ROBINSON & COLE LLP

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

ORIGINAL

August 4, 2011

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

Re: **Notice of Completion of Construction Activity**

EM-VER-166-110203A – 347 East Street, Wolcott, Connecticut
EM-VER-137-110415 – 86 Voluntown Road, Stonington, Connecticut
EM-VER-137-110322 – 7 Broadway Avenue Extension, Mystic (Groton), Connecticut

Dear Ms. Roberts:

This letter will serve as notice that construction activity associated with the above-referenced facility modifications has been completed.

If you have any questions or need any additional information regarding any of these facilities, 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
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

March 14, 2011

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-166-110203A** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 347 East Street, Wolcott, 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 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;
- Not less than 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 February 3, 2011. 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,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Thomas G. Dunn, Mayor, Town of Wolcott
David Kalinowski, Zoning Enforcement Officer, Town of Wolcott
Crown Castle USA, Inc.

ROBINSON & COLE

EM-VER-166-110203A

KENNETH C. BALDWIN

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ORIGINAL

February 3, 2011

Via Hand Delivery

RECEIVED
FEB - 3 2011
CONNECTICUT
SITING COUNCIL

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

Re: **Notice of Exempt Modification – Antenna Swap**
347 East Street, Wolcott, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 177-foot level on the existing 180-foot tower at the above-referenced address. The tower is owned by Crown Castle. The Connecticut Siting Council ("Council") approved Cellco's use of this tower in Docket No. 56. Cellco intends to remove all if its existing antennas and replace them with twelve (12) new antennas (two (2) model DB846F65ZAXY cellular antennas; two (2) model LPA-80063/6CF cellular antennas; two (2) model SC-E 6014 rev 2 cellular antennas; one (1) model LPA-185063/12CF PCS antenna; two (2) model APX18-206516L-CT0 PCS antennas; and three (3) model BXA 70063/6CF LTE antennas). All new antennas will be installed at the same 177-foot level on the tower. Cellco will also install six (6) coax cable diplexers on its existing antenna platform. Attached behind Tab 1 of this filing are the specifications for each of the proposed replacement antennas and cable diplexers.

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 Thomas Dunn, Mayor for the Town of Wolcott. A copy of this letter is also being sent to Agostinho and Joanne Rodrigues, the owners 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).

1. The proposed modifications will not result in any increase in the overall height of the existing tower. Cellco's replacement antennas and diplexers will be located at the 177-foot level on the 180-foot tower.

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

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

Also attached is a Structural Analysis Report confirming that the tower and foundation can support Cellco's proposed modifications. (See 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:
Thomas Dunn, Wolcott Mayor
Agostinho and Joanne Rodrigues
Sandy M. Carter

Product Specifications

ANDREW®
A CommScope Company

DB846F65ZAXY

Directed Dipole™ Antenna, 806–960 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Excellent azimuth roll-off, reducing soft hand-offs and improving capacity
- Deep null filling below the horizon for improved signal intensity
- Rugged, reliable design, light weight for low tower loading
- Air dielectric feed system

CHARACTERISTICS

General Specifications

Antenna Type	Directed Dipole™
Brand	Directed Dipole™
Operating Frequency Band	806 – 960 MHz

Electrical Specifications

Frequency Band, MHz	**806–896**	**870–960**
Beamwidth, Horizontal, degrees	65	60
Gain, dBd	14.5	14.8
Gain, dBi	16.6	16.9
Beamwidth, Vertical, degrees	11.0	10.5
Beam Tilt, degrees	0	0
Upper Sidelobe Suppression (USLS), typical, dB	15	15
Front-to-Back Ratio at 180°, dB	40	40
VSWR | Return Loss, db	1.33:1 | 17.0	1.33:1 | 17.0
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	Vertical	Vertical
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

www.commscope.com/andrew

Product Specifications

DB846F65ZAXY

ANDREW®
A CommScope Company

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Back
Connector Quantity	1
Wind Loading, maximum	387.0 N @ 100 mph 87.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	215.9 mm | 8.5 in
Length	1828.8 mm | 72.0 in
Width	254.0 mm | 10.0 in
Net Weight	9.5 kg | 21.0 lb

Regulatory Compliance/Certifications

Agency
RoHS 2002/95/EC
China RoHS SJ/T 11364-2006

Classification
Compliant by Exemption
Above Maximum Concentration Value (MCV)

INCLUDED PRODUCTS

DB5083
Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

DB380
Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

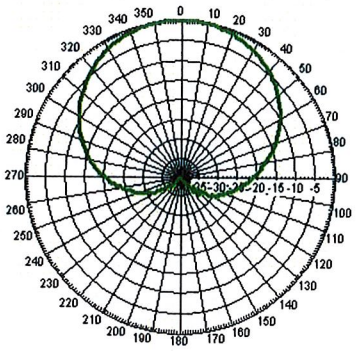
DB382NS
Side Offset Bracket for 4.5 in (114.3 mm) OD round members

Product Specifications

DB846F65ZAXY

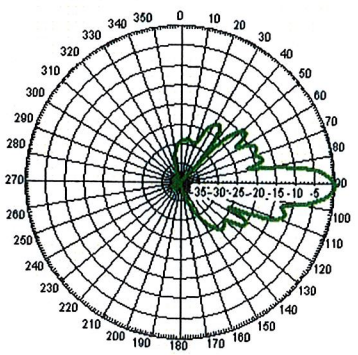
ANDREW®
A CommScope Company

Horizontal Pattern

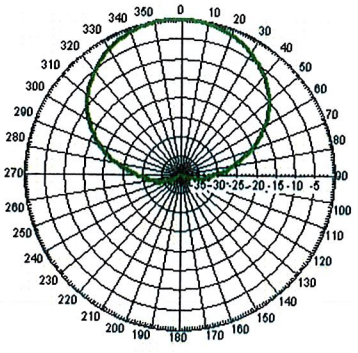


Freq: 850 MHz, Tilt: 0

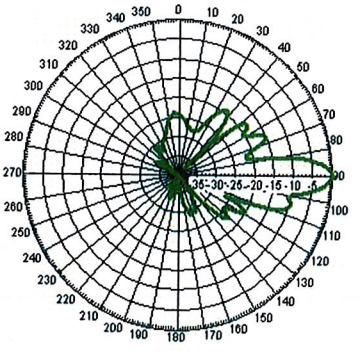
Vertical Pattern



Freq: 850 MHz, Tilt: 0



Freq: 940 MHz, Tilt: 0



Freq: 940 MHz, Tilt: 0

www.commscope.com/andrew

Amphenol ANTENNA SOLUTIONS

LPA-80063-6CF-EDIN-X

V-Pol | Log Periodic | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

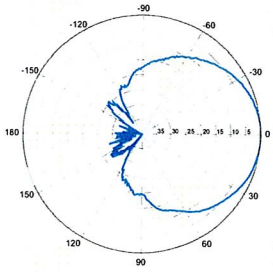
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	63°
Vertical beamwidth	10°
Gain	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10
Impedance	50Ω
VSWR	≤1.4:1
Null fill	5% (-26.02 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)

Mechanical Characteristics		
Dimensions Length x Width x Depth	1805 x 385 x 332 mm	71.1 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	12.3 kg	27 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.70 m² Side: 0.59 m²	Front: 7.5 ft² Side: 6.3 ft²
Wind load @ 161 km/hr (100 mph)	Front: 885 N Side: 757 N	Front: 199 lbf Side: 170 lbf

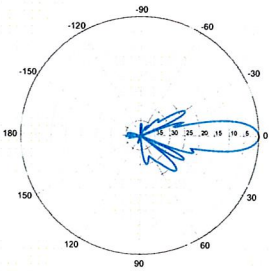
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit (0-20°)	21700000	50-102 mm 2.0-4.0 in	11 kg 25 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80063-6CF-EDIN-X



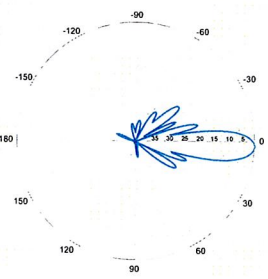
Horizontal

LPA-80063-6CF-EDIN-0



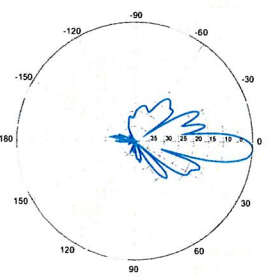
0° | Vertical

LPA-80063-6CF-EDIN-2



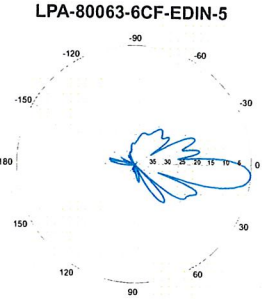
2° | Vertical

LPA-80063-6CF-EDIN-4



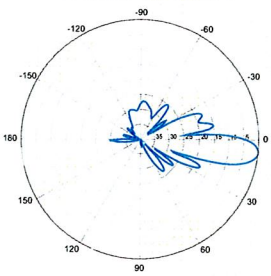
4° | Vertical

LPA-80063-6CF-EDIN-5



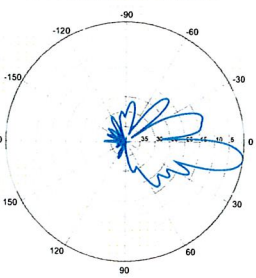
5° | Vertical

LPA-80063-6CF-EDIN-6



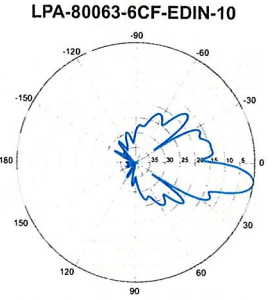
6° | Vertical

LPA-80063-6CF-EDIN-8



8° | Vertical

LPA-80063-6CF-EDIN-10

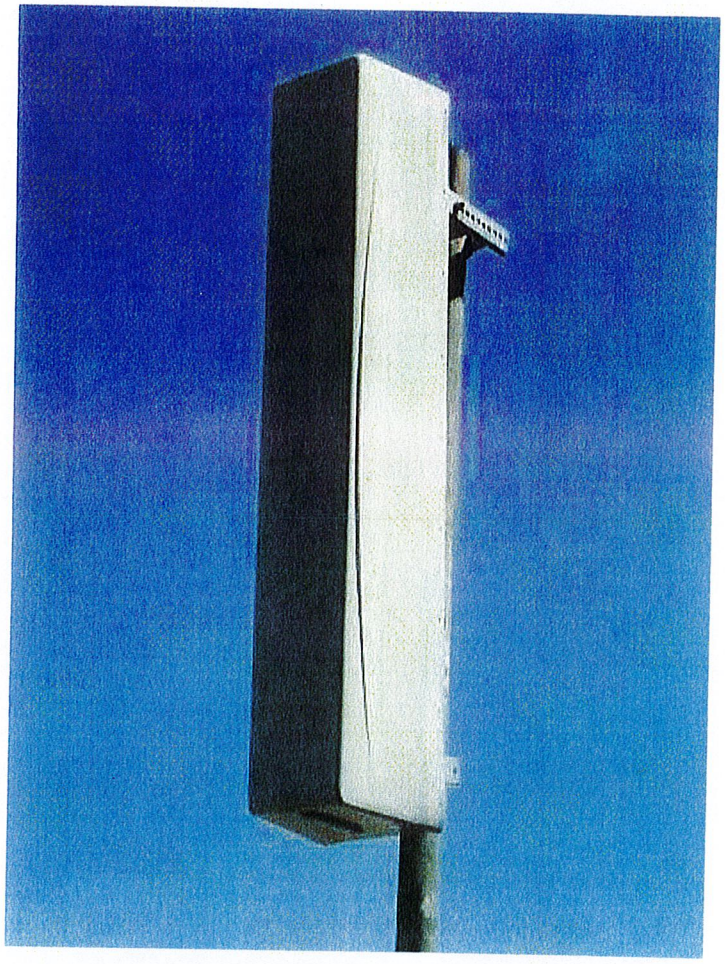


10° | Vertical

Swedcom

SC-E 6014 *rev2*

Enhanced 800 - 960 MHz log-periodic antenna



Features

- Small size
- Aesthetically pleasing
- Suitable for TDMA/CDMA/GSM/3G
- High return loss
- Low intermodulation
- High front-to-back ratio
- Outstanding performance over the entire band (800 - 960 MHz)
- Upper side-lobe suppression
- Rugged design
- Dramatically improved signal to interference performance

Electrical specifications

Frequency range:	**800-960 MHz**
Impedance:	**50 ohm**
Connector type:	**7/16 Din**
Return loss:	**20 dB**
Polarization:	**Vertical**
Gain:	**14 dBd**
Front-to-back ratio:	**> 30 dB**
Upper side-lobe suppression:	**18 dB**
Intermodulation (2x20W):	**IM5 160 dB** **IM7/9 170 dB**
Power rating:	**500 W**
H-plane (-3 dB point):	**54 - 60°**
V-plane (-3 dB point):	**16 - 18°**
Lightning protection:	**DC grounded**

Mechanical specifications

Overall height:	**43 in**	**[1092 mm]**
Width:	**8.5 in**	**[216 mm]**
Depth:	**8 in**	**[203 mm]**
Weight (excluding brackets):	**15 lbs**	**[6.8 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**2.54 sq. ft.**	**[0.24 sq.m]**
Lateral thrust At 113 mph/ 180Km/h (worst case):	**122 lbs**	**[577 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Tilt-bracket:	**Hot dip galvanized steel**
Mounting bolts:	**Stainless steel**

The SC-E 6014 rev2 is made in the U.S.A.

Amphenol ANTENNA SOLUTIONS

BXA-185063-12CF-EDIN-X

X-Pol | FET Panel | 63° | 20.5 dBi

Replace "X" with desired electrical downtilt.

