Robinson + Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts

August 7, 2014

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

Re: **Notice of Exempt Modification – Facility Modification**
400 Main Street, Somers, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 179-foot level on the existing 187-foot tower at 400 Main Street in Somers, Connecticut (the "Property"). The tower is owned by Crown Castle. The Council approved Cellco's use of this tower in 2005. Cellco now intends to modify its facility by replacing three of its antennas with three (3) model LNX-6513DS-VTM, 700 MHz antennas, at the 179-foot level on the tower. Cellco also intends to install three (3) remote radio heads ("RRHs") behind its 700 MHz antennas and one (1) HYBRIFLEX™ 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 Lisa Pellegrini, First Selectman of the Town of Somers. The Town of Somers is the owner of the Property.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be installed at the 179-foot level of the existing 187-foot tower.

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3). The additional antennas and remote radio heads called out in the Proposed Antenna and Cable Information table on page 3 of the Structural Report were previously approved by the Council as a part of EM-VER-129-140224. That work has not yet been completed but will be completed together with the improvements described above.

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:
Lisa Pellegrini, Somers First Selectman
Sandy M. Carter

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

LNX-6513DS-VTM

Andrew® Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Extended tilt range offers better coverage
- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Gain, dBi	14.6	15.1
Beamwidth, Horizontal, degrees	65	65
Beamwidth, Horizontal Tolerance, degrees	±3	±3
Beamwidth, Vertical, degrees	16.0	14.5
Beam Tilt, degrees	0–10	0–10
USLS, typical, dB	20	20
Front-to-Back Ratio at 180°, dB	30	30
CPR at Boresight, dB	12	12
CPR at Sector, dB	10	10
Isolation, dB	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol®
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	698 – 896 MHz

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity, total	2
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
Wind Loading, maximum	437.9 N @ 150 km/h 98.4 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in

Product Specifications

LNX-6513DS-VTM

Length	1390.0 mm | 54.7 in
Width	301.0 mm | 11.9 in
Net Weight	14.1 kg | 31.1 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	LNX-6513DS-R2M
Model with Factory Installed AISG 2.0 Actuator	LNX-6513DS-A1M
RET System	Teletilt®

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

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets and double nuts.

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

Alcatel-Lucent RRH2x40-07-U

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-07-U is a high-power, small form-factor Remote Radio Head (RRH) operating in the North American Digital Dividend / 700MHz frequency band (3GPP Band 13). The Alcatel-Lucent RRH2x40-07-U is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.

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

The Alcatel-Lucent RRH2x40-07-U is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-07-U has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to two-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 10 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-07-U is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-07-U installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-07-U is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-07-U is compact and weights less than 23 kg (50 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

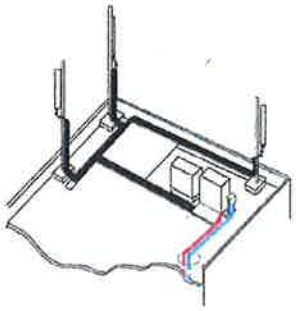
Because of its small size and weight, the Alcatel-Lucent RRH2x40-07-U can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-07-U where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-07-U provides more RF power while at the same time consuming less electricity.

Features

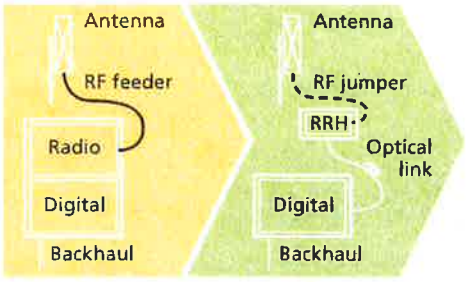
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless), noise-free, and heaterless unit
- Best-in-class power efficiency, with significantly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

Benefits

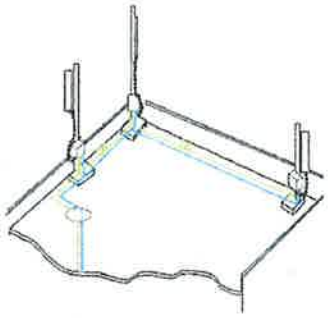
- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility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



Macro



RRH for space-constrained cell sites



Distributed

Technical specifications

Physical dimensions

- Height: 390 mm (15.4 in.)
- Width: 380 mm (15 in.)
- Depth: 210 mm (8.2 in.)
- Weight (without mounting kit): less than 23 kg (50 lb)

Power

- Power supply: -48V

Operating environment

- Outdoor temperature range:
  - ¬ With solar load: -40°C to +50°C (-40°F to +122°F)
  - ¬ Without solar load: -40°C to +55°C (-40°F to +131°F)
- Passive convection cooling (no fans)
- Enclosure protection
  - ¬ IP65 (International Protection rating)

RF characteristics

- Frequency band: 700 MHz; 3GPP Band 13
- Bandwidth: up to 10 MHz
- RF output power at antenna port:
  - ¬ 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way
- Noise figure: below 2.5 dB typical
- ALD features
  - ¬ TMA
  - ¬ Remote electrical tilt (RET) support (AISG v2.0)

Optical characteristics

Type/number of fibers

- Up to 3.12 Gb/s line bit rate
- Single-mode variant
  - ¬ One SM fiber (9/125 µm) per RRH2x, carrying UL and DL using CWDM (at 1550/1310 nm)
- Multi-mode variant
  - ¬ Two MM fibers (50/125 µm) per RRH2x: one carrying UL, the other carrying DL (at 850 nm)

Optical fiber length

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

Alarms and ports

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

CPG2809100913 (09)

Alcatel·Lucent

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)

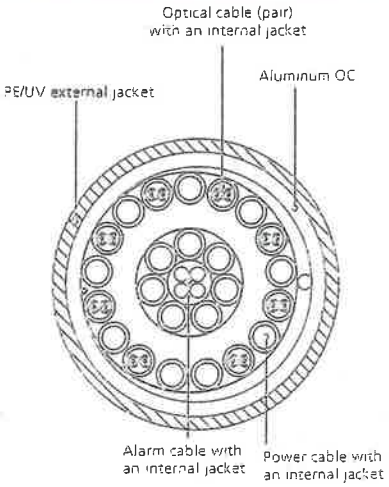


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Somers 2								
Tower Height: 187ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Sprint CDMA/LTE	2	347.5	190	0.0069	1900	1.0000	0.69%	
*Sprint CDMA/LTE	1	195	190	0.0019	850	0.5667	0.34%	
*Sprint CDMA/LTE	2	195	190	0.0039	2500	1.0000	0.39%	
*Pocket (now MetroPCS)	3	631	150	0.0303	2130	1.0000	3.03%	
*AT&T UMTS	2	1077	160	0.0303	1900	1.0000	3.03%	
*AT&T UMTS	2	565	160	0.0159	880	0.5867	2.71%	
*AT&T GSM	1	283	160	0.0040	880	0.5867	0.68%	
*AT&T GSM	4	646	160	0.0363	1900	1.0000	3.63%	
*AT&T LTE	1	1615	160	0.0227	734	0.4893	4.64%	
*T-Mobile	9	246	168	0.0282	1935	1.0000	2.82%	
*Town	1	200	115	0.0054	30	0.2000	2.72%	
*Town	1	180	128	0.0040	150	0.2000	1.98%	
*Town	1	150	194	0.0014	450	0.3000	0.48%	
Verizon	**11**	**382**	**179**	**0.0472**	**1970**	**1.0000**	**4.72%**	
Verizon	**9**	**370**	**179**	**0.0374**	**869**	**0.5793**	**6.45%**	
Verizon	**1**	**1750**	**179**	**0.0196**	**2145**	**1.0000**	**1.96%**	
Verizon	**1**	**1050**	**179**	**0.0118**	**698**	**0.4653**	**2.53%**	
								42.78%
* Source: Siting Council								

ATTACHMENT 3

Date: **June 16, 2014**

Brittany Richardson
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Aero Solutions, LLC
5500 Flatiron Parkway, Suite 100
Boulder, CO 80301
720-381-2843

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate** **Carrier Site Name:**	 Somers 2, 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:**	803934 CT SOMERS FD CAC 295092 780558 253488 Rev. 0
Engineering Firm Designation:	**Aero Solutions, LLC Project Number:**	003-14-0623
Site Data:	**400 MAIN STREET, SOMERS, Tolland County, CT** **Latitude *41° 59' 1.48"*, Longitude *-72° 27' 56.87"*** **187 Foot - Monopole Tower**	

Dear Brittany Richardson,

Aero Solutions, LLC 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 658421, in accordance with application 253488, revision 0.

