

February 28, 2018

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification
1455 Forbes Street, East Hartford, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) antennas at the 111-foot level of the existing 131-foot tower at 1455 Forbes Street in East Hartford, Connecticut (the “Property”). The tower is owned by Crown Castle (“Crown”). The Council approved Cellco’s use of this tower in 1991. Cellco now intends to remove six (6) of its existing remote radio heads (“RRHs”), install nine (9) new RRHs behind its antennas and install one (1) HYBRIFLEX™ fiber optic antenna cable. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to East Hartford Mayor, Marcia A. Leclerc; Jeffrey Cormier, East Hartford’s Town Planner; Robert Handel, the owner of the Property; and Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco’s new RRHs will be installed on Cellco’s existing antenna platform at the 111-foot level of the 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 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).

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5.

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:

Marcia A. Leclerc, Mayor
Jeffrey Cormier, Town Planner
Robert Handel
Crown Castle
Tim Parks

ATTACHMENT 1

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.

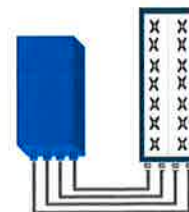
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the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

TECHNICAL SPECIFICATIONS

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.)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
Volume in L	38 (with solar shield)
Weight in kg (lb) (w/a mounting HW)	26 (57.2) (with solar shield)
DC voltage range	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions	-40°C (-40°F) /+55°C (+131°F) IP65
Wind load (@150km/h or 93mph)	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

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ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new 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 B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 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, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 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 B25 RRH4x30 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.

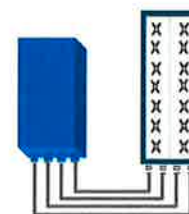


FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx 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

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2) RX Diversity scheme	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) Volume (w/ solar shield) in L Weight (w/ solar shield) in kg (lb)	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 580W typical @100% RF load
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 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 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

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B25 RRH4x30

ALCATEL-LUCENT DATA SHEET REV1.1 – JANUARY 2015

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 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. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.



The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

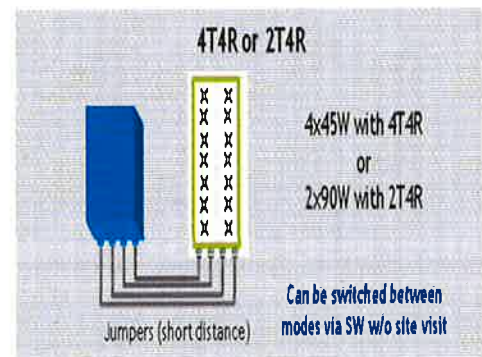
Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz 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 AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



TECHNICAL SPECIFICATIONS

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (In 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme Receiver Sensivity (FRC A1-3)	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity -104.5 dBm maximum
Sizes (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (In 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) / +55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

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

Product Description

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

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

Features/Benefits

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

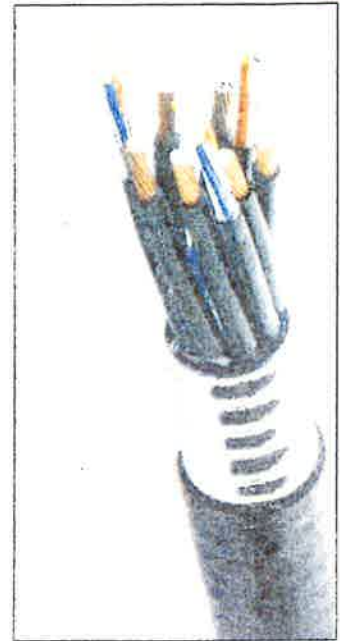


Figure 1: HYBRIFLEX Series

Technical Specifications

Structure			
Outer Conductor Armor	Corrugated Aluminum	(mm (in))	46.5 (1.83)
Jacket	Polyethylene, PE	(mm (in))	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
Weight, Approximate		(kg/m (lb/ft))	1.9 (1.30)
Minimum Bending Radius, Single Bending		(mm (in))	200 (8)
Minimum Bending Radius, Repeated Bending		(mm (in))	500 (20)
Recommended/Maximum Clamp Spacing		(m (ft))	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	0.68 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		(Ω/km (Ω/1000ft))	2.1 (0.307)
Optical Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		(μm)	50/125
Primary Coating (Acrylate)		(μm)	245
Buffer Diameter, Nominal		(μm)	900
Secondary Protection, Jacket, Nominal		(mm (in))	2.0 (0.08)
Minimum Bending Radius		(mm (in))	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		(mm (AWG))	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		(mm (AWG))	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		(mm (in))	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Environment			
Installation Temperature		(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature		(°C (°F))	-40 to +65 (-40 to 149)

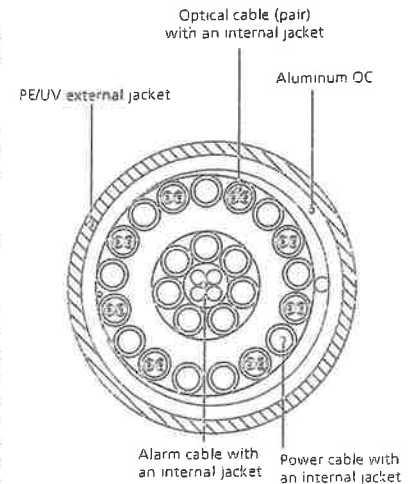


Figure 2: Construction Detail

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

ATTACHMENT 2

Site Name: Forbes (East Hartford) Tower Height: 131'		General	Power	Density				
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Sprint	1	438	97	850	0.0190	0.5667	0.34%	
*Sprint	2	438	97	850	0.0380	0.5667	0.67%	
*Sprint	5	622	97	1900	0.1352	1.0000	1.35%	
*Sprint	2	1556	97	1900	0.1352	1.0000	1.35%	
*Sprint	8	778	97	2500	0.2703	1.0000	2.70%	
*Clearwire	2	153	97	2496	0.0133	1.0000	0.13%	
*Clearwire	1	211	101	18 GHz	0.0084	1.0000	0.08%	
*AT&T-LTE	2	1211	120	700	0.0670	0.4667	1.44%	
*AT&T-PCS-LTE	2	1634	120	1900	0.0904	1.0000	0.90%	
*AT&T-WCS-LTE	2	1964	120	2300	0.1087	1.0000	1.09%	
*AT&T-UMTS	2	419	120	850	0.0232	0.5667	0.41%	
*AT&T-PCS-UMTS	2	817	120	1900	0.0452	1.0000	0.45%	
*AT&T-PCS-GSM	2	817	120	1900	0.0452	1.0000	0.45%	
*T-Mobile	4	2334	87	1900/2100	0.5118	1.0000	5.12%	
*T-Mobile	1	865	87	700	0.0474	0.4667	1.02%	
*T-Mobile	6	1167	87	1900/2100	0.3838	1.0000	3.84%	
VZW PCS	1	5000	5000	111	0.1459	1.0	14.59%	
VZW Cellular LTE								
VZW Cellular	3	389	1167	111	0.0341	0.579333	5.88%	
VZW AWS	1	7400	7400	111	0.2160	1.0	21.60%	
VZW 700	1	2200	2200	111	0.0642	0.497333	12.91%	76.3%
* Source: Siting Council								

ATTACHMENT 3



Date: March 25, 2017

Timothy Howell
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
980.209.8242

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
stschanen@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation:	Verizon Wireless Co-Locate	
	Carrier Site Number:	119711
	Carrier Site Name:	Forbes ST, CT
Crown Castle Designation:	Crown Castle BU Number:	806376
	Crown Castle Site Name:	HRT 100 943239
	Crown Castle JDE Job Number:	424259
	Crown Castle Work Order Number:	1381949
	Crown Castle Application Number:	378432 Rev. 0
Engineering Firm Designation:	Paul J Ford and Company Project Number:	37517-1009.002.7805
Site Data:	1455 FORBES STREET, EAST HARTFORD, Hartford County, CT	
	Latitude 41° 43' 53.3", Longitude -72° 36' 28"	
	131 Foot - Monopole Tower	

Dear Timothy Howell,

Paul J Ford and Company 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 1016496, in accordance with application 378432, 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:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment	Sufficient Capacity
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.	

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the proposed modifications drawings, referenced in Table 4 of this report, for the determined available structural capacity to be effective.

We at Paul J Ford and Company appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Seth Tschanen, E.I.
Structural Designer



MAR 30 2017

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1) INTRODUCTION

This tower is a 131 ft Monopole tower designed by VALMONT in January of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

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
107.0	111.0	3	alcatel lucent	B25 RRH4X30	1	1 5/8	--
		3	alcatel lucent	B66A RRH4X45			
	107.0	3	alcatel lucent	B13 RRH 4X30			

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			
121.0	121.0	1	tower mounts	T-Arm Mount [TA 702-3]	1 2 6	3/8 3/4 1 1/4	1			
		3	ericsson	RRUS-11						
		3	kathrein	800 10121 w/ Mount Pipe						
		6	powerwave technologies	LGP21401						
	120.0	1	raycap	DC6-48-60-18-8F	1 2	3/8 3/4	2			
		3	kathrein	80010798 w/ Mount Pipe						
		3	ericsson	RRUS 32						
		3	ericsson	RRUS 32 B2						
		1	raycap	DC6-48-60-18-8F						
		3	alcatel lucent	RRH2X60-AWS				-- 13 --	-- 1 5/8 --	3 1 3
107.0	111.0	3	alcatel lucent	RRH2X60-PCS						
		6	andrew	SBNHH-1D65B						
		3	antel	BXA-70063/6CFx4						
		3	antel	BXA-80063/4CF						
		2	rfs celwave	DB-T1-6Z-8AB-0Z						
	107.0	107.0	6	rfs celwave	FD9R6004/2C-3L					
			1	tower mounts	Platform Mount (LP 101-1)					
		3	alcatel lucent	RRH2x60-700			3			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
99.0	100.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	--	--	1
	99.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz w/Mount Pipe			
		1	tower mounts	Side Arm Mount [SO 101-3]			
	98.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz w/Mount Pipe			
97.0	101.0	2	andrew	VHLP2.5-11	3	5/16	1
		2	dragonwave	HORIZON COMPACT			
	97.0	3	kathrein	840 10054			
		1	motorola	TIMING 2000			
		3	rfs celwave	APXVSP18-C-A20			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		3	samsung	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount (LP 101-1)			
87.0	87.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe	1	7/8	2
		3	commscope	LNx-6515DS-VTM w/ Mount Pipe	12 1	1 1/4 1 5/8	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
		1	tower mounts	T-Arm Mount [TA 602-3]			

- 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)
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3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Welti, 11/11/91	262381	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont, 10613-91 & 10614-91, 11/30/91	262389	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 1/22/91	262386	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 127151, 2/26/2013	3675451	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25676, 6/4/2014	5099148	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 150936, 10/2/15	5921968	CCISITES
4-TOWER PROPOSED REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2016777.806376.03, 10/21/06	6515906	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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) Monopole was reinforced in conformance with the referenced modification drawings.
- 5) Monopole will be modified in conformance with the referenced proposed modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company 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	131 - 110	Pole	TP15.525x10.525x0.1875	1	-1.90	682.56	25.3	Pass
L2	110 - 90	Pole	TP20.528x15.525x0.25	2	-9.07	1203.23	70.8	Pass
L3	90 - 84.5833	Pole	TP21.883x20.528x0.4767	3	-12.11	1411.51	77.3	Pass
L4	84.5833 - 83	Pole	TP22.2791x21.883x0.6243	4	-12.47	1870.42	62.8	Pass
L5	83 - 81	Pole	TP22.7794x22.2791x0.3895	5	-12.84	1579.26	78.1	Pass
L6	81 - 70	Pole	TP25.531x22.7794x0.5101	6	-14.38	1603.57	95.0	Pass
L7	70 - 67.0833	Pole	TP25.7604x23.5102x0.4353	7	-16.42	2002.90	89.8	Pass
L8	67.0833 - 64.0833	Pole	TP26.5107x25.7604x0.4313	8	-17.10	2045.15	93.0	Pass
L9	64.0833 - 62.44	Pole	TP26.9217x26.5107x0.4775	9	-17.49	2199.71	89.3	Pass
L10	62.44 - 59.5	Pole	TP27.6571x26.9217x0.6039	10	-18.32	2277.80	91.3	Pass
L11	59.5 - 53.5	Pole	TP29.1578x27.6571x0.699	11	-20.25	2612.78	87.5	Pass
L12	53.5 - 44.5833	Pole	TP31.388x29.1578x0.6831	12	-23.22	2739.35	93.2	Pass
L13	44.5833 - 34.08	Pole	TP34.015x31.388x0.6644	13	-25.15	2788.06	97.2	Pass
L14	34.08 - 31.5	Pole	TP34.0326x31.4557x0.7154	14	-28.33	3058.35	96.0	Pass
L15	31.5 - 26.85	Pole	TP35.194x34.0326x0.6102	15	-30.90	3250.22	95.1	Pass
L16	26.85 - 18	Pole	TP37.4043x35.194x0.6404	16	-34.23	3522.80	94.3	Pass
L17	18 - 17.0833	Pole	TP37.6333x37.4043x0.8042	17	-34.66	4607.11	73.2	Pass
L18	17.0833 - 13	Pole	TP38.6531x37.6333x0.707	18	-36.38	4179.22	82.8	Pass
L19	13 - 11.85	Pole	TP38.9404x38.6531x0.8711	19	-36.96	5122.09	68.6	Pass
L20	11.85 - 6.5	Pole	TP40.2766x38.9404x0.6358	20	-39.11	3882.46	92.8	Pass
L21	6.5 - 4	Pole	TP40.901x40.2766x0.7503	21	-40.28	4177.62	88.1	Pass
L22	4 - 0	Pole	TP41.9x40.901x0.8546	22	-42.39	5352.53	70.9	Pass
							Summary	
						Pole (L13)	97.2	Pass
						Rating =	97.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	99.3	Pass
1	Base Plate	0	66.9	Pass
1	Base Foundation Steel	0	57.2	Pass
1	Base Foundation Soil Interaction	0	28.7	Pass
1	Flange Connection	110	23.7	Pass

Structure Rating (max from all components) =	99.3%
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Notes:

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

4.1) Recommendations

The monopole and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the modifications as per the proposed modification drawings referenced in Table 4.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 1) Tower is located in Hartford County, Connecticut.
- 2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- 3) Basic wind speed of 97 mph.
- 4) Structure Class II.
- 5) Exposure Category C.
- 6) Topographic Category 1.
- 7) Crest Height 0.0000 ft.
- 8) Nominal ice thickness of 1.0000 in.
- 9) Ice thickness is considered to increase with height.
- 10) Ice density of 56.00 pcf.
- 11) A wind speed of 50 mph is used in combination with ice.
- 12) Temperature drop of 50 °F.
- 13) Deflections calculated using a wind speed of 60 mph.
- 14) A non-linear (P-delta) analysis was used.
- 15) Pressures are calculated at each section.
- 16) Stress ratio used in pole design is 1.
- 17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	131.0000- 110.0000	21.0000	0.00	12	10.5250	15.5250	0.1875	0.7500	A572-65 (65 ksi)
L2	110.0000- 90.0000	20.0000	0.00	12	15.5250	20.5280	0.2500	1.0000	A572-65 (65 ksi)
L3	90.0000- 84.5833	5.4167	0.00	12	20.5280	21.8830	0.4767	1.9069	Reinf 37.88 ksi (38 ksi)
L4	84.5833- 83.0000	1.5833	0.00	12	21.8830	22.2791	0.6243	2.4972	Reinf 37.89 ksi (38 ksi)
L5	83.0000- 81.0000	2.0000	0.00	12	22.2791	22.7794	0.3895	1.5578	Reinf 49.60 ksi (50 ksi)
L6	81.0000- 70.0000	11.0000	4.00	12	22.7794	25.5310	0.5101	2.0405	Reinf 35.84 ksi (36 ksi)
L7	70.0000-	6.9167	0.00	12	23.5101	25.7604	0.4353	1.7411	Reinf 49.76 ksi

