Robinson+Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

June 11, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
167 Coccomo Circle (a/k/a Lester Street), New Britain, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 145-foot level of the existing 188-foot tower at 167 Coccomo Circle in New Britain (the "Property"). The tower and underlying property are owned by Crown Castle. The Council approved Cellco's use of this tower in 2001. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 1900 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas, all at the same 145-foot level. Cellco also intends to replace six (6) existing remote radio heads ("RRHs") and install three new (3) RRHs, for a total of nine (9) RRHs, one (1) each behind its 700 MHz, 1900 MHz and 2100 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 Erin Stewart, Mayor of the City of New Britain.

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. The replacement antennas and RRHs will be located at the 145-foot level on the 188-foot tower.

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

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

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

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

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

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:
Erin Stewart, New Britain Mayor
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

SBNHH-1D65B

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS, dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2180	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

* 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 with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Product Specifications

SBNHH-1D65B

Mechanical Specifications

Color	Light gray
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	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 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®

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.

* 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.

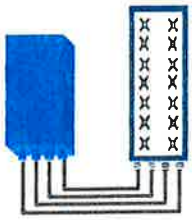
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

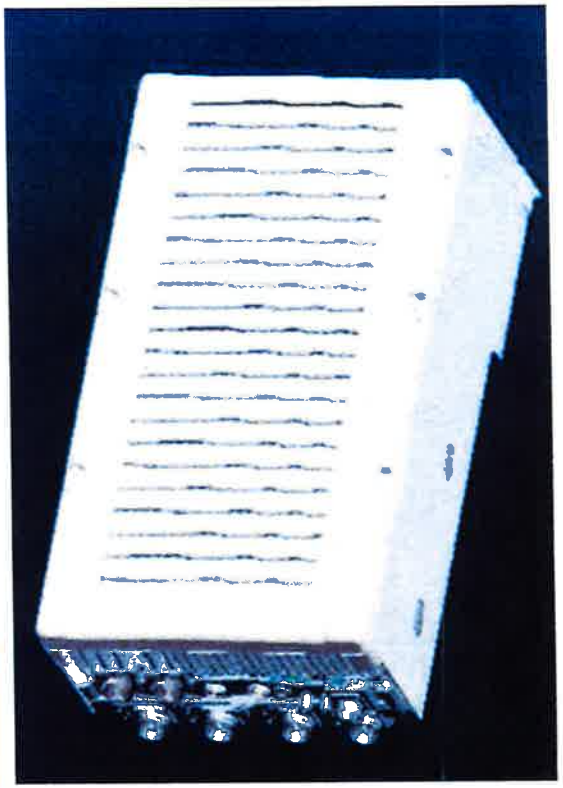
		RRH2x60
RF Output Power		2x60W
Instantaneous Bandwidth		20MHz
Transmitter		2 TX
Receiver	1900 HW version	2 Branch RX – LA6.0.1
	1900A HW version	4 Branch RX – LR13.3
Features		AISG 2.0 for RET/TMA
		Internal Smart Bias-T
Power		-48VDC
CPRI Ports		2 CPRI Rate 3 Ports
External Alarms		4 External User Alarms
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**

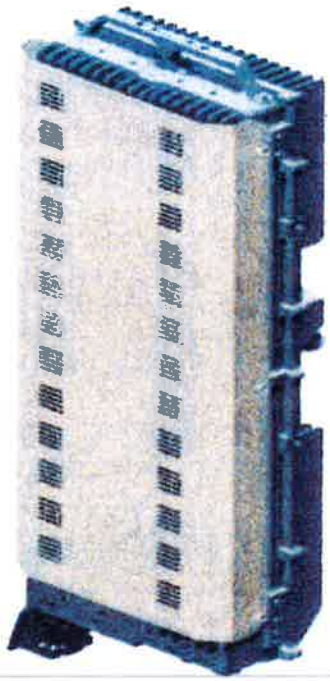


**- Includes solar shield but not mounting brackets (8 lbs.)

Alcatel·Lucent

ALCATEL-LUCENT
WIRELESS PRODUCT DATASHEET
RRH2x60-AWS FOR BAND 4 APPLICATIONS

The Alcatel-Lucent RRH2x60-AWS is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the 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 a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

The Alcatel-Lucent RRH2x60-AWS integrates all the latest technologies. This allows to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

The Alcatel-Lucent RRH2x60-AWS is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

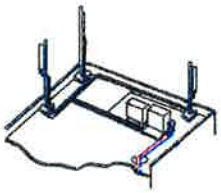
The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

The RRH2x60-AWS includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

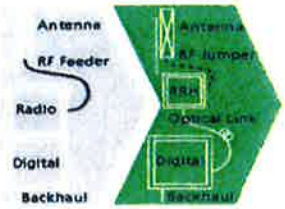
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-AWS is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

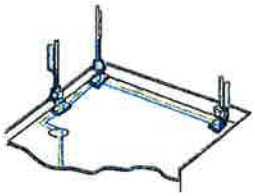
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

- RRH2x60-AWS integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- RRH2x60-AWS is optimized for LTE operation
- RRH2x60-AWS is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control
- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights
- HxWxD : 510x285x186mm (27 l with solar shield)
- Weight : 20 kg (44 lbs)

Electrical Data
- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption (ETSI average traffic load reference) : 250W @2x60W

RF Characteristics
- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity
- Two CPRI optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 20km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications
- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data
- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B, CE Mark – European Directive : 2002/95/EC (ROHS); 2002/96/EC (WEEE); 1999/5/EC (R&TTE)
- Health : EN 50385

Alcatel·Lucent

AT THE SPEED OF IDEAS™

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)

* This data is provisional and subject to change

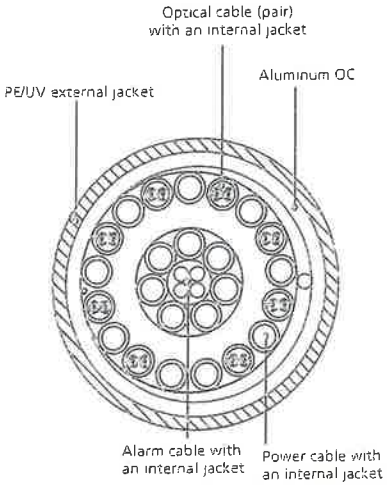


Figure 2: Construction Detail

ATTACHMENT 2

	General	Power	Density					
Site Name: New Britain 3								
Tower Height: 188Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T UMTS	2	1077	190	0.0215	1900	1.0000	2.15%	
*AT&T UMTS	2	565	190	0.0113	880	0.5867	1.92%	
*AT&T GSM	1	283	190	0.0028	880	0.5867	0.48%	
*AT&T GSM	4	646	190	0.0257	1900	1.0000	2.57%	
*AT&T LTE	1	1313	189	0.0132	734	0.4893	2.70%	
*T-Mobile GSM/UMTS	2	12	163	0.0003	1950	1.0000	0.03%	
*T-Mobile UMTS	2	12	163	0.0003	2100	1.0000	0.03%	
*T-Mobile LTE	2	24	163	0.0006	2100	1.0000	0.06%	
Verizon PCS	**11**	**413**	**145**	**0.0777**	**1970**	**1.0000**	**7.77%**	
Verizon Cellular	**9**	**389**	**145**	**0.0599**	**869**	**0.5793**	**10.33%**	
Verizon AWS	**1**	**3500**	**145**	**0.0599**	**2145**	**1.0000**	**5.99%**	
Verizon 700	**1**	**2100**	**145**	**0.0359**	**746**	**0.4973**	**7.22%**	
								41.26%
* Source: Siting Council								

ATTACHMENT 3

Date: **May 19, 2015**

James Ravencraft
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(980) 209-8241

SSOE Group
320 Seven Springs Way, Suite 350
Brentwood, TN 37027
(615) 661-7585
jweigand@ssoe.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	119668
	Carrier Site Name:	New Britain 3 CT
Crown Castle Designation:	**Crown Castle BU Number:**	803175
	Crown Castle Site Name:	CT New Britain 3 CAC 803175
	Crown Castle JDE Job Number:	334512
	Crown Castle Work Order Number:	1061757
	Crown Castle Application Number:	296845 Rev. 1
Engineering Firm Designation:	**SSOE Group Project Number:**	015-00428-00 BC 0732
Site Data:	**Lester Road, New Britain, CT 06050, Hartford County** **Latitude *41° 41' 11.8"*, Longitude *-72° 45' 27.8"*** **188 Foot – Summit Monopole Tower**	

Dear Mr. James Ravencraft,

SSOE Group 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 787989, in accordance with application 296845, 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:

LC5: Existing + 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 80 mph fastest mile.

