1.19	0.04	C
			B	1	0.65	1	1	1	153.646			
			C	1	0.65	1	1	1	153.646			
Sum Weight:	7.23	33.19						OTM	524.80 kip-ft	6.35		

Tower Forces - Service - Wind 60 To Face

tnxTower FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Job BU:# 823530 CT364/CHAPEL ST. MONOPOLE	Page 18 of 46
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	Client Crown Castle	Designed by Jarèl Duncan

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	klf	
L1 175.00-164.25	0.12	0.69	A	1	0.65	1	1	1	21.500	0.25	0.02	C
			B	1	0.65	1	1	1	21.500			
			C	1	0.65	1	1	1	21.500			
L2 164.25-129.67	1.10	3.66	A	1	0.65	1	1	1	85.337	1.09	0.03	C
			B	1	0.65	1	1	1	85.337			
			C	1	0.65	1	1	1	85.337			
L3 129.67-96.00	1.60	5.58	A	1	0.65	1	1	1	105.431	1.26	0.04	C
			B	1	0.65	1	1	1	105.431			
			C	1	0.65	1	1	1	105.431			
L4 96.00-63.17	1.64	6.69	A	1	0.65	1	1	1	123.185	1.31	0.04	C
			B	1	0.65	1	1	1	123.185			
			C	1	0.65	1	1	1	123.185			
L5 63.17-31.17	1.60	7.77	A	1	0.65	1	1	1	139.239	1.24	0.04	C
			B	1	0.65	1	1	1	139.239			
			C	1	0.65	1	1	1	139.239			
L6 31.17-0.00	1.16	8.79	A	1	0.65	1	1	1	153.646	1.19	0.04	C
			B	1	0.65	1	1	1	153.646			
			C	1	0.65	1	1	1	153.646			
Sum Weight:	7.23	33.19						OTM	524.80 kip-ft	6.35		

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	klf	
L1 175.00-164.25	0.12	0.69	A	1	0.65	1	1	1	21.500	0.25	0.02	C
			B	1	0.65	1	1	1	21.500			
			C	1	0.65	1	1	1	21.500			
L2 164.25-129.67	1.10	3.66	A	1	0.65	1	1	1	85.337	1.09	0.03	C
			B	1	0.65	1	1	1	85.337			
			C	1	0.65	1	1	1	85.337			
L3 129.67-96.00	1.60	5.58	A	1	0.65	1	1	1	105.431	1.26	0.04	C
			B	1	0.65	1	1	1	105.431			
			C	1	0.65	1	1	1	105.431			
L4 96.00-63.17	1.64	6.69	A	1	0.65	1	1	1	123.185	1.31	0.04	C
			B	1	0.65	1	1	1	123.185			
			C	1	0.65	1	1	1	123.185			
L5 63.17-31.17	1.60	7.77	A	1	0.65	1	1	1	139.239	1.24	0.04	C
			B	1	0.65	1	1	1	139.239			
			C	1	0.65	1	1	1	139.239			
L6 31.17-0.00	1.16	8.79	A	1	0.65	1	1	1	153.646	1.19	0.04	C
			B	1	0.65	1	1	1	153.646			
			C	1	0.65	1	1	1	153.646			
Sum Weight:	7.23	33.19						OTM	524.80 kip-ft	6.35		

Discrete Appurtenance Pressures - No Ice $G_H = 1.690$

tnxTower FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Job BU:# 823530 CT364/CHAPEL ST. MONOPOLE	Page 19 of 46
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	Client Crown Castle	Designed by Jarel Duncan

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _A Ac Front ft ²	C _A Ac Side ft ²
Lightning Rod	240.0000	0.03	-0.79	0.46	177.00	1.616	0	0.25	0.25
ATJB200-A01-007	-20.0000	0.00	0.00	-4.96	172.00	1.603	0	0.44	0.14
ETW190VS12UB	70.0000	0.01	0.00	-4.96	172.00	1.603	0	0.66	0.37
DB201-F	0.0000	0.01	0.00	-4.96	175.00	1.611	0	0.40	0.40
AIR 21 w/ Mount Pipe	-20.0000	0.20	0.00	-4.96	172.00	1.603	0	13.51	11.41
AIR 21 w/ Mount Pipe	70.0000	0.30	0.00	-4.96	172.00	1.603	0	20.26	17.11
AIR 33 w/ Mount Pipe	-20.0000	0.13	0.00	-4.96	172.00	1.603	0	6.54	5.82
ETW190VS12UB	160.0000	0.01	4.30	2.48	172.00	1.603	0	0.66	0.37
DB201-F	180.0000	0.01	4.30	2.48	175.00	1.611	0	0.40	0.40
AIR 21 w/ Mount Pipe	160.0000	0.20	4.30	2.48	172.00	1.603	0	13.51	11.41
AIR 33 w/ Mount Pipe	180.0000	0.13	4.30	2.48	172.00	1.603	0	6.54	5.82
ETW190VS12UB	250.0000	0.01	-4.30	2.48	172.00	1.603	0	0.66	0.37
AIR 21 w/ Mount Pipe	250.0000	0.20	-4.30	2.48	172.00	1.603	0	13.51	11.41
AIR 33 w/ Mount Pipe	250.0000	0.13	-4.30	2.48	172.00	1.603	0	6.54	5.82
OA20-67-DIN	300.0000	0.01	-6.90	3.98	175.00	1.611	0	1.80	1.80
LS-230C	240.0000	0.01	0.00	7.96	168.00	1.592	0	1.61	1.61
6x2.5" Pipe Mount	0.0000	0.03	0.00	-4.96	172.00	1.603	0	1.44	1.44
Pipe Mount [PM 601-1]	-20.0000	0.07	0.00	-5.96	174.00	1.608	0	3.00	0.90
Pipe Mount [PM 601-1]	-6.0000	0.07	0.00	-5.96	174.00	1.608	0	3.00	0.90
Side Arm Mount [SO 305-1]	300.0000	0.03	-6.03	3.48	174.00	1.608	0	0.94	1.41
Side Arm Mount [SO 305-1]	240.0000	0.03	0.00	6.96	170.00	1.597	0	0.94	1.41
Platform Mount [LP 701-1]	0.0000	2.75	0.00	0.00	172.00	1.603	0	59.15	59.15
800MHz 2X50W RRH W/FILTER	-20.0000	0.06	0.00	-3.07	162.00	1.576	0	2.40	2.25
PCS 1900MHz 2x40W	-20.0000	0.04	0.00	-5.07	162.00	1.576	0	2.74	1.46
APXVSPP18-C-A20 w/ Mount Pipe	-20.0000	0.08	0.00	-5.07	162.00	1.576	0	8.50	6.95
800MHz 2X50W RRH W/FILTER	110.0000	0.06	2.66	1.54	162.00	1.576	0	2.40	2.25
PCS 1900MHz 2x40W	110.0000	0.04	4.39	2.54	162.00	1.576	0	2.74	1.46
APXVSPP18-C-A20 w/ Mount Pipe	110.0000	0.08	4.39	2.54	162.00	1.576	0	8.50	6.95
800MHz 2X50W RRH W/FILTER	220.0000	0.06	-2.66	1.54	162.00	1.576	0	2.40	2.25
PCS 1900MHz 2x40W	220.0000	0.04	-4.39	2.54	162.00	1.576	0	2.74	1.46
APXVSPP18-C-A20 w/ Mount Pipe	220.0000	0.08	-4.39	2.54	162.00	1.576	0	8.50	6.95
Empty Pipe Mount	300.0000	0.04	-4.39	-2.54	162.00	1.576	0	2.40	2.40
Empty Pipe Mount	60.0000	0.04	4.39	-2.54	162.00	1.576	0	2.40	2.40
Empty Pipe Mount	180.0000	0.04	0.00	5.07	162.00	1.576	0	2.40	2.40
Platform Mount [LP 712-1]	0.0000	1.34	0.00	0.00	162.00	1.576	0	24.53	24.53
BXA-171085-12BF w/ Mount Pipe	0.0000	0.04	0.00	-5.18	152.00	1.547	0	4.97	5.23
BXA-70063-6CF-2 w/ Mount Pipe	0.0000	0.04	0.00	-5.18	152.00	1.547	0	7.97	5.80
LPA-80080/4CF W/Mount Pipe	0.0000	0.02	0.00	-5.18	152.00	1.547	0	5.24	12.11
BXA-171085-12BF w/ Mount Pipe	120.0000	0.04	4.49	2.59	152.00	1.547	0	4.97	5.23
BXA-70063-6CF-2 w/ Mount Pipe	120.0000	0.04	4.49	2.59	152.00	1.547	0	7.97	5.80
LPA-80080/4CF W/Mount Pipe	120.0000	0.02	4.49	2.59	152.00	1.547	0	5.24	12.11
BXA-171085-12BF w/ Mount Pipe	240.0000	0.04	-4.49	2.59	152.00	1.547	0	4.97	5.23
BXA-70063-6CF-2 w/ Mount Pipe	240.0000	0.04	-4.49	2.59	152.00	1.547	0	7.97	5.80

tnxTower FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Job BU:# 823530 CT364/CHAPEL ST. MONOPOLE	Page 20 of 46
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	Client Crown Castle	Designed by Jarel Duncan

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _A Ac Front ft ²	C _A Ac Side ft ²
LPA-80080/4CF W/ Mount Pipe	240.0000	0.02	-4.49	2.59	152.00	1.547	0	5.24	12.11
RRH2x40-AWS	0.0000	0.04	0.00	-5.18	152.00	1.547	0	2.52	1.59
742 213 w/ Mount Pipe	0.0000	0.05	0.00	-5.18	152.00	1.547	0	5.37	4.62
DB-T1-6Z-8AB-0Z	0.0000	0.04	0.00	-5.18	152.00	1.547	0	5.60	2.33
RRH2x40-AWS	120.0000	0.04	4.49	2.59	152.00	1.547	0	2.52	1.59
742 213 w/ Mount Pipe	120.0000	0.05	4.49	2.59	152.00	1.547	0	5.37	4.62
RRH2x40-AWS	240.0000	0.04	-4.49	2.59	152.00	1.547	0	2.52	1.59
742 213 w/ Mount Pipe	240.0000	0.05	-4.49	2.59	152.00	1.547	0	5.37	4.62
Platform Mount [LP 403-1]	0.0000	1.50	0.00	0.00	152.00	1.547	0	18.85	18.85
7770.00 w/ Mount Pipe	30.0000	0.12	0.00	-5.29	142.00	1.517	0	12.24	8.51
LGP2140X	30.0000	0.02	0.00	-5.29	142.00	1.517	0	2.52	0.76
RRUS 11	30.0000	0.10	0.00	-5.29	142.00	1.517	0	6.50	2.75
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	30.0000	0.07	0.00	-5.29	142.00	1.517	0	8.50	6.30
7770.00 w/ Mount Pipe	150.0000	0.12	4.58	2.64	142.00	1.517	0	12.24	8.51
LGP2140X	150.0000	0.02	4.58	2.64	142.00	1.517	0	2.52	0.76
RRUS 11	150.0000	0.10	4.58	2.64	142.00	1.517	0	6.50	2.75
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	150.0000	0.07	4.58	2.64	142.00	1.517	0	8.50	6.30
7770.00 w/ Mount Pipe	270.0000	0.12	-4.58	2.64	142.00	1.517	0	12.24	8.51
LGP2140X	270.0000	0.02	-4.58	2.64	142.00	1.517	0	2.52	0.76
APTDC-BDFDM-DB	270.0000	0.00	-4.58	2.64	142.00	1.517	0	0.06	0.12
RRUS 11	270.0000	0.10	-4.58	2.64	142.00	1.517	0	6.50	2.75
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	270.0000	0.07	-4.58	2.64	142.00	1.517	0	8.50	6.30
DC6-48-60-18-8F Empty Pipe Mount	270.0000	0.03	-4.58	2.64	142.00	1.517	0	2.57	4.32
Empty Pipe Mount	0.0000	0.02	0.00	-5.29	142.00	1.517	0	1.20	1.20
Empty Pipe Mount	120.0000	0.02	4.58	2.64	142.00	1.517	0	1.20	1.20
Empty Pipe Mount	240.0000	0.02	-4.58	2.64	142.00	1.517	0	1.20	1.20
Platform Mount [LP 303-1]	0.0000	1.25	0.00	0.00	142.00	1.517	0	14.66	14.66
APXV18-206517S-C w/ Mount Pipe	30.0000	0.05	0.00	-2.54	115.00	1.429	0	5.40	4.70
APXV18-206517S-C w/ Mount Pipe	150.0000	0.05	2.20	1.27	115.00	1.429	0	5.40	4.70
APXV18-206517S-C w/ Mount Pipe	270.0000	0.05	-2.20	1.27	115.00	1.429	0	5.40	4.70
Pipe Mount [PM 501-3]	0.0000	0.16	0.00	0.00	115.00	1.429	0	5.78	5.78
GPS-TMG-HR-26NCM	0.0000	0.00	0.00	-4.15	50.00	1.126	0	0.16	0.16
Side Arm Mount [SO 701-1]	0.0000	0.07	0.00	0.00	50.00	1.126	0	0.85	1.67
Sum Weight:		11.11							