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Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade (ksi)
L8	67.0833-64.0833	3.0000	0.00	12	25.7604	26.5107	0.4313	1.7250	Reinf 49.80 ksi (50 ksi)
L9	64.0833-62.4400	1.6433	0.00	12	26.5107	26.9217	0.4775	1.9099	Reinf 47.71 ksi (48 ksi)
L10	62.4400-59.5000	2.9400	0.00	12	26.9217	27.6571	0.6039	2.4158	Reinf 38.18 ksi (38 ksi)
L11	59.5000-53.5000	6.0000	0.00	12	27.6571	29.1578	0.6990	2.7960	Reinf 35.97 ksi (36 ksi)
L12	53.5000-44.5833	8.9167	0.00	12	29.1578	31.3880	0.6831	2.7322	Reinf 35.77 ksi (36 ksi)
L13	44.5833-34.0800	10.5033	4.92	12	31.3880	34.0150	0.6644	2.6575	Reinf 35.78 ksi (36 ksi)
L14	34.0800-31.5000	7.5000	0.00	12	31.4557	34.0326	0.7154	2.8616	Reinf 36.10 ksi (36 ksi)
L15	31.5000-26.8500	4.6500	0.00	12	34.0326	35.1940	0.6102	2.4408	Reinf 42.18 ksi (42 ksi)
L16	26.8500-18.0000	8.8500	0.00	12	35.1940	37.4043	0.6404	2.5614	Reinf 40.98 ksi (41 ksi)
L17	18.0000-17.0833	0.9167	0.00	12	37.4043	37.6333	0.8042	3.2168	Reinf 42.60 ksi (43 ksi)
L18	17.0833-13.0000	4.0833	0.00	12	37.6333	38.6531	0.7070	2.8281	Reinf 42.66 ksi (43 ksi)
L19	13.0000-11.8500	1.1500	0.00	12	38.6531	38.9404	0.8711	3.4844	Reinf 42.30 ksi (42 ksi)
L20	11.8500-6.5000	5.3500	0.00	12	38.9404	40.2766	0.6358	2.5430	Reinf 42.19 ksi (42 ksi)
L21	6.5000-4.0000	2.5000	0.00	12	40.2766	40.9010	0.7503	3.0010	Reinf 37.98 ksi (38 ksi)
L22	4.0000-0.0000	4.0000		12	40.9010	41.9000	0.8546	3.4183	Reinf 41.79 ksi (42 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	10.8963	6.2413	85.1314	3.7008	5.4520	15.6148	172.4993	3.0718	2.3182	12.364
	16.0727	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
L2	16.0727	12.2964	366.2060	5.4684	8.0419	45.5370	742.0327	6.0519	3.4907	13.963
	21.2521	16.3238	856.7561	7.2595	10.6335	80.5714	1736.0201	8.0341	4.8315	19.326
L3	21.2521	30.7795	1579.5432	7.1784	10.6335	148.5440	3200.5827	15.1487	4.2239	8.86
	22.6549	32.8594	1921.8885	7.6634	11.3354	169.5476	3894.2672	16.1724	4.5870	9.622
L4	22.6549	42.7352	2465.1574	7.6106	11.3354	217.4744	4995.0772	21.0330	4.1915	6.714
	23.0650	43.5314	2605.5216	7.7524	11.5405	225.7710	5279.4932	21.4248	4.2977	6.884
L5	23.0650	27.4502	1678.8311	7.8365	11.5405	145.4724	3401.7670	13.5102	4.9271	12.651
	23.5829	28.0776	1796.5942	8.0156	11.7997	152.2576	3640.3869	13.8189	5.0611	12.996
L6	23.5829	36.5791	2315.4200	7.9724	11.7997	196.2270	4691.6686	18.0031	4.7377	9.288
	26.4316	41.0990	3284.1419	8.9575	13.2251	248.3272	6654.5619	20.2277	5.4752	10.733
L7	25.6867	32.3410	2197.9556	8.2608	12.1783	180.4819	4453.6539	15.9173	5.1342	11.795
	26.6691	35.4949	2905.7220	9.0664	13.3439	217.7570	5887.7806	17.4695	5.7373	13.181
L8	26.6691	35.1726	2880.2570	9.0678	13.3439	215.8487	5836.1815	17.3109	5.7480	13.329
	27.4459	36.2146	3143.8891	9.3365	13.7326	228.9370	6370.3716	17.8237	5.9491	13.795
L9	27.4459	40.0257	3462.4354	9.3199	13.7326	252.1334	7015.8327	19.6994	5.8252	12.2
	27.8714	40.6577	3629.0318	9.4670	13.9455	260.2304	7353.4022	20.0105	5.9354	12.431
L10	27.8714	51.1799	4524.6383	9.4218	13.9455	324.4525	9168.1439	25.1892	5.5965	9.267
	28.6327	52.6099	4914.6000	9.6850	14.3264	343.0459	9958.3120	25.8930	5.7935	9.593
L11	28.6327	60.6767	5628.4056	9.6510	14.3264	392.8705	11404.675	29.8632	5.5388	7.924
	30.1863	64.0544	6621.6606	10.1882	15.1037	438.4126	13417.279	31.5256	5.9410	8.499
L12	30.1863	62.6279	6481.4511	10.1939	15.1037	429.1295	13133.177	30.8235	5.9837	8.76
	32.4952	67.5330	8126.7669	10.9924	16.2590	499.8330	16467.033	33.2377	6.5814	9.635
L13	32.4952	65.7271	7919.0636	10.9990	16.2590	487.0583	16046.169	32.3489	6.6314	9.981
	35.2149	71.3471	10129.082	11.9395	17.6198	574.8703	20524.267	35.1149	7.3355	11.041

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Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L14	34.3154	70.8139	8541.2107	11.0050	16.2940	524.1924	17306.808	34.8524	6.5128	9.104
	35.2331	76.7501	10874.305	11.9276	17.6289	616.8460	22034.291	37.7741	7.2034	10.069
L15	35.2331	65.6687	9363.1031	11.9652	17.6289	531.1229	18972.185	32.3201	7.4854	12.267
	36.4355	67.9506	10373.475	12.3810	18.2305	569.0183	21019.473	33.4432	7.7967	12.777
L16	36.4355	71.2481	10857.911	12.3702	18.2305	595.5912	22001.072	35.0662	7.7158	12.049
	38.7238	75.8058	13077.766	13.1615	19.3754	674.9659	26499.100	37.3093	8.3082	12.974
L17	38.7238	94.7758	16205.001	13.1029	19.3754	836.3679	32835.727	46.6458	7.8691	9.785
	38.9608	95.3687	16511.016	13.1848	19.4940	846.9775	33455.795	46.9375	7.9305	9.861
L18	38.9608	84.0677	14631.391	13.2196	19.4940	750.5570	29647.166	41.3756	8.1909	11.585
	40.0167	86.3895	15877.462	13.5847	20.0223	792.9881	32172.044	42.5183	8.4642	11.971
L19	40.0167	105.9752	19309.056	13.5260	20.0223	964.3765	39125.384	52.1578	8.0245	9.212
	40.3140	106.7809	19752.792	13.6288	20.1711	979.2617	40024.512	52.5543	8.1015	9.3
L20	40.3140	78.4139	14685.249	13.7131	20.1711	728.0339	29756.296	38.5930	8.7322	13.735
	41.6974	81.1493	16276.314	14.1914	20.8633	780.1423	32980.226	39.9392	9.0903	14.299
L21	41.6974	95.4891	19041.994	14.1504	20.8633	912.7045	38584.243	46.9968	8.7834	11.707
	42.3438	96.9976	19958.733	14.3740	21.1867	942.0408	40441.805	47.7392	8.9508	11.93
L22	42.3438	110.1975	22557.155	14.3366	21.1867	1064.6849	45706.913	54.2359	8.6712	10.147
	43.3781	112.9466	24287.826	14.6943	21.7042	1119.0381	49213.722	55.5889	8.9389	10.46

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 131.0000-110.0000				1	1	1			
L2 110.0000-90.0000				1	1	1			
L3 90.0000-84.5833				1	1	1			
L4 84.5833-83.0000				1	1	1			
L5 83.0000-81.0000				1	1	1			
L6 81.0000-70.0000				1	1	1			
L7 70.0000-67.0833				1	1	1			
L8 67.0833-64.0833				1	1	1			
L9 64.0833-62.4400				1	1	1			
L10 62.4400-59.5000				1	1	1			
L11 59.5000-53.5000				1	1	1			
L12 53.5000-44.5833				1	1	1			
L13 44.5833-34.0800				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L14 34.0800-31.5000				1	1	1			
L15 31.5000-26.8500				1	1	1			
L16 26.8500-18.0000				1	1	1			
L17 18.0000-17.0833				1	1	1			
L18 17.0833-13.0000				1	1	1			
L19 13.0000-11.8500				1	1	1			
L20 11.8500-6.5000				1	1	1			
L21 6.5000-4.0000				1	1	1			
L22 4.0000-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		C_{AA}	Weight
				ft			ft ² /ft	plf
LDF6-50A(1-1/4")	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	3	No Ice	0.1550	0.66
						1/2" Ice	0.2550	1.91
						1" Ice	0.3550	3.78
LDF6-50A(1-1/4")	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	3	No Ice	0.0000	0.66
						1/2" Ice	0.0000	1.91
						1" Ice	0.0000	3.78
FB-L98B-002-75000(3/8")	C	No	Inside Pole	121.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	121.0000 - 0.0000	2	No Ice	0.0000	0.59
						1/2" Ice	0.0000	0.59
						1" Ice	0.0000	0.59
FB-L98B-002-75000(3/8")	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.60
						1" Ice	0.0000	1.76
WR-VG86ST-BRD(3/4")	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	2	No Ice	0.0000	0.58
						1/2" Ice	0.0000	1.38
						1" Ice	0.0000	2.78
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	1	No Ice	0.0000	0.72
						1/2" Ice	0.0000	2.48
						1" Ice	0.0000	4.84

HJ7-50A(1-5/8")	C	No	Inside Pole	107.0000 - 0.0000	12	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	107.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	107.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30

ATCB-B01-005(5/16)	C	No	Inside Pole	97.0000 - 0.0000	3	No Ice	0.0000	0.07
						1/2" Ice	0.0000	0.07
						1" Ice	0.0000	0.07
FSJ4-50B(1/2")	C	No	Inside Pole	97.0000 - 0.0000	2	No Ice	0.0000	0.14
						1/2" Ice	0.0000	0.14
						1" Ice	0.0000	0.14
FSJ4-50B(1/2")	C	No	CaAa (Out Of Face)	97.0000 - 0.0000	1	No Ice	0.0000	0.14
						1/2" Ice	0.0000	0.76
						1" Ice	0.0000	2.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						No Ice	Ice	plf
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	97.0000 - 0.0000	3	No Ice	0.0000	1.08
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.18
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	97.0000 - 0.0000	1	No Ice	0.0000	0.72
						1/2" Ice	0.0000	2.48
						1" Ice	0.0000	4.84
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	97.0000 - 0.0000	1	No Ice	0.2375	0.72
						1/2" Ice	0.3375	2.48
						1" Ice	0.4375	4.84

LCF114-50J(1-1/4")	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	12	No Ice	0.0000	0.70
						1/2" Ice	0.0000	1.97
						1" Ice	0.0000	3.85
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	2.37
						1" Ice	0.0000	4.28
MLC Hybrid 6/6(7/8")	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	1	No Ice	0.0000	1.82
						1/2" Ice	0.0000	2.79
						1" Ice	0.0000	4.36

1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	20.7500 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	45.8333 - 20.7500	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	68.3333 - 43.3333	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	85.8333 - 65.8333	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	66.0000 - 0.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	91.5000 - 81.5000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
			ft ²	ft ²	ft ²	ft ²	K
L1	131.0000-110.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.115	0.08
L2	110.0000-90.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.213	0.44
L3	90.0000-84.5833	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.864	0.18
L4	84.5833-83.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.574	0.06
L5	83.0000-81.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.905	0.08
L6	81.0000-70.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.103	0.43
L7	70.0000-67.0833	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.570	0.11
L8	67.0833-64.0833	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

131 Ft Monopole Tower Structural Analysis
 Project Number 37517-1009.002.7805, Application 378432, Revision 0

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L9	64.0833-62.4400	C	0.000	0.000	0.000	2.958	0.12
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L10	62.4400-59.5000	C	0.000	0.000	0.000	1.634	0.06
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L11	59.5000-53.5000	C	0.000	0.000	0.000	2.923	0.11
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L12	53.5000-44.5833	C	0.000	0.000	0.000	5.965	0.23
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L13	44.5833-34.0800	C	0.000	0.000	0.000	9.021	0.35
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L14	34.0800-31.5000	C	0.000	0.000	0.000	10.599	0.41
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L15	31.5000-26.8500	C	0.000	0.000	0.000	2.565	0.10
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L16	26.8500-18.0000	C	0.000	0.000	0.000	4.623	0.18
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L17	18.0000-17.0833	C	0.000	0.000	0.000	9.028	0.34
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L18	17.0833-13.0000	C	0.000	0.000	0.000	0.988	0.04
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L19	13.0000-11.8500	C	0.000	0.000	0.000	4.400	0.16
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L20	11.8500-6.5000	C	0.000	0.000	0.000	1.239	0.04
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L21	6.5000-4.0000	C	0.000	0.000	0.000	5.765	0.21
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L22	4.0000-0.0000	C	0.000	0.000	0.000	2.694	0.10
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.310	0.16

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	131.0000-110.0000	A	2.275	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	20.132	1.26
L2	110.0000-90.0000	A	2.233	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	41.885	2.97
L3	90.0000-84.5833	A	2.204	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.682	1.43
L4	84.5833-83.0000	A	2.195	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.900	0.55
L5	83.0000-81.0000	A	2.191	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.114	0.70
L6	81.0000-70.0000	A	2.172	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	33.528	3.78

131 Ft Monopole Tower Structural Analysis
 Project Number 37517-1009.002.7805, Application 378432, Revision 0

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L7	70.0000-67.0833	A	2.152	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.650	1.00
L8	67.0833-64.0833	A	2.142	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.035	1.01
L9	64.0833-62.4400	A	2.134	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.999	0.55
L10	62.4400-59.5000	A	2.127	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.703	0.97
L11	59.5000-53.5000	A	2.110	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	21.723	1.96
L12	53.5000-44.5833	A	2.081	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	32.686	2.84
L13	44.5833-34.0800	A	2.035	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	37.763	3.21
L14	34.0800-31.5000	A	1.999	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.099	0.79
L15	31.5000-26.8500	A	1.975	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.054	1.36
L16	26.8500-18.0000	A	1.924	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	30.215	2.51
L17	18.0000-17.0833	A	1.878	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.130	0.25
L18	17.0833-13.0000	A	1.849	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.794	1.11
L19	13.0000-11.8500	A	1.814	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.835	0.30
L20	11.8500-6.5000	A	1.759	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.478	1.37
L21	6.5000-4.0000	A	1.664	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.871	0.60
L22	4.0000-0.0000	A	1.510	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.829	0.86

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	131.0000-110.0000	-0.2741	0.1583	-0.5993	0.3460
L2	110.0000-90.0000	-0.5255	0.3034	-1.0298	0.5945
L3	90.0000-84.5833	-0.7564	0.4367	-1.3736	0.7930
L4	84.5833-83.0000	-0.8197	0.4733	-1.4852	0.8575
L5	83.0000-81.0000	-0.8018	0.4629	-1.4783	0.8535
L6	81.0000-70.0000	-0.7432	0.4291	-1.4507	0.8376
L7	70.0000-67.0833	-0.7880	0.4550	-1.5489	0.8942
L8	67.0833-64.0833	-0.8609	0.4971	-1.6545	0.9552
L9	64.0833-62.4400	-0.8715	0.5032	-1.6728	0.9658
L10	62.4400-59.5000	-0.8771	0.5064	-1.6939	0.9779
L11	59.5000-53.5000	-0.8875	0.5124	-1.7334	1.0008
L12	53.5000-44.5833	-0.9155	0.5286	-1.8148	1.0478

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L13	44.5833-34.0800	-0.9321	0.5382	-1.8827	1.0870
L14	34.0800-31.5000	-0.9288	0.5363	-1.8959	1.0946
L15	31.5000-26.8500	-0.9359	0.5403	-1.9114	1.1036
L16	26.8500-18.0000	-0.9660	0.5577	-1.9542	1.1282
L17	18.0000-17.0833	-1.0144	0.5856	-1.9912	1.1496
L18	17.0833-13.0000	-1.0185	0.5880	-1.9993	1.1543
L19	13.0000-11.8500	-1.0228	0.5905	-2.0053	1.1578
L20	11.8500-6.5000	-1.0279	0.5935	-2.0076	1.1591
L21	6.5000-4.0000	-1.0339	0.5969	-1.9969	1.1529
L22	4.0000-0.0000	-1.0387	0.5997	-1.9546	1.1285

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement	C _{AA} Front	C _{AA} Side	Weight	
			ft	°	ft	ft ²	ft ²	K	
800 10121 w/ Mount Pipe	A	From Leg	4.0000	0.00	121.0000	No Ice	5.7362	4.9479	0.07
			0.00			1/2"	6.3448	6.0222	0.12
			-1.00			Ice	6.8570	6.8104	0.18
						1" Ice			
800 10121 w/ Mount Pipe	B	From Leg	4.0000	0.00	121.0000	No Ice	5.7362	4.9479	0.07
			0.00			1/2"	6.3448	6.0222	0.12
			-1.00			Ice	6.8570	6.8104	0.18
						1" Ice			
800 10121 w/ Mount Pipe	C	From Leg	4.0000	0.00	121.0000	No Ice	5.7362	4.9479	0.07
			0.00			1/2"	6.3448	6.0222	0.12
			-1.00			Ice	6.8570	6.8104	0.18
						1" Ice			
RRUS-11	A	From Leg	4.0000	0.00	121.0000	No Ice	2.7908	1.1923	0.05
			0.00			1/2"	2.9984	1.3395	0.07
			-1.00			Ice	3.2134	1.4957	0.09
						1" Ice			
RRUS-11	B	From Leg	4.0000	0.00	121.0000	No Ice	2.7908	1.1923	0.05
			0.00			1/2"	2.9984	1.3395	0.07
			-1.00			Ice	3.2134	1.4957	0.09
						1" Ice			
RRUS-11	C	From Leg	4.0000	0.00	121.0000	No Ice	2.7908	1.1923	0.05
			0.00			1/2"	2.9984	1.3395	0.07
			-1.00			Ice	3.2134	1.4957	0.09
						1" Ice			
(2) LGP21401	A	From Leg	4.0000	0.00	121.0000	No Ice	1.1040	0.3471	0.01
			0.00			1/2"	1.2388	0.4422	0.02
			-1.00			Ice	1.3810	0.5444	0.03
						1" Ice			
(2) LGP21401	B	From Leg	4.0000	0.00	121.0000	No Ice	1.1040	0.3471	0.01
			0.00			1/2"	1.2388	0.4422	0.02
			-1.00			Ice	1.3810	0.5444	0.03
						1" Ice			
(2) LGP21401	C	From Leg	4.0000	0.00	121.0000	No Ice	1.1040	0.3471	0.01
			0.00			1/2"	1.2388	0.4422	0.02
			-1.00			Ice	1.3810	0.5444	0.03
						1" Ice			
DC6-48-60-18-8F	A	From Leg	4.0000	0.00	121.0000	No Ice	0.9167	0.9167	0.02
			0.00			1/2"	1.4583	1.4583	0.04
			-1.00			Ice	1.6431	1.6431	0.06
						1" Ice			

