

EM-VER-077-130425
53 Slater Street, Manchester

RECEIVED
JUL 31 2014

CONNECTICUT
SITING COUNCIL

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

July 29, 2014

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

Re: **Completion of Construction Activity**

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the Cellco Partnership d/b/a Verizon Wireless telecommunications facility modifications listed below has been completed.

- EM-VER-083-130308 – 213 Court Street, Middletown, Connecticut
- EM-VER-089-130308 – 200 Stanley Street, New Britain, Connecticut
- EM-VER-137-130314 – 7 Broadway Avenue Ext., Stonington, Connecticut
- EM-VER-148-130312 – 20 Alexander Drive, Wallingford, Connecticut
- EM-VER-089-130322 – Lester Street, New Britain, Connecticut
- EM-VER-110-130325 – 21-35 East Main Street (a/k/a 1 Central Square), Plainville, Connecticut
- EM-VER-155-130322 – 1358 New Britain Avenue, West Hartford, Connecticut
- EM-VER-084-130411 – 26185 Research Drive, Milford, Connecticut
- EM-VER-104-130401 – 2 Hinkley Hill Road, Norwich, Connecticut
- EM-VER-148-130408 – 90 North Plains Industrial Road, Wallingford, Connecticut
- EM-VER-159-130411 – 250 Silas Deane Highway, Wethersfield, Connecticut
- EM-VER-146-130416 – 197 South Street, Vernon, Connecticut
- EM-VER-076-130425 – 252 Ridge Road, Madison, Connecticut
- EM-VER-077-130425 – 53 Slater Street, Manchester, Connecticut
- EM-VER-129-130425 – 400 Main Street, Somers, Connecticut
- EM-VER-052-130430 – Town Farm Road, Farmington, Connecticut
- EM-VER-080-130430 – 38 Elm Street, Meriden, Connecticut

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Robinson + Cole

Melanie A. Bachman
July 29, 2014
Page 2

EM-VER-014-130509 – 850 West Main Street, Branford, Connecticut
EM-VER-025-130506 – 705 West Johnson Avenue, Cheshire, Connecticut
EM-VER-041-130524 – 135 Henry Hill Road, East Haddam, Connecticut
EM-VER-115-130524 – 54 Waterbury Road, Prospect, Connecticut
EM-VER-156-130524 – 668 Jones Hill Road, West Haven, Connecticut
EM-VER-027-130603 – 48 Cow Hill Road, Clinton, Connecticut
EM-VER-148-130603 – 945 East Center Street, Wallingford, Connecticut

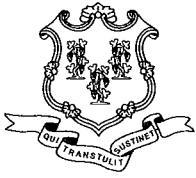
If you have any questions or need any additional information regarding this facility please do not hesitate to contact me.

Sincerely,



Kenneth C. Baldwin

Copy to:
Sandy M. Carter



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

May 13, 2013

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **EM-VER-077-130425** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 53 Slater Street, Manchester, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated April 23, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

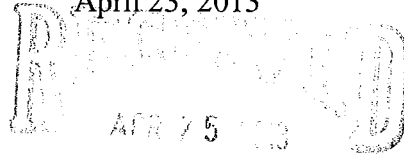
MABR/CDM/jb

c: The Honorable Leo V. Diana, Mayor, Town of Manchester
Scott A. Shanley, General Manager, Town of Manchester
James Davis, Zoning Enforcement Officer, Town of Manchester
Crown Castle

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Hartford, CT 06103-3597
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Also admitted in Massachusetts

April 23, 2013



Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap
53 Slater Street, Manchester, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 113-foot level of the existing 155-foot tower at the above-referenced address. The tower is owned by Crown Castle. The Council approved Cellco’s shared use of this tower in 2003. Cellco now intends to replace six (6) of its antennas with three (3) model LNX-6512DS-T0M cellular antennas and three (3) model BXA-17063-12BF AWS antennas, at the same level on the tower. Cellco also intends to install six (6) remote radio heads (“RRHs”) behind its antennas and one (1) HYBRIFLEX™ fiber cable inside the monopole tower. Attached behind Tab 1 are the specifications for the 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 Leo V. Diane, Mayor for the Town of Manchester. A copy of this letter is also being sent to One Hundred Twenty One Connecticut Avenue Associates LLC, the owner of the property on which the tower is located.

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



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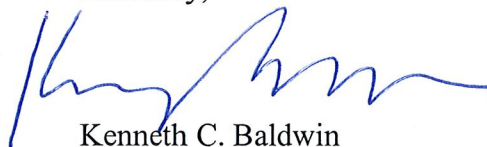
www.rc.com

Linda Roberts
April 23, 2013
Page 2

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and RRHs will be located at the 113-foot level of the 155-foot tower.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Tab 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 attached behind Tab 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Leo V. Diana, Mayor
One Hundred Twenty One Connecticut Avenue Associates LLC
Sandy M. Carter



Product Specifications



LNX-6512DS-TOM

DualPol® Antenna, 698–896 MHz, 65° horizontal beamwidth, fixed electrical tilt



- Continuous wideband operation
- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Patented DualPol® technology
- Ideal choice for site collocations and tough zoning restrictions

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol®
Operating Frequency Band	698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Beamwidth, Horizontal, degrees	65	65
Beamwidth, Horizontal Tolerance, degrees	±3	±3
Gain, dBd	12.7	13.6
Gain, dBi	14.8	15.7
Beamwidth, Vertical, degrees	18.7	16.4
Beam Tilt, degrees	0	0
Upper Sidelobe Suppression (USLS), typical, dB	20	19
Front-to-Back Ratio at 180°, dB	30	30
Cross Polarization Ratio (CPR) at Boresight, dB	20	20
Cross Polarization Ratio (CPR) at Sector, dB	12	12
Isolation, dB	30	30
VSWR Return Loss, db	1.35:1 16.5	1.35:1 16.5
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power per Port, maximum, watts	500	500
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm
Lightning Protection	dc Ground	dc Ground

Product Specifications



LNX-6512DS-TOM

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Radome Material	Fiberglass, UV resistant
Wind Loading, maximum	379.8 N @ 150 km/h 85.4 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph

Dimensions

Depth	181.0 mm 7.1 in
Length	1232.0 mm 48.5 in
Width	301.0 mm 11.9 in
Net Weight	12.8 kg 28.2 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2002/95/EC	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system



INCLUDED PRODUCTS



DB380

Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Used for wide panel antennas. Includes two clamp sets.



DB5083

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

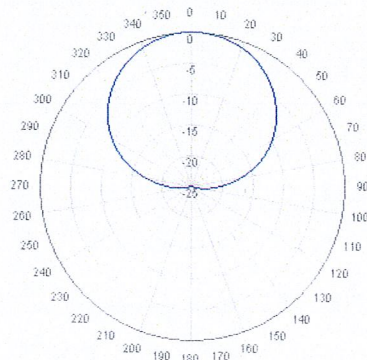
Product Specifications

LNx-6512DS-T0M

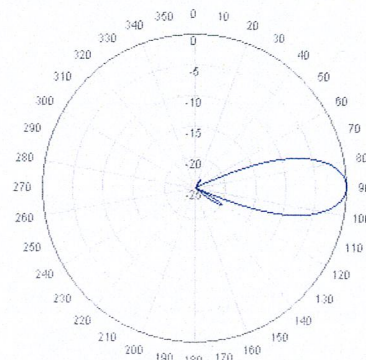


Horizontal Pattern

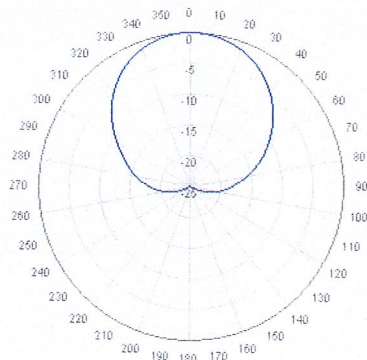
Vertical Pattern



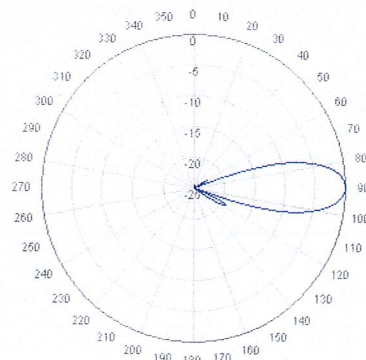
Freq: 750 MHz, Tilt: 0°



Freq: 750 MHz, Tilt: 0°



Freq: 850 MHz, Tilt: 0°



Freq: 850 MHz, Tilt: 0°

BXA-171063-12BF-EDIN-X

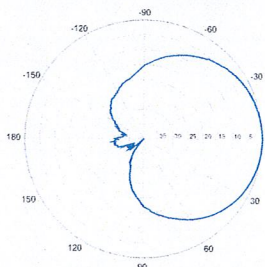
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 63° | 19.0 dBi

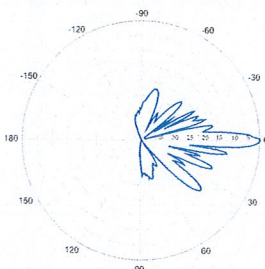
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	16.1 dBd / 18.2 dBi	16.5 dBd / 18.6 dBi	16.9 dBd / 19.0 dBi
Electrical downtilt (X)	0, 2, 5		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1820 x 154 x 105 mm		71.7 x 6.1 x 4.1 in
Depth with z-brackets	133 mm		5.2 in
Weight without mounting brackets	6.8 kg		15 lbs
Survival wind speed	> 201 km/hr		> 125 mph
Wind area	Front: 0.28 m ² Side: 0.19 m ²	Front: 3.1 ft ² Side: 2.1 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-12BF-EDIN-X-FP		



BXA-171063-12BF-EDIN-X

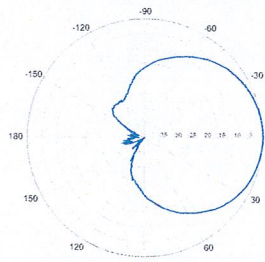


Horizontal | 1710-1880 MHz
BXA-171063-12BF-EDIN-0

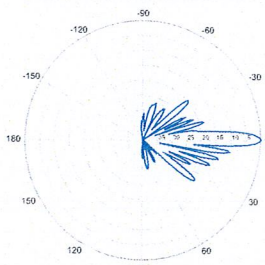


0° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-X

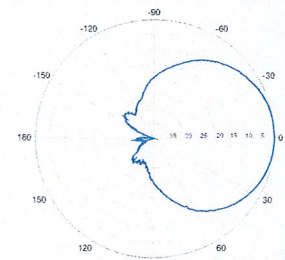


Horizontal | 1850-1990 MHz
BXA-171063-12BF-EDIN-0

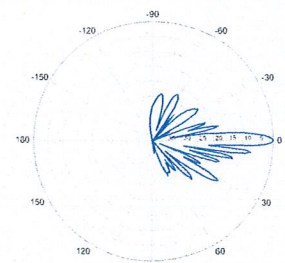


0° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171063-12BF-EDIN-0



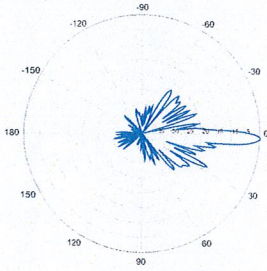
0° | Vertical | 1920-2170 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-171063-12BF-EDIN-X