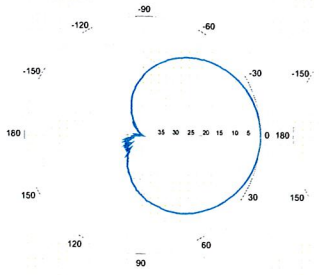
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	1850-1990 MHz
Polarization	±45°
Horizontal beamwidth	63°
Vertical beamwidth	5°
Gain	18.4 dBd (20.5 dBi)
Electrical downtilt (X)	0, 2, 3, 4
Impedance	50Ω
VSWR	≤1.4:1
Null fill	5% (-26.02 dB)
Isolation between ports	< -30 dB
Input power	250 W
Lightning protection	Direct Ground
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)

Mechanical Characteristics		
Dimensions Length x Width x Depth	1829 x 154 x 105 mm	72.0 x 6.1 x 4.1 in
Depth with z-brackets	133 mm	5.2 in
Weight without mounting brackets	6.8 kg	15.0 lbs
Survival wind speed	> 241 km/hr	> 150 mph
Wind area	Front: 0.28 m² Side: 0.19 m²	Front: 3.1 ft² Side: 2.1 ft²
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf

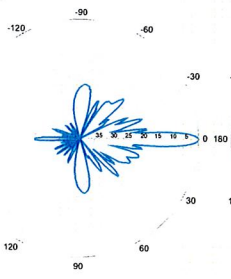
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5.0 lbs
2-Point Mounting & Downtilt Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8.0 lbs
Concealment Configurations	For concealment configurations, order BXA-185063-12CF-EDIN-X-FP		

BXA-185063-12CF-EDIN-X



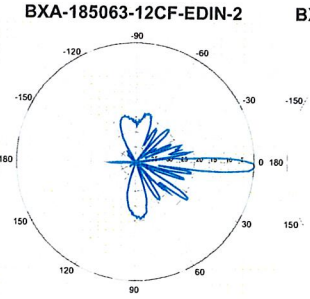
Horizontal

BXA-185063-12CF-EDIN-0



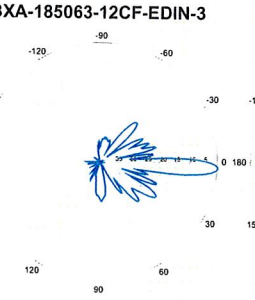
0° | Vertical

BXA-185063-12CF-EDIN-2



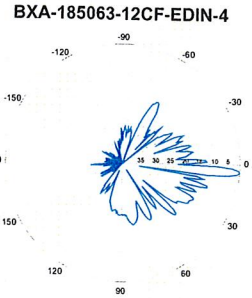
2° | Vertical

BXA-185063-12CF-EDIN-3



3° | Vertical

BXA-185063-12CF-EDIN-4



4° | Vertical

Product Data Sheet **APX18-206516L-CT0**

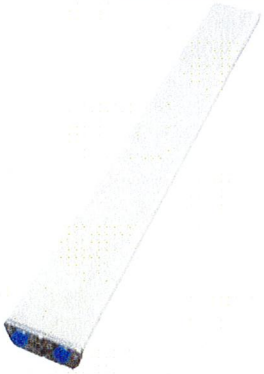
Optimizer® Dual Polarized Antenna, 1710-2170, 65deg, 17.6/18.6dBi, 1.3m, FET, 0deg

Product Description

Dense urban networks where site aspect is essential.

Features/Benefits

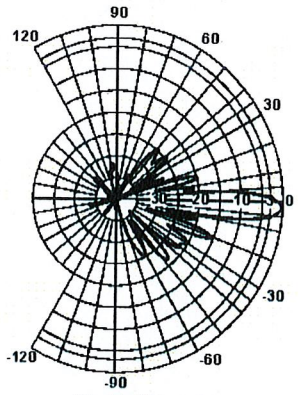
- **Very broadband design operating from GSM1800 up to 3G-UMTS.**
- **Reduction of visual impact by gathering 3 antennas in a cylindrical volume.**
- **Reduction of site dimensions will ease site acceptance.**
- **Possible camouflage solution on demand.**
- **Wind load thrust highly reduced.**
- **Compatible with usual base stations with 35 dB typical isolation between ports.**
- **Effective polarization diversity ensured by high cross polar discrimination.**
- **Optimized suppression of side lobes allows strong mechanical tilt.**



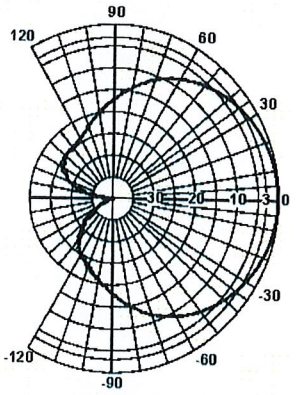
Technical Specifications

Electrical Specifications

Frequency Range, MHz	1710-1900	1900-2170
Horizontal Beamwidth, deg	69	64
Vertical Beamwidth, deg	6.9	6
Electrical Downtilt, deg	0	
Gain, dBi (dBd)	17.6 (15.5)	18.6 (16.5)
1st Upper Sidelobe Suppression, dB	>20	
Front-To-Back Ratio, dB	>29	30
Polarization	Dual pol +/-45°	
VSWR	< 1.4:1	
Isolation between Ports, dB	>30 (typ 35)	
3rd Order IMP @ 2 x 43 dBm, dBc	>150, N/A	
7th Order IMP @ 2 x 46 dBm, dBc	N/A, >170	
Impedance, Ohms	50	
Maximum Power Input, W	300	
Lightning Protection	Direct Ground	
Connector Type	(2) 7-16 Long Neck Female	



Vertical Pattern



Horizontal Pattern

Mechanical Specifications

Dimensions - HxWxD, mm (in)	1349 x 169 x 80 (53.0 x 6.65 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	8.5 (18.7)
Survival Wind Speed, km/h (mph)	200 (125)
Rated Wind Speed, km/h (mph)	160 (100)
Max Wind Loading Area, m² (ft²)	0.23 (2.46)
Front Thrust @ Rated Wind, N (lbf)	406 (91)
Maximum Thrust @ Rated Wind, N (lbf)	406 (91)
Wind Load - Side @ Rated Wind, N (lbf)	236 (53)
Wind Load - Rear @ Rated Wind, N (lbf)	196 (44)
Radome Material	Fiberglass
Radome Color	Light Grey RAL7035
Mounting Hardware Material	Diecasted Aluminum
Shipping Weight, kg (lb)	13.5 (30)
Packing Dimensions, HxWxD, mm (in)	1464 x 251 x 203 (57.64 x 9.88 x 7.99)

Ordering Information

Mounting Hardware	APM40-2
Mounting Pipe Diameter, mm (in)	60-120 (2.36-4.72)
Mounting Hardware Weight, kg (lb)	3.4 (7.5)

Other Documentation

APM40 Series Datasheet
APM40 Series Installation Instructions

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

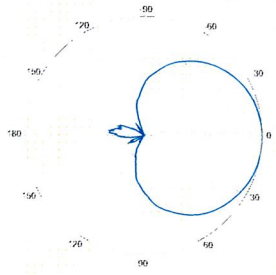
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	

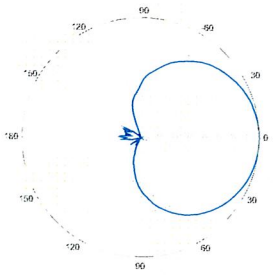
Mechanical Characteristics		
Dimensions Length x Width x Depth	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in
Depth with z-brackets	172 mm	6.8 in
Weight without mounting brackets	7.9 kg	17 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.51 m² Side: 0.24 m²	Front: 5.5 ft² Side: 2.6 ft²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting Bracket Kit	36210003	50-160 mm 2.0-6.3 in	6.3 kg 14 lbs
3-Point Downtilt Bracket Kit (0-14°)	36210004	50-160 mm 2.0-6.3 in	7.3 kg 16 lbs
Downtilt Mounting Applications	A mounting bracket and downtilt bracket kit must be ordered for downtilt applications		
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X

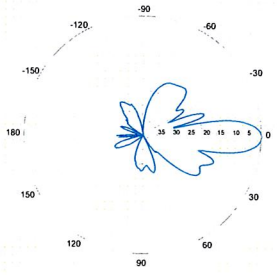


Horizontal | 750 MHz

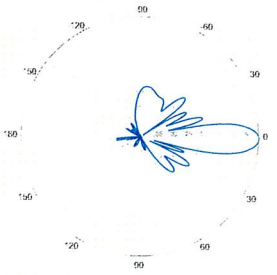


Horizontal | 850 MHz

BXA-70063-6CF-EDIN-0



0° | Vertical | 750 MHz



0° | Vertical | 850 MHz

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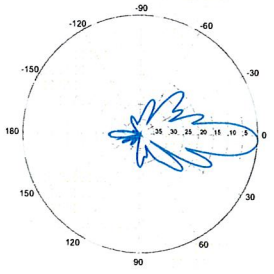
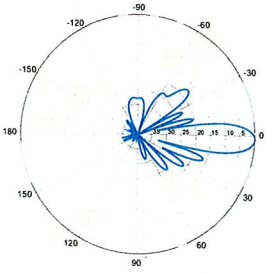


2° | Vertical | 750 MHz



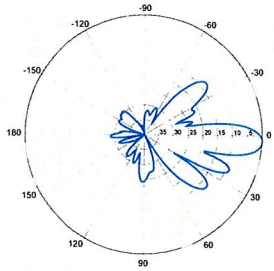
2° | Vertical | 850 MHz

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.

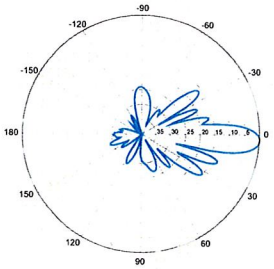
BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3

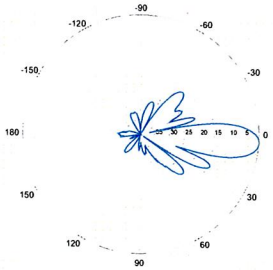


3° | Vertical | 750 MHz

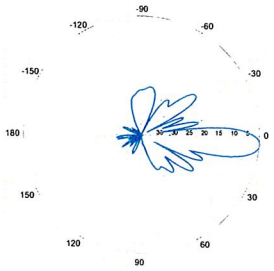


3° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-4



4° | Vertical | 750 MHz



4° | Vertical | 850 MHz

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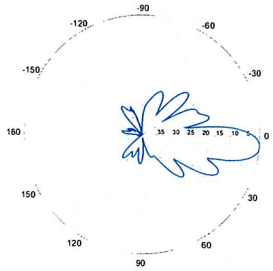
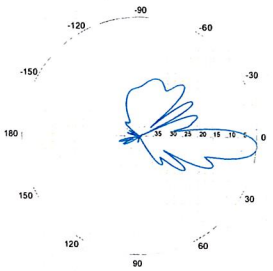


5° | Vertical | 750 MHz



5° | Vertical | 850 MHz

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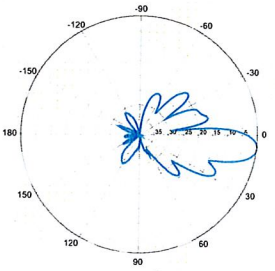
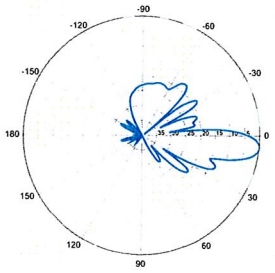
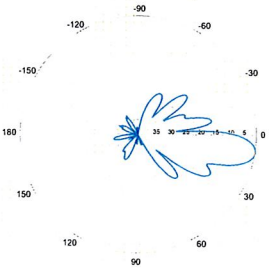


6° | Vertical | 750 MHz

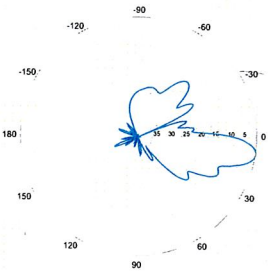


6° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-8



8° | Vertical | 750 MHz



8° | Vertical | 850 MHz

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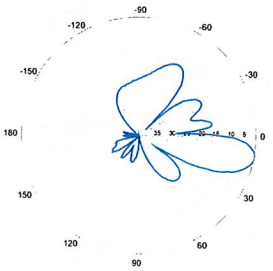
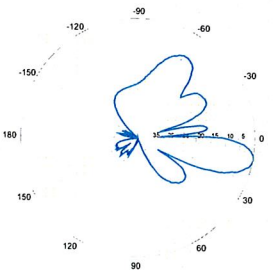


10° | Vertical | 750 MHz



10° | Vertical | 850 MHz

Product Data Sheet **FD9R6004/2C-3L**

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.

Features/Benefits

- **LTE ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **Very compact & small size design – Easy installation and reduced tower load**
- **In-line long-neck connectors for easy connection & waterproofing**
- **Exceptional reliability & environmental protection (IP 67)**
- **Equipped with 1 * Breathable Vent – Prevent any humidity inside the product**
- **Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)**
- **Grounding already provided through the mounting bracket**
- **Kit available for easy dual mount**

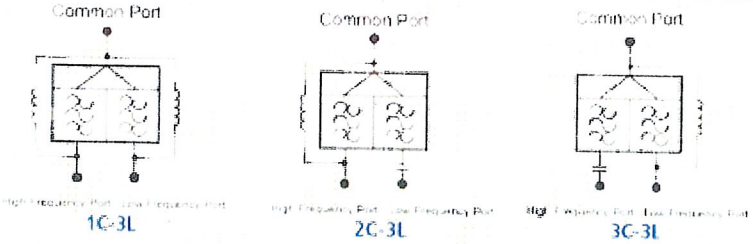
Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Frequency Band, MHz	698-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Frequency Range Low Frequency Path, MHz	698-960
Frequency Range High Frequency Path, MHz	1710-2200
Return Loss All Ports Min/Typ, dB	19/23
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss 698-960 MHz Path, Typ, dB	0.07
Insertion Loss 1710-2200MHz path, Typ, dB	0.13
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 60/70@1710-2200MHz
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Application	LTE 700MHz, GSM900/3G/UMTS, GSM900/GSM1800, Cellular 800/PCS
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

Notes

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Selection Guide Diplexer 698-960 / 1710-2200MHz					
	Model Number	Full DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single	FD9R6004/1C-3L				X
	FD9R6004/2C-3L				X
	FD9R6004/3C-3L				X
Dual	KIT-FD9R6004/1C-DL				X
	KIT-FD9R6004/2C-DL				X
	KIT-FD9R6004/3C-DL				X



1C-3L 2C-3L 3C-3L

The FD9R6004 Series is upgradeable to a Dual Diplexer kit by means of 2 diplexers and mounting hardware kits SEM2-1A and SEM2-3

Mounting Hardware and Ground Cable Ordering Information		
Model Number	**Description**	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FT9DW/xC-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 2m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	

	General	Power	Density					
Site Name: Wolcott								
Tower Height: Verizon @ 177Ft.								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Cingular UMTS	1	500	158	0.0072	880	0.5867	1.23%	
*Cingular GSM	8	296	158	0.0341	880	0.5867	5.81%	
*Cingular GSM	2	427	158	0.0123	1900	1.0000	1.23%	
*Clearwire	2	153	168	0.0039	2496	1.0000	0.39%	
*Clearwire	1	211	168	0.0027	11 GHz	1.0000	0.27%	
*Pocket	3	631	148	0.0311	2130	1.0000	3.11%	
*T-Mobile GSM	8	138	188	0.0112	1945	1.0000	1.12%	
*T-Mobile UMTS	2	599	188	0.0122	2100	1.0000	1.22%	
Verizon	**3**	**337**	**177**	**0.0116**	**1970**	**1.0000**	**1.16%**	
Verizon	**9**	**368**	**177**	**0.0380**	**869**	**0.5793**	**6.56%**	
Verizon	**1**	**640**	**177**	**0.00734535**	**757**	**0.497333**	**1.48%**	**23.58%**
* Source: Siting Council								

Date: **January 03, 2011**

Veronica Harris
Crown Castle
1200 McArthur Blvd
Mahwah, NJ 07430

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

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate Carrier Site Name:**	Wolcott, CT
Crown Castle Designation:	**Crown Castle BU Number:**	806362
	Crown Castle Site Name:	NHV 108 943133
	Crown Castle JDE Job Number:	147623
	Crown Castle Work Order Number:	378497
Engineering Firm Designation:	**Crown Castle Project Number:**	378497

Site Data: **Intersection of Rte 322/Meridian Rd Wolcott Site, Wolcott, New Haven County, CT**
Latitude *41° 33' 34.41"*, Longitude *-72° 56' 49.1"*
180 Foot - Self Support Tower

Dear Veronica Harris,

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 378497, in accordance with application 113985, revision 2.