Discrete Appurtenance Pressures - With Ice G_H = 1.690

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _A Ac Front ft ²	C _A Ac Side ft ²	t _z in
Lightning Rod	240.0000	0.04	-0.79	-0.46	177.00	1.616	0	0.92	0.92	0.9162
ATJB200-A01-007	-20.0000	0.01	0.00	-4.96	172.00	1.603	0	0.62	0.27	0.9143
ETW190VS12UB	70.0000	0.02	0.00	-4.96	172.00	1.603	0	0.88	0.55	0.9143
DB201-F	0.0000	0.02	0.00	-4.96	175.00	1.611	0	0.99	0.99	0.9143
AIR 21 w/ Mount Pipe	-20.0000	0.43	0.00	-4.96	172.00	1.603	0	15.51	14.54	0.9143
AIR 21 w/ Mount Pipe	70.0000	0.64	0.00	-4.96	172.00	1.603	0	23.26	21.81	0.9143
AIR 33 w/ Mount Pipe	-20.0000	0.24	0.00	-4.96	172.00	1.603	0	7.46	7.26	0.9143

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	Client Crown Castle	Designed by Jarel Duncan

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _A Ac Front ft ²	C _A Ac Side ft ²	t _z in
ETW190VS12UB	160.0000	0.02	4.30	2.48	172.00	1.603	0	0.88	0.55	0.9143
DB201-F	180.0000	0.02	4.30	2.48	175.00	1.611	0	0.99	0.99	0.9143
AIR 21 w/ Mount Pipe	160.0000	0.43	4.30	2.48	172.00	1.603	0	15.51	14.54	0.9143
AIR 33 w/ Mount Pipe	180.0000	0.24	4.30	2.48	172.00	1.603	0	7.46	7.26	0.9143
ETW190VS12UB	250.0000	0.02	-4.30	2.48	172.00	1.603	0	0.88	0.55	0.9143
AIR 21 w/ Mount Pipe	250.0000	0.43	-4.30	2.48	172.00	1.603	0	15.51	14.54	0.9143
AIR 33 w/ Mount Pipe	250.0000	0.24	-4.30	2.48	172.00	1.603	0	7.46	7.26	0.9143
OA20-67-DIN	300.0000	0.01	-6.90	3.98	175.00	1.611	0	3.74	3.74	0.9143
LS-230C	240.0000	0.04	0.00	7.96	168.00	1.592	0	2.72	2.72	0.9143
6'x2.5" Pipe Mount	0.0000	0.05	0.00	-4.96	172.00	1.603	0	2.24	2.24	0.9143
Pipe Mount [PM 601-1]	-20.0000	0.09	0.00	-5.96	174.00	1.608	0	4.35	1.30	0.9143
Pipe Mount [PM 601-1]	-6.0000	0.09	0.00	-5.96	174.00	1.608	0	4.35	1.30	0.9143
Side Arm Mount [SO 305-1]	300.0000	0.05	-6.03	3.48	174.00	1.608	0	1.93	2.80	0.9143
Side Arm Mount [SO 305-1]	240.0000	0.05	0.00	6.96	170.00	1.597	0	1.93	2.80	0.9143
Platform Mount [LP 701-1]	0.0000	3.98	0.00	0.00	172.00	1.603	0	81.04	81.04	0.9143
800MHz 2X50W RRH W/FILTER	-20.0000	0.11	0.00	-3.07	162.00	1.576	0	2.79	2.64	0.9078
PCS 1900MHz 2x40W	-20.0000	0.08	0.00	-5.07	162.00	1.576	0	3.17	1.81	0.9078
APXVSPP18-C-A20 w/ Mount Pipe	-20.0000	0.21	0.00	-5.07	162.00	1.576	0	9.65	8.86	0.9078
800MHz 2X50W RRH W/FILTER	110.0000	0.11	2.66	1.54	162.00	1.576	0	2.79	2.64	0.9078
PCS 1900MHz 2x40W	110.0000	0.08	4.39	2.54	162.00	1.576	0	3.17	1.81	0.9078
APXVSPP18-C-A20 w/ Mount Pipe	110.0000	0.21	4.39	2.54	162.00	1.576	0	9.65	8.86	0.9078
800MHz 2X50W RRH W/FILTER	220.0000	0.11	-2.66	1.54	162.00	1.576	0	2.79	2.64	0.9078
PCS 1900MHz 2x40W	220.0000	0.08	-4.39	2.54	162.00	1.576	0	3.17	1.81	0.9078
APXVSPP18-C-A20 w/ Mount Pipe	220.0000	0.21	-4.39	2.54	162.00	1.576	0	9.65	8.86	0.9078
Empty Pipe Mount	300.0000	0.08	-4.39	-2.54	162.00	1.576	0	3.51	3.51	0.9078
Empty Pipe Mount	60.0000	0.08	4.39	-2.54	162.00	1.576	0	3.51	3.51	0.9078
Empty Pipe Mount	180.0000	0.08	0.00	5.07	162.00	1.576	0	3.51	3.51	0.9078
Platform Mount [LP 712-1]	0.0000	1.90	0.00	0.00	162.00	1.576	0	34.35	34.35	0.9078
BXA-171085-12BF w/ Mount Pipe	0.0000	0.13	0.00	-5.18	152.00	1.547	0	5.93	7.09	0.9009
BXA-70063-6CF-2 w/ Mount Pipe	0.0000	0.16	0.00	-5.18	152.00	1.547	0	9.10	7.65	0.9009
LPA-80080/4CF W/Mount Pipe	0.0000	0.15	0.00	-5.18	152.00	1.547	0	6.34	13.55	0.9009
BXA-171085-12BF w/ Mount Pipe	120.0000	0.13	4.49	2.59	152.00	1.547	0	5.93	7.09	0.9009
BXA-70063-6CF-2 w/ Mount Pipe	120.0000	0.16	4.49	2.59	152.00	1.547	0	9.10	7.65	0.9009
LPA-80080/4CF W/Mount Pipe	120.0000	0.15	4.49	2.59	152.00	1.547	0	6.34	13.55	0.9009
BXA-171085-12BF w/ Mount Pipe	240.0000	0.13	-4.49	2.59	152.00	1.547	0	5.93	7.09	0.9009
BXA-70063-6CF-2 w/ Mount Pipe	240.0000	0.16	-4.49	2.59	152.00	1.547	0	9.10	7.65	0.9009
LPA-80080/4CF W/Mount Pipe	240.0000	0.15	-4.49	2.59	152.00	1.547	0	6.34	13.55	0.9009
RRH2x40-AWS	0.0000	0.08	0.00	-5.18	152.00	1.547	0	2.95	1.97	0.9009
742 213 w/ Mount Pipe	0.0000	0.14	0.00	-5.18	152.00	1.547	0	6.39	6.79	0.9009
DB-T1-6Z-8AB-0Z	0.0000	0.11	0.00	-5.18	152.00	1.547	0	6.18	2.75	0.9009
RRH2x40-AWS	120.0000	0.08	4.49	2.59	152.00	1.547	0	2.95	1.97	0.9009
742 213 w/ Mount Pipe	120.0000	0.14	4.49	2.59	152.00	1.547	0	6.39	6.79	0.9009

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _A A _c Front ft ²	C _A A _c Side ft ²	t _z in
RRH2x40-AWS	240.0000	0.08	-4.49	2.59	152.00	1.547	0	2.95	1.97	0.9009
742 213 w/ Mount Pipe	240.0000	0.14	-4.49	2.59	152.00	1.547	0	6.39	6.79	0.9009
Platform Mount [LP 403-1]	0.0000	2.03	0.00	0.00	152.00	1.547	0	28.67	28.67	0.9009
7770.00 w/ Mount Pipe	30.0000	0.29	0.00	-5.29	142.00	1.517	0	14.04	11.12	0.8935
LGP2140X	30.0000	0.06	0.00	-5.29	142.00	1.517	0	3.09	1.18	0.8935
RRUS 11	30.0000	0.18	0.00	-5.29	142.00	1.517	0	7.38	3.40	0.8935
AM-X-CD-16-65-00T-R	30.0000	0.20	0.00	-5.29	142.00	1.517	0	9.64	8.18	0.8935
ET w/ Mount Pipe										
7770.00 w/ Mount Pipe	150.0000	0.29	4.58	2.64	142.00	1.517	0	14.04	11.12	0.8935
LGP2140X	150.0000	0.06	4.58	2.64	142.00	1.517	0	3.09	1.18	0.8935
RRUS 11	150.0000	0.18	4.58	2.64	142.00	1.517	0	7.38	3.40	0.8935
AM-X-CD-16-65-00T-R	150.0000	0.20	4.58	2.64	142.00	1.517	0	9.64	8.18	0.8935
ET w/ Mount Pipe										
7770.00 w/ Mount Pipe	270.0000	0.29	-4.58	2.64	142.00	1.517	0	14.04	11.12	0.8935
LGP2140X	270.0000	0.06	-4.58	2.64	142.00	1.517	0	3.09	1.18	0.8935
APTDC-BDFDM-DB	270.0000	0.00	-4.58	2.64	142.00	1.517	0	0.13	0.21	0.8935
RRUS 11	270.0000	0.18	-4.58	2.64	142.00	1.517	0	7.38	3.40	0.8935
AM-X-CD-16-65-00T-R	270.0000	0.20	-4.58	2.64	142.00	1.517	0	9.64	8.18	0.8935
ET w/ Mount Pipe										
DC6-48-60-18-8F	270.0000	0.09	-4.58	2.64	142.00	1.517	0	2.99	4.82	0.8935
Empty Pipe Mount	0.0000	0.04	0.00	-5.29	142.00	1.517	0	1.75	1.75	0.8935
Empty Pipe Mount	120.0000	0.04	4.58	2.64	142.00	1.517	0	1.75	1.75	0.8935
Empty Pipe Mount	240.0000	0.04	-4.58	2.64	142.00	1.517	0	1.75	1.75	0.8935
Platform Mount [LP 303-1]	0.0000	1.66	0.00	0.00	142.00	1.517	0	22.18	22.18	0.8935
APXV18-206517S-C w/ Mount Pipe	30.0000	0.14	0.00	-2.54	115.00	1.429	0	6.35	6.51	0.8712
APXV18-206517S-C w/ Mount Pipe	150.0000	0.14	2.20	1.27	115.00	1.429	0	6.35	6.51	0.8712
APXV18-206517S-C w/ Mount Pipe	270.0000	0.14	-2.20	1.27	115.00	1.429	0	6.35	6.51	0.8712
Pipe Mount [PM 501-3]	0.0000	0.19	0.00	0.00	115.00	1.429	0	8.55	8.55	0.8712
GPS-TMG-HR-26NCM	0.0000	0.00	0.00	-4.15	50.00	1.126	0	0.25	0.25	0.7883
Side Arm Mount [SO 701-1]	0.0000	0.09	0.00	0.00	50.00	1.126	0	1.31	2.73	0.7883
Sum Weight:		19.34								

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 _A A _c Front ft ²	C _A A _c Side ft ²
Lightning Rod	240.0000	0.03	-0.79	0.46	177.00	1.616	0	0.25	0.25
ATJB200-A01-007	-20.0000	0.00	0.00	-4.96	172.00	1.603	0	0.44	0.14
ETW190VS12UB	70.0000	0.01	0.00	-4.96	172.00	1.603	0	0.66	0.37
DB201-F	0.0000	0.01	0.00	-4.96	175.00	1.611	0	0.40	0.40
AIR 21 w/ Mount Pipe	-20.0000	0.20	0.00	-4.96	172.00	1.603	0	13.51	11.41
AIR 21 w/ Mount Pipe	70.0000	0.30	0.00	-4.96	172.00	1.603	0	20.26	17.11
AIR 33 w/ Mount Pipe	-20.0000	0.13	0.00	-4.96	172.00	1.603	0	6.54	5.82
ETW190VS12UB	160.0000	0.01	4.30	2.48	172.00	1.603	0	0.66	0.37
DB201-F	180.0000	0.01	4.30	2.48	175.00	1.611	0	0.40	0.40
AIR 21 w/ Mount Pipe	160.0000	0.20	4.30	2.48	172.00	1.603	0	13.51	11.41
AIR 33 w/ Mount Pipe	180.0000	0.13	4.30	2.48	172.00	1.603	0	6.54	5.82
ETW190VS12UB	250.0000	0.01	-4.30	2.48	172.00	1.603	0	0.66	0.37
AIR 21 w/ Mount Pipe	250.0000	0.20	-4.30	2.48	172.00	1.603	0	13.51	11.41
AIR 33 w/ Mount Pipe	250.0000	0.13	-4.30	2.48	172.00	1.603	0	6.54	5.82