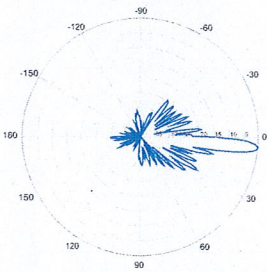
X-Pol | FET Panel | 63° | 19.0 dBi

BXA-171063-12BF-EDIN-2



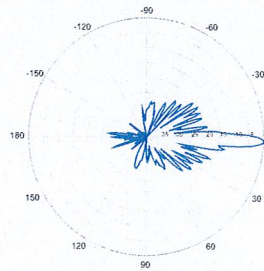
2° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-5



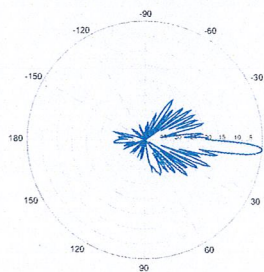
5° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-2



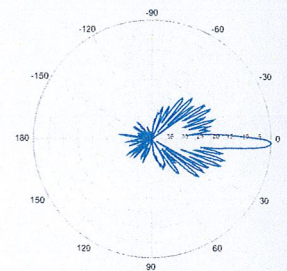
2° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-5



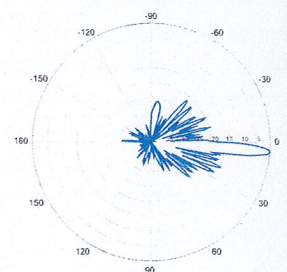
5° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-5



5° | Vertical | 1920-2170 MHz

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Alcatel-Lucent RRH2x40-07-U

REMOTE RADIO HEAD

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



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

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

The Alcatel-Lucent RRH2x40-07-U is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

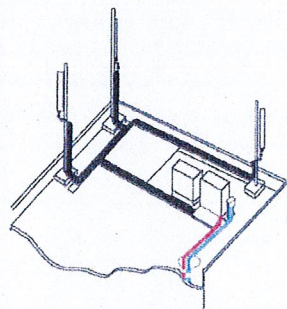
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent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

Fast, low-cost installation and deployment

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

Excellent RF performance

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



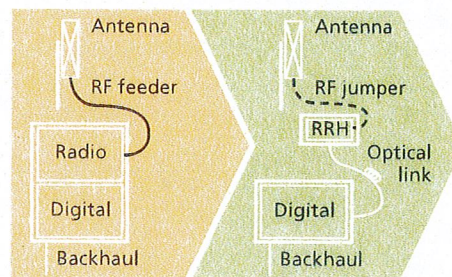
Macro

Features

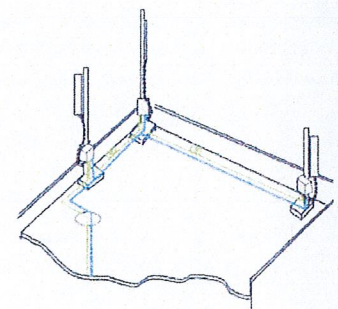
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless), noise-free, and heaterless unit
- Best-in-class power efficiency, with significantly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

Benefits

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



RRH for space-constrained cell sites



Distributed

Technical specifications

Physical dimensions

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

Power

- Power supply: -48V

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)
- Passive convection cooling (no fans)

- Enclosure protection

→ IP65 (International Protection rating)

RF characteristics

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

Optical characteristics

Type/number of fibers

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

Optical fiber length

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

Alarms and ports

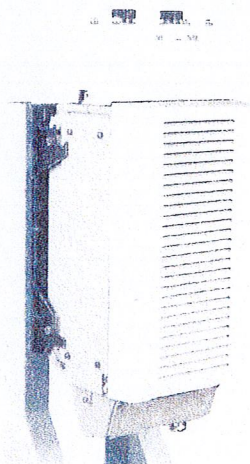
- Six external alarms
- Two optical ports to support daisy-chaining

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Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.



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

The Alcatel-Lucent RRH2x40-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-AWS is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

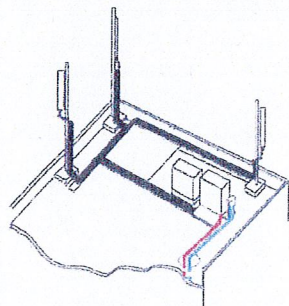
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent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

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-AWS is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-AWS is compact and weighs less than 20 kg (44 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

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



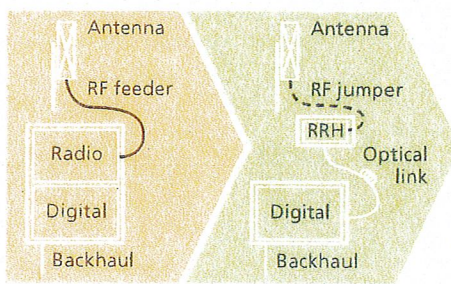
Macro

Features

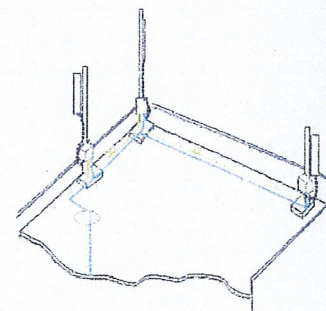
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless)
- Noise-free
- Best-in-class power efficiency, with significantly reduced energy consumption

Benefits

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



RRH for space-constrained cell sites



Distributed

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)

- Passive convection cooling (no fans)
- Enclosure protection
 - IP65 (International Protection rating)

RF characteristics

- Frequency band: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port; 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

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

Digital Ports and Alarms

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

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

Product Description

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

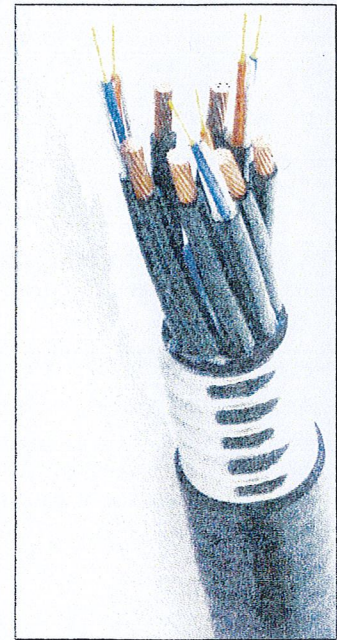


Figure 1: HYBRIFLEX Series

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)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)

Fiber Optic Properties

Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[μm]	50/125
Primary Coating (Acrylate)		[μm]	245
Buffer Diameter, Nominal		[μm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant

DC Power Cable Properties

Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant

Environment

Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

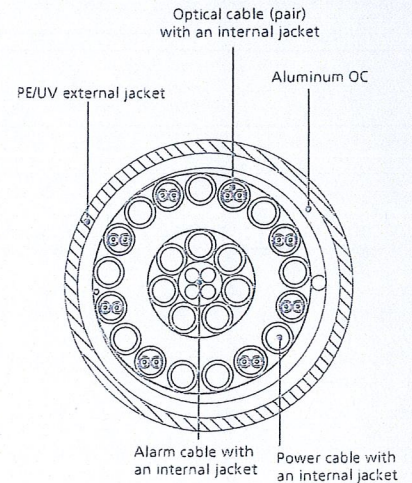


Figure 2: Construction Detail

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

Site Name: Buckland (Manchester)		General		Power		Density							
Tower Height: Verizon @ 113ft		# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total				
*Nextel		9	100	78	0.0532	851	0.5673	9.38%					
*Sprint CDMA/LTE		4	693	155	0.0415	1900	1.0000	4.15%					
*Sprint CDMA/LTE		1	390	155	0.0058	850	0.5667	1.03%					
*Clearwire		2	153	155	0.0046	2496	1.0000	0.46%					
*Clearwire		1	211	151	0.0033	11 GHz	1.0000	0.33%					
*AT&T UMTS		2	565	145	0.0193	880	0.5867	3.29%					
*AT&T UMTS		2	1077	145	0.0368	1900	1.0000	3.68%					
*AT&T GSM		1	283	145	0.0048	880	0.5867	0.82%					
*AT&T GSM		4	646	145	0.0442	1900	1.0000	4.42%					
*AT&T LTE		1	1313	145	0.0225	734	0.4893	4.59%					
*MetroPCS CDMA		3	727	103	0.0739	2135	1.0000	7.39%					
*MetroPCS LTE		1	1200	103	0.0407	2130	1.0000	4.07%					
*T-Mobile GSM/UMTS		2	12	133	0.0005	1950	1.0000	0.05%					
*T-Mobile UMTS		2	12	133	0.0005	2100	1.0000	0.05%					
*T-Mobile LTE		2	24	133	0.0010	2100	1.0000	0.10%					
Verizon PCS		11	410	113	0.1270	1970	1.0000	12.70%					
Verizon Cellular		9	330	113	0.0836	869	0.5793	14.44%					
Verizon AWS		1	1828	113	0.0515	2145	1.0000	5.15%					
Verizon 700		1	1026	113	0.0289	698	0.4653	6.21%					
									82.30%				
* Source: Siting Council													

Date: February 14, 2013

Patrick Byrum
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416 2000

Subject: Structural Analysis Report

Carrier Designation:	Verizon Wireless Co-Locate	
	Carrier Site Name:	Buckland
Crown Castle Designation:	Crown Castle BU Number:	876347
	Crown Castle Site Name:	BUCKLAND MALL
	Crown Castle JDE Job Number:	214847
	Crown Castle Work Order Number:	576254
	Crown Castle Application Number:	173329 Rev. 3
Engineering Firm Designation:	Crown Castle Project Number:	576254
Site Data:	53 Slater Street, MANCHESTER, Hartford County, CT Latitude 41° 48' 18", Longitude -72° 32' 1" 155 Foot - Monopole Tower	

Dear Patrick Byrum,

Crown Castle 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 576254, in accordance with application 173329, revision 3.

