Robinson+Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts

October 27, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
Route 34 (Berkshire Road), Newtown, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) antennas at the top of the existing 185-foot tower off Route 34 in Newtown, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 1988 (Docket No. 89). Cellco now intends to replace six (6) of its existing antennas with three (3) model SBNHH-1D85C, 700 MHz antennas and three (3) model SBNHH-1D85C, 1900/2100 MHz antennas, all at the same level on the tower. Cellco also intends to replace three (3) existing remote radio heads ("RRHs") and install six (6) new RRHs and one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to E. Patricia Llodra, First Selectwoman of the Town of Newtown. A copy of this letter is also being sent to Carmine V. Renzulli, the owner of the Property and to Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRH's will be located on its existing platform at the top level on the tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case 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:
E. Patricia Llodra, Newtown First Selectwoman
Carmine V. Renzulli
Crown Castle
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

SBNHH-1D85C

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 85° horizontal beamwidth, internal RETs.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Three internal RETs for independent tilt on all three bands

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	15.6	15.6	17.0	17.6	17.9	17.8
Beamwidth, Horizontal, degrees	82	83	82	79	79	80
Beamwidth, Vertical, degrees	8.9	8.1	5.6	5.2	5.0	4.6
Beam Tilt, degrees	0–10	0–10	0–8	0–8	0–8	0–8
USLS (First Lobe), dB	16	17	14	14	14	15
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	25	25	25	25
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	300	300	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	15.4	15.4	16.6	17.3	17.6	17.6
Gain by all Beam Tilts Tolerance, dB	±0.2	±0.3	±0.6	±0.2	±0.4	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 15.2	0 ° | 15.1	0 ° | 16.6	0 ° | 17.3	0 ° | 17.6	0 ° | 17.5
	5 ° | 15.5	5 ° | 15.4	4 ° | 16.6	4 ° | 17.4	4 ° | 17.7	4 ° | 17.7
	10 ° | 15.5	10 ° | 15.5	8 ° | 16.4	8 ° | 17.2	8 ° | 17.5	8 ° | 17.3
Beamwidth, Horizontal Tolerance, degrees	±2.3	±1.4	±4.5	±2.4	±2.9	±2.6
Beamwidth, Vertical Tolerance, degrees	±0.5	±0.5	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	17	18	15	16	16	17
Front-to-Back Total Power at 180° ± 30°, dB	23	24	27	26	25	27
CPR at Boresight, dB	20	20	21	22	18	25
CPR at Sector, dB	14	16	13	12	11	6

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

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband
Band	Multiband
Brand	DualPol®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray

Product Specifications

SBNHH-1D85C

Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	875.0 N @ 150 km/h 196.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	2438.0 mm | 96.0 in
Width	301.0 mm | 11.9 in
Net Weight	22.5 kg | 49.6 lb

Remote Electrical Tilt (RET) Information

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

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	2561.0 mm | 100.8 in
Width	409.0 mm | 16.1 in
Shipping Weight	35.0 kg | 77.2 lb

Regulatory Compliance/Certifications

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

Included Products

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

Product Specifications

SBNHH-1D85C

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

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

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

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

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

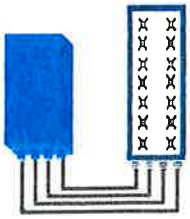
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

FEATURES

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

BENEFITS

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



4x30W with 4T4R
or
2x60W with 2T4R

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

Alcatel·Lucent

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

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

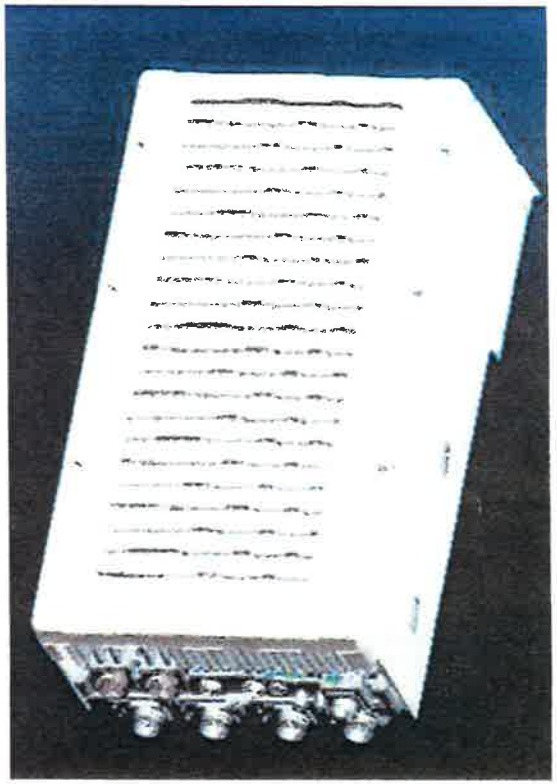
		RRH2x60
RF Output Power		2x60W
Instantaneous Bandwidth		20MHz
Transmitter		2 TX
Receiver	1900 HW version	2 Branch RX – LA6.0.1
	1900A HW version	4 Branch RX – LR13.3
Features		AISG 2.0 for RET/TMA
		Internal Smart Bias-T
Power		-48VDC
CPRI Ports		2 CPRI Rate 3 Ports
External Alarms		4 External User Alarms
Monitor Ports		TX
Environmental		GR487 Compliance
RF Connectors		7/16 DIN (top mounted)

** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW
RRH2X60 - HW CHARACTERISTICS

LR14.3

	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w)x 9.4" (d)**
Weight	55lb**



**- Includes solar shield but not mounting brackets (8 lbs.)

Alcatel·Lucent

B66A RRH 4X45 – PHYSICAL CHARACTERISTICS- TARGET 15.1

B4 RRH4x45-4R (AWS-Extension Band)	
Frequency Band	**LR15.1 – B4 / LR16.1 B66 (AWS 1 and 3 only)**
RF Output Power	**2x90W/4x45W (SW configurable)**
Operational range	**2110-2180 MHz, DL/ 1710-1780 MHz UL**
Instantaneous Bandwidth	**70MHz**
Configuration (HW readiness)	**LTE: 2T2R, 2T4R, 4T4R**
Carrier Bandwidths	**5, 10, 15 and 20 MHz**
Interfaces	**2x CPRI Rate 7 Ports Antenna Connectors 4.3-10**
AISG Support	**AISG 2.0 for RET Internal Smart Bias T**
Monitor Ports	**NA (Spec An to replace ports)**
Environmental	**GR487 Compliance / GR3178 Compliance (with exceptions)**
Mounting options	**Pole/Wall**
Connectors location	**All bottom**
External Alarms	**4**
Annual Return Rate (Target)	**<2%**
Operating Temperature	**-40 C to +55 C (without solar load)**

- Commercial Product Will include B66 support of AWS 1 and 3.
- Lower AWS 3 UL Not in 3GPP Band 66 Definition

Physical Dimensions – Not to Exceed		
	W/O Solar Shield	With Solar Shield
Dimensions HxWxD	H = 26in (H=660mm) W = 11.4in (W=290mm) D = 5.9in (D=150mm)	H = 26.6in (H=675mm) W = 12in (W=304mm) D = 6.8n (D=173mm)
Volume	29l	35.5l
Weight		64lbs / 29kg

Product Data Sheet HB158-1-08U8-S8J18

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

Product Description

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

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

Figure 1: HYBRIFLEX Series

Features/Benefits

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

Technical Specifications

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

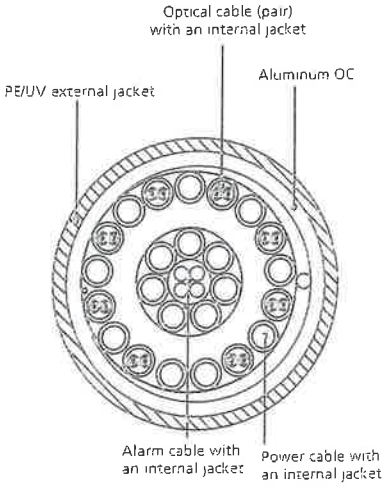


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Newtown								
Tower Height: 185ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T UMTS	4	535	184	0.0243	850	0.5667	0.43%	
*AT&T UMTS	4	535	184	0.0243	1900	1.0000	0.24%	
*AT&T GSM	4	414	184	0.0188	850	0.5667	0.33%	
*AT&T GSM	2	1371	177	0.0337	1900	1.0000	0.34%	
*AT&T LTE	2	1371	177	0.0337	700	0.4667	0.72%	
*MetroPCS	3	444	135	0.0288	2140	1.0000	0.29%	
*Sprint CDMA/LTE	3	693	165	0.0296	1900	1.0000	0.30%	
*Sprint CDMA/LTE	1	390	165	0.0055	850	0.5667	0.10%	
*Sprint CDMA/LTE	2	693	165	0.0197	2500	1.0000	0.20%	
*Nextel	9	100	155	0.0146	851	0.5673	0.26%	
*T-Mobile LTE	2	24	148	0.0009	2100	1.0000	0.01%	
*T-Mobile GSM/UMTS	2	12	148	0.0004	1950	1.0000	0.00%	
*T-Mobile UMTS	2	12	148	0.0004	2100	1.0000	0.00%	
Verizon PCS	**1**	**1724**	**185**	**0.0181**	**1970**	**1.0000**	**1.81%**	
Verizon Cellular	**9**	**366**	**185**	**0.0346**	**869**	**0.5793**	**5.97%**	
Verizon AWS	**1**	**1987**	**185**	**0.0209**	**2145**	**1.0000**	**2.09%**	
Verizon 700	**1**	**596**	**185**	**0.0063**	**746**	**0.4973**	**1.26%**	
								14.35%
* Source: Siting Council								

ATTACHMENT 3

Date: **September 17, 2015**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	117922
	Carrier Site Name:	Newtown CT
Crown Castle Designation:	**Crown Castle BU Number:**	806354
	Crown Castle Site Name:	BRG 123 943084
	Crown Castle JDE Job Number:	342686
	Crown Castle Work Order Number:	1119992
	Crown Castle Application Number:	305918 Rev. 7
Engineering Firm Designation:	**Jacobs Engineering Group, Inc. Project Number:**	1119992
Site Data:	**21 BERKSHIRE ROAD NEWTOWN, NEWTOWN, Fairfield County, CT** **Latitude *41° 24' 45.53"*, Longitude *-73° 16' 12.34"*** **185 Foot - Monopole Tower**	

Dear Sean Dempsey,

Jacobs Engineering Group, 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 825846, in accordance with application 305918, revision 7.

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

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

This analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 Connecticut State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

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

We at *Jacobs Engineering Group, 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.

Strutural analysis prepared by:

Earnest Johnson, E.I.
Structural Engineer

Reviewed by:

Matthew E. Watkins, P.E.
Engineering Project Manager

tnxTower Report - version 6.1.4.1

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1) INTRODUCTION

This tower is a 185 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in August of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
185.0	187.0	3	Alcatel Lucent	RRH2X60-PCS	1	1-5/8	-
		2	Alcatel Lucent	RRH2x60-700			
		3	Alcatel Lucent	RRH4X45-AWS4 B66			
		6	Commscope	SBNHH-1D85C w/ Mount Pipe			
		1	RFS Celwave	DB-B1-6C-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
185.0	188.0	3	Alcatel Lucent	RRH2X40-AWS	-	-	3
	187.0	3	Antel	BXA-171063-12BF w/ Mount Pipe			
		3	Antel	BXA-171063-12CF-EDIN-X w/ Mount Pipe			
		3	Antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	RFS Celwave	FD9R6004/2C-3L			
		6	Decibel	DB846F65ZAXY w/ Mount Pipe	13	1-5/8	1
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
	185.0	1	Tower Mounts	Platform Mount [LP 601-1]			
		1	Tower Mounts	Side Arm Mount [SO 103-3]			
182.0	188.0	1	Decibel	ASP-601	1	1/2	1
	182.0	1	Tower Mounts	Side Arm Mount [SO 104-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
175.0	177.0	12	Powerwave Technologies	7020.00	-	-	2
		3	CCI Antennas	OPA-65R-LCUU-H6 w/ Mount Pipe			
		3	Ericsson	RRUS12/RRUS A2			
		6	Powerwave Technologies	7770.00 w/ Mount Pipe	1 2 12	3/8 5/8 1-5/8	1
	175.0	3	Ericsson	RRUS-11			
		3	CCI Antennas	DTMABP7819VG12A			
		6	Powerwave Technologies	LGP2140X			
		1	Raycap	DC6-48-60-18-8F			
		1	Tower Mounts	Platform Mount [LP 712-1]			
167.0	167.0	3	Alcatel Lucent	1900MHz RRH (65MHz)	-	-	1
		3	Alcatel Lucent	TME-800MHZ RRH			
		1	Tower Mounts	Side Arm Mount [SO 104-3]			
165.0	165.0	3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER	3	1-1/4	1
		9	RFS Celwave	ACU-A20-N			
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		1	Tower Mounts	Platform Mount [LP 712-1]			
155.0	155.0	1	Tower Mounts	Side Arm Mount [SO 102-1]	-	-	4
145.0	148.0	3	Ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	Ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	Ericsson	KRY 112 144/1			
	145.0	1	Tower Mounts	Platform Mount [LP 601-1]			
135.0	137.0	3	Kathrein	800 10504 w/ Mount Pipe	6	1-5/8	1
		3	Kathrein	860 10025			
	135.0	1	Tower Mounts	T-Arm Mount [TA 602-3]			

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
185	185	12	Swedcom	ALP 9212	-	-
175	175	12	Swedcom	ALP11011	-	-
165	165	9	Decibel	DB980	-	-
155	155	12	Swedcom	ALP9011	-	-
145	145	6	EMS Wireless	RR65-18	-	-
		1	Scala	OGB9-900		
110	110	1	Generic	GPS	-	-
50	50	1	Generic	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-Geotechnical Report	DR. CLARENCE WELTI	2297011	CCISites
4-Tower Foundation Drawings	EEI	822037	CCISites
4-Tower Manufacturer Drawings	EEI	822035	CCISites
4-Tower Reinforcement Drawings	VSI	2381114	CCISites
4-Post Modification Inspection	VSI	2447231	CCISites

3.1) Analysis Method

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

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, 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	185 - 149.622	Pole	TP36.0404x29x0.25	1	-9.4	1435.3	51.4	Pass
L2	149.622 -	Pole	TP42.4605x34.5443x0.3125	2	-18.0	2114.7	84.1	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
	114.221							
L3	114.221 - 76.8021	Pole	TP49.157x40.6978x0.375	3	-27.9	2938.0	95.8	Pass
L4	76.8021 - 38.3802	Pole	TP55.9285x47.1064x0.4375	4	-40.8	3900.1	97.0	Pass
L5	38.3802 - 0	Pole	TP62.5x53.5869x0.5	5	-60.3	5115.2	94.7	Pass
							Summary	
						Pole (L4)	97.0	Pass
						RATING =	**97.0**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	84.4	Pass
1	Base Plate	0	87.7	Pass
1	Base Foundation Structural	0	85.5	Pass
1	Base Foundation Soil Interaction	0	97.0	Pass

Structure Rating (max from all components) =	**97.0%**

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

4.1) Recommendations

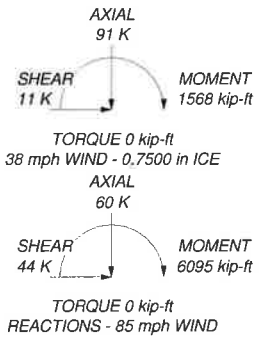
The tower and its foundation have sufficient capacity to carry the existing, reserved and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5
Length (ft)	35'4-9/16"	40'4-29/32"	43'2-3/4"	45'27/32"	45'10-7/16"
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.4375	0.5000
Socket Length (ft)	5'1/8"	5'9-23/32"	6'7-13/16"	7'5-7/8"	
Top Dia (in)	29.0000	34.5443	40.6978	47.1064	53.5869
Bot Dia (in)	36.0404	42.4605	49.1570	55.9285	62.5000
Grade			A572-65		
Weight (K)	3.1	5.2	7.8	10.9	14.3

41.2



TORQUE 0 kip-ft
38 mph WIND - 0.7500 in ICE

TORQUE 0 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB846F65ZAXY w/ Mount Pipe	185	1900MHz RRH (65MHz)	167
(2) DB846F65ZAXY w/ Mount Pipe	185	1900MHz RRH (65MHz)	167
(2) DB846F65ZAXY w/ Mount Pipe	185	800MHZ RRH	167
DB-T1-6Z-8AB-0Z	185	800MHZ RRH	167
RRH2x60-700	185	800MHZ RRH	167
RRH2x60-700	185	Side Arm Mount [SO 104-3]	167
RRH2X60-PCS	185	APXVSPP18-C-A20 w/ Mount Pipe	165
RRH2X60-PCS	185	APXVSPP18-C-A20 w/ Mount Pipe	165
RRH2X60-PCS	185	APXVSPP18-C-A20 w/ Mount Pipe	165
RRH4X45-AWS4 B66	185	(3) ACU-A20-N	165
RRH4X45-AWS4 B66	185	(3) ACU-A20-N	165
RRH4X45-AWS4 B66	185	(3) ACU-A20-N	165
DB-B1-6C-8AB-0Z	185	800 EXTERNAL NOTCH FILTER	165
(2) SBNHH-1D85C w/ Mount Pipe	185	800 EXTERNAL NOTCH FILTER	165
(2) SBNHH-1D85C w/ Mount Pipe	185	800 EXTERNAL NOTCH FILTER	165
(2) SBNHH-1D85C w/ Mount Pipe	185	Climbing Ladder - 5'	165
6' x 2" Mount Pipe	185	6' x 2" Mount Pipe	165
6' x 2" Mount Pipe	185	6' x 2" Mount Pipe	165
6' x 2" Mount Pipe	185	6' x 2" Mount Pipe	165
Climbing Ladder - 5'	185	Platform Mount [LP 712-1]	165
Platform Mount [LP 712-1]	185	Side Arm Mount [SO 102-1]	155
Side Arm Mount [SO 202-3]	185	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	145
ASP-601	182	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	145
Side Arm Mount [SO 104-3]	182	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	145
(2) 7770.00 w/ Mount Pipe	175	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	145
(2) 7770.00 w/ Mount Pipe	175	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	145
(2) 7770.00 w/ Mount Pipe	175	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	145
(2) LGP2140X	175	KRY 112 144/1	145
(2) LGP2140X	175	KRY 112 144/1	145
(2) LGP2140X	175	KRY 112 144/1	145
RRUS-11	175	Platform Mount [LP 712-1]	145
RRUS-11	175	800 10504 w/ Mount Pipe	135
RRUS-11	175	800 10504 w/ Mount Pipe	135
DTMABP7819VG12A	175	800 10504 w/ Mount Pipe	135
DTMABP7819VG12A	175	860 10025	135
DTMABP7819VG12A	175	860 10025	135
DC6-48-60-18-8F	175	860 10025	135
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) 6' x 2" Mount Pipe	135
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) 6' x 2" Mount Pipe	135
OPA-65R-LCUU-H6 w/ Mount Pipe	175	(2) 6' x 2" Mount Pipe	135
RRUS12/RRUS A2	175	T-Arm Mount [TA 602-3]	135
RRUS12/RRUS A2	175	GPS	108
RRUS12/RRUS A2	175	Side Arm Mount [SO 901-1]	108
(4) 7020.00	175	GPS	107
(4) 7020.00	175	Side Arm Mount [SO 901-1]	107
(4) 7020.00	175	GPS	51
Platform Mount [LP 712-1]	175	Side Arm Mount [SO 901-1]	51
1900MHz RRH (65MHz)	167		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 97%

Jacobs Engineering Group, Inc.
JACOBS
5449 Bells Ferry Road
Acworth, GA 30102
Phone: (770) 701-2500
FAX: (770) 701-2501

Job:	BRG 123 943084
Project:	BU806354_WO1119992
Client:	CROWN CASTLE
Drawn by:	JOHNSOE
App'd:	
Code:	TIA/EIA-222-F
Date:	09/17/15
Scale:	N
Path:	T:\806354 BRG 123 943084\1119992 Analysis\sn\Tower\806354_LGT.eri
Dwg No.	

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 Fairfield County, Connecticut.
Basic wind speed of 85 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 38 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		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

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	185'-149'7-7/16"	35'4-9/16"	5'1/8"	18	29.0000	36.0404	0.2500	1.0000	A572-65 (65 ksi)
L2	149'7-7/16"-114' 2-5/8"	40'4-29/32"	5'9-23/32"	18	34.5443	42.4605	0.3125	1.2500	A572-65 (65 ksi)
L3	114'2-5/8"-76'9-19/32"	43'2-3/4"	6'7-13/16"	18	40.6978	49.1570	0.3750	1.5000	A572-65 (65 ksi)
L4	76'9-19/32"-38'4 -9/16"	45'27/32"	7'5-7/8"	18	47.1064	55.9285	0.4375	1.7500	A572-65 (65 ksi)
L5	38'4-9/16"-0'	45'10-7/16"		18	53.5869	62.5000	0.5000	2.0000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
									(65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	29.4474	22.8131	2382.3081	10.2063	14.7320	161.7098	4767.7509	11.4087	4.6640	18.656
	36.5964	28.3997	4596.0425	12.7056	18.3085	251.0329	9198.1326	14.2025	5.9031	23.612
L2	36.0729	33.9537	5026.7193	12.1523	17.5485	286.4469	10060.0528	16.9801	5.5298	17.695
	43.1155	41.8055	9382.6455	14.9625	21.5699	434.9872	18777.6370	20.9067	6.9230	22.154
L3	42.4796	47.9942	9858.8582	14.3146	20.6745	476.8616	19730.6889	24.0016	6.5028	17.341
	49.9153	58.0628	17456.3904	17.3176	24.9718	699.0454	34935.7504	29.0369	7.9916	21.311
L4	49.1541	64.8057	17832.2562	16.5675	23.9301	745.1819	35687.9766	32.4090	7.5207	17.19
	56.7913	77.0562	29977.1322	19.6993	28.4117	1055.0990	59993.7092	38.5354	9.0734	20.739
L5	55.8918	84.2489	29996.8983	18.8458	27.2221	1101.9301	60033.2673	42.1325	8.5513	17.103
	63.4642	98.3940	47784.7640	22.0100	31.7500	1505.0319	95632.4044	49.2063	10.1200	20.24

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 185'-149'7-7/16"				1	1	1		
L2 149'7-7/16"-114'2-5/8"				1	1	1		
L3 114'2-5/8"-76'9-19/32"				1	1	1		
L4 76'9-19/32"-38'4-9/16"				1	1	1		
L5 38'4-9/16"-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***										
***										
B										
C										
***										
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
A								
LDF4P-50A(1/2")	A	No	Inside Pole	182' - 0'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
HJ7-50A(1-5/8")	A	No	Inside Pole	185' - 0'	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
						2" Ice	0.00	1.04
						4" Ice	0.00	1.04
HJ7-50A(1-5/8")	A	No	CaAa (Out Of Face)	185' - 0'	1	No Ice	0.20	1.04
						1/2" Ice	0.30	2.55
						1" Ice	0.40	4.68
						2" Ice	0.60	10.76
						4" Ice	1.00	30.26
HB158-1-08U8-S8J18(1-5/8)	A	No	CaAa (Out Of Face)	185' - 0'	1	No Ice	0.00	1.30
						1/2" Ice	0.00	2.81
						1" Ice	0.00	4.94
						2" Ice	0.00	11.02
						4" Ice	0.00	30.52
CR 50 1873PE(1-5/8")	A	No	CaAa (Out Of Face)	175' - 0'	12	No Ice	0.00	0.83
						1/2" Ice	0.00	2.34
						1" Ice	0.00	4.47
						2" Ice	0.00	10.55
						4" Ice	0.00	30.05
2" Rigid Conduit	A	No	Inside Pole	175' - 0'	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
FB-L98B-002-75000(3/8")	A	No	CaAa (Out Of Face)	175' - 0'	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.60
						1" Ice	0.00	1.76
						2" Ice	0.00	5.91
						4" Ice	0.00	21.53
WR-VG82ST-BRDA(5/8")	A	No	CaAa (Out Of Face)	175' - 0'	2	No Ice	0.00	0.31
						1/2" Ice	0.00	1.01
						1" Ice	0.00	2.32
						2" Ice	0.00	6.77
						4" Ice	0.00	23.01
***								
***								
B								
***								
HB114-1-0813U4-M5J(1 1/4")	B	No	Inside Pole	165' - 0'	3	No Ice	0.00	1.20
						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
						2" Ice	0.00	1.20
						4" Ice	0.00	1.20
LDF7-50A(1-5/8")	B	No	Inside Pole	145' - 0'	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	145' - 0'	1	No Ice	0.20	0.70
						1/2" Ice	0.30	2.23
						1" Ice	0.40	4.38

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.60	10.50
						4" Ice	1.00	30.07
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	145' - 0'	6	No Ice	0.00	0.70
						1/2" Ice	0.00	2.23
						1" Ice	0.00	4.38
						2" Ice	0.00	10.50
						4" Ice	0.00	30.07
CR 50 1873(1-5/8")	B	No	Inside Pole	135' - 0'	6	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
						2" Ice	0.00	0.83
						4" Ice	0.00	0.83
C								
***								
GPS								
LDF4P-50A(1/2")	B	No	Inside Pole	40' - 0'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF4P-50A(1/2")	C	No	Inside Pole	100' - 0'	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
***								
Safety Line 3/8	C	No	CaAa (Out Of Face)	185' - 0'	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	185'-149'7-7/16"	A	0.000	0.000	0.000	7.005	0.9
		B	0.000	0.000	0.000	0.000	0.1
		C	0.000	0.000	0.000	1.327	0.0
L2	149'7-7/16"-114'2-5/8"	A	0.000	0.000	0.000	7.009	1.0
		B	0.000	0.000	0.000	6.187	0.5
		C	0.000	0.000	0.000	1.328	0.0
L3	114'2-5/8"-76'9-19/32"	A	0.000	0.000	0.000	7.409	1.1
		B	0.000	0.000	0.000	7.521	0.7
		C	0.000	0.000	0.000	1.403	0.0
L4	76'9-19/32"-38'4-9/16"	A	0.000	0.000	0.000	7.608	1.1
		B	0.000	0.000	0.000	7.723	0.7
		C	0.000	0.000	0.000	1.441	0.0
L5	38'4-9/16"-0'	A	0.000	0.000	0.000	7.599	1.1
		B	0.000	0.000	0.000	7.714	0.7
		C	0.000	0.000	0.000	1.439	0.0

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	185'-149'7-7/16"	A	0.911	0.000	0.000	0.000	13.450	2.2
		B		0.000	0.000	0.000	0.000	0.1
		C		0.000	0.000	0.000	7.772	0.0
L2	149'7-7/16"-114'2-5/8"	A	0.885	0.000	0.000	0.000	13.459	2.8
		B		0.000	0.000	0.000	11.794	1.2
		C		0.000	0.000	0.000	7.778	0.0
L3	114'2-5/8"-76'9-19/32"	A	0.852	0.000	0.000	0.000	14.035	2.9
		B		0.000	0.000	0.000	14.148	1.5
		C		0.000	0.000	0.000	8.029	0.1
L4	76'9-19/32"-38'4-9/16"	A	0.802	0.000	0.000	0.000	14.153	2.9
		B		0.000	0.000	0.000	14.268	1.5
		C		0.000	0.000	0.000	7.986	0.1
L5	38'4-9/16"-0'	A	0.750	0.000	0.000	0.000	13.754	2.8
		B		0.000	0.000	0.000	13.869	1.5
		C		0.000	0.000	0.000	7.594	0.1

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	185'-149'7-7/16"	-0.0448	-0.2474	-0.2234	-0.3175
L2	149'7-7/16"-114'2-5/8"	0.1607	-0.1210	0.1143	-0.1145
L3	114'2-5/8"-76'9-19/32"	0.1905	-0.1059	0.1641	-0.0913
L4	76'9-19/32"-38'4-9/16"	0.1930	-0.1073	0.1698	-0.0945
L5	38'4-9/16"-0'	0.1950	-0.1085	0.1749	-0.0973