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Description	Aiming	Weight	Offset _x	Offset _z	z	K _z	q _z	C _A Ac	C _A Ac
	Azimuth °	K	ft	ft	ft		ksf	Front ft ²	Side ft ²
OA20-67-DIN	300.0000	0.01	-6.90	3.98	175.00	1.611	0	1.80	1.80
LS-230C	240.0000	0.01	0.00	7.96	168.00	1.592	0	1.61	1.61
6'x2.5" Pipe Mount	0.0000	0.03	0.00	-4.96	172.00	1.603	0	1.44	1.44
Pipe Mount [PM 601-1]	-20.0000	0.07	0.00	-5.96	174.00	1.608	0	3.00	0.90
Pipe Mount [PM 601-1]	-6.0000	0.07	0.00	-5.96	174.00	1.608	0	3.00	0.90
Side Arm Mount [SO 305-1]	300.0000	0.03	-6.03	3.48	174.00	1.608	0	0.94	1.41
Side Arm Mount [SO 305-1]	240.0000	0.03	0.00	6.96	170.00	1.597	0	0.94	1.41
Platform Mount [LP 701-1]	0.0000	2.75	0.00	0.00	172.00	1.603	0	59.15	59.15
800MHz 2X50W RRH W/FILTER	-20.0000	0.06	0.00	-3.07	162.00	1.576	0	2.40	2.25
PCS 1900MHz 2x40W	-20.0000	0.04	0.00	-5.07	162.00	1.576	0	2.74	1.46
APXVSPP18-C-A20 w/ Mount Pipe	-20.0000	0.08	0.00	-5.07	162.00	1.576	0	8.50	6.95
800MHz 2X50W RRH W/FILTER	110.0000	0.06	2.66	1.54	162.00	1.576	0	2.40	2.25
PCS 1900MHz 2x40W	110.0000	0.04	4.39	2.54	162.00	1.576	0	2.74	1.46
APXVSPP18-C-A20 w/ Mount Pipe	110.0000	0.08	4.39	2.54	162.00	1.576	0	8.50	6.95
800MHz 2X50W RRH W/FILTER	220.0000	0.06	-2.66	1.54	162.00	1.576	0	2.40	2.25
PCS 1900MHz 2x40W	220.0000	0.04	-4.39	2.54	162.00	1.576	0	2.74	1.46
APXVSPP18-C-A20 w/ Mount Pipe	220.0000	0.08	-4.39	2.54	162.00	1.576	0	8.50	6.95
Empty Pipe Mount	300.0000	0.04	-4.39	-2.54	162.00	1.576	0	2.40	2.40
Empty Pipe Mount	60.0000	0.04	4.39	-2.54	162.00	1.576	0	2.40	2.40
Empty Pipe Mount	180.0000	0.04	0.00	5.07	162.00	1.576	0	2.40	2.40
Platform Mount [LP 712-1]	0.0000	1.34	0.00	0.00	162.00	1.576	0	24.53	24.53
BXA-171085-12BF w/ Mount Pipe	0.0000	0.04	0.00	-5.18	152.00	1.547	0	4.97	5.23
BXA-70063-6CF-2 w/ Mount Pipe	0.0000	0.04	0.00	-5.18	152.00	1.547	0	7.97	5.80
LPA-80080/4CF W/Mount Pipe	0.0000	0.02	0.00	-5.18	152.00	1.547	0	5.24	12.11
BXA-171085-12BF w/ Mount Pipe	120.0000	0.04	4.49	2.59	152.00	1.547	0	4.97	5.23
BXA-70063-6CF-2 w/ Mount Pipe	120.0000	0.04	4.49	2.59	152.00	1.547	0	7.97	5.80
LPA-80080/4CF W/Mount Pipe	120.0000	0.02	4.49	2.59	152.00	1.547	0	5.24	12.11
BXA-171085-12BF w/ Mount Pipe	240.0000	0.04	-4.49	2.59	152.00	1.547	0	4.97	5.23
BXA-70063-6CF-2 w/ Mount Pipe	240.0000	0.04	-4.49	2.59	152.00	1.547	0	7.97	5.80
LPA-80080/4CF W/Mount Pipe	240.0000	0.02	-4.49	2.59	152.00	1.547	0	5.24	12.11
RRH2x40-AWS	0.0000	0.04	0.00	-5.18	152.00	1.547	0	2.52	1.59
742 213 w/ Mount Pipe	0.0000	0.05	0.00	-5.18	152.00	1.547	0	5.37	4.62
DB-T1-6Z-8AB-OZ	0.0000	0.04	0.00	-5.18	152.00	1.547	0	5.60	2.33
RRH2x40-AWS	120.0000	0.04	4.49	2.59	152.00	1.547	0	2.52	1.59
742 213 w/ Mount Pipe	120.0000	0.05	4.49	2.59	152.00	1.547	0	5.37	4.62
RRH2x40-AWS	240.0000	0.04	-4.49	2.59	152.00	1.547	0	2.52	1.59
742 213 w/ Mount Pipe	240.0000	0.05	-4.49	2.59	152.00	1.547	0	5.37	4.62
Platform Mount [LP 403-1]	0.0000	1.50	0.00	0.00	152.00	1.547	0	18.85	18.85
7770.00 w/ Mount Pipe	30.0000	0.12	0.00	-5.29	142.00	1.517	0	12.24	8.51
LGP2140X	30.0000	0.02	0.00	-5.29	142.00	1.517	0	2.52	0.76
RRUS 11	30.0000	0.10	0.00	-5.29	142.00	1.517	0	6.50	2.75

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z ksf	C _A A _C Front ft ²	C _A A _C Side ft ²
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	30.0000	0.07	0.00	-5.29	142.00	1.517	0	8.50	6.30
7770.00 w/ Mount Pipe	150.0000	0.12	4.58	2.64	142.00	1.517	0	12.24	8.51
LGP2140X	150.0000	0.02	4.58	2.64	142.00	1.517	0	2.52	0.76
RRUS 11	150.0000	0.10	4.58	2.64	142.00	1.517	0	6.50	2.75
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	150.0000	0.07	4.58	2.64	142.00	1.517	0	8.50	6.30
7770.00 w/ Mount Pipe	270.0000	0.12	-4.58	2.64	142.00	1.517	0	12.24	8.51
LGP2140X	270.0000	0.02	-4.58	2.64	142.00	1.517	0	2.52	0.76
APTDC-BDFDM-DB	270.0000	0.00	-4.58	2.64	142.00	1.517	0	0.06	0.12
RRUS 11	270.0000	0.10	-4.58	2.64	142.00	1.517	0	6.50	2.75
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	270.0000	0.07	-4.58	2.64	142.00	1.517	0	8.50	6.30
DC6-48-60-18-8F	270.0000	0.03	-4.58	2.64	142.00	1.517	0	2.57	4.32
Empty Pipe Mount	0.0000	0.02	0.00	-5.29	142.00	1.517	0	1.20	1.20
Empty Pipe Mount	120.0000	0.02	4.58	2.64	142.00	1.517	0	1.20	1.20
Empty Pipe Mount	240.0000	0.02	-4.58	2.64	142.00	1.517	0	1.20	1.20
Platform Mount [LP 303-1]	0.0000	1.25	0.00	0.00	142.00	1.517	0	14.66	14.66
APXV18-206517S-C w/ Mount Pipe	30.0000	0.05	0.00	-2.54	115.00	1.429	0	5.40	4.70
APXV18-206517S-C w/ Mount Pipe	150.0000	0.05	2.20	1.27	115.00	1.429	0	5.40	4.70
APXV18-206517S-C w/ Mount Pipe	270.0000	0.05	-2.20	1.27	115.00	1.429	0	5.40	4.70
Pipe Mount [PM 501-3]	0.0000	0.16	0.00	0.00	115.00	1.429	0	5.78	5.78
GPS-TMG-HR-26NCM	0.0000	0.00	0.00	-4.15	50.00	1.126	0	0.16	0.16
Side Arm Mount [SO 701-1]	0.0000	0.07	0.00	0.00	50.00	1.126	0	0.85	1.67
Sum Weight:		11.11							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z ksf
172.00	HP2-102	-20.0000	0.03	0.00	-4.96	1.603	3.14	0
175.00	VHLP2.6	-20.0000	0.05	0.00	-5.92	1.611	6.68	0
175.00	VHLP2.6	-6.0000	0.05	0.00	-5.92	1.611	6.68	0
	Sum Weight:		0.13					

Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z ksf	t _z in
172.00	HP2-102	-20.0000	0.06	0.00	-4.96	1.603	3.63	0	0.9143
175.00	VHLP2.6	-20.0000	0.11	0.00	-5.92	1.611	7.39	0	0.9162
175.00	VHLP2.6	-6.0000	0.11	0.00	-5.92	1.611	7.39	0	0.9162
	Sum Weight:		0.28						

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Dish Pressures - Service

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z ksf
172.00	HP2-102	-20.0000	0.03	0.00	-4.96	1.603	3.14	0
175.00	VHLP2.6	-20.0000	0.05	0.00	-5.92	1.611	6.68	0
175.00	VHLP2.6	-6.0000	0.05	0.00	-5.92	1.611	6.68	0
	Sum		0.13					
	Weight:							

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	33.19					
Bracing Weight	0.00					
Total Member Self-Weight	33.19			-2.97	0.59	
Total Weight	51.66			-2.97	0.59	
Wind 0 deg - No Ice		-0.14	-36.08	-4463.90	25.20	-0.84
Wind 30 deg - No Ice		17.46	-31.28	-3873.19	-2132.65	-3.82
Wind 60 deg - No Ice		30.56	-18.07	-2238.51	-3748.33	-6.75
Wind 90 deg - No Ice		35.42	0.27	43.12	-4350.81	-7.46
Wind 120 deg - No Ice		30.70	18.45	2298.04	-3772.35	-5.65
Wind 150 deg - No Ice		17.83	31.51	3905.72	-2196.82	-2.95
Wind 180 deg - No Ice		0.18	36.27	4491.88	-30.68	0.49
Wind 210 deg - No Ice		-17.44	31.45	3895.75	2128.89	3.42
Wind 240 deg - No Ice		-30.54	18.09	2235.70	3745.84	6.49
Wind 270 deg - No Ice		-35.43	-0.24	-44.79	4353.76	7.64
Wind 300 deg - No Ice		-30.65	-18.29	-2277.28	3764.56	5.61
Wind 330 deg - No Ice		-17.77	-31.32	-3878.98	2187.56	2.75
Member Ice	7.77					
Total Weight Ice	68.79			-6.03	1.97	
Wind 0 deg - Ice		-0.02	-5.54	-702.55	5.70	-0.30
Wind 30 deg - Ice		2.69	-4.81	-610.00	-332.16	-0.65
Wind 60 deg - Ice		4.70	-2.77	-354.67	-584.52	-0.96
Wind 90 deg - Ice		5.45	0.04	0.66	-678.54	-0.95
Wind 120 deg - Ice		4.72	2.83	352.18	-588.18	-0.62
Wind 150 deg - Ice		2.74	4.84	603.56	-341.58	-0.21
Wind 180 deg - Ice		0.03	5.57	695.12	-2.68	0.26
Wind 210 deg - Ice		-2.68	4.83	601.83	335.41	0.60
Wind 240 deg - Ice		-4.70	2.78	343.02	587.95	0.92
Wind 270 deg - Ice		-5.45	-0.04	-12.12	682.71	0.98
Wind 300 deg - Ice		-4.72	-2.81	-360.60	590.87	0.61
Wind 330 deg - Ice		-2.73	-4.81	-611.15	344.08	0.18
Total Weight	51.66			-2.97	0.59	
Wind 0 deg - Service		-0.06	-14.09	-1745.43	9.98	-0.33
Wind 30 deg - Service		6.82	-12.22	-1514.68	-832.93	-1.49
Wind 60 deg - Service		11.94	-7.06	-876.13	-1464.05	-2.64
Wind 90 deg - Service		13.83	0.10	15.13	-1699.40	-2.91
Wind 120 deg - Service		11.99	7.21	895.95	-1473.44	-2.21
Wind 150 deg - Service		6.97	12.31	1523.96	-858.00	-1.15
Wind 180 deg - Service		0.07	14.17	1752.93	-11.85	0.19
Wind 210 deg - Service		-6.81	12.28	1520.06	831.73	1.33
Wind 240 deg - Service		-11.93	7.06	871.61	1463.35	2.53
Wind 270 deg - Service		-13.84	-0.09	-19.21	1700.83	2.99
Wind 300 deg - Service		-11.97	-7.15	-891.28	1470.67	2.19
Wind 330 deg - Service		-6.94	-12.23	-1516.94	854.65	1.07

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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
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	175 - 164.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8.27	0.40	5.34
			Max. Mx	11	-4.33	39.23	3.70
			Max. My	2	-4.26	1.13	44.69
			Max. Vy	11	-7.86	39.23	3.70
			Max. Vx	8	8.49	-0.85	-40.64
			Max. Torque	11			-7.12
L2	164.25 -	Pole	Max Tension	1	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	129.67		Max. Compression	14	-25.50	0.92	5.99
			Max. Mx	11	-14.02	562.07	12.57
			Max. My	8	-13.87	-7.05	-588.52
			Max. Vy	11	-22.66	562.07	12.57
			Max. Vx	8	23.54	-7.05	-588.52
			Max. Torque	11			-7.75
L3	129.67 - 96	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-34.50	1.11	6.32
			Max. Mx	11	-21.25	1371.10	21.32
			Max. My	8	-21.13	-13.34	-1426.77
			Max. Vy	11	-26.74	1371.10	21.32
			Max. Vx	8	27.64	-13.34	-1426.77
			Max. Torque	11			-7.47
L4	96 - 63.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-44.41	1.39	6.55
			Max. Mx	11	-29.66	2277.94	29.71
			Max. My	8	-29.58	-19.43	-2362.12
			Max. Vy	11	-29.86	2277.94	29.71
			Max. Vx	8	30.76	-19.43	-2362.12
			Max. Torque	11			-7.48
L5	63.17 - 31.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-55.62	1.72	6.62
			Max. Mx	11	-39.26	3256.85	37.71
			Max. My	8	-39.22	-25.30	-3368.57
			Max. Vy	11	-32.67	3256.85	37.71
			Max. Vx	8	33.54	-25.30	-3368.57
			Max. Torque	11			-7.52
L6	31.17 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-69.90	2.09	6.66
			Max. Mx	11	-51.64	4532.79	46.96
			Max. My	8	-51.64	-32.14	-4676.73
			Max. Vy	11	-35.45	4532.79	46.96
			Max. Vx	8	36.30	-32.14	-4676.73
			Max. Torque	11			-7.54