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

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

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

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

Structural analysis prepared by: Drew Stephens / AS

Respectfully submitted by:

Jamal A. Huwel, P.E.
Manager Engineering

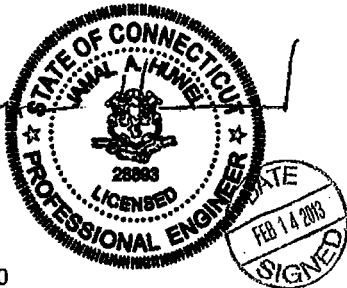


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

- Table 1 - Proposed Antenna and Cable Information
- Table 2 - Existing and Reserved Antenna and Cable Information
- Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

- Table 4 - Documents Provided
- 3.1) Analysis Method
- 3.2) Assumptions

4) ANALYSIS RESULTS

- Table 5 - Section Capacity (Summary)
- Table 6 - Tower Components vs. Capacity
- 4.1) Recommendations

5) APPENDIX A

- tnxTower Output

6) APPENDIX B

- Base Level Drawing

7) APPENDIX C

- Additional Calculations

1) INTRODUCTION

This tower is a 155 ft Monopole tower designed by SEA Consultants Inc. in February of 2002. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
113.0	113.0	3	alcatel lucent	RRH2X40-07-U	1	1-5/8	-
		3	alcatel lucent	RRH2x40-AWS			
		3	andrew	LNx-6512DS-TOM w/ Mount Pipe			
		3	antel	BXA-171063-12BF w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
155.0	155.0	3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe	3	1-1/4	2
		3	samsung telecommunications	WIMAX DAP HEAD	5	1/2 5/16 1/4	1
		3	argus technologies	LPX310R			
		1	tower mounts	Platform Mount [LP 713-1]			
	151.0	1	andrew	VHLP1-23	3	1/4	1
		1	andrew	VHLP2-11	3		
		1	andrew	VHLP2.5-18	3		
153.0	153.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	2
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Side Arm Mount [SO 102-3]			
143.0	145.0	1	tower mounts	Side Arm Mount [SO 102-3]	1	3/8 3/4	2
		6	ericsson	RRUS-11			
		1	raycap	DC6-48-60-18-8F			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	kathrein	800 10121 w/ Mount Pipe	6	1-1/4	1
		6	powerwave technologies	LGP21401			
		143.0	1	tower mounts	T-Arm Mount [TA 702-3]	-	-
133.0	133.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		1	tower mounts	Platform Mount [LP 403-1]	12	1-5/8	1
113.0	113.0	6	decibel	DB844G65ZAXY w/ Mount Pipe	12	1-5/8	1
		1	antel	BXA-70040/6CFx4 w/ Mount Pipe			
		2	antel	BXA-70063/6CFx2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 601-1]			
103.0	103.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
78.0	78.0	12	decibel	844G65VTZASX w/ Mount Pipe	12	1-5/8	1
		1	tower mounts	Platform Mount [LP 303-1]			
60.0	60.0	1	tower mounts	Side Arm Mount [SO 701-1]	1	1/2	1
		1	trimble	ACUTIME 2000			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed; Not Considered in Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
155	155	9	Decibel	DB980H90	-	-
145	145	6	Allgon	7250.03	-	-
133	133	6	EMS	RR90-17-00DP PCS	-	-
50	50	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	1533476	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Paul J. Ford	1615406	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford	2068033	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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	155 - 115.5	Pole	TP29.308x22x0.25	1	-7.88	1080.07	52.5	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.1142x0.3125	2	-15.11	1772.22	81.6	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.0565x0.375	3	-24.53	2481.90	95.4	Pass
L4	43.75 - 0	Pole	TP48.8x39.7348x0.4375	4	-39.08	3491.31	99.9	Pass
							Summary	
						Pole (L4)	99.9	Pass
						Rating =	99.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	92.9	Pass
1	Base Plate	0	76.1	Pass
1	Base Foundation	0	66.8	Pass

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

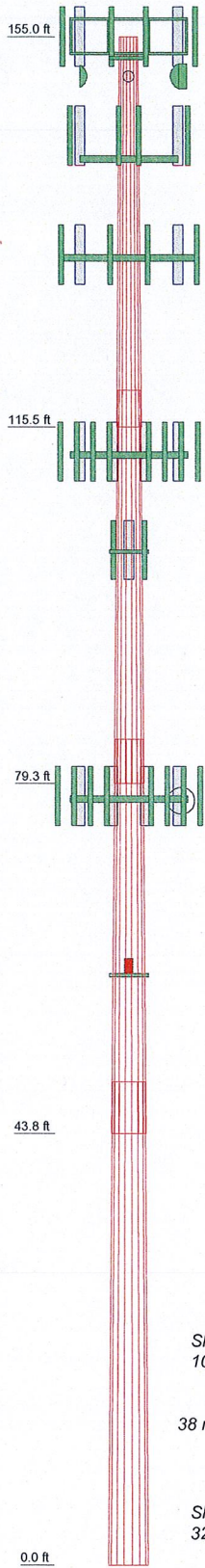
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	
Length (ft)	39.50	40.00	40.00	49.00	
Number of Sides	18	18	18	18	
Thickness (in)	0.2500	0.3125	0.3750	0.4375	
Socket Length (ft)	3.75	4.50	5.25	39.7348	
Top Dia (in)	22.0000	28.1142	34.0565	48.8000	
Bot Dia (in)	29.3080	35.5140	41.4560		
Grade	A607-60	A607-60	A607-65		
Weight (K)	2.7	4.3	6.1	10.1	23.2



DESIGNED APPURTENANCE LOADING

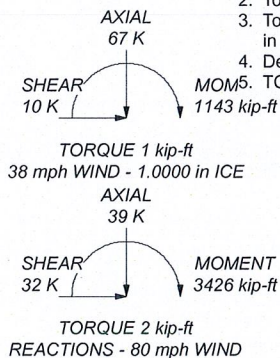
TYPE	ELEVATION	TYPE	ELEVATION
LPX310R	155	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	133
LPX310R	155	KRY 112 144/1	133
WIMAX DAP HEAD	155	(2) 5' x 2" Pipe Mount	133
WIMAX DAP HEAD	155	(2) 5' x 2" Pipe Mount	133
WIMAX DAP HEAD	155	(2) 5' x 2" Pipe Mount	133
HORIZON COMPACT	155	Platform Mount [LP 403-1]	133
HORIZON COMPACT	155	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	133
9' x 2" Pipe Mount	155	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	133
9' x 2" Pipe Mount	155	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	133
APXVSP18-C-A20 w/ Mount Pipe	155	MG D3-800Tx w/ Mount Pipe	113
APXVSP18-C-A20 w/ Mount Pipe	155	MG D3-800Tx w/ Mount Pipe	113
Platform Mount [LP 713-1]	155	MG D3-800Tx w/ Mount Pipe	113
VHLP2.5-18	155	(2) FD9R6004/2C-3L	113
VHLP1-23	155	(2) FD9R6004/2C-3L	113
VHLP2-11	155	(2) FD9R6004/2C-3L	113
PCS 1900MHz 4x45W-65MHz	153	BXA-171063-12BF w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	BXA-171063-12BF w/ Mount Pipe	113
PCS 1900MHz 4x45W-65MHz	153	BXA-171063-12BF w/ Mount Pipe	113
Side Arm Mount [SO 102-3]	153	BXA-171063-12BF w/ Mount Pipe	113
800MHz 2X50W RRH W/FILTER	153	LNx-6512DS-T0M w/ Mount Pipe	113
800MHz 2X50W RRH W/FILTER	153	LNx-6512DS-T0M w/ Mount Pipe	113
800MHz 2X50W RRH W/FILTER	153	LNx-6512DS-T0M w/ Mount Pipe	113
Side Arm Mount [SO 102-3]	145	RRH2x40-AWS	113
(2) LGP21401	143	RRH2x40-AWS	113
(2) LGP21401	143	RRH2x40-AWS	113
(2) RRUS-11	143	RRH2x40-07-U	113
(2) RRUS-11	143	RRH2x40-07-U	113
(2) RRUS-11	143	RRH2x40-07-U	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	DB-T1-6Z-8AB-0Z	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	Platform Mount [LP 601-1]	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	BXA-70063/6CFx2 w/ Mount Pipe	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	BXA-70063/6CFx2 w/ Mount Pipe	113
AM-X-CD-16-65-00T-RET w/ Mount Pipe	143	BXA-70040/6CFx4 w/ Mount Pipe	113
DC6-48-60-18-8F	143	Pipe Mount [PM 601-3]	103
(2) LGP21401	143	APXV18-206517S-C w/ Mount Pipe	103
T-Arm Mount [TA 702-3]	143	APXV18-206517S-C w/ Mount Pipe	103
800 10121 w/ Mount Pipe	143	APXV18-206517S-C w/ Mount Pipe	103
800 10121 w/ Mount Pipe	143	Platform Mount [LP 303-1]	78
800 10121 w/ Mount Pipe	143	(4) 844G65VTZASX w/ Mount Pipe	78
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	133	(4) 844G65VTZASX w/ Mount Pipe	78
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	133	(4) 844G65VTZASX w/ Mount Pipe	78
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	133	Side Arm Mount [SO 701-1]	60
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	133	ACUTIME 2000	60

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 99.9%



		Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416 2000 FAX:		Job: BU# 876347
		Project:	Client: Crown Castle	Drawn by: DStephens
We Are Solutions		Code: TIA/EIA-222-F	Date: 02/13/13	Scale: NTS
		Path: R:\ISA Models - Letters\Work Area\DStephens\876347\876347.er	Dwg No. E-1	

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 4) Tower is located in Hartford County, Connecticut.
- 5) Basic wind speed of 80 mph.
- 6) Nominal ice thickness of 1.0000 in.
- 7) Ice thickness is considered to increase with height.
- 8) Ice density of 56 pcf.
- 9) A wind speed of 38 mph is used in combination with ice.
- 10) Temperature drop of 50 °F.
- 11) Deflections calculated using a wind speed of 50 mph.
- 12) A non-linear (P-delta) analysis was used.
- 13) Pressures are calculated at each section.
- 14) Stress ratio used in pole design is 1.333.
- 15) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> 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) Add IBC .6D+W Combination | <ul style="list-style-type: none"> 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 SR Members Have Cut Ends √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	155.00-115.50	39.50	3.75	18	22.0000	29.3080	0.2500	1.0000	A607-60 (60 ksi)
L2	115.50-79.25	40.00	4.50	18	28.1142	35.5140	0.3125	1.2500	A607-65 (65 ksi)
L3	79.25-43.75	40.00	5.25	18	34.0565	41.4560	0.3750	1.5000	A607-65 (65 ksi)
L4	43.75-0.00	49.00		18	39.7348	48.8000	0.4375	1.7500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728

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
L2	29.7601	23.0575	2459.6966	10.3156	14.8885	165.2082	4922.6297	11.5310	4.7182	18.873
	29.2523	27.5758	2692.8279	9.8696	14.2820	188.5468	5389.1990	13.7905	4.3981	14.074
	36.0619	34.9155	5466.1042	12.4965	18.0411	302.9804	10939.4008	17.4611	5.7005	18.241
L3	35.4272	40.0894	5745.8039	11.9569	17.3007	332.1137	11499.1684	20.0485	5.3339	14.224
	42.0955	48.8967	10425.5424	14.5838	21.0596	495.0483	20864.8031	24.4530	6.6363	17.697
L4	41.3340	54.5692	10646.6064	13.9505	20.1853	527.4439	21307.2218	27.2898	6.2233	14.225
	49.5528	67.1574	19844.8883	17.1687	24.7904	800.5070	39715.8890	33.5851	7.8188	17.872