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
185' Verizon Wireless									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.15 7.70 8.28 9.45 11.92	7.70 8.78 9.64 11.48 15.54	0.0 0.1 0.2 0.4 0.8
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.15 7.70 8.28 9.45 11.92	7.70 8.78 9.64 11.48 15.54	0.0 0.1 0.2 0.4 0.8
(2) DB846F65ZAXY w/	C	From Leg	4.00	0.0000	185'	No Ice	7.15	7.70	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0' 2'			1/2" Ice 1" Ice 2" Ice 4" Ice	7.70 8.28 9.45 11.92	8.78 9.64 11.48 15.54	0.1 0.2 0.4 0.8
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.60 5.92 6.24 6.91 8.37	2.33 2.56 2.79 3.28 4.37	0.0 0.1 0.1 0.2 0.5
RRH2x60-700	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.1 0.1 0.1 0.2 0.4
RRH2x60-700	C	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.96 4.27 4.60 5.27 6.72	1.82 2.08 2.36 2.96 4.25	0.1 0.1 0.1 0.2 0.4
RRH2X60-PCS	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	2.01 2.22 2.43 2.89 3.92	0.1 0.1 0.1 0.2 0.3
RRH2X60-PCS	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	2.01 2.22 2.43 2.89 3.92	0.1 0.1 0.1 0.2 0.3
RRH2X60-PCS	C	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.57 2.79 3.02 3.52 4.61	2.01 2.22 2.43 2.89 3.92	0.1 0.1 0.1 0.2 0.3
RRH4X45-AWS4 B66	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.10 3.36 3.62 4.17 5.38	1.76 1.98 2.21 2.69 3.77	0.1 0.1 0.1 0.2 0.3
RRH4X45-AWS4 B66	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.10 3.36 3.62 4.17 5.38	1.76 1.98 2.21 2.69 3.77	0.1 0.1 0.1 0.2 0.3
RRH4X45-AWS4 B66	C	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.10 3.36 3.62 4.17 5.38	1.76 1.98 2.21 2.69 3.77	0.1 0.1 0.1 0.2 0.3
DB-B1-6C-8AB-0Z	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.60 5.92 6.24 6.91 8.37	2.33 2.56 2.79 3.28 4.37	0.0 0.1 0.1 0.2 0.5
(2) SBNHH-1D85C w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice	11.63 12.35 13.07	9.79 11.31 12.85	0.1 0.2 0.3

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	14.54	15.19	0.5
						4" Ice	17.81	20.05	1.1
(2) SBNHH-1D85C w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice	11.63	9.79	0.1
						1/2" Ice	12.35	11.31	0.2
						1" Ice	13.07	12.85	0.3
						2" Ice	14.54	15.19	0.5
						4" Ice	17.81	20.05	1.1
(2) SBNHH-1D85C w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	185'	No Ice	11.63	9.79	0.1
						1/2" Ice	12.35	11.31	0.2
						1" Ice	13.07	12.85	0.3
						2" Ice	14.54	15.19	0.5
						4" Ice	17.81	20.05	1.1
6' x 2" Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	185'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	185'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	185'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
Climbing Ladder - 5'	C	None		0.0000	185'	No Ice	2.05	2.05	0.1
						1/2" Ice	2.41	2.41	0.1
						1" Ice	2.78	2.78	0.1
						2" Ice	3.53	3.53	0.1
						4" Ice	5.13	5.13	0.3
Platform Mount [LP 712-1]	C	None		0.0000	185'	No Ice	24.53	24.53	1.3
						1/2" Ice	29.94	29.94	1.6
						1" Ice	35.35	35.35	2.0
						2" Ice	46.17	46.17	2.6
						4" Ice	67.81	67.81	3.8
Side Arm Mount [SO 202-3]	C	None		0.0000	185'	No Ice	6.18	6.18	0.3
						1/2" Ice	8.56	8.56	0.4
						1" Ice	10.94	10.94	0.5
						2" Ice	15.70	15.70	0.6
						4" Ice	25.22	25.22	0.9
182' NEWTOWN ASP-601	B	From Leg	1.00 0' 6'	0.0000	182'	No Ice	2.34	2.34	0.0
						1/2" Ice	4.21	4.21	0.0
						1" Ice	6.08	6.08	0.0
						2" Ice	9.83	9.83	0.1
						4" Ice	17.32	17.32	0.1
Side Arm Mount [SO 104-3]	B	None		0.0000	182'	No Ice	3.30	3.30	0.3
						1/2" Ice	4.13	4.13	0.3
						1" Ice	4.96	4.96	0.3
						2" Ice	6.62	6.62	0.4
						4" Ice	9.94	9.94	0.5
175' AT&T Mobility (2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice	6.12	4.25	0.1
						1/2" Ice	6.63	5.01	0.1
						1" Ice	7.13	5.71	0.2

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	8.16	7.16	0.3
						4" Ice	10.36	10.41	0.7
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice	6.12	4.25	0.1
						1/2" Ice	6.63	5.01	0.1
						1" Ice	7.13	5.71	0.2
						2" Ice	8.16	7.16	0.3
						4" Ice	10.36	10.41	0.7
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice	6.12	4.25	0.1
						1/2" Ice	6.63	5.01	0.1
						1" Ice	7.13	5.71	0.2
						2" Ice	8.16	7.16	0.3
						4" Ice	10.36	10.41	0.7
(2) LGP2140X	A	From Leg	4.00 0' 0'	0.0000	175'	No Ice	1.26	0.38	0.0
						1/2" Ice	1.42	0.49	0.0
						1" Ice	1.58	0.62	0.0
						2" Ice	1.94	0.89	0.1
						4" Ice	2.75	1.54	0.1
(2) LGP2140X	B	From Leg	4.00 0' 0'	0.0000	175'	No Ice	1.26	0.38	0.0
						1/2" Ice	1.42	0.49	0.0
						1" Ice	1.58	0.62	0.0
						2" Ice	1.94	0.89	0.1
						4" Ice	2.75	1.54	0.1
(2) LGP2140X	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice	1.26	0.38	0.0
						1/2" Ice	1.42	0.49	0.0
						1" Ice	1.58	0.62	0.0
						2" Ice	1.94	0.89	0.1
						4" Ice	2.75	1.54	0.1
RRUS-11	A	From Leg	4.00 0' 0'	0.0000	175'	No Ice	2.94	1.25	0.1
						1/2" Ice	3.17	1.41	0.1
						1" Ice	3.41	1.59	0.1
						2" Ice	3.91	1.96	0.2
						4" Ice	5.02	2.82	0.3
RRUS-11	B	From Leg	4.00 0' 0'	0.0000	175'	No Ice	2.94	1.25	0.1
						1/2" Ice	3.17	1.41	0.1
						1" Ice	3.41	1.59	0.1
						2" Ice	3.91	1.96	0.2
						4" Ice	5.02	2.82	0.3
RRUS-11	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice	2.94	1.25	0.1
						1/2" Ice	3.17	1.41	0.1
						1" Ice	3.41	1.59	0.1
						2" Ice	3.91	1.96	0.2
						4" Ice	5.02	2.82	0.3
DTMABP7819VG12A	A	From Leg	4.00 0' 0'	0.0000	175'	No Ice	1.14	0.39	0.0
						1/2" Ice	1.28	0.49	0.0
						1" Ice	1.44	0.59	0.0
						2" Ice	1.77	0.83	0.1
						4" Ice	2.54	1.41	0.1
DTMABP7819VG12A	B	From Leg	4.00 0' 0'	0.0000	175'	No Ice	1.14	0.39	0.0
						1/2" Ice	1.28	0.49	0.0
						1" Ice	1.44	0.59	0.0
						2" Ice	1.77	0.83	0.1
						4" Ice	2.54	1.41	0.1
DTMABP7819VG12A	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice	1.14	0.39	0.0
						1/2" Ice	1.28	0.49	0.0
						1" Ice	1.44	0.59	0.0
						2" Ice	1.77	0.83	0.1
						4" Ice	2.54	1.41	0.1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC6-48-60-18-8F	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	0.0 0.1 0.1 0.1 0.3
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	7.18 8.36 9.26 11.09 15.15	0.1 0.2 0.3 0.5 1.0
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	7.18 8.36 9.26 11.09 15.15	0.1 0.2 0.3 0.5 1.0
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	7.18 8.36 9.26 11.09 15.15	0.1 0.2 0.3 0.5 1.0
RRUS12/RRUS A2	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	2.14 2.35 2.56 3.02 4.03	0.1 0.1 0.1 0.2 0.4
RRUS12/RRUS A2	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	2.14 2.35 2.56 3.02 4.03	0.1 0.1 0.1 0.2 0.4
RRUS12/RRUS A2	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	2.14 2.35 2.56 3.02 4.03	0.1 0.1 0.1 0.2 0.4
(4) 7020.00	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.0 0.0 0.0 0.0 0.1
(4) 7020.00	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.0 0.0 0.0 0.0 0.1
(4) 7020.00	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.0 0.0 0.0 0.0 0.1
Platform Mount [LP 712-1]	C	None		0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	24.53 29.94 35.35 46.17 67.81	1.3 1.6 2.0 2.6 3.8
167' SPRINT PCS* 1900MHz RRH (65MHz)	A	From Leg	4.00	0.0000	167'	No Ice	2.70	2.77	0.1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2" Ice	2.94	3.01	0.1
			0'			1" Ice	3.18	3.26	0.1
						2" Ice	3.70	3.78	0.2
						4" Ice	4.85	4.93	0.4
1900MHz RRH (65MHz)	B	From Leg	4.00	0.0000	167'	No Ice	2.70	2.77	0.1
			0'			1/2" Ice	2.94	3.01	0.1
			0'			1" Ice	3.18	3.26	0.1
						2" Ice	3.70	3.78	0.2
						4" Ice	4.85	4.93	0.4
1900MHz RRH (65MHz)	C	From Leg	4.00	0.0000	167'	No Ice	2.70	2.77	0.1
			0'			1/2" Ice	2.94	3.01	0.1
			0'			1" Ice	3.18	3.26	0.1
						2" Ice	3.70	3.78	0.2
						4" Ice	4.85	4.93	0.4
800MHZ RRH	A	From Leg	4.00	0.0000	167'	No Ice	2.49	2.07	0.1
			0'			1/2" Ice	2.71	2.27	0.1
			0'			1" Ice	2.93	2.48	0.1
						2" Ice	3.41	2.93	0.2
						4" Ice	4.46	3.93	0.3
800MHZ RRH	B	From Leg	4.00	0.0000	167'	No Ice	2.49	2.07	0.1
			0'			1/2" Ice	2.71	2.27	0.1
			0'			1" Ice	2.93	2.48	0.1
						2" Ice	3.41	2.93	0.2
						4" Ice	4.46	3.93	0.3
800MHZ RRH	C	From Leg	4.00	0.0000	167'	No Ice	2.49	2.07	0.1
			0'			1/2" Ice	2.71	2.27	0.1
			0'			1" Ice	2.93	2.48	0.1
						2" Ice	3.41	2.93	0.2
						4" Ice	4.46	3.93	0.3
Side Arm Mount [SO 104-3]	C	None		0.0000	167'	No Ice	3.30	3.30	0.3
						1/2" Ice	4.13	4.13	0.3
						1" Ice	4.96	4.96	0.3
						2" Ice	6.62	6.62	0.4
						4" Ice	9.94	9.94	0.5
165' Sprint PCS									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	165'	No Ice	8.50	6.95	0.1
			0'			1/2" Ice	9.15	8.13	0.2
			0'			1" Ice	9.77	9.02	0.2
						2" Ice	11.03	10.84	0.4
						4" Ice	13.68	14.85	0.9
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	165'	No Ice	8.50	6.95	0.1
			0'			1/2" Ice	9.15	8.13	0.2
			0'			1" Ice	9.77	9.02	0.2
						2" Ice	11.03	10.84	0.4
						4" Ice	13.68	14.85	0.9
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	165'	No Ice	8.50	6.95	0.1
			0'			1/2" Ice	9.15	8.13	0.2
			0'			1" Ice	9.77	9.02	0.2
						2" Ice	11.03	10.84	0.4
						4" Ice	13.68	14.85	0.9
(3) ACU-A20-N	A	From Leg	4.00	0.0000	165'	No Ice	0.08	0.14	0.0
			0'			1/2" Ice	0.12	0.19	0.0
			0'			1" Ice	0.17	0.25	0.0
						2" Ice	0.30	0.40	0.0
						4" Ice	0.67	0.80	0.0
(3) ACU-A20-N	B	From Leg	4.00	0.0000	165'	No Ice	0.08	0.14	0.0
			0'			1/2" Ice	0.12	0.19	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	0.17	0.25	0.0
						2" Ice	0.30	0.40	0.0
						4" Ice	0.67	0.80	0.0
(3) ACU-A20-N	C	From Leg	4.00	0.0000	165'	No Ice	0.08	0.14	0.0
			0'			1/2" Ice	0.12	0.19	0.0
			0'			1" Ice	0.17	0.25	0.0
						2" Ice	0.30	0.40	0.0
						4" Ice	0.67	0.80	0.0
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	165'	No Ice	0.77	0.37	0.0
			0'			1/2" Ice	0.89	0.46	0.0
			0'			1" Ice	1.02	0.56	0.0
						2" Ice	1.30	0.79	0.0
						4" Ice	1.97	1.34	0.1
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	165'	No Ice	0.77	0.37	0.0
			0'			1/2" Ice	0.89	0.46	0.0
			0'			1" Ice	1.02	0.56	0.0
						2" Ice	1.30	0.79	0.0
						4" Ice	1.97	1.34	0.1
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	165'	No Ice	0.77	0.37	0.0
			0'			1/2" Ice	0.89	0.46	0.0
			0'			1" Ice	1.02	0.56	0.0
						2" Ice	1.30	0.79	0.0
						4" Ice	1.97	1.34	0.1
Climbing Ladder - 5'	C	None		0.0000	165'	No Ice	2.05	2.05	0.1
						1/2" Ice	2.41	2.41	0.1
						1" Ice	2.78	2.78	0.1
						2" Ice	3.53	3.53	0.1
						4" Ice	5.13	5.13	0.3
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	165'	No Ice	1.43	1.43	0.0
			0'			1/2" Ice	1.92	1.92	0.0
			0'			1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	165'	No Ice	1.43	1.43	0.0
			0'			1/2" Ice	1.92	1.92	0.0
			0'			1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	165'	No Ice	1.43	1.43	0.0
			0'			1/2" Ice	1.92	1.92	0.0
			0'			1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
Platform Mount [LP 712-1]	C	None		0.0000	165'	No Ice	24.53	24.53	1.3
						1/2" Ice	29.94	29.94	1.6
						1" Ice	35.35	35.35	2.0
						2" Ice	46.17	46.17	2.6
						4" Ice	67.81	67.81	3.8
155 Sprint PCS Side Arm Mount [SO 102-1]	A	From Leg	1.00	0.0000	155'	No Ice	1.50	1.50	0.0
			0'			1/2" Ice	1.74	1.75	0.0
			0'			1" Ice	1.98	2.00	0.0
						2" Ice	2.46	2.50	0.1
						4" Ice	3.42	3.50	0.1
145' T-Mobile ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	145'	No Ice	6.83	5.64	0.1
			0'			1/2" Ice	7.35	6.48	0.2

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			3'			1" Ice	7.86	7.26	0.2
						2" Ice	8.93	8.86	0.4
						4" Ice	11.18	12.29	0.8
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0' 3'	0.0000	145'	No Ice	6.83	5.64	0.1
						1/2" Ice	7.35	6.48	0.2
						1" Ice	7.86	7.26	0.2
						2" Ice	8.93	8.86	0.4
						4" Ice	11.18	12.29	0.8
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0' 3'	0.0000	145'	No Ice	6.83	5.64	0.1
						1/2" Ice	7.35	6.48	0.2
						1" Ice	7.86	7.26	0.2
						2" Ice	8.93	8.86	0.4
						4" Ice	11.18	12.29	0.8
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0' 3'	0.0000	145'	No Ice	6.83	5.64	0.1
						1/2" Ice	7.35	6.48	0.2
						1" Ice	7.86	7.26	0.2
						2" Ice	8.93	8.86	0.4
						4" Ice	11.18	12.29	0.8
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0' 3'	0.0000	145'	No Ice	6.83	5.64	0.1
						1/2" Ice	7.35	6.48	0.2
						1" Ice	7.86	7.26	0.2
						2" Ice	8.93	8.86	0.4
						4" Ice	11.18	12.29	0.8
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0' 3'	0.0000	145'	No Ice	6.83	5.64	0.1
						1/2" Ice	7.35	6.48	0.2
						1" Ice	7.86	7.26	0.2
						2" Ice	8.93	8.86	0.4
						4" Ice	11.18	12.29	0.8
KRY 112 144/1	A	From Leg	4.00 0' 3'	0.0000	145'	No Ice	0.41	0.19	0.0
						1/2" Ice	0.50	0.26	0.0
						1" Ice	0.60	0.33	0.0
						2" Ice	0.82	0.51	0.0
						4" Ice	1.36	0.97	0.1
KRY 112 144/1	B	From Leg	4.00 0' 3'	0.0000	145'	No Ice	0.41	0.19	0.0
						1/2" Ice	0.50	0.26	0.0
						1" Ice	0.60	0.33	0.0
						2" Ice	0.82	0.51	0.0
						4" Ice	1.36	0.97	0.1
KRY 112 144/1	C	From Leg	4.00 0' 3'	0.0000	145'	No Ice	0.41	0.19	0.0
						1/2" Ice	0.50	0.26	0.0
						1" Ice	0.60	0.33	0.0
						2" Ice	0.82	0.51	0.0
						4" Ice	1.36	0.97	0.1
Platform Mount [LP 712-1]	C	None		0.0000	145'	No Ice	24.53	24.53	1.3
						1/2" Ice	29.94	29.94	1.6
						1" Ice	35.35	35.35	2.0
						2" Ice	46.17	46.17	2.6
						4" Ice	67.81	67.81	3.8
135' METRO PCS									
800 10504 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	135'	No Ice	3.48	3.19	0.0
						1/2" Ice	3.86	3.82	0.1
						1" Ice	4.24	4.47	0.1
						2" Ice	5.09	5.82	0.2
						4" Ice	7.01	8.79	0.5
800 10504 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	135'	No Ice	3.48	3.19	0.0
						1/2" Ice	3.86	3.82	0.1
						1" Ice	4.24	4.47	0.1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.09	5.82	0.2
						4" Ice	7.01	8.79	0.5
800 10504 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	135'	No Ice	3.48	3.19	0.0
						1/2" Ice	3.86	3.82	0.1
						1" Ice	4.24	4.47	0.1
						2" Ice	5.09	5.82	0.2
						4" Ice	7.01	8.79	0.5
860 10025	A	From Leg	4.00 0' 2'	0.0000	135'	No Ice	0.16	0.14	0.0
						1/2" Ice	0.23	0.20	0.0
						1" Ice	0.30	0.27	0.0
						2" Ice	0.48	0.44	0.0
						4" Ice	0.93	0.88	0.1
860 10025	B	From Leg	4.00 0' 2'	0.0000	135'	No Ice	0.16	0.14	0.0
						1/2" Ice	0.23	0.20	0.0
						1" Ice	0.30	0.27	0.0
						2" Ice	0.48	0.44	0.0
						4" Ice	0.93	0.88	0.1
860 10025	C	From Leg	4.00 0' 2'	0.0000	135'	No Ice	0.16	0.14	0.0
						1/2" Ice	0.23	0.20	0.0
						1" Ice	0.30	0.27	0.0
						2" Ice	0.48	0.44	0.0
						4" Ice	0.93	0.88	0.1
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	135'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	135'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	135'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
T-Arm Mount [TA 602-3]	C	None		0.0000	135'	No Ice	11.59	11.59	0.3
						1/2" Ice	15.44	15.44	0.3
						1" Ice	19.29	19.29	0.4
						2" Ice	26.99	26.99	0.7
						4" Ice	42.39	42.39	1.8
GPS GPS	C	From Leg	2.00 0' 0'	0.0000	108'	No Ice	0.08	0.08	0.0
						1/2" Ice	0.14	0.14	0.0
						1" Ice	0.23	0.23	0.0
						2" Ice	0.44	0.44	0.0
						4" Ice	1.00	1.00	0.1
GPS	C	From Leg	2.00 0' 0'	0.0000	107'	No Ice	0.08	0.08	0.0
						1/2" Ice	0.14	0.14	0.0
						1" Ice	0.23	0.23	0.0
						2" Ice	0.44	0.44	0.0
						4" Ice	1.00	1.00	0.1
GPS	C	From Leg	2.00 0' 0'	0.0000	51'	No Ice	0.08	0.08	0.0
						1/2" Ice	0.14	0.14	0.0
						1" Ice	0.23	0.23	0.0
						2" Ice	0.44	0.44	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	1.00	1.00	0.1
Side Arm Mount [SO 901-1]	C	From Leg	1.00 0' 0'	0.0000	108'	No Ice	0.50	0.88	0.1
						1/2" Ice	0.68	1.13	0.1
						1" Ice	0.86	1.38	0.1
						2" Ice	1.22	1.88	0.1
						4" Ice	1.94	2.88	0.1
Side Arm Mount [SO 901-1]	C	From Leg	1.00 0' 0'	0.0000	107'	No Ice	0.50	0.88	0.1
						1/2" Ice	0.68	1.13	0.1
						1" Ice	0.86	1.38	0.1
						2" Ice	1.22	1.88	0.1
						4" Ice	1.94	2.88	0.1
Side Arm Mount [SO 901-1]	C	From Leg	1.00 0' 0'	0.0000	51'	No Ice	0.50	0.88	0.1
						1/2" Ice	0.68	1.13	0.1
						1" Ice	0.86	1.38	0.1
						2" Ice	1.22	1.88	0.1
						4" Ice	1.94	2.88	0.1

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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

Comb. No.	Description
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	185 - 149.622	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-20.7	0.2	2.6
			Max. Mx	11	-9.4	515.6	1.4
			Max. My	2	-9.4	1.0	520.6
			Max. Vy	11	-22.4	515.6	1.4
			Max. Vx	2	-22.6	1.0	520.6
			Max. Torque	11			-0.6
L2	149.622 - 114.221	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-35.3	-0.8	5.7
			Max. Mx	11	-18.0	1473.0	3.0
			Max. My	2	-18.0	1.8	1483.9
			Max. Vy	11	-31.3	1473.0	3.0
			Max. Vx	2	-31.5	1.8	1483.9
			Max. Torque	11			-0.5
L3	114.221 - 76.8021	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-49.3	-1.8	8.9
			Max. Mx	11	-27.9	2703.7	4.8
			Max. My	2	-27.9	3.4	2720.4
			Max. Vy	11	-35.8	2703.7	4.8
			Max. Vx	2	-36.0	3.4	2720.4
			Max. Torque	11			-0.6
L4	76.8021 - 38.3802	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-66.3	-3.2	12.7
			Max. Mx	11	-40.8	4131.1	7.0
			Max. My	2	-40.8	5.0	4154.6
			Max. Vy	11	-40.0	4131.1	7.0
			Max. Vx	2	-40.1	5.0	4154.6
			Max. Torque	11			-0.5
L5	38.3802 - 0	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-90.6	-5.5	17.5
			Max. Mx	5	-60.3	-6062.4	-3.3
			Max. My	2	-60.3	6.7	6094.9
			Max. Vy	5	44.1	-6062.4	-3.3
			Max. Vx	2	-44.2	6.7	6094.9
			Max. Torque	11			-0.5

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	90.6	0.0	10.8
	Max. H_x	11	60.3	44.0	0.0
	Max. H_z	2	60.3	0.0	44.2
	Max. M_x	2	6094.9	0.0	44.2
	Max. M_z	5	6062.4	-44.0	-0.0
	Max. Torsion	5	0.5	-44.0	-0.0
	Min. Vert	1	60.3	0.0	0.0
	Min. H_x	5	60.3	-44.0	-0.0
	Min. H_z	8	60.3	-0.0	-44.2
	Min. M_x	8	-6087.9	-0.0	-44.2
	Min. M_z	11	-6062.2	44.0	0.0
	Min. Torsion	11	-0.5	44.0	0.0

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	60.3	0.0	0.0	-3.4	-0.1	0.0
Dead+Wind 0 deg - No Ice	60.3	-0.0	-44.2	-6094.9	6.7	-0.0
Dead+Wind 30 deg - No Ice	60.3	22.0	-38.2	-5275.5	-3025.4	-0.3
Dead+Wind 60 deg - No Ice	60.3	38.1	-22.1	-3043.4	-5246.8	-0.4
Dead+Wind 90 deg - No Ice	60.3	44.0	0.0	3.3	-6062.4	-0.5
Dead+Wind 120 deg - No Ice	60.3	38.2	22.1	3048.1	-5253.6	-0.4
Dead+Wind 150 deg - No Ice	60.3	22.1	38.3	5275.2	-3037.1	-0.2
Dead+Wind 180 deg - No Ice	60.3	0.0	44.2	6087.9	-6.9	0.0
Dead+Wind 210 deg - No Ice	60.3	-22.0	38.2	5268.5	3025.2	0.3
Dead+Wind 240 deg - No Ice	60.3	-38.1	22.1	3036.4	5246.6	0.4
Dead+Wind 270 deg - No Ice	60.3	-44.0	-0.0	-10.3	6062.2	0.5
Dead+Wind 300 deg - No Ice	60.3	-38.2	-22.1	-3055.1	5253.3	0.4
Dead+Wind 330 deg - No Ice	60.3	-22.1	-38.3	-5282.2	3036.8	0.2
Dead+Ice+Temp	90.6	0.0	-0.0	-17.5	-5.5	0.0
Dead+Wind 0 deg+Ice+Temp	90.6	-0.0	-10.8	-1568.1	-4.0	-0.0
Dead+Wind 30 deg+Ice+Temp	90.6	5.4	-9.3	-1359.6	-776.3	-0.0
Dead+Wind 60 deg+Ice+Temp	90.6	9.3	-5.4	-791.6	-1342.1	-0.1
Dead+Wind 90 deg+Ice+Temp	90.6	10.8	0.0	-16.1	-1549.7	-0.1
Dead+Wind 120 deg+Ice+Temp	90.6	9.3	5.4	758.9	-1343.6	-0.1
Dead+Wind 150 deg+Ice+Temp	90.6	5.4	9.4	1325.8	-779.0	-0.0
Dead+Wind 180 deg+Ice+Temp	90.6	0.0	10.8	1532.7	-7.1	0.0
Dead+Wind 210 deg+Ice+Temp	90.6	-5.4	9.3	1324.2	765.2	0.0
Dead+Wind 240 deg+Ice+Temp	90.6	-9.3	5.4	756.2	1330.9	0.1
Dead+Wind 270 deg+Ice+Temp	90.6	-10.8	-0.0	-19.2	1538.6	0.1
Dead+Wind 300 deg+Ice+Temp	90.6	-9.3	-5.4	-794.2	1332.5	0.1
Dead+Wind 330 deg+Ice+Temp	90.6	-5.4	-9.4	-1361.2	767.8	0.0
Dead+Wind 0 deg - Service	60.3	-0.0	-15.3	-2115.0	2.2	-0.0
Dead+Wind 30 deg - Service	60.3	7.6	-13.2	-1830.9	-1048.7	-0.1
Dead+Wind 60 deg - Service	60.3	13.2	-7.6	-1057.2	-1818.7	-0.2
Dead+Wind 90 deg - Service	60.3	15.2	0.0	-1.2	-2101.4	-0.2
Dead+Wind 120 deg - Service	60.3	13.2	7.7	1054.2	-1821.1	-0.1
Dead+Wind 150 deg - Service	60.3	7.6	13.3	1826.2	-1052.8	-0.1
Dead+Wind 180 deg - Service	60.3	0.0	15.3	2107.9	-2.5	0.0
Dead+Wind 210 deg - Service	60.3	-7.6	13.2	1823.9	1048.5	0.1
Dead+Wind 240 deg - Service	60.3	-13.2	7.6	1050.2	1818.5	0.2
Dead+Wind 270 deg - Service	60.3	-15.2	-0.0	-5.9	2101.2	0.2
Dead+Wind 300 deg - Service	60.3	-13.2	-7.7	-1061.3	1820.9	0.1
Dead+Wind 330 deg - Service	60.3	-7.6	-13.3	-1833.3	1052.6	0.1