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	69.90	0.00	0.00
	Max. H _x	11	51.66	35.43	0.24
	Max. H _z	2	51.66	0.14	36.08
	Max. M _x	2	4647.70	0.14	36.08
	Max. M _z	5	4529.70	-35.42	-0.27
	Max. Torsion	5	7.35	-35.42	-0.27
	Min. Vert	1	51.66	0.00	0.00
	Min. H _x	5	51.66	-35.42	-0.27
	Min. H _z	8	51.66	-0.18	-36.27
	Min. M _x	8	-4676.73	-0.18	-36.27
	Min. M _z	11	-4532.79	35.43	0.24
	Min. Torsion	11	-7.54	35.43	0.24

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Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	51.66	0.00	-0.00	-3.09	0.61	-0.00
Dead+Wind 0 deg - No Ice	51.66	-0.14	-36.08	-4647.70	26.40	-0.84
Dead+Wind 30 deg - No Ice	51.66	17.46	-31.28	-4032.87	-2219.93	-3.78
Dead+Wind 60 deg - No Ice	51.66	30.56	-18.07	-2330.92	-3902.29	-6.66
Dead+Wind 90 deg - No Ice	51.66	35.42	0.27	45.17	-4529.70	-7.35
Dead+Wind 120 deg - No Ice	51.66	30.70	18.45	2393.12	-3927.23	-5.56
Dead+Wind 150 deg - No Ice	51.66	17.83	31.51	4066.60	-2287.00	-2.90
Dead+Wind 180 deg - No Ice	51.66	0.18	36.27	4676.73	-32.14	0.49
Dead+Wind 210 deg - No Ice	51.66	-17.44	31.45	4056.31	2215.92	3.38
Dead+Wind 240 deg - No Ice	51.66	-30.54	18.09	2327.92	3899.65	6.40
Dead+Wind 270 deg - No Ice	51.66	-35.43	-0.24	-46.96	4532.79	7.54
Dead+Wind 300 deg - No Ice	51.66	-30.65	-18.29	-2371.47	3919.19	5.53
Dead+Wind 330 deg - No Ice	51.66	-17.77	-31.32	-4038.81	2277.42	2.70
Dead+Ice+Temp	69.90	-0.00	-0.00	-6.66	2.09	-0.00
Dead+Wind 0 deg+Ice+Temp	69.90	-0.02	-5.54	-749.45	6.16	-0.31
Dead+Wind 30 deg+Ice+Temp	69.90	2.69	-4.81	-650.78	-353.97	-0.66
Dead+Wind 60 deg+Ice+Temp	69.90	4.70	-2.77	-378.54	-623.02	-0.96
Dead+Wind 90 deg+Ice+Temp	69.90	5.45	0.04	0.38	-723.27	-0.95
Dead+Wind 120 deg+Ice+Temp	69.90	4.72	2.83	375.22	-626.96	-0.62
Dead+Wind 150 deg+Ice+Temp	69.90	2.74	4.84	643.19	-364.11	-0.20
Dead+Wind 180 deg+Ice+Temp	69.90	0.03	5.57	740.80	-2.87	0.26
Dead+Wind 210 deg+Ice+Temp	69.90	-2.68	4.83	641.33	357.50	0.60
Dead+Wind 240 deg+Ice+Temp	69.90	-4.70	2.78	365.34	626.75	0.93
Dead+Wind 270 deg+Ice+Temp	69.90	-5.45	-0.04	-13.38	727.81	0.98
Dead+Wind 300 deg+Ice+Temp	69.90	-4.72	-2.81	-384.94	629.90	0.61
Dead+Wind 330 deg+Ice+Temp	69.90	-2.73	-4.81	-652.02	366.84	0.17
Dead+Wind 0 deg - Service	51.66	-0.06	-14.09	-1819.93	10.72	-0.33
Dead+Wind 30 deg - Service	51.66	6.82	-12.22	-1579.40	-867.91	-1.49
Dead+Wind 60 deg - Service	51.66	11.94	-7.06	-913.67	-1525.89	-2.63
Dead+Wind 90 deg - Service	51.66	13.83	0.10	15.70	-1771.28	-2.90
Dead+Wind 120 deg - Service	51.66	11.99	7.21	934.09	-1535.72	-2.20
Dead+Wind 150 deg - Service	51.66	6.97	12.31	1588.74	-894.21	-1.14
Dead+Wind 180 deg - Service	51.66	0.07	14.17	1827.41	-12.19	0.19
Dead+Wind 210 deg - Service	51.66	-6.81	12.28	1584.66	867.13	1.33
Dead+Wind 240 deg - Service	51.66	-11.93	7.06	908.54	1525.64	2.53
Dead+Wind 270 deg - Service	51.66	-13.84	-0.09	-20.35	1773.26	2.98
Dead+Wind 300 deg - Service	51.66	-11.97	-7.15	-929.56	1533.31	2.18
Dead+Wind 330 deg - Service	51.66	-6.94	-12.23	-1581.76	891.19	1.07

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-51.66	0.00	0.00	51.66	0.00	0.000%
2	-0.14	-51.66	-36.08	0.14	51.66	36.08	0.000%
3	17.46	-51.66	-31.28	-17.46	51.66	31.28	0.000%
4	30.56	-51.66	-18.07	-30.56	51.66	18.07	0.000%
5	35.42	-51.66	0.27	-35.42	51.66	-0.27	0.000%
6	30.70	-51.66	18.45	-30.70	51.66	-18.45	0.000%
7	17.83	-51.66	31.51	-17.83	51.66	-31.51	0.000%
8	0.18	-51.66	36.27	-0.18	51.66	-36.27	0.000%
9	-17.44	-51.66	31.45	17.44	51.66	-31.45	0.000%
10	-30.54	-51.66	18.09	30.54	51.66	-18.09	0.000%
11	-35.43	-51.66	-0.24	35.43	51.66	0.24	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
12	-30.65	-51.66	-18.29	30.65	51.66	18.29	0.000%
13	-17.77	-51.66	-31.32	17.77	51.66	31.32	0.000%
14	0.00	-69.90	0.00	0.00	69.90	0.00	0.000%
15	-0.02	-69.90	-5.54	0.02	69.90	5.54	0.000%
16	2.69	-69.90	-4.81	-2.69	69.90	4.81	0.000%
17	4.70	-69.90	-2.77	-4.70	69.90	2.77	0.000%
18	5.45	-69.90	0.04	-5.45	69.90	-0.04	0.000%
19	4.72	-69.90	2.83	-4.72	69.90	-2.83	0.000%
20	2.74	-69.90	4.84	-2.74	69.90	-4.84	0.000%
21	0.03	-69.90	5.57	-0.03	69.90	-5.57	0.000%
22	-2.68	-69.90	4.83	2.68	69.90	-4.83	0.000%
23	-4.70	-69.90	2.78	4.70	69.90	-2.78	0.000%
24	-5.45	-69.90	-0.04	5.45	69.90	0.04	0.000%
25	-4.72	-69.90	-2.81	4.72	69.90	2.81	0.000%
26	-2.73	-69.90	-4.81	2.73	69.90	4.81	0.000%
27	-0.06	-51.66	-14.09	0.06	51.66	14.09	0.000%
28	6.82	-51.66	-12.22	-6.82	51.66	12.22	0.000%
29	11.94	-51.66	-7.06	-11.94	51.66	7.06	0.000%
30	13.83	-51.66	0.10	-13.83	51.66	-0.10	0.000%
31	11.99	-51.66	7.21	-11.99	51.66	-7.21	0.000%
32	6.97	-51.66	12.31	-6.97	51.66	-12.31	0.000%
33	0.07	-51.66	14.17	-0.07	51.66	-14.17	0.000%
34	-6.81	-51.66	12.28	6.81	51.66	-12.28	0.000%
35	-11.93	-51.66	7.06	11.93	51.66	-7.06	0.000%
36	-13.84	-51.66	-0.09	13.84	51.66	0.09	0.000%
37	-11.97	-51.66	-7.15	11.97	51.66	7.15	0.000%
38	-6.94	-51.66	-12.23	6.94	51.66	12.23	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	5	0.0000001	0.00006448
3	Yes	6	0.0000001	0.00008949
4	Yes	6	0.0000001	0.00010380
5	Yes	5	0.0000001	0.00031010
6	Yes	6	0.0000001	0.00009163
7	Yes	6	0.0000001	0.00010200
8	Yes	4	0.0000001	0.00090249
9	Yes	6	0.0000001	0.00009924
10	Yes	6	0.0000001	0.00008781
11	Yes	5	0.0000001	0.00043074
12	Yes	6	0.0000001	0.00010429
13	Yes	6	0.0000001	0.00009267
14	Yes	4	0.0000001	0.00006103
15	Yes	5	0.0000001	0.00029396
16	Yes	5	0.0000001	0.00031455
17	Yes	5	0.0000001	0.00031387
18	Yes	5	0.0000001	0.00028089
19	Yes	5	0.0000001	0.00030709
20	Yes	5	0.0000001	0.00031080
21	Yes	5	0.0000001	0.00028474
22	Yes	5	0.0000001	0.00030853
23	Yes	5	0.0000001	0.00030372
24	Yes	5	0.0000001	0.00028382

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25	Yes	5	0.00000001	0.00031885
26	Yes	5	0.00000001	0.00032046
27	Yes	4	0.00000001	0.00031390
28	Yes	5	0.00000001	0.00018550
29	Yes	5	0.00000001	0.00024512
30	Yes	5	0.00000001	0.00007976
31	Yes	5	0.00000001	0.00019321
32	Yes	5	0.00000001	0.00023246
33	Yes	4	0.00000001	0.00026329
34	Yes	5	0.00000001	0.00022302
35	Yes	5	0.00000001	0.00018092
36	Yes	5	0.00000001	0.00009179
37	Yes	5	0.00000001	0.00024572
38	Yes	5	0.00000001	0.00019694

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 164.25	46.332	33	2.2804	0.0265
L2	167.17 - 129.67	42.623	33	2.2682	0.0219
L3	133.5 - 96	27.496	33	1.9593	0.0100
L4	100.67 - 63.17	15.529	33	1.4846	0.0054
L5	68.67 - 31.17	7.154	33	0.9834	0.0028
L6	37.42 - 0	2.141	33	0.5170	0.0013

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	VHLP2.6	33	46.332	2.2804	0.0265	24457
172.00	HP2-102	33	44.909	2.2775	0.0247	24457
162.00	800MHz 2X50W RRH W/FILTER	33	40.192	2.2466	0.0193	10964
152.00	BXA-171085-12BF w/ Mount Pipe	33	35.570	2.1721	0.0152	6985
142.00	(2) 7770.00 w/ Mount Pipe	33	31.110	2.0654	0.0121	5124
115.00	APXV18-206517S-C w/ Mount Pipe	33	20.344	1.7012	0.0070	3866
50.00	GPS-TMG-HR-26NCM	33	3.754	0.7003	0.0018	3428

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 164.25	118.550	8	5.8116	0.0667
L2	167.17 - 129.67	109.043	8	5.7910	0.0551
L3	133.5 - 96	70.333	8	5.0164	0.0252
L4	100.67 - 63.17	39.728	8	3.7994	0.0136
L5	68.67 - 31.17	18.304	8	2.5167	0.0072
L6	37.42 - 0	5.480	8	1.3230	0.0032

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	VHLP2.6	8	118.550	5.8116	0.0675	10548
172.00	HP2-102	8	114.902	5.8083	0.0630	10548
162.00	800MHz 2X50W RRH W/FILTER	8	102.816	5.7414	0.0495	4591
152.00	BXA-171085-12BF w/ Mount Pipe	8	90.984	5.5589	0.0389	2849
142.00	(2) 7770.00 w/ Mount Pipe	8	79.575	5.2894	0.0308	2063
115.00	APXV18-206517S-C w/ Mount Pipe	8	52.043	4.3540	0.0176	1528
50.00	GPS-TMG-HR-26NCM	8	9.606	1.7922	0.0046	1342

Compression Checks

Pole Design Data

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		
L1	175 - 173.881	TP26x22x0.25	10.75	0.00	0.0	39.000	17.2586	-0.32	673.09	0.000*		
	173.881 - 172.763							-0.22	698.85	0.000		
	172.763 - 171.644							39.000	18.2494	-7.80	711.73	0.011*
	171.644 - 170.526							39.000	18.5797	-4.02	724.61	0.006
	170.526 - 169.407							39.000	18.9099	-4.10	737.49	0.006
	169.407 - 168.289							39.000	19.2402	-4.18	750.37	0.006
	168.289 - 167.17							39.000	19.5705	-4.26	763.25	0.006
	167.17 - 164.25							39.000	20.4326	-2.13	796.87	0.003
	164.25 - 162.542							39.000	24.6504	-2.58	961.37	0.003
	162.542 - 160.833							39.000	25.0864	-4.90	978.37	0.005
L2	160.833 - 159.125	TP34.0625x24.4135x0.3125	37.50	0.00	0.0	39.000	25.5224	-6.78	995.37	0.007		
	159.125 - 157.417							39.000	25.9584	-6.98	1012.38	0.007
	157.417 - 155.708							39.000	25.9584	-6.98	1012.38	0.007
	155.708 - 154							39.000	26.3944	-7.18	1029.38	0.007
	154 - 152.292							39.000	26.8304	-7.38	1046.38	0.007
	152.292 - 150.583							39.000	26.8304	-7.38	1046.38	0.007
	150.583 - 148.875							39.000	27.2664	-7.58	1063.39	0.007
	148.875 - 147.167							39.000	27.7024	-7.79	1080.39	0.007
	147.167 - 145.459							39.000	28.1384	-9.66	1097.40	0.009
	145.459 - 143.751							39.000	28.1384	-9.66	1097.40	0.009

