

EM-VER-080-130430
38 Elm Street, Meriden

RECEIVED
JUL 31 2014

CONNECTICUT
SITING COUNCIL

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

July 29, 2014

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

Re: **Completion of Construction Activity**

Dear Ms. Bachman:

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

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

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Melanie A. Bachman

July 29, 2014

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

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

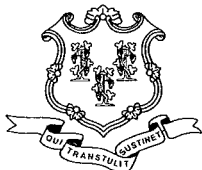
Sincerely,



Kenneth C. Baldwin

Copy to:

Sandy M. Carter



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

May 20, 2013

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

RE: **EM-VER-080-130430** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 38 Elm Street, Meriden, Connecticut.

Dear Attorney Baldwin:

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

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

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated April 29, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

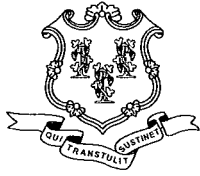
This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies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

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/laf

c: The Honorable Michael S. Rohde, Mayor, City of Meriden
Lawrence Kendzior, City Manager, City of Meriden
Dominick Caruso, City Planner, City of Meriden
Ashley Harriman LLC



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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E-Mail: siting.council@ct.gov

www.ct.gov/csc

May 1, 2013

The Honorable Michael S. Rohde
Mayor
City of Meriden
City Hall
142 East Main Street
Room 124
Meriden, CT 06450

RE: **EM-VER-080-130430** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 38 Elm Street, Meriden, Connecticut.

Dear Mayor Rohde:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by May 15, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

A handwritten signature in black ink, appearing to read "Melanie A. Bachman".

Melanie A. Bachman
Acting Executive Director

MAB/jb

c: Lawrence Kendzior, City Manager, City of Meriden
Dominick Caruso, City Planner, City of Meriden

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Hartford, CT 06103-3597
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April 29, 2013

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

Re: **Notice of Exempt Modification – Facility Modification**
38 Elm Street, Meriden, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains fifteen (15) wireless telecommunications antennas on an existing roof-mounted lattice tower at the above-referenced address. The tower and underlying property are owned by Ashley Harriman LLC. The Council approved Cellco’s shared use of this tower in 1995. Cellco now intends to replace three (3) of its existing antennas with three (3) model BXA-70063-6CF LTE antennas at the same height on the existing tower. Attached behind Tab 1 are the specifications for the replacement antennas.

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 Michael Rohde, Mayor of the City of Meriden. A copy of this letter is also being sent to Ashley Harriman LLC, the owner of the property on which the roof-mounted 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 an increase in the height of the existing tower.



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Melanie A. Bachman
April 29, 2013
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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Far Field Approximation tables for RF emissions at each of Cellco's operating frequencies for the modified facility are included behind Tab 2 and demonstrate compliance with the FCC standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower can support Cellco's proposed antenna modifications. (*See Structural Analysis Report attached behind Tab 3*).

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Michael Rohde, Meriden Mayor
Ashley Harriman LLC
Sandy M. Carter



BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

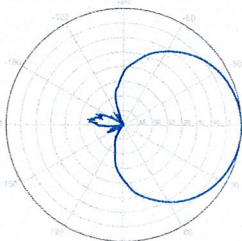
Replace "X" with desired electrical downtilt.

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 with EDIN connectors	500 W		
Input power with NE connectors	300 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 m ² Side: 0.24 m ²	Front: 5.5 ft ² Side: 2.6 ft ²	
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 & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

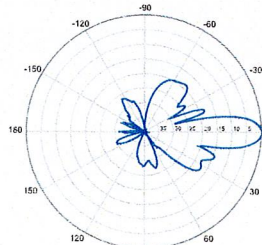


BXA-70063-6CF-EDIN-X



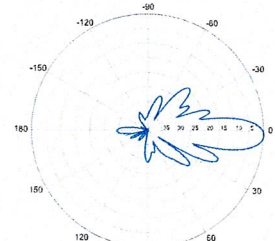
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

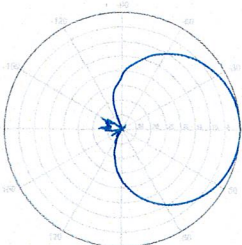


0° | Vertical | 750 MHz

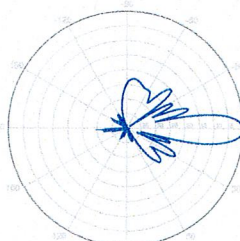
BXA-70063-6CF-EDIN-2



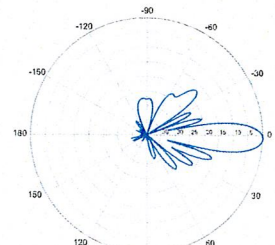
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



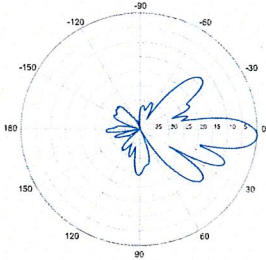
2° | Vertical | 850 MHz

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

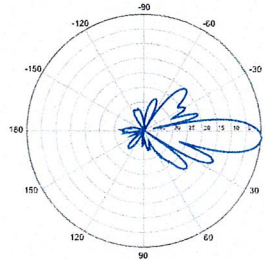
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