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.0	-60.3	0.0	0.0	60.3	0.0	0.000%
2	-0.0	-60.3	-44.2	0.0	60.3	44.2	0.000%
3	22.0	-60.3	-38.2	-22.0	60.3	38.2	0.000%
4	38.1	-60.3	-22.1	-38.1	60.3	22.1	0.000%
5	44.0	-60.3	0.0	-44.0	60.3	-0.0	0.000%
6	38.2	-60.3	22.1	-38.2	60.3	-22.1	0.000%
7	22.1	-60.3	38.3	-22.1	60.3	-38.3	0.000%
8	0.0	-60.3	44.2	-0.0	60.3	-44.2	0.000%
9	-22.0	-60.3	38.2	22.0	60.3	-38.2	0.000%
10	-38.1	-60.3	22.1	38.1	60.3	-22.1	0.000%
11	-44.0	-60.3	-0.0	44.0	60.3	0.0	0.000%
12	-38.2	-60.3	-22.1	38.2	60.3	22.1	0.000%
13	-22.1	-60.3	-38.3	22.1	60.3	38.3	0.000%
14	0.0	-90.6	0.0	-0.0	90.6	0.0	0.000%
15	-0.0	-90.6	-10.8	0.0	90.6	10.8	0.000%
16	5.4	-90.6	-9.3	-5.4	90.6	9.3	0.000%
17	9.3	-90.6	-5.4	-9.3	90.6	5.4	0.000%
18	10.8	-90.6	0.0	-10.8	90.6	-0.0	0.000%
19	9.3	-90.6	5.4	-9.3	90.6	-5.4	0.000%
20	5.4	-90.6	9.4	-5.4	90.6	-9.4	0.000%
21	0.0	-90.6	10.8	-0.0	90.6	-10.8	0.000%
22	-5.4	-90.6	9.3	5.4	90.6	-9.3	0.000%
23	-9.3	-90.6	5.4	9.3	90.6	-5.4	0.000%
24	-10.8	-90.6	-0.0	10.8	90.6	0.0	0.000%
25	-9.3	-90.6	-5.4	9.3	90.6	5.4	0.000%
26	-5.4	-90.6	-9.4	5.4	90.6	9.4	0.000%
27	-0.0	-60.3	-15.3	0.0	60.3	15.3	0.000%
28	7.6	-60.3	-13.2	-7.6	60.3	13.2	0.000%
29	13.2	-60.3	-7.6	-13.2	60.3	7.6	0.000%
30	15.2	-60.3	0.0	-15.2	60.3	-0.0	0.000%
31	13.2	-60.3	7.7	-13.2	60.3	-7.7	0.000%
32	7.6	-60.3	13.3	-7.6	60.3	-13.3	0.000%
33	0.0	-60.3	15.3	-0.0	60.3	-15.3	0.000%
34	-7.6	-60.3	13.2	7.6	60.3	-13.2	0.000%
35	-13.2	-60.3	7.6	13.2	60.3	-7.6	0.000%
36	-15.2	-60.3	-0.0	15.2	60.3	0.0	0.000%
37	-13.2	-60.3	-7.7	13.2	60.3	7.7	0.000%
38	-7.6	-60.3	-13.3	7.6	60.3	13.3	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00039371
3	Yes	6	0.00000001	0.00007897
4	Yes	6	0.00000001	0.00007949
5	Yes	4	0.00000001	0.00045788
6	Yes	6	0.00000001	0.00007892
7	Yes	6	0.00000001	0.00007947
8	Yes	4	0.00000001	0.00036791

9	Yes	6	0.00000001	0.00007929
10	Yes	6	0.00000001	0.00007866
11	Yes	4	0.00000001	0.00068446
12	Yes	6	0.00000001	0.00007970
13	Yes	6	0.00000001	0.00007926
14	Yes	4	0.00000001	0.00006703
15	Yes	5	0.00000001	0.00043125
16	Yes	5	0.00000001	0.00060627
17	Yes	5	0.00000001	0.00060728
18	Yes	5	0.00000001	0.00042547
19	Yes	5	0.00000001	0.00058845
20	Yes	5	0.00000001	0.00059211
21	Yes	5	0.00000001	0.00042069
22	Yes	5	0.00000001	0.00058572
23	Yes	5	0.00000001	0.00058312
24	Yes	5	0.00000001	0.00042323
25	Yes	5	0.00000001	0.00060579
26	Yes	5	0.00000001	0.00060372
27	Yes	4	0.00000001	0.00016728
28	Yes	5	0.00000001	0.00016903
29	Yes	5	0.00000001	0.00017102
30	Yes	4	0.00000001	0.00018059
31	Yes	5	0.00000001	0.00016798
32	Yes	5	0.00000001	0.00017051
33	Yes	4	0.00000001	0.00016595
34	Yes	5	0.00000001	0.00016971
35	Yes	5	0.00000001	0.00016687
36	Yes	4	0.00000001	0.00018904
37	Yes	5	0.00000001	0.00017221
38	Yes	5	0.00000001	0.00017054

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	185 - 149.622	47.534	27	2.2748	0.0011
L2	154.628 - 114.221	33.492	27	2.0806	0.0006
L3	120.029 - 76.8021	19.869	27	1.6196	0.0003
L4	83.4479 - 38.3802	9.381	27	1.0731	0.0002
L5	45.8724 - 0	2.825	27	0.5553	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185'	(2) DB846F65ZAXY w/ Mount Pipe	27	47.534	2.2748	0.0011	31606
182'	ASP-601	27	46.112	2.2604	0.0010	31606
175'	(2) 7770.00 w/ Mount Pipe	27	42.806	2.2253	0.0009	15803
167'	1900MHz RRH (65MHz)	27	39.076	2.1786	0.0008	8779
165'	APXVSPP18-C-A20 w/ Mount Pipe	27	38.155	2.1653	0.0008	7901
155'	Side Arm Mount [SO 102-1]	27	33.656	2.0842	0.0006	5344
145'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	27	29.377	1.9743	0.0005	4694
135'	800 10504 w/ Mount Pipe	27	25.355	1.8414	0.0004	4261

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108'	GPS	27	15.967	1.4376	0.0003	3872
107'	GPS	27	15.663	1.4225	0.0002	3883
51'	GPS	27	3.452	0.6222	0.0001	3596

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	185 - 149.622	136.645	2	6.5413	0.0030
L2	154.628 - 114.221	96.333	2	5.9850	0.0018
L3	120.029 - 76.8021	57.186	2	4.6614	0.0009
L4	83.4479 - 38.3802	27.015	2	3.0903	0.0005
L5	45.8724 - 0	8.138	2	1.5998	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185'	(2) DB846F65ZAXY w/ Mount Pipe	2	136.645	6.5413	0.0031	11267
182'	ASP-601	2	132.564	6.5002	0.0029	11267
175'	(2) 7770.00 w/ Mount Pipe	2	123.075	6.3997	0.0026	5632
167'	1900MHz RRH (65MHz)	2	112.365	6.2661	0.0023	3127
165'	APXVSPP18-C-A20 w/ Mount Pipe	2	109.722	6.2278	0.0022	2814
155'	Side Arm Mount [SO 102-1]	2	96.803	5.9952	0.0018	1900
145'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	84.514	5.6802	0.0015	1664
135'	800 10504 w/ Mount Pipe	2	72.958	5.2986	0.0012	1507
108'	GPS	2	45.967	4.1385	0.0007	1360
107'	GPS	2	45.093	4.0952	0.0007	1364
51'	GPS	2	9.945	1.7924	0.0002	1251

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 $\frac{P}{P_a}$
L1	185 - 183.401	TP36.0404x29x0.25	35'4-9/16"	0'	0.0	39.00	23.0656	-2.2	899.6	0.002
	183.401 - 181.803					39.00	23.3180	-2.6	909.4	0.003
	181.803 - 180.204					39.00	23.5704	-2.8	919.2	0.003

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	180.204 - 178.606					39.00	23.8228	-2.9	929.1	0.003
	178.606 - 177.007					39.00	24.0753	-3.1	938.9	0.003
	177.007 - 175.409					39.00	24.3277	-3.2	948.8	0.003
	175.409 - 173.81					39.00	24.5801	-5.3	958.6	0.006
	173.81 - 172.212					39.00	24.8326	-5.5	968.5	0.006
	172.212 - 170.613					39.00	25.0850	-5.6	978.3	0.006
	170.613 - 169.015					39.00	25.3374	-5.8	988.2	0.006
	169.015 - 167.416					39.00	25.5899	-6.0	998.0	0.006
	167.416 - 165.817					39.00	25.8423	-6.7	1007.9	0.007
	165.817 - 164.219					39.00	26.0947	-8.3	1017.7	0.008
	164.219 - 162.62					39.00	26.3471	-8.5	1027.5	0.008
	162.62 - 161.022					39.00	26.5996	-8.6	1037.4	0.008
	161.022 - 159.423					39.00	26.8520	-8.8	1047.2	0.008
	159.423 - 157.825					39.00	27.1044	-9.0	1057.1	0.009
	157.825 - 156.226					39.00	27.3569	-9.2	1066.9	0.009
	156.226 - 154.628					39.00	27.6093	-9.4	1076.8	0.009
	154.628 - 149.622					39.00	28.3997	-4.8	1107.6	0.004
L2	154.628 - 149.622	TP42.4605x34.5443x0.3125	40'4-29/32"	0'	0.0	39.00	34.9263	-5.8	1362.1	0.004
	149.622 - 147.978					39.00	35.2458	-10.9	1374.6	0.008
	147.978 - 146.334					39.00	35.5653	-11.1	1387.1	0.008
	146.334 - 144.69					39.00	35.8848	-13.1	1399.5	0.009
	144.69 - 143.046					39.00	36.2043	-13.3	1412.0	0.009
	143.046 - 141.402					39.00	36.5237	-13.6	1424.4	0.010
	141.402 - 139.758					39.00	36.8432	-13.9	1436.9	0.010
	139.758 - 138.114					39.00	37.1627	-14.2	1449.3	0.010
	138.114 - 136.47					39.00	37.4822	-14.5	1461.8	0.010
	136.47 - 134.826					39.00	37.8017	-15.2	1474.3	0.010
	134.826 - 133.181					39.00	38.1212	-15.5	1486.7	0.010
	133.181 - 131.537					39.00	38.4407	-15.8	1499.2	0.011
	131.537 - 129.893					39.00	38.7601	-16.1	1511.7	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	129.893 - 128.249					39.00	39.0796	-16.4	1524.1	0.011
	128.249 - 126.605					39.00	39.3991	-16.7	1536.6	0.011
	126.605 - 124.961					39.00	39.7186	-17.1	1549.0	0.011
	124.961 - 123.317					39.00	40.0381	-17.4	1561.5	0.011
	123.317 - 121.673					39.00	40.3576	-17.7	1574.0	0.011
	121.673 - 120.029					39.00	40.6771	-18.0	1586.4	0.011
	120.029 - 114.221					39.00	41.8055	-9.2	1630.4	0.006
L3	120.029 - 114.221	TP49.157x40.6978x0.375	43'2-3/4"	0'	0.0	39.00	49.3468	-10.8	1924.5	0.006
	114.221 - 112.512					39.00	49.7451	-20.5	1940.1	0.011
	112.512 - 110.802					39.00	50.1433	-20.9	1955.6	0.011
	110.802 - 109.092					39.00	50.5415	-21.3	1971.1	0.011
	109.092 - 107.383					39.00	50.9397	-21.8	1986.7	0.011
	107.383 - 105.673					39.00	51.3379	-22.3	2002.2	0.011
	105.673 - 103.964					39.00	51.7362	-22.7	2017.7	0.011
	103.964 - 102.254					39.00	52.1344	-23.1	2033.2	0.011
	102.254 - 100.544					39.00	52.5326	-23.5	2048.8	0.011
	100.544 - 98.8346					39.00	52.9308	-24.0	2064.3	0.012
	98.8346 - 97.125					39.00	53.3290	-24.4	2079.8	0.012
	97.125 - 95.4154					39.00	53.7273	-24.8	2095.4	0.012
	95.4154 - 93.7057					39.00	54.1255	-25.2	2110.9	0.012
	93.7057 - 91.9961					39.00	54.5237	-25.7	2126.4	0.012
	91.9961 - 90.2865					39.00	54.9219	-26.1	2141.9	0.012
	90.2865 - 88.5768					39.00	55.3201	-26.5	2157.5	0.012
	88.5768 - 86.8672					39.00	55.7183	-27.0	2173.0	0.012
	86.8672 - 85.1576					39.00	56.1166	-27.4	2188.6	0.013
	85.1576 - 83.4479					39.00	56.5148	-27.9	2204.1	0.013
	83.4479 - 76.8021					39.00	58.0628	-14.5	2264.4	0.006
L4	83.4479 - 76.8021	TP55.9285x47.1064x0.4375	45'27/32"	0'	0.0	39.00	66.6122	-16.5	2597.9	0.006
	76.8021 - 75.0838					39.00	67.0792	-31.5	2616.1	0.012
	75.0838 - 73.3655					39.00	67.5463	-32.0	2634.3	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	73.3655 - 71.6471					39.00	68.0134	-32.6	2652.5	0.012
	71.6471 - 69.9288					39.00	68.4805	-33.1	2670.7	0.012
	69.9288 - 68.2105					39.00	68.9476	-33.6	2689.0	0.012
	68.2105 - 66.4922					39.00	69.4146	-34.1	2707.2	0.013
	66.4922 - 64.7739					39.00	69.8817	-34.6	2725.4	0.013
	64.7739 - 63.0556					39.00	70.3488	-35.2	2743.6	0.013
	63.0556 - 61.3372					39.00	70.8159	-35.7	2761.8	0.013
	61.3372 - 59.6189					39.00	71.2830	-36.3	2780.0	0.013
	59.6189 - 57.9006					39.00	71.7501	-36.8	2798.3	0.013
	57.9006 - 56.1823					39.00	72.2171	-37.3	2816.5	0.013
	56.1823 - 54.464					39.00	72.6842	-37.9	2834.7	0.013
	54.464 - 52.7457					39.00	73.1513	-38.4	2852.9	0.013
	52.7457 - 51.0273					39.00	73.6184	-39.0	2871.1	0.014
	51.0273 - 49.309					39.00	74.0855	-39.7	2889.3	0.014
	49.309 - 47.5907					39.00	74.5525	-40.2	2907.6	0.014
	47.5907 - 45.8724					39.00	75.0196	-40.8	2925.8	0.014
	45.8724 - 38.3802					39.00	77.0562	-21.4	3005.2	0.007
L5	45.8724 - 38.3802	TP62.5x53.5869x0.5	45'10-7/16"	0'	0.0	39.00	86.5592	-23.9	3375.8	0.007
	38.3802 - 36.3602					39.00	87.1821	-46.1	3400.1	0.014
	36.3602 - 34.3402					39.00	87.8049	-46.8	3424.4	0.014
	34.3402 - 32.3202					39.00	88.4278	-47.6	3448.7	0.014
	32.3202 - 30.3002					39.00	89.0507	-48.3	3473.0	0.014
	30.3002 - 28.2802					39.00	89.6736	-49.1	3497.3	0.014
	28.2802 - 26.2601					39.00	90.2965	-49.9	3521.6	0.014
	26.2601 - 24.2401					39.00	90.9194	-50.6	3545.9	0.014
	24.2401 - 22.2201					39.00	91.5423	-51.4	3570.2	0.014
	22.2201 - 20.2001					39.00	92.1651	-52.2	3594.4	0.015
	20.2001 - 18.1801					39.00	92.7880	-53.0	3618.7	0.015
	18.1801 - 16.1601					39.00	93.4109	-53.8	3643.0	0.015
	16.1601 - 14.1401					39.00	94.0338	-54.6	3667.3	0.015

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	14.1401 - 12.1201					39.00	94.6567	-55.4	3691.6	0.015
	12.1201 - 10.1001					39.00	95.2796	-56.2	3715.9	0.015
	10.1001 - 8.08004					39.00	95.9025	-57.0	3740.2	0.015
	8.08004 - 6.06003					39.00	96.5253	-57.8	3764.5	0.015
	6.06003 - 4.04002					39.00	97.1482	-58.6	3788.8	0.015
	4.04002 - 2.02001					39.00	97.7711	-59.4	3813.1	0.016
	2.02001 - 0					39.00	98.3940	-60.3	3837.4	0.016