We at *SSOE Group* 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: Jonathan P. Weigand, EI

Respectfully submitted by:

STATE OF CONNECTICUT BARRY W. BURGESS NO. 26165 LICENSED PROFESSIONAL ENGINEER

Barry W. Burgess, PE
Section Manager

5/19/2015

TABLE OF CONTENTS

1) INTRODUCTION

The existing 188' monopole has eighteen sides and is evenly tapered from 59.61" (flat-flat) at the base to 22.00" (flat-flat) at the top. It has four major sections, connected with slip joints. The structure is galvanized and has no tower lighting.

The tower was originally designed for Crown Castle by Summit Manufacturing of West Hazleton, PA for an 85 mph wind speed with 0.5" radial ice in accordance with TIA/EIA-222-F 1996.

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 using a fastest mile wind speed of 80 mph with no ice, 28 mph with 1" 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
145.0	145.0	3	Alcatel Lucent	RRH2X60-AWS	1	1-5/8	1
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	RRH2x60-700			
		6	Andrew	SBNHH-1D65B w/ Mount Pipe			
		1	Kathrein	800 10735V01 w/ Mount Pipe			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			

Notes:
1) See Appendix B for the proposed coax layout.

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
188.0	189.0	6	Ericsson	RRUS-11	1 2 7	3/8 3/4 1-5/8	
		3	KMW Communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	Powerwave Technologies	7770.00 w/ Mount Pipe			
		6	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
	188.0	1		Miscellaneous [NA 510-2]			
		1		Platform Mount [LP 1201-1]			
177.0	177.0	1		Platform Mount [LP 601-1]			1
160.0	163.0	3	Ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1 13	1/4 1-5/8	
		3	Ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	RFS Celwave	ATMAA1412D-1A20			
	160.0	1		Platform Mount [LP 601-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
145.0	150.0	1	GPS	GPS_A	1 13	1/2 1-5/8	
	145.0	2	Andrew	LNX-6512DS-T4M w/ Mount Pipe			
		3	Antel	BXA-80063/6 w/ Mount Pipe			
		1		Platform Mount [LP 601-1]			
		3	Alcatel Lucent	RRH 2x40-700 W/SOLAR			2
		3	Alcatel Lucent	RRH2x40-AWS			
		1	Andrew	LNX-6512DS-T4M w/ Mount Pipe			
		2	Antel	BXA-171063-12CF-EDIN-2 w/ Mount Pipe			
		1	Antel	BXA-171063-8BF-EDIN-2 w/ Mount Pipe			
		3	Antel	BXA-185090/8CFx2 w/ Mount Pipe			

Notes:
1) Empty mount
2) Existing equipment to be removed; not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
188.0	188.0	12	Generic	1' x 5' x 3" Panel Antenna	-	-
		1	Generic	14' Platform	-	-
177.0	177.0	12	Generic	1' x 5' x 3" Panel Antenna	-	-
		1	Generic	14' Platform	-	-
162.0	162.0	12	Generic	1' x 5' x 3" Panel Antenna	-	-
		1	Generic	14' Platform	-	-
147.0	147.0	12	Generic	1' x 5' x 3" Panel Antenna	-	-
		1	Generic	14' Platform	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Original Tower Drawings	Summit Job #: 12481, dated 12/11/00	Doc ID#: 679659	Crown DMZ
Foundation Drawings	Summit Job #: 12481, dated 12/11/00	Doc ID#: 679660	Crown DMZ
Foundation Mapping	Tower Engineering Professionals Project #: 100063, dated 1/7/10	Doc ID#: 679660	Crown DMZ
Geotechnical Reports	Clough, Harbour & Associates Project #: 8961.07.46, dated 10/26/00	Doc ID#: 679661	Crown DMZ

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) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
2) No foundation reinforcement steel information was available; therefore, the minimum allowable steel per code has been assumed for this analysis.
3) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package, dated 9/25/12 with any adjustments as noted below.

This analysis may be affected if any assumptions are not valid or have been made in error. SSOE Group 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	188 - 137	Pole	TP32.711x22x0.25	1	-11.49	1302.25	57.4	Pass
L2	137 - 90.25	Pole	TP42.03x31.3184x0.3125	2	-19.23	2094.29	85.2	Pass
L3	90.25 - 44.5	Pole	TP51.014x40.3023x0.375	3	-30.05	3048.94	85.7	Pass
L4	44.5 - 0	Pole	TP59.61x48.8988x0.5	4	-48.24	4876.78	70.5	Pass
							Summary	
						Pole (L3)	85.7	Pass
						Rating =	**85.7**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Plate		74.7%	Pass
1	Anchor Rods		74.4%	Pass
1	Foundation Structural		61.6%	Pass
1	Foundation Soil Interaction		88.2%	Pass

Structure Rating (max from all components) =	88.2%

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

4.1) Recommendations

The existing tower and its foundations are sufficient for the proposed loads and do not require modifications.

5) DISCLAIMER OF WARRANTIES

SSOE Group has not performed a site visit to the tower to verify member sizes or antenna/coax loading. SSOE Group shall be contacted immediately if the existing conditions are not as represented on the tower elevation contained in this report in order to evaluate the significance of the discrepancy. SSOE Group has not performed a condition assessment of the tower foundation. This report does not replace a full tower inspection

The engineering services rendered by SSOE Group in connection with this structural analysis are limited to an analysis of the tower structure and theoretical capacity of its main structural members. Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as part of our work. We recommend that material of suitable size and strength be purchased from a reputable tower manufacturer.

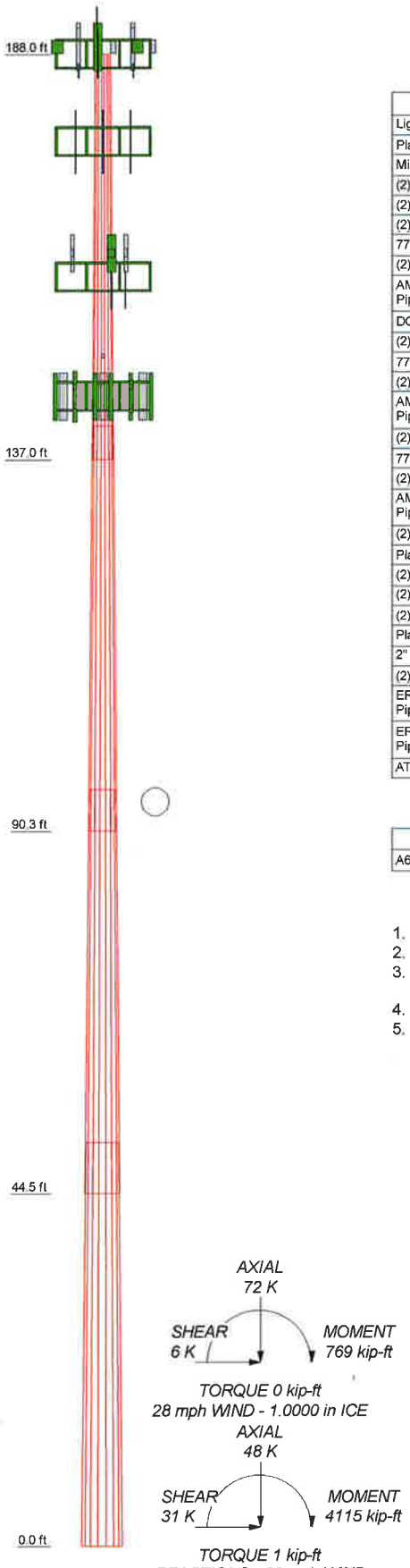
SSOE Group makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. SSOE Group will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data contained in this report. The maximum liability of SSOE Group pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	51.00	51.00	51.00	51.00
Number of Sides	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.5000
Socket Length (ft)	4.25	5.25	6.50	
Top Dia (in)	22.0000	31.3184	40.3023	48.8988
Bot Dia (in)	32.7110	42.0300	51.0140	59.6100
Grade	A607-65			
Weight (K)	3.7	6.3	9.4	14.8