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 155.00-115.50				1	1	1		
L2 115.50-79.25				1	1	1		
L3 79.25-43.75				1	1	1		
L4 43.75-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
ATCB-B01-005(5/16)	B	No	Inside Pole	155.00 - 0.00	3	No Ice	0.07
						1/2" Ice	0.07
						1" Ice	0.07
						2" Ice	0.07
						4" Ice	0.07
						No Ice	0.04
FSJ1-50A(1/4")	B	No	Inside Pole	155.00 - 0.00	3	No Ice	0.04
						1/2" Ice	0.04
						1" Ice	0.04
						2" Ice	0.04
						4" Ice	0.04
						No Ice	2.80
2" Rigid Conduit	B	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	4.33
						1/2" Ice	6.47
						1" Ice	12.57
						2" Ice	32.12
						4" Ice	32.12
						No Ice	2.80
2" Rigid Conduit	B	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	4.33
						1/2" Ice	6.47
						1" Ice	12.57
						2" Ice	32.12
						4" Ice	32.12
						No Ice	0.14
FSJ4-50B(1/2")	B	No	CaAa (Out Of Face)	155.00 - 0.00	2	No Ice	0.76
						1/2" Ice	2.00
						1" Ice	6.30
						2" Ice	22.23
						4" Ice	22.23
						No Ice	0.14
FSJ4-50B(1/2")	B	No	CaAa (Out Of Face)	155.00 - 0.00	3	No Ice	0.76
						1/2" Ice	2.00
						1" Ice	6.30
						2" Ice	22.23
						4" Ice	22.23
						No Ice	0.14
* HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	155.00 - 0.00	1	No Ice	1.08
						1/2" Ice	2.33
						1" Ice	4.18
						2" Ice	9.73
						No Ice	0.15
						1/2" Ice	0.25

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight	
						ft ² /ft	plf		
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	155.00 - 0.00	2	4" Ice	0.95	28.15	
						No Ice	0.00	1.08	
						1/2" Ice	0.00	2.33	
						1" Ice	0.00	4.18	
						2" Ice	0.00	9.73	
						4" Ice	0.00	28.15	

LDF6-50A(1-1/4")	A	No	Inside Pole	145.00 - 0.00	6	No Ice	0.00	0.66	
						1/2" Ice	0.00	0.66	
						1" Ice	0.00	0.66	
						2" Ice	0.00	0.66	
						4" Ice	0.00	0.66	
						No Ice	0.00	0.06	
FB-L98B-002-75000(3/8")	A	No	Inside Pole	143.00 - 0.00	1	1/2" Ice	0.00	0.06	
						1" Ice	0.00	0.06	
						2" Ice	0.00	0.06	
						4" Ice	0.00	0.06	
						No Ice	0.00	0.06	
						1/2" Ice	0.00	0.06	
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	143.00 - 0.00	2	No Ice	0.00	0.59	
						1/2" Ice	0.00	0.59	
						1" Ice	0.00	0.59	
						2" Ice	0.00	0.59	
						4" Ice	0.00	0.59	
						No Ice	0.00	0.06	

	LCF158-50JA-A0(1 5/8")	A	No	Inside Pole	133.00 - 0.00	12	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
							4" Ice	0.00	0.08
No Ice							0.16	1.07	
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	A	No	CaAa (Out Of Face)	133.00 - 0.00	1	1/2" Ice	0.26	2.37	
						1" Ice	0.36	4.28	
						2" Ice	0.56	9.93	
						4" Ice	0.96	28.56	
						No Ice	0.00	1.35	
						1/2" Ice	0.00	1.35	

	561(1-5/8")	B	No	Inside Pole	113.00 - 0.00	12	No Ice	0.00	1.35
							1/2" Ice	0.00	1.35
							1" Ice	0.00	1.35
							2" Ice	0.00	1.35
							4" Ice	0.00	1.35
No Ice							0.00	1.30	
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	113.00 - 0.00	1	1/2" Ice	0.00	1.30	
						1" Ice	0.00	1.30	
						2" Ice	0.00	1.30	
						4" Ice	0.00	1.30	
						No Ice	0.20	0.70	
						1/2" Ice	0.30	2.23	

	AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	103.00 - 0.00	2	1" Ice	0.40	4.38
							2" Ice	0.60	10.50
							4" Ice	1.00	30.07
							No Ice	0.00	0.70
							1/2" Ice	0.00	2.23
1" Ice							0.00	4.38	

	AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	103.00 - 0.00	4	2" Ice	0.00	10.50
							4" Ice	0.00	30.07
							No Ice	0.00	0.70
							1/2" Ice	0.00	2.23
							1" Ice	0.00	4.38
2" Ice							0.00	10.50	

	LDF7-50A(1-5/8")	C	No	Inside Pole	78.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
							4" Ice	0.00	0.82
No Ice							0.00	0.15	

	LDF4-50A(1/2")	C	No	Inside Pole	60.00 - 0.00	1	1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
							4" Ice	0.00	0.15
							No Ice	0.00	0.15
1/2" Ice							0.00	0.15	

Feed Line/Linear Appurtenances Section Areas

Tower Sectio 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
L1	155.00-115.50	A	0.000	0.000	0.000	2.844	0.19
		B	0.000	0.000	0.000	12.008	0.26
		C	0.000	0.000	0.000	6.083	0.13
L2	115.50-79.25	A	0.000	0.000	0.000	5.891	0.26
		B	0.000	0.000	0.000	20.568	0.93
		C	0.000	0.000	0.000	5.582	0.12
L3	79.25-43.75	A	0.000	0.000	0.000	5.769	0.26
		B	0.000	0.000	0.000	25.063	1.01
		C	0.000	0.000	0.000	5.467	0.45
L4	43.75-0.00	A	0.000	0.000	0.000	7.110	0.32
		B	0.000	0.000	0.000	30.888	1.24
		C	0.000	0.000	0.000	6.737	0.58

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio 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	155.00-115.50	A	1.184	0.000	0.000	0.000	6.987	0.26
		B		0.000	0.000	0.000	40.061	1.16
		C		0.000	0.000	0.000	15.434	0.62
L2	115.50-79.25	A	1.138	0.000	0.000	0.000	14.472	0.42
		B		0.000	0.000	0.000	57.557	2.44
		C		0.000	0.000	0.000	14.164	0.57
L3	79.25-43.75	A	1.077	0.000	0.000	0.000	13.849	0.40
		B		0.000	0.000	0.000	65.466	2.73
		C		0.000	0.000	0.000	13.548	0.87
L4	43.75-0.00	A	1.000	0.000	0.000	0.000	16.535	0.48
		B		0.000	0.000	0.000	78.018	3.17
		C		0.000	0.000	0.000	16.164	1.04

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	155.00-115.50	0.1562	0.1819	0.4420	0.4188
L2	115.50-79.25	0.4131	0.2289	0.8067	0.4593
L3	79.25-43.75	0.5427	0.3036	1.0095	0.5761
L4	43.75-0.00	0.5628	0.3149	1.0636	0.6067

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
LPX310R	A	From Leg	4.00	0.0000	155.00	No Ice	2.08	1.32	0.01
			0.00			1/2"	2.35	1.58	0.03
			0.00			Ice	2.63	1.84	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
						1" Ice	3.29	2.39	0.08
						2" Ice	4.71	3.68	0.22
						4" Ice			
LPX310R	B	From Leg	4.00	0.0000	155.00	No Ice	2.08	1.32	0.01
			0.00			1/2"	2.35	1.58	0.03
			0.00			Ice	2.63	1.84	0.04
						1" Ice	3.29	2.39	0.08
						2" Ice	4.71	3.68	0.22
						4" Ice			
LPX310R	C	From Leg	4.00	0.0000	155.00	No Ice	2.08	1.32	0.01
			0.00			1/2"	2.35	1.58	0.03
			0.00			Ice	2.63	1.84	0.04
						1" Ice	3.29	2.39	0.08
						2" Ice	4.71	3.68	0.22
						4" Ice			
WIMAX DAP HEAD	A	From Leg	4.00	0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			0.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	B	From Leg	4.00	0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			0.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	C	From Leg	4.00	0.0000	155.00	No Ice	1.80	0.78	0.03
			0.00			1/2"	1.99	0.92	0.04
			0.00			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
HORIZON COMPACT	A	From Leg	4.00	0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00			1/2"	0.97	0.52	0.02
			-4.00			Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
						4" Ice			
HORIZON COMPACT	B	From Leg	4.00	0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00			1/2"	0.97	0.52	0.02
			-4.00			Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
						4" Ice			
HORIZON COMPACT	C	From Leg	4.00	0.0000	155.00	No Ice	0.84	0.43	0.01
			0.00			1/2"	0.97	0.52	0.02
			-4.00			Ice	1.10	0.63	0.03
						1" Ice	1.39	0.86	0.05
						2" Ice	2.08	1.43	0.12
						4" Ice			
9' x 2" Pipe Mount	A	From Leg	4.00	0.0000	155.00	No Ice	2.14	2.14	0.07
			0.00			1/2"	3.07	3.07	0.08
			0.00			Ice	4.01	4.01	0.10
						1" Ice	5.13	5.13	0.17
						2" Ice	7.46	7.46	0.37
						4" Ice			
9' x 2" Pipe Mount	B	From Leg	4.00	0.0000	155.00	No Ice	2.14	2.14	0.07
			0.00			1/2"	3.07	3.07	0.08
			0.00			Ice	4.01	4.01	0.10
						1" Ice	5.13	5.13	0.17
						2" Ice	7.46	7.46	0.37
						4" Ice			
9' x 2" Pipe Mount	C	From Leg	4.00	0.0000	155.00	No Ice	2.14	2.14	0.07
			0.00			1/2"	3.07	3.07	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight K	
			0.00			Ice	4.01	4.01	0.10
						1" Ice	5.13	5.13	0.17
						2" Ice	7.46	7.46	0.37
						4" Ice			
* APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice	8.50	6.95	0.08
						1/2"	9.15	8.13	0.15
						Ice	9.77	9.02	0.22
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice	8.50	6.95	0.08
						1/2"	9.15	8.13	0.15
						Ice	9.77	9.02	0.22
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice	8.50	6.95	0.08
						1/2"	9.15	8.13	0.15
						Ice	9.77	9.02	0.22
						1" Ice	11.03	10.84	0.41
						2" Ice	13.68	14.85	0.91
						4" Ice			
Platform Mount [LP 713-1]	C	None		0.0000	155.00	No Ice	31.27	31.27	1.51
						1/2"	39.68	39.68	1.93
						Ice	48.09	48.09	2.35
						1" Ice	64.91	64.91	3.19
						2" Ice	98.55	98.55	4.86
						4" Ice			
*** 800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.40	2.25	0.06
						1/2"	2.61	2.46	0.09
						Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.40	2.25	0.06
						1/2"	2.61	2.46	0.09
						Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.40	2.25	0.06
						1/2"	2.61	2.46	0.09
						Ice	2.83	2.68	0.11
						1" Ice	3.30	3.13	0.17
						2" Ice	4.34	4.15	0.34
						4" Ice			
PCS 1900MHz 4x45W- 65MHz	A	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.71	2.61	0.06
						1/2"	2.95	2.85	0.08
						Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
PCS 1900MHz 4x45W- 65MHz	B	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.71	2.61	0.06
						1/2"	2.95	2.85	0.08
						Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			
PCS 1900MHz 4x45W- 65MHz	C	From Leg	1.00 0.00 0.00	0.0000	153.00	No Ice	2.71	2.61	0.06
						1/2"	2.95	2.85	0.08
						Ice	3.20	3.09	0.11
						1" Ice	3.72	3.61	0.17
						2" Ice	4.86	4.74	0.35
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement ft	C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight K	
Side Arm Mount [SO 102-3]	C	None		0.0000	153.00	4" Ice			
						No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
						2" Ice	4.92	4.92	0.20
4" Ice	6.84	6.84	0.32						