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

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements 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 *Aero Solutions, LLC* 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: **Benjamin Ude**

Respectfully submitted by:

Shraddha Dharia, P.E.
Structural Engineer
CT PE#: PEN0028187
Expires: 1/31/2015

6.17.2014

tnxTower Report - version **6.1.4.1**

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 187 ft Monopole tower designed by Summit in April of 2001. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 38 mph with 1 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
181.0	181.0	3	alcatel lucent	RRH2X40-AWS			
		3	alcatel lucent	RRH2x40 700			
		1	crown mounts	Side Arm Mount [SO 102-3]			
178.0	179.0	3	andrew	LNX-6513DS-A1M w/ Mount Pipe	1	1-5/8"	
		6	kathrein	742 213 w/ Mount Pipe			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			

Notes:
1) Proposed Equipment

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
188.0	193.0	1	andrew	DB404L-B	1 3	7/8" 1-1/4"	1
	190.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	188.0	1	tower mounts	Platform Mount [LP-1201]			
	186.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4"	2
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
186.0	186.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	crown mounts	Side Arm Mount [SO 102-3]			
178.0	179.0	3	antel	BXA-70080-6CF-EDIN-X w/ Mount Pipe			3
		6	antel	LPA-185090/8CFx2 w/ Mount Pipe			
		2	antel	LPA-80063/4CF w/ Mount Pipe	18	1-5/8"	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		4	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe			
	178.0	1	tower mounts	Platform Mount [LP-1201]			
168.0	169.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	6	1-5/8"	1
		6	ericsson	KRY 112 71/1			
	168.0	1	tower mounts	Platform Mount [LP-1201]			
160.0	160.0	1	crown mounts	T-Arm Mount [TA 601-3]	1 2 6	3/8" 3/4" 1-5/8"	1
		6	ericsson	RRUS-11			
		3	kathrein	800 10121 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		3	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
150.0	150.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8"	1
120.0	125.0	1	sinclair	SD212-SF2P2SNM Dipole	1	7/8"	1
	120.0	1	crown mounts	Side Arm Mount [SO 702-1]			
110.0	110.0	1	sinclair	SD110-SFXPASNM	1	1/2"	1
81.0	82.0	1	crown mounts	Side Arm Mount [SO 309-1]	1	7/8"	1
		1	telewave	ANT450D3			
48.0	49.0	1	lucent	KS24019-L112A	1	1/2"	1
	48.0	1	crown mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

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)
188	188	12	generic	Panel Antennas (CaAa = 75 ft2)		
178	178	12	generic	Panel Antennas (CaAa = 75 ft2)		
168	168	12	generic	Panel Antennas (CaAa = 75 ft2)		
158	158	12	generic	Panel Antennas (CaAa = 75 ft2)		
148	148	12	generic	Panel Antennas (CaAa = 75		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
				ft2)		
138	138	12	generic	Panel Antennas (CaAa = 75 ft2)		
128	128	12	generic	Panel Antennas (CaAa = 75 ft2)		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	URS Corporation	1095648	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, LLC	1058248	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, LLC/PJF	419873	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. Aero Solutions, LLC 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	187 - 136	Pole	TP36.201x26x0.25	1	-13.535	1445.905	77.6	Pass
L2	136 - 89.5	Pole	TP45.003x34.801x0.375	2	-23.453	2690.300	85.4	Pass
L3	89.5 - 44.25	Pole	TP53.304x43.103x0.438	3	-36.889	3718.990	89.3	Pass
L4	44.25 - 0	Pole	TP61.28x51.079x0.5	4	-56.709	5014.559	86.9	Pass
							Summary	
						Pole (L3)	89.3	Pass
						Rating =	89.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	78.6	Pass
1	Base Plate	0	59.7	Pass
1	Base Foundation Soil Interaction	0	84.4	Pass

Structure Rating (max from all components) =	89.3%

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

4.1) Recommendations

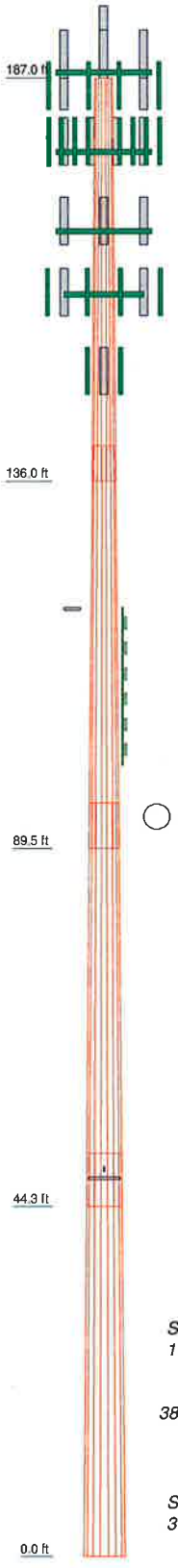
The tower has sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

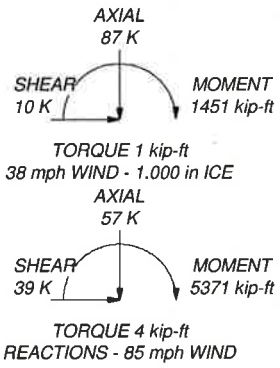
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	51.000	51.000	51.000	51.000
Number of Sides	18	18	18	18
Thickness (in)	0.250	0.375	0.438	0.500
Socket Length (ft)	4.500	5.750	6.750	
Top Dia (in)	26.000	34.801	43.103	51.079
Bot Dia (in)	36.201	45.003	53.304	61.280
Grade	A607-65			
Weight (K)	4.2	8.2	11.5	15.3

Total Weight (K) 39.3





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB404L-B	188	DB-T1-6Z-8AB-0Z	178
APXVSPP18-C-A20 w/ Mount Pipe	188	DB-T1-6Z-8AB-0Z	178
APXVSPP18-C-A20 w/ Mount Pipe	188	Platform Mount [LP-1201]	178
APXVSPP18-C-A20 w/ Mount Pipe	188	RR90-17-02DP w/ Mount Pipe	168
APXVTM14-C-120 w/ Mount Pipe	188	RR90-17-02DP w/ Mount Pipe	168
APXVTM14-C-120 w/ Mount Pipe	188	RR90-17-02DP w/ Mount Pipe	168
APXVTM14-C-120 w/ Mount Pipe	188	(2) KRY 112 71/1	168
TD-RRH8x20-25	188	(2) KRY 112 71/1	168
TD-RRH8x20-25	188	(2) KRY 112 71/1	168
TD-RRH8x20-25	188	(2) Pipe Mount 2 x 6'	168
Pipe Mount 2 x 8'	188	(2) Pipe Mount 2 x 6'	168
Pipe Mount 2 x 8'	188	(2) Pipe Mount 2 x 6'	168
Pipe Mount 2 x 8'	188	Platform Mount [LP-1201]	168
Platform Mount [LP-1201]	188	800 10121 w/ Mount Pipe	160
PCS 1900MHz 4x45W-65MHz	186	800 10121 w/ Mount Pipe	160
PCS 1900MHz 4x45W-65MHz	186	800 10121 w/ Mount Pipe	160
PCS 1900MHz 4x45W-65MHz	186	P65-17-XLH-RR w/ Mount Pipe	160
800MHz 2X50W RRH W/FILTER	186	P65-17-XLH-RR w/ Mount Pipe	160
800MHz 2X50W RRH W/FILTER	186	P65-17-XLH-RR w/ Mount Pipe	160
800MHz 2X50W RRH W/FILTER	186	(2) RRUS-11	160
Side Arm Mount [SO 102-3]	186	(2) RRUS-11	160
RRH2X40-AWS	181	(2) RRUS-11	160
RRH2X40-AWS	181	(2) LGP21401	160
RRH2X40-AWS	181	(2) LGP21401	160
RRH2x40 700	181	(2) LGP21401	160
RRH2x40 700	181	DC6-48-60-18-8F	160
RRH2x40 700	181	T-Arm Mount [TA 601-3]	160
Side Arm Mount [SO 102-3]	181	APXV18-206517S-C w/ Mount Pipe	150
(2) 742 213 w/ Mount Pipe	178	APXV18-206517S-C w/ Mount Pipe	150
(2) 742 213 w/ Mount Pipe	178	APXV18-206517S-C w/ Mount Pipe	150
(2) 742 213 w/ Mount Pipe	178	SD212-SF2P2SNM Dipole	120
LNX-6513DS-A1M w/ Mount Pipe	178	Side Arm Mount [SO 702-1]	120
LNX-6513DS-A1M w/ Mount Pipe	178	SD110-SFXPASNM	110
LNX-6513DS-A1M w/ Mount Pipe	178	Pipe Mount 2 x 16'	110
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	178	ANT450D3	81
		Side Arm Mount [SO 309-1]	81
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	178	KS24019-L112A	48
		Side Arm Mount [SO 701-1]	48
(2) LPA-80063/4CF w/ Mount Pipe	178		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland 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 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 89.3%