34.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 3/4" x 8'	188	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160
Platform Mount [LP 1201-1]	188	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	160
Miscellaneous [NA 510-2]	188	ATMAA1412D-1A20	160
(2) 2" x 6' Mount Pipe	188	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160
(2) 2" x 6' Mount Pipe	188	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	160
(2) 2" x 6' Mount Pipe	188	ATMAA1412D-1A20	160
7770.00 w/ Mount Pipe	188	Platform Mount [LP 601-1]	145
(2) LGP21401	188	2" x 6' Mount Pipe	145
AM-X-CD-16-65-00T-RET w/ Mount Pipe	188	2" x 6' Mount Pipe	145
DC6-48-60-18-8F	188	2" x 6' Mount Pipe	145
(2) RRUS-11	188	GPS_A	145
7770.00 w/ Mount Pipe	188	BXA-80063/6 w/ Mount Pipe	145
(2) LGP21401	188	LNX-6512DS-T4M w/ Mount Pipe	145
AM-X-CD-16-65-00T-RET w/ Mount Pipe	188	(2) SBNHH-1D65B w/ Mount Pipe	145
(2) RRUS-11	188	RRH2X60-AWS	145
7770.00 w/ Mount Pipe	188	DB-T1-6Z-8AB-0Z	145
(2) LGP21401	188	RRH2x60-700	145
AM-X-CD-16-65-00T-RET w/ Mount Pipe	188	RRH2X60-PCS	145
(2) RRUS-11	188	BXA-80063/6 w/ Mount Pipe	145
Platform Mount [LP 601-1]	177	LNX-6512DS-T4M w/ Mount Pipe	145
(2) 2" x 8' Mount Pipe	177	(2) SBNHH-1D65B w/ Mount Pipe	145
(2) 2" x 8' Mount Pipe	177	RRH2X60-AWS	145
(2) 2" x 8' Mount Pipe	177	RRH2x60-700	145
Platform Mount [LP 601-1]	160	RRH2X60-PCS	145
2" x 8' Mount Pipe	160	BXA-80063/6 w/ Mount Pipe	145
(2) 2" x 8' Mount Pipe	160	(2) SBNHH-1D65B w/ Mount Pipe	145
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160	800 10735V01 w/ Mount Pipe	145
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	160	RRH2X60-AWS	145
ATMAA1412D-1A20	160	RRH2x60-700	145
		RRH2X60-PCS	145

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

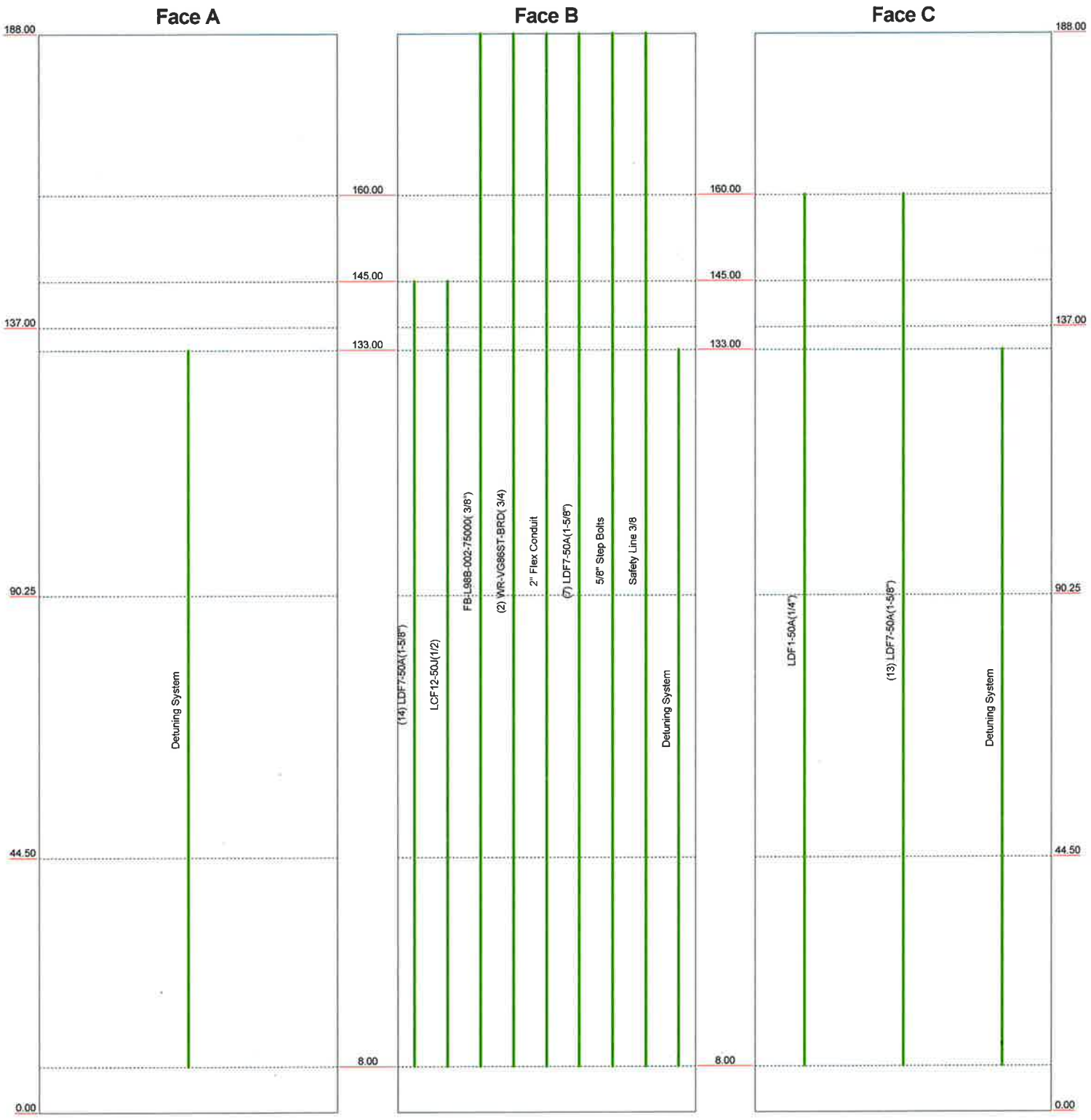
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 85.7%

SSOE Group
320 Seven Springs Way
Brentwood, TN 37027
SSOE
Phone: (615) 661-7585
FAX: (615) 661-7569

Job: BU 803175
Project: 015-00428-00
Client: CCI | Drawn by: 15366 | App'd:
Code: TIA/EIA-222-F | Date: 05/19/15 | Scale: N
Path: F:\Projects\Crown\In Progress\803175\tnx\803175.eri | Dwg No.