800 10121 w/ Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
800 10121 w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	5.69	4.60	0.07
						1/2" Ice	6.18	5.35	0.11
						1" Ice	6.68	6.05	0.17
						2" Ice	7.70	7.53	0.30
						4" Ice	9.86	10.83	0.68
(2) LGP21401	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	0.00	0.23	0.01
						1/2" Ice	0.00	0.31	0.02
						1" Ice	0.00	0.40	0.03
						2" Ice	0.00	0.61	0.05
						4" Ice	0.00	1.12	0.14
(2) LGP21401	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	0.00	0.23	0.01
						1/2" Ice	0.00	0.31	0.02
						1" Ice	0.00	0.40	0.03
						2" Ice	0.00	0.61	0.05
						4" Ice	0.00	1.12	0.14
(2) LGP21401	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	0.00	0.23	0.01
						1/2" Ice	0.00	0.31	0.02
						1" Ice	0.00	0.40	0.03
						2" Ice	0.00	0.61	0.05
						4" Ice	0.00	1.12	0.14
(2) RRUS-11	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
(2) RRUS-11	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
(2) RRUS-11	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	3.00 0.00	0.0000	143.00	No Ice	8.50	6.30	0.07
						1/2" Ice	9.15	7.48	0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			2.00			Ice	9.77	8.37	0.21
						1" Ice	11.03	10.18	0.38
						2" Ice	13.68	14.02	0.87
						4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	8.50	6.30	0.07
						1/2"	9.15	7.48	0.14
						Ice	9.77	8.37	0.21
						1" Ice	11.03	10.18	0.38
						2" Ice	13.68	14.02	0.87
						4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	8.50	6.30	0.07
						1/2"	9.15	7.48	0.14
						Ice	9.77	8.37	0.21
						1" Ice	11.03	10.18	0.38
						2" Ice	13.68	14.02	0.87
						4" Ice			
DC6-48-60-18-8F	A	From Leg	3.00 0.00 2.00	0.0000	143.00	No Ice	1.27	1.27	0.02
						1/2"	1.46	1.46	0.04
						Ice	1.66	1.66	0.05
						1" Ice	2.09	2.09	0.10
						2" Ice	3.10	3.10	0.21
						4" Ice			
Side Arm Mount [ISO 102-3]	C	None		0.0000	145.00	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			
T-Arm Mount [TA 702-3]	C	None		0.0000	143.00	No Ice	5.64	5.64	0.34
						1/2"	6.55	6.55	0.43
						Ice	7.46	7.46	0.52
						1" Ice	9.28	9.28	0.70
						2" Ice	12.92	12.92	1.06
						4" Ice			

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	6.83	5.64	0.11
						1/2"	7.35	6.48	0.17
						Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	6.83	5.64	0.11
						1/2"	7.35	6.48	0.17
						Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	6.83	5.64	0.11
						1/2"	7.35	6.48	0.17
						Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	6.83	5.64	0.11
						1/2"	7.35	6.48	0.17
						Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	6.83	5.64	0.11
						1/2"	7.35	6.48	0.17
						Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			Horz Lateral ft	Vert ft					
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	6.83	5.64	0.11
						1/2"	7.35	6.48	0.17
						Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.41	0.20	0.01
						1/2"	0.50	0.27	0.01
						Ice	0.59	0.35	0.02
						1" Ice	0.81	0.53	0.03
						2" Ice	1.36	1.00	0.08
KRY 112 144/1	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.41	0.20	0.01
						1/2"	0.50	0.27	0.01
						Ice	0.59	0.35	0.02
						1" Ice	0.81	0.53	0.03
						2" Ice	1.36	1.00	0.08
KRY 112 144/1	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	0.41	0.20	0.01
						1/2"	0.50	0.27	0.01
						Ice	0.59	0.35	0.02
						1" Ice	0.81	0.53	0.03
						2" Ice	1.36	1.00	0.08
(2) 5' x 2" Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2"	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
(2) 5' x 2" Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2"	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
(2) 5' x 2" Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	133.00	No Ice	1.00	1.00	0.03
						1/2"	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
Platform Mount [LP 403-1]	C	None		0.0000	133.00	No Ice	18.85	18.85	1.50
						1/2"	24.30	24.30	1.80
						Ice	29.75	29.75	2.09
						1" Ice	40.65	40.65	2.69
						2" Ice	62.45	62.45	3.87
*** BXA-70063/6CFx2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice	7.97	5.40	0.04
						1/2"	8.61	6.55	0.10
						Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
BXA-70063/6CFx2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice	7.97	5.40	0.04
						1/2"	8.61	6.55	0.10
						Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
BXA-70040/6CFx4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice	16.55	7.37	0.06
						1/2"	17.27	8.54	0.16
						Ice	17.96	9.42	0.27
						1" Ice	19.37	11.23	0.52

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
						2" Ice	22.30	15.34	1.17	
						4" Ice				
MG D3-800Tx w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	113.00	No Ice	3.57	3.42	0.03
							1/2" Ice	3.98	4.12	0.07
							Ice	4.39	4.78	0.11
							1" Ice	5.33	6.16	0.21
							2" Ice	7.34	9.18	0.52
						4" Ice				
MG D3-800Tx w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	113.00	No Ice	3.57	3.42	0.03
							1/2" Ice	3.98	4.12	0.07
							Ice	4.39	4.78	0.11
							1" Ice	5.33	6.16	0.21
							2" Ice	7.34	9.18	0.52
						4" Ice				
MG D3-800Tx w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	113.00	No Ice	3.57	3.42	0.03
							1/2" Ice	3.98	4.12	0.07
							Ice	4.39	4.78	0.11
							1" Ice	5.33	6.16	0.21
							2" Ice	7.34	9.18	0.52
						4" Ice				
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.00	0.0000	113.00	No Ice	0.37	0.08	0.00
							1/2" Ice	0.45	0.14	0.01
							Ice	0.54	0.20	0.01
							1" Ice	0.75	0.34	0.02
							2" Ice	1.28	0.74	0.06
						4" Ice				
(2) FD9R6004/2C-3L	B	From Leg	4.00	0.00	0.0000	113.00	No Ice	0.37	0.08	0.00
							1/2" Ice	0.45	0.14	0.01
							Ice	0.54	0.20	0.01
							1" Ice	0.75	0.34	0.02
							2" Ice	1.28	0.74	0.06
						4" Ice				
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.00	0.0000	113.00	No Ice	0.37	0.08	0.00
							1/2" Ice	0.45	0.14	0.01
							Ice	0.54	0.20	0.01
							1" Ice	0.75	0.34	0.02
							2" Ice	1.28	0.74	0.06
						4" Ice				
BXA-171063-12BF w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	113.00	No Ice	4.97	5.23	0.04
							1/2" Ice	5.52	6.39	0.08
							Ice	6.04	7.26	0.14
							1" Ice	7.09	9.05	0.27
							2" Ice	9.36	12.82	0.67
						4" Ice				
BXA-171063-12BF w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	113.00	No Ice	4.97	5.23	0.04
							1/2" Ice	5.52	6.39	0.08
							Ice	6.04	7.26	0.14
							1" Ice	7.09	9.05	0.27
							2" Ice	9.36	12.82	0.67
						4" Ice				
BXA-171063-12BF w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	113.00	No Ice	4.97	5.23	0.04
							1/2" Ice	5.52	6.39	0.08
							Ice	6.04	7.26	0.14
							1" Ice	7.09	9.05	0.27
							2" Ice	9.36	12.82	0.67
						4" Ice				
LNX-6512DS-T0M w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	113.00	No Ice	5.85	4.55	0.05
							1/2" Ice	6.31	5.23	0.09
							Ice	6.77	5.91	0.15
							1" Ice	7.74	7.34	0.28
							2" Ice	9.80	10.46	0.65
						4" Ice				
LNX-6512DS-T0M w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	113.00	No Ice	5.85	4.55	0.05
							1/2" Ice	6.31	5.23	0.09
							Ice	6.77	5.91	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
LNX-6512DS-T0M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	113.00	1" Ice	7.74	7.34	0.28
						2" Ice	9.80	10.46	0.65
						4" Ice			
						No Ice	5.85	4.55	0.05
						1/2"	6.31	5.23	0.09
						Ice	6.77	5.91	0.15
						1" Ice	7.74	7.34	0.28
RRH2x40-AWS	A	From Leg	4.00 0.00 0.00	0.0000	113.00	2" Ice	9.80	10.46	0.65
						4" Ice			
						No Ice	2.52	1.59	0.04
						1/2"	2.75	1.80	0.06
						Ice	2.99	2.01	0.08
						1" Ice	3.50	2.46	0.13
						2" Ice	4.61	3.48	0.28
RRH2x40-AWS	B	From Leg	4.00 0.00 0.00	0.0000	113.00	4" Ice			
						No Ice	2.52	1.59	0.04
						1/2"	2.75	1.80	0.06
						Ice	2.99	2.01	0.08
						1" Ice	3.50	2.46	0.13
						2" Ice	4.61	3.48	0.28
						4" Ice			
RRH2x40-AWS	C	From Leg	4.00 0.00 0.00	0.0000	113.00	No Ice	2.52	1.59	0.04
						1/2"	2.75	1.80	0.06
						Ice	2.99	2.01	0.08
						1" Ice	3.50	2.46	0.13
						2" Ice	4.61	3.48	0.28
						4" Ice			
						No Ice	2.52	1.59	0.04
RRH2X40-07-U	A	From Leg	4.00 0.00 0.00	0.0000	113.00	1/2"	2.45	1.39	0.07
						Ice	2.66	1.55	0.09
						1" Ice	3.10	1.91	0.13
						2" Ice	4.10	2.73	0.27
						4" Ice			
						No Ice	2.25	1.23	0.05
						1/2"	2.45	1.39	0.07
RRH2X40-07-U	B	From Leg	4.00 0.00 0.00	0.0000	113.00	Ice	2.66	1.55	0.09
						1" Ice	3.10	1.91	0.13
						2" Ice	4.10	2.73	0.27
						4" Ice			
						No Ice	2.25	1.23	0.05
						1/2"	2.45	1.39	0.07
						Ice	2.66	1.55	0.09
RRH2X40-07-U	C	From Leg	4.00 0.00 0.00	0.0000	113.00	1" Ice	3.10	1.91	0.13
						2" Ice	4.10	2.73	0.27
						4" Ice			
						No Ice	2.25	1.23	0.05
						1/2"	2.45	1.39	0.07
						Ice	2.66	1.55	0.09
						1" Ice	3.10	1.91	0.13
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	113.00	2" Ice	8.37	4.37	0.45
						4" Ice			
						No Ice	5.60	2.33	0.04
						1/2"	5.92	2.56	0.08
						Ice	6.24	2.79	0.12
						1" Ice	6.91	3.28	0.21
						2" Ice	8.37	4.37	0.45
Platform Mount [LP 601-1]	C	None		0.0000	113.00	4" Ice			
						No Ice	28.47	28.47	1.12
						1/2"	33.59	33.59	1.51
						Ice	38.71	38.71	1.91
						1" Ice	48.95	48.95	2.69
						2" Ice	69.43	69.43	4.26
						4" Ice			
*** APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	0.0000	103.00	No Ice	5.40	4.70	0.05
						1/2"	5.96	5.86	0.09
						Ice	6.48	6.73	0.15
						1" Ice	7.55	8.51	0.28
						2" Ice	9.92	12.28	0.68
						4" Ice			
						No Ice	5.40	4.70	0.05
APXV18-206517S-C w/	B	From Leg	0.50	0.0000	103.00	No Ice	5.40	4.70	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight K
Mount Pipe			0.00 0.00			1/2" Ice 5.96 Ice 6.48	5.86 6.73	0.09 0.15
						1" Ice 7.55 2" Ice 9.92	8.51 12.28	0.28 0.68
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	0.0000	103.00	No Ice 5.40 1/2" Ice 5.96 Ice 6.48 1" Ice 7.55 2" Ice 9.92	4.70 5.86 6.73 8.51 12.28	0.05 0.09 0.15 0.28 0.68
Pipe Mount [PM 601-3]	C	None		0.0000	103.00	No Ice 4.39 1/2" Ice 5.48 Ice 6.57 1" Ice 8.75 2" Ice 13.11 4" Ice	4.39 5.48 6.57 8.75 13.11	0.20 0.24 0.28 0.36 0.53