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Section No.	Elevation ft	Size	L ft	L _w ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
	150.583 - 148.875					39.000	28.5744	-9.87	1114.40	0.009
	148.875 - 147.167					39.000	29.0103	-10.09	1131.40	0.009
	147.167 - 145.458					39.000	29.4463	-10.32	1148.41	0.009
	145.458 - 143.75					39.000	29.8823	-10.52	1165.41	0.009
	143.75 - 142.042					39.000	30.3183	-10.75	1182.41	0.009
	142.042 - 140.333					39.000	30.7543	-12.88	1199.42	0.011
	140.333 - 138.625					39.000	31.1903	-13.12	1216.42	0.011
	138.625 - 136.917					39.000	31.6263	-13.37	1233.43	0.011
	136.917 - 135.208					39.000	32.0623	-13.62	1250.43	0.011
	135.208 - 133.5					39.000	32.4983	-13.87	1267.43	0.011
	133.5 - 129.67					39.000	33.4758	-6.89	1305.56	0.005
L3	133.5 - 129.67	TP41.75x32.452x0.375	37.50	0.00	0.0	39.000	39.3100	-8.03	1533.09	0.005
	129.67 - 128.059					39.000	39.7854	-15.23	1551.63	0.010
	128.059 - 126.448					39.000	40.2609	-15.53	1570.18	0.010
	126.448 - 124.837					39.000	40.7364	-15.85	1588.72	0.010
	124.837 - 123.226					39.000	41.2118	-16.16	1607.26	0.010
	123.226 - 121.614					39.000	41.6873	-16.48	1625.81	0.010
	121.614 - 120.003					39.000	42.1628	-16.80	1644.35	0.010
	120.003 - 118.392					39.000	42.6382	-17.12	1662.89	0.010
	118.392 - 116.781					39.000	43.1137	-17.45	1681.43	0.010
	116.781 - 115.17					39.000	43.5892	-17.77	1699.98	0.010
	115.17 - 113.559					39.000	44.0646	-18.35	1718.52	0.011
	113.559 - 111.948					39.000	44.5401	-18.69	1737.06	0.011
	111.948 - 110.337					39.000	45.0156	-19.03	1755.61	0.011
	110.337 - 108.726					39.000	45.4911	-19.37	1774.15	0.011
	108.726 - 107.114					39.000	45.9665	-19.71	1792.69	0.011
	107.114 - 105.503					39.000	46.4420	-20.06	1811.24	0.011
	105.503 - 103.892					39.000	46.9175	-20.42	1829.78	0.011
	103.892 - 102.281					39.000	47.3929	-20.77	1848.32	0.011
	102.281 - 100.67					39.000	47.8684	-21.13	1866.87	0.011
	100.67 - 96					39.000	49.2466	-11.60	1920.62	0.006
L4	100.67 - 96	TP49.0625x39.8421x0.375	37.50	0.00	0.0	39.000	48.3424	-11.29	1885.35	0.006
	96 - 94.4817					39.000	48.7868	-23.24	1902.68	0.012

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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
	94.4817 - 92.9633					39.000	49.2311	-23.59	1920.01	0.012
	92.9633 - 91.445					39.000	49.6755	-23.95	1937.34	0.012
	91.445 - 89.9267					39.000	50.1198	-24.31	1954.67	0.012
	89.9267 - 88.4083					39.000	50.5642	-24.67	1972.00	0.013
	88.4083 - 86.89					39.000	51.0085	-25.03	1989.33	0.013
	86.89 - 85.3717					39.000	51.4529	-25.39	2006.66	0.013
	85.3717 - 83.8533					39.000	51.8972	-25.76	2023.99	0.013
	83.8533 - 82.335					39.000	52.3415	-26.13	2041.32	0.013
	82.335 - 80.8167					39.000	52.7859	-26.50	2058.65	0.013
	80.8167 - 79.2983					39.000	53.2302	-26.88	2075.98	0.013
	79.2983 - 77.78					39.000	53.6746	-27.26	2093.31	0.013
	77.78 - 76.2617					39.000	54.1189	-27.64	2110.64	0.013
	76.2617 - 74.7433					39.000	54.5633	-28.02	2127.97	0.013
	74.7433 - 73.225					39.000	55.0076	-28.41	2145.30	0.013
	73.225 - 71.7067					39.000	55.4520	-28.79	2162.63	0.013
	71.7067 - 70.1883					39.000	55.8963	-29.18	2179.96	0.013
	70.1883 - 68.67					39.000	56.3407	-29.58	2197.29	0.013
	68.67 - 63.17					39.000	57.9503	-16.19	2260.06	0.007
L5	68.67 - 63.17	TP56.125x46.9602x0.375	37.50	0.00	0.0	39.000	57.0479	-15.81	2224.87	0.007
	63.17 - 61.7394					39.000	57.4640	-32.39	2241.10	0.014
	61.7394 - 60.3089					39.000	57.8802	-32.77	2257.33	0.015
	60.3089 - 58.8783					39.000	58.2963	-33.15	2273.56	0.015
	58.8783 - 57.4478					39.000	58.7125	-33.54	2289.79	0.015
	57.4478 - 56.0172					39.000	59.1286	-33.92	2306.02	0.015
	56.0172 - 54.5867					39.000	59.5447	-34.31	2322.24	0.015
	54.5867 - 53.1561					39.000	59.9609	-34.70	2338.47	0.015
	53.1561 - 51.7256					39.000	60.3770	-35.10	2354.70	0.015
	51.7256 - 50.295					39.000	60.7931	-35.49	2370.93	0.015
	50.295 - 48.8644					39.000	61.2093	-35.96	2387.16	0.015
	48.8644 - 47.4339					39.000	61.6254	-36.36	2403.39	0.015
	47.4339 - 46.0033					39.000	62.0415	-36.76	2419.62	0.015
	46.0033 - 44.5728					39.000	62.4577	-37.16	2435.85	0.015
	44.5728 - 43.1422					39.000	62.8738	-37.57	2452.08	0.015
	43.1422 - 41.7117					39.000	63.2900	-37.98	2468.31	0.015

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L6	41.7117 - 40.2811	TP62.9375x53.8475x0.375	37.42	0.00	0.0	39.000	63.7061	-38.39	2484.54	0.015
	39.000					64.1222	-38.80	2500.77	0.016	
	39.000					64.5384	-39.22	2517.00	0.016	
	39.000					66.3564	-21.39	2587.90	0.008	
	39.000					65.4528	-20.95	2552.66	0.008	
	39.000					65.9271	-42.81	2571.16	0.017	
	39.000					66.4014	-43.28	2589.66	0.017	
	39.000					66.8757	-43.75	2608.15	0.017	
	38.908					67.3501	-44.22	2620.48	0.017	
	38.789					67.8244	-44.70	2630.86	0.017	
	38.670					68.2987	-45.18	2641.14	0.017	
	38.551					68.7731	-45.66	2651.30	0.017	
	38.432					69.2474	-46.14	2661.34	0.017	
	38.313					69.7217	-46.63	2671.28	0.017	
	38.194					70.1961	-47.12	2681.10	0.018	
	38.075					70.6704	-47.61	2690.81	0.018	
	37.956					71.1447	-48.10	2700.40	0.018	
	37.837					71.6190	-48.60	2709.88	0.018	
	37.718					72.0934	-49.10	2719.25	0.018	
	37.599					72.5677	-49.60	2728.51	0.018	
37.480	73.0420	-50.11	2737.65	0.018						
37.361	73.5164	-50.61	2746.68	0.018						
37.243	73.9907	-51.13	2755.60	0.019						
37.124	74.4650	-51.64	2764.41	0.019						

* DL controls

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	175 - 173.881	TP26x22x0.25	1.32	0.172	39.000	0.004	0.00	0.000	39.000	0.000
	173.881 - 172.763		2.13	0.256	39.000	0.007	0.00	0.000	39.000	0.000
	172.763 - 171.644		5.33	0.619	39.000	0.016	0.00	0.000	39.000	0.000

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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 $\frac{f_{by}}{F_{by}}$
	171.644 - 170.526		17.27	1.936	39.000	0.050	0.00	0.000	39.000	0.000
	170.526 - 169.407		26.33	2.849	39.000	0.073	0.00	0.000	39.000	0.000
	169.407 - 168.289		35.48	3.707	39.000	0.095	0.00	0.000	39.000	0.000
	168.289 - 167.17		44.71	4.514	39.000	0.116	0.00	0.000	39.000	0.000
	167.17 - 164.25		32.33	2.993	39.000	0.077	0.00	0.000	39.000	0.000
L2	167.17 - 164.25	TP34.0625x24.4135x0.3125	36.92	2.945	39.000	0.076	0.00	0.000	39.000	0.000
	164.25 - 162.542		83.92	6.461	39.000	0.166	0.00	0.000	39.000	0.000
	162.542 - 160.833		102.53	7.625	39.000	0.196	0.00	0.000	39.000	0.000
	160.833 - 159.125		123.10	8.847	39.000	0.227	0.00	0.000	39.000	0.000
	159.125 - 157.417		143.91	10.003	39.000	0.256	0.00	0.000	39.000	0.000
	157.417 - 155.708		164.97	11.095	39.000	0.284	0.00	0.000	39.000	0.000
	155.708 - 154		186.28	12.128	39.000	0.311	0.00	0.000	39.000	0.000
	154 - 152.292		207.84	13.107	39.000	0.336	0.00	0.000	39.000	0.000
	152.292 - 150.583		236.64	14.461	39.000	0.371	0.00	0.000	39.000	0.000
	150.583 - 148.875		266.89	15.813	39.000	0.405	0.00	0.000	39.000	0.000
	148.875 - 147.167		297.39	17.092	39.000	0.438	0.00	0.000	39.000	0.000
	147.167 - 145.458		328.15	18.303	39.000	0.469	0.00	0.000	39.000	0.000
	145.458 - 143.75		359.32	19.458	39.000	0.499	0.00	0.000	39.000	0.000
	143.75 - 142.042		390.94	20.563	39.000	0.527	0.00	0.000	39.000	0.000
	142.042 - 140.333		429.87	21.971	39.000	0.563	0.00	0.000	39.000	0.000
	140.333 - 138.625		469.14	23.309	39.000	0.598	0.00	0.000	39.000	0.000
	138.625 - 136.917		508.69	24.578	39.000	0.630	0.00	0.000	39.000	0.000
	136.917 - 135.208		548.49	25.782	39.000	0.661	0.00	0.000	39.000	0.000
	135.208 - 133.5		588.56	26.925	39.000	0.690	0.00	0.000	39.000	0.000
L3	133.5 - 129.67	TP41.75x32.452x0.375	319.79	13.784	39.000	0.353	0.00	0.000	39.000	0.000
	129.67 - 128.059		359.71	13.521	39.000	0.347	0.00	0.000	39.000	0.000
	128.059 - 126.448		718.22	26.351	39.000	0.676	0.00	0.000	39.000	0.000
	126.448 - 124.837		757.17	27.125	39.000	0.696	0.00	0.000	39.000	0.000
	124.837 - 123.226		796.38	27.863	39.000	0.714	0.00	0.000	39.000	0.000
	123.226 - 121.614		835.83	28.569	39.000	0.733	0.00	0.000	39.000	0.000
	121.614 - 120.003		875.54	29.244	39.000	0.750	0.00	0.000	39.000	0.000
			915.49	29.889	39.000	0.766	0.00	0.000	39.000	0.000

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	120.003 - 118.392		955.69	30.506	39.000	0.782	0.00	0.000	39.000	0.000
	118.392 - 116.781		996.15	31.096	39.000	0.797	0.00	0.000	39.000	0.000
	116.781 - 115.17		1036.85	31.661	39.000	0.812	0.00	0.000	39.000	0.000
	115.17 - 113.559		1079.03	32.239	39.000	0.827	0.00	0.000	39.000	0.000
	113.559 - 111.948		1121.62	32.796	39.000	0.841	0.00	0.000	39.000	0.000
	111.948 - 110.337		1164.45	33.329	39.000	0.855	0.00	0.000	39.000	0.000
	110.337 - 108.726		1207.54	33.840	39.000	0.868	0.00	0.000	39.000	0.000
	108.726 - 107.114		1250.88	34.330	39.000	0.880	0.00	0.000	39.000	0.000
	107.114 - 105.503		1294.48	34.800	39.000	0.892	0.00	0.000	39.000	0.000
	105.503 - 103.892		1338.34	35.250	39.000	0.904	0.00	0.000	39.000	0.000
	103.892 - 102.281		1382.46	35.681	39.000	0.915	0.00	0.000	39.000	0.000
	102.281 - 100.67		1426.83	36.096	39.000	0.926	0.00	0.000	39.000	0.000
L4	100.67 - 96	TP49.0625x39.8421x0.375	800.46	19.127	39.000	0.490	0.00	0.000	39.000	0.000
	100.67 - 96		756.68	18.767	39.000	0.481	0.00	0.000	39.000	0.000
	96 - 94.4817		1600.03	38.961	39.000	0.999	0.00	0.000	39.000	0.000
	94.4817 - 92.9633		1643.13	39.288	39.000	1.007	0.00	0.000	39.000	0.000
	92.9633 - 91.445		1686.46	39.602	39.000	1.015	0.00	0.000	39.000	0.000
	91.445 - 89.9267		1730.00	39.905	39.000	1.023	0.00	0.000	39.000	0.000
	89.9267 - 88.4083		1773.75	40.195	39.000	1.031	0.00	0.000	39.000	0.000
	88.4083 - 86.89		1817.72	40.474	39.000	1.038	0.00	0.000	39.000	0.000
	86.89 - 85.3717		1861.91	40.742	39.000	1.045	0.00	0.000	39.000	0.000
	85.3717 - 83.8533		1906.31	40.999	39.000	1.051	0.00	0.000	39.000	0.000
	83.8533 - 82.335		1950.93	41.246	39.000	1.058	0.00	0.000	39.000	0.000
	82.335 - 80.8167		1995.76	41.483	39.000	1.064	0.00	0.000	39.000	0.000
	80.8167 - 79.2983		2040.81	41.712	39.000	1.070	0.00	0.000	39.000	0.000
	79.2983 - 77.78		2086.07	41.931	39.000	1.075	0.00	0.000	39.000	0.000
	77.78 - 76.2617		2131.56	42.142	39.000	1.081	0.00	0.000	39.000	0.000
	76.2617 - 74.7433		2177.25	42.344	39.000	1.086	0.00	0.000	39.000	0.000
	74.7433 - 73.225		2223.17	42.538	39.000	1.091	0.00	0.000	39.000	0.000
	73.225 - 71.7067		2269.29	42.725	39.000	1.096	0.00	0.000	39.000	0.000
	71.7067 - 70.1883		2315.64	42.905	39.000	1.100	0.00	0.000	39.000	0.000
	70.1883 -		2362.20	43.077	39.000	1.105	0.00	0.000	39.000	0.000