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	185 - 183.401	TP36.0404x29x0.25	29.4	2.13	39.00	0.055	0.0	0.00	39.00	0.000
	183.401 - 181.803		45.4	3.22	39.00	0.083	0.0	0.00	39.00	0.000
	181.803 - 180.204		61.4	4.27	39.00	0.109	0.0	0.00	39.00	0.000
	180.204 - 178.606		77.7	5.28	39.00	0.135	0.0	0.00	39.00	0.000
	178.606 - 177.007		94.2	6.28	39.00	0.161	0.0	0.00	39.00	0.000
	177.007 - 175.409		111.0	7.24	39.00	0.186	0.0	0.00	39.00	0.000
	175.409 - 173.81		141.7	9.05	39.00	0.232	0.0	0.00	39.00	0.000
	173.81 - 172.212		168.1	10.52	39.00	0.270	0.0	0.00	39.00	0.000
	172.212 - 170.613		194.9	11.95	39.00	0.306	0.0	0.00	39.00	0.000
	170.613 - 169.015		221.9	13.34	39.00	0.342	0.0	0.00	39.00	0.000
	169.015 - 167.416		249.2	14.68	39.00	0.376	0.0	0.00	39.00	0.000
	167.416 - 165.817		277.9	16.05	39.00	0.412	0.0	0.00	39.00	0.000
	165.817 - 164.219		309.6	17.54	39.00	0.450	0.0	0.00	39.00	0.000
	164.219 - 162.62		344.1	19.12	39.00	0.490	0.0	0.00	39.00	0.000
	162.62 - 161.022		378.8	20.65	39.00	0.530	0.0	0.00	39.00	0.000
	161.022 - 159.423		413.8	22.14	39.00	0.568	0.0	0.00	39.00	0.000
	159.423 - 157.825		449.1	23.58	39.00	0.605	0.0	0.00	39.00	0.000
	157.825 - 156.226		484.7	24.98	39.00	0.640	0.0	0.00	39.00	0.000
	156.226 - 154.628		520.6	26.34	39.00	0.675	0.0	0.00	39.00	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	154.628 - 149.622		290.2	13.87	39.00	0.356	0.0	0.00	39.00	0.000
L2	154.628 - 149.622	TP42.4605x34.5443x0.3125	345.1	13.66	39.00	0.350	0.0	0.00	39.00	0.000
	149.622 - 147.978		673.7	26.18	39.00	0.671	0.0	0.00	39.00	0.000
	147.978 - 146.334		712.4	27.19	39.00	0.697	0.0	0.00	39.00	0.000
	146.334 - 144.69		757.9	28.41	39.00	0.728	0.0	0.00	39.00	0.000
	144.69 - 143.046		802.5	29.55	39.00	0.758	0.0	0.00	39.00	0.000
	143.046 - 141.402		847.4	30.66	39.00	0.786	0.0	0.00	39.00	0.000
	141.402 - 139.758		892.6	31.74	39.00	0.814	0.0	0.00	39.00	0.000
	139.758 - 138.114		938.2	32.78	39.00	0.841	0.0	0.00	39.00	0.000
	138.114 - 136.47		984.0	33.80	39.00	0.867	0.0	0.00	39.00	0.000
	136.47 - 134.826		1031.5	34.83	39.00	0.893	0.0	0.00	39.00	0.000
	134.826 - 133.181		1080.5	35.87	39.00	0.920	0.0	0.00	39.00	0.000
	133.181 - 131.537		1129.8	36.89	39.00	0.946	0.0	0.00	39.00	0.000
	131.537 - 129.893		1179.4	37.87	39.00	0.971	0.0	0.00	39.00	0.000
	129.893 - 128.249		1229.3	38.83	39.00	0.996	0.0	0.00	39.00	0.000
	128.249 - 126.605		1279.6	39.76	39.00	1.020	0.0	0.00	39.00	0.000
	126.605 - 124.961		1330.2	40.67	39.00	1.043	0.0	0.00	39.00	0.000
	124.961 - 123.317		1381.1	41.55	39.00	1.065	0.0	0.00	39.00	0.000
	123.317 - 121.673		1432.3	42.41	39.00	1.087	0.0	0.00	39.00	0.000
	121.673 - 120.029		1483.9	43.25	39.00	1.109	0.0	0.00	39.00	0.000
	120.029 - 114.221		779.6	21.51	39.00	0.551	0.0	0.00	39.00	0.000
L3	120.029 - 114.221	TP49.157x40.6978x0.375	889.4	21.17	39.00	0.543	0.0	0.00	39.00	0.000
	114.221 - 112.512		1724.4	40.38	39.00	1.035	0.0	0.00	39.00	0.000
	112.512 - 110.802		1780.1	41.02	39.00	1.052	0.0	0.00	39.00	0.000
	110.802 - 109.092		1836.2	41.65	39.00	1.068	0.0	0.00	39.00	0.000
	109.092 - 107.383		1892.5	42.25	39.00	1.083	0.0	0.00	39.00	0.000
	107.383 - 105.673		1949.2	42.84	39.00	1.099	0.0	0.00	39.00	0.000
	105.673 - 103.964		2006.5	43.42	39.00	1.113	0.0	0.00	39.00	0.000
	103.964 - 102.254		2064.1	43.99	39.00	1.128	0.0	0.00	39.00	0.000
	102.254 - 100.544		2122.1	44.54	39.00	1.142	0.0	0.00	39.00	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	100.544 - 98.8346		2180.4	45.07	39.00	1.156	0.0	0.00	39.00	0.000
	98.8346 - 97.125		2239.0	45.59	39.00	1.169	0.0	0.00	39.00	0.000
	97.125 - 95.4154		2298.0	46.10	39.00	1.182	0.0	0.00	39.00	0.000
	95.4154 - 93.7057		2357.3	46.59	39.00	1.195	0.0	0.00	39.00	0.000
	93.7057 - 91.9961		2417.0	47.08	39.00	1.207	0.0	0.00	39.00	0.000
	91.9961 - 90.2865		2477.0	47.54	39.00	1.219	0.0	0.00	39.00	0.000
	90.2865 - 88.5768		2537.3	48.00	39.00	1.231	0.0	0.00	39.00	0.000
	88.5768 - 86.8672		2598.0	48.45	39.00	1.242	0.0	0.00	39.00	0.000
	86.8672 - 85.1576		2659.0	48.88	39.00	1.253	0.0	0.00	39.00	0.000
	85.1576 - 83.4479		2720.4	49.30	39.00	1.264	0.0	0.00	39.00	0.000
	83.4479 - 76.8021		1405.3	24.12	39.00	0.619	0.0	0.00	39.00	0.000
L4	83.4479 - 76.8021	TP55.9285x47.1064x0.4375	1557.4	23.73	39.00	0.608	0.0	0.00	39.00	0.000
	76.8021 - 75.0838		3026.2	45.47	39.00	1.166	0.0	0.00	39.00	0.000
	75.0838 - 73.3655		3090.1	45.79	39.00	1.174	0.0	0.00	39.00	0.000
	73.3655 - 71.6471		3154.3	46.10	39.00	1.182	0.0	0.00	39.00	0.000
	71.6471 - 69.9288		3218.9	46.40	39.00	1.190	0.0	0.00	39.00	0.000
	69.9288 - 68.2105		3283.8	46.69	39.00	1.197	0.0	0.00	39.00	0.000
	68.2105 - 66.4922		3348.9	46.98	39.00	1.205	0.0	0.00	39.00	0.000
	66.4922 - 64.7739		3414.4	47.25	39.00	1.212	0.0	0.00	39.00	0.000
	64.7739 - 63.0556		3480.2	47.52	39.00	1.219	0.0	0.00	39.00	0.000
	63.0556 - 61.3372		3546.3	47.79	39.00	1.225	0.0	0.00	39.00	0.000
	61.3372 - 59.6189		3612.7	48.04	39.00	1.232	0.0	0.00	39.00	0.000
	59.6189 - 57.9006		3679.4	48.29	39.00	1.238	0.0	0.00	39.00	0.000
	57.9006 - 56.1823		3746.4	48.54	39.00	1.245	0.0	0.00	39.00	0.000
	56.1823 - 54.464		3813.7	48.77	39.00	1.251	0.0	0.00	39.00	0.000
	54.464 - 52.7457		3881.3	49.00	39.00	1.256	0.0	0.00	39.00	0.000
	52.7457 - 51.0273		3949.2	49.23	39.00	1.262	0.0	0.00	39.00	0.000
	51.0273 - 49.309		4017.3	49.44	39.00	1.268	0.0	0.00	39.00	0.000
	49.309 - 47.5907		4085.8	49.66	39.00	1.273	0.0	0.00	39.00	0.000
	47.5907 - 45.8724		4154.6	49.86	39.00	1.279	0.0	0.00	39.00	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	45.8724 - 38.3802		2138.9	24.33	39.00	0.624	0.0	0.00	39.00	0.000
L5	45.8724 - 38.3802	TP62.5x53.5869x0.5	2319.8	23.93	39.00	0.613	0.0	0.00	39.00	0.000
	38.3802 - 36.3602		4541.8	46.17	39.00	1.184	0.0	0.00	39.00	0.000
	36.3602 - 34.3402		4625.2	46.35	39.00	1.189	0.0	0.00	39.00	0.000
	34.3402 - 32.3202		4708.9	46.53	39.00	1.193	0.0	0.00	39.00	0.000
	32.3202 - 30.3002		4793.0	46.70	39.00	1.197	0.0	0.00	39.00	0.000
	30.3002 - 28.2802		4877.4	46.86	39.00	1.201	0.0	0.00	39.00	0.000
	28.2802 - 26.2601		4962.2	47.01	39.00	1.205	0.0	0.00	39.00	0.000
	26.2601 - 24.2401		5047.3	47.16	39.00	1.209	0.0	0.00	39.00	0.000
	24.2401 - 22.2201		5132.7	47.31	39.00	1.213	0.0	0.00	39.00	0.000
	22.2201 - 20.2001		5218.5	47.45	39.00	1.217	0.0	0.00	39.00	0.000
	20.2001 - 18.1801		5304.6	47.58	39.00	1.220	0.0	0.00	39.00	0.000
	18.1801 - 16.1601		5391.1	47.71	39.00	1.223	0.0	0.00	39.00	0.000
	16.1601 - 14.1401		5477.9	47.84	39.00	1.227	0.0	0.00	39.00	0.000
	14.1401 - 12.1201		5565.0	47.96	39.00	1.230	0.0	0.00	39.00	0.000
	12.1201 - 10.1001		5652.5	48.08	39.00	1.233	0.0	0.00	39.00	0.000
	10.1001 - 8.08004		5740.3	48.19	39.00	1.236	0.0	0.00	39.00	0.000
	8.08004 - 6.06003		5828.5	48.30	39.00	1.238	0.0	0.00	39.00	0.000
	6.06003 - 4.04002		5917.0	48.40	39.00	1.241	0.0	0.00	39.00	0.000
	4.04002 - 2.02001		6005.8	48.50	39.00	1.244	0.0	0.00	39.00	0.000
	2.02001 - 0		6094.9	48.60	39.00	1.246	0.0	0.00	39.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	185 - 183.401	TP36.0404x29x0.25	9.4	0.41	26.00	0.031	0.1	0.00	26.00	0.000
	183.401 - 181.803		9.9	0.43	26.00	0.033	0.3	0.01	26.00	0.000
	181.803 - 180.204		10.1	0.43	26.00	0.033	0.3	0.01	26.00	0.000
	180.204 - 178.606		10.3	0.43	26.00	0.033	0.3	0.01	26.00	0.000
	178.606 - 177.007		10.4	0.43	26.00	0.033	0.3	0.01	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	177.007 - 175.409		10.6	0.44	26.00	0.033	0.3	0.01	26.00	0.000
	175.409 - 173.81		16.5	0.67	26.00	0.051	0.3	0.01	26.00	0.000
	173.81 - 172.212		16.6	0.67	26.00	0.052	0.0	0.00	26.00	0.000
	172.212 - 170.613		16.8	0.67	26.00	0.052	0.0	0.00	26.00	0.000
	170.613 - 169.015		17.0	0.67	26.00	0.052	0.0	0.00	26.00	0.000
	169.015 - 167.416		17.1	0.67	26.00	0.052	0.0	0.00	26.00	0.000
	167.416 - 165.817		18.3	0.71	26.00	0.054	0.0	0.00	26.00	0.000
	165.817 - 164.219		21.5	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	164.219 - 162.62		21.6	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	162.62 - 161.022		21.8	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	161.022 - 159.423		22.0	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	159.423 - 157.825		22.2	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	157.825 - 156.226		22.3	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	156.226 - 154.628		22.6	0.82	26.00	0.063	0.0	0.00	26.00	0.000
	154.628 - 149.622		10.7	0.38	26.00	0.029	0.0	0.00	26.00	0.000
L2	154.628 - 149.622	TP42.4605x34.5443x0.3125	12.5	0.36	26.00	0.027	0.0	0.00	26.00	0.000
	149.622 - 147.978		23.4	0.66	26.00	0.051	0.0	0.00	26.00	0.000
	147.978 - 146.334		23.6	0.66	26.00	0.051	0.0	0.00	26.00	0.000
	146.334 - 144.69		27.0	0.75	26.00	0.058	0.0	0.00	26.00	0.000
	144.69 - 143.046		27.2	0.75	26.00	0.058	0.0	0.00	26.00	0.000
	143.046 - 141.402		27.4	0.75	26.00	0.058	0.0	0.00	26.00	0.000
	141.402 - 139.758		27.6	0.75	26.00	0.058	0.0	0.00	26.00	0.000
	139.758 - 138.114		27.8	0.75	26.00	0.058	0.0	0.00	26.00	0.000
	138.114 - 136.47		28.0	0.75	26.00	0.057	0.0	0.00	26.00	0.000
	136.47 - 134.826		29.7	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	134.826 - 133.181		29.9	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	133.181 - 131.537		30.1	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	131.537 - 129.893		30.3	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	129.893 - 128.249		30.5	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	128.249 - 126.605		30.7	0.78	26.00	0.060	0.0	0.00	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	126.605 - 124.961		30.9	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	124.961 - 123.317		31.1	0.78	26.00	0.060	0.0	0.00	26.00	0.000
	123.317 - 121.673		31.3	0.77	26.00	0.060	0.0	0.00	26.00	0.000
	121.673 - 120.029		31.5	0.77	26.00	0.059	0.0	0.00	26.00	0.000
	120.029 - 114.221		15.3	0.37	26.00	0.028	0.0	0.00	26.00	0.000
L3	120.029 - 114.221	TP49.157x40.6978x0.375	17.0	0.35	26.00	0.027	0.0	0.00	26.00	0.000
	114.221 - 112.512		32.5	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	112.512 - 110.802		32.7	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	110.802 - 109.092		32.9	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	109.092 - 107.383		33.1	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	107.383 - 105.673		33.4	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	105.673 - 103.964		33.6	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	103.964 - 102.254		33.8	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	102.254 - 100.544		34.0	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	100.544 - 98.8346		34.2	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	98.8346 - 97.125		34.4	0.65	26.00	0.050	0.1	0.00	26.00	0.000
	97.125 - 95.4154		34.6	0.64	26.00	0.050	0.1	0.00	26.00	0.000
	95.4154 - 93.7057		34.8	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	93.7057 - 91.9961		35.0	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	91.9961 - 90.2865		35.2	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	90.2865 - 88.5768		35.4	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	88.5768 - 86.8672		35.6	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	86.8672 - 85.1576		35.8	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	85.1576 - 83.4479		36.0	0.64	26.00	0.049	0.1	0.00	26.00	0.000
	83.4479 - 76.8021		17.7	0.31	26.00	0.023	0.0	0.00	26.00	0.000
L4	83.4479 - 76.8021	TP55.9285x47.1064x0.4375	19.2	0.29	26.00	0.022	0.0	0.00	26.00	0.000
	76.8021 - 75.0838		37.1	0.55	26.00	0.043	0.1	0.00	26.00	0.000
	75.0838 - 73.3655		37.3	0.55	26.00	0.042	0.1	0.00	26.00	0.000
	73.3655 - 71.6471		37.5	0.55	26.00	0.042	0.1	0.00	26.00	0.000
	71.6471 - 69.9288		37.7	0.55	26.00	0.042	0.1	0.00	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	69.9288 - 68.2105		37.8	0.55	26.00	0.042	0.1	0.00	26.00	0.000
	68.2105 - 66.4922		38.0	0.55	26.00	0.042	0.1	0.00	26.00	0.000
	66.4922 - 64.7739		38.2	0.55	26.00	0.042	0.1	0.00	26.00	0.000
	64.7739 - 63.0556		38.4	0.55	26.00	0.042	0.1	0.00	26.00	0.000
	63.0556 - 61.3372		38.6	0.54	26.00	0.042	0.1	0.00	26.00	0.000
	61.3372 - 59.6189		38.7	0.54	26.00	0.042	0.0	0.00	26.00	0.000
	59.6189 - 57.9006		38.9	0.54	26.00	0.042	0.0	0.00	26.00	0.000
	57.9006 - 56.1823		39.1	0.54	26.00	0.042	0.0	0.00	26.00	0.000
	56.1823 - 54.464		39.3	0.54	26.00	0.042	0.0	0.00	26.00	0.000
	54.464 - 52.7457		39.4	0.54	26.00	0.041	0.0	0.00	26.00	0.000
	52.7457 - 51.0273		39.6	0.54	26.00	0.041	0.0	0.00	26.00	0.000
	51.0273 - 49.309		39.8	0.54	26.00	0.041	0.1	0.00	26.00	0.000
	49.309 - 47.5907		40.0	0.54	26.00	0.041	0.1	0.00	26.00	0.000
	47.5907 - 45.8724		40.1	0.54	26.00	0.041	0.1	0.00	26.00	0.000
	45.8724 - 38.3802		19.9	0.26	26.00	0.020	0.1	0.00	26.00	0.000
L5	45.8724 - 38.3802	TP62.5x53.5869x0.5	21.1	0.24	26.00	0.019	0.1	0.00	26.00	0.000
	38.3802 - 36.3602		41.2	0.47	26.00	0.036	0.1	0.00	26.00	0.000
	36.3602 - 34.3402		41.4	0.47	26.00	0.036	0.1	0.00	26.00	0.000
	34.3402 - 32.3202		41.5	0.47	26.00	0.036	0.1	0.00	26.00	0.000
	32.3202 - 30.3002		41.7	0.47	26.00	0.036	0.1	0.00	26.00	0.000
	30.3002 - 28.2802		41.9	0.47	26.00	0.036	0.1	0.00	26.00	0.000
	28.2802 - 26.2601		42.1	0.47	26.00	0.036	0.1	0.00	26.00	0.000
	26.2601 - 24.2401		42.2	0.46	26.00	0.036	0.1	0.00	26.00	0.000
	24.2401 - 22.2201		42.4	0.46	26.00	0.036	0.1	0.00	26.00	0.000
	22.2201 - 20.2001		42.6	0.46	26.00	0.036	0.1	0.00	26.00	0.000
	20.2001 - 18.1801		42.7	0.46	26.00	0.035	0.1	0.00	26.00	0.000
	18.1801 - 16.1601		42.9	0.46	26.00	0.035	0.1	0.00	26.00	0.000
	16.1601 - 14.1401		43.1	0.46	26.00	0.035	0.1	0.00	26.00	0.000
	14.1401 - 12.1201		43.2	0.46	26.00	0.035	0.1	0.00	26.00	0.000
	12.1201 - 10.1001		43.4	0.46	26.00	0.035	0.1	0.00	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	10.1001 - 8.08004		43.6	0.45	26.00	0.035	0.1	0.00	26.00	0.000
	8.08004 - 6.06003		43.7	0.45	26.00	0.035	0.1	0.00	26.00	0.000
	6.06003 - 4.04002		43.9	0.45	26.00	0.035	0.1	0.00	26.00	0.000
	4.04002 - 2.02001		44.1	0.45	26.00	0.035	0.0	0.00	26.00	0.000
	2.02001 - 0		44.2	0.45	26.00	0.035	0.0	0.00	26.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
L1	185 - 183.401	0.002	0.055	0.000	0.031	0.000	0.057 ✔	1.333	H1-3+VT ✔
	183.401 - 181.803	0.003	0.083	0.000	0.033	0.000	0.086 ✔	1.333	H1-3+VT ✔
	181.803 - 180.204	0.003	0.109	0.000	0.033	0.000	0.113 ✔	1.333	H1-3+VT ✔
	180.204 - 178.606	0.003	0.135	0.000	0.033	0.000	0.139 ✔	1.333	H1-3+VT ✔
	178.606 - 177.007	0.003	0.161	0.000	0.033	0.000	0.164 ✔	1.333	H1-3+VT ✔
	177.007 - 175.409	0.003	0.186	0.000	0.033	0.000	0.189 ✔	1.333	H1-3+VT ✔
	175.409 - 173.81	0.006	0.232	0.000	0.051	0.000	0.238 ✔	1.333	H1-3+VT ✔
	173.81 - 172.212	0.006	0.270	0.000	0.052	0.000	0.276 ✔	1.333	H1-3+VT ✔
	172.212 - 170.613	0.006	0.306	0.000	0.052	0.000	0.313 ✔	1.333	H1-3+VT ✔
	170.613 - 169.015	0.006	0.342	0.000	0.052	0.000	0.349 ✔	1.333	H1-3+VT ✔
	169.015 - 167.416	0.006	0.376	0.000	0.052	0.000	0.383 ✔	1.333	H1-3+VT ✔
	167.416 - 165.817	0.007	0.412	0.000	0.054	0.000	0.419 ✔	1.333	H1-3+VT ✔
	165.817 - 164.219	0.008	0.450	0.000	0.063	0.000	0.459 ✔	1.333	H1-3+VT ✔
	164.219 - 162.62	0.008	0.490	0.000	0.063	0.000	0.500 ✔	1.333	H1-3+VT ✔
	162.62 - 161.022	0.008	0.530	0.000	0.063	0.000	0.539 ✔	1.333	H1-3+VT ✔
	161.022 - 159.423	0.008	0.568	0.000	0.063	0.000	0.577 ✔	1.333	H1-3+VT ✔
	159.423 - 157.825	0.009	0.605	0.000	0.063	0.000	0.614 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
	157.825 - 156.226	0.009	0.640	0.000	0.063	0.000	0.650 ✔	1.333	H1-3+VT ✔
	156.226 - 154.628	0.009	0.675	0.000	0.063	0.000	0.685 ✔	1.333	H1-3+VT ✔
	154.628 - 149.622	0.004	0.356	0.000	0.029	0.000	0.360 ✔	1.333	H1-3+VT ✔
L2	154.628 - 149.622	0.004	0.350	0.000	0.027	0.000	0.355 ✔	1.333	H1-3+VT ✔
	149.622 - 147.978	0.008	0.671	0.000	0.051	0.000	0.680 ✔	1.333	H1-3+VT ✔
	147.978 - 146.334	0.008	0.697	0.000	0.051	0.000	0.706 ✔	1.333	H1-3+VT ✔
	146.334 - 144.69	0.009	0.728	0.000	0.058	0.000	0.739 ✔	1.333	H1-3+VT ✔
	144.69 - 143.046	0.009	0.758	0.000	0.058	0.000	0.768 ✔	1.333	H1-3+VT ✔
	143.046 - 141.402	0.010	0.786	0.000	0.058	0.000	0.797 ✔	1.333	H1-3+VT ✔
	141.402 - 139.758	0.010	0.814	0.000	0.058	0.000	0.824 ✔	1.333	H1-3+VT ✔
	139.758 - 138.114	0.010	0.841	0.000	0.058	0.000	0.851 ✔	1.333	H1-3+VT ✔
	138.114 - 136.47	0.010	0.867	0.000	0.057	0.000	0.877 ✔	1.333	H1-3+VT ✔
	136.47 - 134.826	0.010	0.893	0.000	0.060	0.000	0.904 ✔	1.333	H1-3+VT ✔
	134.826 - 133.181	0.010	0.920	0.000	0.060	0.000	0.931 ✔	1.333	H1-3+VT ✔
	133.181 - 131.537	0.011	0.946	0.000	0.060	0.000	0.957 ✔	1.333	H1-3+VT ✔
	131.537 - 129.893	0.011	0.971	0.000	0.060	0.000	0.983 ✔	1.333	H1-3+VT ✔
	129.893 - 128.249	0.011	0.996	0.000	0.060	0.000	1.007 ✔	1.333	H1-3+VT ✔
	128.249 - 126.605	0.011	1.020	0.000	0.060	0.000	1.031 ✔	1.333	H1-3+VT ✔
	126.605 - 124.961	0.011	1.043	0.000	0.060	0.000	1.055 ✔	1.333	H1-3+VT ✔
	124.961 - 123.317	0.011	1.065	0.000	0.060	0.000	1.077 ✔	1.333	H1-3+VT ✔
	123.317 - 121.673	0.011	1.087	0.000	0.060	0.000	1.100 ✔	1.333	H1-3+VT ✔
	121.673 - 120.029	0.011	1.109	0.000	0.059	0.000	1.121 ✔	1.333	H1-3+VT ✔
	120.029 - 114.221	0.006	0.551	0.000	0.028	0.000	0.557 ✔	1.333	H1-3+VT ✔
L3	120.029 - 114.221	0.006	0.543	0.000	0.027	0.000	0.549 ✔	1.333	H1-3+VT ✔
	114.221 - 112.512	0.011	1.035	0.000	0.050	0.000	1.047 ✔	1.333	H1-3+VT ✔
	112.512 - 110.802	0.011	1.052	0.000	0.050	0.000	1.063 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
	110.802 - 109.092	0.011	1.068	0.000	0.050	0.000	1.079 ✔	1.333	H1-3+VT ✔
	109.092 - 107.383	0.011	1.083	0.000	0.050	0.000	1.095 ✔	1.333	H1-3+VT ✔
	107.383 - 105.673	0.011	1.099	0.000	0.050	0.000	1.110 ✔	1.333	H1-3+VT ✔
	105.673 - 103.964	0.011	1.113	0.000	0.050	0.000	1.125 ✔	1.333	H1-3+VT ✔
	103.964 - 102.254	0.011	1.128	0.000	0.050	0.000	1.140 ✔	1.333	H1-3+VT ✔
	102.254 - 100.544	0.011	1.142	0.000	0.050	0.000	1.154 ✔	1.333	H1-3+VT ✔
	100.544 - 98.8346	0.012	1.156	0.000	0.050	0.000	1.168 ✔	1.333	H1-3+VT ✔
	98.8346 - 97.125	0.012	1.169	0.000	0.050	0.000	1.181 ✔	1.333	H1-3+VT ✔
	97.125 - 95.4154	0.012	1.182	0.000	0.050	0.000	1.194 ✔	1.333	H1-3+VT ✔
	95.4154 - 93.7057	0.012	1.195	0.000	0.049	0.000	1.207 ✔	1.333	H1-3+VT ✔
	93.7057 - 91.9961	0.012	1.207	0.000	0.049	0.000	1.220 ✔	1.333	H1-3+VT ✔
	91.9961 - 90.2865	0.012	1.219	0.000	0.049	0.000	1.232 ✔	1.333	H1-3+VT ✔
	90.2865 - 88.5768	0.012	1.231	0.000	0.049	0.000	1.244 ✔	1.333	H1-3+VT ✔
	88.5768 - 86.8672	0.012	1.242	0.000	0.049	0.000	1.255 ✔	1.333	H1-3+VT ✔
	86.8672 - 85.1576	0.013	1.253	0.000	0.049	0.000	1.266 ✔	1.333	H1-3+VT ✔
	85.1576 - 83.4479	0.013	1.264	0.000	0.049	0.000	1.277 ✔	1.333	H1-3+VT ✔
	83.4479 - 76.8021	0.006	0.619	0.000	0.023	0.000	0.625 ✔	1.333	H1-3+VT ✔
L4	83.4479 - 76.8021	0.006	0.608	0.000	0.022	0.000	0.615 ✔	1.333	H1-3+VT ✔
	76.8021 - 75.0838	0.012	1.166	0.000	0.043	0.000	1.178 ✔	1.333	H1-3+VT ✔
	75.0838 - 73.3655	0.012	1.174	0.000	0.042	0.000	1.187 ✔	1.333	H1-3+VT ✔
	73.3655 - 71.6471	0.012	1.182	0.000	0.042	0.000	1.195 ✔	1.333	H1-3+VT ✔
	71.6471 - 69.9288	0.012	1.190	0.000	0.042	0.000	1.203 ✔	1.333	H1-3+VT ✔
	69.9288 - 68.2105	0.012	1.197	0.000	0.042	0.000	1.210 ✔	1.333	H1-3+VT ✔
	68.2105 - 66.4922	0.013	1.205	0.000	0.042	0.000	1.218 ✔	1.333	H1-3+VT ✔
	66.4922 - 64.7739	0.013	1.212	0.000	0.042	0.000	1.225 ✔	1.333	H1-3+VT ✔
	64.7739 - 63.0556	0.013	1.219	0.000	0.042	0.000	1.232 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
	63.0556 - 61.3372	0.013	1.225	0.000	0.042	0.000	1.239 ✔	1.333	H1-3+VT ✔
	61.3372 - 59.6189	0.013	1.232	0.000	0.042	0.000	1.245 ✔	1.333	H1-3+VT ✔
	59.6189 - 57.9006	0.013	1.238	0.000	0.042	0.000	1.252 ✔	1.333	H1-3+VT ✔
	57.9006 - 56.1823	0.013	1.245	0.000	0.042	0.000	1.258 ✔	1.333	H1-3+VT ✔
	56.1823 - 54.464	0.013	1.251	0.000	0.042	0.000	1.264 ✔	1.333	H1-3+VT ✔
	54.464 - 52.7457	0.013	1.256	0.000	0.041	0.000	1.270 ✔	1.333	H1-3+VT ✔
	52.7457 - 51.0273	0.014	1.262	0.000	0.041	0.000	1.276 ✔	1.333	H1-3+VT ✔
	51.0273 - 49.309	0.014	1.268	0.000	0.041	0.000	1.282 ✔	1.333	H1-3+VT ✔
	49.309 - 47.5907	0.014	1.273	0.000	0.041	0.000	1.287 ✔	1.333	H1-3+VT ✔
	47.5907 - 45.8724	0.014	1.279	0.000	0.041	0.000	1.293 ✔	1.333	H1-3+VT ✔
	45.8724 - 38.3802	0.007	0.624	0.000	0.020	0.000	0.631 ✔	1.333	H1-3+VT ✔
L5	45.8724 - 38.3802	0.007	0.613	0.000	0.019	0.000	0.621 ✔	1.333	H1-3+VT ✔
	38.3802 - 36.3602	0.014	1.184	0.000	0.036	0.000	1.198 ✔	1.333	H1-3+VT ✔
	36.3602 - 34.3402	0.014	1.189	0.000	0.036	0.000	1.203 ✔	1.333	H1-3+VT ✔
	34.3402 - 32.3202	0.014	1.193	0.000	0.036	0.000	1.207 ✔	1.333	H1-3+VT ✔
	32.3202 - 30.3002	0.014	1.197	0.000	0.036	0.000	1.212 ✔	1.333	H1-3+VT ✔
	30.3002 - 28.2802	0.014	1.201	0.000	0.036	0.000	1.216 ✔	1.333	H1-3+VT ✔
	28.2802 - 26.2601	0.014	1.205	0.000	0.036	0.000	1.220 ✔	1.333	H1-3+VT ✔
	26.2601 - 24.2401	0.014	1.209	0.000	0.036	0.000	1.224 ✔	1.333	H1-3+VT ✔
	24.2401 - 22.2201	0.014	1.213	0.000	0.036	0.000	1.228 ✔	1.333	H1-3+VT ✔
	22.2201 - 20.2001	0.015	1.217	0.000	0.036	0.000	1.231 ✔	1.333	H1-3+VT ✔
	20.2001 - 18.1801	0.015	1.220	0.000	0.035	0.000	1.235 ✔	1.333	H1-3+VT ✔
	18.1801 - 16.1601	0.015	1.223	0.000	0.035	0.000	1.238 ✔	1.333	H1-3+VT ✔
	16.1601 - 14.1401	0.015	1.227	0.000	0.035	0.000	1.242 ✔	1.333	H1-3+VT ✔
	14.1401 - 12.1201	0.015	1.230	0.000	0.035	0.000	1.245 ✔	1.333	H1-3+VT ✔
	12.1201 - 10.1001	0.015	1.233	0.000	0.035	0.000	1.248 ✔	1.333	H1-3+VT ✔

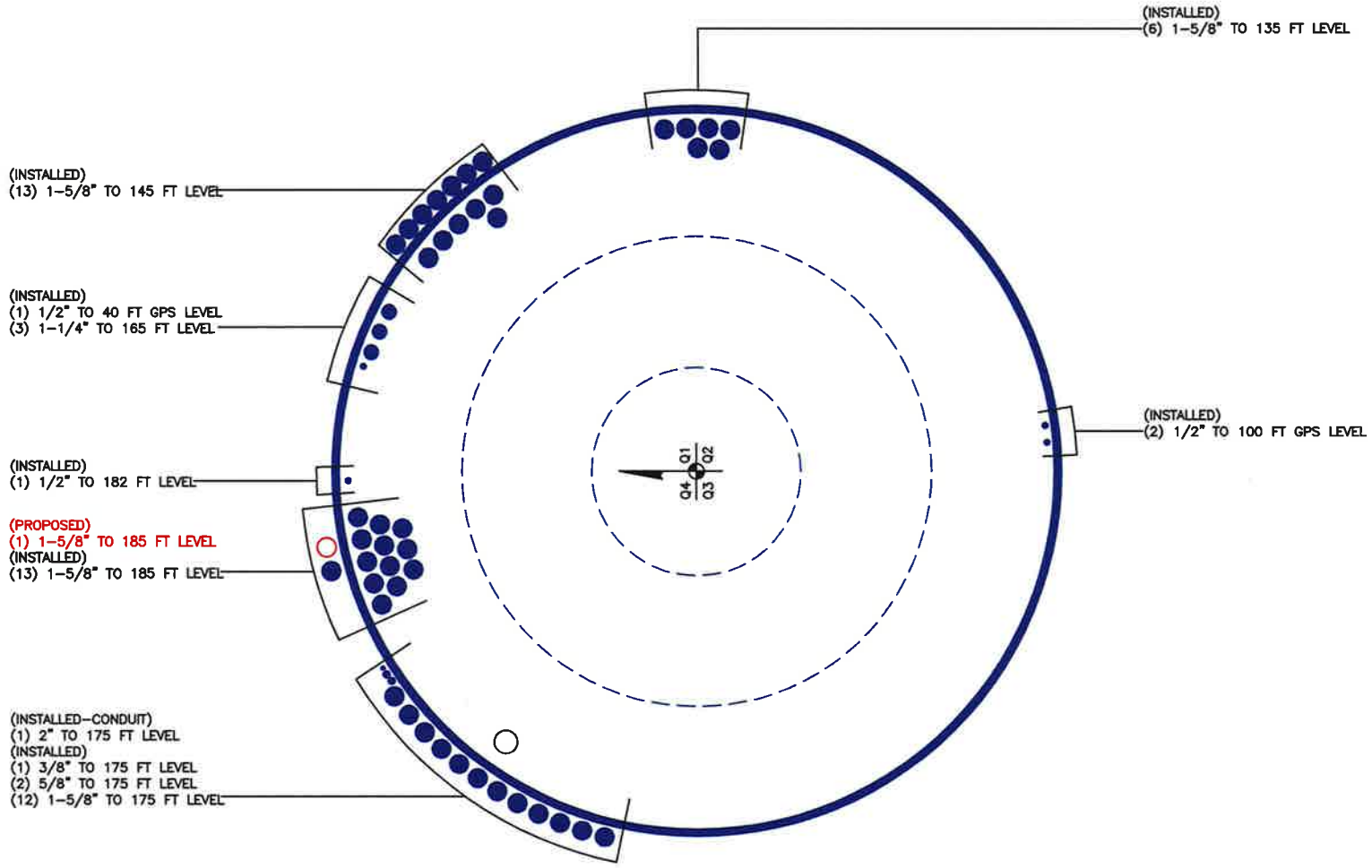
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	10.1001 - 8.08004	0.015	1.236	0.000	0.035	0.000	1.251 ✔	1.333	H1-3+VT ✔
	8.08004 - 6.06003	0.015	1.238	0.000	0.035	0.000	1.254 ✔	1.333	H1-3+VT ✔
	6.06003 - 4.04002	0.015	1.241	0.000	0.035	0.000	1.257 ✔	1.333	H1-3+VT ✔
	4.04002 - 2.02001	0.016	1.244	0.000	0.035	0.000	1.259 ✔	1.333	H1-3+VT ✔
	2.02001 - 0	0.016	1.246	0.000	0.035	0.000	1.262 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	185 - 149.622	Pole	TP36.0404x29x0.25	1	-9.4	1435.3	51.4	Pass
L2	149.622 - 114.221	Pole	TP42.4605x34.5443x0.3125	2	-18.0	2114.7	84.1	Pass
L3	114.221 - 76.8021	Pole	TP49.157x40.6978x0.375	3	-27.9	2938.0	95.8	Pass
L4	76.8021 - 38.3802	Pole	TP55.9285x47.1064x0.4375	4	-40.8	3900.1	97.0	Pass
L5	38.3802 - 0	Pole	TP62.5x53.5869x0.5	5	-60.3	5115.2	94.7	Pass
							Summary	
						Pole (L4)	97.0	Pass
						RATING =	**97.0**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806354 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: *806354*
Site Name: *BRG 123 943084*
App #: *305918 Rev 7*

Pole Manufacturer:	*Other*

Reactions		
Moment:	6095	ft-kips
Axial:	60	kips
Shear:	44	kips

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

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	73	in

Plate Data		
Diam:	79	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	8.27	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	15	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	62.5	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Anchor Rod Results

		Stiffened
Maximum Rod Tension:	164.5 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	84.4% Pass	

Base Plate Results

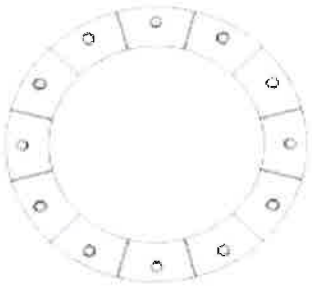
	Flexural Check	Stiffened
Base Plate Stress:	30.6 ksi	Service, ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	51.1% Pass	Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld :	87.7% Pass
Vertical Weld:	60.6% Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	30.9% Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	63.5% Pass
Plate Comp. (AISC Bracket):	81.9% Pass

Pole Results

Pole Punching Shear Check:	15.2% Pass



* 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#: *806354*
Site Name: *BRG 123 943084*
App #: *305918 Rev 7*

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

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	6	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	28	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	8	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	64.00	ft^2
Pier Height:	4.00	ft
Soil (above pad) Height:	3.00	ft

Soil Parameters		
Unit Weight, γ:	128.0	pcf
Ultimate Bearing Capacity, qn:	12.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	34.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	9.00	ksf
Passive Pres. Coeff., Kp	3.54	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	59.4	kips
Pad Force Location Above D:	1.33	ft
ϕ(Passive Pressure Moment):	79.20	ft-kips
Factored O.T. M(WL), "1.6W":	8644.1	ft-kips
Factored OT (MW-Msoil), M1	8564.85	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	2.02	ft
Sum of Soil Wedges Wt:	30.99	kips
Soil Wedges ecc, K1:	6.71	ft
Ftg+Soil above Pad wt:	667.7	kips
Unfactored (Total ftg-soil Wt):	698.67	kips
1.2D. **No Soil Wedges.**	873.22	kips
0.9D. **With Soil Wedges**	682.81	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(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:	60	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	44	kips
Unfactored WL Moment, M:	6095	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	72	kips
0.90	0.9D+1.6W, Pu:	54	kips
1.35	Vu:	59.4	kips
	Mu:	8228.25	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	873.22	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	8564.85	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	9.81	ft
Orthogonal qu=	3.72	ksf
qu/ϕ*qn Ratio=	**41.33%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	6.93	ft
Diagonal qu=	4.37	ksf
qu/ϕ*qn Ratio=	**48.59%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	682.81	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	8377.55	ft-kips

Orthogonal ecc3 = M2/P2 =	12.27	ft
Ortho Non Bearing Length,NBL=	24.54	ft
Orthogonal qu=	7.05	ksf
Diagonal qu=	6.02	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	6095.00		
M Orthogonal:	6285.29	**96.97%**	**Pass**
M Diagonal:	6285.29	**96.97%**	**Pass**

Project Name:	BRG 123 943084	JACOBS® Jacobs Engineering Group, Inc.	Created On: 6/3/2014
Project Number:	806354		Checked By: DW
Job Number:	1108564		Revised On: 3/4/2015
Date:	9/17/2015		Revision No.: 1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load		
Code	F	
Axial	60	kips
Shear	44	kips
Moment	6095	k-ft
Soil Unit Weight	128	pcf
Friction Angle	34	
Cohesion	0	psf

Material		
Concrete Strength (F'c)	4000	psi
Concrete Density	150	pcf
Rebar Tensile (Fy)	60	ksi
Clear Cover	3	in

Pad		
Thickness	3	ft
Bearing Depth	6	ft
Width	28	ft
Rebar Size	9	
Rebar Quantity	45	

Pier		
Pier type	Square	
Width	8	ft
Height above Grade	1	ft
Rebar Size	9	
Rebar Quantity	48	
Tie Size	4	
Tie C/C Spacing	10.5	in

Structural Checks

Pad Beam Shear Capacity	998.0	kips
Pad Beam Shear	476.2	kips
Pad Beam Shear Check	47.7%	Pass

Pad Bending Moment Capacity	6100.6	k-ft
Pad Bending Moment	4247.2	k-ft
Pad Bending Moment Check	69.6%	Pass

Punching Shear Capacity	3025.0	kips
Punching Shear	463.7	kips
Punching Shear Check	15.3%	Pass

Pad-Pier Bearing Capacity	40734.7	kips
Pad-Pier Bearing	873.2	kips
Pad-Pier Bearing Check	2.1%	Pass

Pier Beam Shear Capacity	942.4	kips
Pier Beam Shear	59.4	kips
Pier Beam Shear Check	6.3%	Pass

Pier Bending Moment Capacity	9885.4	k-ft
Pier Bending Moment	8456.5	k-ft
Pier Bending Moment Check	85.5%	Pass

Date: **November 18, 2015**

Rebecca Klein
Crown Castle
525 Alderman Lane
Fort Mill, SC 29715

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
(770) 701-2500

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate** **Carrier Site Name:**	 Newtown CT
Crown Castle Designation:	**Crown Castle BU Number:** **Crown Castle Site Name:** **Crown Castle JDE Job Number:** **Crown Castle Work Order Number:** **Crown Castle Application Number:**	806354 BRG 123 943084 356122 1153594 320744 Rev. 1
Engineering Firm Designation:	**Jacobs Engineering Group Inc. Project Number:**	1153594
Site Data:	**21 BERKSHIRE ROAD NEWTOWN, NEWTOWN, Fairfield County, CT** **Latitude *41° 24' 45.53"*, Longitude *-73° 16' 12.34"*** **185 Foot - Monopole Tower**	

Dear Rebecca Klein,

Jacobs Engineering Group 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 846496, in accordance with application 320744, revision 1.