Aero Solutions, LLC
5500 Flatiron Parkway, Suite 100
Boulder, CO 80301
Phone: 720-381-2843
FAX: 720-304-6883

Job:	***BU#803934 CT SOMERS FD CAC***		
Project:	***Existing 187 ft. Monopole***		
Client: Crown Castle	Drawn by: Benjamin Ude	App'd:	
Code: TIA/EIA-222-F	Date: 06/16/14	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

2) Tower is located in Tolland County, Connecticut.
3) Basic wind speed of 85 mph.
4) Nominal ice thickness of 1.000 in.
5) Ice thickness is considered to increase with height.
6) Ice density of 56.000 pcf.
7) A wind speed of 38 mph is used in combination with ice.
8) Temperature drop of 50.000 °F.
9) Deflections calculated using a wind speed of 50 mph.
10) A non-linear (P-delta) analysis was used.
11) Pressures are calculated at each section.
12) Stress ratio used in pole design is 1.333.
13) 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	187.000-136.000	51.000	4.500	18	26.000	36.201	0.250	1.000	A607-65 (65 ksi)
L2	136.000-89.500	51.000	5.750	18	34.801	45.003	0.375	1.500	A607-65 (65 ksi)
L3	89.500-44.250	51.000	6.750	18	43.103	53.304	0.438	1.750	A607-65 (65 ksi)
L4	44.250-0.000	51.000		18	51.079	61.280	0.500	2.000	A607-65 (65 ksi)

Tapered Pole Properties

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

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	26.401	20.433	1711.654	9.141	13.208	129.592	3425.561	10.218	4.136	16.544
	36.759	28.527	4658.191	12.763	18.390	253.299	9322.512	14.266	5.931	23.726
L2	36.252	40.975	6135.246	12.221	17.679	347.039	12278.566	20.492	5.465	14.573
	45.697	53.118	13365.891	15.843	22.862	584.646	26749.369	26.564	7.261	19.361
L3	44.936	59.246	13625.291	15.146	21.896	622.267	27268.510	29.629	6.816	15.58
	54.126	73.412	25921.737	18.768	27.078	957.284	51877.583	36.713	8.612	19.683
L4	53.238	80.269	25943.042	17.955	25.948	999.807	51920.220	40.142	8.110	16.22
	62.225	96.458	45019.064	21.577	31.130	1446.152	90097.366	48.238	9.905	19.811

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 187.000-136.000				1	1	1		
L2 136.000-89.500				1	1	1		
L3 89.500-44.250				1	1	1		
L4 44.250-0.000				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 klf
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-08U4-M5J(1 1/4")	A	No	Inside Pole	187.000 - 8.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
HCC 78-50J(7/8")	A	No	CaAa (Out Of Face)	178.000 - 8.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.003
						2" Ice	0.000	0.008
						4" Ice	0.000	0.025
HCC 78-50J(7/8")	A	No	CaAa (Out Of Face)	187.000 - 178.000	1	No Ice	0.110	0.001
						1/2" Ice	0.210	0.002
						1" Ice	0.310	0.003
						2" Ice	0.510	0.008
						4" Ice	0.910	0.025
HB114-1-0813U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	187.000 - 8.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.010
						4" Ice	0.000	0.028
**								
LDF7-50A(1-5/8")	C	No	Inside Pole	178.000 - 8.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF7-50A(1-5/8")	C	No	CaAa (Out Of	178.000 - 8.000	1	No Ice	0.198	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
			Face)			1/2" Ice	0.298	0.002
						1" Ice	0.398	0.004
						2" Ice	0.598	0.011
						4" Ice	0.998	0.030
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	178.000 - 8.000	5	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.011
						4" Ice	0.000	0.030
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	178.000 - 8.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.005
						2" Ice	0.000	0.011
						4" Ice	0.000	0.031
**								
HJ7-50A(1-5/8")	B	No	Inside Pole	168.000 - 8.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
**								
LDF7-50A(1-5/8")	C	No	Inside Pole	160.000 - 5.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	C	No	Inside Pole	160.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	160.000 - 5.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
**								
CR 50 1873(1-5/8")	A	No	Inside Pole	150.000 - 8.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
**								
HCC 78-50J(7/8")	A	No	Inside Pole	120.000 - 8.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
**								
HCC12-50J(1/2")	B	No	Inside Pole	110.000 - 8.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
**								
AVA5-50(7/8")	B	No	CaAa (Out Of Face)	81.000 - 8.000	1	No Ice	0.110	0.000
						1/2" Ice	0.210	0.001
						1" Ice	0.310	0.003
						2" Ice	0.510	0.008
						4" Ice	0.910	0.025
**								
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	48.000 - 8.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.002
						2" Ice	0.000	0.007
						4" Ice	0.000	0.023
**								

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	187.000-136.000	A	0.000	0.000	0.000	0.990	0.323
		B	0.000	0.000	0.000	0.000	0.200
		C	0.000	0.000	0.000	8.316	0.822
L2	136.000-89.500	A	0.000	0.000	0.000	0.000	0.479
		B	0.000	0.000	0.000	0.000	0.295
		C	0.000	0.000	0.000	9.207	1.033
L3	89.500-44.250	A	0.000	0.000	0.000	0.000	0.474
		B	0.000	0.000	0.000	4.050	0.305
		C	0.000	0.000	0.000	8.960	1.005
L4	44.250-0.000	A	0.000	0.000	0.000	0.000	0.380
		B	0.000	0.000	0.000	3.995	0.246
		C	0.000	0.000	0.000	7.178	0.829

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	187.000-136.000	A	1.209	0.000	0.000	0.000	3.166	0.725
		B		0.000	0.000	0.000	0.000	0.200
		C		0.000	0.000	0.000	18.471	2.266
L2	136.000-89.500	A	1.158	0.000	0.000	0.000	0.000	0.845
		B		0.000	0.000	0.000	0.000	0.295
		C		0.000	0.000	0.000	20.450	2.631
L3	89.500-44.250	A	1.088	0.000	0.000	0.000	0.000	0.806
		B		0.000	0.000	0.000	12.563	0.428
		C		0.000	0.000	0.000	19.441	2.474
L4	44.250-0.000	A	1.000	0.000	0.000	0.000	0.000	0.619
		B		0.000	0.000	0.000	11.884	0.355
		C		0.000	0.000	0.000	15.067	1.975

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	187.000-136.000	-0.204	0.094	-0.390	0.160
L2	136.000-89.500	-0.243	0.140	-0.480	0.277
L3	89.500-44.250	-0.130	0.202	-0.157	0.437
L4	44.250-0.000	-0.087	0.177	-0.079	0.386

Discrete Tower Loads

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
**									
DB404L-B	A	From Leg	2.000 0.000	0.000	188.000	No Ice 1/2"	1.140 2.052	1.140 2.052	0.014 0.018