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L5	68.67	TP56.125x46.9602x0.375	1296.68	22.346	39.000	0.573	0.00	0.000	39.000	0.000	
	68.67 - 63.17		1236.29	21.987	39.000	0.564	0.00	0.000	39.000	0.000	
	63.17 - 61.7394		2577.92	45.184	39.000	1.159	0.00	0.000	39.000	0.000	
	61.7394 - 61.7394		2623.03	45.313	39.000	1.162	0.00	0.000	39.000	0.000	
	60.3089 - 60.3089		2668.32	45.438	39.000	1.165	0.00	0.000	39.000	0.000	
	58.8783 - 58.8783		2713.79	45.557	39.000	1.168	0.00	0.000	39.000	0.000	
	57.4478 - 57.4478		2759.43	45.670	39.000	1.171	0.00	0.000	39.000	0.000	
	56.0172 - 56.0172		2805.23	45.780	39.000	1.174	0.00	0.000	39.000	0.000	
	54.5867 - 54.5867		2851.21	45.884	39.000	1.177	0.00	0.000	39.000	0.000	
	53.1561 - 53.1561		2897.36	45.984	39.000	1.179	0.00	0.000	39.000	0.000	
	51.7256 - 51.7256		2943.67	46.079	39.000	1.182	0.00	0.000	39.000	0.000	
	50.295 - 50.295		2990.22	46.171	39.000	1.184	0.00	0.000	39.000	0.000	
	48.8644 - 48.8644		3036.95	46.259	39.000	1.186	0.00	0.000	39.000	0.000	
	47.4339 - 47.4339		3083.84	46.343	39.000	1.188	0.00	0.000	39.000	0.000	
	46.0033 - 46.0033		3130.91	46.423	39.000	1.190	0.00	0.000	39.000	0.000	
	44.5728 - 44.5728		3178.13	46.500	39.000	1.192	0.00	0.000	39.000	0.000	
	43.1422 - 43.1422		3225.53	46.572	39.000	1.194	0.00	0.000	39.000	0.000	
	41.7117 - 41.7117		3273.07	46.642	39.000	1.196	0.00	0.000	39.000	0.000	
	40.2811 - 40.2811		3320.79	46.707	39.000	1.198	0.00	0.000	39.000	0.000	
	38.8506 - 38.8506		3368.67	46.769	39.000	1.199	0.00	0.000	39.000	0.000	
	37.42 - 37.42		1827.28	23.994	39.000	0.615	0.00	0.000	39.000	0.000	
	L6		37.42 - 31.17	1752.78	23.658	39.000	0.607	0.00	0.000	39.000	0.000
			31.17 - 31.17	3636.14	48.371	39.000	1.240	0.00	0.000	39.000	0.000
29.5295 - 29.5295		3692.39	48.418	39.000	1.241	0.00	0.000	39.000	0.000		
27.8889 - 27.8889		3748.82	48.461	39.000	1.243	0.00	0.000	39.000	0.000		
26.2484 - 26.2484		3805.43	48.500	38.908	1.247	0.00	0.000	38.908	0.000		
24.6079 - 24.6079		3862.23	48.536	38.789	1.251	0.00	0.000	38.789	0.000		
22.9674 - 22.9674		3919.21	48.568	38.670	1.256	0.00	0.000	38.670	0.000		
21.3268 - 21.3268		3976.37	48.596	38.551	1.261	0.00	0.000	38.551	0.000		
19.6863 - 19.6863		4033.72	48.622	38.432	1.265	0.00	0.000	38.432	0.000		
18.0458 - 18.0458		4091.24	48.645	38.313	1.270	0.00	0.000	38.313	0.000		
16.4053 - 16.4053		4148.96	48.664	38.194	1.274	0.00	0.000	38.194	0.000		

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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 $\frac{f_{by}}{F_{by}}$
	14.7647									
	14.7647 - 13.1242		4206.86	48.681	38.075	1.279	0.00	0.000	38.075	0.000
	13.1242 - 11.4837		4264.94	48.696	37.956	1.283	0.00	0.000	37.956	0.000
	11.4837 - 9.84316		4323.22	48.707	37.837	1.287	0.00	0.000	37.837	0.000
	9.84316 - 8.20263		4381.68	48.717	37.718	1.292	0.00	0.000	37.718	0.000
	8.20263 - 6.5621		4440.33	48.723	37.599	1.296	0.00	0.000	37.599	0.000
	6.5621 - 4.92158		4499.18	48.728	37.480	1.300	0.00	0.000	37.480	0.000
	4.92158 - 3.28105		4558.21	48.730	37.361	1.304	0.00	0.000	37.361	0.000
	3.28105 - 1.64053		4617.43	48.731	37.243	1.308	0.00	0.000	37.243	0.000
	1.64053 - 0		4676.84	48.729	37.124	1.313	0.00	0.000	37.124	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_w ksi	Allow. F_w ksi	Ratio $\frac{f_w}{F_w}$
L1	175 - 173.881	TP26x22x0.25	0.00	0.000	26.000	0.000	0.00	0.000	26.000	0.000
	173.881 - 172.763		0.75	0.042	26.000	0.003	0.36	0.021	26.000	0.001
	172.763 - 171.644		0.01	0.000	26.000	0.000	0.00	0.000	26.000	0.000
	171.644 - 170.526		8.07	0.434	26.000	0.033	0.34	0.019	26.000	0.001
	170.526 - 169.407		8.14	0.430	26.000	0.033	0.34	0.018	26.000	0.001
	169.407 - 168.289		8.22	0.427	26.000	0.033	0.34	0.017	26.000	0.001
	168.289 - 167.17		8.29	0.424	26.000	0.033	0.34	0.017	26.000	0.001
	167.17 - 164.25		4.02	0.197	26.000	0.015	0.16	0.007	26.000	0.000
L2	167.17 - 164.25	TP34.0625x24.4135x0.3125	4.50	0.182	26.000	0.014	0.18	0.007	26.000	0.000
	164.25 - 162.542		8.66	0.345	26.000	0.027	0.34	0.013	26.000	0.000
	162.542 - 160.833		11.97	0.469	26.000	0.036	0.34	0.012	26.000	0.000
	160.833 - 159.125		12.11	0.467	26.000	0.036	0.34	0.012	26.000	0.000
	159.125 - 157.417		12.26	0.464	26.000	0.036	0.33	0.011	26.000	0.000
	157.417 - 155.708		12.40	0.462	26.000	0.036	0.33	0.011	26.000	0.000
	155.708 - 154		12.55	0.460	26.000	0.035	0.33	0.010	26.000	0.000
	154 - 152.292		12.70	0.458	26.000	0.035	0.33	0.010	26.000	0.000
	152.292 - 150.583		17.64	0.627	26.000	0.048	0.32	0.010	26.000	0.000
	150.583 -		17.78	0.622	26.000	0.048	0.32	0.009	26.000	0.000

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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_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$
	148.875									
	148.875 - 147.167		17.93	0.618	26.000	0.048	0.32	0.009	26.000	0.000
	147.167 - 145.458		18.09	0.614	26.000	0.047	0.32	0.009	26.000	0.000
	145.458 - 143.75		18.44	0.617	26.000	0.047	0.66	0.017	26.000	0.001
	143.75 - 142.042		18.59	0.613	26.000	0.047	0.66	0.017	26.000	0.001
	142.042 - 140.333		22.92	0.745	26.000	0.057	0.65	0.016	26.000	0.001
	140.333 - 138.625		23.08	0.740	26.000	0.057	0.21	0.005	26.000	0.000
	138.625 - 136.917		23.23	0.735	26.000	0.056	0.21	0.005	26.000	0.000
	136.917 - 135.208		23.39	0.729	26.000	0.056	0.22	0.005	26.000	0.000
	135.208 - 133.5		23.54	0.724	26.000	0.056	0.22	0.005	26.000	0.000
	133.5 - 129.67		11.37	0.340	26.000	0.026	0.11	0.002	26.000	0.000
L3	133.5 - 129.67	TP41.75x32.452x0.375	12.59	0.320	26.000	0.025	0.12	0.002	26.000	0.000
	129.67 - 128.059		24.11	0.606	26.000	0.047	0.23	0.004	26.000	0.000
	128.059 - 126.448		24.27	0.603	26.000	0.046	0.23	0.004	26.000	0.000
	126.448 - 124.837		24.42	0.600	26.000	0.046	0.23	0.004	26.000	0.000
	124.837 - 123.226		24.58	0.596	26.000	0.046	0.24	0.004	26.000	0.000
	123.226 - 121.614		24.73	0.593	26.000	0.046	0.24	0.004	26.000	0.000
	121.614 - 120.003		24.89	0.590	26.000	0.045	0.24	0.004	26.000	0.000
	120.003 - 118.392		25.04	0.587	26.000	0.045	0.25	0.004	26.000	0.000
	118.392 - 116.781		25.20	0.584	26.000	0.045	0.25	0.004	26.000	0.000
	116.781 - 115.17		25.36	0.582	26.000	0.045	0.25	0.004	26.000	0.000
	115.17 - 113.559		26.36	0.598	26.000	0.046	0.26	0.004	26.000	0.000
	113.559 - 111.948		26.52	0.595	26.000	0.046	0.26	0.004	26.000	0.000
	111.948 - 110.337		26.68	0.593	26.000	0.046	0.26	0.004	26.000	0.000
	110.337 - 108.726		26.84	0.590	26.000	0.045	0.27	0.004	26.000	0.000
	108.726 - 107.114		27.00	0.587	26.000	0.045	0.27	0.004	26.000	0.000
	107.114 - 105.503		27.16	0.585	26.000	0.045	0.27	0.004	26.000	0.000
	105.503 - 103.892		27.32	0.582	26.000	0.045	0.28	0.004	26.000	0.000
	103.892 - 102.281		27.48	0.580	26.000	0.045	0.28	0.004	26.000	0.000
	102.281 - 100.67		27.64	0.577	26.000	0.044	0.28	0.003	26.000	0.000
	100.67 - 96		14.61	0.297	26.000	0.023	0.15	0.002	26.000	0.000
L4	100.67 - 96	TP49.0625x39.8421x0.375	13.58	0.281	26.000	0.022	0.14	0.002	26.000	0.000
	96 - 94.4817		28.34	0.581	26.000	0.045	0.30	0.004	26.000	0.000

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	94.4817 - 92.9633		28.48	0.578	26.000	0.044	0.30	0.003	26.000	0.000
	92.9633 - 91.445		28.62	0.576	26.000	0.044	0.30	0.003	26.000	0.000
	91.445 - 89.9267		28.76	0.574	26.000	0.044	0.31	0.003	26.000	0.000
	89.9267 - 88.4083		28.90	0.572	26.000	0.044	0.31	0.003	26.000	0.000
	88.4083 - 86.89		29.05	0.569	26.000	0.044	0.31	0.003	26.000	0.000
	86.89 - 85.3717		29.19	0.567	26.000	0.044	0.32	0.003	26.000	0.000
	85.3717 - 83.8533		29.33	0.565	26.000	0.043	0.32	0.003	26.000	0.000
	83.8533 - 82.335		29.47	0.563	26.000	0.043	0.32	0.003	26.000	0.000
	82.335 - 80.8167		29.62	0.561	26.000	0.043	0.33	0.003	26.000	0.000
	80.8167 - 79.2983		29.76	0.559	26.000	0.043	0.33	0.003	26.000	0.000
	79.2983 - 77.78		29.90	0.557	26.000	0.043	0.33	0.003	26.000	0.000
	77.78 - 76.2617		30.04	0.555	26.000	0.043	0.34	0.003	26.000	0.000
	76.2617 - 74.7433		30.19	0.553	26.000	0.043	0.34	0.003	26.000	0.000
	74.7433 - 73.225		30.33	0.551	26.000	0.042	0.34	0.003	26.000	0.000
	73.225 - 71.7067		30.47	0.549	26.000	0.042	0.35	0.003	26.000	0.000
	71.7067 - 70.1883		30.61	0.548	26.000	0.042	0.35	0.003	26.000	0.000
	70.1883 - 68.67		30.76	0.546	26.000	0.042	0.35	0.003	26.000	0.000
	68.67 - 63.17		16.21	0.280	26.000	0.022	0.19	0.002	26.000	0.000
L5	68.67 - 63.17	TP56.125x46.9602x0.375	15.18	0.266	26.000	0.020	0.18	0.002	26.000	0.000
	63.17 - 61.7394		31.50	0.548	26.000	0.042	0.37	0.003	26.000	0.000
	61.7394 - 60.3089		31.62	0.546	26.000	0.042	0.37	0.003	26.000	0.000
	60.3089 - 58.8783		31.74	0.544	26.000	0.042	0.38	0.003	26.000	0.000
	58.8783 - 57.4478		31.86	0.543	26.000	0.042	0.38	0.003	26.000	0.000
	57.4478 - 56.0172		31.98	0.541	26.000	0.042	0.38	0.003	26.000	0.000
	56.0172 - 54.5867		32.10	0.539	26.000	0.041	0.39	0.003	26.000	0.000
	54.5867 - 53.1561		32.22	0.537	26.000	0.041	0.39	0.003	26.000	0.000
	53.1561 - 51.7256		32.34	0.536	26.000	0.041	0.39	0.003	26.000	0.000
	51.7256 - 50.295		32.45	0.534	26.000	0.041	0.40	0.003	26.000	0.000
	50.295 - 48.8644		32.63	0.533	26.000	0.041	0.40	0.003	26.000	0.000
	48.8644 - 47.4339		32.75	0.531	26.000	0.041	0.40	0.003	26.000	0.000
	47.4339 - 46.0033		32.86	0.530	26.000	0.041	0.41	0.003	26.000	0.000