(4) 844G65VTZASX w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 6.13 1/2" Ice 6.59 Ice 7.06 1" Ice 8.04 2" Ice 10.12 4" Ice	5.21 5.89 6.59 8.04 11.19	0.03 0.08 0.14 0.28 0.67
(4) 844G65VTZASX w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 6.13 1/2" Ice 6.59 Ice 7.06 1" Ice 8.04 2" Ice 10.12 4" Ice	5.21 5.89 6.59 8.04 11.19	0.03 0.08 0.14 0.28 0.67
(4) 844G65VTZASX w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 6.13 1/2" Ice 6.59 Ice 7.06 1" Ice 8.04 2" Ice 10.12 4" Ice	5.21 5.89 6.59 8.04 11.19	0.03 0.08 0.14 0.28 0.67
Platform Mount [LP 303-1]	C	None		0.0000	78.00	No Ice 14.66 1/2" Ice 18.87 Ice 23.08 1" Ice 31.50 2" Ice 48.34 4" Ice	14.66 18.87 23.08 31.50 48.34	1.25 1.48 1.71 2.18 3.10

ACUTIME 2000	A	From Leg	3.00 0.00 0.00	0.0000	60.00	No Ice 0.30 1/2" Ice 0.37 Ice 0.46 1" Ice 0.65 2" Ice 1.15 4" Ice	0.30 0.37 0.46 0.65 1.15	0.00 0.00 0.01 0.02 0.08
Side Arm Mount [SO 701-1]	A	None		0.0000	60.00	No Ice 0.85 1/2" Ice 1.14 Ice 1.43 1" Ice 2.01 2" Ice 3.17 4" Ice	1.67 2.34 3.01 4.35 7.03	0.07 0.08 0.09 0.12 0.18

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz	Lateral							
				ft	ft	°	°	ft	ft	ft ²	K	
VHLP2.5-18	B	Paraboloid w/Shroud (HP)	From Leg	4.00	80.0000			155.00	2.50	No Ice	6.68	0.05
				0.00						1/2" Ice	7.06	0.05
				-4.00						1" Ice	7.46	0.06
										2" Ice	8.29	0.10
										4" Ice	10.08	0.26
VHLP1-23	A	Paraboloid w/o Radome	From Leg	4.00	0.0000			155.00	1.27	No Ice	1.28	0.01
				0.00						1/2" Ice	1.45	0.02
				-4.00						1" Ice	1.62	0.02
										2" Ice	1.97	0.04
										4" Ice	2.66	0.07
VHLP2-11	C	Paraboloid w/o Radome	From Leg	4.00	75.0000			155.00	2.17	No Ice	3.72	0.03
				0.00						1/2" Ice	4.01	0.05
				-4.00						1" Ice	4.30	0.07
										2" Ice	4.88	0.11
										4" Ice	6.04	0.19

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	155 - 115.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17.87	-0.48	-0.84
			Max. Mx	5	-7.90	-320.46	-1.46
			Max. My	8	-7.88	-4.17	-325.35
			Max. Vy	5	13.15	-320.46	-1.46
			Max. Vx	8	13.30	-4.17	-325.35
			Max. Torque	4			-2.23
L2	115.5 - 79.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.50	-1.46	-1.88
			Max. Mx	5	-15.13	-998.78	0.17
			Max. My	8	-15.11	-5.53	-1009.11
			Max. Vy	5	22.04	-998.78	0.17
			Max. Vx	8	22.20	-5.53	-1009.11
			Max. Torque	4			-2.09
L3	79.25 - 43.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-47.84	-3.64	-3.69
			Max. Mx	5	-24.54	-1913.25	2.29
			Max. My	8	-24.53	-6.32	-1928.94
			Max. Vy	5	28.47	-1913.25	2.29
			Max. Vx	8	28.62	-6.32	-1928.94
			Max. Torque	4			-1.89
L4	43.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-67.18	-6.87	-6.39
			Max. Mx	5	-39.08	-3402.46	5.22
			Max. My	8	-39.08	-7.44	-3425.50
			Max. Vy	5	32.17	-3402.46	5.22
			Max. Vx	8	32.32	-7.44	-3425.50
			Max. Torque	4			-2.10

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	21	67.18	-0.01	-10.34
	Max. H _x	11	39.11	32.06	-0.20
	Max. H _z	2	39.11	-0.18	32.25
	Max. M _x	2	3418.64	-0.18	32.25
	Max. M _z	5	3402.46	-32.14	0.07
	Max. Torsion	10	1.45	27.80	-16.28
	Min. Vert	1	39.11	0.00	0.00
	Min. H _x	5	39.11	-32.14	0.07
	Min. H _z	8	39.11	-0.01	-32.28
	Min. M _x	8	-3425.50	-0.01	-32.28
	Min. M _z	11	-3387.80	32.06	-0.20
	Min. Torsion	4	-2.10	-27.92	16.20

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	39.11	0.00	0.00	1.14	-1.22	0.00
Dead+Wind 0 deg - No Ice	39.11	0.18	-32.25	-3418.64	-25.21	1.35
Dead+Wind 30 deg - No Ice	39.11	16.13	-28.00	-2969.31	-1707.98	1.23
Dead+Wind 60 deg - No Ice	39.11	27.92	-16.20	-1716.25	-2958.53	2.10
Dead+Wind 90 deg - No Ice	39.11	32.14	-0.07	-5.22	-3402.46	1.98
Dead+Wind 120 deg - No Ice	39.11	27.74	16.19	1725.00	-2934.11	0.61
Dead+Wind 150 deg - No Ice	39.11	15.95	27.94	2966.30	-1686.68	-0.15

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 180 deg - No Ice	39.11	0.01	32.28	3425.50	-7.44	-0.24
Dead+Wind 210 deg - No Ice	39.11	-16.01	28.05	2978.78	1686.76	-0.58
Dead+Wind 240 deg - No Ice	39.11	-27.80	16.28	1731.18	2936.97	-1.45
Dead+Wind 270 deg - No Ice	39.11	-32.06	0.20	27.86	3387.80	-0.90
Dead+Wind 300 deg - No Ice	39.11	-27.71	-16.00	-1692.97	2927.20	-0.03
Dead+Wind 330 deg - No Ice	39.11	-15.84	-27.92	-2960.15	1667.89	1.06
Dead+Ice+Temp	67.18	0.00	0.00	6.39	-6.87	0.00
Dead+Wind 0 deg+Ice+Temp	67.18	0.04	-10.33	-1128.05	-12.89	0.57
Dead+Wind 30 deg+Ice+Temp	67.18	5.16	-8.96	-978.16	-572.80	0.57
Dead+Wind 60 deg+Ice+Temp	67.18	8.94	-5.18	-562.20	-987.94	0.76
Dead+Wind 90 deg+Ice+Temp	67.18	10.29	-0.01	5.48	-1136.23	0.63
Dead+Wind 120 deg+Ice+Temp	67.18	8.89	5.19	578.39	-981.77	0.15
Dead+Wind 150 deg+Ice+Temp	67.18	5.12	8.95	990.48	-567.99	-0.17
Dead+Wind 180 deg+Ice+Temp	67.18	0.01	10.34	1142.52	-9.29	-0.28
Dead+Wind 210 deg+Ice+Temp	67.18	-5.13	8.97	993.39	553.66	-0.40
Dead+Wind 240 deg+Ice+Temp	67.18	-8.91	5.20	579.03	968.77	-0.59
Dead+Wind 270 deg+Ice+Temp	67.18	-10.27	0.05	13.14	1118.96	-0.34
Dead+Wind 300 deg+Ice+Temp	67.18	-8.89	-5.13	-556.95	966.69	0.01
Dead+Wind 330 deg+Ice+Temp	67.18	-5.09	-8.94	-976.16	549.74	0.41
Dead+Wind 0 deg - Service	39.11	0.07	-12.60	-1336.86	-10.65	0.53
Dead+Wind 30 deg - Service	39.11	6.30	-10.94	-1161.07	-669.05	0.49
Dead+Wind 60 deg - Service	39.11	10.91	-6.33	-670.78	-1158.34	0.83
Dead+Wind 90 deg - Service	39.11	12.55	-0.03	-1.31	-1332.00	0.78
Dead+Wind 120 deg - Service	39.11	10.83	6.32	675.65	-1148.77	0.24
Dead+Wind 150 deg - Service	39.11	6.23	10.91	1161.33	-660.71	-0.06
Dead+Wind 180 deg - Service	39.11	0.00	12.61	1341.01	-3.69	-0.09
Dead+Wind 210 deg - Service	39.11	-6.26	10.96	1166.22	659.18	-0.23
Dead+Wind 240 deg - Service	39.11	-10.86	6.36	678.06	1148.33	-0.57
Dead+Wind 270 deg - Service	39.11	-12.52	0.08	11.63	1324.68	-0.36
Dead+Wind 300 deg - Service	39.11	-10.82	-6.25	-661.65	1144.48	-0.01
Dead+Wind 330 deg - Service	39.11	-6.19	-10.90	-1157.46	651.79	0.42