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
			5.000			Ice	2.964	2.964	0.022
						1" Ice	4.788	4.788	0.031
						2" Ice	8.436	8.436	0.048
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000	80.000	188.000	No Ice	8.498	6.946	0.083
			0.000			1/2"	9.149	8.127	0.151
			2.000			Ice	9.767	9.021	0.227
						1" Ice	11.031	10.844	0.406
						2" Ice	13.679	14.851	0.909
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000	40.000	188.000	No Ice	8.498	6.946	0.083
			0.000			1/2"	9.149	8.127	0.151
			2.000			Ice	9.767	9.021	0.227
						1" Ice	11.031	10.844	0.406
						2" Ice	13.679	14.851	0.909
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000	30.000	188.000	No Ice	8.498	6.946	0.083
			0.000			1/2"	9.149	8.127	0.151
			2.000			Ice	9.767	9.021	0.227
						1" Ice	11.031	10.844	0.406
						2" Ice	13.679	14.851	0.909
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	80.000	188.000	No Ice	7.134	4.959	0.077
			0.000			1/2"	7.662	5.754	0.131
			-2.000			Ice	8.183	6.472	0.193
						1" Ice	9.256	8.010	0.338
						2" Ice	11.526	11.412	0.752
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	40.000	188.000	No Ice	7.134	4.959	0.077
			0.000			1/2"	7.662	5.754	0.131
			-2.000			Ice	8.183	6.472	0.193
						1" Ice	9.256	8.010	0.338
						2" Ice	11.526	11.412	0.752
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	30.000	188.000	No Ice	7.134	4.959	0.077
			0.000			1/2"	7.662	5.754	0.131
			-2.000			Ice	8.183	6.472	0.193
						1" Ice	9.256	8.010	0.338
						2" Ice	11.526	11.412	0.752
						4" Ice			
TD-RRH8x20-25	A	From Leg	4.000	80.000	188.000	No Ice	4.720	1.703	0.070
			0.000			1/2"	5.014	1.920	0.097
			-2.000			Ice	5.316	2.145	0.128
						1" Ice	5.948	2.622	0.201
						2" Ice	7.314	3.680	0.397
						4" Ice			
TD-RRH8x20-25	B	From Leg	4.000	40.000	188.000	No Ice	4.720	1.703	0.070
			0.000			1/2"	5.014	1.920	0.097
			-2.000			Ice	5.316	2.145	0.128
						1" Ice	5.948	2.622	0.201
						2" Ice	7.314	3.680	0.397
						4" Ice			
TD-RRH8x20-25	C	From Leg	4.000	30.000	188.000	No Ice	4.720	1.703	0.070
			0.000			1/2"	5.014	1.920	0.097
			-2.000			Ice	5.316	2.145	0.128
						1" Ice	5.948	2.622	0.201
						2" Ice	7.314	3.680	0.397
						4" Ice			
Pipe Mount 2 x 8'	A	From Leg	4.000	0.000	188.000	No Ice	1.900	1.900	0.029
			0.000			1/2"	2.728	2.728	0.044
			2.000			Ice	3.401	3.401	0.063
						1" Ice	4.396	4.396	0.119
						2" Ice	6.498	6.498	0.300
						4" Ice			
Pipe Mount 2 x 8'	B	From Leg	4.000	0.000	188.000	No Ice	1.900	1.900	0.029

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
			0.000 2.000			1/2" Ice 1" Ice 2" Ice 4" Ice	2.728 3.401 4.396 6.498	2.728 3.401 4.396 6.498	0.044 0.063 0.119 0.300
Pipe Mount 2 x 8'	C	From Leg	4.000 0.000 2.000	0.000	188.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.900 2.728 3.401 4.396 6.498	1.900 2.728 3.401 4.396 6.498	0.029 0.044 0.063 0.119 0.300
Platform Mount [LP-1201]	C	None		0.000	188.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.100 26.800 30.500 37.900 52.700	23.100 26.800 30.500 37.900 52.700	2.100 2.500 2.900 3.700 5.300
**									
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.000 0.000 0.000	80.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.000 0.000 0.000	40.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.000 0.000 0.000	30.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
800MHz 2X50W RRH W/FILTER	A	From Leg	1.000 0.000 0.000	80.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.401 2.613 2.833 3.300 4.337	2.254 2.460 2.675 3.132 4.148	0.064 0.086 0.111 0.172 0.338
800MHz 2X50W RRH W/FILTER	B	From Leg	1.000 0.000 0.000	40.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.401 2.613 2.833 3.300 4.337	2.254 2.460 2.675 3.132 4.148	0.064 0.086 0.111 0.172 0.338
800MHz 2X50W RRH W/FILTER	C	From Leg	1.000 0.000 0.000	30.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.401 2.613 2.833 3.300 4.337	2.254 2.460 2.675 3.132 4.148	0.064 0.086 0.111 0.172 0.338
Side Arm Mount [SO 102-3]	C	None		0.000	186.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.000 3.480 3.960 4.920 6.840	3.000 3.480 3.960 4.920 6.840	0.081 0.111 0.141 0.201 0.321
**									
RRH2X40-AWS	A	From Leg	1.000 0.000 0.000	30.000	181.000	No Ice 1/2" Ice 1" Ice	2.522 2.753 2.993 3.499	1.589 1.795 2.010 2.465	0.044 0.061 0.082 0.132

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	4.615	3.479	0.275
						4" Ice			
RRH2X40-AWS	B	From Leg	1.000	30.000	181.000	No Ice	2.522	1.589	0.044
			0.000			1/2" Ice	2.753	1.795	0.061
			0.000				2.993	2.010	0.082
						1" Ice	3.499	2.465	0.132
						2" Ice	4.615	3.479	0.275
						4" Ice			
RRH2X40-AWS	C	From Leg	1.000	30.000	181.000	No Ice	2.522	1.589	0.044
			0.000			1/2" Ice	2.753	1.795	0.061
			0.000				2.993	2.010	0.082
						1" Ice	3.499	2.465	0.132
						2" Ice	4.615	3.479	0.275
						4" Ice			
RRH2x40 700	A	From Leg	1.000	30.000	181.000	No Ice	2.290	1.206	0.050
			0.000			1/2" Ice	2.493	1.363	0.067
			0.000				2.705	1.529	0.086
						1" Ice	3.155	1.887	0.134
						2" Ice	4.158	2.706	0.271
						4" Ice			
RRH2x40 700	B	From Leg	1.000	30.000	181.000	No Ice	2.290	1.206	0.050
			0.000			1/2" Ice	2.493	1.363	0.067
			0.000				2.705	1.529	0.086
						1" Ice	3.155	1.887	0.134
						2" Ice	4.158	2.706	0.271
						4" Ice			
RRH2x40 700	C	From Leg	1.000	30.000	181.000	No Ice	2.290	1.206	0.050
			0.000			1/2" Ice	2.493	1.363	0.067
			0.000				2.705	1.529	0.086
						1" Ice	3.155	1.887	0.134
						2" Ice	4.158	2.706	0.271
						4" Ice			
Side Arm Mount [SO 102-3]	C	None		0.000	181.000	No Ice	3.000	3.000	0.081
						1/2" Ice	3.480	3.480	0.111
							3.960	3.960	0.141
						1" Ice	4.920	4.920	0.201
						2" Ice	6.840	6.840	0.321
						4" Ice			
**									
(2) 742 213 w/ Mount Pipe	A	From Leg	4.000	30.000	178.000	No Ice	5.373	4.620	0.049
			0.000			1/2" Ice	5.950	6.000	0.094
			1.000				6.501	6.982	0.146
						1" Ice	7.611	8.852	0.277
						2" Ice	9.933	12.794	0.683
						4" Ice			
(2) 742 213 w/ Mount Pipe	B	From Leg	4.000	30.000	178.000	No Ice	5.373	4.620	0.049
			0.000			1/2" Ice	5.950	6.000	0.094
			1.000				6.501	6.982	0.146
						1" Ice	7.611	8.852	0.277
						2" Ice	9.933	12.794	0.683
						4" Ice			
(2) 742 213 w/ Mount Pipe	C	From Leg	4.000	30.000	178.000	No Ice	5.373	4.620	0.049
			0.000			1/2" Ice	5.950	6.000	0.094
			1.000				6.501	6.982	0.146
						1" Ice	7.611	8.852	0.277
						2" Ice	9.933	12.794	0.683
						4" Ice			
LNX-6513DS-A1M w/ Mount Pipe	A	From Leg	4.000	30.000	178.000	No Ice	6.566	5.159	0.051
			0.000			1/2" Ice	7.076	5.923	0.105
			1.000				7.582	6.668	0.165
						1" Ice	8.626	8.236	0.308
						2" Ice	10.837	11.586	0.715
						4" Ice			
LNX-6513DS-A1M w/ Mount Pipe	B	From Leg	4.000	30.000	178.000	No Ice	6.566	5.159	0.051
			0.000			1/2" Ice	7.076	5.923	0.105