131 Ft Monopole Tower Structural Analysis
 Project Number 37517-1009.002.7805, Application 378432, Revision 0

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral	Vert					
80010798 w/ Mount Pipe	A	From Leg	4.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11	
			0.00				1/2"	11.5345	8.7492	0.19
			-1.00				Ice	12.1217	9.8028	0.28
80010798 w/ Mount Pipe	B	From Leg	4.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11	
			0.00				1/2"	11.5345	8.7492	0.19
			-1.00				Ice	12.1217	9.8028	0.28
80010798 w/ Mount Pipe	C	From Leg	4.0000	0.00	121.0000	No Ice	10.9246	7.4788	0.11	
			0.00				1/2"	11.5345	8.7492	0.19
			-1.00				Ice	12.1217	9.8028	0.28
RRUS 32	A	From Leg	4.0000	0.00	121.0000	No Ice	2.8571	1.7766	0.06	
			0.00				1/2"	3.0830	1.9677	0.08
			-1.00				Ice	3.3163	2.1658	0.10
RRUS 32	B	From Leg	4.0000	0.00	121.0000	No Ice	2.8571	1.7766	0.06	
			0.00				1/2"	3.0830	1.9677	0.08
			-1.00				Ice	3.3163	2.1658	0.10
RRUS 32	C	From Leg	4.0000	0.00	121.0000	No Ice	2.8571	1.7766	0.06	
			0.00				1/2"	3.0830	1.9677	0.08
			-1.00				Ice	3.3163	2.1658	0.10
RRUS 32 B2	A	From Leg	4.0000	0.00	121.0000	No Ice	2.7313	1.6681	0.05	
			0.00				1/2"	2.9531	1.8552	0.07
			-1.00				Ice	3.1823	2.0493	0.10
RRUS 32 B2	B	From Leg	4.0000	0.00	121.0000	No Ice	2.7313	1.6681	0.05	
			0.00				1/2"	2.9531	1.8552	0.07
			-1.00				Ice	3.1823	2.0493	0.10
RRUS 32 B2	C	From Leg	4.0000	0.00	121.0000	No Ice	2.7313	1.6681	0.05	
			0.00				1/2"	2.9531	1.8552	0.07
			-1.00				Ice	3.1823	2.0493	0.10
DC6-48-60-18-8F	A	From Leg	4.0000	0.00	121.0000	No Ice	0.9167	0.9167	0.02	
			0.00				1/2"	1.4583	1.4583	0.04
			-1.00				Ice	1.6431	1.6431	0.06
T-Arm Mount [TA 702-3]	C	None		0.00	121.0000	No Ice	5.6400	5.6400	0.34	
							1/2"	6.5500	6.5500	0.43
							Ice	7.4600	7.4600	0.52
*** BXA-80063/4CF	A	From Leg	4.0000	0.00	107.0000	No Ice	4.7078	2.2482	0.01	
			0.00				1/2"	5.0262	2.5469	0.04
			4.00				Ice	5.3516	2.8529	0.07
BXA-80063/4CF	B	From Leg	4.0000	0.00	107.0000	No Ice	4.7078	2.2482	0.01	
			0.00				1/2"	5.0262	2.5469	0.04
			4.00				Ice	5.3516	2.8529	0.07
BXA-80063/4CF	C	From Leg	4.0000	0.00	107.0000	No Ice	4.7078	2.2482	0.01	
			0.00				1/2"	5.0262	2.5469	0.04
			4.00				Ice	5.3516	2.8529	0.07
BXA-70063/6CFx4	A	From Leg	4.0000	0.00	107.0000	No Ice	7.5690	3.7554	0.02	
			0.00				1/2"	8.0160	4.1889	0.06
			4.00				Ice	8.4701	4.6297	0.10
BXA-70063/6CFx4	B	From Leg	4.0000	0.00	107.0000	No Ice	7.5690	3.7554	0.02	
			0.00				1/2"	8.0160	4.1889	0.06
			4.00				Ice	8.4701	4.6297	0.10

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						ft
			ft	ft		ft	ft ²	ft ²	K	
BXA-70063/6CFx4	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice	7.5690	3.7554	0.02
			0.00				1/2"	8.0160	4.1889	0.06
			4.00				Ice	8.4701	4.6297	0.10
(2) SBNHH-1D65B	A	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	8.1597	5.3963	0.04
			0.00				1/2"	8.6190	5.8529	0.09
			4.00				Ice	9.0854	6.3169	0.15
(2) SBNHH-1D65B	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice	8.1597	5.3963	0.04
			0.00				1/2"	8.6190	5.8529	0.09
			4.00				Ice	9.0854	6.3169	0.15
(2) SBNHH-1D65B	C	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	8.1597	5.3963	0.04
			0.00				1/2"	8.6190	5.8529	0.09
			4.00				Ice	9.0854	6.3169	0.15
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice	0.3142	0.0762	0.00
			0.00				1/2"	0.3862	0.1189	0.01
			0.00				Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	0.3142	0.0762	0.00
			0.00				1/2"	0.3862	0.1189	0.01
			0.00				Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice	0.3142	0.0762	0.00
			0.00				1/2"	0.3862	0.1189	0.01
			0.00				Ice	0.4656	0.1685	0.01
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	4.8000	2.0000	0.04
			0.00				1/2"	5.0704	2.1926	0.08
			4.00				Ice	5.3481	2.3926	0.12
DB-T1-6Z-8AB-0Z	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice	4.8000	2.0000	0.04
			0.00				1/2"	5.0704	2.1926	0.08
			4.00				Ice	5.3481	2.3926	0.12
B66A RRH4X45	A	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	2.5800	1.6296	0.07
			0.00				1/2"	2.7937	1.8106	0.09
			4.00				Ice	3.0148	1.9986	0.11
B66A RRH4X45	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice	2.5800	1.6296	0.07
			0.00				1/2"	2.7937	1.8106	0.09
			4.00				Ice	3.0148	1.9986	0.11
B66A RRH4X45	C	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	2.5800	1.6296	0.07
			0.00				1/2"	2.7937	1.8106	0.09
			4.00				Ice	3.0148	1.9986	0.11
B13 RRH 4X30	A	From Leg	4.0000	0.00	0.00	107.0000	No Ice	2.0552	1.3201	0.06
			0.00				1/2"	2.2405	1.4754	0.07
			0.00				Ice	2.4333	1.6376	0.09
B13 RRH 4X30	B	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	2.0552	1.3201	0.06
			0.00				1/2"	2.2405	1.4754	0.07
			0.00				Ice	2.4333	1.6376	0.09
B13 RRH 4X30	C	From Leg	4.0000	0.00	0.00	107.0000	No Ice	2.0552	1.3201	0.06
			0.00				1/2"	2.2405	1.4754	0.07
			0.00				Ice	2.4333	1.6376	0.09
B25 RRH4X30	A	From Leg	4.0000	0.00	0.00	107.0000	1" Ice	2.2000	1.7417	0.06
			0.00				1/2"	2.3926	1.9204	0.08
			4.00				Ice	2.5926	2.1065	0.10
B25 RRH4X30	B	From Leg	4.0000	0.00	0.00	107.0000	No Ice	2.2000	1.7417	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	2.3926	1.9204	0.08
			4.00			Ice	2.5926	2.1065	0.10
B25 RRH4X30	C	From Leg	4.0000	0.00	107.0000	1" Ice	2.2000	1.7417	0.06
			0.00			No Ice	2.3926	1.9204	0.08
			4.00			1/2"	2.5926	2.1065	0.10
						Ice			
						1" Ice			
Platform Mount (LP 101-1)	C	None		0.00	107.0000	No Ice	36.2100	36.2100	1.50
						1/2"	42.8200	42.8200	2.30
						Ice	49.4300	49.4300	3.10
						1" Ice			

800MHz 2X50W RRH W/FILTER	A	From Leg	4.0000	0.00	99.0000	No Ice	2.0583	1.9317	0.06
			0.00			1/2"	2.2398	2.1087	0.09
			1.00			Ice	2.4287	2.2931	0.11
						1" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	4.0000	0.00	99.0000	No Ice	2.0583	1.9317	0.06
			0.00			1/2"	2.2398	2.1087	0.09
			1.00			Ice	2.4287	2.2931	0.11
						1" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	4.0000	0.00	99.0000	No Ice	2.0583	1.9317	0.06
			0.00			1/2"	2.2398	2.1087	0.09
			1.00			Ice	2.4287	2.2931	0.11
						1" Ice			
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	A	From Leg	4.0000	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00			1/2"	3.0564	3.5513	0.11
			0.00			Ice	3.3899	4.0155	0.15
						1" Ice			
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	B	From Leg	4.0000	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00			1/2"	3.0564	3.5513	0.11
			0.00			Ice	3.3899	4.0155	0.15
						1" Ice			
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	C	From Leg	4.0000	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00			1/2"	3.0564	3.5513	0.11
			0.00			Ice	3.3899	4.0155	0.15
						1" Ice			
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	A	From Leg	4.0000	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00			1/2"	3.0564	3.5513	0.11
			-1.00			Ice	3.3899	4.0155	0.15
						1" Ice			
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	B	From Leg	4.0000	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00			1/2"	3.0564	3.5513	0.11
			-1.00			Ice	3.3899	4.0155	0.15
						1" Ice			
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	C	From Leg	4.0000	0.00	99.0000	No Ice	2.7348	3.1038	0.07
			0.00			1/2"	3.0564	3.5513	0.11
			-1.00			Ice	3.3899	4.0155	0.15
						1" Ice			
Side Arm Mount [SO 101-3]	C	None		0.00	99.0000	No Ice	7.5000	7.5000	0.25
						1/2"	8.9000	8.9000	0.33
						Ice	10.3000	10.3000	0.41
						1" Ice			
Clearwire TIMING 2000	A	From Face	4.0000	0.00	97.0000	No Ice	0.1079	0.1079	0.00
			0.00			1/2"	0.1518	0.1518	0.00
			0.00			Ice	0.2031	0.2031	0.01
						1" Ice			
840 10054	A	From Face	4.0000	0.00	97.0000	No Ice	4.5779	1.3611	0.04
			0.00			1/2"	4.8744	1.6198	0.06
			0.00			Ice	5.1779	1.8858	0.09
						1" Ice			
840 10054	B	From Face	4.0000	0.00	97.0000	No Ice	4.5779	1.3611	0.04
			0.00			1/2"	4.8744	1.6198	0.06
			0.00			Ice	5.1779	1.8858	0.09
						1" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral	Vert					
							ft ²	ft ²	K
840 10054	C	From Face	4.0000	0.00	97.0000	No Ice	4.5779	1.3611	0.04
			0.00			1/2"	4.8744	1.6198	0.06
			0.00			Ice	5.1779	1.8858	0.09
WIMAX DAP HEAD	A	From Face	4.0000	0.00	97.0000	1" Ice	1.5467	0.6840	0.03
			0.00			No Ice	1.7037	0.7999	0.04
			0.00			1/2"	1.8681	0.9228	0.06
WIMAX DAP HEAD	B	From Face	4.0000	0.00	97.0000	Ice	1.5467	0.6840	0.03
			0.00			No Ice	1.7037	0.7999	0.04
			0.00			1/2"	1.8681	0.9228	0.06
WIMAX DAP HEAD	C	From Face	4.0000	0.00	97.0000	1" Ice	1.5467	0.6840	0.03
			0.00			No Ice	1.7037	0.7999	0.04
			0.00			1/2"	1.8681	0.9228	0.06
HORIZON COMPACT	B	From Face	4.0000	0.00	97.0000	Ice	0.7208	0.3681	0.01
			0.00			No Ice	0.8278	0.4499	0.02
			4.00			1/2"	0.9422	0.5391	0.03
HORIZON COMPACT	C	From Face	4.0000	0.00	97.0000	1" Ice	0.7208	0.3681	0.01
			0.00			No Ice	0.8278	0.4499	0.02
			4.00			1/2"	0.9422	0.5391	0.03
Sprint APXVSP18-C-A20	A	From Face	4.0000	0.00	97.0000	Ice	8.0244	5.2833	0.06
			0.00			No Ice	8.4800	5.7360	0.11
			0.00			1/2"	8.9426	6.1960	0.16
APXVSP18-C-A20	B	From Face	4.0000	0.00	97.0000	1" Ice	8.0244	5.2833	0.06
			0.00			No Ice	8.4800	5.7360	0.11
			0.00			1/2"	8.9426	6.1960	0.16
APXVSP18-C-A20	C	From Face	4.0000	0.00	97.0000	Ice	8.0244	5.2833	0.06
			0.00			No Ice	8.4800	5.7360	0.11
			0.00			1/2"	8.9426	6.1960	0.16
IBC1900HG-2A	A	From Face	4.0000	0.00	97.0000	1" Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
IBC1900HG-2A	B	From Face	4.0000	0.00	97.0000	Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
IBC1900HG-2A	C	From Face	4.0000	0.00	97.0000	1" Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
IBC1900BB-1	A	From Face	4.0000	0.00	97.0000	Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
IBC1900BB-1	B	From Face	4.0000	0.00	97.0000	1" Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
IBC1900BB-1	C	From Face	4.0000	0.00	97.0000	Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
Platform Mount (LP 101-1)	C	None		0.00	97.0000	1" Ice	36.2100	36.2100	1.50
						No Ice	42.8200	42.8200	2.30
						1/2"	49.4300	49.4300	3.10
						Ice			

131 Ft Monopole Tower Structural Analysis
 Project Number 37517-1009.002.7805, Application 378432, Revision 0

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral	Vert					

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.0000	0.00	87.0000	No Ice	6.3292	5.6424	0.11	
			0.00				1/2"	6.7751	6.4259	0.17
			0.00				Ice	7.2137	7.1313	0.23
							1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.0000	0.00	87.0000	No Ice	6.3292	5.6424	0.11	
			0.00				1/2"	6.7751	6.4259	0.17
			0.00				Ice	7.2137	7.1313	0.23
							1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.0000	0.00	87.0000	No Ice	6.3292	5.6424	0.11	
			0.00				1/2"	6.7751	6.4259	0.17
			0.00				Ice	7.2137	7.1313	0.23
							1" Ice			
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000	0.00	87.0000	No Ice	11.6828	9.8418	0.08	
			0.00				1/2"	12.4043	11.3657	0.17
			0.00				Ice	13.1351	12.9138	0.27
							1" Ice			
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000	0.00	87.0000	No Ice	11.6828	9.8418	0.08	
			0.00				1/2"	12.4043	11.3657	0.17
			0.00				Ice	13.1351	12.9138	0.27
							1" Ice			
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000	0.00	87.0000	No Ice	11.6828	9.8418	0.08	
			0.00				1/2"	12.4043	11.3657	0.17
			0.00				Ice	13.1351	12.9138	0.27
							1" Ice			
KRY 112 144/1	A	From Face	4.0000	0.00	87.0000	No Ice	0.3500	0.1750	0.01	
			0.00				1/2"	0.4259	0.2343	0.01
			0.00				Ice	0.5093	0.3009	0.02
							1" Ice			
KRY 112 144/1	B	From Face	4.0000	0.00	87.0000	No Ice	0.3500	0.1750	0.01	
			0.00				1/2"	0.4259	0.2343	0.01
			0.00				Ice	0.5093	0.3009	0.02
							1" Ice			
KRY 112 144/1	C	From Face	4.0000	0.00	87.0000	No Ice	0.3500	0.1750	0.01	
			0.00				1/2"	0.4259	0.2343	0.01
			0.00				Ice	0.5093	0.3009	0.02
							1" Ice			
RRUS 11 B12	A	From Leg	4.0000	0.00	87.0000	No Ice	2.8333	1.1821	0.05	
			0.00				1/2"	3.0426	1.3299	0.07
			0.00				Ice	3.2593	1.4848	0.10
							1" Ice			
RRUS 11 B12	B	From Leg	4.0000	0.00	87.0000	No Ice	2.8333	1.1821	0.05	
			0.00				1/2"	3.0426	1.3299	0.07
			0.00				Ice	3.2593	1.4848	0.10
							1" Ice			
RRUS 11 B12	C	From Leg	4.0000	0.00	87.0000	No Ice	2.8333	1.1821	0.05	
			0.00				1/2"	3.0426	1.3299	0.07
			0.00				Ice	3.2593	1.4848	0.10
							1" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000	0.00	87.0000	No Ice	6.7474	6.0700	0.15	
			0.00				1/2"	7.2017	6.8671	0.21
			0.00				Ice	7.6475	7.5828	0.28
							1" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000	0.00	87.0000	No Ice	6.7474	6.0700	0.15	
			0.00				1/2"	7.2017	6.8671	0.21
			0.00				Ice	7.6475	7.5828	0.28
							1" Ice			
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000	0.00	87.0000	No Ice	6.7474	6.0700	0.15	
			0.00				1/2"	7.2017	6.8671	0.21
			0.00				Ice	7.6475	7.5828	0.28
							1" Ice			
T-Arm Mount [TA 602-3]	C	None		0.00	87.0000	No Ice	11.5900	11.5900	0.77	
							1/2"	15.4400	15.4400	0.99
							Ice	19.2900	19.2900	1.21
							1" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz	Lateral Vert						
				ft	°	°	ft	ft	ft ²	K	
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	1.0000	0.00	0.00	97.0000	2.9167	No Ice	6.6800	0.05
				0.00					1/2" Ice	7.0700	0.08
				4.00					1" Ice	7.4600	0.12
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	1.0000	0.00	0.00	97.0000	2.9167	No Ice	6.6800	0.05
				0.00					1/2" Ice	7.0700	0.08
				4.00					1" Ice	7.4600	0.12