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:

LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

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

We at *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: Michael De Jong, E.I.T.

Respectfully submitted by:

Aaron C. Poot, P.E.
Engineering Supervisor

STATE OF CONNECTICUT
AARON C. POOT
No. 25050
LICENSED
PROFESSIONAL ENGINEER

RISA Tower Report - version 5.4.2.0

1/3/11

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft Self Support tower designed by ROHN in September of 1986. The tower was originally designed for EIA Zone C with 1" radial ice. The foundation was reinforced by All Points Technology Corp in 2002.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177	177	2	andrew	DB846F65ZAXY w/ Mount Pipe	-	-	-
		1	antel	BXA-185063/12CFx2 w/ Mount Pipe			
		3	antel	BXA-70063/6CFx4 w/ Mount Pipe			
		2	antel	LPA-80063/6CFx5 w/ Mount Pipe			
		2	rfs celwave	APX18-206516L-CT0 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		2	swedcom	SC-E 6014 rev2 w/ Mount Pipe			
112	113	1	andrew	UHX6-59-D3A			
	112	1	tower mounts	Pipe Mount [PM 501-1]			
70	72	1	andrew	UHX10-59-D3A	-	-	-

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
180	188	3	andrew	TMZXXX-6516-R2M w/ Mount Pipe	18	1-5/8	1
		3	rfs celwave	ATMAA1412D-1A20			
	180	3	rfs celwave	ATMPP1412D-1CWA			
		1	tower mounts	Flag Pole Mount [CO201-1]			
177	179	2	antel	LPA-80063/8CF w/ Mount Pipe	12	1-5/8	3
		4	antel	LPD-4019 w/ Mount Pipe			
		6	decibel	DB948F65T2E-M 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
	177	1	tower mounts	Sector Mount [SM 502-3]	-	-	1
168	168	3	argus technologies	LLPX310R w/ Mount Pipe	6 3	5/16 1/2	2
		3	dragonwave	A-ANT-18G-2-C			
		3	samsung telecommunications	FDD_R6_RRH			
158	158	1	tower mounts	Sector Mount [SM 411-3]	12	1-1/4	1
		6	adc	DUAL BAND 800/1900 FULL BAND MASTHEAD			
		6	css	DUO1417-8686 w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
148	148	1	tower mounts	Sector Mount [SM 502-3]	6	1-5/8	1
		3	rfs celwave	APXV18-206517S-C w/ Mount Pipe			
112	112	1	andrew	HP8-59E	1	EW107	3
		1	tower mounts	Pipe Mount [PM 501-1]			
70	70	1	andrew	HP10-59E	1	EW107	3
		1	tower mounts	Pipe Mount [PM 501-1]	-	-	1
40	40	1	gps	GPS_A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 201-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed, feedlines to be reused with proposed equipment

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)
180	180	4	Rfs Celwave	PD10017	-	-
170	170	3	Rfs Celwave	PD1132D	-	-
160	160	2	Generic	6' STD Dish	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering	2303630	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	ROHN	217670	CCISITES
4-TOWER MANUFACTURER DRAWINGS	ROHN	529684	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	All Points Technology Corp.	903539	CCISITES

3.1) Analysis Method

RISATower (version 5.4.2.0), 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.
5) Since uplift is controlling the foundation design, the concrete collar can conservatively be neglected for the foundation analysis.

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
T1	180 - 160	Leg	ROHN 2.5 STD	1	-11	41	26.4	Pass
T2	160 - 140	Leg	ROHN 3 X-STR	40	-38	84	44.9	Pass
T3	140 - 120	Leg	ROHN 4 X-STR	79	-65	139	46.5	Pass
T4	120 - 100	Leg	ROHN 5 X-STR	118	-85	177	48.2	Pass
T5	100 - 80	Leg	ROHN 5 X-STR	145	-110	177	61.8	Pass
T6	80 - 60	Leg	ROHN 6 EHS	172	-132	212	62.1	Pass
T7	60 - 40	Leg	ROHN 6 X-STR	199	-156	264	59.0	Pass
T8	40 - 20	Leg	ROHN 6 X-STR	226	-179	264	67.6	Pass
T9	20 - 0	Leg	ROHN 8 EHS	253	-211	333	63.5	Pass
T1	180 - 160	Diagonal	ROHN 2 STD	12	-6	16	38.3	Pass
T2	160 - 140	Diagonal	ROHN 2 STD	48	-7	13	54.4	Pass
T3	140 - 120	Diagonal	ROHN 2 STD	84	-7	12	61.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T4	120 - 100	Diagonal	ROHN 2.5 STD	126	-10	14	67.9	Pass
T5	100 - 80	Diagonal	ROHN 2.5 STD	153	-9	13	69.7	Pass
T6	80 - 60	Diagonal	ROHN 2.5 STD	179	-11	11	95.2	Pass
T7	60 - 40	Diagonal	ROHN 2.5 X-STR	207	-11	12	85.4	Pass
T8	40 - 20	Diagonal	ROHN 3 STD	234	-10	17	60.6	Pass
T9	20 - 0	Diagonal	ROHN 3 STD	267	-16	28	55.1	Pass
T1	180 - 160	Horizontal	ROHN 1.5 STD	10	-3	20	16.0 18.8 (b)	Pass
T2	160 - 140	Horizontal	ROHN 1.5 STD	46	-4	17	25.9 26.2 (b)	Pass
T3	140 - 120	Horizontal	ROHN 2 STD	82	-5	25	19.6 28.1 (b)	Pass
T4	120 - 100	Horizontal	ROHN 2 STD	124	-6	20	28.1 34.2 (b)	Pass
T5	100 - 80	Horizontal	ROHN 2 STD	151	-6	15	38.6	Pass
T6	80 - 60	Horizontal	ROHN 2.5 STD	178	-7	25	29.5 44.0 (b)	Pass
T7	60 - 40	Horizontal	ROHN 2.5 STD	205	-8	20	38.8 45.0 (b)	Pass
T8	40 - 20	Horizontal	ROHN 2.5 STD	232	-8	16	49.3	Pass
T9	20 - 0	Horizontal	ROHN 3 STD	263	-8	28	30.9 34.3 (b)	Pass
T1	180 - 160	Top Girt	ROHN 1.5 STD	5	-2	20	7.5	Pass
T9	20 - 0	Redund Horz 1 Bracing	ROHN TS 1.5 x 11Ga	277	-4	5	74.9	Pass
T9	20 - 0	Redund Diag 1 Bracing	ROHN 1.5 STD	259	-3	4	92.8	Pass
T9	20 - 0	Redund Hip 1 Bracing	ROHN TS 1.5 x 11Ga	270	0	4	1.0	Pass
T9	20 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	282	0	7	0.7	Pass
T1	180 - 160	Inner Bracing	L2x2x1/8	37	0	6	0.5	Pass
T2	160 - 140	Inner Bracing	L2x2x1/8	53	0	4	0.3	Pass
T3	140 - 120	Inner Bracing	L2x2x1/8	91	0	3	0.4	Pass
T4	120 - 100	Inner Bracing	L2x2x1/8	130	0	2	0.4	Pass
T5	100 - 80	Inner Bracing	L2 1/2x2 1/2x3/16	158	0	3	0.5	Pass
T6	80 - 60	Inner Bracing	L3x3x3/16	184	0	5	0.5	Pass
T7	60 - 40	Inner Bracing	L3 1/2x3 1/2x1/4	212	0	7	0.5	Pass
T8	40 - 20	Inner Bracing	L3 1/2x3 1/2x1/4	238	0	6	0.5	Pass
T9	20 - 0	Inner Bracing	ROHN 3 STD	285	0	20	0.4	Pass
							Summary	
						Leg (T8)	67.6	Pass
						Diagonal (T6)	95.2	Pass
						Horizontal (T8)	49.3	Pass
						Top Girt (T1)	7.5	Pass
						Redund Horz 1	74.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Bracing (T9)		
						Redund Diag 1 Bracing (T9)	92.8	Pass
						Redund Hip 1 Bracing (T9)	1.0	Pass
						Redund Hip Diagonal Bracing (T9)	0.7	Pass
						Inner Bracing (T8)	0.5	Pass
						Bolt Checks	53.6	Pass
						Rating =	95.2	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	Anchor Rods	0	53.6	Pass
1	Base Foundation Soil Interaction	0	71.2	Pass

Structure Rating (max from all components) =	95.2%

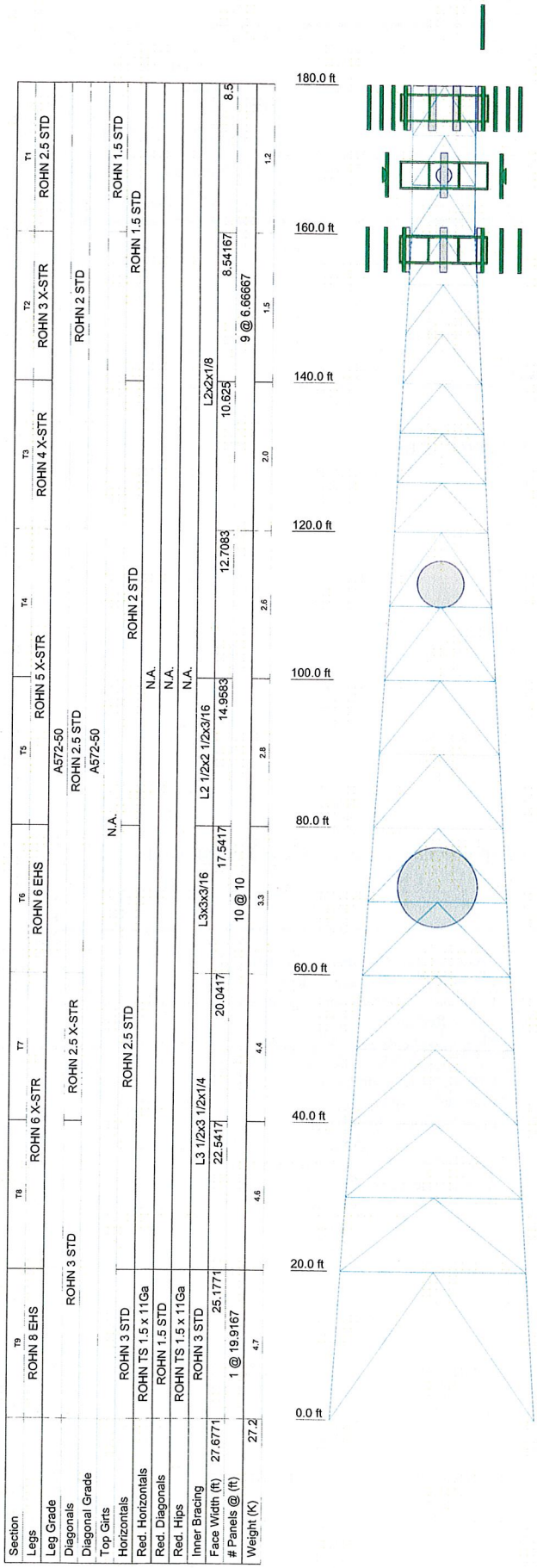
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

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

RISA TOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
TMZXXX-6516-R2M w/ Mount Pipe	180	A-ANT-18G-2-C	168
TMZXXX-6516-R2M w/ Mount Pipe	180	A-ANT-18G-2-C	168
TMZXXX-6516-R2M w/ Mount Pipe	180	A-ANT-18G-2-C	168
ATMAA1412D-1A20	180	(2) LGP13519	158
ATMAA1412D-1A20	180	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	158
ATMAA1412D-1A20	180	(2) DUO1417-8686 w/ Mount Pipe	158
ATMPP1412D-1CWA	180	7770.00 w/ Mount Pipe	158
ATMPP1412D-1CWA	180	(2) LGP13519	158
ATMPP1412D-1CWA	180	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	158
Flag Pole Mount [CO201-1]	180	(2) DUO1417-8686 w/ Mount Pipe	158
8'x2 1/2" Pipe Mount	180	7770.00 w/ Mount Pipe	158
(2) DB846F65ZAXY w/ Mount Pipe	177	(2) LGP13519	158
BXA-185063/12CFx2 w/ Mount Pipe	177	Sector Mount [SM 502-3]	158
BXA-70063/6CFx4 w/ Mount Pipe	177	4' x 2" Pipe Mount	158
(2) FD9R6004/2C-3L	177	4' x 2" Pipe Mount	158
BXA-70063/6CFx4 w/ Mount Pipe	177	4' x 2" Pipe Mount	158
(2) LPA-80063/6CFx5 w/ Mount Pipe	177	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	158
APX18-206516L-CT0 w/ Mount Pipe	177	(2) DUO1417-8686 w/ Mount Pipe	158
(2) FD9R6004/2C-3L	177	7770.00 w/ Mount Pipe	158
BXA-70063/6CFx4 w/ Mount Pipe	177	APXV18-206517S-C w/ Mount Pipe	148
APX18-206516L-CT0 w/ Mount Pipe	177	APXV18-206517S-C w/ Mount Pipe	148
(2) FD9R6004/2C-3L	177	APXV18-206517S-C w/ Mount Pipe	148
(2) SC-E 6014 rev2 w/ Mount Pipe	177	Pipe Mount [PM 501-1]	112
Sector Mount [SM 502-3]	177	UHX6-59-D3A	112
LLPX310R w/ Mount Pipe	168	Pipe Mount [PM 501-1]	70
FDD_R6_RRH	168	UHX10-59-D3A	70
LLPX310R w/ Mount Pipe	168	Side Arm Mount [SO 201-1]	40
FDD_R6_RRH	168	GPS_A	40
LLPX310R w/ Mount Pipe	168		
FDD_R6_RRH	168		
Sector Mount [SM 411-3]	168		

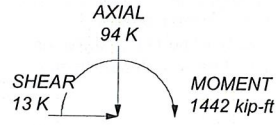
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

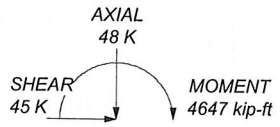
TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.6 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 95.2%

MAX. CORNER REACTIONS AT BASE:
DOWN: 210 K
UPLIFT: -177 K
SHEAR: 27 K



TORQUE 9 kip-ft
37.6 mph WIND - 0.750 in ICE



TORQUE 41 kip-ft
REACTIONS - 85.0 mph WIND

CROWN CASTLE
Shaping the Wireless World
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2254

Job: **BU# 806362**			
Project:			
Client: Crown Castle	Drawn by: MDeJong		App'd:
Code: TIA/EIA-222-F	Date: 12/29/10		Scale: NTS
Path: R:\SA Models - Letters\Work Area\MDeJong\806362\806362.eri			Dwg No. E-1