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.000			Ice	7.582	6.668	0.165
						1" Ice	8.626	8.236	0.308
						2" Ice	10.837	11.586	0.715
						4" Ice			
LNX-6513DS-A1M w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.566 7.076 7.582 8.626 10.837	5.159 5.923 6.668 8.236 11.586	0.051 0.105 0.165 0.308 0.715
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.856 3.220 3.592 4.450 6.318	7.227 7.922 8.634 10.112 13.339	0.030 0.076 0.128 0.253 0.613
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.856 3.220 3.592 4.450 6.318	7.227 7.922 8.634 10.112 13.339	0.030 0.076 0.128 0.253 0.613
(2) LPA-80063/4CF w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.248 7.719 8.200 9.195 11.320	7.260 7.957 8.672 10.156 13.391	0.038 0.104 0.176 0.344 0.796
DB-T1-6Z-8AB-0Z	A	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
DB-T1-6Z-8AB-0Z	C	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
Platform Mount [LP-1201]	C	None		0.000	178.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.100 26.800 30.500 37.900 52.700	23.100 26.800 30.500 37.900 52.700	2.100 2.500 2.900 3.700 5.300
**									
RR90-17-02DP w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.593 5.088 5.578 6.588 8.731	3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557
RR90-17-02DP w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.593 5.088 5.578 6.588 8.731	3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557
RR90-17-02DP w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.593 5.088 5.578 6.588 8.731	3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557

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) KRY 112 71/1	A	From Leg	4.000 0.000 1.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.681 0.802 0.932 1.219 1.896	0.450 0.559 0.677 0.939 1.566	0.013 0.018 0.025 0.044 0.111
(2) KRY 112 71/1	B	From Leg	4.000 0.000 1.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.681 0.802 0.932 1.219 1.896	0.450 0.559 0.677 0.939 1.566	0.013 0.018 0.025 0.044 0.111
(2) KRY 112 71/1	C	From Leg	4.000 0.000 1.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.681 0.802 0.932 1.219 1.896	0.450 0.559 0.677 0.939 1.566	0.013 0.018 0.025 0.044 0.111
(2) Pipe Mount 2 x 6'	A	From Leg	4.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(2) Pipe Mount 2 x 6'	B	From Leg	4.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(2) Pipe Mount 2 x 6'	C	From Leg	4.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
Platform Mount [LP-1201]	C	None		0.000	168.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.100 26.800 30.500 37.900 52.700	23.100 26.800 30.500 37.900 52.700	2.100 2.500 2.900 3.700 5.300
**									
800 10121 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	40.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.685 6.182 6.676 7.695 9.858	4.600 5.351 6.046 7.526 10.832	0.066 0.114 0.168 0.298 0.675
800 10121 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.685 6.182 6.676 7.695 9.858	4.600 5.351 6.046 7.526 10.832	0.066 0.114 0.168 0.298 0.675
800 10121 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.685 6.182 6.676 7.695 9.858	4.600 5.351 6.046 7.526 10.832	0.066 0.114 0.168 0.298 0.675
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	40.000	160.000	No Ice 1/2" Ice 1" Ice	11.704 12.424 13.153 14.639	8.938 10.450 11.986 14.313	0.092 0.178 0.273 0.498

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	17.906	19.144	1.126
						4" Ice			
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice	11.704	8.938	0.092
						1/2" Ice	12.424	10.450	0.178
						1" Ice	13.153	11.986	0.273
						2" Ice	14.639	14.313	0.498
						4" Ice	17.906	19.144	1.126
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice	11.704	8.938	0.092
						1/2" Ice	12.424	10.450	0.178
						1" Ice	13.153	11.986	0.273
						2" Ice	14.639	14.313	0.498
						4" Ice	17.906	19.144	1.126
(2) RRUS-11	A	From Leg	4.000 0.000 0.000	40.000	160.000	No Ice	2.942	1.246	0.055
						1/2" Ice	3.172	1.412	0.074
						1" Ice	3.410	1.587	0.097
						2" Ice	3.913	1.963	0.151
						4" Ice	5.023	2.819	0.302
(2) RRUS-11	B	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice	2.942	1.246	0.055
						1/2" Ice	3.172	1.412	0.074
						1" Ice	3.410	1.587	0.097
						2" Ice	3.913	1.963	0.151
						4" Ice	5.023	2.819	0.302
(2) RRUS-11	C	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice	2.942	1.246	0.055
						1/2" Ice	3.172	1.412	0.074
						1" Ice	3.410	1.587	0.097
						2" Ice	3.913	1.963	0.151
						4" Ice	5.023	2.819	0.302
(2) LGP21401	A	From Leg	4.000 0.000 0.000	40.000	160.000	No Ice	1.288	0.233	0.014
						1/2" Ice	1.445	0.313	0.021
						1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401	B	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice	1.288	0.233	0.014
						1/2" Ice	1.445	0.313	0.021
						1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401	C	From Leg	4.000 0.000 0.000	30.000	160.000	No Ice	1.288	0.233	0.014
						1/2" Ice	1.445	0.313	0.021
						1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
DC6-48-60-18-8F	A	From Leg	4.000 0.000 0.000	40.000	160.000	No Ice	2.567	2.567	0.033
						1/2" Ice	2.798	2.798	0.055
						1" Ice	3.038	3.038	0.081
						2" Ice	3.543	3.543	0.143
						4" Ice	4.658	4.658	0.313
T-Arm Mount [TA 601-3]	C	None		0.000	160.000	No Ice	10.900	10.900	0.726
						1/2" Ice	14.650	14.650	0.926
						1" Ice	18.400	18.400	1.125
						2" Ice	25.900	25.900	1.524
						4" Ice	40.900	40.900	2.322
**									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.000 0.000	30.000	150.000	No Ice	5.404	4.700	0.052
						1/2" Ice	5.960	5.860	0.097

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
			0.000			Ice	6.481	6.734	0.150
						1" Ice	7.547	8.515	0.280
						2" Ice	9.919	12.277	0.679
						4" Ice			
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.000 0.000 0.000	30.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.404 5.960 6.481 7.547 9.919	4.700 5.860 6.734 8.515 12.277	0.052 0.097 0.150 0.280 0.679
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.000 0.000 0.000	30.000	150.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.404 5.960 6.481 7.547 9.919	4.700 5.860 6.734 8.515 12.277	0.052 0.097 0.150 0.280 0.679
**									
SD212-SF2P2SNM Dipole	A	From Leg	6.000 0.000 5.000	90.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.510 5.510 6.510 8.510 12.510	4.510 5.510 6.510 8.510 12.510	0.048 0.062 0.077 0.106 0.163
Side Arm Mount [SO 702-1]	A	From Face	3.000 0.000 0.000	90.000	120.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.000 1.000 1.000 1.000 1.000	1.430 2.050 2.670 3.910 6.390	0.027 0.038 0.049 0.071 0.115
**									
SD110-SFXPASNM	B	From Leg	1.000 0.000 0.000	15.000	110.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.510 5.510 6.510 8.510 12.510	4.510 5.510 6.510 8.510 12.510	0.048 0.062 0.077 0.106 0.163
Pipe Mount 2 x 16'	B	From Leg	0.500 0.000 0.000	0.000	110.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.808 5.436 7.081 10.421 15.464	3.808 5.436 7.081 10.421 15.464	0.060 0.088 0.127 0.235 0.581
**									
ANT450D3	A	From Leg	3.000 0.000 1.000	90.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.592 7.656 9.738 13.950 21.924	5.592 7.656 9.738 13.950 21.924	0.041 0.082 0.135 0.282 0.735
Side Arm Mount [SO 309-1]	A	From Leg	1.000 0.000 1.000	90.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.820 4.070 5.320 7.820 12.820	2.200 3.160 4.120 6.040 9.880	0.040 0.062 0.084 0.128 0.216
**									
KS24019-L112A	A	From Leg	3.000 0.000 1.000	0.000	48.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.156 0.225 0.302 0.484 0.951	0.156 0.225 0.302 0.484 0.951	0.005 0.007 0.009 0.018 0.056
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	48.000	No Ice 1/2" Ice	0.850 1.140 1.430	1.670 2.340 3.010	0.065 0.079 0.093