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 131.0000-110.0000	119.8282	1.315	30.08	23.598	A	0.000	23.598	23.598	100.00	0.000	0.000
					B	0.000	23.598	100.00	0.000	0.000	
					C	0.000	23.598	100.00	0.000	5.115	
L2 110.0000-90.0000	99.5374	1.264	28.93	31.104	A	0.000	31.104	31.104	100.00	0.000	0.000
					B	0.000	31.104	100.00	0.000	0.000	
					C	0.000	31.104	100.00	0.000	11.213	
L3 90.0000-84.5833	87.2628	1.23	28.14	9.910	A	0.000	9.910	9.910	100.00	0.000	0.000
					B	0.000	9.910	100.00	0.000	0.000	
					C	0.000	9.910	100.00	0.000	4.864	
L4 84.5833-83.0000	83.7893	1.219	27.90	3.016	A	0.000	3.016	3.016	100.00	0.000	0.000
					B	0.000	3.016	100.00	0.000	0.000	
					C	0.000	3.016	100.00	0.000	1.574	
L5 83.0000-81.0000	81.9963	1.214	27.77	3.887	A	0.000	3.887	3.887	100.00	0.000	0.000
					B	0.000	3.887	100.00	0.000	0.000	
					C	0.000	3.887	100.00	0.000	1.905	
L6 81.0000-70.0000	75.3956	1.193	27.28	22.923	A	0.000	22.923	22.923	100.00	0.000	0.000
					B	0.000	22.923	100.00	0.000	0.000	
					C	0.000	22.923	100.00	0.000	9.103	
L7 70.0000-67.0833	68.5325	1.169	26.74	6.363	A	0.000	6.363	6.363	100.00	0.000	0.000
					B	0.000	6.363	100.00	0.000	0.000	
					C	0.000	6.363	100.00	0.000	2.570	
L8 67.0833-64.0833	65.5761	1.158	26.49	6.764	A	0.000	6.764	6.764	100.00	0.000	0.000
					B	0.000	6.764	100.00	0.000	0.000	
					C	0.000	6.764	100.00	0.000	2.958	
L9 64.0833-62.4400	63.2595	1.149	26.29	3.788	A	0.000	3.788	3.788	100.00	0.000	0.000
					B	0.000	3.788	100.00	0.000	0.000	
					C	0.000	3.788	100.00	0.000	1.634	
L10 62.4400-59.5000	60.9634	1.14	26.09	6.922	A	0.000	6.922	6.922	100.00	0.000	0.000
					B	0.000	6.922	100.00	0.000	0.000	
					C	0.000	6.922	100.00	0.000	2.923	
L11 59.5000-53.5000	56.4736	1.122	25.67	14.705	A	0.000	14.705	14.705	100.00	0.000	0.000
					B	0.000	14.705	100.00	0.000	0.000	
					C	0.000	14.705	100.00	0.000	5.965	
L12 53.5000-44.5833	48.9869	1.089	24.92	23.288	A	0.000	23.288	23.288	100.00	0.000	0.000
					B	0.000	23.288	100.00	0.000	0.000	
					C	0.000	23.288	100.00	0.000	9.021	
L13 44.5833-34.0800	39.2613	1.039	23.78	29.632	A	0.000	29.632	29.632	100.00	0.000	0.000
					B	0.000	29.632	100.00	0.000	0.000	
					C	0.000	29.632	100.00	0.000	10.599	
L14 34.0800-31.5000	32.7843	1.001	22.90	7.476	A	0.000	7.476	7.476	100.00	0.000	0.000
					B	0.000	7.476	100.00	0.000	0.000	
					C	0.000	7.476	100.00	0.000	2.565	
L15 31.5000-26.8500	29.1620	0.976	22.34	13.886	A	0.000	13.886	13.886	100.00	0.000	0.000
					B	0.000	13.886	100.00	0.000	0.000	
					C	0.000	13.886	100.00	0.000	4.623	
L16 26.8500-	22.3801	0.923	21.13	27.715	A	0.000	27.715	27.715	100.00	0.000	0.000

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
18.0000			2		B	0.000	27.715		100.00	0.000	0.000
L17 18.0000-17.0833	17.5412	0.877	20.075	2.967	C	0.000	27.715		100.00	0.000	9.028
					A	0.000	2.967	2.967	100.00	0.000	0.000
					B	0.000	2.967	2.967	100.00	0.000	0.000
L18 17.0833-13.0000	15.0326	0.85	19.450	13.437	C	0.000	2.967		100.00	0.000	0.988
					A	0.000	13.437	13.437	100.00	0.000	0.000
					B	0.000	13.437	13.437	100.00	0.000	0.000
L19 13.0000-11.8500	12.4243	0.85	19.450	3.849	C	0.000	13.437		100.00	0.000	4.400
					A	0.000	3.849	3.849	100.00	0.000	0.000
					B	0.000	3.849	3.849	100.00	0.000	0.000
L20 11.8500-6.5000	9.1600	0.85	19.450	18.282	C	0.000	3.849		100.00	0.000	1.239
					A	0.000	18.282	18.282	100.00	0.000	0.000
					B	0.000	18.282	18.282	100.00	0.000	0.000
L21 6.5000-4.0000	5.2468	0.85	19.450	8.754	C	0.000	18.282		100.00	0.000	5.765
					A	0.000	8.754	8.754	100.00	0.000	0.000
					B	0.000	8.754	8.754	100.00	0.000	0.000
L22 4.0000-0.0000	1.9920	0.85	19.450	14.287	C	0.000	8.754		100.00	0.000	2.694
					A	0.000	14.287	14.287	100.00	0.000	0.000
					B	0.000	14.287	14.287	100.00	0.000	0.000
					C	0.000	14.287		100.00	0.000	4.310

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 131.0000-110.0000	119.8282	1.315	7.994	2.2753	31.561	A	0.000	31.561	31.561	100.00	0.000	0.000
						B	0.000	31.561	31.561	100.00	0.000	0.000
						C	0.000	31.561	31.561	100.00	0.000	20.132
L2 110.0000-90.0000	99.5374	1.264	7.687	2.2335	38.549	A	0.000	38.549	38.549	100.00	0.000	0.000
						B	0.000	38.549	38.549	100.00	0.000	0.000
						C	0.000	38.549	38.549	100.00	0.000	41.885
L3 90.0000-84.5833	87.2628	1.23	7.477	2.2043	11.900	A	0.000	11.900	11.900	100.00	0.000	0.000
						B	0.000	11.900	11.900	100.00	0.000	0.000
						C	0.000	11.900	11.900	100.00	0.000	17.682
L4 84.5833-83.0000	83.7893	1.219	7.414	2.1953	3.595	A	0.000	3.595	3.595	100.00	0.000	0.000
						B	0.000	3.595	3.595	100.00	0.000	0.000
						C	0.000	3.595	3.595	100.00	0.000	5.900
L5 83.0000-81.0000	81.9963	1.214	7.380	2.1906	4.618	A	0.000	4.618	4.618	100.00	0.000	0.000
						B	0.000	4.618	4.618	100.00	0.000	0.000
						C	0.000	4.618	4.618	100.00	0.000	7.114
L6 81.0000-70.0000	75.3956	1.193	7.251	2.1723	26.906	A	0.000	26.906	26.906	100.00	0.000	0.000
						B	0.000	26.906	26.906	100.00	0.000	0.000
						C	0.000	26.906	26.906	100.00	0.000	33.528
L7 70.0000-67.0833	68.5325	1.169	7.107	2.1516	7.419	A	0.000	7.419	7.419	100.00	0.000	0.000
						B	0.000	7.419	7.419	100.00	0.000	0.000
						C	0.000	7.419	7.419	100.00	0.000	9.650
L8 67.0833-64.0833	65.5761	1.158	7.041	2.1422	7.835	A	0.000	7.835	7.835	100.00	0.000	0.000
						B	0.000	7.835	7.835	100.00	0.000	0.000
						C	0.000	7.835	7.835	100.00	0.000	11.035
L9 64.0833-62.4400	63.2595	1.149	6.988	2.1345	4.372	A	0.000	4.372	4.372	100.00	0.000	0.000
						B	0.000	4.372	4.372	100.00	0.000	0.000
						C	0.000	4.372	4.372	100.00	0.000	5.999
L10 62.4400-59.5000	60.9634	1.14	6.934	2.1266	7.964	A	0.000	7.964	7.964	100.00	0.000	0.000
						B	0.000	7.964	7.964	100.00	0.000	0.000
						C	0.000	7.964	7.964	100.00	0.000	10.703
L11 59.5000-53.5000	56.4736	1.122	6.823	2.1104	16.815	A	0.000	16.815	16.815	100.00	0.000	0.000
						B	0.000	16.815	16.815	100.00	0.000	0.000
						C	0.000	16.815	16.815	100.00	0.000	21.723
L12 53.5000-44.5833	48.9869	1.089	6.622	2.0806	26.380	A	0.000	26.380	26.380	100.00	0.000	0.000
						B	0.000	26.380	26.380	100.00	0.000	0.000
						C	0.000	26.380	26.380	100.00	0.000	32.686
L13 44.5833-	39.2613	1.039	6.320	2.0351	33.195	A	0.000	33.195	33.195	100.00	0.000	0.000

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
34.0800						B	0.000	33.195		100.00	0.000	0.000
L14 34.0800-31.5000	32.7843	1.001	6.085	1.9987	8.352	C	0.000	33.195		100.00	0.000	37.763
						A	0.000	8.352	8.352	100.00	0.000	0.000
						B	0.000	8.352		100.00	0.000	0.000
						C	0.000	8.352		100.00	0.000	9.099
L15 31.5000-26.8500	29.1620	0.976	5.937	1.9754	15.417	A	0.000	15.417	15.417	100.00	0.000	0.000
						B	0.000	15.417		100.00	0.000	0.000
						C	0.000	15.417		100.00	0.000	16.054
L16 26.8500-18.0000	22.3801	0.923	5.615	1.9238	30.553	A	0.000	30.553	30.553	100.00	0.000	0.000
						B	0.000	30.553		100.00	0.000	0.000
						C	0.000	30.553		100.00	0.000	30.215
L17 18.0000-17.0833	17.5412	0.877	5.334	1.8775	3.254	A	0.000	3.254	3.254	100.00	0.000	0.000
						B	0.000	3.254		100.00	0.000	0.000
						C	0.000	3.254		100.00	0.000	3.130
L18 17.0833-13.0000	15.0326	0.85	5.168	1.8488	14.695	A	0.000	14.695	14.695	100.00	0.000	0.000
						B	0.000	14.695		100.00	0.000	0.000
						C	0.000	14.695		100.00	0.000	13.794
L19 13.0000-11.8500	12.4243	0.85	5.168	1.8139	4.197	A	0.000	4.197	4.197	100.00	0.000	0.000
						B	0.000	4.197		100.00	0.000	0.000
						C	0.000	4.197		100.00	0.000	3.835
L20 11.8500-6.5000	9.1600	0.85	5.168	1.7594	19.851	A	0.000	19.851	19.851	100.00	0.000	0.000
						B	0.000	19.851		100.00	0.000	0.000
						C	0.000	19.851		100.00	0.000	17.478
L21 6.5000-4.0000	5.2468	0.85	5.168	1.6641	9.448	A	0.000	9.448	9.448	100.00	0.000	0.000
						B	0.000	9.448		100.00	0.000	0.000
						C	0.000	9.448		100.00	0.000	7.871
L22 4.0000-0.0000	1.9920	0.85	5.168	1.5105	15.294	A	0.000	15.294	15.294	100.00	0.000	0.000
						B	0.000	15.294		100.00	0.000	0.000
						C	0.000	15.294		100.00	0.000	11.829

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 131.0000-110.0000	119.8282	1.315	10.299	23.598	A	0.000	23.598	23.598	100.00	0.000	0.000
					B	0.000	23.598		100.00	0.000	0.000
					C	0.000	23.598		100.00	0.000	5.115
L2 110.0000-90.0000	99.5374	1.264	9.905	31.104	A	0.000	31.104	31.104	100.00	0.000	0.000
					B	0.000	31.104		100.00	0.000	0.000
					C	0.000	31.104		100.00	0.000	11.213
L3 90.0000-84.5833	87.2628	1.23	9.634	9.910	A	0.000	9.910	9.910	100.00	0.000	0.000
					B	0.000	9.910		100.00	0.000	0.000
					C	0.000	9.910		100.00	0.000	4.864
L4 84.5833-83.0000	83.7893	1.219	9.552	3.016	A	0.000	3.016	3.016	100.00	0.000	0.000
					B	0.000	3.016		100.00	0.000	0.000
					C	0.000	3.016		100.00	0.000	1.574
L5 83.0000-81.0000	81.9963	1.214	9.509	3.887	A	0.000	3.887	3.887	100.00	0.000	0.000
					B	0.000	3.887		100.00	0.000	0.000
					C	0.000	3.887		100.00	0.000	1.905
L6 81.0000-70.0000	75.3956	1.193	9.342	22.923	A	0.000	22.923	22.923	100.00	0.000	0.000
					B	0.000	22.923		100.00	0.000	0.000
					C	0.000	22.923		100.00	0.000	9.103
L7 70.0000-67.0833	68.5325	1.169	9.156	6.363	A	0.000	6.363	6.363	100.00	0.000	0.000
					B	0.000	6.363		100.00	0.000	0.000
					C	0.000	6.363		100.00	0.000	2.570
L8 67.0833-64.0833	65.5761	1.158	9.072	6.764	A	0.000	6.764	6.764	100.00	0.000	0.000
					B	0.000	6.764		100.00	0.000	0.000
					C	0.000	6.764		100.00	0.000	2.958
L9 64.0833-62.4400	63.2595	1.149	9.003	3.788	A	0.000	3.788	3.788	100.00	0.000	0.000
					B	0.000	3.788		100.00	0.000	0.000
					C	0.000	3.788		100.00	0.000	1.634
L10 62.4400-	60.9634	1.14	8.933	6.922	A	0.000	6.922	6.922	100.00	0.000	0.000

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
59.5000					B	0.000	6.922		100.00	0.000	0.000
					C	0.000	6.922		100.00	0.000	2.923
L11 59.5000-53.5000	56.4736	1.122	8.791	14.705	A	0.000	14.705	14.705	100.00	0.000	0.000
					B	0.000	14.705		100.00	0.000	0.000
					C	0.000	14.705		100.00	0.000	5.965
L12 53.5000-44.5833	48.9869	1.089	8.531	23.288	A	0.000	23.288	23.288	100.00	0.000	0.000
					B	0.000	23.288		100.00	0.000	0.000
					C	0.000	23.288		100.00	0.000	9.021
L13 44.5833-34.0800	39.2613	1.039	8.143	29.632	A	0.000	29.632	29.632	100.00	0.000	0.000
					B	0.000	29.632		100.00	0.000	0.000
					C	0.000	29.632		100.00	0.000	10.599
L14 34.0800-31.5000	32.7843	1.001	7.840	7.476	A	0.000	7.476	7.476	100.00	0.000	0.000
					B	0.000	7.476		100.00	0.000	0.000
					C	0.000	7.476		100.00	0.000	2.565
L15 31.5000-26.8500	29.1620	0.976	7.649	13.886	A	0.000	13.886	13.886	100.00	0.000	0.000
					B	0.000	13.886		100.00	0.000	0.000
					C	0.000	13.886		100.00	0.000	4.623
L16 26.8500-18.0000	22.3801	0.923	7.234	27.715	A	0.000	27.715	27.715	100.00	0.000	0.000
					B	0.000	27.715		100.00	0.000	0.000
					C	0.000	27.715		100.00	0.000	9.028
L17 18.0000-17.0833	17.5412	0.877	6.873	2.967	A	0.000	2.967	2.967	100.00	0.000	0.000
					B	0.000	2.967		100.00	0.000	0.000
					C	0.000	2.967		100.00	0.000	0.988
L18 17.0833-13.0000	15.0326	0.85	6.659	13.437	A	0.000	13.437	13.437	100.00	0.000	0.000
					B	0.000	13.437		100.00	0.000	0.000
					C	0.000	13.437		100.00	0.000	4.400
L19 13.0000-11.8500	12.4243	0.85	6.659	3.849	A	0.000	3.849	3.849	100.00	0.000	0.000
					B	0.000	3.849		100.00	0.000	0.000
					C	0.000	3.849		100.00	0.000	1.239
L20 11.8500-6.5000	9.1600	0.85	6.659	18.282	A	0.000	18.282	18.282	100.00	0.000	0.000
					B	0.000	18.282		100.00	0.000	0.000
					C	0.000	18.282		100.00	0.000	5.765
L21 6.5000-4.0000	5.2468	0.85	6.659	8.754	A	0.000	8.754	8.754	100.00	0.000	0.000
					B	0.000	8.754		100.00	0.000	0.000
					C	0.000	8.754		100.00	0.000	2.694
L22 4.0000-0.0000	1.9920	0.85	6.659	14.287	A	0.000	14.287	14.287	100.00	0.000	0.000
					B	0.000	14.287		100.00	0.000	0.000
					C	0.000	14.287		100.00	0.000	4.310