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

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

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

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

We at *Jacobs Engineering Group 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.

Structural analysis prepared by:

Ankit Gupta
Structural Engineer

Reviewed by:

STATE OF CONNECTICUT
MATTHEW E. WATKINS
No. 29955
LICENSED PROFESSIONAL ENGINEER

11/18/15

Matthew E. Watkins, P.E.
Engineering Project Manager

tnxTower Report - version 6.1.4.1

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1) INTRODUCTION

This tower is a 185 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in August of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
185.0	187.0	3	alcatel lucent	RRH2X60-PCS	1	1-5/8	-
		3	alcatel lucent	RRH2x60-700			
		3	alcatel lucent	RRH4X45-AWS4 B66			
		6	commscope	SBNHH-1D85C 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
185.0	188.0	3	alcatel lucent	RRH2X40-AWS	-	-	3
	187.0	3	antel	BXA-171063-12BF w/ Mount Pipe			
		3	antel	BXA-171063-12CF-EDIN-X w/ Mount Pipe			
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	rfs celwave	DB-T1-6Z-8AB-0Z	13	1-5/8	1
		6	decibel	DB846F65ZAXY w/ Mount Pipe			
	185.0	1	tower mounts (crown)	Platform Mount [LP 712-1]			
		1	tower mounts (crown)	Side Arm Mount [SO 202-3]			
182.0	188.0	1	decibel	ASP-601	1	1/2	1
	182.0	1	tower mounts (crown)	Side Arm Mount [SO 104-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
175.0	177.0	3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	-	-	2
		3	ericsson	RRUS12/RRUS A2			
		12	powerwave technologies	7020.00			
		6	powerwave technologies	7770.00 w/ Mount Pipe	1 2 12	3/8 5/8 1-5/8	1
	175.0	3	cci antennas	DTMABP7819VG12A			
		3	ericsson	RRUS-11			
		6	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts (crown)	Platform Mount [LP 712-1]			
167.0	167.0	3	alcatel lucent	TME-1900MHz RRH (65MHz)	-	-	1
		3	alcatel lucent	TME-800MHZ RRH			
		1	tower mounts (crown)	Side Arm Mount [SO 104-3]			
165.0	165.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	3	1-1/4	1
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		1	tower mounts (crown)	Platform Mount [LP 712-1]			
155.0	155.0	1	tower mounts (crown)	Side Arm Mount [SO 102-1]	-	-	4
145.0	148.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	145.0	1	tower mounts (crown)	Platform Mount [LP 712-1]			
135.0	137.0	3	kathrein	800 10504 w/ Mount Pipe	6	1-5/8	1
		3	kathrein	860 10025			
	135.0	1	tower mounts (crown)	T-Arm Mount [TA 602-3]			

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
185	185	12	swedcom	ALP 9212	-	-
175	175	12	swedcom	ALP11011	-	-
165	165	9	decibel	DB980	-	-
155	155	12	swedcom	ALP9011	-	-
145	145	6	ems wireless	RR65-18	-	-
		1	scala	OGB9-900		
110	110	1	generic	GPS	-	-
50	50	1	generic	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	DR. CLARENCE WELTI	2297011	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI	822037	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI	822035	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	VSI	2381114	CCISITES
4-POST MODIFICATION INSPECTION	VSI	2447231	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group 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	185 - 149.622	Pole	TP36.0404x29x0.25	1	-9.4	1435.3	51.9	Pass
L2	149.622 - 114.221	Pole	TP42.4605x34.5443x0.3125	2	-18.0	2114.7	84.7	Pass
L3	114.221 - 76.8021	Pole	TP49.157x40.6978x0.375	3	-27.9	2938.0	96.5	Pass
L4	76.8021 - 38.3802	Pole	TP55.9285x47.1064x0.4375	4	-40.8	3900.1	97.6	Pass
L5	38.3802 - 0	Pole	TP62.5x53.5869x0.5	5	-60.3	5115.2	95.2	Pass
							Summary	
						Pole (L4)	97.6	Pass
						RATING =	**97.6**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	84.8	Pass
1	Base Plate	0	88.2	Pass
1	Base Foundation Structural	0	86.0	Pass
1	Base Foundation Soil Interaction	0	97.5	Pass

Structure Rating (max from all components) =	**97.6%**

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

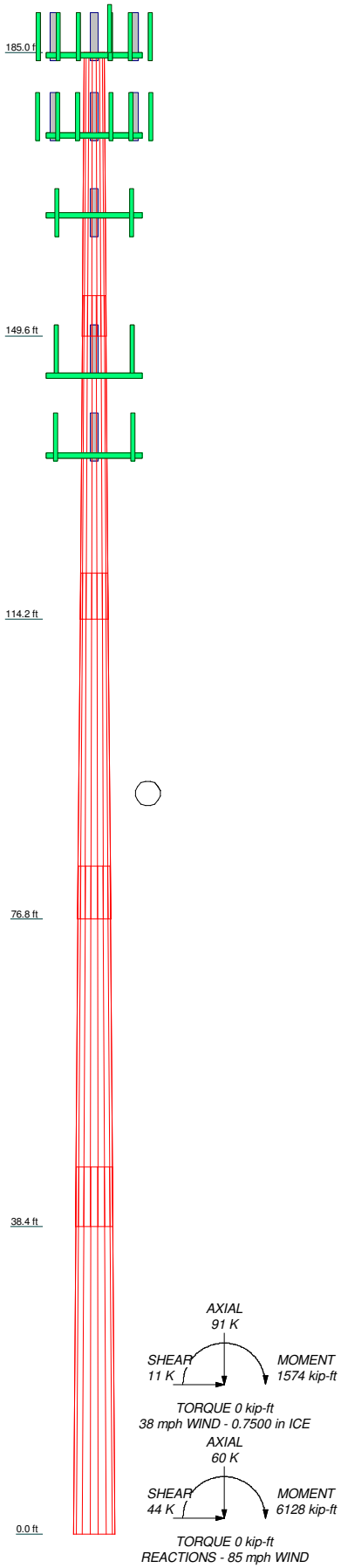
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the 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	354-9/16"	18	0.2500	5'1/8"	29.0000	36.0404		3.1
2	404-29/32"	18	0.3125	5'9-23/32"	34.5443	42.4605		5.2
3	432-3/4"	18	0.3750	6'7-13/16"	40.6978	49.1570	A572-65	7.8
4	452'/32"	18	0.4375	7'5-7/8"	47.1064	55.9285		10.9
5	45'10-7/16"	18	0.5000		53.5869	62.5000		14.3
								41.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB846F65ZAXY w/ Mount Pipe	185	TME-1900MHz RRH (65MHz)	167
(2) DB846F65ZAXY w/ Mount Pipe	185	TME-1900MHz RRH (65MHz)	167
(2) DB846F65ZAXY w/ Mount Pipe	185	TME-1900MHz RRH (65MHz)	167
(2) SBNHH-1D85C w/ Mount Pipe	185	TME-800MHZ RRH	167
(2) SBNHH-1D85C w/ Mount Pipe	185	TME-800MHZ RRH	167
(2) SBNHH-1D85C w/ Mount Pipe	185	TME-800MHZ RRH	167
RRH2x60-700	185	Side Arm Mount [SO 104-3]	167
RRH2x60-700	185	APXVSPP18-C-A20 w/ Mount Pipe	165
RRH2x60-700	185	APXVSPP18-C-A20 w/ Mount Pipe	165
RRH2X60-PCS	185	APXVSPP18-C-A20 w/ Mount Pipe	165
RRH2X60-PCS	185	(3) ACU-A20-N	165
RRH2X60-PCS	185	(3) ACU-A20-N	165
RRH4X45-AWS4 B66	185	(3) ACU-A20-N	165
RRH4X45-AWS4 B66	185	800 EXTERNAL NOTCH FILTER	165
RRH4X45-AWS4 B66	185	800 EXTERNAL NOTCH FILTER	165
DB-T1-6Z-8AB-0Z	185	800 EXTERNAL NOTCH FILTER	165
DB-T1-6Z-8AB-0Z	185	Climbing Ladder - 5'	165
6' x 2" Mount Pipe	185	6' x 2" Mount Pipe	165
6' x 2" Mount Pipe	185	6' x 2" Mount Pipe	165
6' x 2" Mount Pipe	185	6' x 2" Mount Pipe	165
Climbing Ladder - 5'	185	Platform Mount [LP 712-1]	165
Platform Mount [LP 712-1]	185	Side Arm Mount [SO 102-1]	155
Side Arm Mount [SO 202-3]	185	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	145
ASP-601	182	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	145
Side Arm Mount [SO 104-3]	182	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	145
(2) 7770.00 w/ Mount Pipe	175	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	145
(2) 7770.00 w/ Mount Pipe	175	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	145
(2) 7770.00 w/ Mount Pipe	175	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	145
OPA-65R-LCUU-H6 w/ Mount Pipe	175	KRY 112 144/1	145
OPA-65R-LCUU-H6 w/ Mount Pipe	175	KRY 112 144/1	145
OPA-65R-LCUU-H6 w/ Mount Pipe	175	KRY 112 144/1	145
(2) LGP2140X	175	Platform Mount [LP 712-1]	145
(2) LGP2140X	175	800 10504 w/ Mount Pipe	135
(2) LGP2140X	175	800 10504 w/ Mount Pipe	135
RRUS-11	175	800 10504 w/ Mount Pipe	135
RRUS-11	175	860 10025	135
RRUS-11	175	860 10025	135
DTMABP7819VG12A	175	860 10025	135
DTMABP7819VG12A	175	(2) 6' x 2" Mount Pipe	135
DTMABP7819VG12A	175	(2) 6' x 2" Mount Pipe	135
DC6-48-60-18-8F	175	(2) 6' x 2" Mount Pipe	135
(4) 7020.00	175	T-Arm Mount [TA 602-3]	135
(4) 7020.00	175	GPS	108
(4) 7020.00	175	Side Arm Mount [SO 901-1]	108
RRUS12/RRUS A2	175	GPS	107
RRUS12/RRUS A2	175	Side Arm Mount [SO 901-1]	107
RRUS12/RRUS A2	175	GPS	51
Platform Mount [LP 712-1]	175	Side Arm Mount [SO 901-1]	51

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 97.6%

Jacobs Engineering Group, Inc.
5449 Bells Ferry Rd
Acworth, GA 30102
Phone: 770-701-2500
FAX: 770-701-2501

Job:	***185' Monopole - BRG 123 943084***		
Project:	***BU806354_WO1153594***		
Client: CROWN CASTLE	Drawn by: J. Earnest		App'd:
Code: TIA/EIA-222-F	Date: 11/18/15		Scale: NTS
Path: C:\Users\EARNESJT\Desktop\806354\BU806354_WO1153594.eri			Dwg No. E-1

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 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 38 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		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

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	185'-149'7-7/16"	35'4-9/16"	5'1/8"	18	29.0000	36.0404	0.2500	1.0000	A572-65 (65 ksi)
L2	149'7-7/16"-114' 2-5/8"	40'4-29/32"	5'9-23/32"	18	34.5443	42.4605	0.3125	1.2500	A572-65 (65 ksi)
L3	114'2-5/8"-76'9-19/32"	43'2-3/4"	6'7-13/16"	18	40.6978	49.1570	0.3750	1.5000	A572-65 (65 ksi)
L4	76'9-19/32"-38'4-9/16"	45'27/32"	7'5-7/8"	18	47.1064	55.9285	0.4375	1.7500	A572-65 (65 ksi)
L5	38'4-9/16"-0'	45'10-7/16"		18	53.5869	62.5000	0.5000	2.0000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
									(65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	29.4474	22.8131	2382.3081	10.2063	14.7320	161.7098	4767.7509	11.4087	4.6640	18.656
	36.5964	28.3997	4596.0425	12.7056	18.3085	251.0329	9198.1326	14.2025	5.9031	23.612
L2	36.0729	33.9537	5026.7193	12.1523	17.5485	286.4469	10060.0528	16.9801	5.5298	17.695
	43.1155	41.8055	9382.6455	14.9625	21.5699	434.9872	18777.6370	20.9067	6.9230	22.154
L3	42.4796	47.9942	9858.8582	14.3146	20.6745	476.8616	19730.6889	24.0016	6.5028	17.341
	49.9153	58.0628	17456.3904	17.3176	24.9718	699.0454	34935.7504	29.0369	7.9916	21.311
L4	49.1541	64.8057	17832.2562	16.5675	23.9301	745.1819	35687.9766	32.4090	7.5207	17.19
	56.7913	77.0562	29977.1322	19.6993	28.4117	1055.0990	59993.7092	38.5354	9.0734	20.739
L5	55.8918	84.2489	29996.8983	18.8458	27.2221	1101.9301	60033.2673	42.1325	8.5513	17.103
	63.4642	98.3940	47784.7640	22.0100	31.7500	1505.0319	95632.4044	49.2063	10.1200	20.24

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 185'-149'7-7/16"				1	1	1		
L2 149'7-7/16"-114'2-5/8"				1	1	1		
L3 114'2-5/8"-76'9-19/32"				1	1	1		
L4 76'9-19/32"-38'4-9/16"				1	1	1		
L5 38'4-9/16"-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***										
***										
B										
C										
***										
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
A								
LDF4P-50A(1/2")	A	No	Inside Pole	182' - 0'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
HJ7-50A(1-5/8")	A	No	Inside Pole	185' - 0'	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
						2" Ice	0.00	1.04
						4" Ice	0.00	1.04
HJ7-50A(1-5/8")	A	No	CaAa (Out Of Face)	185' - 0'	1	No Ice	0.20	1.04
						1/2" Ice	0.30	2.55
						1" Ice	0.40	4.68
						2" Ice	0.60	10.76
						4" Ice	1.00	30.26
HB158-1-08U8-S8J18(1-5/8)	A	No	CaAa (Out Of Face)	185' - 0'	1	No Ice	0.00	1.30
						1/2" Ice	0.00	2.81
						1" Ice	0.00	4.94
						2" Ice	0.00	11.02
						4" Ice	0.00	30.52
CR 50 1873PE(1-5/8")	A	No	CaAa (Out Of Face)	175' - 0'	12	No Ice	0.00	0.83
						1/2" Ice	0.00	2.34
						1" Ice	0.00	4.47
						2" Ice	0.00	10.55
						4" Ice	0.00	30.05
2" Rigid Conduit	A	No	Inside Pole	175' - 0'	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
FB-L98B-002-75000(3/8")	A	No	CaAa (Out Of Face)	175' - 0'	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.60
						1" Ice	0.00	1.76
						2" Ice	0.00	5.91
						4" Ice	0.00	21.53
WR-VG82ST-BRDA(5/8")	A	No	CaAa (Out Of Face)	175' - 0'	2	No Ice	0.00	0.31
						1/2" Ice	0.00	1.01
						1" Ice	0.00	2.32
						2" Ice	0.00	6.77
						4" Ice	0.00	23.01
***								
***								
B								
***								
HB114-1-0813U4-M5J(1 1/4")	B	No	Inside Pole	165' - 0'	3	No Ice	0.00	1.20
						1/2" Ice	0.00	1.20
						1" Ice	0.00	1.20
						2" Ice	0.00	1.20
						4" Ice	0.00	1.20
LDF7-50A(1-5/8")	B	No	Inside Pole	145' - 0'	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	145' - 0'	1	No Ice	0.20	0.70
						1/2" Ice	0.30	2.23
						1" Ice	0.40	4.38

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.60	10.50
						4" Ice	1.00	30.07
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	145' - 0'	6	No Ice	0.00	0.70
						1/2" Ice	0.00	2.23
						1" Ice	0.00	4.38
						2" Ice	0.00	10.50
						4" Ice	0.00	30.07
CR 50 1873(1-5/8")	B	No	Inside Pole	135' - 0'	6	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
						2" Ice	0.00	0.83
						4" Ice	0.00	0.83
C								
***								
GPS								
LDF4P-50A(1/2")	B	No	Inside Pole	40' - 0'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF4P-50A(1/2")	C	No	Inside Pole	100' - 0'	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
***								
Safety Line 3/8	C	No	CaAa (Out Of Face)	185' - 0'	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	185'-149'7-7/16"	A	0.000	0.000	0.000	7.005	0.9
		B	0.000	0.000	0.000	0.000	0.1
		C	0.000	0.000	0.000	1.327	0.0
L2	149'7-7/16"-114'2-5/8"	A	0.000	0.000	0.000	7.009	1.0
		B	0.000	0.000	0.000	6.187	0.5
		C	0.000	0.000	0.000	1.328	0.0
L3	114'2-5/8"-76'9-19/32"	A	0.000	0.000	0.000	7.409	1.1
		B	0.000	0.000	0.000	7.521	0.7
		C	0.000	0.000	0.000	1.403	0.0
L4	76'9-19/32"-38'4-9/16"	A	0.000	0.000	0.000	7.608	1.1
		B	0.000	0.000	0.000	7.723	0.7
		C	0.000	0.000	0.000	1.441	0.0
L5	38'4-9/16"-0'	A	0.000	0.000	0.000	7.599	1.1
		B	0.000	0.000	0.000	7.714	0.7
		C	0.000	0.000	0.000	1.439	0.0

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	185'-149'7-7/16"	A	0.911	0.000	0.000	0.000	13.450	2.2
		B		0.000	0.000	0.000	0.000	0.1
		C		0.000	0.000	0.000	7.772	0.0
L2	149'7-7/16"-114'2-5/8"	A	0.885	0.000	0.000	0.000	13.459	2.8
		B		0.000	0.000	0.000	11.794	1.2
		C		0.000	0.000	0.000	7.778	0.0
L3	114'2-5/8"-76'9-19/32"	A	0.852	0.000	0.000	0.000	14.035	2.9
		B		0.000	0.000	0.000	14.148	1.5
		C		0.000	0.000	0.000	8.029	0.1
L4	76'9-19/32"-38'4-9/16"	A	0.802	0.000	0.000	0.000	14.153	2.9
		B		0.000	0.000	0.000	14.268	1.5
		C		0.000	0.000	0.000	7.986	0.1
L5	38'4-9/16"-0'	A	0.750	0.000	0.000	0.000	13.754	2.8
		B		0.000	0.000	0.000	13.869	1.5
		C		0.000	0.000	0.000	7.594	0.1

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	185'-149'7-7/16"	-0.0448	-0.2474	-0.2234	-0.3175
L2	149'7-7/16"-114'2-5/8"	0.1607	-0.1210	0.1143	-0.1145
L3	114'2-5/8"-76'9-19/32"	0.1905	-0.1059	0.1641	-0.0913
L4	76'9-19/32"-38'4-9/16"	0.1930	-0.1073	0.1698	-0.0945
L5	38'4-9/16"-0'	0.1950	-0.1085	0.1749	-0.0973

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight K
185' Verizon Wireless									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.15 7.70 8.28 9.45 11.92	7.70 8.78 9.64 11.48 15.54	0.0 0.1 0.2 0.4 0.8
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.15 7.70 8.28 9.45 11.92	7.70 8.78 9.64 11.48 15.54	0.0 0.1 0.2 0.4 0.8
(2) DB846F65ZAXY w/	C	From Leg	4.00	0.0000	185'	No Ice	7.15	7.70	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0'			1/2" Ice	7.70	8.78	0.1
			2'			1" Ice	8.28	9.64	0.2
						2" Ice	9.45	11.48	0.4
						4" Ice	11.92	15.54	0.8
(2) SBNHH-1D85C w/ Mount Pipe	A	From Leg	4.00	0.0000	185'	No Ice	11.63	9.79	0.1
			0'			1/2" Ice	12.35	11.31	0.2
			2'			1" Ice	13.07	12.85	0.3
						2" Ice	14.54	15.19	0.5
						4" Ice	17.81	20.05	1.1
(2) SBNHH-1D85C w/ Mount Pipe	B	From Leg	4.00	0.0000	185'	No Ice	11.63	9.79	0.1
			0'			1/2" Ice	12.35	11.31	0.2
			2'			1" Ice	13.07	12.85	0.3
						2" Ice	14.54	15.19	0.5
						4" Ice	17.81	20.05	1.1
(2) SBNHH-1D85C w/ Mount Pipe	C	From Leg	4.00	0.0000	185'	No Ice	11.63	9.79	0.1
			0'			1/2" Ice	12.35	11.31	0.2
			2'			1" Ice	13.07	12.85	0.3
						2" Ice	14.54	15.19	0.5
						4" Ice	17.81	20.05	1.1
RRH2x60-700	A	From Leg	4.00	0.0000	185'	No Ice	3.96	1.82	0.1
			0'			1/2" Ice	4.27	2.08	0.1
			2'			1" Ice	4.60	2.36	0.1
						2" Ice	5.27	2.96	0.2
						4" Ice	6.72	4.25	0.4
RRH2x60-700	B	From Leg	4.00	0.0000	185'	No Ice	3.96	1.82	0.1
			0'			1/2" Ice	4.27	2.08	0.1
			2'			1" Ice	4.60	2.36	0.1
						2" Ice	5.27	2.96	0.2
						4" Ice	6.72	4.25	0.4
RRH2x60-700	C	From Leg	4.00	0.0000	185'	No Ice	3.96	1.82	0.1
			0'			1/2" Ice	4.27	2.08	0.1
			2'			1" Ice	4.60	2.36	0.1
						2" Ice	5.27	2.96	0.2
						4" Ice	6.72	4.25	0.4
RRH2X60-PCS	A	From Leg	4.00	0.0000	185'	No Ice	2.57	2.01	0.1
			0'			1/2" Ice	2.79	2.22	0.1
			2'			1" Ice	3.02	2.43	0.1
						2" Ice	3.52	2.89	0.2
						4" Ice	4.61	3.92	0.3
RRH2X60-PCS	B	From Leg	4.00	0.0000	185'	No Ice	2.57	2.01	0.1
			0'			1/2" Ice	2.79	2.22	0.1
			2'			1" Ice	3.02	2.43	0.1
						2" Ice	3.52	2.89	0.2
						4" Ice	4.61	3.92	0.3
RRH2X60-PCS	C	From Leg	4.00	0.0000	185'	No Ice	2.57	2.01	0.1
			0'			1/2" Ice	2.79	2.22	0.1
			2'			1" Ice	3.02	2.43	0.1
						2" Ice	3.52	2.89	0.2
						4" Ice	4.61	3.92	0.3
RRH4X45-AWS4 B66	A	From Leg	4.00	0.0000	185'	No Ice	3.10	1.76	0.1
			0'			1/2" Ice	3.36	1.98	0.1
			2'			1" Ice	3.62	2.21	0.1
						2" Ice	4.17	2.69	0.2
						4" Ice	5.38	3.77	0.3
RRH4X45-AWS4 B66	B	From Leg	4.00	0.0000	185'	No Ice	3.10	1.76	0.1
			0'			1/2" Ice	3.36	1.98	0.1
			2'			1" Ice	3.62	2.21	0.1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	4.17	2.69	0.2
						4" Ice	5.38	3.77	0.3
RRH4X45-AWS4 B66	C	From Leg	4.00 0' 2'	0.0000	185'	No Ice	3.10	1.76	0.1
						1/2" Ice	3.36	1.98	0.1
						1" Ice	3.62	2.21	0.1
						2" Ice	4.17	2.69	0.2
						4" Ice	5.38	3.77	0.3
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0' 2'	0.0000	185'	No Ice	5.60	2.33	0.0
						1/2" Ice	5.92	2.56	0.1
						1" Ice	6.24	2.79	0.1
						2" Ice	6.91	3.28	0.2
						4" Ice	8.37	4.37	0.5
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0' 2'	0.0000	185'	No Ice	5.60	2.33	0.0
						1/2" Ice	5.92	2.56	0.1
						1" Ice	6.24	2.79	0.1
						2" Ice	6.91	3.28	0.2
						4" Ice	8.37	4.37	0.5
6' x 2" Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	185'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	185'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	185'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
Climbing Ladder - 5'	C	None		0.0000	185'	No Ice	2.05	2.05	0.1
						1/2" Ice	2.41	2.41	0.1
						1" Ice	2.78	2.78	0.1
						2" Ice	3.53	3.53	0.1
						4" Ice	5.13	5.13	0.3
Platform Mount [LP 712-1]	C	None		0.0000	185'	No Ice	24.53	24.53	1.3
						1/2" Ice	29.94	29.94	1.6
						1" Ice	35.35	35.35	2.0
						2" Ice	46.17	46.17	2.6
						4" Ice	67.81	67.81	3.8
Side Arm Mount [SO 202-3]	C	None		0.0000	185'	No Ice	6.18	6.18	0.3
						1/2" Ice	8.56	8.56	0.4
						1" Ice	10.94	10.94	0.5
						2" Ice	15.70	15.70	0.6
						4" Ice	25.22	25.22	0.9
182' NEWTOWN									
ASP-601	B	From Leg	1.00 0' 6'	0.0000	182'	No Ice	2.34	2.34	0.0
						1/2" Ice	4.21	4.21	0.0
						1" Ice	6.08	6.08	0.0
						2" Ice	9.83	9.83	0.1
						4" Ice	17.32	17.32	0.1
Side Arm Mount [SO 104-3]	B	None		0.0000	182'	No Ice	3.30	3.30	0.3
						1/2" Ice	4.13	4.13	0.3
						1" Ice	4.96	4.96	0.3
						2" Ice	6.62	6.62	0.4