0' - 188'

Round | Flat | App In Face | App Out Face | Truss Leg



SSOE Group
320 Seven Springs Way
Brentwood, TN 37027
SSOE
Phone: (615) 661-7585
FAX: (615) 661-7569

Job: BU 803175			
Project: 015-00428-00			
Client: CCI	Drawn by: 15366	App'd:	
Code: TIA/EIA-222-F	Date: 05/19/15	Scale: N	
Path: F:\Projects\Crown\In Progress\803175\tnx\803175.en		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 Hartford County, Connecticut.
- Basic wind speed of 80 mph.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 28 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 50 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		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	188.00-137.00	51.00	4.25	18	22.0000	32.7110	0.2500	1.0000	A607-65 (65 ksi)
L2	137.00-90.25	51.00	5.25	18	31.3184	42.0300	0.3125	1.2500	A607-65 (65 ksi)
L3	90.25-44.50	51.00	6.50	18	40.3023	51.0140	0.3750	1.5000	A607-65 (65 ksi)
L4	44.50-0.00	51.00		18	48.8988	59.6100	0.5000	2.0000	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	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	33.2156	25.7578	3429.0204	11.5237	16.6172	206.3538	6862.5527	12.8813	5.3171	21.269
L2	32.7080	30.7540	3735.3228	11.0071	15.9098	234.7819	7475.5606	15.3799	4.9620	15.879
	42.6784	41.3785	9098.0688	14.8097	21.3512	426.1143	18208.109 1	20.6932	6.8473	21.911
L3	42.0437	47.5235	9571.6471	14.1742	20.4736	467.5120	19155.888 7	23.7663	6.4332	17.155
	51.8010	60.2731	19526.796 6	17.9768	25.9151	753.4907	39079.287 1	30.1423	8.3185	22.183
L4	51.0393	76.8089	22730.963 0	17.1816	24.8406	915.0736	45491.836 0	38.4117	7.7262	15.452
	60.5296	93.8076	41409.239 5	20.9841	30.2819	1367.4593	82872.966 4	46.9127	9.6114	19.223

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 188.00-137.00				1	1	1		
L2 137.00-90.25				1	1	1		
L3 90.25-44.50				1	1	1		
L4 44.50-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	B	No	Inside Pole	145.00 - 8.00	14	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
LCF12-50J(1/2)	B	No	Inside Pole	145.00 - 8.00	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
FB-L98B-002-75000(3/8")	B	No	Inside Pole	188.00 - 8.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	188.00 - 8.00	2	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
						2" Ice	0.00	0.59
						4" Ice	0.00	0.59
2" Flex Conduit	B	No	Inside Pole	188.00 - 8.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
						2" Ice	0.00	0.32
						4" Ice	0.00	0.32
LDF7-50A(1-5/8")	B	No	Inside Pole	188.00 - 8.00	7	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
LDF1-50A(1/4")	C	No	Inside Pole	160.00 - 8.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						4" Ice	0.00	0.06
LDF7-50A(1-5/8")	C	No	Inside Pole	160.00 - 8.00	13	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
5/8" Step Bolts	B	No	CaAa (Out Of Face)	188.00 - 8.00	1	No Ice	0.04	1.00
						1/2" Ice	0.14	1.56
						1" Ice	0.24	2.73
						2" Ice	0.44	6.91
						4" Ice	0.84	22.58
Safety Line 3/8	B	No	CaAa (Out Of Face)	188.00 - 8.00	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
Detuning System	A	No	CaAa (Out Of Face)	133.00 - 8.00	1	No Ice	0.05	0.37
						1/2" Ice	0.30	1.90
						1" Ice	0.40	4.03
						2" Ice	0.60	10.14
						4" Ice	1.00	29.69
Detuning System	B	No	CaAa (Out Of Face)	133.00 - 8.00	1	No Ice	0.05	0.37
						1/2" Ice	0.30	1.90
						1" Ice	0.40	4.03
						2" Ice	0.60	10.14
						4" Ice	1.00	29.69
Detuning System	C	No	CaAa (Out Of Face)	133.00 - 8.00	1	No Ice	0.05	0.37
						1/2" Ice	0.30	1.90
						1" Ice	0.40	4.03
						2" Ice	0.60	10.14
						4" Ice	1.00	29.69

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	188.00-137.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	4.037	0.53
		C	0.000	0.000	0.000	0.000	0.25
L2	137.00-90.25	A	0.000	0.000	0.000	1.958	0.02
		B	0.000	0.000	0.000	5.659	0.96
		C	0.000	0.000	0.000	1.958	0.52
L3	90.25-44.50	A	0.000	0.000	0.000	2.096	0.02
		B	0.000	0.000	0.000	5.717	0.94
		C	0.000	0.000	0.000	2.096	0.51
L4	44.50-0.00	A	0.000	0.000	0.000	1.672	0.01
		B	0.000	0.000	0.000	4.561	0.75
		C	0.000	0.000	0.000	1.672	0.40

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	188.00-137.00	A	1.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	28.713	0.73
		C		0.000	0.000	0.000	0.000	0.25
L2	137.00-90.25	A	1.159	0.000	0.000	0.000	18.892	0.23
		B		0.000	0.000	0.000	45.212	1.35
		C		0.000	0.000	0.000	18.892	0.73
L3	90.25-44.50	A	1.089	0.000	0.000	0.000	19.756	0.23
		B		0.000	0.000	0.000	44.589	1.32

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	19.756	0.72
L4	44.50-0.00	A	1.000	0.000	0.000	0.000	15.249	0.17
		B		0.000	0.000	0.000	34.038	1.02
		C		0.000	0.000	0.000	15.249	0.56

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	188.00-137.00	0.0994	0.0574	0.5477	0.3162
L2	137.00-90.25	0.0965	0.0557	0.4462	0.2576
L3	90.25-44.50	0.0974	0.0562	0.4616	0.2665
L4	44.50-0.00	0.0800	0.0462	0.3982	0.2299

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
Lightning Rod 3/4" x 8'	C	From Leg	0.00 0.00 4.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.00 1.41 2.25 3.67 5.74	1.00 1.41 2.25 3.67 5.74	0.11 0.11 0.13 0.16 0.31
Platform Mount [LP 1201-1]	C	None		0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.10 26.80 30.50 37.90 52.70	23.10 26.80 30.50 37.90 52.70	2.10 2.50 2.90 3.70 5.30
Miscellaneous [NA 510-2]	C	None		0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.00 17.90 22.80 32.60 52.20	13.00 17.90 22.80 32.60 52.20	0.46 0.63 0.81 1.15 1.84
(2) 2" x 6' Mount Pipe	A	From Centroid-Face	3.94 0.69 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.20 1.80 2.17 2.93 4.57	1.20 1.80 2.17 2.93 4.57	0.03 0.04 0.05 0.09 0.23
(2) 2" x 6' Mount Pipe	B	From Centroid-Face	3.94 0.69 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.20 1.80 2.17 2.93 4.57	1.20 1.80 2.17 2.93 4.57	0.03 0.04 0.05 0.09 0.23
(2) 2" x 6' Mount Pipe	C	From Centroid-Face	3.94 0.69 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.20 1.80 2.17 2.93 4.57	1.20 1.80 2.17 2.93 4.57	0.03 0.04 0.05 0.09 0.23
7770.00 w/ Mount Pipe	B	From	3.94	10.0000	188.00	No Ice	6.22	4.35	0.06