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice

Comb. No.	Description
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	131 - 110	Pole	Max Tension	8	0.00	0.00	-0.00
			Max. Compression	26	-9.02	0.75	0.77
			Max. Mx	20	-1.91	52.96	0.17
			Max. My	2	-1.91	0.04	53.12
			Max. Vy	20	-5.27	52.96	0.17
			Max. Vx	2	-5.27	0.04	53.12
			Max. Torque	9			0.30
			Max Tension	1	0.00	0.00	0.00
L2	110 - 90	Pole	Max. Compression	26	-36.70	1.83	-0.37
			Max. Mx	8	-9.08	-345.32	-0.65
			Max. My	2	-9.09	0.99	344.78
			Max. Vy	20	-19.51	345.17	1.41
			Max. Vx	2	-19.40	0.99	344.78
			Max. Torque	22			-0.47
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.42	3.06	-1.07
L3	90 - 84.5833	Pole	Max. Mx	20	-12.11	462.25	1.76
			Max. My	2	-12.13	1.32	461.16
			Max. Vy	20	-24.13	462.25	1.76
			Max. Vx	2	-24.02	1.32	461.16
			Max. Torque	25			0.57
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.37	3.54	-1.35
			Max. Mx	20	-12.47	500.68	1.86
L4	84.5833 - 83	Pole	Max. My	2	-12.49	1.43	499.37
			Max. Vy	20	-24.39	500.68	1.86
			Max. Vx	2	-24.29	1.43	499.37
			Max. Torque	25			0.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.44	4.17	-1.70
			Max. Mx	20	-12.84	549.80	1.98
			Max. My	2	-12.86	1.56	548.21
L5	83 - 81	Pole	Max. Vy	20	-24.70	549.80	1.98
			Max. Vx	2	-24.59	1.56	548.21
			Max. Torque	25			0.73

131 Ft Monopole Tower Structural Analysis
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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	81 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.49	6.45	-3.01
			Max. Mx	20	-14.39	726.55	2.40
			Max. My	2	-14.40	2.05	723.95
			Max. Vy	20	-25.78	726.55	2.40
			Max. Vx	2	-25.67	2.05	723.95
			Max. Torque	25			1.00
L7	70 - 67.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.33	8.75	-4.32
			Max. Mx	20	-16.43	909.10	2.82
			Max. My	2	-16.44	2.54	905.50
			Max. Vy	20	-26.94	909.10	2.82
			Max. Vx	2	-26.84	2.54	905.50
			Max. Torque	25			1.29
L8	67.0833 - 64.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.02	9.77	-4.91
			Max. Mx	20	-17.11	990.66	2.99
			Max. My	2	-17.12	2.76	986.62
			Max. Vy	20	-27.41	990.66	2.99
			Max. Vx	2	-27.30	2.76	986.62
			Max. Torque	25			1.44
L9	64.0833 - 62.44	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.98	10.34	-5.23
			Max. Mx	20	-17.49	1035.94	3.09
			Max. My	2	-17.50	2.87	1031.66
			Max. Vy	20	-27.68	1035.94	3.09
			Max. Vx	2	-27.57	2.87	1031.66
			Max. Torque	25			1.52
L10	62.44 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.83	11.36	-5.82
			Max. Mx	20	-18.32	1118.07	3.26
			Max. My	2	-18.34	3.09	1113.35
			Max. Vy	20	-28.17	1118.07	3.26
			Max. Vx	2	-28.07	3.09	1113.35
			Max. Torque	25			1.67
L11	59.5 - 53.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.84	13.49	-7.04
			Max. Mx	20	-20.25	1290.28	3.60
			Max. My	2	-20.27	3.53	1284.66
			Max. Vy	20	-29.21	1290.28	3.60
			Max. Vx	2	-29.10	3.53	1284.66
			Max. Torque	25			1.99
L12	53.5 - 44.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.87	16.74	-8.91
			Max. Mx	20	-23.23	1557.72	4.10
			Max. My	2	-23.24	4.20	1550.74
			Max. Vy	20	-30.76	1557.72	4.10
			Max. Vx	2	-30.65	4.20	1550.74
			Max. Torque	25			2.49
L13	44.5833 - 34.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.65	18.82	-10.11
			Max. Mx	20	-25.15	1732.17	4.41
			Max. My	2	-25.16	4.63	1724.32
			Max. Vy	20	-31.70	1732.17	4.41
			Max. Vx	2	-31.59	4.63	1724.32
			Max. Torque	25			2.80
L14	34.08 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.77	21.63	-11.73
			Max. Mx	20	-29.27	1975.40	4.81
			Max. My	2	-29.28	5.21	1966.38
			Max. Vy	20	-33.08	1975.40	4.81
			Max. Vx	2	-32.97	5.21	1966.38
			Max. Torque	25			3.23
L15	31.5 - 26.85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.85	23.36	-12.72

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L16	26.85 - 18	Pole	Max. Mx	20	-30.90	2130.98	5.06
			Max. My	2	-30.90	5.58	2121.23
			Max. Vy	20	-33.81	2130.98	5.06
			Max. Vx	2	-33.71	5.58	2121.23
			Max. Torque	25			3.50
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.90	26.65	-14.61
			Max. Mx	20	-34.23	2436.30	5.52
			Max. My	2	-34.23	6.28	2425.13
			Max. Vy	20	-35.17	2436.30	5.52
L17	18 - 17.0833	Pole	Max. Vx	2	-35.06	6.28	2425.13
			Max. Torque	25			4.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.60	26.99	-14.81
			Max. Mx	20	-34.66	2468.62	5.57
			Max. My	2	-34.66	6.36	2457.30
			Max. Vy	20	-35.30	2468.62	5.57
			Max. Vx	2	-35.20	6.36	2457.30
			Max. Torque	25			4.06
			Max Tension	1	0.00	0.00	0.00
L18	17.0833 - 13	Pole	Max. Compression	26	-95.54	28.49	-15.67
			Max. Mx	20	-36.38	2614.09	5.78
			Max. My	2	-36.38	6.69	2602.11
			Max. Vy	20	-35.91	2614.09	5.78
			Max. Vx	2	-35.80	6.69	2602.11
			Max. Torque	25			4.30
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.45	28.90	-15.92
			Max. Mx	20	-36.96	2655.51	5.83
			Max. My	2	-36.96	6.78	2643.34
L19	13 - 11.85	Pole	Max. Vy	20	-36.08	2655.51	5.83
			Max. Vx	2	-35.98	6.78	2643.34
			Max. Torque	25			4.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.10	30.77	-16.99
			Max. Mx	20	-39.11	2850.76	6.10
			Max. My	2	-39.11	7.22	2837.71
			Max. Vy	20	-36.87	2850.76	6.10
			Max. Vx	2	-36.77	7.22	2837.71
			Max. Torque	25			4.69
L20	11.85 - 6.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.92	31.61	-17.48
			Max. Mx	20	-40.28	2943.46	6.22
			Max. My	2	-40.28	7.42	2930.00
			Max. Vy	20	-37.25	2943.46	6.22
			Max. Vx	2	-37.15	7.42	2930.00
			Max. Torque	25			4.85
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.96	32.82	-18.17
			Max. Mx	20	-42.39	3093.81	6.41
L21	6.5 - 4	Pole	Max. My	2	-42.39	7.76	3079.69
			Max. Vy	20	-37.88	3093.81	6.41
			Max. Vx	2	-37.77	7.76	3079.69
			Max. Torque	25			5.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.96	32.82	-18.17
			Max. Mx	20	-42.39	3093.81	6.41
			Max. My	2	-42.39	7.76	3079.69
			Max. Vy	20	-37.88	3093.81	6.41
			Max. Vx	2	-37.77	7.76	3079.69
L22	4 - 0	Pole	Max. Torque	25			5.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.96	32.82	-18.17
			Max. Mx	20	-42.39	3093.81	6.41
			Max. My	2	-42.39	7.76	3079.69
			Max. Vy	20	-37.88	3093.81	6.41
			Max. Vx	2	-37.77	7.76	3079.69
			Max. Torque	25			5.10

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	104.96	-0.00	0.00
	Max. H _x	21	31.80	37.87	0.07
	Max. H _z	3	31.80	0.04	37.76
	Max. M _x	2	3079.69	0.04	37.76
	Max. M _z	8	3088.59	-37.86	-0.02
	Max. Torsion	25	5.10	19.07	32.70

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	21	31.80	37.87	0.07
	Min. H _x	9	31.80	-37.87	-0.02
	Min. H _z	14	42.40	-0.04	-37.72
	Min. M _x	14	-3078.60	-0.04	-37.72
	Min. M _z	20	-3093.81	37.86	0.07
	Min. Torsion	13	-5.04	-18.94	-32.68

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	35.33	-0.00	0.00	1.18	2.14	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	42.40	-0.04	-37.76	-3079.69	7.76	-4.23
0.9 Dead+1.6 Wind 0 deg - No Ice	31.80	-0.04	-37.76	-3056.90	7.05	-4.24
1.2 Dead+1.6 Wind 30 deg - No Ice	42.40	19.00	-32.66	-2661.88	-1549.36	-2.22
0.9 Dead+1.6 Wind 30 deg - No Ice	31.80	19.00	-32.66	-2642.16	-1538.32	-2.23
1.2 Dead+1.6 Wind 60 deg - No Ice	42.40	32.82	-18.80	-1529.93	-2676.71	0.12
0.9 Dead+1.6 Wind 60 deg - No Ice	31.80	32.82	-18.80	-1518.76	-2657.16	0.11
1.2 Dead+1.6 Wind 90 deg - No Ice	42.40	37.86	0.02	3.89	-3088.59	2.43
0.9 Dead+1.6 Wind 90 deg - No Ice	31.80	37.87	0.02	3.50	-3066.09	2.43
1.2 Dead+1.6 Wind 120 deg - No Ice	42.40	32.84	18.77	1531.04	-2680.25	4.22
0.9 Dead+1.6 Wind 120 deg - No Ice	31.80	32.84	18.77	1519.13	-2660.66	4.22
1.2 Dead+1.6 Wind 150 deg - No Ice	42.40	18.94	32.68	2667.49	-1544.79	5.04
0.9 Dead+1.6 Wind 150 deg - No Ice	31.80	18.94	32.68	2647.01	-1533.77	5.04
1.2 Dead+1.6 Wind 180 deg - No Ice	42.40	0.04	37.72	3078.60	-2.54	4.20
0.9 Dead+1.6 Wind 180 deg - No Ice	31.80	0.04	37.72	3054.92	-3.16	4.20
1.2 Dead+1.6 Wind 210 deg - No Ice	42.40	-18.87	32.63	2662.38	1541.10	2.24
0.9 Dead+1.6 Wind 210 deg - No Ice	31.80	-18.87	32.63	2641.94	1528.83	2.25
1.2 Dead+1.6 Wind 240 deg - No Ice	42.40	-32.80	18.69	1522.14	2680.35	0.01
0.9 Dead+1.6 Wind 240 deg - No Ice	31.80	-32.80	18.69	1510.31	2659.48	0.02
1.2 Dead+1.6 Wind 270 deg - No Ice	42.40	-37.86	-0.07	-6.41	3093.81	-2.40
0.9 Dead+1.6 Wind 270 deg - No Ice	31.80	-37.87	-0.07	-6.71	3069.99	-2.40
1.2 Dead+1.6 Wind 300 deg - No Ice	42.40	-32.86	-18.87	-1538.84	2687.06	-4.31
0.9 Dead+1.6 Wind 300 deg - No Ice	31.80	-32.86	-18.87	-1527.58	2666.13	-4.32
1.2 Dead+1.6 Wind 330 deg - No Ice	42.40	-19.07	-32.70	-2667.01	1563.48	-5.09
0.9 Dead+1.6 Wind 330 deg - No Ice	31.80	-19.07	-32.70	-2647.25	1551.04	-5.10
1.2 Dead+1.0 Ice+1.0 Temp	104.96	0.00	-0.00	18.17	32.82	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	104.96	-0.01	-10.29	-882.66	33.93	-2.55
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	104.96	5.17	-8.90	-760.86	-420.27	-1.44

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
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	104.96	8.93	-5.13	-430.24	-749.91	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	104.96	10.31	0.00	18.63	-870.46	1.44
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	104.96	8.94	5.12	466.04	-750.57	2.52
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	104.96	5.16	8.90	797.78	-419.00	2.96
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	104.96	0.01	10.28	918.20	31.88	2.54
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	104.96	-5.14	8.90	796.75	483.03	1.45
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	104.96	-8.93	5.11	464.27	815.35	0.03
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	104.96	-10.31	-0.01	16.58	936.26	-1.44
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	104.96	-8.94	-5.14	-432.02	816.74	-2.55
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	104.96	-5.18	-8.91	-761.88	487.85	-2.98
Dead+Wind 0 deg - Service	35.33	-0.01	-8.08	-655.59	3.27	0.09
Dead+Wind 30 deg - Service	35.33	4.06	-6.99	-566.48	-328.62	0.10
Dead+Wind 60 deg - Service	35.33	7.02	-4.02	-325.21	-568.92	0.03
Dead+Wind 90 deg - Service	35.33	8.10	0.00	1.72	-656.82	-0.05
Dead+Wind 120 deg - Service	35.33	7.03	4.02	327.24	-569.67	-0.09
Dead+Wind 150 deg - Service	35.33	4.05	6.99	569.47	-327.65	-0.06
Dead+Wind 180 deg - Service	35.33	0.01	8.07	657.14	1.08	-0.09
Dead+Wind 210 deg - Service	35.33	-4.04	6.98	568.37	330.10	-0.09
Dead+Wind 240 deg - Service	35.33	-7.02	4.00	325.34	572.93	0.01
Dead+Wind 270 deg - Service	35.33	-8.10	-0.02	-0.47	661.17	0.06
Dead+Wind 300 deg - Service	35.33	-7.03	-4.04	-327.11	574.37	0.06
Dead+Wind 330 deg - Service	35.33	-4.08	-7.00	-567.58	334.88	0.05