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	46.0033 - 44.5728		32.98	0.528	26.000	0.041	0.41	0.003	26.000	0.000
	44.5728 - 43.1422		33.09	0.526	26.000	0.040	0.41	0.003	26.000	0.000
	43.1422 - 41.7117		33.21	0.525	26.000	0.040	0.42	0.003	26.000	0.000
	41.7117 - 40.2811		33.32	0.523	26.000	0.040	0.42	0.003	26.000	0.000
	40.2811 - 38.8506		33.43	0.521	26.000	0.040	0.42	0.003	26.000	0.000
	38.8506 - 37.42		33.54	0.520	26.000	0.040	0.43	0.003	26.000	0.000
	37.42 - 31.17		17.59	0.265	26.000	0.020	0.23	0.001	26.000	0.000
L6	37.42 - 31.17	TP62.9375x53.8475x0.375	16.58	0.253	26.000	0.019	0.21	0.001	26.000	0.000
	31.17 - 29.5295		34.26	0.520	26.000	0.040	0.44	0.003	26.000	0.000
	29.5295 - 27.8889		34.37	0.518	26.000	0.040	0.45	0.003	26.000	0.000
	27.8889 - 26.2484		34.48	0.516	26.000	0.040	0.45	0.003	26.000	0.000
	26.2484 - 24.6079		34.59	0.514	26.000	0.039	0.45	0.003	26.000	0.000
	24.6079 - 22.9674		34.70	0.512	26.000	0.039	0.45	0.003	26.000	0.000
	22.9674 - 21.3268		34.81	0.510	26.000	0.039	0.46	0.003	26.000	0.000
	21.3268 - 19.6863		34.93	0.508	26.000	0.039	0.46	0.003	26.000	0.000
	19.6863 - 18.0458		35.04	0.506	26.000	0.039	0.46	0.003	26.000	0.000
	18.0458 - 16.4053		35.15	0.504	26.000	0.039	0.46	0.003	26.000	0.000
	16.4053 - 14.7647		35.26	0.502	26.000	0.039	0.47	0.003	26.000	0.000
	14.7647 - 13.1242		35.38	0.501	26.000	0.039	0.47	0.003	26.000	0.000
	13.1242 - 11.4837		35.49	0.499	26.000	0.038	0.47	0.003	26.000	0.000
	11.4837 - 9.84316		35.61	0.497	26.000	0.038	0.48	0.003	26.000	0.000
	9.84316 - 8.20263		35.72	0.495	26.000	0.038	0.48	0.003	26.000	0.000
	8.20263 - 6.5621		35.84	0.494	26.000	0.038	0.48	0.003	26.000	0.000
	6.5621 - 4.92158		35.95	0.492	26.000	0.038	0.48	0.003	26.000	0.000
	4.92158 - 3.28105		36.07	0.491	26.000	0.038	0.49	0.003	26.000	0.000
	3.28105 - 1.64053		36.18	0.489	26.000	0.038	0.49	0.003	26.000	0.000
	1.64053 - 0		36.30	0.487	26.000	0.037	0.49	0.003	26.000	0.000

Pole Interaction Design Data

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		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
L1	175 - 173.881	0.000	0.004	0.000	0.000	0.000	0.005* ✓	1.000	H1-3+VT ✓
	173.881 - 172.763	0.000	0.007	0.000	0.003	0.001	0.007 ✓	1.333	H1-3+VT ✓
	172.763 - 171.644	0.011	0.016	0.000	0.000	0.000	0.027* ✓	1.000	H1-3+VT ✓
	171.644 - 170.526	0.006	0.050	0.000	0.033	0.001	0.055 ✓	1.333	H1-3+VT ✓
	170.526 - 169.407	0.006	0.073	0.000	0.033	0.001	0.079 ✓	1.333	H1-3+VT ✓
	169.407 - 168.289	0.006	0.095	0.000	0.033	0.001	0.101 ✓	1.333	H1-3+VT ✓
	168.289 - 167.17	0.006	0.116	0.000	0.033	0.001	0.122 ✓	1.333	H1-3+VT ✓
	167.17 - 164.25	0.003	0.077	0.000	0.015	0.000	0.079 ✓	1.333	H1-3+VT ✓
L2	167.17 - 164.25	0.003	0.076	0.000	0.014	0.000	0.078 ✓	1.333	H1-3+VT ✓
	164.25 - 162.542	0.005	0.166	0.000	0.027	0.000	0.171 ✓	1.333	H1-3+VT ✓
	162.542 - 160.833	0.007	0.196	0.000	0.036	0.000	0.203 ✓	1.333	H1-3+VT ✓
	160.833 - 159.125	0.007	0.227	0.000	0.036	0.000	0.234 ✓	1.333	H1-3+VT ✓
	159.125 - 157.417	0.007	0.256	0.000	0.036	0.000	0.264 ✓	1.333	H1-3+VT ✓
	157.417 - 155.708	0.007	0.284	0.000	0.036	0.000	0.292 ✓	1.333	H1-3+VT ✓
	155.708 - 154	0.007	0.311	0.000	0.035	0.000	0.318 ✓	1.333	H1-3+VT ✓
	154 - 152.292	0.007	0.336	0.000	0.035	0.000	0.344 ✓	1.333	H1-3+VT ✓
	152.292 - 150.583	0.009	0.371	0.000	0.048	0.000	0.380 ✓	1.333	H1-3+VT ✓
	150.583 - 148.875	0.009	0.405	0.000	0.048	0.000	0.415 ✓	1.333	H1-3+VT ✓
	148.875 - 147.167	0.009	0.438	0.000	0.048	0.000	0.448 ✓	1.333	H1-3+VT ✓
	147.167 - 145.458	0.009	0.469	0.000	0.047	0.000	0.479 ✓	1.333	H1-3+VT ✓
	145.458 - 143.75	0.009	0.499	0.000	0.047	0.001	0.509 ✓	1.333	H1-3+VT ✓
	143.75 - 142.042	0.009	0.527	0.000	0.047	0.001	0.537 ✓	1.333	H1-3+VT ✓
	142.042 - 140.333	0.011	0.563	0.000	0.057	0.001	0.575 ✓	1.333	H1-3+VT ✓
	140.333 - 138.625	0.011	0.598	0.000	0.057	0.000	0.609 ✓	1.333	H1-3+VT ✓
	138.625 - 136.917	0.011	0.630	0.000	0.056	0.000	0.642 ✓	1.333	H1-3+VT ✓
	136.917 - 135.208	0.011	0.661	0.000	0.056	0.000	0.673 ✓	1.333	H1-3+VT ✓
	135.208 - 133.5	0.011	0.690	0.000	0.056	0.000	0.702 ✓	1.333	H1-3+VT ✓

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		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
	133.5 - 129.67	0.005	0.353	0.000	0.026	0.000	0.359	1.333	H1-3+VT ✓
L3	133.5 - 129.67	0.005	0.347	0.000	0.025	0.000	0.352	1.333	H1-3+VT ✓
	129.67 - 128.059	0.010	0.676	0.000	0.047	0.000	0.686	1.333	H1-3+VT ✓
	128.059 - 126.448	0.010	0.696	0.000	0.046	0.000	0.706	1.333	H1-3+VT ✓
	126.448 - 124.837	0.010	0.714	0.000	0.046	0.000	0.725	1.333	H1-3+VT ✓
	124.837 - 123.226	0.010	0.733	0.000	0.046	0.000	0.743	1.333	H1-3+VT ✓
	123.226 - 121.614	0.010	0.750	0.000	0.046	0.000	0.761	1.333	H1-3+VT ✓
	121.614 - 120.003	0.010	0.766	0.000	0.045	0.000	0.777	1.333	H1-3+VT ✓
	120.003 - 118.392	0.010	0.782	0.000	0.045	0.000	0.793	1.333	H1-3+VT ✓
	118.392 - 116.781	0.010	0.797	0.000	0.045	0.000	0.808	1.333	H1-3+VT ✓
	116.781 - 115.17	0.010	0.812	0.000	0.045	0.000	0.823	1.333	H1-3+VT ✓
	115.17 - 113.559	0.011	0.827	0.000	0.046	0.000	0.838	1.333	H1-3+VT ✓
	113.559 - 111.948	0.011	0.841	0.000	0.046	0.000	0.852	1.333	H1-3+VT ✓
	111.948 - 110.337	0.011	0.855	0.000	0.046	0.000	0.866	1.333	H1-3+VT ✓
	110.337 - 108.726	0.011	0.868	0.000	0.045	0.000	0.879	1.333	H1-3+VT ✓
	108.726 - 107.114	0.011	0.880	0.000	0.045	0.000	0.892	1.333	H1-3+VT ✓
	107.114 - 105.503	0.011	0.892	0.000	0.045	0.000	0.904	1.333	H1-3+VT ✓
	105.503 - 103.892	0.011	0.904	0.000	0.045	0.000	0.916	1.333	H1-3+VT ✓
	103.892 - 102.281	0.011	0.915	0.000	0.045	0.000	0.927	1.333	H1-3+VT ✓
	102.281 - 100.67	0.011	0.926	0.000	0.044	0.000	0.937	1.333	H1-3+VT ✓
	100.67 - 96	0.006	0.490	0.000	0.023	0.000	0.497	1.333	H1-3+VT ✓
L4	100.67 - 96	0.006	0.481	0.000	0.022	0.000	0.487	1.333	H1-3+VT ✓
	96 - 94.4817	0.012	0.999	0.000	0.045	0.000	1.012	1.333	H1-3+VT ✓
	94.4817 - 92.9633	0.012	1.007	0.000	0.044	0.000	1.020	1.333	H1-3+VT ✓
	92.9633 - 91.445	0.012	1.015	0.000	0.044	0.000	1.028	1.333	H1-3+VT ✓
	91.445 - 89.9267	0.012	1.023	0.000	0.044	0.000	1.036	1.333	H1-3+VT ✓

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Section No.	Elevation ft	Ratio $\frac{P}{P_u}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	89.9267 - 88.4083	0.013	1.031	0.000	0.044	0.000	1.044	1.333	H1-3+VT ✓
	88.4083 - 86.89	0.013	1.038	0.000	0.044	0.000	1.051	1.333	H1-3+VT ✓
	86.89 - 85.3717	0.013	1.045	0.000	0.044	0.000	1.058	1.333	H1-3+VT ✓
	85.3717 - 83.8533	0.013	1.051	0.000	0.043	0.000	1.064	1.333	H1-3+VT ✓
	83.8533 - 82.335	0.013	1.058	0.000	0.043	0.000	1.071	1.333	H1-3+VT ✓
	82.335 - 80.8167	0.013	1.064	0.000	0.043	0.000	1.077	1.333	H1-3+VT ✓
	80.8167 - 79.2983	0.013	1.070	0.000	0.043	0.000	1.083	1.333	H1-3+VT ✓
	79.2983 - 77.78	0.013	1.075	0.000	0.043	0.000	1.089	1.333	H1-3+VT ✓
	77.78 - 76.2617	0.013	1.081	0.000	0.043	0.000	1.094	1.333	H1-3+VT ✓
	76.2617 - 74.7433	0.013	1.086	0.000	0.043	0.000	1.099	1.333	H1-3+VT ✓
	74.7433 - 73.225	0.013	1.091	0.000	0.042	0.000	1.104	1.333	H1-3+VT ✓
	73.225 - 71.7067	0.013	1.096	0.000	0.042	0.000	1.109	1.333	H1-3+VT ✓
	71.7067 - 70.1883	0.013	1.100	0.000	0.042	0.000	1.114	1.333	H1-3+VT ✓
	70.1883 - 68.67	0.013	1.105	0.000	0.042	0.000	1.118	1.333	H1-3+VT ✓
	68.67 - 63.17	0.007	0.573	0.000	0.022	0.000	0.580	1.333	H1-3+VT ✓
L5	68.67 - 63.17	0.007	0.564	0.000	0.020	0.000	0.571	1.333	H1-3+VT ✓
	63.17 - 61.7394	0.014	1.159	0.000	0.042	0.000	1.173	1.333	H1-3+VT ✓
	61.7394 - 60.3089	0.015	1.162	0.000	0.042	0.000	1.177	1.333	H1-3+VT ✓
	60.3089 - 58.8783	0.015	1.165	0.000	0.042	0.000	1.180	1.333	H1-3+VT ✓
	58.8783 - 57.4478	0.015	1.168	0.000	0.042	0.000	1.183	1.333	H1-3+VT ✓
	57.4478 - 56.0172	0.015	1.171	0.000	0.042	0.000	1.186	1.333	H1-3+VT ✓
	56.0172 - 54.5867	0.015	1.174	0.000	0.041	0.000	1.189	1.333	H1-3+VT ✓
	54.5867 - 53.1561	0.015	1.177	0.000	0.041	0.000	1.192	1.333	H1-3+VT ✓
	53.1561 - 51.7256	0.015	1.179	0.000	0.041	0.000	1.194	1.333	H1-3+VT ✓
	51.7256 - 50.295	0.015	1.182	0.000	0.041	0.000	1.197	1.333	H1-3+VT ✓
	50.295 - 48.8644	0.015	1.184	0.000	0.041	0.000	1.199	1.333	H1-3+VT ✓