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
**						1" Ice	2.010	4.350	0.121
						2" Ice	3.170	7.030	0.177
						4" Ice			

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	187 - 136	Pole	Max Tension	27	0.000	-0.000	-0.000
			Max. Compression	14	-30.150	3.249	0.190
			Max. Mx	11	-13.535	798.101	-0.620

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-13.741	-0.308	753.312
			Max. Vy	11	-24.539	798.101	-0.620
			Max. Vx	2	-23.389	-0.308	753.312
			Max. Torque	12			-1.614
L2	136 - 89.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-44.569	5.929	-0.112
			Max. Mx	11	-23.453	2031.598	-2.305
			Max. My	2	-23.598	-1.890	1934.197
			Max. Vy	11	-30.001	2031.598	-2.305
			Max. Vx	2	-28.836	-1.890	1934.197
			Max. Torque	11			-3.059
L3	89.5 - 44.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-62.608	8.877	-0.134
			Max. Mx	11	-36.889	3474.513	-3.823
			Max. My	2	-36.967	-3.110	3324.657
			Max. Vy	11	-34.916	3474.513	-3.823
			Max. Vx	2	-33.740	-3.110	3324.657
			Max. Torque	11			-4.009
L4	44.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-87.308	11.843	-0.942
			Max. Mx	11	-56.709	5371.336	-5.628
			Max. My	2	-56.711	-4.491	5160.651
			Max. Vy	11	-39.242	5371.336	-5.628
			Max. Vx	2	-38.081	-4.491	5160.651
			Max. Torque	11			-4.170

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	24	87.308	9.926	-0.004
	Max. H_x	11	56.736	39.202	-0.037
	Max. H_z	2	56.736	-0.037	38.044
	Max. M_x	2	5160.651	-0.037	38.044
	Max. M_z	5	5367.591	-39.202	0.037
	Max. Torsion	5	4.096	-39.202	0.037
	Min. Vert	1	56.736	0.000	0.000
	Min. H_x	5	56.736	-39.202	0.037
	Min. H_z	8	56.736	0.037	-38.044
	Min. M_x	8	-5159.105	0.037	-38.044
	Min. M_z	11	-5371.336	39.202	-0.037
	Min. Torsion	11	-4.098	39.202	-0.037

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	56.736	0.000	0.000	-0.729	1.794	0.000
Dead+Wind 0 deg - No Ice	56.736	0.037	-38.044	-5160.651	-4.491	0.051
Dead+Wind 30 deg - No Ice	56.736	19.633	-32.965	-4472.352	-2688.723	-2.020
Dead+Wind 60 deg - No Ice	56.736	33.968	-19.053	-2585.880	-4651.599	-3.536
Dead+Wind 90 deg - No Ice	56.736	39.202	-0.037	-7.115	-5367.591	-4.096
Dead+Wind 120 deg - No Ice	56.736	33.932	18.990	2573.363	-4645.240	-3.560
Dead+Wind 150 deg - No Ice	56.736	19.569	32.928	4464.483	-2677.682	-2.082
Dead+Wind 180 deg - No Ice	56.736	-0.037	38.044	5159.105	8.255	-0.053
Dead+Wind 210 deg - No Ice	56.736	-19.633	32.965	4470.813	2692.457	1.990
Dead+Wind 240 deg - No Ice	56.736	-33.968	19.053	2584.372	4655.324	3.509
Dead+Wind 270 deg - No Ice	56.736	-39.202	0.037	5.629	5371.336	4.098
Dead+Wind 300 deg - No Ice	56.736	-33.932	-18.990	-2574.857	4649.014	3.590

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - No Ice	56.736	-19.569	-32.928	-4466.008	2681.466	2.109
Dead+Ice+Temp	87.308	-0.000	-0.000	0.942	11.843	0.000
Dead+Wind 0 deg+Ice+Temp	87.308	0.004	-9.692	-1395.574	11.016	0.020
Dead+Wind 30 deg+Ice+Temp	87.308	4.966	-8.395	-1208.993	-708.320	-0.591
Dead+Wind 60 deg+Ice+Temp	87.308	8.598	-4.849	-698.207	-1234.624	-1.042
Dead+Wind 90 deg+Ice+Temp	87.308	9.926	-0.004	-0.086	-1426.880	-1.213
Dead+Wind 120 deg+Ice+Temp	87.308	8.594	4.843	698.311	-1233.579	-1.059
Dead+Wind 150 deg+Ice+Temp	87.308	4.960	8.392	1209.855	-706.511	-0.622
Dead+Wind 180 deg+Ice+Temp	87.308	-0.004	9.692	1397.475	13.100	-0.019
Dead+Wind 210 deg+Ice+Temp	87.308	-4.966	8.395	1210.893	732.429	0.589
Dead+Wind 240 deg+Ice+Temp	87.308	-8.598	4.849	700.111	1258.729	1.040
Dead+Wind 270 deg+Ice+Temp	87.308	-9.926	0.004	1.997	1450.987	1.214
Dead+Wind 300 deg+Ice+Temp	87.308	-8.594	-4.843	-696.399	1257.693	1.063
Dead+Wind 330 deg+Ice+Temp	87.308	-4.960	-8.392	-1207.948	730.630	0.626
Dead+Wind 0 deg - Service	56.736	0.013	-13.164	-1788.959	-0.322	0.017
Dead+Wind 30 deg - Service	56.736	6.793	-11.407	-1550.492	-930.606	-0.703
Dead+Wind 60 deg - Service	56.736	11.754	-6.593	-896.770	-1611.012	-1.233
Dead+Wind 90 deg - Service	56.736	13.565	-0.013	-2.983	-1859.231	-1.431
Dead+Wind 120 deg - Service	56.736	11.741	6.571	891.395	-1608.802	-1.247
Dead+Wind 150 deg - Service	56.736	6.771	11.394	1546.732	-926.779	-0.729
Dead+Wind 180 deg - Service	56.736	-0.013	13.164	1787.404	4.095	-0.018
Dead+Wind 210 deg - Service	56.736	-6.793	11.407	1548.938	934.376	0.699
Dead+Wind 240 deg - Service	56.736	-11.754	6.593	895.219	1614.780	1.229
Dead+Wind 270 deg - Service	56.736	-13.565	0.013	1.435	1863.002	1.432
Dead+Wind 300 deg - Service	56.736	-11.741	-6.571	-892.944	1612.576	1.251
Dead+Wind 330 deg - Service	56.736	-6.771	-11.394	-1548.284	930.554	0.733