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-35.33	0.00	0.00	35.33	-0.00	0.000%
2	-0.04	-42.40	-37.76	0.04	42.40	37.76	0.004%
3	-0.04	-31.80	-37.76	0.04	31.80	37.76	0.003%
4	19.00	-42.40	-32.66	-19.00	42.40	32.66	0.000%
5	19.00	-31.80	-32.66	-19.00	31.80	32.66	0.000%
6	32.82	-42.40	-18.80	-32.82	42.40	18.80	0.000%
7	32.82	-31.80	-18.80	-32.82	31.80	18.80	0.000%
8	37.87	-42.40	0.02	-37.86	42.40	-0.02	0.008%
9	37.87	-31.80	0.02	-37.87	31.80	-0.02	0.007%
10	32.84	-42.40	18.77	-32.84	42.40	-18.77	0.000%
11	32.84	-31.80	18.77	-32.84	31.80	-18.77	0.000%
12	18.94	-42.40	32.68	-18.94	42.40	-32.68	0.000%
13	18.94	-31.80	32.68	-18.94	31.80	-32.68	0.000%
14	0.04	-42.40	37.72	-0.04	42.40	-37.72	0.004%
15	0.04	-31.80	37.72	-0.04	31.80	-37.72	0.007%
16	-18.87	-42.40	32.63	18.87	42.40	-32.63	0.000%
17	-18.87	-31.80	32.63	18.87	31.80	-32.63	0.000%
18	-32.80	-42.40	18.69	32.80	42.40	-18.69	0.000%
19	-32.80	-31.80	18.69	32.80	31.80	-18.69	0.000%
20	-37.87	-42.40	-0.07	37.86	42.40	0.07	0.008%
21	-37.87	-31.80	-0.07	37.87	31.80	0.07	0.007%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
22	-32.86	-42.40	-18.87	32.86	42.40	18.87	0.000%
23	-32.86	-31.80	-18.87	32.86	31.80	18.87	0.000%
24	-19.07	-42.40	-32.70	19.07	42.40	32.70	0.000%
25	-19.07	-31.80	-32.70	19.07	31.80	32.70	0.000%
26	0.00	-104.96	0.00	-0.00	104.96	0.00	0.000%
27	-0.01	-104.96	-10.29	0.01	104.96	10.29	0.001%
28	5.17	-104.96	-8.90	-5.17	104.96	8.90	0.001%
29	8.94	-104.96	-5.13	-8.93	104.96	5.13	0.001%
30	10.31	-104.96	0.00	-10.31	104.96	-0.00	0.001%
31	8.94	-104.96	5.12	-8.94	104.96	-5.12	0.001%
32	5.16	-104.96	8.90	-5.16	104.96	-8.90	0.001%
33	0.01	-104.96	10.28	-0.01	104.96	-10.28	0.001%
34	-5.14	-104.96	8.90	5.14	104.96	-8.90	0.001%
35	-8.93	-104.96	5.11	8.93	104.96	-5.11	0.001%
36	-10.31	-104.96	-0.01	10.31	104.96	0.01	0.001%
37	-8.94	-104.96	-5.14	8.94	104.96	5.14	0.001%
38	-5.18	-104.96	-8.91	5.18	104.96	8.91	0.001%
39	-0.01	-35.33	-8.08	0.01	35.33	8.08	0.002%
40	4.06	-35.33	-6.99	-4.06	35.33	6.99	0.002%
41	7.02	-35.33	-4.02	-7.02	35.33	4.02	0.002%
42	8.10	-35.33	0.00	-8.10	35.33	-0.00	0.002%
43	7.03	-35.33	4.02	-7.03	35.33	-4.02	0.002%
44	4.05	-35.33	6.99	-4.05	35.33	-6.99	0.002%
45	0.01	-35.33	8.07	-0.01	35.33	-8.07	0.002%
46	-4.04	-35.33	6.98	4.04	35.33	-6.98	0.002%
47	-7.02	-35.33	4.00	7.02	35.33	-4.00	0.002%
48	-8.10	-35.33	-0.02	8.10	35.33	0.02	0.002%
49	-7.03	-35.33	-4.04	7.03	35.33	4.04	0.002%
50	-4.08	-35.33	-7.00	4.08	35.33	7.00	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	16	0.00005082	0.00010328
3	Yes	16	0.00003508	0.00008174
4	Yes	20	0.00000001	0.00009327
5	Yes	19	0.00000001	0.00014289
6	Yes	20	0.00000001	0.00009348
7	Yes	19	0.00000001	0.00014327
8	Yes	15	0.00010327	0.00013927
9	Yes	15	0.00007208	0.00011236
10	Yes	20	0.00000001	0.00009634
11	Yes	19	0.00000001	0.00014771
12	Yes	20	0.00000001	0.00009159
13	Yes	19	0.00000001	0.00014022
14	Yes	16	0.00005084	0.00009076
15	Yes	15	0.00007212	0.00014072
16	Yes	20	0.00000001	0.00009467
17	Yes	19	0.00000001	0.00014512
18	Yes	20	0.00000001	0.00009301
19	Yes	19	0.00000001	0.00014245
20	Yes	15	0.00010325	0.00012393
21	Yes	15	0.00007207	0.00010079
22	Yes	20	0.00000001	0.00009247
23	Yes	19	0.00000001	0.00014147
24	Yes	20	0.00000001	0.00009867
25	Yes	20	0.00000001	0.00007198
26	Yes	14	0.00000001	0.00002431
27	Yes	18	0.00010070	0.00007732
28	Yes	18	0.00010053	0.00009699
29	Yes	18	0.00010054	0.00009798
30	Yes	18	0.00010076	0.00007478
31	Yes	18	0.00010051	0.00010496
32	Yes	18	0.00010049	0.00009983
33	Yes	18	0.00010066	0.00007967

34	Yes	18	0.00010037	0.00011144
35	Yes	18	0.00010036	0.00010934
36	Yes	18	0.00010060	0.00007983
37	Yes	18	0.00010039	0.00010421
38	Yes	18	0.00010040	0.00011072
39	Yes	15	0.00000001	0.00003269
40	Yes	15	0.00000001	0.00003728
41	Yes	15	0.00000001	0.00003493
42	Yes	15	0.00000001	0.00003273
43	Yes	15	0.00000001	0.00003340
44	Yes	15	0.00000001	0.00003698
45	Yes	15	0.00000001	0.00003274
46	Yes	15	0.00000001	0.00003368
47	Yes	15	0.00000001	0.00003509
48	Yes	15	0.00000001	0.00003291
49	Yes	15	0.00000001	0.00003755
50	Yes	15	0.00000001	0.00003470

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 110	21.27	49	1.51	0.00
L2	110 - 90	14.69	49	1.43	0.00
L3	90 - 84.5833	9.31	49	1.08	0.00
L4	84.5833 - 83	8.12	49	1.01	0.00
L5	83 - 81	7.79	49	0.99	0.00
L6	81 - 70	7.38	49	0.95	0.00
L7	74 - 67.0833	6.06	49	0.85	0.00
L8	67.0833 - 64.0833	4.88	49	0.76	0.00
L9	64.0833 - 62.44	4.42	48	0.70	0.00
L10	62.44 - 59.5	4.19	48	0.67	0.00
L11	59.5 - 53.5	3.78	48	0.63	0.00
L12	53.5 - 44.5833	3.03	48	0.56	0.00
L13	44.5833 - 34.08	2.08	48	0.46	0.00
L14	39 - 31.5	1.59	48	0.39	0.00
L15	31.5 - 26.85	1.02	48	0.33	0.00
L16	26.85 - 18	0.72	48	0.27	0.00
L17	18 - 17.0833	0.31	48	0.17	0.00
L18	17.0833 - 13	0.28	48	0.16	0.00
L19	13 - 11.85	0.16	48	0.12	0.00
L20	11.85 - 6.5	0.13	48	0.11	0.00
L21	6.5 - 4	0.04	48	0.05	0.00
L22	4 - 0	0.01	48	0.03	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	800 10121 w/ Mount Pipe	49	18.08	1.51	0.00	12186
107.0000	BXA-80063/4CF	49	13.81	1.39	0.00	4825
101.0000	VHLP2.5-11	49	12.10	1.29	0.00	3613
99.0000	800MHz 2X50W RRH W/FILTER	49	11.56	1.25	0.00	3332
97.0000	TIMING 2000	49	11.03	1.21	0.00	3092
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	49	8.64	1.04	0.00	3552

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 110	99.48	22	7.10	0.01
L2	110 - 90	68.78	22	6.72	0.01
L3	90 - 84.5833	43.62	22	5.08	0.01
L4	84.5833 - 83	38.06	22	4.73	0.01
L5	83 - 81	36.51	22	4.65	0.01
L6	81 - 70	34.60	22	4.47	0.01
L7	74 - 67.0833	28.40	22	3.99	0.01
L8	67.0833 - 64.0833	22.88	22	3.56	0.01
L9	64.0833 - 62.44	20.73	22	3.29	0.01
L10	62.44 - 59.5	19.62	22	3.16	0.01
L11	59.5 - 53.5	17.73	22	2.97	0.01
L12	53.5 - 44.5833	14.22	22	2.63	0.01
L13	44.5833 - 34.08	9.77	22	2.14	0.00
L14	39 - 31.5	7.45	22	1.83	0.00
L15	31.5 - 26.85	4.76	22	1.56	0.00
L16	26.85 - 18	3.37	22	1.28	0.00
L17	18 - 17.0833	1.45	22	0.80	0.00
L18	17.0833 - 13	1.30	22	0.76	0.00
L19	13 - 11.85	0.73	22	0.57	0.00
L20	11.85 - 6.5	0.60	22	0.52	0.00
L21	6.5 - 4	0.17	22	0.25	0.00
L22	4 - 0	0.06	22	0.15	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	800 10121 w/ Mount Pipe	22	84.61	7.06	0.01	2714
107.0000	BXA-80063/4CF	22	64.63	6.52	0.01	1066
101.0000	VHLP2.5-11	22	56.67	6.04	0.01	792
99.0000	800MHz 2X50W RRH W/FILTER	22	54.13	5.87	0.01	729
97.0000	TIMING 2000	22	51.66	5.69	0.01	675
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	22	40.48	4.87	0.01	769

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	131 - 110 (1)	TP15.525x10.525x0.1875	21.000	0.0000	0.0	9.2600	-1.90	682.56	0.003
L2	110 - 90 (2)	TP20.528x15.525x0.25	20.000	0.0000	0.0	16.323	-9.07	1203.23	0.008
L3	90 - 84.5833 (3)	TP21.883x20.528x0.4767	5.4167	0.0000	0.0	32.859	-12.11	1411.51	0.009
L4	84.5833 - 83 (4)	TP22.2791x21.883x0.624	1.5833	0.0000	0.0	43.531	-12.47	1870.42	0.007
L5	83 - 81 (5)	TP22.7794x22.2791x0.38	2.0000	0.0000	0.0	28.077	-12.84	1579.26	0.008
L6	81 - 70 (6)	TP25.531x22.7794x0.510	11.000	0.0000	0.0	39.455	-14.38	1603.57	0.009
L7	70 - 67.0833 (7)	TP25.7604x23.5102x0.43	6.9167	0.0000	0.0	35.494	-16.42	2002.90	0.008
L8	67.0833 -	TP26.5107x25.7604x0.43	3.0000	0.0000	0.0	36.214	-17.10	2045.15	0.008

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L9	64.0833 (8)	13				6			
	64.0833 - 62.44 (9)	TP26.9217x26.5107x0.47	1.6433	0.0000	0.0	40.657	-17.49	2199.71	0.008
L10	62.44 - 59.5 (10)	75				7			
	62.44 - 59.5 (10)	TP27.6571x26.9217x0.60	2.9400	0.0000	0.0	52.609	-18.32	2277.80	0.008
L11	59.5 - 53.5 (11)	39				9			
	59.5 - 53.5 (11)	TP29.1578x27.6571x0.69	6.0000	0.0000	0.0	64.054	-20.25	2612.78	0.008
L12	53.5 - 44.5833 (12)	9				4			
	53.5 - 44.5833 (12)	TP31.388x29.1578x0.683	8.9167	0.0000	0.0	67.533	-23.22	2739.35	0.008
L13	44.5833 - 34.08 (13)	1				0			
	44.5833 - 34.08 (13)	TP34.015x31.388x0.6644	10.503	0.0000	0.0	68.714	-25.15	2788.06	0.009
L14	34.08 - 31.5 (14)	3				5			
	34.08 - 31.5 (14)	TP34.0326x31.4557x0.71	7.5000	0.0000	0.0	74.708	-28.33	3058.35	0.009
L15	31.5 - 26.85 (15)	54				1			
	31.5 - 26.85 (15)	TP35.194x34.0326x0.610	4.6500	0.0000	0.0	67.950	-30.90	3250.22	0.010
L16	26.85 - 18 (16)	2				6			
	26.85 - 18 (16)	TP37.4043x35.194x0.640	8.8500	0.0000	0.0	75.805	-34.23	3522.80	0.010
L17	18 - 17.0833 (17)	4				8			
	18 - 17.0833 (17)	TP37.6333x37.4043x0.80	0.9167	0.0000	0.0	95.368	-34.66	4607.11	0.008
L18	17.0833 - 13 (18)	42				7			
	17.0833 - 13 (18)	TP38.6531x37.6333x0.70	4.0833	0.0000	0.0	86.389	-36.38	4179.22	0.009
L19	13 - 11.85 (19)	7				5			
	13 - 11.85 (19)	TP38.9404x38.6531x0.87	1.1500	0.0000	0.0	106.78	-36.96	5122.09	0.007
L20	11.85 - 6.5 (20)	11				10			
	11.85 - 6.5 (20)	TP40.2766x38.9404x0.63	5.3500	0.0000	0.0	81.149	-39.11	3882.46	0.010
L21	6.5 - 4 (21)	58				3			
	6.5 - 4 (21)	TP40.901x40.2766x0.750	2.5000	0.0000	0.0	96.997	-40.28	4177.62	0.010
L22	4 - 0 (22)	3				6			
	4 - 0 (22)	TP41.9x40.901x0.8546	4.0000	0.0000	0.0	112.94	-42.39	5352.53	0.008
						70			

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio M _{ux} / φM _{nx}	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio M _{uy} / φM _{ny}
L1	131 - 110 (1)	TP15.525x10.525x0.1875	53.14	212.37	0.250	0.00	212.37	0.000
L2	110 - 90 (2)	TP20.528x15.525x0.25	346.20	494.91	0.700	0.00	494.91	0.000
L3	90 - 84.5833 (3)	TP21.883x20.528x0.4767	463.42	606.92	0.764	0.00	606.92	0.000
L4	84.5833 - 83 (4)	3	501.88	808.40	0.621	0.00	808.40	0.000
L5	83 - 81 (5)	95	551.04	713.66	0.772	0.00	713.66	0.000
L6	81 - 70 (6)	1	727.94	774.49	0.940	0.00	774.49	0.000
L7	70 - 67.0833 (7)	53	910.64	1023.97	0.889	0.00	1023.97	0.000
L8	67.0833 - 64.0833 (8)	13	992.26	1077.40	0.921	0.00	1077.40	0.000
L9	64.0833 - 62.44 (9)	75	1037.57	1173.28	0.884	0.00	1173.28	0.000
L10	62.44 - 59.5 (10)	39	1119.76	1237.72	0.905	0.00	1237.72	0.000
L11	59.5 - 53.5 (11)	9	1292.08	1490.23	0.867	0.00	1490.23	0.000
L12	53.5 - 44.5833 (12)	1	1559.70	1689.57	0.923	0.00	1689.57	0.000
L13	44.5833 - 34.08 (13)	3	1734.24	1801.62	0.963	0.00	1801.62	0.000
L14	34.08 - 31.5 (14)	54	1892.72	1992.71	0.950	0.00	1992.71	0.000
L15	31.5 - 26.85 (15)	2	2133.27	2268.12	0.941	0.00	2268.12	0.000
L16	26.85 - 18 (16)	4	2438.73	2613.88	0.933	0.00	2613.88	0.000
L17	18 - 17.0833	TP37.6333x37.4043x0.80	2471.06	3409.68	0.725	0.00	3409.68	0.000

Section No.	Elevation ft	Size	M_{ux}	ϕM_{nx}	Ratio	M_{uy}	ϕM_{ny}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L18	(17) 17.0833 - 13	42 TP38.6531x37.6333x0.70	2616.59	3196.82	0.818	0.00	3196.82	0.000
L19	(18) 13 - 11.85	7 TP38.9404x38.6531x0.87	2658.03	3914.45	0.679	0.00	3914.45	0.000
L20	(19) 11.85 - 6.5	11 TP40.2766x38.9404x0.63	2853.36	3110.39	0.917	0.00	3110.39	0.000
L21	(20) 6.5 - 4 (21)	58 TP40.901x40.2766x0.750	2946.10	3381.09	0.871	0.00	3381.09	0.000
L22	3 4 - 0 (22)	3 TP41.9x40.901x0.8546	3096.50	4419.26	0.701	0.00	4419.26	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	ϕV_n	Ratio	Actual	ϕT_n	Ratio
			V_u K	K	$\frac{V_u}{\phi V_n}$	T_u kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	131 - 110 (1)	TP15.525x10.525x0.1875	5.27	341.28	0.015	0.02	430.62	0.000
L2	110 - 90 (2)	TP20.528x15.525x0.25	19.54	601.61	0.032	0.21	1003.53	0.000
L3	90 - 84.5833 (3)	TP21.883x20.528x0.4767	24.16	705.75	0.034	0.39	1230.65	0.000
L4	84.5833 - 83 (4)	TP22.2791x21.883x0.624	24.43	935.21	0.026	0.45	1639.18	0.000
L5	83 - 81 (5)	TP22.7794x22.2791x0.38	24.74	789.63	0.031	0.53	1447.08	0.000
L6	81 - 70 (6)	TP25.531x22.7794x0.510	25.82	801.78	0.032	0.76	1570.42	0.000
L7	70 - 67.0833 (7)	TP25.7604x23.5102x0.43	26.98	1001.45	0.027	1.01	2076.28	0.000
L8	67.0833 - 64.0833 (8)	TP26.5107x25.7604x0.43	27.44	1022.58	0.027	1.14	2184.63	0.001
L9	64.0833 - 62.44 (9)	TP26.9217x26.5107x0.47	27.71	1099.85	0.025	1.22	2379.03	0.001
L10	62.44 - 59.5 (10)	TP27.6571x26.9217x0.60	28.21	1138.90	0.025	1.35	2509.69	0.001
L11	59.5 - 53.5 (11)	TP29.1578x27.6571x0.69	29.24	1306.39	0.022	1.62	3021.73	0.001
L12	53.5 - 44.5833 (12)	TP31.388x29.1578x0.683	30.79	1369.68	0.022	2.05	3425.92	0.001
L13	44.5833 - 34.08 (13)	TP34.015x31.388x0.6644	31.73	1394.03	0.023	2.32	3653.11	0.001
L14	34.08 - 31.5 (14)	TP34.0326x31.4557x0.71	32.90	1550.08	0.021	2.64	4040.58	0.001
L15	31.5 - 26.85 (15)	TP35.194x34.0326x0.610	33.84	1625.11	0.021	2.92	4599.02	0.001
L16	26.85 - 18 (16)	TP37.4043x35.194x0.640	35.20	1761.40	0.020	3.36	5300.13	0.001
L17	18 - 17.0833 (17)	TP37.6333x37.4043x0.80	35.33	2303.55	0.015	3.41	6913.76	0.000
L18	17.0833 - 13 (18)	TP38.6531x37.6333x0.70	35.94	2089.61	0.017	3.62	6482.17	0.001
L19	13 - 11.85 (19)	TP38.9404x38.6531x0.87	36.11	2561.04	0.014	3.68	7937.28	0.000
L20	11.85 - 6.5 (20)	TP40.2766x38.9404x0.63	36.90	1941.23	0.019	3.96	6306.91	0.001
L21	6.5 - 4 (21)	TP40.901x40.2766x0.750	37.28	2088.81	0.018	4.09	6855.79	0.001
L22	3 4 - 0 (22)	3 TP41.9x40.901x0.8546	37.91	2676.26	0.014	4.31	8960.83	0.000