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Section No.	Elevation ft	Ratio $\frac{P}{P_u}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	48.8644 - 47.4339	0.015	1.186	0.000	0.041	0.000	1.202	1.333	H1-3+VT ✓
	47.4339 - 46.0033	0.015	1.188	0.000	0.041	0.000	1.204	1.333	H1-3+VT ✓
	46.0033 - 44.5728	0.015	1.190	0.000	0.041	0.000	1.206	1.333	H1-3+VT ✓
	44.5728 - 43.1422	0.015	1.192	0.000	0.040	0.000	1.208	1.333	H1-3+VT ✓
	43.1422 - 41.7117	0.015	1.194	0.000	0.040	0.000	1.210	1.333	H1-3+VT ✓
	41.7117 - 40.2811	0.015	1.196	0.000	0.040	0.000	1.212	1.333	H1-3+VT ✓
	40.2811 - 38.8506	0.016	1.198	0.000	0.040	0.000	1.214	1.333	H1-3+VT ✓
	38.8506 - 37.42	0.016	1.199	0.000	0.040	0.000	1.215	1.333	H1-3+VT ✓
	37.42 - 31.17	0.008	0.615	0.000	0.020	0.000	0.624	1.333	H1-3+VT ✓
L6	37.42 - 31.17	0.008	0.607	0.000	0.019	0.000	0.615	1.333	H1-3+VT ✓
	31.17 - 29.5295	0.017	1.240	0.000	0.040	0.000	1.257	1.333	H1-3+VT ✓
	29.5295 - 27.8889	0.017	1.241	0.000	0.040	0.000	1.259	1.333	H1-3+VT ✓
	27.8889 - 26.2484	0.017	1.243	0.000	0.040	0.000	1.260	1.333	H1-3+VT ✓
	26.2484 - 24.6079	0.017	1.247	0.000	0.039	0.000	1.264	1.333	H1-3+VT ✓
	24.6079 - 22.9674	0.017	1.251	0.000	0.039	0.000	1.269	1.333	H1-3+VT ✓
	22.9674 - 21.3268	0.017	1.256	0.000	0.039	0.000	1.273	1.333	H1-3+VT ✓
	21.3268 - 19.6863	0.017	1.261	0.000	0.039	0.000	1.278	1.333	H1-3+VT ✓
	19.6863 - 18.0458	0.017	1.265	0.000	0.039	0.000	1.283	1.333	H1-3+VT ✓
	18.0458 - 16.4053	0.017	1.270	0.000	0.039	0.000	1.287	1.333	H1-3+VT ✓
	16.4053 - 14.7647	0.018	1.274	0.000	0.039	0.000	1.292	1.333	H1-3+VT ✓
	14.7647 - 13.1242	0.018	1.279	0.000	0.039	0.000	1.297	1.333	H1-3+VT ✓
	13.1242 - 11.4837	0.018	1.283	0.000	0.038	0.000	1.301	1.333	H1-3+VT ✓
	11.4837 - 9.84316	0.018	1.287	0.000	0.038	0.000	1.306	1.333	H1-3+VT ✓
	9.84316 - 8.20263	0.018	1.292	0.000	0.038	0.000	1.310	1.333	H1-3+VT ✓
	8.20263 - 6.5621	0.018	1.296	0.000	0.038	0.000	1.314	1.333	H1-3+VT ✓
	6.5621 - 4.92158	0.018	1.300	0.000	0.038	0.000	1.319	1.333	H1-3+VT ✓

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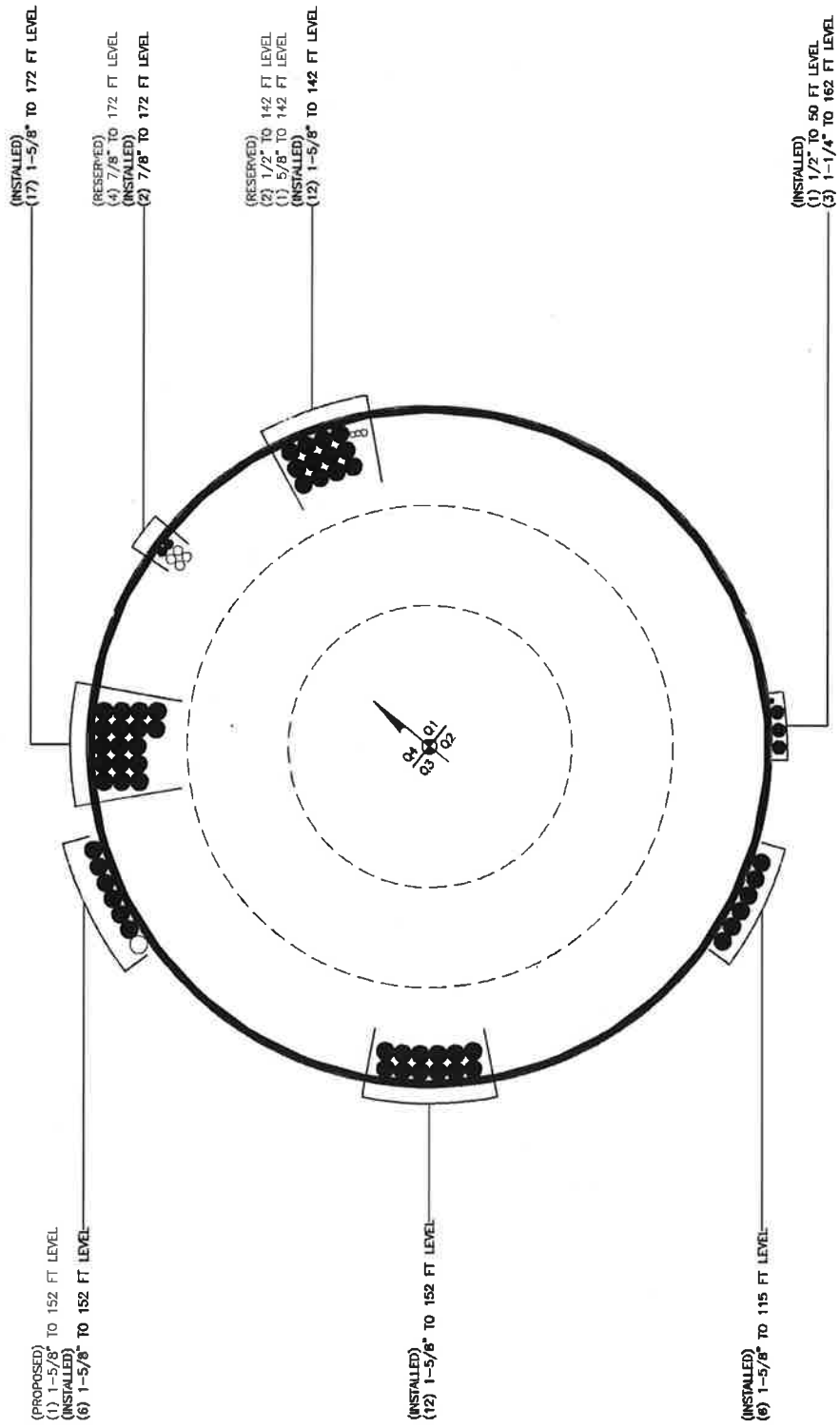
Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P}{P_a}$	$\frac{f_{bx}}{F_{bx}}$	$\frac{f_{by}}{F_{by}}$	$\frac{f_v}{F_v}$	$\frac{f_{vt}}{F_{vt}}$			
	4.92158 - 3.28105	0.018	1.304	0.000	0.038	0.000	1.323	1.333	H1-3+VT ✓
	3.28105 - 1.64053	0.019	1.308	0.000	0.038	0.000	1.327	1.333	H1-3+VT ✓
	1.64053 - 0	0.019	1.313	0.000	0.037	0.000	1.332	1.333	H1-3+VT ✓

* DL controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
L1	175 - 164.25	Pole	TP26x22x0.25	1	-4.26	1017.41	9.1	Pass	
L2	164.25 - 129.67	Pole	TP34.0625x24.4135x0.3125	2	-13.87	1689.48	52.7	Pass	
L3	129.67 - 96	Pole	TP41.75x32.452x0.375	3	-21.13	2488.54	70.3	Pass	
L4	96 - 63.17	Pole	TP49.0625x39.8421x0.375	4	-29.58	2928.99	83.9	Pass	
L5	63.17 - 31.17	Pole	TP56.125x46.9602x0.375	5	-39.22	3355.16	91.2	Pass	
L6	31.17 - 0	Pole	TP62.9375x53.8475x0.375	6	-51.64	3684.96	99.9	Pass	
							Summary		
							Pole (L6)	99.9	Pass
							RATING =	99.9	Pass

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 8235.30 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. 14251J1400
 Site Name: CT364-Chapel St. Monopol
 Site ID: 823530

Pole Manufacturer: *Pirod*

Anchor Rod Data

Qty:	45	
Diam:	1.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	68	in

Plate Data

Diam:	71	in
Thick:	1.5	in
Grade:	50	ksi
Single-Rod B-eff:	4.44	in

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	62.9375	in
Thick:	0.375	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	
-------	-------	--

Reactions

Moment:	4677	ft-kips
Axial:	52	kips
Shear:	36	kips

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

Anchor Rod Results

Maximum Rod Tension: 72.2 Kips
 Allowable Tension: 81.0 Kips
 Anchor Rod Stress Ratio: 89.2% Pass

Rigid
Service ASD
Fty*ASIF

Base Plate Results

Base Plate Stress: Rohn/Pirod, OK
 Allowable Plate Stress: 50.0 ksi
 Base Plate Stress Ratio: Rohn/Pirod, OK

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length: 25.75

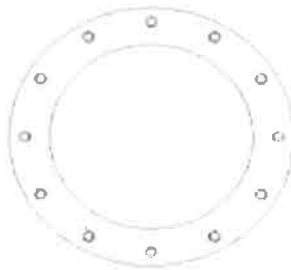
n/a

Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A



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

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

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

Site Data

BU#: 823530
Site Name: 364 Chapel St. Monopole
App #: 213940 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:	6	in
Pad Bearing Depth, D:	8	ft
Pad Thickness, T:	2.75	ft
Pad Width=Length, L:	22.5	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	7.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	44.18	ft^2
Pier Height:	5.75	ft
Soil (above pad) Height:	5.25	ft

Soil Parameters

Unit Weight, γ :	125.0	pcf
Ultimate Bearing Capacity, q_n :	16.00	ksf
Strength Reduct. factor, ϕ :	0.75	
Angle of Friction, Φ :	36.0	degrees
Undrained Shear Strength, C_u :	0.00	ksf
Allowable Bearing: $\phi * q_n$:	12.00	ksf
Passive Pres. Coeff., K_p :	3.85	

Forces/Moments due to Wind and Lateral Soil

Minimum of ($\phi * \text{Ultimate Pad Passive Force, } V_u$):	48.6	kips
Pad Force Location Above D:	1.28	ft
ϕ (Passive Pressure Moment):	62.20	ft-kips
Factored O.T. M(WL), "1.6W":	6727.1	ft-kips
Factored OT (MW-Msoil), M1	6664.85	ft-kips

Resistance due to Foundation Gravity

Soil Wedge Projection grade, a:	3.81	ft
Sum of Soil Wedges Wt:	84.89	kips
Soil Wedges ecc, K1:	5.81	ft
Ftg+Soil above Pad wt:	550.2	kips
Unfactored (Total ftg-soil Wt):	635.06	kips
1.2D. No Soil Wedges.	722.60	kips
0.9D. With Soil Wedges	618.35	kips

Resistance due to Cohesion (Vertical)

$\phi * (1/2 * C_u)$ (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:	52	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	36	kips
Unfactored WL Moment, M:	4677	ft-kips

Load Factor Shaft Factored Loads

1.20	1.2D+1.6W, Pu:	62.4	kips
0.90	0.9D+1.6W, Pu:	46.8	kips
1.35	Vu:	48.6	kips
	Mu:	6313.95	ft-kips

1.2D+1.6W Load Combination. Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	722.60	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	6664.85	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 9.22 ft
 Orthogonal qu = 7.92 ksf
 qu/ $\phi * q_n$ Ratio = **66.03%** Pass

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 6.52 ft
 Diagonal qu = 8.08 ksf
 qu/ $\phi * q_n$ Ratio = **67.31%** Pass

<- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination. Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	618.35	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	6220.94	ft-kips

Orthogonal ecc3 = M2/P2 = 10.06 ft
 Ortho Non Bearing Length, NBL = 20.12 ft
 Orthogonal qu = 11.55 ksf
 Diagonal qu = 9.04 ksf

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

Actual M:	4677.00		
M Orthogonal:	4697.35	99.57%	Pass
M Diagonal:	4697.35	99.57%	Pass