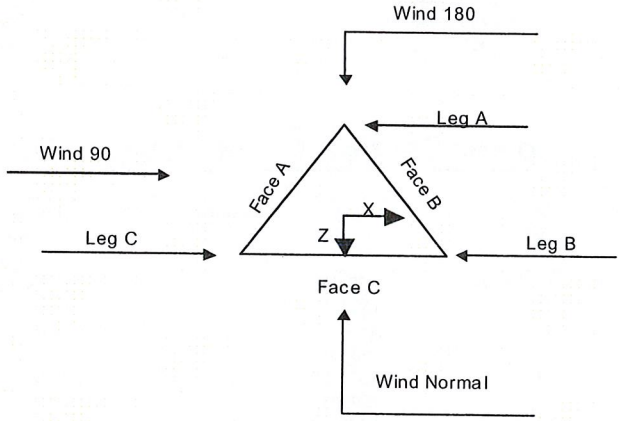
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 8'6" at the top and 27'8-1/8" at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85.0 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 37.6 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180'-160'		B054	8'6"	1	20'
T2	160'-140'		C039	8'6-15/32"	1	20'
T3	140'-120'		D061	10'7-9/16"	1	20'
T4	120'-100'		E075	12'8-17/32"	1	20'
T5	100'-80'		F023	14'11-17/32"	1	20'
T6	80'-60'		G043	17'6-15/32"	1	20'
T7	60'-40'		H014	20'15/32"	1	20'
T8	40'-20'		J021	22'6-15/32"	1	20'
T9	20'-0'		K029	25'2-5/32"	1	20'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180'-160'	6'8-1/32"	K Brace Down	No	Yes	0.000	0.000
T2	160'-140'	6'8-1/32"	K Brace Down	No	Yes	0.000	0.000
T3	140'-120'	6'8-1/32"	K Brace Down	No	Yes	0.000	0.000
T4	120'-100'	10'	K Brace Down	No	Yes	0.000	0.000
T5	100'-80'	10'	K Brace Down	No	Yes	0.000	0.000
T6	80'-60'	10'	K Brace Down	No	Yes	0.000	0.000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T7	60'-40'	10'	K Brace Down	No	Yes	0.000	0.000
T8	40'-20'	10'	K Brace Down	No	Yes	0.000	0.000
T9	20'-0'	19'11-1/32"	K1 Down	No	Yes	0.000	1.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180'-160'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 160'-140'	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 140'-120'	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120'-100'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T5 100'-80'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T6 80'-60'	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60'-40'	Pipe	ROHN 6 X-STR	A572-50 (50 ksi)	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)
T8 40'-20'	Pipe	ROHN 6 X-STR	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 20'-0'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180'-160'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 160'-140'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 140'-120'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120'-100'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 100'-80'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 80'-60'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60'-40'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T8 40'-20'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 20'-0'	None	Pipe		A618-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180'-160'	Pipe		A618-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 160'-140'	Pipe		A618-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 140'-120'	Pipe		A618-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 120'-100'	Pipe		A618-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 100'-80'	Pipe		A618-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80'-60'	Pipe		A618-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T7 60'-40'	Pipe		A618-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 40'-20'	Pipe		A618-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20'-0'	Pipe		A618-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T9 20'-0'	A572-50 (50 ksi)	Horizontal (1)	Pipe	ROHN TS 1.5 x 11Ga	1
		Diagonal (1)	Pipe	ROHN 1.5 STD	1
		Hip (1)	Pipe	ROHN TS 1.5 x 11Ga	1
		Hip Diagonal		ROHN 2.5 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 180'-160'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000
T2 160'-140'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	6.000	6.000
T3 140'-120'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000
T4 120'-100'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T5 100'-80'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000
T6 80'-60'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000
T7 60'-40'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000
T8 40'-20'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000
T9 20'-0'	0.00	0.000	A36 (36 ksi)	1	1.025	1.05	36.000	36.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 180'-160'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 160'-140'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 140'-120'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 120'-100'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 100'-80'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 80'-60'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 60'-40'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 40'-20'	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 20'-0'	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180'-160'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T2 160'-140'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T3 140'-120'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T4 120'-100'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T5 100'-80'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T6 80'-60'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 60'-40'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T8 40'-20'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 20'-0'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180'-160'	Flange	0.750 A325N	4	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T2 160'-140'	Flange	0.875 A325N	4	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T3 140'-120'	Flange	1.000 A325N	4	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T4 120'-100'	Flange	1.000 A325N	4	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T5 100'-80'	Flange	1.000 A325N	6	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T6 80'-60'	Flange	1.000 A325N	6	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T7 60'-40'	Flange	1.000 A325N	6	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T8 40'-20'	Flange	1.000 A325N	8	0.625 A325X	3	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T9 20'-0'	Flange	1.000 A449	8	0.750 A325X	3	0.000 A325N	0	0.000 A325N	0	0.750 A325N	0	0.750 A325N	2	0.625 A325N	1

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HJ7-50A(1-5/8")	C	Yes	Ar (CfAe)	180' - 158'	-3.000	-0.38	18	12	0.750	1.980		1.04
Feedline Ladder (Af) *	C	Yes	Af (CfAe)	180' - 5'	-1.000	-0.38	1	1	3.000	3.000	12.000	8.40
LDF7-50A(1-5/8")	A	Yes	Ar (CfAe)	177' - 5'	0.000	-0.4	12	2	1.980 0.500	1.980		0.82
T-Brackets (Af)	A	Yes	Af (CfAe)	177' - 5'	6.000	-0.4	1	1	1.000	1.000	4.000	8.40

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
*												
7983A(1/2")	A	Yes	Ar (CfAe)	168' - 5'	0.000	-0.43	3	3	0.580	0.580		0.08
9207(5/16")	A	Yes	Ar (CfAe)	168' - 5'	0.000	-0.45	6	6	0.330	0.330		0.60
*												
HJ7-50A(1-5/8")	C	Yes	Ar (CfAe)	158' - 5'	-3.000	-0.4	30	12	0.750	1.980		1.04
Feedline Ladder (Af)	C	Yes	Af (CfAe)	158' - 5'	0.000	-0.4	1	1	3.000	3.000	12.000	8.40
*												
LCF158-50JL(1-5/8")	A	Yes	Ar (CfAe)	148' - 5'	0.000	0.4	6	3	0.750	1.980		0.52
Feedline Ladder (Af)	A	Yes	Af (CfAe)	168' - 5'	0.000	0.4	1	1	3.000	3.000	12.000	8.40
*												
EW107(ELLIPTICAL)	C	Yes	Ar (CfAe)	112' - 70'	-1.000	-0.46	1	1	1.170	1.170		0.29
EW107(ELLIPTICAL)	C	Yes	Ar (CfAe)	70' - 5'	-1.000	-0.46	2	2	1.170	1.170		0.29
*												
LDF4-50A(1/2")	C	Yes	Ar (CfAe)	40' - 5'	-1.000	-0.48	1	1	0.630	0.630		0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180'-160'	A	8.090	3.417	0.000	0.000	0
		B	0.000	0.000	0.000	0.000	0
		C	39.600	5.000	0.000	0.000	1
T2	160'-140'	A	16.760	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	39.600	9.500	0.000	0.000	1
T3	140'-120'	A	22.700	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	39.600	10.000	0.000	0.000	1
T4	120'-100'	A	22.700	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	40.770	10.000	0.000	0.000	1
T5	100'-80'	A	22.700	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	41.550	10.000	0.000	0.000	1
T6	80'-60'	A	22.700	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	42.525	10.000	0.000	0.000	1
T7	60'-40'	A	22.700	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	43.500	10.000	0.000	0.000	1
T8	40'-20'	A	22.700	6.667	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	44.550	10.000	0.000	0.000	1
T9	20'-0'	A	17.025	5.000	0.000	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	33.413	7.500	0.000	0.000	1

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180'-160'	A	0.913	13.825	9.700	0.000	0.000	1
		B		0.000	0.000	0.000	0.000	0
		C		6.343	57.079	0.000	0.000	2
T2	160'-140'	A	0.899	22.628	23.671	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		6.298	63.348	0.000	0.000	2
T3	140'-120'	A	0.884	26.152	29.063	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		6.247	63.979	0.000	0.000	2
T4	120'-100'	A	0.867	25.860	28.985	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		9.092	63.901	0.000	0.000	3
T5	100'-80'	A	0.846	25.516	28.893	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		10.890	63.810	0.000	0.000	3
T6	80'-60'	A	0.821	25.097	28.781	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		10.722	65.648	0.000	0.000	3
T7	60'-40'	A	0.788	24.556	28.637	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		10.506	67.454	0.000	0.000	2
T8	40'-20'	A	0.750	23.917	28.467	0.000	0.000	2
		B		0.000	0.000	0.000	0.000	0
		C		13.800	67.283	0.000	0.000	2
T9	20'-0'	A	0.750	17.938	21.350	0.000	0.000	1
		B		0.000	0.000	0.000	0.000	0
		C		10.350	50.462	0.000	0.000	2

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180'-160'	A	0.907	3.571	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.517	9.281	0.000	0.000
T2	160'-140'	A	1.723	6.460	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.611	9.569	0.000	0.000
T3	140'-120'	A	2.176	7.391	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.675	9.331	0.000	0.000
T4	120'-100'	A	1.786	5.677	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.088	7.492	0.000	0.000
T5	100'-80'	A	1.672	5.229	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	2.935	7.114	0.000	0.000
T6	80'-60'	A	1.714	5.107	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.066	7.170	0.000	0.000
T7	60'-40'	A	1.656	4.798	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.017	6.961	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
T8	40'-20'	A	1.809	4.877	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.361	7.467	0.000	0.000
T9	20'-0'	A	1.373	3.989	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	2.551	6.107	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180'-160'	9.368	9.707	5.587	7.339
T2	160'-140'	8.640	8.733	5.162	7.248
T3	140'-120'	8.938	7.145	5.666	6.921
T4	120'-100'	10.588	8.409	7.532	8.726
T5	100'-80'	12.477	9.882	9.224	10.358
T6	80'-60'	13.448	10.597	9.716	10.957
T7	60'-40'	15.275	11.977	10.651	12.013
T8	40'-20'	16.394	12.766	12.656	13.430
T9	20'-0'	13.184	10.280	10.271	10.900

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	K
TMZXXX-6516-R2M w/ Mount Pipe	B	From Leg	1.00 0' 8'	0.000	180'	No Ice	10.10	3.33	0
						1/2" Ice	10.63	4.01	0
						1" Ice	11.17	4.66	0
						2" Ice	12.28	6.01	0
						4" Ice	14.61	9.00	1
TMZXXX-6516-R2M w/ Mount Pipe	B	From Leg	1.00 0' 8'	90.000	180'	No Ice	10.10	3.33	0
						1/2" Ice	10.63	4.01	0
						1" Ice	11.17	4.66	0
						2" Ice	12.28	6.01	0
						4" Ice	14.61	9.00	1
TMZXXX-6516-R2M w/ Mount Pipe	B	From Leg	1.00 0' 8'	-90.000	180'	No Ice	10.10	3.33	0
						1/2" Ice	10.63	4.01	0
						1" Ice	11.17	4.66	0
						2" Ice	12.28	6.01	0
						4" Ice	14.61	9.00	1
ATMAA1412D-1A20	B	From Leg	1.00 0' 0'	0.000	180'	No Ice	1.17	0.47	0
						1/2" Ice	1.31	0.57	0
						1" Ice	1.47	0.69	0
						2" Ice	1.81	0.95	0
						4" Ice	2.58	1.57	0
ATMAA1412D-1A20	B	From Leg	1.00	90.000	180'	No Ice	1.17	0.47	0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0' 0'			1/2" Ice	1.31	0.57	0
						1" Ice	1.47	0.69	0
						2" Ice	1.81	0.95	0
						4" Ice	2.58	1.57	0
ATMAA1412D-1A20	B	From Leg	1.00 0' 0'	-90.000	180'	No Ice	1.17	0.47	0
						1/2" Ice	1.31	0.57	0
						1" Ice	1.47	0.69	0
						2" Ice	1.81	0.95	0
						4" Ice	2.58	1.57	0
ATMPP1412D-1CWA	B	From Leg	1.00 0' 0'	0.000	180'	No Ice	1.17	0.42	0
						1/2" Ice	1.32	0.53	0
						1" Ice	1.48	0.65	0
						2" Ice	1.82	0.92	0
						4" Ice	2.61	1.57	0
ATMPP1412D-1CWA	B	From Leg	1.00 0' 0'	90.000	180'	No Ice	1.17	0.42	0
						1/2" Ice	1.32	0.53	0
						1" Ice	1.48	0.65	0
						2" Ice	1.82	0.92	0
						4" Ice	2.61	1.57	0
ATMPP1412D-1CWA	B	From Leg	1.00 0' 0'	-90.000	180'	No Ice	1.17	0.42	0
						1/2" Ice	1.32	0.53	0
						1" Ice	1.48	0.65	0
						2" Ice	1.82	0.92	0
						4" Ice	2.61	1.57	0
Flag Pole Mount [CO201-1]	B	From Leg	0.00 0' 0'	0.000	180'	No Ice	0.00	0.00	0
						1/2" Ice	0.00	0.00	0
						1" Ice	0.00	0.00	0
						2" Ice	0.00	0.00	0
						4" Ice	0.00	0.00	0
8'x2 1/2" Pipe Mount	B	From Leg	0.00 0' 0'	0.000	180'	No Ice	2.30	2.30	0
						1/2" Ice	3.13	3.13	0
						1" Ice	3.62	3.62	0
						2" Ice	4.62	4.62	0
						4" Ice	6.73	6.73	0
*									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.000	177'	No Ice	7.27	7.82	0
						1/2" Ice	7.88	9.01	0
						1" Ice	8.48	9.91	0
						2" Ice	9.72	11.81	0
						4" Ice	12.33	15.98	1
BXA-185063/12CFx2 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.000	177'	No Ice	5.01	4.73	0
						1/2" Ice	5.56	5.90	0
						1" Ice	6.08	6.79	0
						2" Ice	7.15	8.58	0
						4" Ice	9.41	12.36	1
BXA-70063/6CFx4 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.000	177'	No Ice	7.97	5.40	0
						1/2" Ice	8.61	6.55	0
						1" Ice	9.22	7.41	0
						2" Ice	10.46	9.18	0
						4" Ice	13.07	12.93	1
(2) FD9R6004/2C-3L	A	From Leg	4.00 0' 0'	0.000	177'	No Ice	0.37	0.08	0
						1/2" Ice	0.45	0.14	0
						1" Ice	0.54	0.20	0
						2" Ice	0.75	0.34	0
						4" Ice	1.28	0.74	0
BXA-70063/6CFx4 w/ Mount Pipe	B	From Leg	4.00 0'	0.000	177'	No Ice	7.97	5.40	0
						1/2" Ice	8.61	6.55	0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	9.22	7.41	0
						2" Ice	10.46	9.18	0
						4" Ice	13.07	12.93	1
(2) LPA-80063/6CFx5 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.55 11.21 11.84 13.13 15.83	10.65 11.91 12.88 14.89 19.13	0 0 0 0 1
APX18-206516L-CT0 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.74 4.16 4.59 5.54 7.57	3.29 4.00 4.66 6.04 9.02	0 0 0 0 1
(2) FD9R6004/2C-3L	B	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0 0 0 0 0
BXA-70063/6CFx4 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0 0 0 0 1
APX18-206516L-CT0 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.74 4.16 4.59 5.54 7.57	3.29 4.00 4.66 6.04 9.02	0 0 0 0 1
(2) FD9R6004/2C-3L	C	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	0 0 0 0 0
(2) SC-E 6014 rev2 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.78 4.18 4.59 5.44 7.29	4.40 5.01 5.64 6.96 9.90	0 0 0 0 1
Sector Mount [SM 502-3]	C	None		0.000	177'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	33.02 47.36 61.70 90.38 147.74	33.02 47.36 61.70 90.38 147.74	2 2 3 4 6
*									
LLPX310R w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.000	168'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.07 5.48 5.91 6.79 8.70	2.98 3.53 4.09 5.31 8.13	0 0 0 0 1
FDD_R6_RRH	A	From Leg	4.00 0' 0'	0.000	168'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.79 1.97 2.16 2.57 3.49	0.78 0.92 1.07 1.39 2.14	0 0 0 0 0
LLPX310R w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.000	168'	No Ice 1/2" Ice 1" Ice	5.07 5.48 5.91	2.98 3.53 4.09	0 0 0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	6.79	5.31	0
						4" Ice	8.70	8.13	1
FDD_R6_RRH	B	From Leg	4.00 0'	0.000	168'	No Ice	1.79	0.78	0
			0'			1/2" Ice	1.97	0.92	0
						1" Ice	2.16	1.07	0
						2" Ice	2.57	1.39	0
						4" Ice	3.49	2.14	0
LLPX310R w/ Mount Pipe	C	From Leg	4.00 0'	0.000	168'	No Ice	5.07	2.98	0
			0'			1/2" Ice	5.48	3.53	0
						1" Ice	5.91	4.09	0
						2" Ice	6.79	5.31	0
						4" Ice	8.70	8.13	1
FDD_R6_RRH	C	From Leg	4.00 0'	0.000	168'	No Ice	1.79	0.78	0
			0'			1/2" Ice	1.97	0.92	0
						1" Ice	2.16	1.07	0
						2" Ice	2.57	1.39	0
						4" Ice	3.49	2.14	0
Sector Mount [SM 411-3]	C	None		0.000	168'	No Ice	21.88	21.88	1
						1/2" Ice	30.68	30.68	1
						1" Ice	39.48	39.48	2
						2" Ice	57.08	57.08	3
						4" Ice	92.28	92.28	4
*									
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	A	From Leg	4.00 0'	0.000	158'	No Ice	1.55	0.81	0
			0'			1/2" Ice	1.72	0.94	0
						1" Ice	1.90	1.09	0
						2" Ice	2.28	1.40	0
						4" Ice	3.14	2.12	0
(2) DUO1417-8686 w/ Mount Pipe	A	From Leg	4.00 0'	0.000	158'	No Ice	6.77	5.39	0
			0'			1/2" Ice	7.24	6.07	0
						1" Ice	7.72	6.76	0
						2" Ice	8.70	8.20	0
						4" Ice	10.81	11.35	1
7770.00 w/ Mount Pipe	A	From Leg	4.00 0'	0.000	158'	No Ice	6.12	4.25	0
			0'			1/2" Ice	6.63	5.01	0
						1" Ice	7.13	5.71	0
						2" Ice	8.16	7.16	0
						4" Ice	10.36	10.41	1
(2) LGP13519	A	From Leg	4.00 0'	0.000	158'	No Ice	0.34	0.21	0
			0'			1/2" Ice	0.42	0.28	0
						1" Ice	0.51	0.36	0
						2" Ice	0.73	0.55	0
						4" Ice	1.25	1.03	0
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	B	From Leg	4.00 0'	0.000	158'	No Ice	1.55	0.81	0
			0'			1/2" Ice	1.72	0.94	0
						1" Ice	1.90	1.09	0
						2" Ice	2.28	1.40	0
						4" Ice	3.14	2.12	0
(2) DUO1417-8686 w/ Mount Pipe	B	From Leg	4.00 0'	0.000	158'	No Ice	6.77	5.39	0
			0'			1/2" Ice	7.24	6.07	0
						1" Ice	7.72	6.76	0
						2" Ice	8.70	8.20	0
						4" Ice	10.81	11.35	1
7770.00 w/ Mount Pipe	B	From Leg	4.00 0'	0.000	158'	No Ice	6.12	4.25	0
			0'			1/2" Ice	6.63	5.01	0
						1" Ice	7.13	5.71	0
						2" Ice	8.16	7.16	0