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
		Centroid-Face	0.69 1.00			1/2" Ice 1" Ice 2" Ice 4" Ice	6.77 7.30 8.38 10.69	5.20 5.92 7.41 10.76	0.11 0.16 0.29 0.68
(2) LGP21401	B	From Centroid-Face	3.94 0.69 1.00	10.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Centroid-Face	3.94 0.69 1.00	10.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
DC6-48-60-18-8F	B	From Centroid-Face	3.94 0.69 1.00	10.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.22 2.44 2.66 3.15 4.21	2.22 2.44 2.66 3.15 4.21	0.02 0.04 0.06 0.12 0.27
(2) RRUS-11	B	From Centroid-Face	3.94 0.69 1.00	10.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
7770.00 w/ Mount Pipe	C	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.22 6.77 7.30 8.38 10.69	4.35 5.20 5.92 7.41 10.76	0.06 0.11 0.16 0.29 0.68
(2) LGP21401	C	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
(2) RRUS-11	C	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
7770.00 w/ Mount Pipe	A	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.22 6.77 7.30 8.38 10.69	4.35 5.20 5.92 7.41 10.76	0.06 0.11 0.16 0.29 0.68
(2) LGP21401	A	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14

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
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
(2) RRUS-11	A	From Centroid-Face	3.94 0.69 1.00	20.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
Platform Mount [LP 601-1]	C	None		0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.47 33.59 38.71 48.95 69.43	28.47 33.59 38.71 48.95 69.43	1.12 1.51 1.91 2.69 4.26
(2) 2" x 8' Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	0.03 0.04 0.06 0.11 0.28
(2) 2" x 8' Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	0.03 0.04 0.06 0.11 0.28
(2) 2" x 8' Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	0.03 0.04 0.06 0.11 0.28
Platform Mount [LP 601-1]	C	None		0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.47 33.59 38.71 48.95 69.43	28.47 33.59 38.71 48.95 69.43	1.12 1.51 1.91 2.69 4.26
2" x 8' Mount Pipe	B	From Centroid-Face	3.86 -1.04 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	0.03 0.04 0.06 0.11 0.28
(2) 2" x 8' Mount Pipe	C	From Centroid-Face	3.86 -1.04 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	0.03 0.04 0.06 0.11 0.28
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Centroid-Face	3.86 -1.04 3.00	-15.0000	160.00	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	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Centroid-Face	3.86 -1.04 3.00	-15.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81

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
						4" Ice			
ATMAA1412D-1A20	B	From Centroid-Face	3.86 -1.04 3.00	-15.0000	160.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Centroid-Face	3.86 -1.04 3.00	-10.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Centroid-Face	3.86 -1.04 3.00	-10.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ATMAA1412D-1A20	C	From Centroid-Face	3.86 -1.04 3.00	-10.0000	160.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Centroid-Face	3.86 -1.04 3.00	0.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Centroid-Face	3.86 -1.04 3.00	0.0000	160.00	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ATMAA1412D-1A20	A	From Centroid-Face	3.86 -1.04 3.00	0.0000	160.00	No Ice	1.17	0.47	0.01
						1/2" Ice	1.31	0.57	0.02
						1" Ice	1.47	0.69	0.03
						2" Ice	1.81	0.95	0.06
						4" Ice	2.58	1.57	0.14
Platform Mount [LP 601-1]	C	None		0.0000	145.00	No Ice	28.47	28.47	1.12
						1/2" Ice	33.59	33.59	1.51
						1" Ice	38.71	38.71	1.91
						2" Ice	48.95	48.95	2.69
						4" Ice	69.43	69.43	4.26
2" x 6' Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23
2" x 6' Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09
						4" Ice	4.57	4.57	0.23
2" x 6' Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	145.00	No Ice	1.20	1.20	0.03
						1/2" Ice	1.80	1.80	0.04
						1" Ice	2.17	2.17	0.05
						2" Ice	2.93	2.93	0.09

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	4.57	4.57	0.23
						4" Ice			
GPS_A	A	From Centroid-Leg	4.00 / 0.00 / 5.00	0.0000	145.00	No Ice	0.30	0.30	0.00
						1/2" Ice	0.37	0.37	0.00
						1" Ice	0.46	0.46	0.01
						2" Ice	0.65	0.65	0.02
						4" Ice	1.15	1.15	0.08
BXA-80063/6 w/ Mount Pipe	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	7.98	5.41	0.04
						1/2" Ice	8.62	6.56	0.10
						1" Ice	9.23	7.42	0.17
						2" Ice	10.47	9.20	0.33
						4" Ice	13.08	12.95	0.79
LNX-6512DS-T4M w/ Mount Pipe	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	5.85	4.55	0.05
						1/2" Ice	6.31	5.23	0.09
						1" Ice	6.77	5.91	0.15
						2" Ice	7.74	7.34	0.28
						4" Ice	9.80	10.46	0.65
(2) SBNHH-1D65B w/ Mount Pipe	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	8.40	6.82	0.06
						1/2" Ice	8.95	7.78	0.13
						1" Ice	9.51	8.61	0.20
						2" Ice	10.66	10.33	0.38
						4" Ice	13.06	14.12	0.86
RRH2X60-AWS	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
DB-T1-6Z-8AB-0Z	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	0.00	0.00	0.00
						1/2" Ice	0.00	0.00	0.00
						1" Ice	0.00	0.00	0.00
						2" Ice	0.00	0.00	0.00
						4" Ice	0.00	0.00	0.00
RRH2x60-700	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2X60-PCS	A	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	2.57	2.01	0.06
						1/2" Ice	2.79	2.22	0.08
						1" Ice	3.02	2.43	0.10
						2" Ice	3.52	2.89	0.16
						4" Ice	4.61	3.92	0.31
BXA-80063/6 w/ Mount Pipe	B	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	7.98	5.41	0.04
						1/2" Ice	8.62	6.56	0.10
						1" Ice	9.23	7.42	0.17
						2" Ice	10.47	9.20	0.33
						4" Ice	13.08	12.95	0.79
LNX-6512DS-T4M w/ Mount Pipe	B	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	5.85	4.55	0.05
						1/2" Ice	6.31	5.23	0.09
						1" Ice	6.77	5.91	0.15
						2" Ice	7.74	7.34	0.28
						4" Ice	9.80	10.46	0.65
(2) SBNHH-1D65B w/ Mount Pipe	B	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	8.40	6.82	0.06
						1/2" Ice	8.95	7.78	0.13
						1" Ice	9.51	8.61	0.20

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	10.66	10.33	0.38
						2" Ice	13.06	14.12	0.86
						4" Ice			
RRH2X60-AWS	B	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2x60-700	B	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2X60-PCS	B	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	2.57	2.01	0.06
						1/2" Ice	2.79	2.22	0.08
						1" Ice	3.02	2.43	0.10
						2" Ice	3.52	2.89	0.16
						4" Ice	4.61	3.92	0.31
BXA-80063/6 w/ Mount Pipe	C	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	7.98	5.41	0.04
						1/2" Ice	8.62	6.56	0.10
						1" Ice	9.23	7.42	0.17
						2" Ice	10.47	9.20	0.33
						4" Ice	13.08	12.95	0.79
(2) SBNHH-1D65B w/ Mount Pipe	C	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	8.40	6.82	0.06
						1/2" Ice	8.95	7.78	0.13
						1" Ice	9.51	8.61	0.20
						2" Ice	10.66	10.33	0.38
						4" Ice	13.06	14.12	0.86
800 10735V01 w/ Mount Pipe	C	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	9.04	5.49	0.06
						1/2" Ice	9.72	6.71	0.12
						1" Ice	10.37	7.69	0.19
						2" Ice	11.69	9.56	0.36
						4" Ice	14.45	13.51	0.85
RRH2X60-AWS	C	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2x60-700	C	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	3.96	1.82	0.06
						1/2" Ice	4.27	2.08	0.08
						1" Ice	4.60	2.36	0.11
						2" Ice	5.27	2.96	0.17
						4" Ice	6.72	4.25	0.35
RRH2X60-PCS	C	From Centroid-Leg	4.00 / 0.00 / 0.00	30.0000	145.00	No Ice	2.57	2.01	0.06
						1/2" Ice	2.79	2.22	0.08
						1" Ice	3.02	2.43	0.10
						2" Ice	3.52	2.89	0.16
						4" Ice	4.61	3.92	0.31