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	9.94	9.94	0.5
175' AT&T Mobility									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.1 0.1 0.2 0.3 0.7
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.1 0.1 0.2 0.3 0.7
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.1 0.1 0.2 0.3 0.7
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	7.18 8.36 9.26 11.09 15.15	0.1 0.2 0.3 0.5 1.0
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	7.18 8.36 9.26 11.09 15.15	0.1 0.2 0.3 0.5 1.0
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	7.18 8.36 9.26 11.09 15.15	0.1 0.2 0.3 0.5 1.0
(2) LGP2140X	A	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.0 0.0 0.0 0.1 0.1
(2) LGP2140X	B	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.0 0.0 0.0 0.1 0.1
(2) LGP2140X	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.26 1.42 1.58 1.94 2.75	0.38 0.49 0.62 0.89 1.54	0.0 0.0 0.0 0.1 0.1
RRUS-11	A	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.1 0.1 0.1 0.2 0.3
RRUS-11	B	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.1 0.1 0.1 0.2 0.3

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS-11	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.94 3.17 3.41 3.91 5.02	1.25 1.41 1.59 1.96 2.82	0.1 0.1 0.1 0.2 0.3
DTMABP7819VG12A	A	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.0 0.0 0.0 0.1 0.1
DTMABP7819VG12A	B	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.0 0.0 0.0 0.1 0.1
DTMABP7819VG12A	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.14 1.28 1.44 1.77 2.54	0.39 0.49 0.59 0.83 1.41	0.0 0.0 0.0 0.1 0.1
DC6-48-60-18-8F	C	From Leg	4.00 0' 0'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	0.0 0.1 0.1 0.1 0.3
(4) 7020.00	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.0 0.0 0.0 0.0 0.1
(4) 7020.00	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.0 0.0 0.0 0.0 0.1
(4) 7020.00	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.78	0.20 0.28 0.36 0.56 1.05	0.0 0.0 0.0 0.0 0.1
RRUS12/RRUS A2	A	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	2.14 2.35 2.56 3.02 4.03	0.1 0.1 0.1 0.2 0.4
RRUS12/RRUS A2	B	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	2.14 2.35 2.56 3.02 4.03	0.1 0.1 0.1 0.2 0.4
RRUS12/RRUS A2	C	From Leg	4.00 0' 2'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.92 4.19 4.74 5.96	2.14 2.35 2.56 3.02 4.03	0.1 0.1 0.1 0.2 0.4
Platform Mount [LP 712-1]	C	None		0.0000	175'	No Ice 1/2" Ice	24.53 29.94	24.53 29.94	1.3 1.6

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	35.35	35.35	2.0
						2" Ice	46.17	46.17	2.6
						4" Ice	67.81	67.81	3.8
167' SPRINT PCS*									
TME-1900MHz RRH (65MHz)	A	From Leg	4.00 0' 0'	0.0000	167'	No Ice	2.70	2.77	0.1
						1/2" Ice	2.94	3.01	0.1
						1" Ice	3.18	3.26	0.1
						2" Ice	3.70	3.78	0.2
						4" Ice	4.85	4.93	0.4
TME-1900MHz RRH (65MHz)	B	From Leg	4.00 0' 0'	0.0000	167'	No Ice	2.70	2.77	0.1
						1/2" Ice	2.94	3.01	0.1
						1" Ice	3.18	3.26	0.1
						2" Ice	3.70	3.78	0.2
						4" Ice	4.85	4.93	0.4
TME-1900MHz RRH (65MHz)	C	From Leg	4.00 0' 0'	0.0000	167'	No Ice	2.70	2.77	0.1
						1/2" Ice	2.94	3.01	0.1
						1" Ice	3.18	3.26	0.1
						2" Ice	3.70	3.78	0.2
						4" Ice	4.85	4.93	0.4
TME-800MHZ RRH	A	From Leg	4.00 0' 0'	0.0000	167'	No Ice	2.49	2.07	0.1
						1/2" Ice	2.71	2.27	0.1
						1" Ice	2.93	2.48	0.1
						2" Ice	3.41	2.93	0.2
						4" Ice	4.46	3.93	0.3
TME-800MHZ RRH	B	From Leg	4.00 0' 0'	0.0000	167'	No Ice	2.49	2.07	0.1
						1/2" Ice	2.71	2.27	0.1
						1" Ice	2.93	2.48	0.1
						2" Ice	3.41	2.93	0.2
						4" Ice	4.46	3.93	0.3
TME-800MHZ RRH	C	From Leg	4.00 0' 0'	0.0000	167'	No Ice	2.49	2.07	0.1
						1/2" Ice	2.71	2.27	0.1
						1" Ice	2.93	2.48	0.1
						2" Ice	3.41	2.93	0.2
						4" Ice	4.46	3.93	0.3
Side Arm Mount [SO 104-3]	C	None		0.0000	167'	No Ice	3.30	3.30	0.3
						1/2" Ice	4.13	4.13	0.3
						1" Ice	4.96	4.96	0.3
						2" Ice	6.62	6.62	0.4
						4" Ice	9.94	9.94	0.5
165' Sprint PCS									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	165'	No Ice	8.50	6.95	0.1
						1/2" Ice	9.15	8.13	0.2
						1" Ice	9.77	9.02	0.2
						2" Ice	11.03	10.84	0.4
						4" Ice	13.68	14.85	0.9
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	165'	No Ice	8.50	6.95	0.1
						1/2" Ice	9.15	8.13	0.2
						1" Ice	9.77	9.02	0.2
						2" Ice	11.03	10.84	0.4
						4" Ice	13.68	14.85	0.9
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	165'	No Ice	8.50	6.95	0.1
						1/2" Ice	9.15	8.13	0.2
						1" Ice	9.77	9.02	0.2
						2" Ice	11.03	10.84	0.4
						4" Ice	13.68	14.85	0.9
(3) ACU-A20-N	A	From Leg	4.00 0'	0.0000	165'	No Ice	0.08	0.14	0.0
						1/2" Ice	0.12	0.19	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	0.17	0.25	0.0
						2" Ice	0.30	0.40	0.0
						4" Ice	0.67	0.80	0.0
(3) ACU-A20-N	B	From Leg	4.00	0.0000	165'	No Ice	0.08	0.14	0.0
			0'			1/2" Ice	0.12	0.19	0.0
			0'			1" Ice	0.17	0.25	0.0
						2" Ice	0.30	0.40	0.0
						4" Ice	0.67	0.80	0.0
(3) ACU-A20-N	C	From Leg	4.00	0.0000	165'	No Ice	0.08	0.14	0.0
			0'			1/2" Ice	0.12	0.19	0.0
			0'			1" Ice	0.17	0.25	0.0
						2" Ice	0.30	0.40	0.0
						4" Ice	0.67	0.80	0.0
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	165'	No Ice	0.77	0.37	0.0
			0'			1/2" Ice	0.89	0.46	0.0
			0'			1" Ice	1.02	0.56	0.0
						2" Ice	1.30	0.79	0.0
						4" Ice	1.97	1.34	0.1
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	165'	No Ice	0.77	0.37	0.0
			0'			1/2" Ice	0.89	0.46	0.0
			0'			1" Ice	1.02	0.56	0.0
						2" Ice	1.30	0.79	0.0
						4" Ice	1.97	1.34	0.1
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	165'	No Ice	0.77	0.37	0.0
			0'			1/2" Ice	0.89	0.46	0.0
			0'			1" Ice	1.02	0.56	0.0
						2" Ice	1.30	0.79	0.0
						4" Ice	1.97	1.34	0.1
Climbing Ladder - 5'	C	None		0.0000	165'	No Ice	2.05	2.05	0.1
						1/2" Ice	2.41	2.41	0.1
						1" Ice	2.78	2.78	0.1
						2" Ice	3.53	3.53	0.1
						4" Ice	5.13	5.13	0.3
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	165'	No Ice	1.43	1.43	0.0
			0'			1/2" Ice	1.92	1.92	0.0
			0'			1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	165'	No Ice	1.43	1.43	0.0
			0'			1/2" Ice	1.92	1.92	0.0
			0'			1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	165'	No Ice	1.43	1.43	0.0
			0'			1/2" Ice	1.92	1.92	0.0
			0'			1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
Platform Mount [LP 712-1]	C	None		0.0000	165'	No Ice	24.53	24.53	1.3
						1/2" Ice	29.94	29.94	1.6
						1" Ice	35.35	35.35	2.0
						2" Ice	46.17	46.17	2.6
						4" Ice	67.81	67.81	3.8
155 Sprint PCS Side Arm Mount [SO 102-1]	A	From Leg	1.00	0.0000	155'	No Ice	1.50	1.50	0.0
			0'			1/2" Ice	1.74	1.75	0.0
			0'			1" Ice	1.98	2.00	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	2.46	2.50	0.1
						4" Ice	3.42	3.50	0.1
145' T-Mobile									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.1 0.2 0.2 0.4 0.8
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.1 0.2 0.2 0.4 0.8
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.1 0.2 0.2 0.4 0.8
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.1 0.2 0.2 0.4 0.8
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.1 0.2 0.2 0.4 0.8
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.1 0.2 0.2 0.4 0.8
KRY 112 144/1	A	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.60 0.82 1.36	0.19 0.26 0.33 0.51 0.97	0.0 0.0 0.0 0.0 0.1
KRY 112 144/1	B	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.60 0.82 1.36	0.19 0.26 0.33 0.51 0.97	0.0 0.0 0.0 0.0 0.1
KRY 112 144/1	C	From Leg	4.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.60 0.82 1.36	0.19 0.26 0.33 0.51 0.97	0.0 0.0 0.0 0.0 0.1
Platform Mount [LP 712-1]	C	None		0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	24.53 29.94 35.35 46.17 67.81	1.3 1.6 2.0 2.6 3.8
135' METRO PCS									
800 10504 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	135'	No Ice 1/2" Ice 1" Ice	3.48 3.86 4.24	3.19 3.82 4.47	0.0 0.1 0.1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.09	5.82	0.2
						4" Ice	7.01	8.79	0.5
800 10504 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	135'	No Ice	3.48	3.19	0.0
						1/2" Ice	3.86	3.82	0.1
						1" Ice	4.24	4.47	0.1
						2" Ice	5.09	5.82	0.2
						4" Ice	7.01	8.79	0.5
800 10504 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	135'	No Ice	3.48	3.19	0.0
						1/2" Ice	3.86	3.82	0.1
						1" Ice	4.24	4.47	0.1
						2" Ice	5.09	5.82	0.2
						4" Ice	7.01	8.79	0.5
860 10025	A	From Leg	4.00 0' 2'	0.0000	135'	No Ice	0.16	0.14	0.0
						1/2" Ice	0.23	0.20	0.0
						1" Ice	0.30	0.27	0.0
						2" Ice	0.48	0.44	0.0
						4" Ice	0.93	0.88	0.1
860 10025	B	From Leg	4.00 0' 2'	0.0000	135'	No Ice	0.16	0.14	0.0
						1/2" Ice	0.23	0.20	0.0
						1" Ice	0.30	0.27	0.0
						2" Ice	0.48	0.44	0.0
						4" Ice	0.93	0.88	0.1
860 10025	C	From Leg	4.00 0' 2'	0.0000	135'	No Ice	0.16	0.14	0.0
						1/2" Ice	0.23	0.20	0.0
						1" Ice	0.30	0.27	0.0
						2" Ice	0.48	0.44	0.0
						4" Ice	0.93	0.88	0.1
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	135'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	135'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	135'	No Ice	1.43	1.43	0.0
						1/2" Ice	1.92	1.92	0.0
						1" Ice	2.29	2.29	0.0
						2" Ice	3.06	3.06	0.1
						4" Ice	4.70	4.70	0.2
T-Arm Mount [TA 602-3]	C	None		0.0000	135'	No Ice	11.59	11.59	0.3
						1/2" Ice	15.44	15.44	0.3
						1" Ice	19.29	19.29	0.4
						2" Ice	26.99	26.99	0.7
						4" Ice	42.39	42.39	1.8
GPS									
GPS	C	From Leg	2.00 0' 0'	0.0000	108'	No Ice	0.08	0.08	0.0
						1/2" Ice	0.14	0.14	0.0
						1" Ice	0.23	0.23	0.0
						2" Ice	0.44	0.44	0.0
						4" Ice	1.00	1.00	0.1
GPS	C	From Leg	2.00 0' 0'	0.0000	107'	No Ice	0.08	0.08	0.0
						1/2" Ice	0.14	0.14	0.0
						1" Ice	0.23	0.23	0.0
						2" Ice	0.44	0.44	0.0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	1.00	1.00	0.1
GPS	C	From Leg	2.00 0' 0'	0.0000	51'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.14 0.23 0.44 1.00	0.08 0.14 0.23 0.44 1.00	0.0 0.0 0.0 0.0 0.1
Side Arm Mount [SO 901-1]	C	From Leg	1.00 0' 0'	0.0000	108'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.50 0.68 0.86 1.22 1.94	0.88 1.13 1.38 1.88 2.88	0.1 0.1 0.1 0.1 0.1
Side Arm Mount [SO 901-1]	C	From Leg	1.00 0' 0'	0.0000	107'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.50 0.68 0.86 1.22 1.94	0.88 1.13 1.38 1.88 2.88	0.1 0.1 0.1 0.1 0.1
Side Arm Mount [SO 901-1]	C	From Leg	1.00 0' 0'	0.0000	51'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.50 0.68 0.86 1.22 1.94	0.88 1.13 1.38 1.88 2.88	0.1 0.1 0.1 0.1 0.1
***									

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	41.2					
Bracing Weight	0.0					
Total Member Self-Weight	41.2			-3.2	-0.4	
Total Weight	60.4			-3.2	-0.4	
Wind 0 deg - No Ice		-0.1	-44.3	-5897.3	15.0	0.4
Wind 30 deg - No Ice		22.0	-38.3	-5100.0	-2925.2	0.2
Wind 60 deg - No Ice		38.2	-22.1	-2936.9	-5081.7	0.0
Wind 90 deg - No Ice		44.2	0.1	12.2	-5876.7	-0.2
Wind 120 deg - No Ice		38.3	22.2	2957.2	-5097.2	-0.4
Wind 150 deg - No Ice		22.2	38.4	5109.0	-2951.9	-0.4
Wind 180 deg - No Ice		0.1	44.3	5890.9	-15.8	-0.4
Wind 210 deg - No Ice		-22.0	38.3	5093.5	2924.4	-0.2
Wind 240 deg - No Ice		-38.2	22.1	2930.5	5080.9	-0.0
Wind 270 deg - No Ice		-44.2	-0.1	-18.6	5875.9	0.2
Wind 300 deg - No Ice		-38.3	-22.2	-2963.6	5096.4	0.4
Wind 330 deg - No Ice		-22.2	-38.4	-5115.4	2951.1	0.4
Member Ice	8.8					
Total Weight Ice	89.4			-16.2	-5.8	
Wind 0 deg - Ice		-0.0	-10.8	-1472.6	-2.5	0.1
Wind 30 deg - Ice		5.4	-9.4	-1275.9	-729.3	0.1
Wind 60 deg - Ice		9.3	-5.4	-741.6	-1262.2	0.0
Wind 90 deg - Ice		10.8	0.0	-12.9	-1458.4	-0.0

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
Wind 120 deg - Ice		9.4	5.4	714.8	-1265.4	-0.1
Wind 150 deg - Ice		5.4	9.4	1246.7	-734.9	-0.1
Wind 180 deg - Ice		0.0	10.8	1440.2	-9.0	-0.1
Wind 210 deg - Ice		-5.4	9.4	1243.5	717.8	-0.1
Wind 240 deg - Ice		-9.3	5.4	709.2	1250.7	-0.0
Wind 270 deg - Ice		-10.8	-0.0	-19.5	1446.9	0.0
Wind 300 deg - Ice		-9.4	-5.4	-747.2	1253.9	0.1
Wind 330 deg - Ice		-5.4	-9.4	-1279.1	723.4	0.1
Total Weight	60.4			-3.2	-0.4	
Wind 0 deg - Service		-0.0	-15.3	-2039.0	6.1	0.1
Wind 30 deg - Service		7.6	-13.3	-1763.1	-1011.2	0.1
Wind 60 deg - Service		13.2	-7.6	-1014.7	-1757.4	0.0
Wind 90 deg - Service		15.3	0.0	5.8	-2032.5	-0.1
Wind 120 deg - Service		13.3	7.7	1024.8	-1762.8	-0.1
Wind 150 deg - Service		7.7	13.3	1769.4	-1020.5	-0.2
Wind 180 deg - Service		0.0	15.3	2040.0	-4.5	-0.1
Wind 210 deg - Service		-7.6	13.3	1764.0	1012.8	-0.1
Wind 240 deg - Service		-13.2	7.6	1015.6	1759.1	-0.0
Wind 270 deg - Service		-15.3	-0.0	-4.9	2034.1	0.1
Wind 300 deg - Service		-13.3	-7.7	-1023.9	1764.4	0.1
Wind 330 deg - Service		-7.7	-13.3	-1768.5	1022.1	0.2

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

Comb. No.	Description
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	185 - 149.622	Pole	Max Tension	14	0.0	0.0	-0.0
			Max. Compression	14	-20.9	-0.3	2.3
			Max. Mx	5	-9.5	-521.5	-2.0
			Max. My	2	-9.5	2.4	524.7
			Max. Vy	5	22.6	-521.5	-2.0
			Max. Vx	2	-22.7	2.4	524.7
			Max. Torque	8			0.8
L2	149.622 - 114.221	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-35.4	-1.3	5.4
			Max. Mx	5	-18.1	-1485.8	-4.0
			Max. My	2	-18.1	4.8	1492.5
			Max. Vy	5	31.5	-1485.8	-4.0
			Max. Vx	2	-31.6	4.8	1492.5
			Max. Torque	13			-0.6
L3	114.221 - 76.8021	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-49.4	-2.3	8.6
			Max. Mx	11	-27.9	2722.9	9.8
			Max. My	2	-27.9	8.3	2733.8
			Max. Vy	5	36.0	-2722.8	-6.8
			Max. Vx	2	-36.1	8.3	2733.8
			Max. Torque	13			-0.6
L4	76.8021 - 38.3802	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-66.4	-3.8	12.4
			Max. Mx	11	-40.8	4157.3	13.9
			Max. My	2	-40.8	11.8	4172.9
			Max. Vy	5	40.2	-4157.2	-9.5
			Max. Vx	2	-40.3	11.8	4172.9
			Max. Torque	13			-0.5
L5	38.3802 - 0	Pole	Max Tension	1	0.0	0.0	0.0
			Max. Compression	14	-90.7	-6.0	17.2
			Max. Mx	5	-60.3	-6097.5	-12.7
			Max. My	2	-60.3	15.7	6118.9
			Max. Vy	5	44.2	-6097.5	-12.7
			Max. Vx	2	-44.4	15.7	6118.9
			Max. Torque	13			-0.5

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	90.7	0.0	10.8
	Max. H_x	11	60.4	44.2	0.1
	Max. H_z	2	60.4	0.1	44.3
	Max. M_x	2	6118.9	0.1	44.3
	Max. M_z	5	6097.5	-44.2	-0.1
	Max. Torsion	7	0.5	-22.2	-38.4
	Min. Vert	1	60.4	0.0	0.0
	Min. H_x	5	60.4	-44.2	-0.1
	Min. H_z	8	60.4	-0.1	-44.3
	Min. M_x	8	-6112.2	-0.1	-44.3
	Min. M_z	11	-6096.7	44.2	0.1
	Min. Torsion	13	-0.5	22.2	38.4

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	60.4	0.0	0.0	-3.2	-0.4	0.0
Dead+Wind 0 deg - No Ice	60.4	-0.1	-44.3	-6118.9	15.7	0.4
Dead+Wind 30 deg - No Ice	60.4	22.0	-38.3	-5291.6	-3035.1	0.2
Dead+Wind 60 deg - No Ice	60.4	38.2	-22.1	-3047.3	-5272.7	0.0
Dead+Wind 90 deg - No Ice	60.4	44.2	0.1	12.7	-6097.5	-0.2
Dead+Wind 120 deg - No Ice	60.4	38.3	22.2	3068.4	-5288.6	-0.4
Dead+Wind 150 deg - No Ice	60.4	22.2	38.4	5300.9	-3062.8	-0.5
Dead+Wind 180 deg - No Ice	60.4	0.1	44.3	6112.2	-16.5	-0.4
Dead+Wind 210 deg - No Ice	60.4	-22.0	38.3	5285.0	3034.3	-0.3
Dead+Wind 240 deg - No Ice	60.4	-38.2	22.1	3040.6	5271.9	-0.0
Dead+Wind 270 deg - No Ice	60.4	-44.2	-0.1	-19.4	6096.7	0.2
Dead+Wind 300 deg - No Ice	60.4	-38.3	-22.2	-3075.0	5287.8	0.4
Dead+Wind 330 deg - No Ice	60.4	-22.2	-38.4	-5307.6	3062.0	0.5
Dead+Ice+Temp	90.7	0.0	-0.0	-17.2	-6.0	0.0
Dead+Wind 0 deg+Ice+Temp	90.7	-0.0	-10.8	-1574.0	-2.6	0.1
Dead+Wind 30 deg+Ice+Temp	90.7	5.4	-9.4	-1363.7	-779.3	0.1
Dead+Wind 60 deg+Ice+Temp	90.7	9.3	-5.4	-792.6	-1348.9	0.0
Dead+Wind 90 deg+Ice+Temp	90.7	10.8	0.0	-13.9	-1558.7	-0.0
Dead+Wind 120 deg+Ice+Temp	90.7	9.4	5.4	764.0	-1352.4	-0.1
Dead+Wind 150 deg+Ice+Temp	90.7	5.4	9.4	1332.4	-785.4	-0.1
Dead+Wind 180 deg+Ice+Temp	90.7	0.0	10.8	1539.2	-9.6	-0.1
Dead+Wind 210 deg+Ice+Temp	90.7	-5.4	9.4	1328.9	767.1	-0.1
Dead+Wind 240 deg+Ice+Temp	90.7	-9.3	5.4	757.9	1336.7	-0.0
Dead+Wind 270 deg+Ice+Temp	90.7	-10.8	-0.0	-20.9	1546.5	0.0
Dead+Wind 300 deg+Ice+Temp	90.7	-9.4	-5.4	-798.7	1340.2	0.1
Dead+Wind 330 deg+Ice+Temp	90.7	-5.4	-9.4	-1367.2	773.2	0.1
Dead+Wind 0 deg - Service	60.4	-0.0	-15.3	-2123.2	5.2	0.1
Dead+Wind 30 deg - Service	60.4	7.6	-13.3	-1836.4	-1052.3	0.1
Dead+Wind 60 deg - Service	60.4	13.2	-7.6	-1058.5	-1827.9	0.0
Dead+Wind 90 deg - Service	60.4	15.3	0.0	2.2	-2113.8	-0.1
Dead+Wind 120 deg - Service	60.4	13.3	7.7	1061.4	-1833.5	-0.1
Dead+Wind 150 deg - Service	60.4	7.7	13.3	1835.3	-1061.9	-0.2
Dead+Wind 180 deg - Service	60.4	0.0	15.3	2116.5	-6.0	-0.1
Dead+Wind 210 deg - Service	60.4	-7.6	13.3	1829.7	1051.5	-0.1
Dead+Wind 240 deg - Service	60.4	-13.2	7.6	1051.8	1827.1	-0.0
Dead+Wind 270 deg - Service	60.4	-15.3	-0.0	-8.9	2113.0	0.1
Dead+Wind 300 deg - Service	60.4	-13.3	-7.7	-1068.1	1832.7	0.1
Dead+Wind 330 deg - Service	60.4	-7.7	-13.3	-1842.0	1061.1	0.2

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.0	-60.4	0.0	0.0	60.4	0.0	0.000%
2	-0.1	-60.4	-44.3	0.1	60.4	44.3	0.000%
3	22.0	-60.4	-38.3	-22.0	60.4	38.3	0.000%
4	38.2	-60.4	-22.1	-38.2	60.4	22.1	0.000%
5	44.2	-60.4	0.1	-44.2	60.4	-0.1	0.000%
6	38.3	-60.4	22.2	-38.3	60.4	-22.2	0.000%
7	22.2	-60.4	38.4	-22.2	60.4	-38.4	0.000%
8	0.1	-60.4	44.3	-0.1	60.4	-44.3	0.000%
9	-22.0	-60.4	38.3	22.0	60.4	-38.3	0.000%
10	-38.2	-60.4	22.1	38.2	60.4	-22.1	0.000%
11	-44.2	-60.4	-0.1	44.2	60.4	0.1	0.000%
12	-38.3	-60.4	-22.2	38.3	60.4	22.2	0.000%
13	-22.2	-60.4	-38.4	22.2	60.4	38.4	0.000%
14	0.0	-90.7	0.0	-0.0	90.7	0.0	0.000%
15	-0.0	-90.7	-10.8	0.0	90.7	10.8	0.000%
16	5.4	-90.7	-9.4	-5.4	90.7	9.4	0.000%
17	9.3	-90.7	-5.4	-9.3	90.7	5.4	0.000%
18	10.8	-90.7	0.0	-10.8	90.7	-0.0	0.000%
19	9.4	-90.7	5.4	-9.4	90.7	-5.4	0.000%
20	5.4	-90.7	9.4	-5.4	90.7	-9.4	0.000%
21	0.0	-90.7	10.8	-0.0	90.7	-10.8	0.000%
22	-5.4	-90.7	9.4	5.4	90.7	-9.4	0.000%
23	-9.3	-90.7	5.4	9.3	90.7	-5.4	0.000%
24	-10.8	-90.7	-0.0	10.8	90.7	0.0	0.000%
25	-9.4	-90.7	-5.4	9.4	90.7	5.4	0.000%
26	-5.4	-90.7	-9.4	5.4	90.7	9.4	0.000%
27	-0.0	-60.4	-15.3	0.0	60.4	15.3	0.000%
28	7.6	-60.4	-13.3	-7.6	60.4	13.3	0.000%
29	13.2	-60.4	-7.6	-13.2	60.4	7.6	0.000%
30	15.3	-60.4	0.0	-15.3	60.4	-0.0	0.000%
31	13.3	-60.4	7.7	-13.3	60.4	-7.7	0.000%
32	7.7	-60.4	13.3	-7.7	60.4	-13.3	0.000%
33	0.0	-60.4	15.3	-0.0	60.4	-15.3	0.000%
34	-7.6	-60.4	13.3	7.6	60.4	-13.3	0.000%
35	-13.2	-60.4	7.6	13.2	60.4	-7.6	0.000%
36	-15.3	-60.4	-0.0	15.3	60.4	0.0	0.000%
37	-13.3	-60.4	-7.7	13.3	60.4	7.7	0.000%
38	-7.7	-60.4	-13.3	7.7	60.4	13.3	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00036708
3	Yes	6	0.00000001	0.00008112
4	Yes	6	0.00000001	0.00008085
5	Yes	4	0.00000001	0.00038269
6	Yes	6	0.00000001	0.00008104
7	Yes	6	0.00000001	0.00008180
8	Yes	4	0.00000001	0.00079826

9	Yes	6	0.00000001	0.00008056
10	Yes	6	0.00000001	0.00008076
11	Yes	4	0.00000001	0.00071222
12	Yes	6	0.00000001	0.00008180
13	Yes	6	0.00000001	0.00008111
14	Yes	4	0.00000001	0.00007070
15	Yes	5	0.00000001	0.00043713
16	Yes	5	0.00000001	0.00061741
17	Yes	5	0.00000001	0.00061648
18	Yes	5	0.00000001	0.00043235
19	Yes	5	0.00000001	0.00060200
20	Yes	5	0.00000001	0.00060604
21	Yes	5	0.00000001	0.00042691
22	Yes	5	0.00000001	0.00059367
23	Yes	5	0.00000001	0.00059351
24	Yes	5	0.00000001	0.00042954
25	Yes	5	0.00000001	0.00061796
26	Yes	5	0.00000001	0.00061487
27	Yes	4	0.00000001	0.00017330
28	Yes	5	0.00000001	0.00017445
29	Yes	5	0.00000001	0.00017333
30	Yes	4	0.00000001	0.00016899
31	Yes	5	0.00000001	0.00017380
32	Yes	5	0.00000001	0.00017711
33	Yes	4	0.00000001	0.00018937
34	Yes	5	0.00000001	0.00017146
35	Yes	5	0.00000001	0.00017203
36	Yes	4	0.00000001	0.00018142
37	Yes	5	0.00000001	0.00017773
38	Yes	5	0.00000001	0.00017498