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	-39.11	0.00	0.00	39.11	0.00	0.000%
2	0.18	-39.11	-32.25	-0.18	39.11	32.25	0.000%
3	16.13	-39.11	-28.00	-16.13	39.11	28.00	0.000%
4	27.92	-39.11	-16.20	-27.92	39.11	16.20	0.000%
5	32.14	-39.11	-0.07	-32.14	39.11	0.07	0.000%
6	27.74	-39.11	16.19	-27.74	39.11	-16.19	0.000%
7	15.95	-39.11	27.94	-15.95	39.11	-27.94	0.000%
8	0.01	-39.11	32.28	-0.01	39.11	-32.28	0.000%
9	-16.01	-39.11	28.05	16.01	39.11	-28.05	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
10	-27.80	-39.11	16.28	27.80	39.11	-16.28	0.000%
11	-32.06	-39.11	0.20	32.06	39.11	-0.20	0.000%
12	-27.71	-39.11	-16.00	27.71	39.11	16.00	0.000%
13	-15.84	-39.11	-27.92	15.84	39.11	27.92	0.000%
14	0.00	-67.18	0.00	-0.00	67.18	-0.00	0.000%
15	0.04	-67.18	-10.33	-0.04	67.18	10.33	0.000%
16	5.16	-67.18	-8.96	-5.16	67.18	8.96	0.000%
17	8.94	-67.18	-5.18	-8.94	67.18	5.18	0.000%
18	10.29	-67.18	-0.01	-10.29	67.18	0.01	0.000%
19	8.89	-67.18	5.19	-8.89	67.18	-5.19	0.000%
20	5.12	-67.18	8.95	-5.12	67.18	-8.95	0.000%
21	0.01	-67.18	10.34	-0.01	67.18	-10.34	0.000%
22	-5.13	-67.18	8.97	5.13	67.18	-8.97	0.000%
23	-8.91	-67.18	5.20	8.91	67.18	-5.20	0.000%
24	-10.27	-67.18	0.05	10.27	67.18	-0.05	0.000%
25	-8.89	-67.18	-5.13	8.89	67.18	5.13	0.000%
26	-5.09	-67.18	-8.94	5.09	67.18	8.94	0.000%
27	0.07	-39.11	-12.60	-0.07	39.11	12.60	0.000%
28	6.30	-39.11	-10.94	-6.30	39.11	10.94	0.000%
29	10.91	-39.11	-6.33	-10.91	39.11	6.33	0.000%
30	12.55	-39.11	-0.03	-12.55	39.11	0.03	0.000%
31	10.83	-39.11	6.32	-10.83	39.11	-6.32	0.000%
32	6.23	-39.11	10.91	-6.23	39.11	-10.91	0.000%
33	0.00	-39.11	12.61	-0.00	39.11	-12.61	0.000%
34	-6.26	-39.11	10.96	6.26	39.11	-10.96	0.000%
35	-10.86	-39.11	6.36	10.86	39.11	-6.36	0.000%
36	-12.52	-39.11	0.08	12.52	39.11	-0.08	0.000%
37	-10.82	-39.11	-6.25	10.82	39.11	6.25	0.000%
38	-6.19	-39.11	-10.90	6.19	39.11	10.90	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00009507
3	Yes	6	0.00000001	0.00008425
4	Yes	6	0.00000001	0.00008007
5	Yes	5	0.00000001	0.00009495
6	Yes	6	0.00000001	0.00008354
7	Yes	6	0.00000001	0.00008213
8	Yes	4	0.00000001	0.00057051
9	Yes	6	0.00000001	0.00008182
10	Yes	6	0.00000001	0.00008449
11	Yes	5	0.00000001	0.00008323
12	Yes	6	0.00000001	0.00008115
13	Yes	6	0.00000001	0.00007994
14	Yes	4	0.00000001	0.00004667
15	Yes	5	0.00000001	0.00060158
16	Yes	6	0.00000001	0.00010839
17	Yes	6	0.00000001	0.00010540
18	Yes	5	0.00000001	0.00060571
19	Yes	6	0.00000001	0.00010933
20	Yes	6	0.00000001	0.00010836
21	Yes	5	0.00000001	0.00060687
22	Yes	6	0.00000001	0.00010580
23	Yes	6	0.00000001	0.00010856
24	Yes	5	0.00000001	0.00059518
25	Yes	5	0.00000001	0.00099516
26	Yes	5	0.00000001	0.00098832
27	Yes	4	0.00000001	0.00039219
28	Yes	5	0.00000001	0.00021144
29	Yes	5	0.00000001	0.00019344
30	Yes	4	0.00000001	0.00050405
31	Yes	5	0.00000001	0.00020870

32	Yes	5	0.00000001	0.00020235
33	Yes	4	0.00000001	0.00017178
34	Yes	5	0.00000001	0.00020025
35	Yes	5	0.00000001	0.00021230
36	Yes	4	0.00000001	0.00032743
37	Yes	5	0.00000001	0.00019668
38	Yes	5	0.00000001	0.00019172

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	47.295	33	2.5314	0.0104
L2	119.25 - 79.25	29.040	33	2.2469	0.0044
L3	83.75 - 43.75	14.390	33	1.6195	0.0021
L4	49 - 0	4.940	33	0.9257	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	LPX310R	33	47.295	2.5314	0.0104	27293
153.00	800MHz 2X50W RRH W/FILTER	33	46.236	2.5203	0.0100	27293
151.00	VHLP2.5-18	33	45.178	2.5091	0.0096	27293
145.00	Side Arm Mount [SO 102-3]	33	42.016	2.4742	0.0085	13646
143.00	800 10121 w/ Mount Pipe	33	40.968	2.4618	0.0081	11371
133.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	33	35.805	2.3895	0.0064	6202
113.00	BXA-70063/6CFx2 w/ Mount Pipe	33	26.146	2.1593	0.0037	3662
103.00	APXV18-206517S-C w/ Mount Pipe	33	21.785	1.9929	0.0030	3441
78.00	(4) 844G65VTZASX w/ Mount Pipe	33	12.455	1.5037	0.0019	2907
60.00	ACUTIME 2000	33	7.318	1.1427	0.0012	2465

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	120.535	8	6.4543	0.0264
L2	119.25 - 79.25	74.060	8	5.7314	0.0111
L3	83.75 - 43.75	36.723	8	4.1331	0.0052
L4	49 - 0	12.612	8	2.3637	0.0023

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	LPX310R	8	120.535	6.4543	0.0264	10948
153.00	800MHz 2X50W RRH W/FILTER	8	117.840	6.4262	0.0254	10948
151.00	VHLP2.5-18	8	115.147	6.3979	0.0244	10948

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	Side Arm Mount [SO 102-3]	8	107.096	6.3093	0.0215	5473
143.00	800 10121 w/ Mount Pipe	8	104.428	6.2777	0.0206	4560
133.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	91.285	6.0943	0.0161	2485
113.00	BXA-70063/6CFx2 w/ Mount Pipe	8	66.688	5.5084	0.0095	1462
103.00	APXV18-206517S-C w/ Mount Pipe	8	55.574	5.0845	0.0075	1370
78.00	(4) 844G65VTZASX w/ Mount Pipe	8	31.789	3.8378	0.0047	1149
60.00	ACUTIME 2000	8	18.681	2.9173	0.0031	970

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in ²	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	39.50	0.00	0.0	36.000	22.5070	-7.88	810.25	0.010
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	40.00	0.00	0.0	39.000	34.0898	-15.11	1329.50	0.011
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	40.00	0.00	0.0	39.000	47.7407	-24.53	1861.89	0.013
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	49.00	0.00	0.0	39.000	67.1574	-39.08	2619.14	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	325.38	24.810	36.000	0.689	0.00	0.000	36.000	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	1009.1	41.937	39.000	1.075	0.00	0.000	39.000	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	1928.9	49.060	39.000	1.258	0.00	0.000	39.000	0.000
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	3425.4	51.350	39.000	1.317	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	13.30	0.591	24.000	0.049	0.10	0.004	24.000	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.1142x0.3125	22.20	0.651	26.000	0.050	0.14	0.003	26.000	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.0565x0.375	28.62	0.599	26.000	0.046	0.02	0.000	26.000	0.000
L4	43.75 - 0 (4)	TP48.8x39.7348x0.4375	32.36	0.482	26.000	0.037	1.23	0.009	26.000	0.000

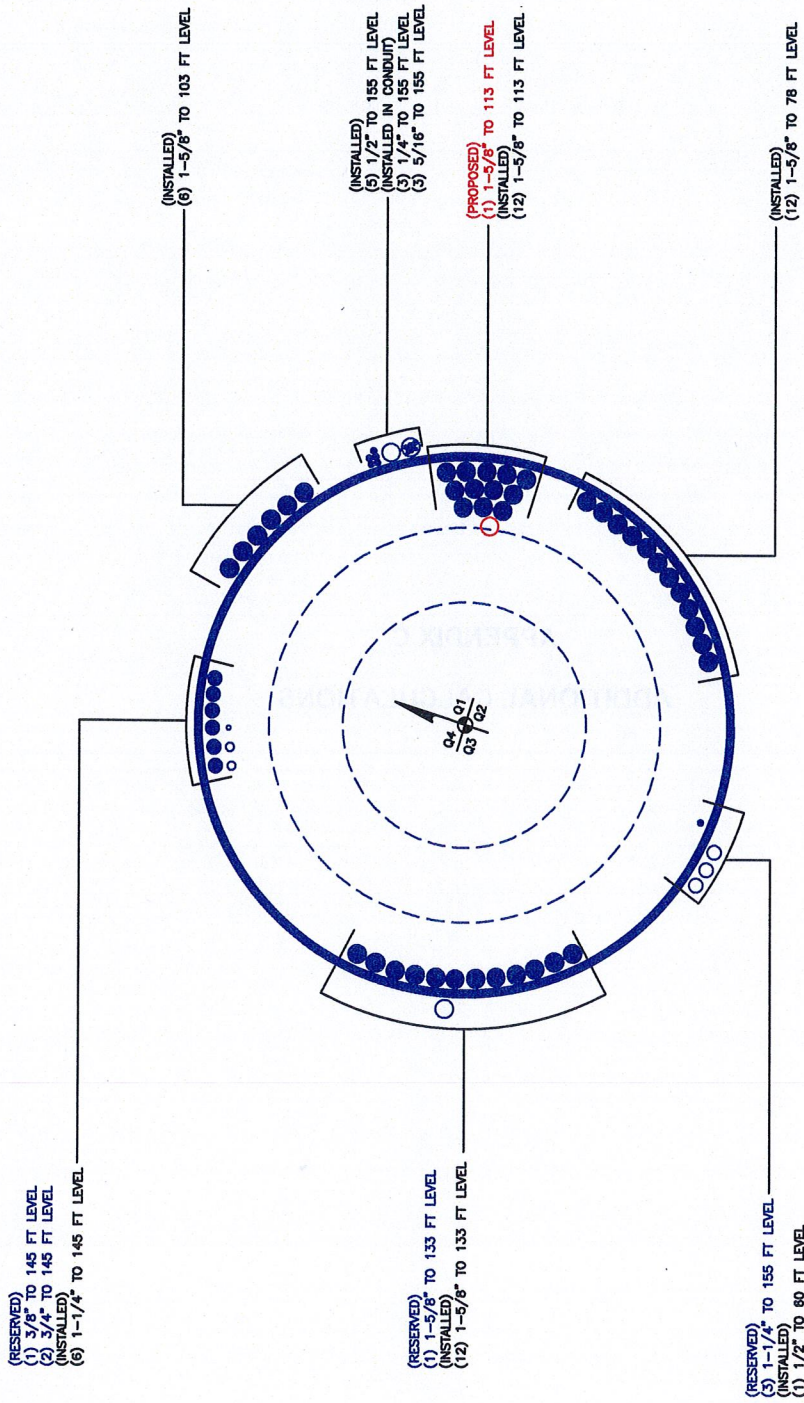
Pole Interaction Design Data

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P	f_{bx}	f_{by}	f_v	f_{vt}			
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
L1	155 - 115.5 (1)	0.010	0.689	0.000	0.049	0.000	0.699	1.333	H1-3+VT ✓
L2	115.5 - 79.25 (2)	0.011	1.075	0.000	0.050	0.000	1.087	1.333	H1-3+VT ✓
L3	79.25 - 43.75 (3)	0.013	1.258	0.000	0.046	0.000	1.272	1.333	H1-3+VT ✓
L4	43.75 - 0 (4)	0.015	1.317	0.000	0.037	0.000	1.332	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF \cdot P_{allow}$ K	% Capacity	Pass Fail
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-7.88	1080.07	52.5	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.1142x0.3125	2	-15.11	1772.22	81.6	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.0565x0.375	3	-24.53	2481.90	95.4	Pass
L4	43.75 - 0	Pole	TP48.8x39.7348x0.4375	4	-39.08	3491.31	99.9	Pass
Summary								
Pole (L4)							99.9	Pass
RATING =							99.9	Pass