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	188 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.36	-0.61	-0.51
			Max. Mx	5	-11.51	-471.19	2.91
			Max. My	8	-11.50	2.96	-476.07
			Max. Vy	5	19.76	-471.19	2.91
			Max. Vx	8	19.81	2.96	-476.07
			Max. Torque	10			1.05
L2	137 - 90.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-36.07	-0.91	-0.69
			Max. Mx	5	-19.24	-1464.32	5.50
			Max. My	8	-19.23	5.52	-1471.31
			Max. Vy	5	23.67	-1464.32	5.50
			Max. Vx	8	23.71	5.52	-1471.31
			Max. Torque	10			1.08
L3	90.25 - 44.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-50.16	-1.26	-0.89
			Max. Mx	5	-30.06	-2602.67	7.98
			Max. My	8	-30.05	7.97	-2611.65
			Max. Vy	5	27.39	-2602.67	7.98
			Max. Vx	8	27.44	7.97	-2611.65
			Max. Torque	10			1.11
L4	44.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-72.28	-1.64	-1.10
			Max. Mx	5	-48.24	-4097.05	10.75
			Max. My	8	-48.24	10.70	-4108.22
			Max. Vy	5	31.12	-4097.05	10.75
			Max. Vx	8	31.17	10.70	-4108.22
			Max. Torque	10			1.14

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	21	72.28	0.01	-5.71
	Max. H_x	11	48.26	31.10	-0.05
	Max. H_z	2	48.26	-0.05	31.14
	Max. M_x	2	4107.44	-0.05	31.14
	Max. M_z	5	4097.05	-31.10	0.05
	Max. Torsion	10	1.14	26.96	-15.62
	Min. Vert	1	48.26	0.00	0.00
	Min. H_x	5	48.26	-31.10	0.05
	Min. H_z	8	48.26	0.05	-31.14
	Min. M_x	8	-4108.22	0.05	-31.14
	Min. M_z	11	-4096.17	31.10	-0.05
	Min. Torsion	4	-1.13	-26.96	15.62

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	48.26	0.00	0.00	0.37	-0.42	0.00
Dead+Wind 0 deg - No Ice	48.26	0.05	-31.14	-4107.44	-11.56	0.69
Dead+Wind 30 deg - No Ice	48.26	15.59	-26.99	-3562.64	-2058.33	1.05
Dead+Wind 60 deg - No Ice	48.26	26.96	-15.62	-2063.18	-3553.72	1.13
Dead+Wind 90 deg - No Ice	48.26	31.10	-0.05	-10.75	-4097.05	0.91
Dead+Wind 120 deg - No Ice	48.26	26.90	15.52	2044.71	-3542.67	0.45
Dead+Wind 150 deg - No Ice	48.26	15.50	26.94	3552.37	-2039.10	-0.13
Dead+Wind 180 deg - No Ice	48.26	-0.05	31.14	4108.22	10.70	-0.67
Dead+Wind 210 deg - No Ice	48.26	-15.59	26.99	3563.41	2057.47	-1.04
Dead+Wind 240 deg - No Ice	48.26	-26.96	15.62	2063.94	3552.85	-1.14
Dead+Wind 270 deg - No Ice	48.26	-31.10	0.05	11.51	4096.17	-0.93
Dead+Wind 300 deg - No Ice	48.26	-26.90	-15.52	-2043.94	3541.78	-0.46
Dead+Wind 330 deg - No Ice	48.26	-15.50	-26.94	-3551.58	2038.22	0.14
Dead+Ice+Temp	72.28	0.00	0.00	1.10	-1.64	0.00
Dead+Wind 0 deg+Ice+Temp	72.28	0.01	-5.71	-766.81	-3.21	0.23
Dead+Wind 30 deg+Ice+Temp	72.28	2.86	-4.94	-664.63	-386.47	0.30
Dead+Wind 60 deg+Ice+Temp	72.28	4.94	-2.86	-384.03	-666.65	0.29
Dead+Wind 90 deg+Ice+Temp	72.28	5.70	-0.01	-0.21	-768.68	0.21
Dead+Wind 120 deg+Ice+Temp	72.28	4.93	2.85	383.99	-665.23	0.07
Dead+Wind 150 deg+Ice+Temp	72.28	2.85	4.94	665.63	-384.00	-0.09
Dead+Wind 180 deg+Ice+Temp	72.28	-0.01	5.71	769.23	-0.36	-0.23
Dead+Wind 210 deg+Ice+Temp	72.28	-2.86	4.94	667.05	382.89	-0.30
Dead+Wind 240	72.28	-4.94	2.86	386.45	663.08	-0.29

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+Ice+Temp						
Dead+Wind 270 deg+Ice+Temp	72.28	-5.70	0.01	2.63	765.11	-0.21
Dead+Wind 300 deg+Ice+Temp	72.28	-4.93	-2.85	-381.57	661.66	-0.07
Dead+Wind 330 deg+Ice+Temp	72.28	-2.85	-4.94	-663.20	380.43	0.09
Dead+Wind 0 deg - Service	48.26	0.02	-12.16	-1606.48	-4.80	0.27
Dead+Wind 30 deg - Service	48.26	6.09	-10.54	-1393.37	-805.44	0.42
Dead+Wind 60 deg - Service	48.26	10.53	-6.10	-806.82	-1390.38	0.45
Dead+Wind 90 deg - Service	48.26	12.15	-0.02	-3.96	-1602.90	0.36
Dead+Wind 120 deg - Service	48.26	10.51	6.06	800.06	-1386.03	0.18
Dead+Wind 150 deg - Service	48.26	6.06	10.52	1389.81	-797.90	-0.05
Dead+Wind 180 deg - Service	48.26	-0.02	12.16	1607.26	3.91	-0.27
Dead+Wind 210 deg - Service	48.26	-6.09	10.54	1394.16	804.55	-0.41
Dead+Wind 240 deg - Service	48.26	-10.53	6.10	807.60	1389.50	-0.45
Dead+Wind 270 deg - Service	48.26	-12.15	0.02	4.75	1602.01	-0.36
Dead+Wind 300 deg - Service	48.26	-10.51	-6.06	-799.27	1385.14	-0.18
Dead+Wind 330 deg - Service	48.26	-6.06	-10.52	-1389.02	797.01	0.05