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	185 - 149.622	47.821	38	2.2900	0.0013
L2	154.628 - 114.221	33.688	38	2.0940	0.0006
L3	120.029 - 76.8021	19.981	38	1.6293	0.0003
L4	83.4479 - 38.3802	9.432	38	1.0792	0.0001
L5	45.8724 - 0	2.840	38	0.5583	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185'	(2) DB846F65ZAXY w/ Mount Pipe	38	47.821	2.2900	0.0013	31323
182'	ASP-601	38	46.390	2.2755	0.0012	31323
175'	(2) 7770.00 w/ Mount Pipe	38	43.062	2.2401	0.0010	15661
167'	TME-1900MHz RRH (65MHz)	38	39.307	2.1929	0.0008	8700
165'	APXVSPP18-C-A20 w/ Mount Pipe	38	38.381	2.1795	0.0008	7830
155'	Side Arm Mount [SO 102-1]	38	33.853	2.0976	0.0006	5296
145'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	38	29.547	1.9869	0.0005	4655
135'	800 10504 w/ Mount Pipe	38	25.501	1.8529	0.0004	4230

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108'	GPS	38	16.057	1.4461	0.0002	3847
107'	GPS	38	15.751	1.4309	0.0002	3858
51'	GPS	38	3.471	0.6256	0.0001	3576

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	185 - 149.622	137.390	13	6.5885	0.0037
L2	154.628 - 114.221	96.858	13	6.0255	0.0018
L3	120.029 - 76.8021	57.501	13	4.6907	0.0008
L4	83.4479 - 38.3802	27.164	13	3.1085	0.0004
L5	45.8724 - 0	8.182	13	1.6087	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185'	(2) DB846F65ZAXY w/ Mount Pipe	13	137.390	6.5885	0.0037	11177
182'	ASP-601	13	133.287	6.5468	0.0035	11177
175'	(2) 7770.00 w/ Mount Pipe	13	123.745	6.4450	0.0029	5587
167'	TME-1900MHz RRH (65MHz)	13	112.977	6.3096	0.0024	3102
165'	APXVSPP18-C-A20 w/ Mount Pipe	13	110.319	6.2709	0.0023	2791
155'	Side Arm Mount [SO 102-1]	13	97.330	6.0359	0.0018	1885
145'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	84.975	5.7178	0.0014	1653
135'	800 10504 w/ Mount Pipe	13	73.356	5.3330	0.0011	1497
108'	GPS	13	46.220	4.1639	0.0007	1353
107'	GPS	13	45.341	4.1202	0.0007	1356
51'	GPS	13	10.000	1.8025	0.0002	1244

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 $\frac{P}{P_a}$
L1	185 - 183.401	TP36.0404x29x0.25	35'4-9/16''	0'	0.0	39.00	23.0656	-2.2	899.6	0.002
	183.401 - 181.803					39.00	23.3180	-2.6	909.4	0.003
	181.803 - 180.204					39.00	23.5704	-2.8	919.2	0.003

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	180.204 - 178.606					39.00	23.8228	-3.0	929.1	0.003
	178.606 - 177.007					39.00	24.0753	-3.1	938.9	0.003
	177.007 - 175.409					39.00	24.3277	-3.3	948.8	0.003
	175.409 - 173.81					39.00	24.5801	-5.3	958.6	0.006
	173.81 - 172.212					39.00	24.8326	-5.5	968.5	0.006
	172.212 - 170.613					39.00	25.0850	-5.7	978.3	0.006
	170.613 - 169.015					39.00	25.3374	-5.8	988.2	0.006
	169.015 - 167.416					39.00	25.5899	-6.0	998.0	0.006
	167.416 - 165.817					39.00	25.8423	-6.7	1007.9	0.007
	165.817 - 164.219					39.00	26.0947	-8.3	1017.7	0.008
	164.219 - 162.62					39.00	26.3471	-8.5	1027.5	0.008
	162.62 - 161.022					39.00	26.5996	-8.7	1037.4	0.008
	161.022 - 159.423					39.00	26.8520	-8.9	1047.2	0.008
	159.423 - 157.825					39.00	27.1044	-9.0	1057.1	0.009
	157.825 - 156.226					39.00	27.3569	-9.2	1066.9	0.009
	156.226 - 154.628					39.00	27.6093	-9.4	1076.8	0.009
	154.628 - 149.622					39.00	28.3997	-4.8	1107.6	0.004
L2	154.628 - 149.622	TP42.4605x34.5443x0.3125	40'4-29/32"	0'	0.0	39.00	34.9263	-5.8	1362.1	0.004
	149.622 - 147.978					39.00	35.2458	-10.9	1374.6	0.008
	147.978 - 146.334					39.00	35.5653	-11.2	1387.1	0.008
	146.334 - 144.69					39.00	35.8848	-13.1	1399.5	0.009
	144.69 - 143.046					39.00	36.2043	-13.4	1412.0	0.009
	143.046 - 141.402					39.00	36.5237	-13.7	1424.4	0.010
	141.402 - 139.758					39.00	36.8432	-13.9	1436.9	0.010
	139.758 - 138.114					39.00	37.1627	-14.2	1449.3	0.010
	138.114 - 136.47					39.00	37.4822	-14.5	1461.8	0.010
	136.47 - 134.826					39.00	37.8017	-15.2	1474.3	0.010
	134.826 - 133.181					39.00	38.1212	-15.5	1486.7	0.010
	133.181 - 131.537					39.00	38.4407	-15.8	1499.2	0.011
	131.537 - 129.893					39.00	38.7601	-16.1	1511.7	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	129.893 - 128.249					39.00	39.0796	-16.5	1524.1	0.011
	128.249 - 126.605					39.00	39.3991	-16.8	1536.6	0.011
	126.605 - 124.961					39.00	39.7186	-17.1	1549.0	0.011
	124.961 - 123.317					39.00	40.0381	-17.4	1561.5	0.011
	123.317 - 121.673					39.00	40.3576	-17.7	1574.0	0.011
	121.673 - 120.029					39.00	40.6771	-18.0	1586.4	0.011
	120.029 - 114.221					39.00	41.8055	-9.3	1630.4	0.006
L3	120.029 - 114.221	TP49.157x40.6978x0.375	43'2-3/4"	0'	0.0	39.00	49.3468	-10.8	1924.5	0.006
	114.221 - 112.512					39.00	49.7451	-20.5	1940.1	0.011
	112.512 - 110.802					39.00	50.1433	-20.9	1955.6	0.011
	110.802 - 109.092					39.00	50.5415	-21.3	1971.1	0.011
	109.092 - 107.383					39.00	50.9397	-21.8	1986.7	0.011
	107.383 - 105.673					39.00	51.3379	-22.3	2002.2	0.011
	105.673 - 103.964					39.00	51.7362	-22.7	2017.7	0.011
	103.964 - 102.254					39.00	52.1344	-23.1	2033.2	0.011
	102.254 - 100.544					39.00	52.5326	-23.6	2048.8	0.012
	100.544 - 98.8346					39.00	52.9308	-24.0	2064.3	0.012
	98.8346 - 97.125					39.00	53.3290	-24.4	2079.8	0.012
	97.125 - 95.4154					39.00	53.7273	-24.8	2095.4	0.012
	95.4154 - 93.7057					39.00	54.1255	-25.3	2110.9	0.012
	93.7057 - 91.9961					39.00	54.5237	-25.7	2126.4	0.012
	91.9961 - 90.2865					39.00	54.9219	-26.1	2141.9	0.012
	90.2865 - 88.5768					39.00	55.3201	-26.6	2157.5	0.012
	88.5768 - 86.8672					39.00	55.7183	-27.0	2173.0	0.012
	86.8672 - 85.1576					39.00	56.1166	-27.5	2188.6	0.013
	85.1576 - 83.4479					39.00	56.5148	-27.9	2204.1	0.013
	83.4479 - 76.8021					39.00	58.0628	-14.5	2264.4	0.006
L4	83.4479 - 76.8021	TP55.9285x47.1064x0.4375	45'27/32"	0'	0.0	39.00	66.6122	-16.5	2597.9	0.006
	76.8021 - 75.0838					39.00	67.0792	-31.6	2616.1	0.012
	75.0838 - 73.3655					39.00	67.5463	-32.1	2634.3	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	73.3655 - 71.6471					39.00	68.0134	-32.6	2652.5	0.012
	71.6471 - 69.9288					39.00	68.4805	-33.1	2670.7	0.012
	69.9288 - 68.2105					39.00	68.9476	-33.6	2689.0	0.013
	68.2105 - 66.4922					39.00	69.4146	-34.2	2707.2	0.013
	66.4922 - 64.7739					39.00	69.8817	-34.7	2725.4	0.013
	64.7739 - 63.0556					39.00	70.3488	-35.2	2743.6	0.013
	63.0556 - 61.3372					39.00	70.8159	-35.8	2761.8	0.013
	61.3372 - 59.6189					39.00	71.2830	-36.3	2780.0	0.013
	59.6189 - 57.9006					39.00	71.7501	-36.8	2798.3	0.013
	57.9006 - 56.1823					39.00	72.2171	-37.4	2816.5	0.013
	56.1823 - 54.464					39.00	72.6842	-37.9	2834.7	0.013
	54.464 - 52.7457					39.00	73.1513	-38.5	2852.9	0.013
	52.7457 - 51.0273					39.00	73.6184	-39.0	2871.1	0.014
	51.0273 - 49.309					39.00	74.0855	-39.7	2889.3	0.014
	49.309 - 47.5907					39.00	74.5525	-40.3	2907.6	0.014
	47.5907 - 45.8724					39.00	75.0196	-40.8	2925.8	0.014
	45.8724 - 38.3802					39.00	77.0562	-21.5	3005.2	0.007
L5	45.8724 - 38.3802	TP62.5x53.5869x0.5	45'10-7/16"	0'	0.0	39.00	86.5592	-23.9	3375.8	0.007
	38.3802 - 36.3602					39.00	87.1821	-46.1	3400.1	0.014
	36.3602 - 34.3402					39.00	87.8049	-46.9	3424.4	0.014
	34.3402 - 32.3202					39.00	88.4278	-47.6	3448.7	0.014
	32.3202 - 30.3002					39.00	89.0507	-48.4	3473.0	0.014
	30.3002 - 28.2802					39.00	89.6736	-49.2	3497.3	0.014
	28.2802 - 26.2601					39.00	90.2965	-49.9	3521.6	0.014
	26.2601 - 24.2401					39.00	90.9194	-50.7	3545.9	0.014
	24.2401 - 22.2201					39.00	91.5423	-51.5	3570.2	0.014
	22.2201 - 20.2001					39.00	92.1651	-52.3	3594.4	0.015
	20.2001 - 18.1801					39.00	92.7880	-53.0	3618.7	0.015
	18.1801 - 16.1601					39.00	93.4109	-53.8	3643.0	0.015
	16.1601 - 14.1401					39.00	94.0338	-54.6	3667.3	0.015

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	14.1401 - 12.1201					39.00	94.6567	-55.4	3691.6	0.015
	12.1201 - 10.1001					39.00	95.2796	-56.2	3715.9	0.015
	10.1001 - 8.08004					39.00	95.9025	-57.0	3740.2	0.015
	8.08004 - 6.06003					39.00	96.5253	-57.9	3764.5	0.015
	6.06003 - 4.04002					39.00	97.1482	-58.7	3788.8	0.015
	4.04002 - 2.02001					39.00	97.7711	-59.5	3813.1	0.016
	2.02001 - 0					39.00	98.3940	-60.3	3837.4	0.016

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	185 - 183.401	TP36.0404x29x0.25	29.7	2.16	39.00	0.055	0.0	0.00	39.00	0.000
	183.401 - 181.803		46.0	3.27	39.00	0.084	0.0	0.00	39.00	0.000
	181.803 - 180.204		62.2	4.33	39.00	0.111	0.0	0.00	39.00	0.000
	180.204 - 178.606		78.8	5.36	39.00	0.137	0.0	0.00	39.00	0.000
	178.606 - 177.007		95.6	6.37	39.00	0.163	0.0	0.00	39.00	0.000
	177.007 - 175.409		112.7	7.35	39.00	0.188	0.0	0.00	39.00	0.000
	175.409 - 173.81		143.7	9.18	39.00	0.235	0.0	0.00	39.00	0.000
	173.81 - 172.212		170.4	10.67	39.00	0.273	0.0	0.00	39.00	0.000
	172.212 - 170.613		197.4	12.11	39.00	0.310	0.0	0.00	39.00	0.000
	170.613 - 169.015		224.7	13.51	39.00	0.346	0.0	0.00	39.00	0.000
	169.015 - 167.416		252.3	14.86	39.00	0.381	0.0	0.00	39.00	0.000
	167.416 - 165.817		281.3	16.25	39.00	0.417	0.0	0.00	39.00	0.000
	165.817 - 164.219		313.3	17.75	39.00	0.455	0.0	0.00	39.00	0.000
	164.219 - 162.62		348.0	19.34	39.00	0.496	0.0	0.00	39.00	0.000
	162.62 - 161.022		383.0	20.88	39.00	0.535	0.0	0.00	39.00	0.000
	161.022 - 159.423		418.3	22.38	39.00	0.574	0.0	0.00	39.00	0.000
	159.423 - 157.825		453.9	23.83	39.00	0.611	0.0	0.00	39.00	0.000
	157.825 - 156.226		489.7	25.24	39.00	0.647	0.0	0.00	39.00	0.000
	156.226 - 154.628		525.9	26.61	39.00	0.682	0.0	0.00	39.00	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	154.628 - 149.622		293.0	14.01	39.00	0.359	0.0	0.00	39.00	0.000
L2	154.628 - 149.622	TP42.4605x34.5443x0.3125	348.5	13.79	39.00	0.354	0.0	0.00	39.00	0.000
	149.622 - 147.978		680.1	26.43	39.00	0.678	0.0	0.00	39.00	0.000
	147.978 - 146.334		719.1	27.45	39.00	0.704	0.0	0.00	39.00	0.000
	146.334 - 144.69		764.9	28.67	39.00	0.735	0.0	0.00	39.00	0.000
	144.69 - 143.046		809.8	29.82	39.00	0.765	0.0	0.00	39.00	0.000
	143.046 - 141.402		855.0	30.93	39.00	0.793	0.0	0.00	39.00	0.000
	141.402 - 139.758		900.5	32.02	39.00	0.821	0.0	0.00	39.00	0.000
	139.758 - 138.114		946.3	33.07	39.00	0.848	0.0	0.00	39.00	0.000
	138.114 - 136.47		992.5	34.09	39.00	0.874	0.0	0.00	39.00	0.000
	136.47 - 134.826		1040.2	35.12	39.00	0.901	0.0	0.00	39.00	0.000
	134.826 - 133.181		1089.4	36.17	39.00	0.927	0.0	0.00	39.00	0.000
	133.181 - 131.537		1139.0	37.19	39.00	0.954	0.0	0.00	39.00	0.000
	131.537 - 129.893		1188.9	38.18	39.00	0.979	0.0	0.00	39.00	0.000
	129.893 - 128.249		1239.1	39.14	39.00	1.004	0.0	0.00	39.00	0.000
	128.249 - 126.605		1289.7	40.07	39.00	1.028	0.0	0.00	39.00	0.000
	126.605 - 124.961		1340.5	40.99	39.00	1.051	0.0	0.00	39.00	0.000
	124.961 - 123.317		1391.7	41.87	39.00	1.074	0.0	0.00	39.00	0.000
	123.317 - 121.673		1443.3	42.73	39.00	1.096	0.0	0.00	39.00	0.000
	121.673 - 120.029		1495.1	43.57	39.00	1.117	0.0	0.00	39.00	0.000
	120.029 - 114.221		785.3	21.66	39.00	0.555	0.0	0.00	39.00	0.000
L3	120.029 - 114.221	TP49.157x40.6978x0.375	895.9	21.32	39.00	0.547	0.0	0.00	39.00	0.000
	114.221 - 112.512		1736.9	40.67	39.00	1.043	0.0	0.00	39.00	0.000
	112.512 - 110.802		1792.9	41.32	39.00	1.059	0.0	0.00	39.00	0.000
	110.802 - 109.092		1849.3	41.94	39.00	1.075	0.0	0.00	39.00	0.000
	109.092 - 107.383		1906.0	42.56	39.00	1.091	0.0	0.00	39.00	0.000
	107.383 - 105.673		1963.3	43.15	39.00	1.106	0.0	0.00	39.00	0.000
	105.673 - 103.964		2020.8	43.73	39.00	1.121	0.0	0.00	39.00	0.000
	103.964 - 102.254		2078.8	44.30	39.00	1.136	0.0	0.00	39.00	0.000
	102.254 - 100.544		2137.0	44.85	39.00	1.150	0.0	0.00	39.00	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	100.544 - 98.8346		2195.6	45.39	39.00	1.164	0.0	0.00	39.00	0.000
	98.8346 - 97.125		2254.6	45.91	39.00	1.177	0.0	0.00	39.00	0.000
	97.125 - 95.4154		2313.8	46.42	39.00	1.190	0.0	0.00	39.00	0.000
	95.4154 - 93.7057		2373.5	46.91	39.00	1.203	0.0	0.00	39.00	0.000
	93.7057 - 91.9961		2433.4	47.40	39.00	1.215	0.0	0.00	39.00	0.000
	91.9961 - 90.2865		2493.8	47.87	39.00	1.227	0.0	0.00	39.00	0.000
	90.2865 - 88.5768		2554.4	48.32	39.00	1.239	0.0	0.00	39.00	0.000
	88.5768 - 86.8672		2615.4	48.77	39.00	1.250	0.0	0.00	39.00	0.000
	86.8672 - 85.1576		2676.7	49.20	39.00	1.262	0.0	0.00	39.00	0.000
	85.1576 - 83.4479		2738.4	49.63	39.00	1.273	0.0	0.00	39.00	0.000
	83.4479 - 76.8021		1414.3	24.28	39.00	0.623	0.0	0.00	39.00	0.000
L4	83.4479 - 76.8021	TP55.9285x47.1064x0.4375	1567.4	23.88	39.00	0.612	0.0	0.00	39.00	0.000
	76.8021 - 75.0838		3045.7	45.76	39.00	1.173	0.0	0.00	39.00	0.000
	75.0838 - 73.3655		3109.9	46.08	39.00	1.182	0.0	0.00	39.00	0.000
	73.3655 - 71.6471		3174.4	46.39	39.00	1.189	0.0	0.00	39.00	0.000
	71.6471 - 69.9288		3239.2	46.69	39.00	1.197	0.0	0.00	39.00	0.000
	69.9288 - 68.2105		3304.4	46.98	39.00	1.205	0.0	0.00	39.00	0.000
	68.2105 - 66.4922		3369.9	47.27	39.00	1.212	0.0	0.00	39.00	0.000
	66.4922 - 64.7739		3435.7	47.55	39.00	1.219	0.0	0.00	39.00	0.000
	64.7739 - 63.0556		3501.7	47.82	39.00	1.226	0.0	0.00	39.00	0.000
	63.0556 - 61.3372		3568.1	48.08	39.00	1.233	0.0	0.00	39.00	0.000
	61.3372 - 59.6189		3634.8	48.34	39.00	1.239	0.0	0.00	39.00	0.000
	59.6189 - 57.9006		3701.8	48.59	39.00	1.246	0.0	0.00	39.00	0.000
	57.9006 - 56.1823		3769.2	48.83	39.00	1.252	0.0	0.00	39.00	0.000
	56.1823 - 54.464		3836.8	49.07	39.00	1.258	0.0	0.00	39.00	0.000
	54.464 - 52.7457		3904.7	49.30	39.00	1.264	0.0	0.00	39.00	0.000
	52.7457 - 51.0273		3972.8	49.52	39.00	1.270	0.0	0.00	39.00	0.000
	51.0273 - 49.309		4041.4	49.74	39.00	1.275	0.0	0.00	39.00	0.000
	49.309 - 47.5907		4110.2	49.95	39.00	1.281	0.0	0.00	39.00	0.000
	47.5907 - 45.8724		4179.4	50.16	39.00	1.286	0.0	0.00	39.00	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	45.8724 - 38.3802		2151.4	24.47	39.00	0.627	0.0	0.00	39.00	0.000
L5	45.8724 - 38.3802	TP62.5x53.5869x0.5	2333.3	24.07	39.00	0.617	0.0	0.00	39.00	0.000
	38.3802 - 36.3602		4568.2	46.44	39.00	1.191	0.0	0.00	39.00	0.000
	36.3602 - 34.3402		4651.9	46.62	39.00	1.195	0.0	0.00	39.00	0.000
	34.3402 - 32.3202		4736.0	46.80	39.00	1.200	0.0	0.00	39.00	0.000
	32.3202 - 30.3002		4820.4	46.96	39.00	1.204	0.0	0.00	39.00	0.000
	30.3002 - 28.2802		4905.2	47.12	39.00	1.208	0.0	0.00	39.00	0.000
	28.2802 - 26.2601		4990.3	47.28	39.00	1.212	0.0	0.00	39.00	0.000
	26.2601 - 24.2401		5075.8	47.43	39.00	1.216	0.0	0.00	39.00	0.000
	24.2401 - 22.2201		5161.6	47.57	39.00	1.220	0.0	0.00	39.00	0.000
	22.2201 - 20.2001		5247.7	47.71	39.00	1.223	0.0	0.00	39.00	0.000
	20.2001 - 18.1801		5334.2	47.85	39.00	1.227	0.0	0.00	39.00	0.000
	18.1801 - 16.1601		5421.0	47.98	39.00	1.230	0.0	0.00	39.00	0.000
	16.1601 - 14.1401		5508.1	48.10	39.00	1.233	0.0	0.00	39.00	0.000
	14.1401 - 12.1201		5595.6	48.22	39.00	1.236	0.0	0.00	39.00	0.000
	12.1201 - 10.1001		5683.4	48.34	39.00	1.239	0.0	0.00	39.00	0.000
	10.1001 - 8.08004		5771.6	48.45	39.00	1.242	0.0	0.00	39.00	0.000
	8.08004 - 6.06003		5860.0	48.56	39.00	1.245	0.0	0.00	39.00	0.000
	6.06003 - 4.04002		5948.9	48.66	39.00	1.248	0.0	0.00	39.00	0.000
	4.04002 - 2.02001		6038.0	48.76	39.00	1.250	0.0	0.00	39.00	0.000
	2.02001 - 0		6127.5	48.86	39.00	1.253	0.0	0.00	39.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	185 - 183.401	TP36.0404x29x0.25	9.6	0.42	26.00	0.032	0.6	0.02	26.00	0.001
	183.401 - 181.803		10.1	0.43	26.00	0.033	0.8	0.03	26.00	0.001
	181.803 - 180.204		10.3	0.44	26.00	0.033	0.8	0.03	26.00	0.001
	180.204 - 178.606		10.4	0.44	26.00	0.034	0.8	0.03	26.00	0.001
	178.606 - 177.007		10.6	0.44	26.00	0.034	0.8	0.03	26.00	0.001