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 876347 TOWER ID: C_BASELEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Maximum Allowable Moment of a Circular Pier

Axial Load (Negative for Compression) = kips

Pier Properties		Material Properties	
Concrete:		Concrete compressive strength =	<input type="text" value="3000"/> psi
Pier Diameter =	<input type="text" value="7.0"/> ft	Reinforcement yield strength =	<input type="text" value="60000"/> psi
Concrete Area =	5541.8 in ²	Modulus of elasticity =	<input type="text" value="29000"/> ksi
Reinforcement:		Reinforcement yield strain =	<input type="text" value="0.00207"/>
Clear Cover =	<input type="text" value="3.00"/> in	Limiting compressive strain =	<input type="text" value="0.003"/>
Cage Diameter =	6.38 ft	Seismic Properties	
Bar Size =	<input type="text" value="11"/>	Seismic Zone =	<input type="text" value="1"/>
Bar Diameter =	1.41 in		
Bar Area =	1.56 in ²		
Number of Bars =	<input type="text" value="32"/>		

Minimum Area of Steel

Required area of steel = 27.71 in²
 Provided area of steel = 49.92 in² **OK**

Axial Loading

Load factor =
 Reduction factor = 0.9
 Factored axial load = -56.3333 kips

Neutral Axis

Distance from extreme edge to neutral axis = 16.43 in
 Equivalent compression zone factor = 0.85
 Distance from extreme edge to equivalent compression zone factor = 13.96 in
 Distance from centroid to neutral axis = 25.57 in

Compression Zone

Area of steel in compression zone = 10.92 in²
 Angle from centroid of pier to intersection of equivalent compression zone and edge of pier = 48.13 deg
 Area of concrete in compression = 604.91 in²
 Force in concrete = $0.85 * f'_c * Acc$ = 1542.52 kips
 Total reinforcement forces = -1486.18 kips
 Factored axial load = -56.33 kips
 Force in concrete = -1542.52 kips
 Sum of the forces in concrete = 0.00 kips **OK**

Maximum Moment

First moment of the concrete
 area in compression about the centroid = 20390.98 in³
 Distance between centroid of concrete
 in compression and centroid of pier = 33.71 in
 Moment of concrete in compression = 51997.00 in-kips
 Total reinforcement moment = 50178.48 in-kips
 Nominal moment strength of column = 102175.48 in-kips
 Factored moment strength of column = 70736.87 in-kips

Maximum Allowable Moment = **5894.74** ft-kips

Individual Bars

Bar #	Angle from first bar (deg)	Distance to centroid (in)	Distance to neutral axis (in)	Distance to equivalent zone (in)	Strain	Area of steel in compression (in ²)	Stress (ksi)	Axial force (kips)
1	0.00	0.00	-25.57	-28.04	-0.0046692	0.00	-60.00	-93.60
2	11.25	7.47	-18.10	-20.56	-0.003305	0.00	-60.00	-93.60
3	22.50	14.65	-10.92	-13.38	-0.0019932	0.00	-57.80	-90.17
4	33.75	21.28	-4.30	-6.76	-0.0007843	0.00	-22.74	-35.48
5	45.00	27.08	1.51	-0.96	0.0002753	0.00	7.99	12.46
6	56.25	31.84	6.27	3.81	0.001145	1.56	33.20	47.82
7	67.50	35.38	9.81	7.34	0.0017912	1.56	51.94	77.05
8	78.75	37.56	11.99	9.52	0.0021891	1.56	60.00	89.62
9	90.00	38.30	12.72	10.26	0.0023235	1.56	60.00	89.62
10	101.25	37.56	11.99	9.52	0.0021891	1.56	60.00	89.62
11	112.50	35.38	9.81	7.34	0.0017912	1.56	51.94	77.05
12	123.75	31.84	6.27	3.81	0.001145	1.56	33.20	47.82
13	135.00	27.08	1.51	-0.96	0.0002753	0.00	7.99	12.46
14	146.25	21.28	-4.30	-6.76	-0.0007843	0.00	-22.74	-35.48
15	157.50	14.65	-10.92	-13.38	-0.0019932	0.00	-57.80	-90.17
16	168.75	7.47	-18.10	-20.56	-0.003305	0.00	-60.00	-93.60
17	180.00	0.00	-25.57	-28.04	-0.0046692	0.00	-60.00	-93.60
18	191.25	-7.47	-33.04	-35.51	-0.0060335	0.00	-60.00	-93.60
19	202.50	-14.65	-40.23	-42.69	-0.0073452	0.00	-60.00	-93.60
20	213.75	-21.28	-46.85	-49.31	-0.0085542	0.00	-60.00	-93.60
21	225.00	-27.08	-52.65	-55.11	-0.0096138	0.00	-60.00	-93.60
22	236.25	-31.84	-57.41	-59.88	-0.0104835	0.00	-60.00	-93.60
23	247.50	-35.38	-60.95	-63.42	-0.0111297	0.00	-60.00	-93.60
24	258.75	-37.56	-63.13	-65.59	-0.0115276	0.00	-60.00	-93.60
25	270.00	-38.30	-63.87	-66.33	-0.0116619	0.00	-60.00	-93.60
26	281.25	-37.56	-63.13	-65.59	-0.0115276	0.00	-60.00	-93.60
27	292.50	-35.38	-60.95	-63.42	-0.0111297	0.00	-60.00	-93.60
28	303.75	-31.84	-57.41	-59.88	-0.0104835	0.00	-60.00	-93.60
29	315.00	-27.08	-52.65	-55.11	-0.0096138	0.00	-60.00	-93.60
30	326.25	-21.28	-46.85	-49.31	-0.0085542	0.00	-60.00	-93.60
31	337.50	-14.65	-40.23	-42.69	-0.0073452	0.00	-60.00	-93.60
32	348.75	-7.47	-33.04	-35.51	-0.0060335	0.00	-60.00	-93.60

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

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

Site Data		
BU#:	876347	
Site Name:	BUCKLAND MALL	
App #:	173329	
Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	56	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	56	in
Thick:	3.25	in
Grade:	50	ksi
Clip Distance:	6	in

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

Pole Data		
Diam:	48.8	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

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

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3426	ft-kips
Unfactored Axial, P:	39	kips
Unfactored Shear, V:	32	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension: 181.1 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 92.9% **Pass**

Base Plate Results

Base Plate Stress: 38.0 ksi
 Allowable PL Bending Stress: 50.0 ksi
 Base Plate Stress Ratio: 76.1% **Pass**

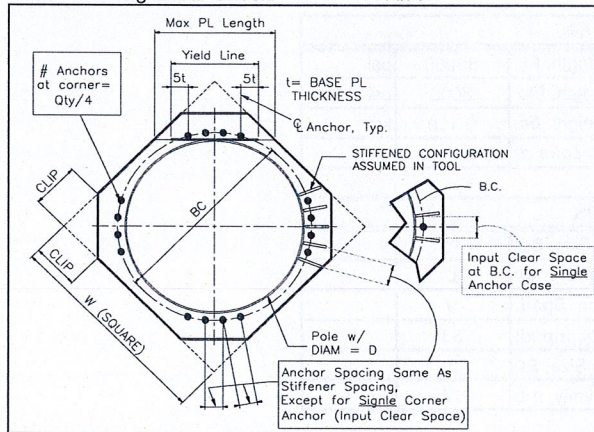
PL Ref. Data
Yield Line (in):
30.40
Max PL Length:
30.40

N/A - Unstiffened 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



Monopole Pier and Pad Foundation

BU # : 876347

Site Name: BUCKLAND MALL

App. Number: 173329

TIA-222 Revision:



Design Reactions		
Shear, S:	32	kips
Moment, M:	3426	ft-kips
Tower Height, H:	155	ft
Tower Weight, Wt:	39	kips
Base Diameter, BD:	4.07	ft

Foundation Dimensions		
Depth, D:	10	ft
Pad Width, W:	23	ft
Neglected Depth, N:	3.33	ft
Thickness, T:	3.00	ft
Pier Diameter, Pd:	7.00	ft
Ext. Above Grade, E:	0.50	ft
BP Dist. Above Pier:	3	in.
Clear Cover, Cc:	3.0	in

Soil Properties		
Soil Unit Weight, γ :	0.115	kcf
Ult. Bearing Capacity, Bc:	30.0	ksf
Angle of Friction, Φ :	30	deg
Cohesion, Co:	0.000	ksf
Passive Pressure, Pp:	3.500	ksf
Base Friction, μ :	0.45	

Material Properties		
Rebar Yield Strength, Fy:	60000	psi
Concrete Strength, F'c:	3000	psi
Concrete Unit Weight, δ_c :	0.150	kcf
Seismic Zone, z:	1	

Rebar Properties		
Pier Rebar Size, Sp:	11	
Pier Rebar Quantity, mp:	32	18
Pad Rebar Size, Spad:	9	
Pad Rebar Quantity, mpad:	33	19
Pier Tie Size, St:	5	4
Tie Quantity, mt:	12	7

Design Checks			
	Capacity/Availability	Demand/Limits	Check
Req'd Pier Diam. (ft)	7	5.57	OK
Overturning (ft-kips)	6105.58	3426.00	56.1%
Shear Capacity (kips)	319.29	32.00	10.0%
Bearing (ksf)	22.50	3.96	17.6%
Pad Shear - 1-way (kips)	735.51	491.48	66.8%
Pad Shear - 2-way (kips)	1949.60	129.50	6.6%
Pad Moment Capacity (k-ft)	4607.86	2966.29	64.4%
Pier Moment Capacity (k-ft)	5894.74	3666.00	62.2%