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	10.36	10.41	1
(2) LGP13519	B	From Leg	4.00 0' 0'	0.000	158'	No Ice	0.34	0.21	0
						1/2" Ice	0.42	0.28	0
						1" Ice	0.51	0.36	0
						2" Ice	0.73	0.55	0
						4" Ice	1.25	1.03	0
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	C	From Leg	4.00 0' 0'	0.000	158'	No Ice	1.55	0.81	0
						1/2" Ice	1.72	0.94	0
						1" Ice	1.90	1.09	0
						2" Ice	2.28	1.40	0
						4" Ice	3.14	2.12	0
(2) DUO1417-8686 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	158'	No Ice	6.77	5.39	0
						1/2" Ice	7.24	6.07	0
						1" Ice	7.72	6.76	0
						2" Ice	8.70	8.20	0
						4" Ice	10.81	11.35	1
7770.00 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.000	158'	No Ice	6.12	4.25	0
						1/2" Ice	6.63	5.01	0
						1" Ice	7.13	5.71	0
						2" Ice	8.16	7.16	0
						4" Ice	10.36	10.41	1
(2) LGP13519	C	From Leg	4.00 0' 0'	0.000	158'	No Ice	0.34	0.21	0
						1/2" Ice	0.42	0.28	0
						1" Ice	0.51	0.36	0
						2" Ice	0.73	0.55	0
						4" Ice	1.25	1.03	0
Sector Mount [SM 502-3]	C	None		0.000	158'	No Ice	33.02	33.02	2
						1/2" Ice	47.36	47.36	2
						1" Ice	61.70	61.70	3
						2" Ice	90.38	90.38	4
						4" Ice	147.74	147.74	6
4' x 2" Pipe Mount	A	From Leg	4.00 0' 0'	0.000	158'	No Ice	0.79	0.79	0
						1/2" Ice	1.03	1.03	0
						1" Ice	1.28	1.28	0
						2" Ice	1.81	1.81	0
						4" Ice	3.11	3.11	0
4' x 2" Pipe Mount	B	From Leg	4.00 0' 0'	0.000	158'	No Ice	0.79	0.79	0
						1/2" Ice	1.03	1.03	0
						1" Ice	1.28	1.28	0
						2" Ice	1.81	1.81	0
						4" Ice	3.11	3.11	0
4' x 2" Pipe Mount	C	From Leg	4.00 0' 0'	0.000	158'	No Ice	0.79	0.79	0
						1/2" Ice	1.03	1.03	0
						1" Ice	1.28	1.28	0
						2" Ice	1.81	1.81	0
						4" Ice	3.11	3.11	0
*									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00 0' 0'	0.000	148'	No Ice	5.40	4.70	0
						1/2" Ice	5.96	5.86	0
						1" Ice	6.48	6.73	0
						2" Ice	7.55	8.51	0
						4" Ice	9.92	12.28	1
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00 0' 0'	0.000	148'	No Ice	5.40	4.70	0
						1/2" Ice	5.96	5.86	0
						1" Ice	6.48	6.73	0
						2" Ice	7.55	8.51	0
						4" Ice	9.92	12.28	1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	K
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00 0' 0'	0.000	148'	No Ice	5.40	4.70	0
						1/2" Ice	5.96	5.86	0
						1" Ice	6.48	6.73	0
						2" Ice	7.55	8.51	0
						4" Ice	9.92	12.28	1
*									
Pipe Mount [PM 501-1]	A	From Leg	0.50 0' 0'	0.000	112'	No Ice	3.47	1.67	0
						1/2" Ice	4.45	2.10	0
						1" Ice	5.43	2.53	0
						2" Ice	7.39	3.39	0
						4" Ice	11.31	5.11	0
*									
Pipe Mount [PM 501-1]	A	From Leg	0.50 0' 0'	0.000	70'	No Ice	3.47	1.67	0
						1/2" Ice	4.45	2.10	0
						1" Ice	5.43	2.53	0
						2" Ice	7.39	3.39	0
						4" Ice	11.31	5.11	0
*									
GPS_A	A	From Leg	2.00 0' 0'	0.000	40'	No Ice	0.30	0.30	0
						1/2" Ice	0.37	0.37	0
						1" Ice	0.46	0.46	0
						2" Ice	0.65	0.65	0
						4" Ice	1.15	1.15	0
Side Arm Mount [SO 201-1]	A	From Leg	1.00 0' 0'	0.000	40'	No Ice	2.96	2.11	0
						1/2" Ice	4.10	2.93	0
						1" Ice	5.24	3.75	0
						2" Ice	7.52	5.39	0
						4" Ice	12.08	8.67	0

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft ft	°	°	ft	ft		ft^2	K
A-ANT-18G-2-C	A	Paraboloid w/o Radome	From Leg	4.00 0' 0'	30.000		168'	2.17	No Ice	3.72	0
									1/2" Ice	4.01	0
									1" Ice	4.30	0
									2" Ice	4.88	0
									4" Ice	6.04	0
A-ANT-18G-2-C	B	Paraboloid w/o Radome	From Leg	4.00 0' 0'	30.000		168'	2.17	No Ice	3.72	0
									1/2" Ice	4.01	0
									1" Ice	4.30	0
									2" Ice	4.88	0
									4" Ice	6.04	0
A-ANT-18G-2-C	C	Paraboloid w/o Radome	From Leg	4.00 0' 0'	30.000		168'	2.17	No Ice	3.72	0
									1/2" Ice	4.01	0
									1" Ice	4.30	0
									2" Ice	4.88	0
									4" Ice	6.04	0

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
*											
UHX6-59-D3A	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 1'	90.000		112'	6.38	No Ice	31.92	0
									1/2" Ice	32.75	0
									1" Ice	33.60	0
									2" Ice	35.34	0
									4" Ice	38.94	1
*											
UHX10-59-D3A	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0' 2'	0.000		70'	10.88	No Ice	92.89	1
									1/2" Ice	94.31	1
									1" Ice	95.74	2
									2" Ice	98.60	3
									4" Ice	104.32	4

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
T1	180 - 160	Leg	Max Tension	8	8	0	0
			Max. Compression	10	-11	0	0
			Max. Mx	12	-1	2	0
			Max. My	9	-1	0	-2
			Max. Vy	10	1	0	0
			Max. Vx	9	1	0	0
		Diagonal	Max Tension	13	6	0	0
			Max. Compression	13	-6	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	13	3	0	0
			Max. Compression	2	-3	0	0
			Max. Mx	21	0	0	0
			Max. My	8	-1	0	0
			Max. Vy	21	0	0	0
			Max. Vx	8	0	0	0
		Top Girt	Max Tension	8	2	0	0
			Max. Compression	2	-2	0	0
			Max. Mx	17	0	0	0
			Max. My	4	0	0	0
			Max. Vy	17	0	0	0
			Max. Vx	2	0	0	0
		Inner Bracing	Max Tension	2	0	0	0
			Max. Compression	2	0	0	0
			Max. Mx	14	0	0	0
			Max. My	19	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	19	0	0	0
T2	160 - 140	Leg	Max Tension	8	31	0	0
			Max. Compression	10	-38	0	0
			Max. Mx	12	13	1	0
			Max. My	7	-3	0	1
			Max. Vy	12	-1	0	0
			Max. Vx	9	1	0	0
		Diagonal	Max Tension	13	7	0	0
			Max. Compression	13	-7	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	13	5	0	0
			Max. Compression	13	-4	0	0
			Max. Mx	21	0	0	0
			Max. My	2	0	0	0
			Max. Vy	21	0	0	0
			Max. Vx	2	0	0	0
		Inner Bracing	Max Tension	3	0	0	0
			Max. Compression	13	0	0	0
			Max. Mx	14	0	0	0
			Max. My	19	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	19	0	0	0
T3	140 - 120	Leg	Max Tension	8	55	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	10	-65	0	0
			Max. Mx	12	53	0	0
			Max. My	11	-3	0	-1
			Max. Vy	12	0	0	0
			Max. Vx	12	0	0	-1
		Diagonal	Max Tension	13	7	0	0
			Max. Compression	13	-7	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	5	5	0	0
			Max. Compression	5	-5	0	0
			Max. Mx	21	0	0	0
			Max. My	4	-1	0	0
			Max. Vy	21	0	0	0
			Max. Vx	4	0	0	0
		Inner Bracing	Max Tension	3	0	0	0
			Max. Compression	4	0	0	0
			Max. Mx	14	0	0	0
			Max. My	19	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	19	0	0	0
T4	120 - 100	Leg	Max Tension	8	73	-1	0
			Max. Compression	10	-85	0	0
			Max. Mx	12	71	-1	0
			Max. My	11	-4	0	1
			Max. Vy	12	0	-1	0
			Max. Vx	11	1	0	-1
		Diagonal	Max Tension	13	10	0	0
			Max. Compression	13	-10	0	0
			Max. Mx	20	2	0	0
			Max. My	8	-1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	8	0	0	0
		Horizontal	Max Tension	13	6	0	0
			Max. Compression	13	-6	0	0
			Max. Mx	21	0	0	0
			Max. My	10	0	0	0
			Max. Vy	21	0	0	0
			Max. Vx	10	0	0	0
		Inner Bracing	Max Tension	3	0	0	0
			Max. Compression	13	0	0	0
			Max. Mx	14	0	0	0
			Max. My	19	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	19	0	0	0
T5	100 - 80	Leg	Max Tension	8	93	0	0
			Max. Compression	10	-110	1	0
			Max. Mx	8	93	-1	0
			Max. My	9	-8	0	1
			Max. Vy	8	0	-1	0
			Max. Vx	9	0	0	1
		Diagonal	Max Tension	13	9	0	0
			Max. Compression	13	-9	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	13	6	0	0
			Max. Compression	13	-6	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	21	1	0	0
			Max. My	10	0	0	0
			Max. Vy	21	0	0	0
			Max. Vx	10	0	0	0
		Inner Bracing	Max Tension	3	0	0	0
			Max. Compression	13	0	0	0
			Max. Mx	14	0	0	0
			Max. My	10	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	10	0	0	0
T6	80 - 60	Leg	Max Tension	4	111	-1	0
			Max. Compression	10	-132	0	0
			Max. Mx	8	102	-1	0
			Max. My	5	-9	0	1
			Max. Vy	8	1	-1	0
			Max. Vx	5	-1	0	1
		Diagonal	Max Tension	7	10	0	0
			Max. Compression	7	-11	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	7	8	0	0
			Max. Compression	13	-7	0	0
			Max. Mx	21	1	0	0
			Max. My	8	-2	0	0
			Max. Vy	21	0	0	0
			Max. Vx	8	0	0	0
		Inner Bracing	Max Tension	1	0	0	0
			Max. Compression	7	0	0	0
			Max. Mx	14	0	0	0
			Max. My	6	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	10	0	0	0
T7	60 - 40	Leg	Max Tension	8	132	-1	0
			Max. Compression	10	-156	0	0
			Max. Mx	8	122	-1	0
			Max. My	9	-12	0	1
			Max. Vy	12	0	-1	0
			Max. Vx	3	0	0	-1
		Diagonal	Max Tension	13	10	0	0
			Max. Compression	13	-11	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	13	8	0	0
			Max. Compression	13	-8	0	0
			Max. Mx	21	1	0	0
			Max. My	8	-1	0	0
			Max. Vy	21	0	0	0
			Max. Vx	8	0	0	0
		Inner Bracing	Max Tension	1	0	0	0
			Max. Compression	25	0	0	0
			Max. Mx	14	0	0	0
			Max. My	10	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	10	0	0	0
T8	40 - 20	Leg	Max Tension	8	151	-1	0
			Max. Compression	10	-179	-1	0
			Max. Mx	6	-178	-1	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	9	-14	0	2
			Max. Vy	2	0	1	0
			Max. Vx	9	0	0	2
		Diagonal	Max Tension	13	10	0	0
			Max. Compression	13	-10	0	0
			Max. Mx	20	2	0	0
			Max. My	2	1	0	0
			Max. Vy	20	0	0	0
			Max. Vx	2	0	0	0
		Horizontal	Max Tension	13	8	0	0
			Max. Compression	13	-8	0	0
			Max. Mx	21	1	0	0
			Max. My	2	2	0	0
			Max. Vy	21	0	0	0
			Max. Vx	2	0	0	0
		Inner Bracing	Max Tension	1	0	0	0
			Max. Compression	25	0	0	0
			Max. Mx	14	0	0	0
			Max. My	10	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	10	0	0	0
T9	20 - 0	Leg	Max Tension	8	178	1	0
			Max. Compression	10	-211	0	0
			Max. Mx	10	-189	5	0
			Max. My	9	-16	0	2
			Max. Vy	2	-12	0	0
			Max. Vx	3	5	0	0
		Diagonal	Max Tension	13	15	0	0
			Max. Compression	13	-16	0	0
			Max. Mx	8	11	0	0
			Max. My	7	-15	0	0
			Max. Vy	21	0	0	0
			Max. Vx	7	0	0	0
		Horizontal	Max Tension	13	8	0	0
			Max. Compression	13	-8	0	0
			Max. Mx	21	-1	0	0
			Max. My	2	1	0	0
			Max. Vy	21	0	0	0
			Max. Vx	2	0	0	0
		Redund Horz 1 Bracing	Max Tension	10	4	0	0
			Max. Compression	10	-4	0	0
			Max. Mx	26	1	0	0
			Max. Vy	26	0	0	0
		Redund Diag 1 Bracing	Max Tension	10	3	0	0
			Max. Compression	10	-3	0	0
			Max. Mx	19	1	0	0
			Max. My	2	3	0	0
			Max. Vy	19	0	0	0
			Max. Vx	2	0	0	0
		Redund Hip 1 Bracing	Max Tension	1	0	0	0
			Max. Compression	13	0	0	0
			Max. Mx	14	0	0	0
			Max. Vy	14	0	0	0
		Redund Hip Diagonal Bracing	Max Tension	13	0	0	0
			Max. Compression	22	0	0	0
			Max. Mx	21	0	0	0
			Max. My	10	0	0	0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Inner Bracing	Max. Vy	21	0	0	0
			Max. Vx	10	0	0	0
			Max Tension	1	0	0	0
			Max. Compression	2	0	0	0
			Max. Mx	14	0	0	0
			Max. My	10	0	0	0
			Max. Vy	14	0	0	0
			Max. Vx	10	0	0	0