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-48.26	0.00	0.00	48.26	0.00	0.000%
2	0.05	-48.26	-31.14	-0.05	48.26	31.14	0.000%
3	15.59	-48.26	-26.99	-15.59	48.26	26.99	0.000%
4	26.96	-48.26	-15.62	-26.96	48.26	15.62	0.000%
5	31.10	-48.26	-0.05	-31.10	48.26	0.05	0.000%
6	26.90	-48.26	15.52	-26.90	48.26	-15.52	0.000%
7	15.50	-48.26	26.94	-15.50	48.26	-26.94	0.000%
8	-0.05	-48.26	31.14	0.05	48.26	-31.14	0.000%
9	-15.59	-48.26	26.99	15.59	48.26	-26.99	0.000%
10	-26.96	-48.26	15.62	26.96	48.26	-15.62	0.000%
11	-31.10	-48.26	0.05	31.10	48.26	-0.05	0.000%
12	-26.90	-48.26	-15.52	26.90	48.26	15.52	0.000%
13	-15.50	-48.26	-26.94	15.50	48.26	26.94	0.000%
14	0.00	-72.28	0.00	-0.00	72.28	-0.00	0.000%
15	0.01	-72.28	-5.71	-0.01	72.28	5.71	0.000%
16	2.86	-72.28	-4.94	-2.86	72.28	4.94	0.000%
17	4.94	-72.28	-2.86	-4.94	72.28	2.86	0.000%
18	5.70	-72.28	-0.01	-5.70	72.28	0.01	0.000%
19	4.93	-72.28	2.85	-4.93	72.28	-2.85	0.000%
20	2.85	-72.28	4.94	-2.85	72.28	-4.94	0.000%
21	-0.01	-72.28	5.71	0.01	72.28	-5.71	0.000%
22	-2.86	-72.28	4.94	2.86	72.28	-4.94	0.000%
23	-4.94	-72.28	2.86	4.94	72.28	-2.86	0.000%
24	-5.70	-72.28	0.01	5.70	72.28	-0.01	0.000%
25	-4.93	-72.28	-2.85	4.93	72.28	2.85	0.000%
26	-2.85	-72.28	-4.94	2.85	72.28	4.94	0.000%
27	0.02	-48.26	-12.16	-0.02	48.26	12.16	0.000%
28	6.09	-48.26	-10.54	-6.09	48.26	10.54	0.000%
29	10.53	-48.26	-6.10	-10.53	48.26	6.10	0.000%
30	12.15	-48.26	-0.02	-12.15	48.26	0.02	0.000%
31	10.51	-48.26	6.06	-10.51	48.26	-6.06	0.000%
32	6.06	-48.26	10.52	-6.06	48.26	-10.52	0.000%
33	-0.02	-48.26	12.16	0.02	48.26	-12.16	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
34	-6.09	-48.26	10.54	6.09	48.26	-10.54	0.000%
35	-10.53	-48.26	6.10	10.53	48.26	-6.10	0.000%
36	-12.15	-48.26	0.02	12.15	48.26	-0.02	0.000%
37	-10.51	-48.26	-6.06	10.51	48.26	6.06	0.000%
38	-6.06	-48.26	-10.52	6.06	48.26	10.52	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00003091
3	Yes	6	0.00000001	0.00005788
4	Yes	6	0.00000001	0.00005594
5	Yes	5	0.00000001	0.00001774
6	Yes	6	0.00000001	0.00005657
7	Yes	6	0.00000001	0.00005642
8	Yes	5	0.00000001	0.00001290
9	Yes	6	0.00000001	0.00005609
10	Yes	6	0.00000001	0.00005784
11	Yes	5	0.00000001	0.00003654
12	Yes	6	0.00000001	0.00005578
13	Yes	6	0.00000001	0.00005612
14	Yes	4	0.00000001	0.00000255
15	Yes	6	0.00000001	0.00002282
16	Yes	6	0.00000001	0.00002626
17	Yes	6	0.00000001	0.00002612
18	Yes	6	0.00000001	0.00002290
19	Yes	6	0.00000001	0.00002614
20	Yes	6	0.00000001	0.00002617
21	Yes	6	0.00000001	0.00002293
22	Yes	6	0.00000001	0.00002610
23	Yes	6	0.00000001	0.00002618
24	Yes	6	0.00000001	0.00002274
25	Yes	6	0.00000001	0.00002582
26	Yes	6	0.00000001	0.00002585
27	Yes	5	0.00000001	0.00000711
28	Yes	6	0.00000001	0.00000678
29	Yes	6	0.00000001	0.00000636
30	Yes	5	0.00000001	0.00000675
31	Yes	6	0.00000001	0.00000651
32	Yes	6	0.00000001	0.00000648
33	Yes	5	0.00000001	0.00000582
34	Yes	6	0.00000001	0.00000639
35	Yes	6	0.00000001	0.00000678
36	Yes	5	0.00000001	0.00000818
37	Yes	6	0.00000001	0.00000633
38	Yes	6	0.00000001	0.00000640

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	188 - 137 (1)	TP32.711x22x0.25	51.00	0.00	0.0	39.000	25.0495	-11.49	976.93	0.012
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	51.00	0.00	0.0	39.000	40.2848	-19.23	1571.11	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 $\frac{P}{P_a}$
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	51.00	0.00	0.0	39.000	58.6481	-30.05	2287.28	0.013
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	51.00	0.00	0.0	39.000	93.8076	-48.24	3658.50	0.013

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	188 - 137 (1)	TP32.711x22x0.25	477.40	29.361	39.000	0.753	0.00	0.000	39.000	0.000
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	1474.36	43.814	39.000	1.123	0.00	0.000	39.000	0.000
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	2616.34	44.017	39.000	1.129	0.00	0.000	39.000	0.000
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	4114.74	36.108	39.000	0.926	0.00	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	188 - 137 (1)	TP32.711x22x0.25	19.85	0.792	26.000	0.061	0.94	0.028	26.000	0.001
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	23.75	0.590	26.000	0.045	0.97	0.014	26.000	0.001
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	27.47	0.468	26.000	0.036	1.01	0.008	26.000	0.000
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	31.20	0.333	26.000	0.026	1.04	0.004	26.000	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	188 - 137 (1)	0.012	0.753	0.000	0.061	0.001	0.766 ✔	1.333	H1-3+VT ✔
L2	137 - 90.25 (2)	0.012	1.123	0.000	0.045	0.001	1.136 ✔	1.333	H1-3+VT ✔
L3	90.25 - 44.5 (3)	0.013	1.129	0.000	0.036	0.000	1.142 ✔	1.333	H1-3+VT ✔
L4	44.5 - 0 (4)	0.013	0.926	0.000	0.026	0.000	0.939 ✔	1.333	H1-3+VT ✔

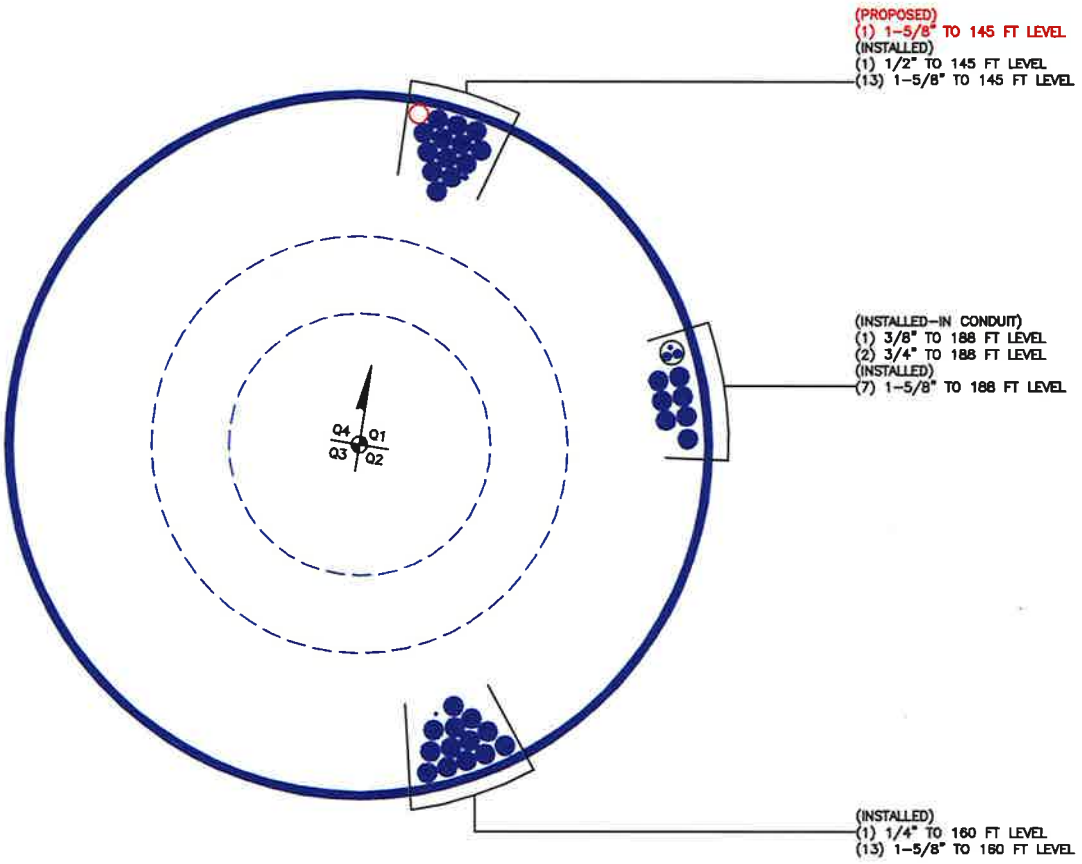
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	188 - 137	Pole	TP32.711x22x0.25	1	-11.49	1302.25	57.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L2	137 - 90.25	Pole	TP42.03x31.3184x0.3125	2	-19.23	2094.29	85.2	Pass
L3	90.25 - 44.5	Pole	TP51.014x40.3023x0.375	3	-30.05	3048.94	85.7	Pass
L4	44.5 - 0	Pole	TP59.61x48.8988x0.5	4	-48.24	4876.78	70.5	Pass
						Summary	ELC:	Existing/Proposed
						Pole (L3)	85.7	Pass
						Rating =	85.7	Pass