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	177.007 - 175.409		10.8	0.44	26.00	0.034	0.8	0.03	26.00	0.001
	175.409 - 173.81		16.6	0.68	26.00	0.052	0.8	0.02	26.00	0.001
	173.81 - 172.212		16.8	0.68	26.00	0.052	0.4	0.01	26.00	0.000
	172.212 - 170.613		17.0	0.68	26.00	0.052	0.4	0.01	26.00	0.000
	170.613 - 169.015		17.1	0.68	26.00	0.052	0.4	0.01	26.00	0.000
	169.015 - 167.416		17.3	0.68	26.00	0.052	0.4	0.01	26.00	0.000
	167.416 - 165.817		18.5	0.71	26.00	0.055	0.4	0.01	26.00	0.000
	165.817 - 164.219		21.6	0.83	26.00	0.064	0.4	0.01	26.00	0.000
	164.219 - 162.62		21.8	0.83	26.00	0.064	0.4	0.01	26.00	0.000
	162.62 - 161.022		22.0	0.83	26.00	0.064	0.4	0.01	26.00	0.000
	161.022 - 159.423		22.2	0.83	26.00	0.063	0.4	0.01	26.00	0.000
	159.423 - 157.825		22.3	0.82	26.00	0.063	0.4	0.01	26.00	0.000
	157.825 - 156.226		22.5	0.82	26.00	0.063	0.4	0.01	26.00	0.000
	156.226 - 154.628		22.8	0.82	26.00	0.063	0.5	0.01	26.00	0.000
	154.628 - 149.622		10.8	0.38	26.00	0.029	0.2	0.01	26.00	0.000
L2	154.628 - 149.622	TP42.4605x34.5443x0.3125	12.6	0.36	26.00	0.028	0.3	0.01	26.00	0.000
	149.622 - 147.978		23.6	0.67	26.00	0.051	0.5	0.01	26.00	0.000
	147.978 - 146.334		23.8	0.67	26.00	0.051	0.5	0.01	26.00	0.000
	146.334 - 144.69		27.2	0.76	26.00	0.058	0.5	0.01	26.00	0.000
	144.69 - 143.046		27.4	0.76	26.00	0.058	0.5	0.01	26.00	0.000
	143.046 - 141.402		27.6	0.76	26.00	0.058	0.5	0.01	26.00	0.000
	141.402 - 139.758		27.8	0.75	26.00	0.058	0.5	0.01	26.00	0.000
	139.758 - 138.114		28.0	0.75	26.00	0.058	0.5	0.01	26.00	0.000
	138.114 - 136.47		28.2	0.75	26.00	0.058	0.5	0.01	26.00	0.000
	136.47 - 134.826		29.9	0.79	26.00	0.061	0.5	0.01	26.00	0.000
	134.826 - 133.181		30.0	0.79	26.00	0.061	0.5	0.01	26.00	0.000
	133.181 - 131.537		30.2	0.79	26.00	0.061	0.5	0.01	26.00	0.000
	131.537 - 129.893		30.4	0.79	26.00	0.060	0.5	0.01	26.00	0.000
	129.893 - 128.249		30.6	0.78	26.00	0.060	0.5	0.01	26.00	0.000
	128.249 - 126.605		30.8	0.78	26.00	0.060	0.6	0.01	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	126.605 - 124.961		31.0	0.78	26.00	0.060	0.6	0.01	26.00	0.000
	124.961 - 123.317		31.2	0.78	26.00	0.060	0.6	0.01	26.00	0.000
	123.317 - 121.673		31.4	0.78	26.00	0.060	0.6	0.01	26.00	0.000
	121.673 - 120.029		31.6	0.78	26.00	0.060	0.6	0.01	26.00	0.000
	120.029 - 114.221		15.4	0.37	26.00	0.028	0.3	0.00	26.00	0.000
L3	120.029 - 114.221	TP49.157x40.6978x0.375	17.1	0.35	26.00	0.027	0.3	0.00	26.00	0.000
	114.221 - 112.512		32.7	0.66	26.00	0.051	0.6	0.01	26.00	0.000
	112.512 - 110.802		32.9	0.66	26.00	0.050	0.6	0.01	26.00	0.000
	110.802 - 109.092		33.1	0.65	26.00	0.050	0.6	0.01	26.00	0.000
	109.092 - 107.383		33.3	0.65	26.00	0.050	0.6	0.01	26.00	0.000
	107.383 - 105.673		33.6	0.65	26.00	0.050	0.5	0.01	26.00	0.000
	105.673 - 103.964		33.8	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	103.964 - 102.254		34.0	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	102.254 - 100.544		34.2	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	100.544 - 98.8346		34.4	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	98.8346 - 97.125		34.6	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	97.125 - 95.4154		34.8	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	95.4154 - 93.7057		35.0	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	93.7057 - 91.9961		35.2	0.65	26.00	0.050	0.4	0.00	26.00	0.000
	91.9961 - 90.2865		35.4	0.64	26.00	0.050	0.4	0.00	26.00	0.000
	90.2865 - 88.5768		35.6	0.64	26.00	0.049	0.4	0.00	26.00	0.000
	88.5768 - 86.8672		35.8	0.64	26.00	0.049	0.4	0.00	26.00	0.000
	86.8672 - 85.1576		36.0	0.64	26.00	0.049	0.4	0.00	26.00	0.000
	85.1576 - 83.4479		36.2	0.64	26.00	0.049	0.4	0.00	26.00	0.000
	83.4479 - 76.8021		17.8	0.31	26.00	0.024	0.2	0.00	26.00	0.000
L4	83.4479 - 76.8021	TP55.9285x47.1064x0.4375	19.3	0.29	26.00	0.022	0.2	0.00	26.00	0.000
	76.8021 - 75.0838		37.3	0.56	26.00	0.043	0.4	0.00	26.00	0.000
	75.0838 - 73.3655		37.5	0.55	26.00	0.043	0.4	0.00	26.00	0.000
	73.3655 - 71.6471		37.7	0.55	26.00	0.043	0.4	0.00	26.00	0.000
	71.6471 - 69.9288		37.8	0.55	26.00	0.042	0.4	0.00	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	69.9288 - 68.2105		38.0	0.55	26.00	0.042	0.4	0.00	26.00	0.000
	68.2105 - 66.4922		38.2	0.55	26.00	0.042	0.4	0.00	26.00	0.000
	66.4922 - 64.7739		38.4	0.55	26.00	0.042	0.5	0.00	26.00	0.000
	64.7739 - 63.0556		38.6	0.55	26.00	0.042	0.5	0.00	26.00	0.000
	63.0556 - 61.3372		38.7	0.55	26.00	0.042	0.5	0.00	26.00	0.000
	61.3372 - 59.6189		38.9	0.55	26.00	0.042	0.5	0.00	26.00	0.000
	59.6189 - 57.9006		39.1	0.54	26.00	0.042	0.5	0.00	26.00	0.000
	57.9006 - 56.1823		39.3	0.54	26.00	0.042	0.5	0.00	26.00	0.000
	56.1823 - 54.464		39.4	0.54	26.00	0.042	0.5	0.00	26.00	0.000
	54.464 - 52.7457		39.6	0.54	26.00	0.042	0.5	0.00	26.00	0.000
	52.7457 - 51.0273		39.8	0.54	26.00	0.042	0.5	0.00	26.00	0.000
	51.0273 - 49.309		40.0	0.54	26.00	0.042	0.5	0.00	26.00	0.000
	49.309 - 47.5907		40.2	0.54	26.00	0.041	0.4	0.00	26.00	0.000
	47.5907 - 45.8724		40.3	0.54	26.00	0.041	0.4	0.00	26.00	0.000
	45.8724 - 38.3802		20.0	0.26	26.00	0.020	0.2	0.00	26.00	0.000
L5	45.8724 - 38.3802	TP62.5x53.5869x0.5	21.2	0.25	26.00	0.019	0.2	0.00	26.00	0.000
	38.3802 - 36.3602		41.4	0.47	26.00	0.037	0.4	0.00	26.00	0.000
	36.3602 - 34.3402		41.6	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	34.3402 - 32.3202		41.7	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	32.3202 - 30.3002		41.9	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	30.3002 - 28.2802		42.1	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	28.2802 - 26.2601		42.2	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	26.2601 - 24.2401		42.4	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	24.2401 - 22.2201		42.6	0.47	26.00	0.036	0.4	0.00	26.00	0.000
	22.2201 - 20.2001		42.7	0.46	26.00	0.036	0.4	0.00	26.00	0.000
	20.2001 - 18.1801		42.9	0.46	26.00	0.036	0.4	0.00	26.00	0.000
	18.1801 - 16.1601		43.1	0.46	26.00	0.035	0.4	0.00	26.00	0.000
	16.1601 - 14.1401		43.2	0.46	26.00	0.035	0.4	0.00	26.00	0.000
	14.1401 - 12.1201		43.4	0.46	26.00	0.035	0.4	0.00	26.00	0.000
	12.1201 - 10.1001		43.6	0.46	26.00	0.035	0.4	0.00	26.00	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	10.1001 - 8.08004		43.7	0.46	26.00	0.035	0.4	0.00	26.00	0.000
	8.08004 - 6.06003		43.9	0.45	26.00	0.035	0.5	0.00	26.00	0.000
	6.06003 - 4.04002		44.1	0.45	26.00	0.035	0.5	0.00	26.00	0.000
	4.04002 - 2.02001		44.2	0.45	26.00	0.035	0.5	0.00	26.00	0.000
	2.02001 - 0		44.4	0.45	26.00	0.035	0.5	0.00	26.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
L1	185 - 183.401	0.002	0.055	0.000	0.032	0.001	0.058 ✔	1.333	H1-3+VT ✔
	183.401 - 181.803	0.003	0.084	0.000	0.033	0.001	0.087 ✔	1.333	H1-3+VT ✔
	181.803 - 180.204	0.003	0.111	0.000	0.033	0.001	0.114 ✔	1.333	H1-3+VT ✔
	180.204 - 178.606	0.003	0.137	0.000	0.034	0.001	0.141 ✔	1.333	H1-3+VT ✔
	178.606 - 177.007	0.003	0.163	0.000	0.034	0.001	0.167 ✔	1.333	H1-3+VT ✔
	177.007 - 175.409	0.003	0.188	0.000	0.034	0.001	0.192 ✔	1.333	H1-3+VT ✔
	175.409 - 173.81	0.006	0.235	0.000	0.052	0.001	0.242 ✔	1.333	H1-3+VT ✔
	173.81 - 172.212	0.006	0.273	0.000	0.052	0.000	0.280 ✔	1.333	H1-3+VT ✔
	172.212 - 170.613	0.006	0.310	0.000	0.052	0.000	0.317 ✔	1.333	H1-3+VT ✔
	170.613 - 169.015	0.006	0.346	0.000	0.052	0.000	0.353 ✔	1.333	H1-3+VT ✔
	169.015 - 167.416	0.006	0.381	0.000	0.052	0.000	0.388 ✔	1.333	H1-3+VT ✔
	167.416 - 165.817	0.007	0.417	0.000	0.055	0.000	0.424 ✔	1.333	H1-3+VT ✔
	165.817 - 164.219	0.008	0.455	0.000	0.064	0.000	0.464 ✔	1.333	H1-3+VT ✔
	164.219 - 162.62	0.008	0.496	0.000	0.064	0.000	0.505 ✔	1.333	H1-3+VT ✔
	162.62 - 161.022	0.008	0.535	0.000	0.064	0.000	0.545 ✔	1.333	H1-3+VT ✔
	161.022 - 159.423	0.008	0.574	0.000	0.063	0.000	0.583 ✔	1.333	H1-3+VT ✔
	159.423 - 157.825	0.009	0.611	0.000	0.063	0.000	0.621 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
	157.825 - 156.226	0.009	0.647	0.000	0.063	0.000	0.657 ✔	1.333	H1-3+VT ✔
	156.226 - 154.628	0.009	0.682	0.000	0.063	0.000	0.692 ✔	1.333	H1-3+VT ✔
	154.628 - 149.622	0.004	0.359	0.000	0.029	0.000	0.364 ✔	1.333	H1-3+VT ✔
L2	154.628 - 149.622	0.004	0.354	0.000	0.028	0.000	0.358 ✔	1.333	H1-3+VT ✔
	149.622 - 147.978	0.008	0.678	0.000	0.051	0.000	0.686 ✔	1.333	H1-3+VT ✔
	147.978 - 146.334	0.008	0.704	0.000	0.051	0.000	0.712 ✔	1.333	H1-3+VT ✔
	146.334 - 144.69	0.009	0.735	0.000	0.058	0.000	0.745 ✔	1.333	H1-3+VT ✔
	144.69 - 143.046	0.009	0.765	0.000	0.058	0.000	0.775 ✔	1.333	H1-3+VT ✔
	143.046 - 141.402	0.010	0.793	0.000	0.058	0.000	0.804 ✔	1.333	H1-3+VT ✔
	141.402 - 139.758	0.010	0.821	0.000	0.058	0.000	0.831 ✔	1.333	H1-3+VT ✔
	139.758 - 138.114	0.010	0.848	0.000	0.058	0.000	0.859 ✔	1.333	H1-3+VT ✔
	138.114 - 136.47	0.010	0.874	0.000	0.058	0.000	0.885 ✔	1.333	H1-3+VT ✔
	136.47 - 134.826	0.010	0.901	0.000	0.061	0.000	0.912 ✔	1.333	H1-3+VT ✔
	134.826 - 133.181	0.010	0.927	0.000	0.061	0.000	0.939 ✔	1.333	H1-3+VT ✔
	133.181 - 131.537	0.011	0.954	0.000	0.061	0.000	0.965 ✔	1.333	H1-3+VT ✔
	131.537 - 129.893	0.011	0.979	0.000	0.060	0.000	0.991 ✔	1.333	H1-3+VT ✔
	129.893 - 128.249	0.011	1.004	0.000	0.060	0.000	1.015 ✔	1.333	H1-3+VT ✔
	128.249 - 126.605	0.011	1.028	0.000	0.060	0.000	1.039 ✔	1.333	H1-3+VT ✔
	126.605 - 124.961	0.011	1.051	0.000	0.060	0.000	1.063 ✔	1.333	H1-3+VT ✔
	124.961 - 123.317	0.011	1.074	0.000	0.060	0.000	1.086 ✔	1.333	H1-3+VT ✔
	123.317 - 121.673	0.011	1.096	0.000	0.060	0.000	1.108 ✔	1.333	H1-3+VT ✔
	121.673 - 120.029	0.011	1.117	0.000	0.060	0.000	1.130 ✔	1.333	H1-3+VT ✔
	120.029 - 114.221	0.006	0.555	0.000	0.028	0.000	0.561 ✔	1.333	H1-3+VT ✔
L3	120.029 - 114.221	0.006	0.547	0.000	0.027	0.000	0.553 ✔	1.333	H1-3+VT ✔
	114.221 - 112.512	0.011	1.043	0.000	0.051	0.000	1.054 ✔	1.333	H1-3+VT ✔
	112.512 - 110.802	0.011	1.059	0.000	0.050	0.000	1.071 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
	110.802 - 109.092	0.011	1.075	0.000	0.050	0.000	1.087 ✔	1.333	H1-3+VT ✔
	109.092 - 107.383	0.011	1.091	0.000	0.050	0.000	1.103 ✔	1.333	H1-3+VT ✔
	107.383 - 105.673	0.011	1.106	0.000	0.050	0.000	1.118 ✔	1.333	H1-3+VT ✔
	105.673 - 103.964	0.011	1.121	0.000	0.050	0.000	1.133 ✔	1.333	H1-3+VT ✔
	103.964 - 102.254	0.011	1.136	0.000	0.050	0.000	1.148 ✔	1.333	H1-3+VT ✔
	102.254 - 100.544	0.012	1.150	0.000	0.050	0.000	1.162 ✔	1.333	H1-3+VT ✔
	100.544 - 98.8346	0.012	1.164	0.000	0.050	0.000	1.176 ✔	1.333	H1-3+VT ✔
	98.8346 - 97.125	0.012	1.177	0.000	0.050	0.000	1.190 ✔	1.333	H1-3+VT ✔
	97.125 - 95.4154	0.012	1.190	0.000	0.050	0.000	1.203 ✔	1.333	H1-3+VT ✔
	95.4154 - 93.7057	0.012	1.203	0.000	0.050	0.000	1.215 ✔	1.333	H1-3+VT ✔
	93.7057 - 91.9961	0.012	1.215	0.000	0.050	0.000	1.228 ✔	1.333	H1-3+VT ✔
	91.9961 - 90.2865	0.012	1.227	0.000	0.050	0.000	1.240 ✔	1.333	H1-3+VT ✔
	90.2865 - 88.5768	0.012	1.239	0.000	0.049	0.000	1.252 ✔	1.333	H1-3+VT ✔
	88.5768 - 86.8672	0.012	1.250	0.000	0.049	0.000	1.264 ✔	1.333	H1-3+VT ✔
	86.8672 - 85.1576	0.013	1.262	0.000	0.049	0.000	1.275 ✔	1.333	H1-3+VT ✔
	85.1576 - 83.4479	0.013	1.273	0.000	0.049	0.000	1.286 ✔	1.333	H1-3+VT ✔
	83.4479 - 76.8021	0.006	0.623	0.000	0.024	0.000	0.629 ✔	1.333	H1-3+VT ✔
L4	83.4479 - 76.8021	0.006	0.612	0.000	0.022	0.000	0.619 ✔	1.333	H1-3+VT ✔
	76.8021 - 75.0838	0.012	1.173	0.000	0.043	0.000	1.186 ✔	1.333	H1-3+VT ✔
	75.0838 - 73.3655	0.012	1.182	0.000	0.043	0.000	1.194 ✔	1.333	H1-3+VT ✔
	73.3655 - 71.6471	0.012	1.189	0.000	0.043	0.000	1.202 ✔	1.333	H1-3+VT ✔
	71.6471 - 69.9288	0.012	1.197	0.000	0.042	0.000	1.210 ✔	1.333	H1-3+VT ✔
	69.9288 - 68.2105	0.013	1.205	0.000	0.042	0.000	1.218 ✔	1.333	H1-3+VT ✔
	68.2105 - 66.4922	0.013	1.212	0.000	0.042	0.000	1.225 ✔	1.333	H1-3+VT ✔
	66.4922 - 64.7739	0.013	1.219	0.000	0.042	0.000	1.232 ✔	1.333	H1-3+VT ✔
	64.7739 - 63.0556	0.013	1.226	0.000	0.042	0.000	1.239 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	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
	63.0556 - 61.3372	0.013	1.233	0.000	0.042	0.000	1.246 ✔	1.333	H1-3+VT ✔
	61.3372 - 59.6189	0.013	1.239	0.000	0.042	0.000	1.253 ✔	1.333	H1-3+VT ✔
	59.6189 - 57.9006	0.013	1.246	0.000	0.042	0.000	1.259 ✔	1.333	H1-3+VT ✔
	57.9006 - 56.1823	0.013	1.252	0.000	0.042	0.000	1.266 ✔	1.333	H1-3+VT ✔
	56.1823 - 54.464	0.013	1.258	0.000	0.042	0.000	1.272 ✔	1.333	H1-3+VT ✔
	54.464 - 52.7457	0.013	1.264	0.000	0.042	0.000	1.278 ✔	1.333	H1-3+VT ✔
	52.7457 - 51.0273	0.014	1.270	0.000	0.042	0.000	1.284 ✔	1.333	H1-3+VT ✔
	51.0273 - 49.309	0.014	1.275	0.000	0.042	0.000	1.290 ✔	1.333	H1-3+VT ✔
	49.309 - 47.5907	0.014	1.281	0.000	0.041	0.000	1.295 ✔	1.333	H1-3+VT ✔
	47.5907 - 45.8724	0.014	1.286	0.000	0.041	0.000	1.301 ✔	1.333	H1-3+VT ✔
	45.8724 - 38.3802	0.007	0.627	0.000	0.020	0.000	0.635 ✔	1.333	H1-3+VT ✔
L5	45.8724 - 38.3802	0.007	0.617	0.000	0.019	0.000	0.624 ✔	1.333	H1-3+VT ✔
	38.3802 - 36.3602	0.014	1.191	0.000	0.037	0.000	1.205 ✔	1.333	H1-3+VT ✔
	36.3602 - 34.3402	0.014	1.195	0.000	0.036	0.000	1.209 ✔	1.333	H1-3+VT ✔
	34.3402 - 32.3202	0.014	1.200	0.000	0.036	0.000	1.214 ✔	1.333	H1-3+VT ✔
	32.3202 - 30.3002	0.014	1.204	0.000	0.036	0.000	1.218 ✔	1.333	H1-3+VT ✔
	30.3002 - 28.2802	0.014	1.208	0.000	0.036	0.000	1.223 ✔	1.333	H1-3+VT ✔
	28.2802 - 26.2601	0.014	1.212	0.000	0.036	0.000	1.227 ✔	1.333	H1-3+VT ✔
	26.2601 - 24.2401	0.014	1.216	0.000	0.036	0.000	1.231 ✔	1.333	H1-3+VT ✔
	24.2401 - 22.2201	0.014	1.220	0.000	0.036	0.000	1.235 ✔	1.333	H1-3+VT ✔
	22.2201 - 20.2001	0.015	1.223	0.000	0.036	0.000	1.238 ✔	1.333	H1-3+VT ✔
	20.2001 - 18.1801	0.015	1.227	0.000	0.036	0.000	1.242 ✔	1.333	H1-3+VT ✔
	18.1801 - 16.1601	0.015	1.230	0.000	0.035	0.000	1.245 ✔	1.333	H1-3+VT ✔
	16.1601 - 14.1401	0.015	1.233	0.000	0.035	0.000	1.249 ✔	1.333	H1-3+VT ✔
	14.1401 - 12.1201	0.015	1.236	0.000	0.035	0.000	1.252 ✔	1.333	H1-3+VT ✔
	12.1201 - 10.1001	0.015	1.239	0.000	0.035	0.000	1.255 ✔	1.333	H1-3+VT ✔

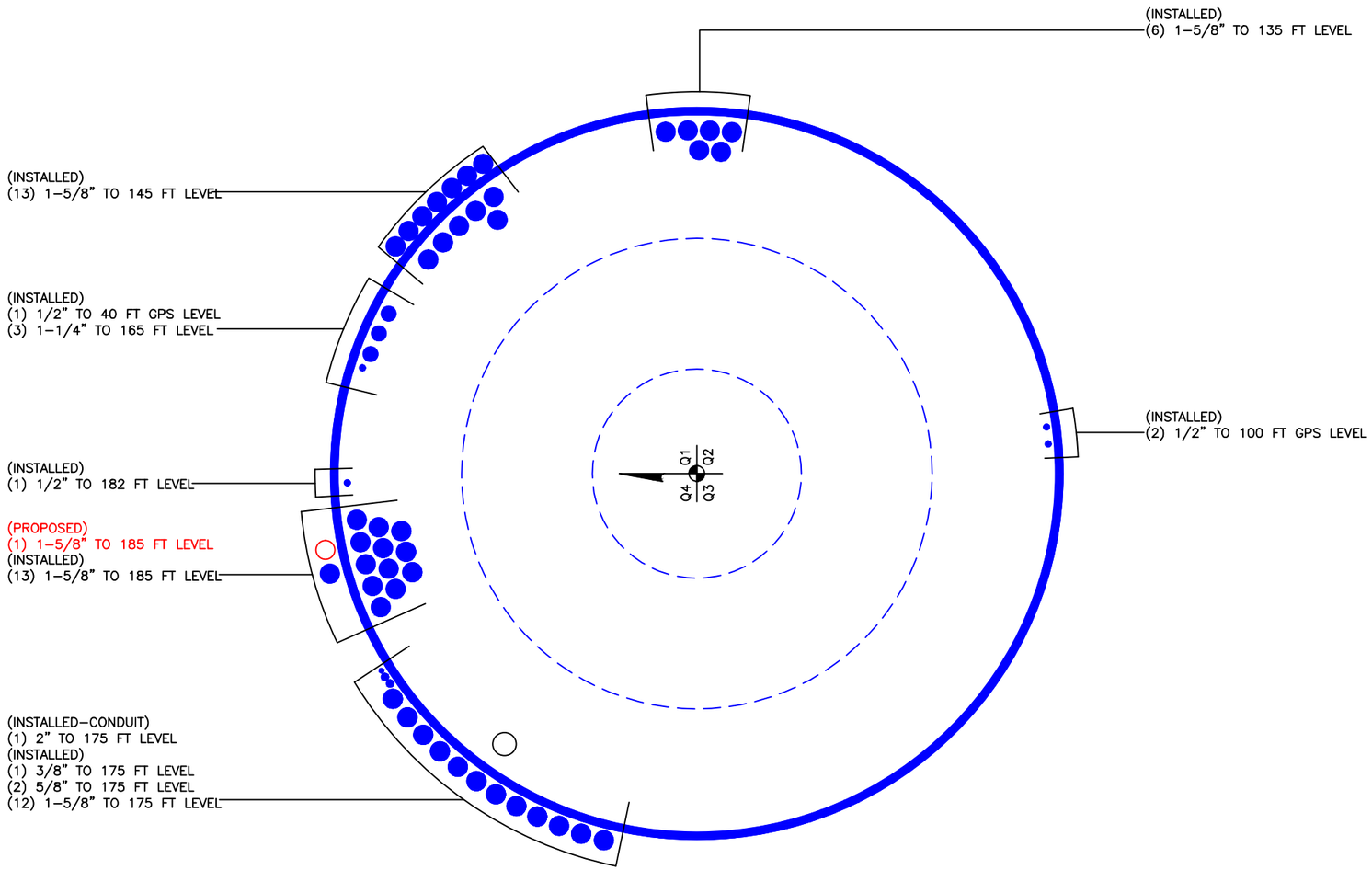
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	10.1001 - 8.08004	0.015	1.242	0.000	0.035	0.000	1.258 ✔	1.333	H1-3+VT ✔
	8.08004 - 6.06003	0.015	1.245	0.000	0.035	0.000	1.261 ✔	1.333	H1-3+VT ✔
	6.06003 - 4.04002	0.015	1.248	0.000	0.035	0.000	1.264 ✔	1.333	H1-3+VT ✔
	4.04002 - 2.02001	0.016	1.250	0.000	0.035	0.000	1.266 ✔	1.333	H1-3+VT ✔
	2.02001 - 0	0.016	1.253	0.000	0.035	0.000	1.269 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	185 - 149.622	Pole	TP36.0404x29x0.25	1	-9.4	1435.3	51.9	Pass
L2	149.622 - 114.221	Pole	TP42.4605x34.5443x0.3125	2	-18.0	2114.7	84.7	Pass
L3	114.221 - 76.8021	Pole	TP49.157x40.6978x0.375	3	-27.9	2938.0	96.5	Pass
L4	76.8021 - 38.3802	Pole	TP55.9285x47.1064x0.4375	4	-40.8	3900.1	97.6	Pass
L5	38.3802 - 0	Pole	TP62.5x53.5869x0.5	5	-60.3	5115.2	95.2	Pass
							Summary	
						Pole (L4)	97.6	Pass
						RATING =	**97.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806354 TOWER ID: C_BASELEVEL

BASE LEVEL DRAWING

NOT TO SCALE | 1

PLOT DATE: 11/12/2015 FILE NAME: 806354-BASELEVEL.dwg

rf R:\Standards – URE\CAD Standards V5.0\Templates\Typical Blocks For Templates\TITLE BLOCK STD–VER 5.1.dwa

CROWN REGION ADDRESS

USA

21/05/12	APPLICATION ADDED PER WORK ORDER # 497389	AM
26/09/13	UPDATED PER WORK ORDER # 650075	JF
11/10/13	UPDATED PER WORK ORDER # 659639	ESG
29/05/14	UPDATED PER WORK ORDER # 773803	JF
27/01/15	UPDATED PER WORK ORDER # 1000314	TDG
8/4/2015	UPDATED PER WORK ORDER 1040576	ZMK
14/7/2015	UPDATED PER WORK ORDER 1082978	SLW
[illegible]	UPDATED PER WORK ORDER 1102143,1089147	[illegible]

DRAWN BY: **CDR**
CHECKED BY:
DRAWING DATE: **18/07/05**

SITE NUMBER:
SITE NAME:

SITE NAME

BRG 123 943084

BUSINESS UNIT NUMBER

806354

SITE ADDRESS

ROUTE 34 - WASHINGTON AVEN
NEWTOWN, CT 06482
FAIRFIELD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#:	*806354*
Site Name:	*BRG 123 943084*
App #:	*320744 Rev 1*
Pole Manufacturer:	*Other*

Reactions		
Moment:	6128	ft-kips
Axial:	60	kips
Shear:	44	kips

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	73	in

Plate Data		
Diam:	79	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	8.27	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	15	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	62.5	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

		Stiffened
Maximum Rod Tension:	165.4 Kips	Service, ASD
Allowable Tension:	195.0 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	84.8% **Pass**	

Base Plate Results

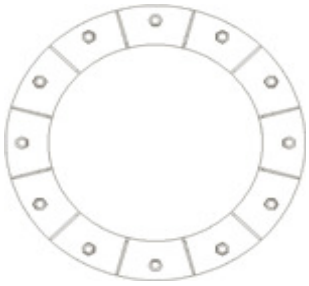
	Flexural Check	Stiffened
Base Plate Stress:	30.8 ksi	Service, ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	51.3% **Pass**	Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld :	88.2% **Pass**
Vertical Weld:	61.0% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	31.1% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	63.9% **Pass**
Plate Comp. (AISC Bracket):	82.3% **Pass**

Pole Results

Pole Punching Shear Check:	15.3% **Pass**



* 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#: *806354*
Site Name: *BRG 123 943084*
App #: *320744 Rev 1*

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	60	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	44	kips
Unfactored WL Moment, M:	6128	ft-kips

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

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	72	kips
0.90	0.9D+1.6W, Pu:	54	kips
1.35	Vu:	59.4	kips
	Mu:	8272.8	ft-kips

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	6	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	28	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	8	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	64.00	ft^2
Pier Height:	4.00	ft
Soil (above pad) Height:	3.00	ft

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	873.22	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	8609.40	ft-kips

Soil Parameters		
Unit Weight, γ:	128.0	pcf
Ultimate Bearing Capacity, qn:	12.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	34.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	9.00	ksf
Passive Pres. Coeff., Kp	3.54	

Orthogonal Direction:

ecc1 = M1/P1 =	9.86	ft
Orthogonal qu=	3.77	ksf
qu/ϕ*qn Ratio=	**41.84%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	6.97	ft
Diagonal qu=	4.42	ksf
qu/ϕ*qn Ratio=	**49.09%**	**Pass**

Run <-- Press Upon Completing All Input

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	59.4	kips
Pad Force Location Above D:	1.33	ft
ϕ(Passive Pressure Moment):	79.20	ft-kips
Factored O.T. M(WL), "1.6W":	8688.6	ft-kips
Factored OT (MW-Msoil), M1	8609.40	ft-kips

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	682.90	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	8423.07	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	2.02	ft
Sum of Soil Wedges Wt:	31.10	kips
Soil Wedges ecc, K1:	6.66	ft
Ftg+Soil above Pad wt:	667.7	kips
Unfactored (Total ftg-soil Wt):	698.78	kips
1.2D. **No Soil Wedges**.	873.22	kips
0.9D. **With Soil Wedges**	682.90	kips

Orthogonal ecc3 = M2/P2 =	12.33	ft
Ortho Non Bearing Length,NBL=	24.67	ft
Orthogonal qu=	7.32	ksf
Diagonal qu=	6.13	ksf

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating

Actual M:	6128.00		
M Orthogonal:	6285.29	**97.50%**	**Pass**
M Diagonal:	6285.29	**97.50%**	**Pass**

Project Name:	BRG 123 943084	JACOBS® Jacobs Engineering Group, Inc.	Created On: 6/3/2014
Project Number:	BU#806354		Checked By: DW
Job Number:	WO#1153594		Revised On: 3/4/2015
Date:	11/18/2015		Revision No.: 1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load		
Code	F	
Axial	60	kips
Shear	44	kips
Moment	6128	k-ft
Soil Unit Weight	128	pcf
Friction Angle	34	
Cohesion	0	psf

Material		
Concrete Strength (F'c)	4000	psi
Concrete Density	150	pcf
Rebar Tensile (Fy)	60	ksi
Clear Cover	3	in

Pad		
Thickness	3	ft
Bearing Depth	6	ft
Width	28	ft
Rebar Size	9	
Rebar Quantity	45	

Pier		
Pier type	Square	
Width	8	ft
Height above Grade	1	ft
Rebar Size	9	
Rebar Quantity	48	
Tie Size	4	
Tie C/C Spacing	10.5	in

Structural Checks

Pad Beam Shear Capacity	998.0	kips
Pad Beam Shear	477.4	kips
Pad Beam Shear Check	47.8%	Pass

Pad Bending Moment Capacity	6100.6	k-ft
Pad Bending Moment	4295.3	k-ft
Pad Bending Moment Check	70.4%	Pass

Punching Shear Capacity	3025.0	kips
Punching Shear	463.7	kips
Punching Shear Check	15.3%	Pass

Pad-Pier Bearing Capacity	40734.7	kips
Pad-Pier Bearing	873.2	kips
Pad-Pier Bearing Check	2.1%	Pass

Pier Beam Shear Capacity	942.4	kips
Pier Beam Shear	59.4	kips
Pier Beam Shear Check	6.3%	Pass

Pier Bending Moment Capacity	9885.4	k-ft
Pier Bending Moment	8501.0	k-ft
Pier Bending Moment Check	86.0%	Pass