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	210	23	-13
	Max. H_x	10	210	23	-13
	Max. H_z	4	-173	-20	11
	Min. Vert	4	-173	-20	11
	Min. H_x	4	-173	-20	11
	Min. H_z	10	210	23	-13
Leg B	Max. Vert	6	209	-23	-14
	Max. H_x	12	-171	20	12
	Max. H_z	13	-147	16	13
	Min. Vert	12	-171	20	12
	Min. H_x	6	209	-23	-14
	Min. H_z	7	182	-19	-14
Leg A	Max. Vert	2	209	1	27
	Max. H_x	11	15	4	1
	Max. H_z	2	209	1	27
	Min. Vert	8	-177	-1	-24
	Min. H_x	5	17	-4	2
	Min. H_z	8	-177	-1	-24

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	48	0	0	23	-23	0
Dead+Wind 0 deg - No Ice	48	0	-45	-4619	-39	41
Dead+Wind 30 deg - No Ice	48	22	-38	-3961	-2302	37
Dead+Wind 60 deg - No Ice	48	37	-22	-2276	-3922	20
Dead+Wind 90 deg - No Ice	48	43	0	-16	-4544	-2
Dead+Wind 120 deg - No Ice	48	38	23	2375	-3969	-15
Dead+Wind 150 deg - No Ice	48	22	39	4031	-2278	-32
Dead+Wind 180 deg - No Ice	48	0	44	4617	1	-41
Dead+Wind 210 deg - No Ice	48	-22	39	4038	2287	-34
Dead+Wind 240 deg - No Ice	48	-38	24	2443	3953	-23
Dead+Wind 270 deg - No Ice	48	-44	0	24	4530	5
Dead+Wind 300 deg - No Ice	48	-37	-22	-2276	3866	22
Dead+Wind 330 deg - No Ice	48	-22	-38	-3927	2242	36
Dead+Ice+Temp	94	0	0	70	-53	0
Dead+Wind 0 deg+Ice+Temp	94	0	-13	-1300	-56	9

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+Wind 30 deg+Ice+Temp	94	6	-11	-1048	-695	9
Dead+Wind 60 deg+Ice+Temp	94	10	-6	-563	-1134	6
Dead+Wind 90 deg+Ice+Temp	94	12	0	62	-1328	2
Dead+Wind 120 deg+Ice+Temp	94	11	7	761	-1225	-1
Dead+Wind 150 deg+Ice+Temp	94	6	11	1193	-689	-6
Dead+Wind 180 deg+Ice+Temp	94	0	12	1337	-47	-8
Dead+Wind 210 deg+Ice+Temp	94	-6	11	1195	596	-8
Dead+Wind 240 deg+Ice+Temp	94	-11	7	776	1126	-7
Dead+Wind 270 deg+Ice+Temp	94	-12	0	71	1230	-1
Dead+Wind 300 deg+Ice+Temp	94	-10	-6	-563	1026	3
Dead+Wind 330 deg+Ice+Temp	94	-6	-11	-1041	586	7
Dead+Wind 0 deg - Service	48	0	-16	-1583	-29	14
Dead+Wind 30 deg - Service	48	7	-13	-1355	-812	13
Dead+Wind 60 deg - Service	48	13	-8	-772	-1373	7
Dead+Wind 90 deg - Service	48	15	0	10	-1588	-1
Dead+Wind 120 deg - Service	48	13	8	837	-1389	-5
Dead+Wind 150 deg - Service	48	7	13	1410	-804	-11
Dead+Wind 180 deg - Service	48	0	15	1613	-15	-14
Dead+Wind 210 deg - Service	48	-8	13	1413	776	-12
Dead+Wind 240 deg - Service	48	-13	8	861	1352	-8
Dead+Wind 270 deg - Service	48	-15	0	24	1552	2
Dead+Wind 300 deg - Service	48	-13	-8	-772	1322	8
Dead+Wind 330 deg - Service	48	-7	-13	-1344	760	12

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0	-48	0	0	48	0	0.000%
2	0	-48	-45	0	48	45	0.018%
3	22	-48	-38	-22	48	38	0.012%
4	37	-48	-22	-37	48	22	0.002%
5	43	-48	0	-43	48	0	0.013%
6	38	-48	23	-38	48	-23	0.018%
7	22	-48	39	-22	48	-39	0.013%
8	0	-48	44	0	48	-44	0.003%
9	-22	-48	39	22	48	-39	0.013%
10	-38	-48	24	38	48	-24	0.018%
11	-44	-48	0	44	48	0	0.013%
12	-37	-48	-22	37	48	22	0.002%
13	-22	-48	-38	22	48	38	0.013%
14	0	-94	0	0	94	0	0.000%
15	0	-94	-13	0	94	13	0.006%
16	6	-94	-11	-6	94	11	0.004%
17	10	-94	-6	-10	94	6	0.003%
18	12	-94	0	-12	94	0	0.005%
19	11	-94	7	-11	94	-7	0.007%
20	6	-94	11	-6	94	-11	0.005%
21	0	-94	12	0	94	-12	0.003%
22	-6	-94	11	6	94	-11	0.005%
23	-11	-94	7	11	94	-7	0.006%
24	-12	-94	0	12	94	0	0.005%
25	-10	-94	-6	10	94	6	0.003%
26	-6	-94	-11	6	94	11	0.004%
27	0	-48	-16	0	48	16	0.004%
28	7	-48	-13	-7	48	13	0.003%
29	13	-48	-8	-13	48	8	0.001%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
30	15	-48	0	-15	48	0	0.003%
31	13	-48	8	-13	48	-8	0.004%
32	7	-48	13	-7	48	-13	0.003%
33	0	-48	15	0	48	-15	0.001%
34	-8	-48	13	8	48	-13	0.003%
35	-13	-48	8	13	48	-8	0.004%
36	-15	-48	0	15	48	0	0.003%
37	-13	-48	-8	13	48	8	0.001%
38	-7	-48	-13	7	48	13	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00027930
3	Yes	4	0.00000001	0.00026439
4	Yes	4	0.00000001	0.00025094
5	Yes	4	0.00000001	0.00026435
6	Yes	4	0.00000001	0.00027912
7	Yes	4	0.00000001	0.00026532
8	Yes	4	0.00000001	0.00025022
9	Yes	4	0.00000001	0.00026381
10	Yes	4	0.00000001	0.00027984
11	Yes	4	0.00000001	0.00026502
12	Yes	4	0.00000001	0.00024961
13	Yes	4	0.00000001	0.00026455
14	Yes	4	0.00000001	0.00004533
15	Yes	4	0.00000001	0.00043669
16	Yes	4	0.00000001	0.00043344
17	Yes	4	0.00000001	0.00043604
18	Yes	4	0.00000001	0.00044899
19	Yes	4	0.00000001	0.00046294
20	Yes	4	0.00000001	0.00045401
21	Yes	4	0.00000001	0.00044632
22	Yes	4	0.00000001	0.00044746
23	Yes	4	0.00000001	0.00045180
24	Yes	4	0.00000001	0.00043055
25	Yes	4	0.00000001	0.00041433
26	Yes	4	0.00000001	0.00041893
27	Yes	4	0.00000001	0.00025116
28	Yes	4	0.00000001	0.00024847
29	Yes	4	0.00000001	0.00024511
30	Yes	4	0.00000001	0.00024873
31	Yes	4	0.00000001	0.00025220
32	Yes	4	0.00000001	0.00024829
33	Yes	4	0.00000001	0.00024462
34	Yes	4	0.00000001	0.00024832
35	Yes	4	0.00000001	0.00025208
36	Yes	4	0.00000001	0.00024771
37	Yes	4	0.00000001	0.00024264
38	Yes	4	0.00000001	0.00024654

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	3.45	31	0.169	0.078
T2	160 - 140	2.74	31	0.161	0.060
T3	140 - 120	2.07	31	0.141	0.040
T4	120 - 100	1.49	31	0.118	0.029
T5	100 - 80	1.02	31	0.098	0.021
T6	80 - 60	0.65	32	0.075	0.015
T7	60 - 40	0.37	32	0.053	0.010
T8	40 - 20	0.17	34	0.035	0.007
T9	20 - 0	0.05	27	0.016	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180'	TMZXXX-6516-R2M w/ Mount Pipe	31	3.45	0.169	0.078	411898
177'	(2) DB846F65ZAXY w/ Mount Pipe	31	3.34	0.168	0.076	411898
168'	A-ANT-18G-2-C	31	3.02	0.165	0.068	171624
158'	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	31	2.67	0.159	0.058	91174
148'	APXV18-206517S-C w/ Mount Pipe	31	2.33	0.150	0.048	58443
113'	UHX6-59-D3A	31	1.32	0.111	0.026	46755
112'	Pipe Mount [PM 501-1]	31	1.29	0.110	0.026	47079
72'	UHX10-59-D3A	32	0.53	0.066	0.013	53534
70'	Pipe Mount [PM 501-1]	32	0.50	0.064	0.012	53985
40'	GPS_A	34	0.17	0.035	0.007	68873

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	9.87	10	0.479	0.226
T2	160 - 140	7.84	10	0.458	0.174
T3	140 - 120	5.93	10	0.402	0.117
T4	120 - 100	4.29	10	0.338	0.084
T5	100 - 80	2.95	10	0.280	0.062
T6	80 - 60	1.87	10	0.214	0.043
T7	60 - 40	1.06	10	0.152	0.029
T8	40 - 20	0.49	2	0.100	0.019
T9	20 - 0	0.13	2	0.046	0.010

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180'	TMZXXX-6516-R2M w/ Mount Pipe	10	9.87	0.479	0.226	155612
177'	(2) DB846F65ZAXY w/ Mount Pipe	10	9.57	0.477	0.218	155612
168'	A-ANT-18G-2-C	10	8.65	0.469	0.195	64838
158'	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	10	7.64	0.454	0.168	33901
148'	APXV18-206517S-C w/ Mount Pipe	10	6.67	0.428	0.139	20896
113'	UHX6-59-D3A	10	3.79	0.317	0.075	16431
112'	Pipe Mount [PM 501-1]	10	3.72	0.314	0.074	16545
72'	UHX10-59-D3A	10	1.52	0.188	0.037	18683
70'	Pipe Mount [PM 501-1]	10	1.43	0.182	0.036	18831
40'	GPS_A	2	0.49	0.100	0.019	24146