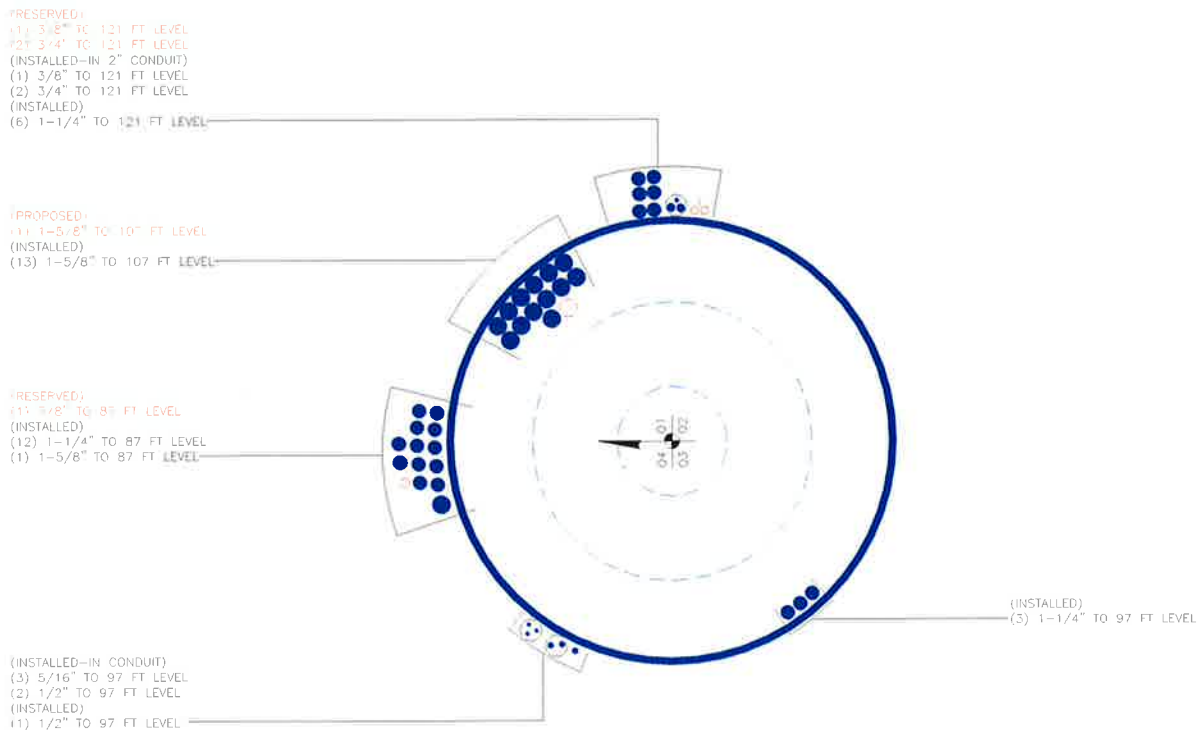
Pole Interaction Design Data

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	131 - 110 (1)	0.003	0.250	0.000	0.015	0.000	0.253	1.000	4.8.2 ✓
L2	110 - 90 (2)	0.008	0.700	0.000	0.032	0.000	0.708	1.000	4.8.2 ✓
L3	90 - 84.5833 (3)	0.009	0.764	0.000	0.034	0.000	0.773	1.000	4.8.2 ✓
L4	84.5833 - 83 (4)	0.007	0.621	0.000	0.026	0.000	0.628	1.000	4.8.2 ✓
L5	83 - 81 (5)	0.008	0.772	0.000	0.031	0.000	0.781	1.000	4.8.2 ✓
L6	81 - 70 (6)	0.009	0.940	0.000	0.032	0.000	0.950	1.000	4.8.2 ✓
L7	70 - 67.0833 (7)	0.008	0.889	0.000	0.027	0.000	0.898	1.000	4.8.2 ✓
L8	67.0833 - 64.0833 (8)	0.008	0.921	0.000	0.027	0.001	0.930	1.000	4.8.2 ✓
L9	64.0833 - 62.44 (9)	0.008	0.884	0.000	0.025	0.001	0.893	1.000	4.8.2 ✓
L10	62.44 - 59.5 (10)	0.008	0.905	0.000	0.025	0.001	0.913	1.000	4.8.2 ✓
L11	59.5 - 53.5 (11)	0.008	0.867	0.000	0.022	0.001	0.875	1.000	4.8.2 ✓
L12	53.5 - 44.5833 (12)	0.008	0.923	0.000	0.022	0.001	0.932	1.000	4.8.2 ✓
L13	44.5833 - 34.08 (13)	0.009	0.963	0.000	0.023	0.001	0.972	1.000	4.8.2 ✓
L14	34.08 - 31.5 (14)	0.009	0.950	0.000	0.021	0.001	0.960	1.000	4.8.2 ✓
L15	31.5 - 26.85 (15)	0.010	0.941	0.000	0.021	0.001	0.951	1.000	4.8.2 ✓
L16	26.85 - 18 (16)	0.010	0.933	0.000	0.020	0.001	0.943	1.000	4.8.2 ✓
L17	18 - 17.0833 (17)	0.008	0.725	0.000	0.015	0.000	0.732	1.000	4.8.2 ✓
L18	17.0833 - 13 (18)	0.009	0.818	0.000	0.017	0.001	0.828	1.000	4.8.2 ✓
L19	13 - 11.85 (19)	0.007	0.679	0.000	0.014	0.000	0.686	1.000	4.8.2 ✓
L20	11.85 - 6.5 (20)	0.010	0.917	0.000	0.019	0.001	0.928	1.000	4.8.2 ✓
L21	6.5 - 4 (21)	0.010	0.871	0.000	0.018	0.001	0.881	1.000	4.8.2 ✓
L22	4 - 0 (22)	0.008	0.701	0.000	0.014	0.000	0.709	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	131 - 110	Pole	TP15.525x10.525x0.1875	1	-1.90	682.56	25.3	Pass
L2	110 - 90	Pole	TP20.528x15.525x0.25	2	-9.07	1203.23	70.8	Pass
L3	90 - 84.5833	Pole	TP21.883x20.528x0.4767	3	-12.11	1411.51	77.3	Pass
L4	84.5833 - 83	Pole	TP22.2791x21.883x0.6243	4	-12.47	1870.42	62.8	Pass
L5	83 - 81	Pole	TP22.7794x22.2791x0.3895	5	-12.84	1579.26	78.1	Pass
L6	81 - 70	Pole	TP25.531x22.7794x0.5101	6	-14.38	1603.57	95.0	Pass
L7	70 - 67.0833	Pole	TP25.7604x23.5102x0.4353	7	-16.42	2002.90	89.8	Pass
L8	67.0833 - 64.0833	Pole	TP26.5107x25.7604x0.4313	8	-17.10	2045.15	93.0	Pass
L9	64.0833 - 62.44	Pole	TP26.9217x26.5107x0.4775	9	-17.49	2199.71	89.3	Pass
L10	62.44 - 59.5	Pole	TP27.6571x26.9217x0.6039	10	-18.32	2277.80	91.3	Pass
L11	59.5 - 53.5	Pole	TP29.1578x27.6571x0.699	11	-20.25	2612.78	87.5	Pass
L12	53.5 - 44.5833	Pole	TP31.388x29.1578x0.6831	12	-23.22	2739.35	93.2	Pass
L13	44.5833 - 34.08	Pole	TP34.015x31.388x0.6644	13	-25.15	2788.06	97.2	Pass
L14	34.08 - 31.5	Pole	TP34.0326x31.4557x0.7154	14	-28.33	3058.35	96.0	Pass
L15	31.5 - 26.85	Pole	TP35.194x34.0326x0.6102	15	-30.90	3250.22	95.1	Pass
L16	26.85 - 18	Pole	TP37.4043x35.194x0.6404	16	-34.23	3522.80	94.3	Pass
L17	18 - 17.0833	Pole	TP37.6333x37.4043x0.8042	17	-34.66	4607.11	73.2	Pass
L18	17.0833 - 13	Pole	TP38.6531x37.6333x0.707	18	-36.38	4179.22	82.8	Pass
L19	13 - 11.85	Pole	TP38.9404x38.6531x0.8711	19	-36.96	5122.09	68.6	Pass
L20	11.85 - 6.5	Pole	TP40.2766x38.9404x0.6358	20	-39.11	3882.46	92.8	Pass
L21	6.5 - 4	Pole	TP40.901x40.2766x0.7503	21	-40.28	4177.62	88.1	Pass
L22	4 - 0	Pole	TP41.9x40.901x0.8546	22	-42.39	5352.53	70.9	Pass
						Summary		
						Pole (L13)	97.2	Pass
						RATING =	97.2	Pass

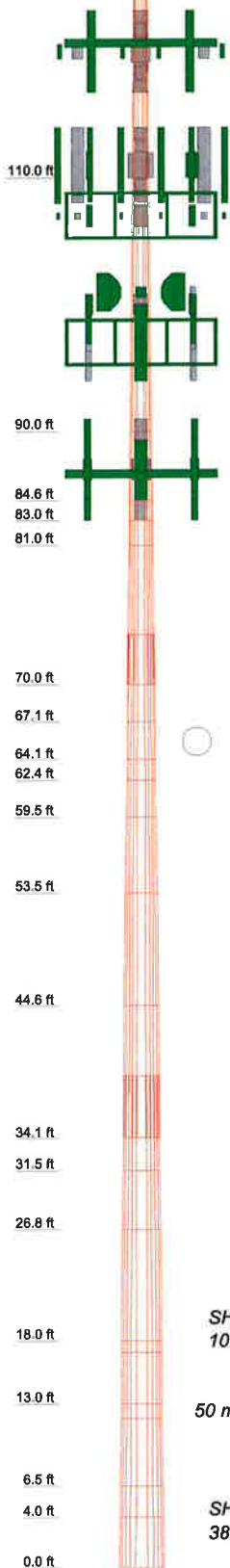
APPENDIX B BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

131.0 ft

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	21.0000	12	0.1875		10.5250	15.5250	A572-65	0.6
2	20.0000	12	0.2500	4.0000	15.5250	20.5280	A572-65	1.0
3	2.0000	12	0.3800	4.0000	22.7794	22.7794	A572-65	0.6
4	2.0000	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.2
5	2.0000	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.2
6	2.0000	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.2
7	6.9167	12	0.5101	4.0000	22.7794	22.7794	A572-65	1.5
8	6.9167	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.8
9	6.9167	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.8
10	6.9167	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.8
11	6.9167	12	0.5101	4.0000	22.7794	22.7794	A572-65	0.8
12	8.9167	12	0.6631	4.9200	28.1578	31.3880	A572-65	2.0
13	7.5000	12	0.6644	4.9200	31.3880	34.0150	A572-65	2.4
14	4.8500	12	0.8102	4.9200	34.0150	35.78	A572-65	1.9
15	4.8500	12	0.8102	4.9200	35.78	36.16	A572-65	1.1
16	8.8500	12	0.8404	4.9200	36.16	38.00	A572-65	2.2
17	8.8500	12	0.8404	4.9200	38.00	39.84	A572-65	2.2
18	18.0	12	0.8404	4.9200	39.84	41.68	A572-65	0.4
19	18.0	12	0.8404	4.9200	41.68	43.52	A572-65	1.2
20	18.0	12	0.8404	4.9200	43.52	45.36	A572-65	0.4
21	6.5	12	0.8404	4.9200	45.36	47.20	A572-65	0.8
22	4.0	12	0.8404	4.9200	47.20	49.04	A572-65	1.5
23	4.0	12	0.8404	4.9200	49.04	50.88	A572-65	0.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800 10121 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
800 10121 w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
RRUS-11	121	PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99
(2) LGP21401	121	Side Arm Mount [SO 101-3]	99
(2) LGP21401	121	TIMING 2000	97
DC6-48-60-18-8F	121	840 10054	97
80010798 w/ Mount Pipe	121	840 10054	97
80010798 w/ Mount Pipe	121	840 10054	97
80010798 w/ Mount Pipe	121	WIMAX DAP HEAD	97
RRUS 32	121	WIMAX DAP HEAD	97
RRUS 32	121	WIMAX DAP HEAD	97
RRUS 32	121	HORIZON COMPACT	97
RRUS 32 B2	121	HORIZON COMPACT	97
RRUS 32 B2	121	APXVSP18-C-A20	97
RRUS 32 B2	121	APXVSP18-C-A20	97
DC6-48-60-18-8F	121	APXVSP18-C-A20	97
T-Arm Mount [TA 702-3]	121	IBC1900HG-2A	97
BXA-80063/4CF	107	IBC1900HG-2A	97
BXA-80063/4CF	107	IBC1900HG-2A	97
BXA-80063/4CF	107	IBC1900BB-1	97
BXA-70063/6CFx4	107	IBC1900BB-1	97
BXA-70063/6CFx4	107	IBC1900BB-1	97
BXA-70063/6CFx4	107	Platform Mount (LP 101-1)	97
(2) SBNHH-1D65B	107	VHLP2.5-11	97
(2) SBNHH-1D65B	107	VHLP2.5-11	97
(2) SBNHH-1D65B	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
(2) FD9R6004/2C-3L	107	LNX-6515DS-VTM w/ Mount Pipe	87
(2) FD9R6004/2C-3L	107	LNX-6515DS-VTM w/ Mount Pipe	87
(2) FD9R6004/2C-3L	107	LNX-6515DS-VTM w/ Mount Pipe	87
DB-T1-6Z-8AB-0Z	107	KRY 112 144/1	87
DB-T1-6Z-8AB-0Z	107	KRY 112 144/1	87
B66A RRH4X45	107	KRY 112 144/1	87
B66A RRH4X45	107	RRUS 11 B12	87
B66A RRH4X45	107	RRUS 11 B12	87
B13 RRH 4X30	107	RRUS 11 B12	87
B13 RRH 4X30	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
B13 RRH 4X30	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
B25 RRH4X30	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
B25 RRH4X30	107	T-Arm Mount [TA 602-3]	87
B25 RRH4X30	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
Platform Mount (LP 101-1)	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
800MHz 2X50W RRH W/FILTER	99		
800MHz 2X50W RRH W/FILTER	99		
800MHz 2X50W RRH W/FILTER	99		
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99		
PCS 1900MHz 4x45W-65MHz w/Mount Pipe	99		

ALL REACTIONS ARE FACTORED



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 35.78 ksi	36 ksi	45 ksi
Reinf 37.88 ksi	38 ksi	48 ksi	Reinf 36.10 ksi	36 ksi	46 ksi
Reinf 37.89 ksi	38 ksi	48 ksi	Reinf 42.18 ksi	42 ksi	53 ksi
Reinf 49.60 ksi	50 ksi	62 ksi	Reinf 40.98 ksi	41 ksi	52 ksi
Reinf 35.84 ksi	36 ksi	45 ksi	Reinf 42.60 ksi	43 ksi	54 ksi
Reinf 49.76 ksi	50 ksi	63 ksi	Reinf 42.66 ksi	43 ksi	54 ksi
Reinf 49.80 ksi	50 ksi	63 ksi	Reinf 42.30 ksi	42 ksi	53 ksi
Reinf 47.71 ksi	48 ksi	60 ksi	Reinf 42.19 ksi	42 ksi	53 ksi
Reinf 38.18 ksi	38 ksi	48 ksi	Reinf 37.98 ksi	38 ksi	48 ksi
Reinf 35.97 ksi	36 ksi	45 ksi	Reinf 41.79 ksi	42 ksi	53 ksi
Reinf 35.77 ksi	36 ksi	45 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 97.2%

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: **131' Monopole / East Hartford, CT**

Project: **37517-1009.002.7700 / BU 806376**

Client: **Crown Castle International** Drawn by: **Seth Tschanen** App'd:

Code: **TIA-222-G** Date: **03/25/17** Scale: **N**

Path: _____ Dwg No. _____

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

TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)*(Rod Diameter)

Site Data

BU#:	806376
Site Name:	HRT 100 943239
App #:	
Pole Manufacturer:	Other

Reactions		
Mu:	3096	ft-kips
Axial, Pu:	42	kips
Shear, Vu:	38	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	49.88	in

Anchor Rod Results

Max Rod (Cu+ Vu/η):	258.1 Kips
Allowable Axial, Φ*Fu*Anet:	260.0 Kips
Anchor Rod Stress Ratio:	99.3% Pass