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-56.736	0.000	0.000	56.736	0.000	0.000%
2	0.037	-56.736	-38.044	-0.037	56.736	38.044	0.000%
3	19.633	-56.736	-32.965	-19.633	56.736	32.965	0.000%
4	33.968	-56.736	-19.053	-33.968	56.736	19.053	0.000%
5	39.202	-56.736	-0.037	-39.202	56.736	0.037	0.000%
6	33.932	-56.736	18.990	-33.932	56.736	-18.990	0.000%
7	19.569	-56.736	32.928	-19.569	56.736	-32.928	0.000%
8	-0.037	-56.736	38.044	0.037	56.736	-38.044	0.000%
9	-19.633	-56.736	32.965	19.633	56.736	-32.965	0.000%
10	-33.968	-56.736	19.053	33.968	56.736	-19.053	0.000%
11	-39.202	-56.736	0.037	39.202	56.736	-0.037	0.000%
12	-33.932	-56.736	-18.990	33.932	56.736	18.990	0.000%
13	-19.569	-56.736	-32.928	19.569	56.736	32.928	0.000%
14	0.000	-87.308	0.000	0.000	87.308	0.000	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
15	0.004	-87.308	-9.692	-0.004	87.308	9.692	0.000%
16	4.966	-87.308	-8.395	-4.966	87.308	8.395	0.000%
17	8.598	-87.308	-4.849	-8.598	87.308	4.849	0.000%
18	9.926	-87.308	-0.004	-9.926	87.308	0.004	0.000%
19	8.594	-87.308	4.843	-8.594	87.308	-4.843	0.000%
20	4.960	-87.308	8.391	-4.960	87.308	-8.392	0.000%
21	-0.004	-87.308	9.692	0.004	87.308	-9.692	0.000%
22	-4.966	-87.308	8.395	4.966	87.308	-8.395	0.000%
23	-8.598	-87.308	4.849	8.598	87.308	-4.849	0.000%
24	-9.926	-87.308	0.004	9.926	87.308	-0.004	0.000%
25	-8.594	-87.308	-4.843	8.594	87.308	4.843	0.000%
26	-4.960	-87.308	-8.391	4.960	87.308	8.392	0.000%
27	0.013	-56.736	-13.164	-0.013	56.736	13.164	0.000%
28	6.793	-56.736	-11.407	-6.793	56.736	11.407	0.000%
29	11.754	-56.736	-6.593	-11.754	56.736	6.593	0.000%
30	13.565	-56.736	-0.013	-13.565	56.736	0.013	0.000%
31	11.741	-56.736	6.571	-11.741	56.736	-6.571	0.000%
32	6.771	-56.736	11.394	-6.771	56.736	-11.394	0.000%
33	-0.013	-56.736	13.164	0.013	56.736	-13.164	0.000%
34	-6.793	-56.736	11.407	6.793	56.736	-11.407	0.000%
35	-11.754	-56.736	6.593	11.754	56.736	-6.593	0.000%
36	-13.565	-56.736	0.013	13.565	56.736	-0.013	0.000%
37	-11.741	-56.736	-6.571	11.741	56.736	6.571	0.000%
38	-6.771	-56.736	-11.394	6.771	56.736	11.394	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	0.00040908
3	Yes	6	0.00000001	0.00005821
4	Yes	6	0.00000001	0.00006155
5	Yes	5	0.00000001	0.00007503
6	Yes	6	0.00000001	0.00005759
7	Yes	6	0.00000001	0.00005976
8	Yes	4	0.00000001	0.00042942
9	Yes	6	0.00000001	0.00006013
10	Yes	6	0.00000001	0.00005787
11	Yes	5	0.00000001	0.00006665
12	Yes	6	0.00000001	0.00006133
13	Yes	6	0.00000001	0.00005808
14	Yes	4	0.00000001	0.00004296
15	Yes	5	0.00000001	0.00037816
16	Yes	5	0.00000001	0.00050310
17	Yes	5	0.00000001	0.00051647
18	Yes	5	0.00000001	0.00038777
19	Yes	5	0.00000001	0.00050624
20	Yes	5	0.00000001	0.00050598
21	Yes	5	0.00000001	0.00037814
22	Yes	5	0.00000001	0.00052056
23	Yes	5	0.00000001	0.00051891
24	Yes	5	0.00000001	0.00039568
25	Yes	5	0.00000001	0.00052651
26	Yes	5	0.00000001	0.00051457
27	Yes	4	0.00000001	0.00011419
28	Yes	5	0.00000001	0.00009238
29	Yes	5	0.00000001	0.00010402
30	Yes	4	0.00000001	0.00028592
31	Yes	5	0.00000001	0.00009096
32	Yes	5	0.00000001	0.00009728
33	Yes	4	0.00000001	0.00011476
34	Yes	5	0.00000001	0.00009875
35	Yes	5	0.00000001	0.00009205
36	Yes	4	0.00000001	0.00027712

37	Yes	5	0.00000001	0.00010368
38	Yes	5	0.00000001	0.00009242

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	187 - 136	47.607	36	2.309	0.005
L2	140.5 - 89.5	26.561	36	1.864	0.003
L3	95.25 - 44.25	11.805	36	1.204	0.002
L4	51 - 0	3.316	36	0.596	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.000	DB404L-B	36	47.607	2.309	0.005	32464
186.000	PCS 1900MHz 4x45W-65MHz	36	47.127	2.301	0.005	32464
181.000	RRH2X40-AWS	36	44.733	2.260	0.005	27054
178.000	(2) 742 213 w/ Mount Pipe	36	43.302	2.235	0.005	18035
168.000	RR90-17-02DP w/ Mount Pipe	36	38.585	2.149	0.004	8542
160.000	800 10121 w/ Mount Pipe	36	34.908	2.075	0.004	6010
150.000	APXV18-206517S-C w/ Mount Pipe	36	30.498	1.974	0.003	4385
120.000	SD212-SF2P2SNM Dipole	36	19.081	1.581	0.002	3809
110.000	SD110-SFXPASNM	36	15.921	1.429	0.002	3988
81.000	ANT450D3	36	8.422	0.996	0.001	4034
48.000	KS24019-L112A	36	2.966	0.559	0.001	3819

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	187 - 136	136.900	11	6.641	0.015
L2	140.5 - 89.5	76.454	11	5.365	0.009
L3	95.25 - 44.25	34.008	11	3.468	0.005
L4	51 - 0	9.558	11	1.718	0.002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.000	DB404L-B	11	136.900	6.641	0.015	11556
186.000	PCS 1900MHz 4x45W-65MHz	11	135.524	6.618	0.015	11556
181.000	RRH2X40-AWS	11	128.650	6.500	0.014	9630
178.000	(2) 742 213 w/ Mount Pipe	11	124.540	6.429	0.014	6419
168.000	RR90-17-02DP w/ Mount Pipe	11	110.994	6.183	0.012	3038
160.000	800 10121 w/ Mount Pipe	11	100.436	5.972	0.011	2136
150.000	APXV18-206517S-C w/ Mount Pipe	11	87.767	5.680	0.010	1556
120.000	SD212-SF2P2SNM Dipole	11	54.947	4.552	0.007	1341
110.000	SD110-SFXPASNM	11	45.854	4.116	0.006	1400

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
81.000	ANT450D3	11	24.265	2.870	0.004	1408
48.000	KS24019-L112A	11	8.547	1.611	0.002	1327

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	187 - 136 (1)	TP36.201x26x0.25	51.000	0.000	0.0	39.000	27.813	-13.535	1084.700	0.012
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	51.000	0.000	0.0	39.000	51.749	-23.453	2018.230	0.012
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	51.000	0.000	0.0	39.000	71.537	-36.889	2789.940	0.013
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	51.000	0.000	0.0	39.000	96.458	-56.709	3761.860	0.015

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	187 - 136 (1)	TP36.201x26x0.25	798.102	39.784	39.000	1.020	0.000	0.000	39.000	0.000
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	2031.600	43.944	39.000	1.127	0.000	0.000	39.000	0.000
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	3474.517	45.877	39.000	1.176	0.000	0.000	39.000	0.000
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	5371.342	44.571	39.000	1.143	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	187 - 136 (1)	TP36.201x26x0.25	24.539	0.882	26.000	0.068	1.398	0.034	26.000	0.001
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	30.000	0.580	26.000	0.045	2.579	0.027	26.000	0.001
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	34.916	0.488	26.000	0.038	3.949	0.025	26.000	0.001
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	39.242	0.407	26.000	0.031	4.102	0.017	26.000	0.001

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	187 - 136 (1)	0.012	1.020	0.000	0.068	0.001	1.034 ✔	1.333	H1-3+VT ✔