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED)
(1) 1-5/8" TO 145 FT LEVEL
(INSTALLED)
(1) 1/2" TO 145 FT LEVEL
(13) 1-5/8" TO 145 FT LEVEL
(INSTALLED-IN CONDUIT)
(1) 3/8" TO 188 FT LEVEL
(2) 3/4" TO 188 FT LEVEL
(INSTALLED)
(7) 1-5/8" TO 188 FT LEVEL
Q4
Q1
Q3
Q2
(INSTALLED)
(1) 1/4" TO 160 FT LEVEL
(13) 1-5/8" TO 160 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

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#: *803175*
Site Name: *CT New Britain 3CAC*
App #: *296845 Rev. 1*

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	67	in
Anchor Spacing:	6.125	in

Plate Data		
W=Side:	66	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	14	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:	59.61	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:	4115	ft-kips
Unfactored Axial, P:	48	kips
Unfactored Shear, V:	31	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	145.0 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	74.4% **Pass**

Base Plate Results Flexural Check

Base Plate Stress:	37.4 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	74.7% **Pass**

PL Ref. Data	
Yield Line (in):	33.73
Max PL Length:	33.73

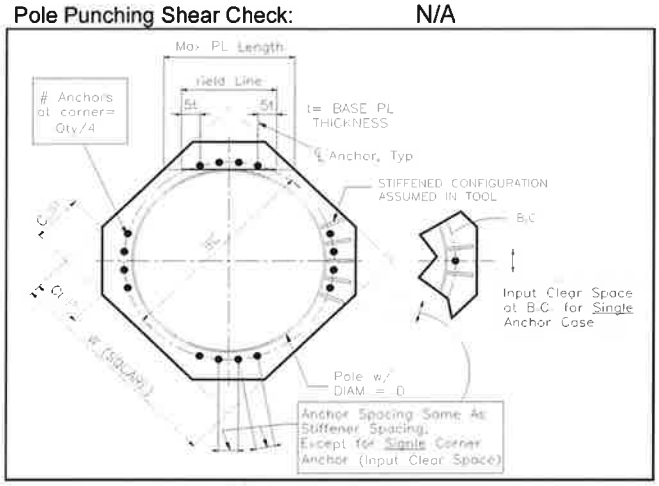
N/A - Unstiffened

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#: *803175*
Site Name: *CT New Britain 3 CAC*
App #: *296845 Rev. 1*

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:	3	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	5.92	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	26	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:	3.42	ft
Soil (above pad) Height:	2.92	ft

Soil Parameters		
Unit Weight, γ:	110.0	pcf
Ultimate Bearing Capacity, qn:	12.00	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	30.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	9.00	ksf
Passive Pres. Coeff., Kp	3.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	41.9	kips
Pad Force Location Above D:	1.33	ft
ϕ(Passive Pressure Moment):	55.67	ft-kips
Factored O.T. M(WL), "1.6W":	5834.4	ft-kips
Factored OT (MW-Msoil), M1	5778.72	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	1.69	ft
Sum of Soil Wedges Wt:	18.99	kips
Soil Wedges ecc, K1:	6.98	ft
Ftg+Soil above Pad wt:	533.6	kips
Unfactored (Total ftg-soil Wt):	552.59	kips
1.2D. **No Soil Wedges**.	697.93	kips
0.9D. **With Soil Wedges**	540.53	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:	48	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	31	kips
Unfactored WL Moment, M:	4115	ft-kips

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	57.6	kips
0.90	0.9D+1.6W, Pu:	43.2	kips
1.35	Vu:	41.85	kips
	Mu:	5555.25	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	697.93	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	5778.72	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	8.28	ft
Orthogonal qu=	2.84	ksf
qu/ϕ*qn Ratio=	**31.59%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	5.85	ft
Diagonal qu=	3.42	ksf
qu/ϕ*qn Ratio=	**37.96%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

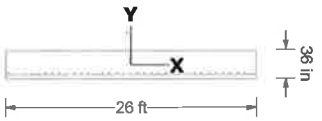
0.9D+1.6W Load Combination, Bearing Results:

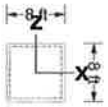
(**w/ Soil Wedges**) [Reaction+Conc+Soil]	540.53	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	5659.51	ft-kips

Orthogonal ecc3 = M2/P2 =	10.47	ft
Ortho Non Bearing Length,NBL=	20.94	ft
Orthogonal qu=	4.11	ksf
Diagonal qu=	4.31	ksf

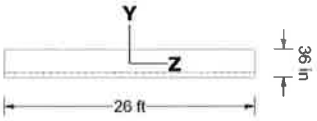
Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	4115.00		
M Orthogonal:	4666.83	**88.18%**	**Pass**
M Diagonal:	4666.83	**88.18%**	**Pass**

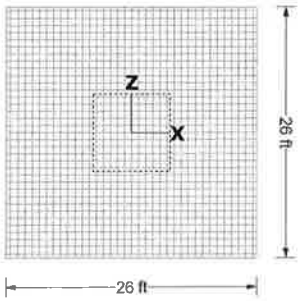
Design Detail

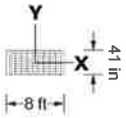




Dowels: 36 - #11
Longitudinal: 36 - #11
Ties: #5 @ 4 in
X Bars: 35 - #11 (@ ~8.9 in)
Z Bars: 35 - #11 (@ ~8.9 in)







Check Summary

Ratio	Check	Provided	Required	Combination
— Footing —				
✓ 0.137	X Flexure (-Z)	6837 ft·k	938.7 ft·k	
✓ 0.137	X Flexure (+Z)	6837 ft·k	938.7 ft·k	
✓ 0.446	Z Flexure (-X)	7183 ft·k	3207 ft·k	
✓ 0.446	Z Flexure (+X)	7183 ft·k	3207 ft·k	
✓ 0.197	Shear (-Z)	766.1 k	150.9 k	
✓ 0.197	Shear (+Z)	766.1 k	150.9 k	
✓ 0.000	Shear (-X)	802.2 k	0 k	
✓ 0.616	Shear (+X)	802.2 k	494 k	
✓ 0.273	Punching Shear	164.3 psi	44.83 psi	
— Pedestal —				
✓ 0.007	Axial	13898 k	102 k	
✓ 0.485	Biaxial Bending	0.485	1.000	
✓ 0.030	Shear X	1352 k	40 k	
✓ 0.000	Shear Z	1352 k	0 k	

Criteria

Building Code	IBC 2006
Strength Load Combinations	IBC 2006 (Strength)
Concrete Weight	150 lb/ft³
Parme beta (for biaxial)	0.65
Include footing weight in strength bearing pressure	Yes
Include overburden in strength bearing pressure	Yes

Loads Summary (Prefactored Loads)

Load Set	Combination	Type	P	Mx	Mz	Vx	Vz	Overburden	Footing Weight
Tower Reactions		Strength	102 k	0 ft·k	5350 ft·k	40 k	0 k	321 psf	304.2 k