Rigid
AISC LRFD
φ*Tn

Plate Data

Diam:	55.88	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	11.23	in

Base Plate Results

Base Plate Stress:	36.1 ksi
Allowable Plate Stress:	54.0 ksi
Base Plate Stress Ratio:	66.9% Pass

Flexural Check

Rigid
AISC LRFD
φ*Fy
Y.L. Length:
27.06

Stiffener Data (Welding at both sides)

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

n/a

Stiffener Results

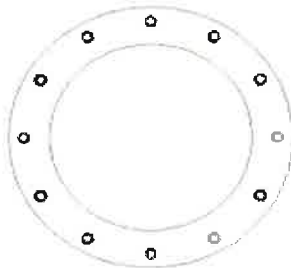
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a
----------------------------	-----

Pole Data

Diam:	41.9	in
Thick:	0.344	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

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

Factored Foundation Loads:

Factored Axial Load (+Comp, -Ten) = **42** kips
 Factored Horiz. Load at Top of Pier = **38** kips
 Factored OTM at Top of Pier = **3096** kips

LC1 **42** kips
 LC2 **31.5** kips

Concrete Vol = **59.54** yd³

LRFD Resistance and Load Factors:

ϕ

Soil Bearing = **0.75**
 Soil Weight = **0.75**
 Concrete Weight = **0.75**

Dead Load Factors

1.2
1.2
0.9
0.9

Soil Properties:

Depth to Water Table = **12** ft
 Uplift Cone from **Top** of footing

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
8	115	0	33	10	8.00

Dimensions:

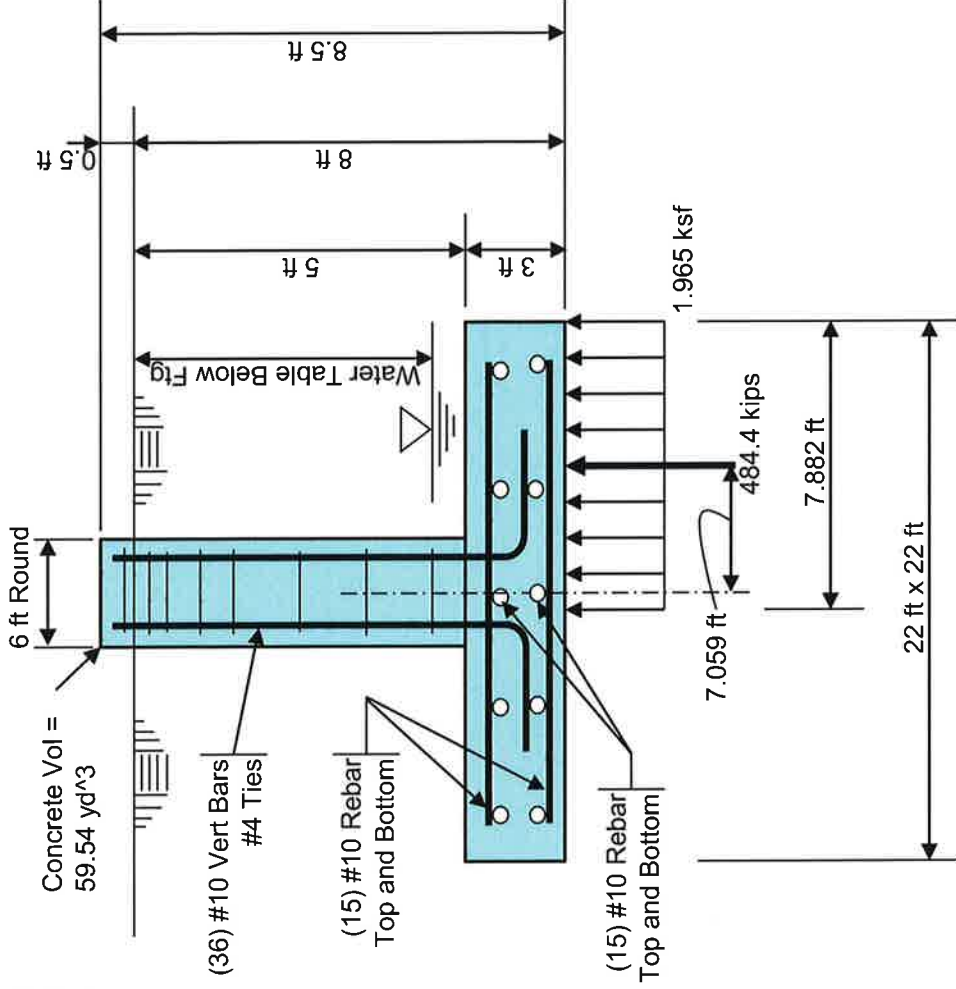
Pier Shape = **Round**
 Pier Width = **6** ft Diameter
 Pier Height above Grade = **0.5** ft
 Depth to Bottom of Footing = **8** ft
 Footing Thickness = **3** ft
 Footing Width, B = **22** ft
 Footing Length, L = **22** ft

Concrete:

Concrete Strength = **3** ksi
 Rebar Strength = **60** ksi

Summary Results:

Maximum Net Soil Bearing = **2.153** ksf Required Available **7.500** ksf
 Uplift = **0.0** kips **445.1** kips
 Punching Shear Stress = **0.050** ksi **0.164** ksi
 Bending Shear Stress = **234.0** kips **652.8** kips
 Bending Moment = **1381** k-ft **2507.1** k-ft
 Conc Pier Reinforcing Steel = **3305.0** k-ft **5779.1** k-ft



Total Pad Reinf Stl = **38.10** in² >= 17.11 in² = Min Stl, OK
 Total Pier Reinf Stl = **45.72** in² >= 20.36 in² = Min Stl, OK
 Footing Thickness = **3.00** ft >= 1.96 ft = Min Ftg Thk, OK

Stress Ratio = **28.7%** in Soil Bearing
 Stress Ratio = **0.0%** in Uplift
 Stress Ratio = **30.4%** in Punching Shear
 Stress Ratio = **35.8%** in Bending Shear
 Stress Ratio = **55.1%** in Bending Moment
 Stress Ratio = **57.2%** in Pier Rebar

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: 806376
 Site Name: HRT 100 943239
 App #:

Reactions		
Mu	53.14	ft-kips
Axial, Pu:	1.9	kips
Shear, Vu:	5.27	kips
Elevation:	110	feet

Bolt Threads:
X-Excluded
$\phi V_n = \phi(0.55 \cdot A_b \cdot F_u)$
$\phi = 0.75, \phi \cdot V_n$ (kips):
38.88

Pole Manufacturer:	Other
--------------------	-------

If No stiffeners, Criteria: TIA G <-Only Applicable to Unstiffened Cases

Bolt Data		
Qty:	10	
Diameter (in.):	1	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	75	<-- Disregard
N/A:	55	<-- Disregard
Circle (in.):	19.45	

Flange Bolt Results

Bolt Tension Capacity, $\phi \cdot T_n, B1$: 54.54 kips
 Adjusted $\phi \cdot T_n$ (due to $V_u = V_u / Q_t$), B: 54.53 kips
 Max Bolt directly applied Tu: 12.92 Kips
 Min. PL "tc" for B cap. w/o Pry: 1.056 in
 Min PL "treq" for actual T w/ Pry: 0.385 in
 Min PL "t1" for actual T w/o Pry: 0.514 in
 T allowable w/o Prying: 54.54 kips $\alpha < 0$ case
 Prying Force, q: 0.00 kips
 Total Bolt Tension = Tu + q: 12.92 kips
 Non-Prying Bolt Stress Ratio, Tu/B: 23.7% **Pass**

Rigid
$\phi \cdot T_n$
$\phi T_n [(1 - (V_u / \phi V_n)^2)^{0.5}]$

Plate Data		
Diam:	21.95	in
Thick, t:	1.375	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.99	in

Exterior Flange Plate Results

Flexural Check
 Compression Side Plate Stress: 6.8 ksi
 Allowable Plate Stress: 45.0 ksi
 Compression Plate Stress Ratio: 15.1% **Pass**
No Prying
 Tension Side Stress Ratio, $(treq/t)^2$: 7.8% **Pass**

Rigid
TIA G
$\phi \cdot F_y$
Comp. Y.L. Length: 11.71

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

n/a

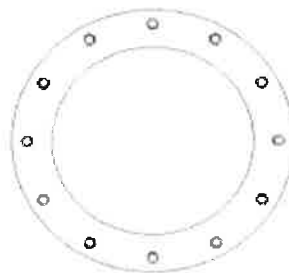
Stiffener Results

Horizontal Weld: n/a
 Vertical Weld: n/a
 Plate Flex+Shear, $f_b / F_b + (f_v / F_v)^2$: n/a
 Plate Tension+Shear, $f_t / F_t + (f_v / F_v)^2$: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

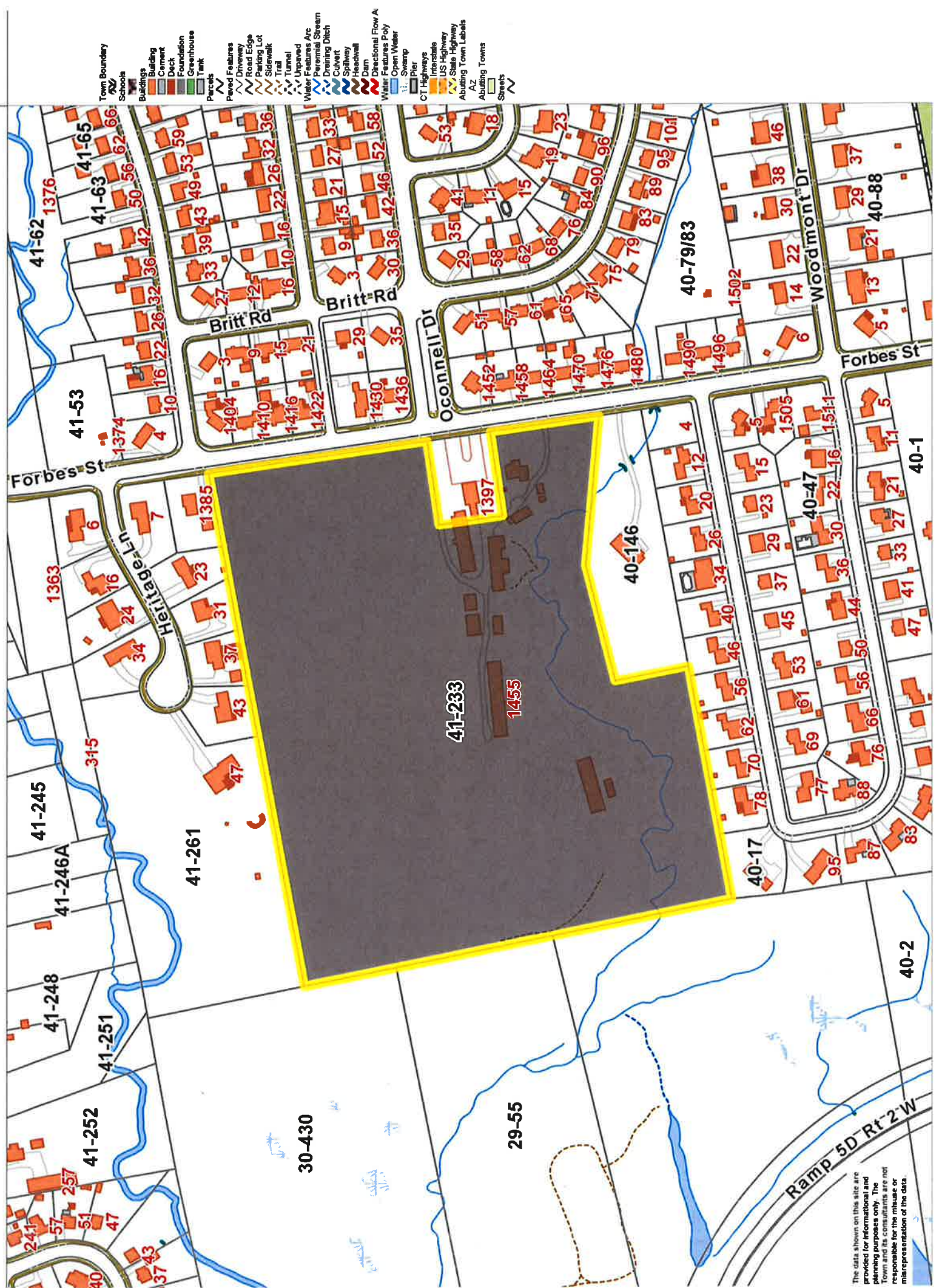
Pole Data		
Diam:	15.53	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

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

ATTACHMENT 4



- Town Boundary
- Schools
- Buildings
- Building
- Deck
- Foundation
- Greenhouse
- Tank
- Pavement
- Paved Features
- Driveway
- Road Edge
- Gravel Lot
- Stairway
- Tunnel
- Unpaved
- Water Features Arc
- Water Features Arc
- Parental Stream
- Draining Ditch
- Culvert
- Spillway
- Headwall
- Dam
- Directional Flow Ar
- Water Features Poly
- Open Water
- Swamp
- Pier
- CT Highways
- Interstate
- US Highway
- State Highway
- Abutting Town Labels
- AZ
- Abutting Towns
- Streets

The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.



Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	CAMA PID:	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		



OWNER OF RECORD

HANDEL ROBERT D

1473 FORBES ST

EAST HARTFORD, CT 06118



LIVING AREA:	720	ZONING:	R2	ACREAGE:	25.74
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SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
HANDEL ROBERT D	3582/ 113	25-Jan-2016	\$0.00
HANDEL JESSIE K EST OF C/O ROBERT D HANDEL EXECUTOR	3534/ 329	21-May-2015	\$0.00
HANDEL JESSIE K	1874/ 345	03-Jan-2000	\$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	0/ 0	01-Jan-2000	\$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	1693/ 161	05-Aug-1997	\$0.00

CURRENT PARCEL ASSESSMENT

TOTAL:	\$332,880.00	IMPROVEMENTS:	\$291,500.00	LAND:	\$41,380.00
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ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2017	\$332,880.00	\$291,500.00	\$41,380.00
2016	\$332,880.00	\$291,500.00	\$41,380.00
2015	\$346,650.00	\$302,420.00	\$44,230.00
2014	\$346,650.00	\$302,420.00	\$44,230.00
2013	\$346,650.00	\$302,420.00	\$44,230.00

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	CAMA PID:	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 1

YEAR BUILT	1865	EXT WALL 1	Vinyl Siding
STYLE	Colonial	INT WALLS 1	Plaster
MODEL	Residential	HEAT FUEL	Gas
STORIES	2.0	HEAT TYPE	Hot Water
OCCUPANCY	One Family	AC TYPE	None
ROOF	Gable	BEDROOMS	4
ROOF COVER	Asphalt	FULL BATHS	1
FLOOR COVER 1	Hardwood	HALF BATHS	1
% BSMT	100	TOTAL ROOMS	9
% FIN BSMT	0	% REC RM	60
% SEMI FIN BSMT	0	% ATTIC FINISH	0
BSMT GARAGE		FIREPLACES	0



OUTBUILDINGS

DESCRIPTION	CODE	UNITS
1 Story Barn	BRN1	1x5112 (5112 SF)
Shed	SHD1	1x64 (64 S.F.)
1 Story Barn	BRN1	1x3072 (3072 SF)
Shed	SHD1	1x300 (300 S.F.)
Shed	SHD1	1x561 (561 S.F.)
1 Story Barn	BRN1	1x4928 (4928 SF)
Shed	SHD1	1x600 (600 S.F.)

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	CAMA PID:	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 2

YEAR BUILT	1934	EXT WALL 1	Vinyl Siding
STYLE	Single Family	INT WALLS 1	Plaster
MODEL	Residential	HEAT FUEL	Other
STORIES	1.0	HEAT TYPE	Other
OCCUPANCY	One Family	AC TYPE	None
ROOF	Gable	BEDROOMS	1
ROOF COVER	Asphalt	FULL BATHS	1
FLOOR COVER 1	Hardwood	HALF BATHS	0
% BSMT	0	TOTAL ROOMS	4
% FIN BSMT	0	% REC RM	0
% SEMI FIN BSMT	0	% ATTIC FINISH	0
BSMT GARAGE		FIREPLACES	0



OUTBUILDINGS

DESCRIPTION	CODE	UNITS
FR/SHED		30 SF
Shed	SHD1	1x105 (105 S.F.)
1 Story Barn	BRN1	1x840 (840 SF)
Shed	SHD1	1x144 (144 S.F.)
1 Story Barn	BRN1	1x3840 (3840 SF)
Shed	SHD1	1x308 (308 S.F.)

ATTACHMENT 5



Certificate of Mailing — Firm

Name and Address of Sender Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here Postmark with Date of Receipt.	Postage	Fee	Special Handling	Parcel Airlift
USPS® Tracking Number Firm-specific Identifier		3	3	neopost™ 02/26/2018 US POSTAGE \$002.38 ZIP 06103 0411122038				
Postmaster, per (name of receiving employee) 								
1. Marcia A. Leclerc, Mayor Town of East Hartford 740 Main Street East Hartford, CT 06108								
2. Jeffrey Cormier, Town Planner Town of East Hartford 740 Main Street East Hartford, CT 06108								
3. Robert Handel 1473 Forbes Street East Hartford, CT 06118								
4.								
5.								
6.								