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.750	4	2	19	0.098 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	2	9	0.215 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2	6	0.251 ✓	1.333	Bolt Shear
T2	160	Leg	A325N	0.875	4	8	26	0.292 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	2	9	0.267 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2	6	0.349 ✓	1.333	Bolt Shear
T3	140	Leg	A325N	1.000	4	14	35	0.400 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	2	9	0.260 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2	6	0.374 ✓	1.333	Bolt Shear
T4	120	Leg	A325N	1.000	4	18	35	0.528 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	3	9	0.355 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3	6	0.456 ✓	1.333	Bolt Shear
T5	100	Leg	A325N	1.000	6	16	35	0.450 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	3	9	0.322 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3	6	0.443 ✓	1.333	Bolt Shear
T6	80	Leg	A325N	1.000	6	19	35	0.538 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	4	9	0.384 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4	6	0.586 ✓	1.333	Bolt Shear
T7	60	Leg	A325N	1.000	6	22	35	0.636 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	4	9	0.381 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4	6	0.599 ✓	1.333	Bolt Shear
T8	40	Leg	A325N	1.000	8	19	35	0.545 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.625	3	3	9	0.370 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4	6	0.610 ✓	1.333	Bolt Shear
T9	20	Leg	A449	1.000	8	22	31	0.715 ✓	1.333	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325X	0.750	3	5	13	0.393 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.750	2	4	9	0.458 ✓	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2.5 STD	20'	6'8-1/32"	84.4 K=1.00	18.11	1.704	-11	31	0.352 ✓
T2	160 - 140	ROHN 3 X-STR	20'15/32"	6'8-5/32"	70.5 K=1.00	20.84	3.016	-38	63	0.599 ✓
T3	140 - 120	ROHN 4 X-STR	20'15/32"	6'8-5/32"	54.3 K=1.00	23.67	4.407	-65	104	0.619 ✓
T4	120 - 100	ROHN 5 X-STR	20'15/32"	10'1/4"	65.4 K=1.00	21.78	6.112	-85	133	0.642 ✓
T5	100 - 80	ROHN 5 X-STR	20'23/32"	10'3/8"	65.4 K=1.00	21.77	6.112	-110	133	0.824 ✓
T6	80 - 60	ROHN 6 EHS	20'19/32"	10'3/8"	54.1 K=1.00	23.70	6.713	-132	159	0.828 ✓
T7	60 - 40	ROHN 6 X-STR	20'19/32"	10'3/8"	54.8 K=1.00	23.58	8.405	-156	198	0.787 ✓
T8	40 - 20	ROHN 6 X-STR	20'23/32"	10'3/8"	54.8 K=1.00	23.58	8.405	-179	198	0.902 ✓
T9	20 - 0	ROHN 8 EHS	20'19/32"	9'11-3/4"	41.0 K=1.00	25.69	9.719	-211	250	0.846 ✓

Diagonal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7'11-1/32'	7'8-13/32'	117.3 K=1.00	10.85	1.075	-6	12	0.510 ✓
T2	160 - 140	ROHN 2 STD	8'6-3/8"	8'3-15/32'	126.4 K=1.00	9.34	1.075	-7	10	0.725 ✓
T3	140 - 120	ROHN 2 STD	9'2-17/32'	8'11-9/32'	136.3 K=1.00	8.04	1.075	-7	9	0.818 ✓
T4	120 - 100	ROHN 2.5 STD	12'5-7/8"	12'1-3/16'	153.3 K=1.00	6.35	1.704	-10	11	0.906 ✓
T5	100 - 80	ROHN 2.5 STD	13'3-23/3	12'11-17/	164.1	5.55	1.704	-9	9	0.929

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 $\frac{P}{P_a}$
			2"	32"	K=1.00					✓
T6	80 - 60	ROHN 2.5 STD	14'1-29/32"	13'9-1/4"	174.4 K=1.00	4.91	1.704	-11	8	1.269 ✓
T7	60 - 40	ROHN 2.5 X-STR	15'27/32"	14'8-13/32"	190.9 K=1.00	4.10	2.254	-11	9	1.139 ✓
T8	40 - 20	ROHN 3 STD	16'31/32"	15'8-3/4"	162.2 K=1.00	5.68	2.228	-10	13	0.807 ✓
T9	20 - 0	ROHN 3 STD	24'3-1/8"	12'1-9/16"	125.1 K=1.00	9.54	2.228	-16	21	0.735 ✓

Horizontal Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6-3/8"	4'1-11/16"	79.9 K=1.00	19.04	0.799	-3	15	0.213 ✓
T2	160 - 140	ROHN 1.5 STD	9'11-5/32"	4'9-27/32"	92.9 K=1.00	16.31	0.799	-4	13	0.345 ✓
T3	140 - 120	ROHN 2 STD	12'1/8"	5'9-27/32"	88.7 K=1.00	17.21	1.075	-5	18	0.261 ✓
T4	120 - 100	ROHN 2 STD	13'9-31/32"	6'8-5/32"	101.9 K=1.00	14.26	1.075	-6	15	0.374 ✓
T5	100 - 80	ROHN 2 STD	16'3"	7'10-11/16"	120.3 K=1.00	10.31	1.075	-6	11	0.515 ✓
T6	80 - 60	ROHN 2.5 STD	18'9-15/32"	9'1-7/16"	115.5 K=1.00	11.19	1.704	-7	19	0.393 ✓
T7	60 - 40	ROHN 2.5 STD	21'3-15/32"	10'4-7/16"	131.3 K=1.00	8.66	1.704	-8	15	0.517 ✓
T8	40 - 20	ROHN 2.5 STD	23'10-5/16"	11'7-13/16"	147.6 K=1.00	6.85	1.704	-8	12	0.658 ✓
T9	20 - 0	ROHN 3 STD	25'2-5/32"	12'3-23/32"	127.0 K=1.00	9.26	2.228	-8	21	0.411 ✓

Top Girt Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6 K=1.00	19.09	0.799	-2	15	0.100 ✓

Redundant Horizontal (1) Design Data (Compression)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN TS 1.5 x 11Ga	6'3-15/32"	5'11-5/32"	145.4 K=1.00	7.06	0.520	-4	4	0.998 ✓

Redundant Diagonal (1) Design Data (Compression)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 1.5 STD	11'5-5/8"	10'10-29/32"	210.3 K=1.00	3.38	0.799	-3	3	1.237 ✓

Redundant Hip (1) Design Data (Compression)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN TS 1.5 x 11Ga	6'3-15/32"	6'3-15/32"	154.2 K=1.00	6.28	0.520	0	3	0.013 ✓

Redundant Hip Diagonal Design Data (Compression)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 2.5 STD	15'19/32"	15'19/32"	190.6 K=1.00	4.11	1.704	0	7	0.007* ✓

* DL controls

Inner Bracing Design Data (Compression)

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 $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	4'3"	4'3"	128.3 K=1.00	9.07	0.484	0	4	0.006 ✓
T2	160 - 140	L2x2x1/8	4'11-5/8"	4'11-5/8"	149.9 K=1.00	6.65	0.484	0	3	0.002 ✓
T3	140 - 120	L2x2x1/8	6'1/8"	6'1/8"	181.3 K=1.00	4.54	0.484	0	2	0.003 ✓
T4	120 - 100	L2x2x1/8	6'11-1/32"	6'11-1/32"	208.8 K=1.00	3.43	0.484	0	2	0.004

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 $\frac{P}{P_a}$
T5	100 - 80	L2 1/2x2 1/2x3/16	8'1-9/16"	8'1-9/16"	197.0 K=1.00	3.85	0.902	0	3	0.002*
T6	80 - 60	L3x3x3/16	9'4-13/16'	9'4-13/16'	189.2 K=1.00	4.17	1.090	0	5	0.002*
T7	60 - 40	L3 1/2x3 1/2x1/4	10'7-13/16"	10'7-13/16"	184.1 K=1.00	4.41	1.690	0	7	0.001*
T8	40 - 20	L3 1/2x3 1/2x1/4	11'11-5/32"	11'11-5/32"	206.3 K=1.00	3.51	1.690	0	6	0.002*
T9	20 - 0	ROHN 3 STD	12'7-3/32'	12'7-3/32'	129.8 K=1.00	8.86	2.228	0	20	0.001*

* DL controls

Tension Checks

Leg Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2.5 STD	20'	6'8-1/32"	84.4	30.00	1.704	8	51	0.149
T2	160 - 140	ROHN 3 X-STR	20'15/32"	6'8-5/32"	70.5	30.00	3.016	31	90	0.341
T3	140 - 120	ROHN 4 X-STR	20'15/32"	6'8-5/32"	54.3	30.00	4.407	55	132	0.418
T4	120 - 100	ROHN 5 X-STR	20'15/32"	10'1/4"	65.4	30.00	6.112	73	183	0.398
T5	100 - 80	ROHN 5 X-STR	20'23/32"	10'3/8"	65.4	30.00	6.112	93	183	0.509
T6	80 - 60	ROHN 6 EHS	20'19/32"	10'3/8"	54.1	30.00	6.713	111	201	0.553
T7	60 - 40	ROHN 6 X-STR	20'19/32"	10'3/8"	54.8	30.00	8.405	132	252	0.523
T8	40 - 20	ROHN 6 X-STR	20'23/32"	10'3/8"	54.8	30.00	8.405	151	252	0.598
T9	20 - 0	ROHN 8 EHS	20'19/32"	9'11-3/4"	41.0	30.00	9.719	178	292	0.610

Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7'11-1/32"	7'8-13/32"	117.3	30.00	1.075	6	32	0.182 ✓
T2	160 - 140	ROHN 2 STD	8'3-23/32"	8'31/32"	123.2	30.00	1.075	7	32	0.227 ✓
T3	140 - 120	ROHN 2 STD	8'11-3/4"	8'8-13/32"	132.7	30.00	1.075	7	32	0.220 ✓
T4	120 - 100	ROHN 2.5 STD	12'5-7/8"	12'1-3/16"	153.3	30.00	1.704	10	51	0.189 ✓
T5	100 - 80	ROHN 2.5 STD	12'10-11/16"	12'6-15/32"	158.8	30.00	1.704	9	51	0.170 ✓
T6	80 - 60	ROHN 2.5 STD	14'1-29/32"	13'9-1/4"	174.4	30.00	1.704	10	51	0.202 ✓
T7	60 - 40	ROHN 2.5 X-STR	14'7-5/16"	14'2-7/8"	184.9	30.00	2.254	10	68	0.150 ✓
T8	40 - 20	ROHN 3 STD	15'6-27/32"	15'2-5/8"	157.0	30.00	2.228	10	67	0.146 ✓
T9	20 - 0	ROHN 3 STD	24'3-1/8"	12'1-9/16"	125.1	30.00	2.228	15	67	0.225 ✓

Horizontal Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6-3/8"	4'1-11/16"	79.9	30.00	0.799	3	24	0.133 ✓
T2	160 - 140	ROHN 1.5 STD	9'11-5/32"	4'9-27/32"	92.9	30.00	0.799	5	24	0.188 ✓
T3	140 - 120	ROHN 2 STD	12'1/8"	5'9-27/32"	88.7	30.00	1.075	5	32	0.150 ✓
T4	120 - 100	ROHN 2 STD	13'9-31/32"	6'8-5/32"	101.9	30.00	1.075	6	32	0.182 ✓
T5	100 - 80	ROHN 2 STD	16'3"	7'10-11/16"	120.3	30.00	1.075	6	32	0.176 ✓
T6	80 - 60	ROHN 2.5 STD	18'9-15/32"	9'1-7/16"	115.5	30.00	1.704	8	51	0.148 ✓
T7	60 - 40	ROHN 2.5 STD	21'3-15/32"	10'4-7/16"	131.3	30.00	1.704	8	51	0.151 ✓
T8	40 - 20	ROHN 2.5 STD	23'10-5/16"	11'7-13/16"	147.6	30.00	1.704	8	51	0.154 ✓
T9	20 - 0	ROHN 3 STD	25'2-5/32"	12'3-23/32"	127.0	30.00	2.228	8	67	0.126 ✓

Top Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6	30.00	0.799	2	24	0.064 ✓

Redundant Horizontal (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN TS 1.5 x 11Ga	6'3-15/32'	5'11-5/32'	145.4	30.00	0.520	4	16	0.235 ✓

Redundant Diagonal (1) Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 1.5 STD	11'5-5/8"	10'10-29/32"	210.3	30.00	0.799	3	24	0.139 ✓

Redundant Hip Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$
T9	20 - 0	ROHN 2.5 STD	15'19/32"	15'19/32"	190.6	30.00	1.704	0	51	0.002 ✓

Inner Bracing Design Data (Tension)

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 $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	4'3"	4'3"	81.4	21.60	0.484	0	10	0.003 ✓
T2	160 - 140	L2x2x1/8	4'3-1/4"	4'3-1/4"	81.8	21.60	0.484	0	10	0.000 ✓
T3	140 - 120	L2x2x1/8	5'3-23/32'	5'3-23/32'	101.8	21.60	0.484	0	10	0.000 ✓
T4	120 - 100	L2x2x1/8	6'4-3/16"	6'4-3/16"	121.8	21.60	0.484	0	10	0.000 ✓
T5	100 - 80	L2 1/2x2 1/2x3/16	7'5-3/4"	7'5-3/4"	115.4	21.60	0.902	0	19	0.000 ✓

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 $\frac{P}{P_a}$
										✔