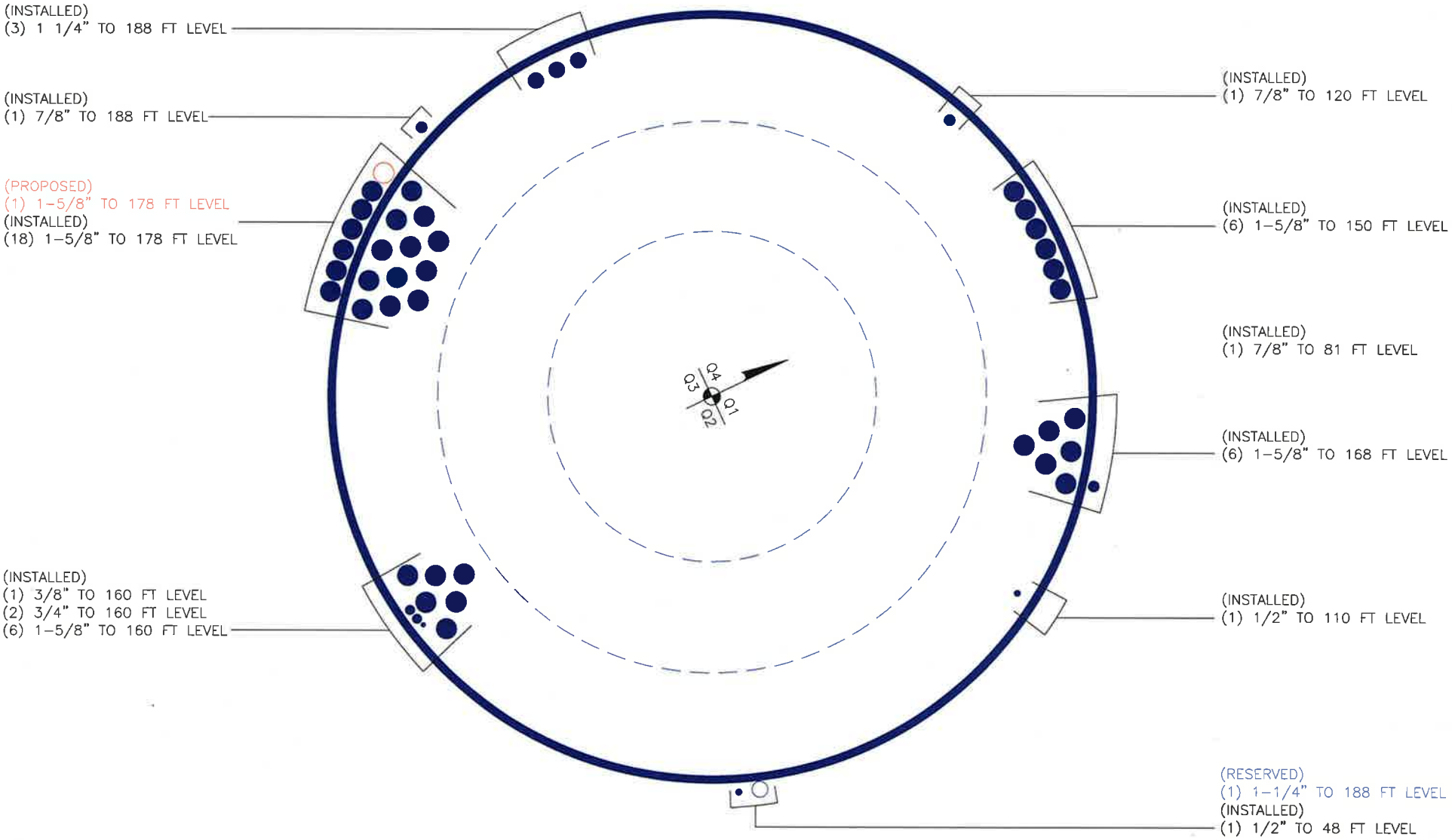
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	136 - 89.5 (2)	0.012	1.127	0.000	0.045	0.001	1.139 ✔	1.333	H1-3+VT ✔
L3	89.5 - 44.25 (3)	0.013	1.176	0.000	0.038	0.001	1.190 ✔	1.333	H1-3+VT ✔
L4	44.25 - 0 (4)	0.015	1.143	0.000	0.031	0.001	1.158 ✔	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	187 - 136	Pole	TP36.201x26x0.25	1	-13.535	1445.905	77.6	Pass
L2	136 - 89.5	Pole	TP45.003x34.801x0.375	2	-23.453	2690.300	85.4	Pass
L3	89.5 - 44.25	Pole	TP53.304x43.103x0.438	3	-36.889	3718.990	89.3	Pass
L4	44.25 - 0	Pole	TP61.28x51.079x0.5	4	-56.709	5014.559	86.9	Pass
							Summary	
						Pole (L3)	89.3	Pass
						RATING =	**89.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(INSTALLED)
(3) 1 1/4" TO 188 FT LEVEL
(INSTALLED)
(1) 7/8" TO 188 FT LEVEL
(PROPOSED)
(1) 1-5/8" TO 178 FT LEVEL
(INSTALLED)
(18) 1-5/8" TO 178 FT LEVEL
(INSTALLED)
(1) 3/8" TO 160 FT LEVEL
(2) 3/4" TO 160 FT LEVEL
(6) 1-5/8" TO 160 FT LEVEL
(INSTALLED)
(1) 7/8" TO 120 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 150 FT LEVEL
(INSTALLED)
(1) 7/8" TO 81 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 168 FT LEVEL
(INSTALLED)
(1) 1/2" TO 110 FT LEVEL
(RESERVED)
(1) 1-1/4" TO 188 FT LEVEL
(INSTALLED)
(1) 1/2" TO 48 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /C

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *803934*
Site Name: *CT SOMERS FD CAC*
App #: *253488 R0*

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	69	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	70	in
Thick:	3.25	in
Grade:	55	ksi
Clip Distance:	6	in

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

Pole Data		
Diam:	61.28	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	5371.33855	ft-kips
Unfactored Axial, P:	56.7092	kips
Unfactored Shear, V:	39.241517	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	153.3 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	78.6% **Pass**

Base Plate Results Flexural Check

Base Plate Stress:	32.8 ksi
Allowable PL Bending Stress:	55.0 ksi
Base Plate Stress Ratio:	59.7% **Pass**

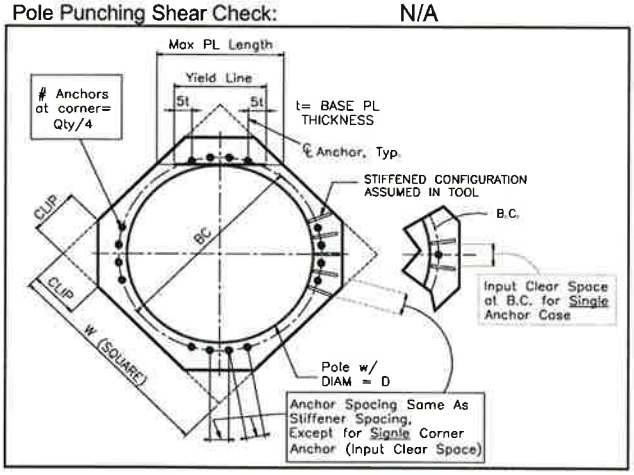
N/A - Unstiffened

Stiffener Results

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

Pole Results

Pole Punching Shear Check: N/A



** 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#: *803934*
Site Name: *CT SOMERS FD CAC*
App #: *????*

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

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	4	ft
Pad Thickness, T:	4	ft
Pad Width=Length, L:	31	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	31	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	961.00	ft^2
Pier Height:	0.50	ft
Soil (above pad) Height:	0.00	ft

Soil Parameters		
Unit Weight, γ:	120.0	pcf
Ultimate Bearing Capacity, qn:	8.00	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:	6.00	ksf
Passive Pres. Coeff., Kp	3.54	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	53.0	kips
Pad Force Location Above D:	1.33	ft
ϕ(Passive Pressure Moment):	70.63	ft-kips
Factored O.T. M(WL), "1.6W":	7489.7	ft-kips
Factored OT (MW-Msoil), M1	7419.06	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	648.7	kips
Unfactored (Total ftg-soil Wt):	648.68	kips
1.2D. **No Soil Wedges.**	846.46	kips
0.9D. **With Soil Wedges**	634.85	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:	56.7092	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	39.24152	kips
Unfactored WL Moment, M:	5371.339	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	68.05104	kips
0.90	0.9D+1.6W, Pu:	51.03828	kips
1.35	Vu:	52.97605	kips
	Mu:	7251.307	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	846.46	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	7419.06	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	8.76	ft
Orthogonal qu=	2.03	ksf
qu/ϕ*qn Ratio=	**33.78%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	6.20	ft
Diagonal qu=	2.44	ksf
qu/ϕ*qn Ratio=	**40.75%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	634.85	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	7419.06	ft-kips

Orthogonal ecc3 = M2/P2 =	11.69	ft
Ortho Non Bearing Length,NBL=	23.37	ft
Orthogonal qu=	2.68	ksf
Diagonal qu=	3.03	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	5371.34		
M Orthogonal:	6362.18	**84.43%**	**Pass**
M Diagonal:	6362.18	**84.43%**	**Pass**