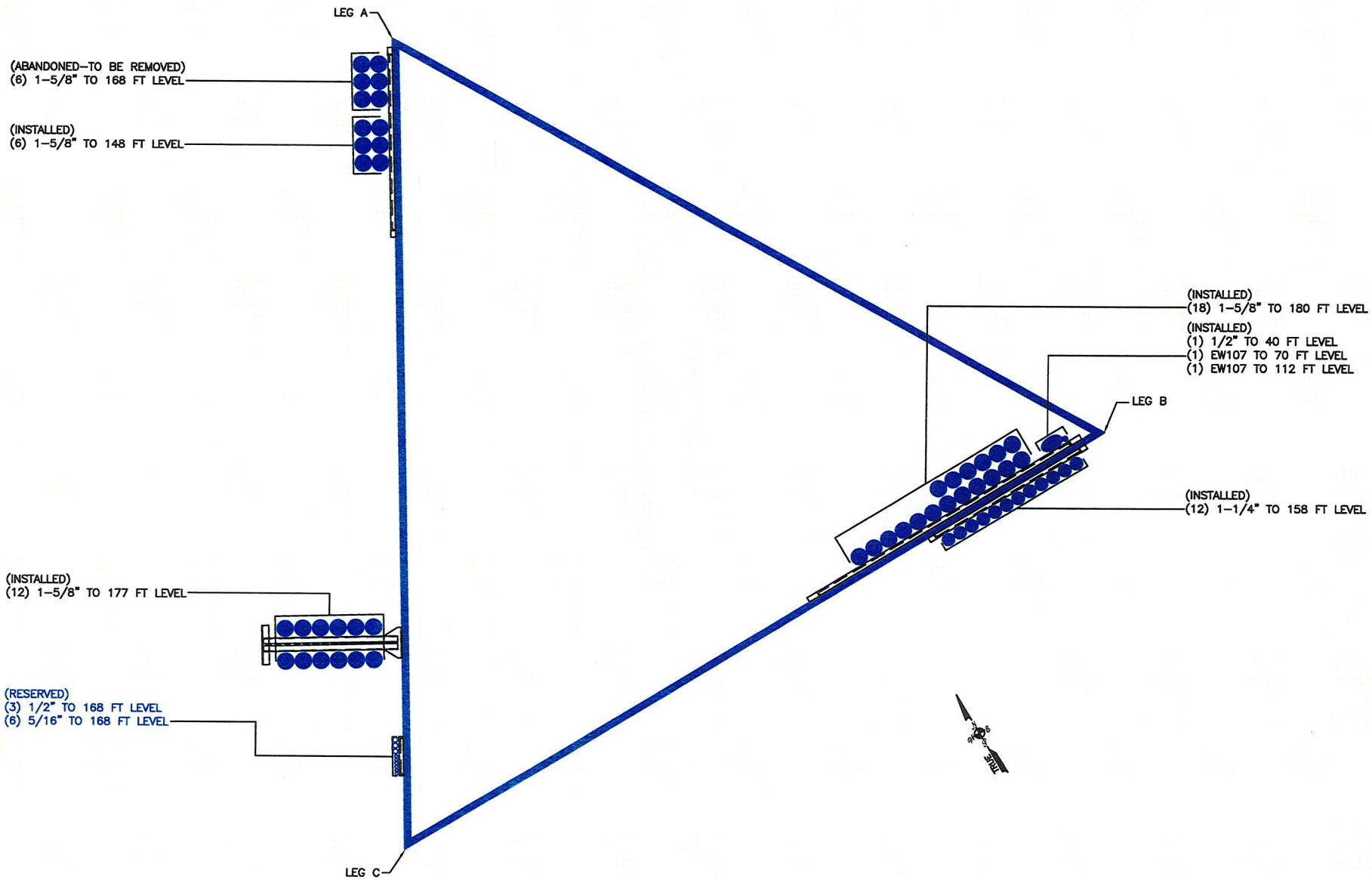
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 2.5 STD	1	-11	41	26.4	Pass
T2	160 - 140	Leg	ROHN 3 X-STR	40	-38	84	44.9	Pass
T3	140 - 120	Leg	ROHN 4 X-STR	79	-65	139	46.5	Pass
T4	120 - 100	Leg	ROHN 5 X-STR	118	-85	177	48.2	Pass
T5	100 - 80	Leg	ROHN 5 X-STR	145	-110	177	61.8	Pass
T6	80 - 60	Leg	ROHN 6 EHS	172	-132	212	62.1	Pass
T7	60 - 40	Leg	ROHN 6 X-STR	199	-156	264	59.0	Pass
T8	40 - 20	Leg	ROHN 6 X-STR	226	-179	264	67.6	Pass
T9	20 - 0	Leg	ROHN 8 EHS	253	-211	333	63.5	Pass
T1	180 - 160	Diagonal	ROHN 2 STD	12	-6	16	38.3	Pass
T2	160 - 140	Diagonal	ROHN 2 STD	48	-7	13	54.4	Pass
T3	140 - 120	Diagonal	ROHN 2 STD	84	-7	12	61.3	Pass
T4	120 - 100	Diagonal	ROHN 2.5 STD	126	-10	14	67.9	Pass
T5	100 - 80	Diagonal	ROHN 2.5 STD	153	-9	13	69.7	Pass
T6	80 - 60	Diagonal	ROHN 2.5 STD	179	-11	11	95.2	Pass
T7	60 - 40	Diagonal	ROHN 2.5 X-STR	207	-11	12	85.4	Pass
T8	40 - 20	Diagonal	ROHN 3 STD	234	-10	17	60.6	Pass
T9	20 - 0	Diagonal	ROHN 3 STD	267	-16	28	55.1	Pass
T1	180 - 160	Horizontal	ROHN 1.5 STD	10	-3	20	16.0 18.8 (b)	Pass
T2	160 - 140	Horizontal	ROHN 1.5 STD	46	-4	17	25.9 26.2 (b)	Pass
T3	140 - 120	Horizontal	ROHN 2 STD	82	-5	25	19.6 28.1 (b)	Pass
T4	120 - 100	Horizontal	ROHN 2 STD	124	-6	20	28.1 34.2 (b)	Pass
T5	100 - 80	Horizontal	ROHN 2 STD	151	-6	15	38.6	Pass
T6	80 - 60	Horizontal	ROHN 2.5 STD	178	-7	25	29.5 44.0 (b)	Pass
T7	60 - 40	Horizontal	ROHN 2.5 STD	205	-8	20	38.8 45.0 (b)	Pass
T8	40 - 20	Horizontal	ROHN 2.5 STD	232	-8	16	49.3	Pass
T9	20 - 0	Horizontal	ROHN 3 STD	263	-8	28	30.9 34.3 (b)	Pass
T1	180 - 160	Top Girt	ROHN 1.5 STD	5	-2	20	7.5	Pass
T9	20 - 0	Redund Horz 1 Bracing	ROHN TS 1.5 x 11Ga	277	-4	5	74.9	Pass
T9	20 - 0	Redund Diag 1 Bracing	ROHN 1.5 STD	259	-3	4	92.8	Pass
T9	20 - 0	Redund Hip 1 Bracing	ROHN TS 1.5 x 11Ga	270	0	4	1.0	Pass
T9	20 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	282	0	7	0.7	Pass
T1	180 - 160	Inner Bracing	L2x2x1/8	37	0	6	0.5	Pass
T2	160 - 140	Inner Bracing	L2x2x1/8	53	0	4	0.3	Pass
T3	140 - 120	Inner Bracing	L2x2x1/8	91	0	3	0.4	Pass
T4	120 - 100	Inner Bracing	L2x2x1/8	130	0	2	0.4	Pass
T5	100 - 80	Inner Bracing	L2 1/2x2 1/2x3/16	158	0	3	0.5	Pass
T6	80 - 60	Inner Bracing	L3x3x3/16	184	0	5	0.5	Pass
T7	60 - 40	Inner Bracing	L3 1/2x3 1/2x1/4	212	0	7	0.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T8	40 - 20	Inner Bracing	L3 1/2x3 1/2x1/4	238	0	6	0.5	Pass
T9	20 - 0	Inner Bracing	ROHN 3 STD	285	0	20	0.4	Pass
							Summary	
						Leg (T8)	67.6	Pass
						Diagonal (T6)	95.2	Pass
						Horizontal (T8)	49.3	Pass
						Top Girt (T1)	7.5	Pass
						Redund Horz 1 Bracing (T9)	74.9	Pass
						Redund Diag 1 Bracing (T9)	92.8	Pass
						Redund Hip 1 Bracing (T9)	1.0	Pass
						Redund Hip Diagonal Bracing (T9)	0.7	Pass
						Inner Bracing (T8)	0.5	Pass
						Bolt Checks	53.6	Pass
						RATING =	**95.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806362 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Maximum Allowable Moment of a Circular Pier

Axial Load (Negative for Compression) = 177.00 kips

Pier Properties

Concrete:

Pier Diameter = 3.0 ft

Concrete Area = 1017.9 in^2

Reinforcement:

Clear Cover = 3.00 in

Cage Diameter = 2.39 ft

Bar Size = 10

Bar Diameter = 1.27 in

Bar Area = 1.27 in^2

Number of Bars = 16

Material Properties

Concrete compressive strength = 3000 psi

Reinforcement yield strength = 60000 psi

Modulus of elasticity = 29000 ksi

Reinforcement yield strain = 0.00207

Limiting compressive strain = 0.003

Seismic Properties

Seismic Zone = 1

Minimum Area of Steel

Required area of steel = 5.09 in^2

Provided area of steel = 20.32 in^2 **OK**

Axial Loading

Load factor = 1.3

Reduction factor = 0.9

Factored axial load = 255.6667 kips

Neutral Axis

Distance from extreme edge to neutral axis =	8.46	in
Equivalent compression zone factor =	0.85	
Distance from extreme edge to equivalent compression zone factor =	7.19	in
Distance from centroid to neutral axis =	9.54	in

Compression Zone

Area of steel in compression zone =	3.81	in^2
Angle from centroid of pier to intersection of equivalent compression zone and edge of pier =	53.09	deg
Area of concrete in compression =	144.65	in^2
Force in concrete = 0.85 * f`c * Acc =	368.87	kips
Total reinforcement forces =	-624.53	kips
Factored axial load =	255.67	kips
Force in concrete =	-368.87	kips
Sum of the forces in concrete =	0.00	kips **OK**

Maximum Moment

First moment of the concrete area in compression about the centoid =	1987.74	in^3
Distance between centroid of concrete in compression and centroid of pier =	13.74	in
Moment of concrete in compression =	5068.74	in-kips
Total reinforcement moment =	7152.34	in-kips
Nominal moment strength of column =	12221.08	in-kips
Factored moment strength of column =	8460.74	in-kips

Maximum Allowable Moment = 705.06 ft-kips

Individual Bars

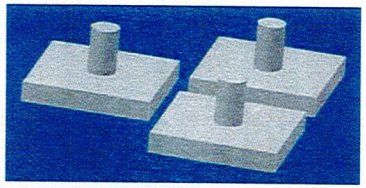
Bar #	Angle from first bar (deg)	Distance to centroid (in)	Distance to neutral axis (in)	Distance to equivalent comp. zone (in)	Strain	Area of steel in compressi on (in^2)	Stress (ksi)	Axial force (kips)
1	0.00	0.00	-9.54	-10.81	-0.0033833	0.00	-60.00	-76.20
2	22.50	5.50	-4.04	-5.31	-0.0014338	0.00	-41.58	-52.81
3	45.00	10.16	0.62	-0.65	0.0002189	0.00	6.35	8.06
4	67.50	13.27	3.73	2.46	0.0013232	1.27	38.37	45.49
5	90.00	14.37	4.82	3.56	0.0017109	1.27	49.62	59.77
6	112.50	13.27	3.73	2.46	0.0013232	1.27	38.37	45.49
7	135.00	10.16	0.62	-0.65	0.0002189	0.00	6.35	8.06
8	157.50	5.50	-4.04	-5.31	-0.0014338	0.00	-41.58	-52.81
9	180.00	0.00	-9.54	-10.81	-0.0033833	0.00	-60.00	-76.20
10	202.50	-5.50	-15.04	-16.31	-0.0053328	0.00	-60.00	-76.20
11	225.00	-10.16	-19.70	-20.97	-0.0069855	0.00	-60.00	-76.20
12	247.50	-13.27	-22.81	-24.08	-0.0080898	0.00	-60.00	-76.20
13	270.00	-14.37	-23.91	-25.17	-0.0084775	0.00	-60.00	-76.20
14	292.50	-13.27	-22.81	-24.08	-0.0080898	0.00	-60.00	-76.20
15	315.00	-10.16	-19.70	-20.97	-0.0069855	0.00	-60.00	-76.20
16	337.50	-5.50	-15.04	-16.31	-0.0053328	0.00	-60.00	-76.20

Pier & Pad Foundation

Checks capacity of separate pier & pad foundations for a self-supporting tower

Per TIA-222-F

BU#: 806362
Site Name: *NHV 108 943133*
App Number: *113985 REV 2*



CROWN CASTLE

Design Reactions		
Shear, **S**:	45.00	kips
Compression/leg, **Ca**:	210.00	kips
Uplift/leg, **Ua**:	177.00	kips
Tower Weight, **Wt**:	48.00	kips
Tower Height, **H**:	180	ft
Base Face Width, **w'**:	27.7	ft

Pad Properties		
Depth, **D**:	12.5	ft
Pad Width, **W**:	9.25	ft
Pad Thickness, **T**:	2.0	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	4.0	ft
Pad Rebar Size, **Sp**:	7	
Pad Rebar Quantity, **mp**:	10	

Pier Properties		
Pier Type:	Square	
Pier Width, **di**:	3.0	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	16	
Pier Tie Size, **St**:	4	min of 3
Tie Quantity, **mt**:	13	

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δx**:	150	pcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, **γ**:	120	pcf
Allowable Gross Bearing, **Bc**:	12.000	ksf
Cohesion, **Co**:	0.000	ksf
Friction Angle, **φ**:	40	degrees
Passive Pressure, **Pp**:	0.000	pcf
Base Friction, **μ**:	0.4	
Seismic Zone, **Sz**:	1	
Base Sliding, **μ**:	0.4	

Design Checks

	Capacity/ Availability	Demand/ Limits	Check	% Capacity
Base sliding (kips):	345.20	45.00	OK	13.0%
Uplift (kips):	248.54	177.00	OK	71.2%
Bearing (ksf):	12.00	4.06	OK	33.8%
Pad shear - 1-way (kips):	250.03	109.65	OK	43.9%
Pad shear - 2-way (kips):	1019.26	269.48	OK	26.4%
Pier concrete stress (ksf):	2021.76	273.00	OK	13.5%
Pier rebar area (in^2):	20.32	6.48	OK	
Pier moment capacity (k-ft):	705.06	247.50	OK	35.1%
Vertical rebar spacing (in):	6.23	18 > s > 2	OK	
Vertical rebar dev. (in pier) (in):	129.00	17.30	OK	
Vertical rebar dev. (in pad) (in):	21.00	17.30	OK	
Vertical rebar hook length (in):	37.50	21.59	OK	
Tie spacing (in pier) (in):	12.00	18 > s > 4.5	OK	
Pad rebar area (in^2):	6.00	5.18	OK	
Pad rebar spacing (in):	10.69	18 > s > 2	OK	
Pad rebar development, (in):	52.50	32.30	OK	

Modification Checks

	Capacity/ Availability	Demand/ Limits	Check
Sleeve rebar area (in^2):	2.00	0.00	Not Used
Sleeve moment capacity (k-ft):	705.06	247.50	Not Run
Sleeve rebar spacing (in):	N/A	18 > s > 2	Not Used
Sleeve tie spacing (in):	N/A	8 > s > 4.5	Not Used
Minimum extra thickness (in):	0	0	Not Used
Pad rebar area - short (in^2):	0.00	0.00	Not Used
Pad rebar area - long (in^2):	0	0.00	Not Used
Pad rebar spacing -short (in):	-105.00	18 > s > 2	Not Used
Pad rebar spacing -long (in):	-105.00	18 > s > 2	Not Used
End cap width, (ft):	0.0	0.0	Not Used
Rebar area, (in^2):	0.00	0.00	Not Used
Rebar spacing, (in):	5.5	18 > s > 2	Not Used
Tie spacing, (in):	4.75	105 > s > 4.5	Not Used
Dowel area, (in^2):	2.17	0.00	Not Used
Dowel embedment, (in):	6.0	6.0	Not Used
Shear Strength of Cone (kips):	9.78	16.74	Not Used
Dowel edge dist., (in):	12.00	9.76	Not Used
Dowel spacing, (in):	14.50	12.00	Not Used
Dowel edge dist. (vert), (in):	6.00	9.76	Not Used
Dowel development length (in):	-3.00	12.82	Not Used

Modifications

Pier Sleeve, ds:	0	in	**End Cap Width, Wec:**	0.0	ft
Revised Pier Width, dx:	3.00	ft	**Revised Width, Wx:**	9.25	ft
PS Rebar Size, Ss:	4		**EC Rebar Size, Sec:**	4	per side, top & bottom
Rebar Quantity, ms:	10		**Rebar Quantity, mec:**	0	
Tie Size, Sst:	5	min of 3	**EC Tie Size, sect:**	4	per side
Tie Quantity, mst:	0		**Tie Quantity, mect:**	21	
Pad Thickness, Te:	0	in	**EC Dowel Size, Secd:**	5	per side
Revised Pad Thickness, Tx:	2.00	ft	**Dowel Quantity, mecd:**	7	
Rebar Size, Se:	3		**Rows of Dowels, nd:**	1	
Rebar Quantity (long), me:	0		**Dowel Depth, decd:**	6.00	in
Rebar Quantity (short), mex:	0		**Edge Distance, eecd:**	12.00	in
Dowel Size, Sed:	3				
Dowel Quantity, med:	0				