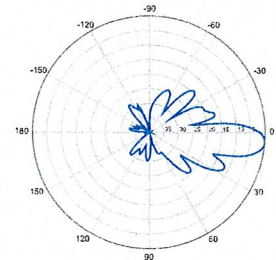
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

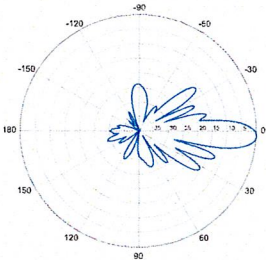


4° | Vertical | 750 MHz

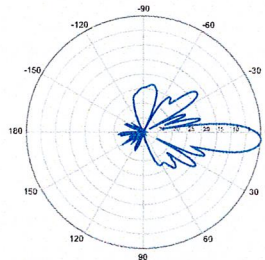
BXA-70063-6CF-EDIN-5



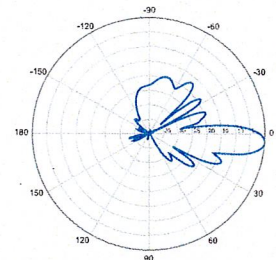
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

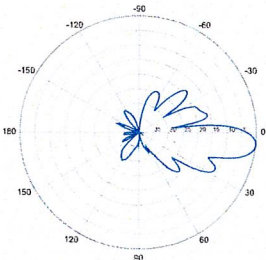


4° | Vertical | 850 MHz



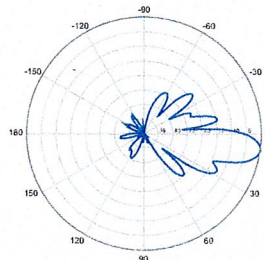
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



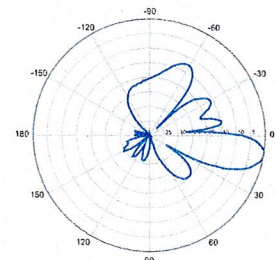
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

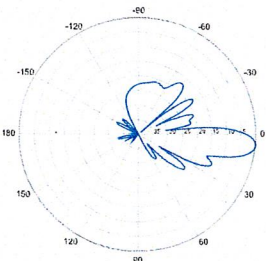


8° | Vertical | 750 MHz

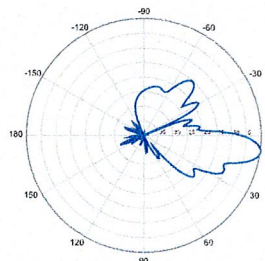
BXA-70063-6CF-EDIN-10



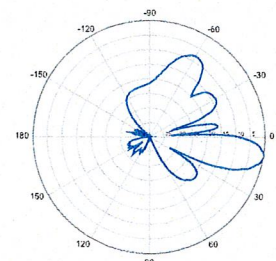
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | 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.

Estimated Radiated Emission

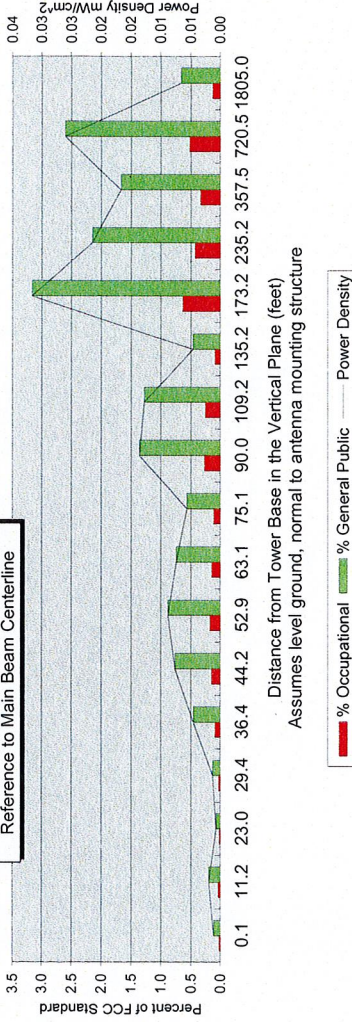
Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types

Location:	Meriden E, CT
Site #:	
Date:	01/17/13
Name:	Justin Kober
File Name:	Meriden E, CT - FF Power AWS

Operating Freq. (MHz):	2145.0
Antenna Height (ft):	66.0
Antenna Gain (dBi):	17.5
Antenna Size (in.):	48.5
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	1750.0

Far Field Approximation
Reference to Main Beam Centerline



Far Field Approximation with downtilt variation



Enter Main Beam

Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	2.0
Solve for r, dx to antenna	63.0	64.0	67.1	69.5	72.8	76.9	82.3	89.1	98.1	109.9	126.1	149.1	184.3	243.5	363.0	723.2	1806.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.2	23.0	29.4	36.4	44.2	52.9	63.1	75.1	90.0	109.2	135.2	173.2	235.2	357.5	720.5	1805.0
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm ²)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.03	0.02	0.02	0.03	0.01
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.3	0.3	0.1	0.6	0.4	0.3	0.5	0.1
Percent of General Population Standard	0.1	0.2	0.1	0.1	0.5	0.8	0.9	0.7	0.6	1.4	1.3	0.5	3.2	2.1	1.7	2.6	0.7

Antenna Type: BXA-171063-8CF
Max%: 3.16%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna, and Antenna Size (vertical size in inches).
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

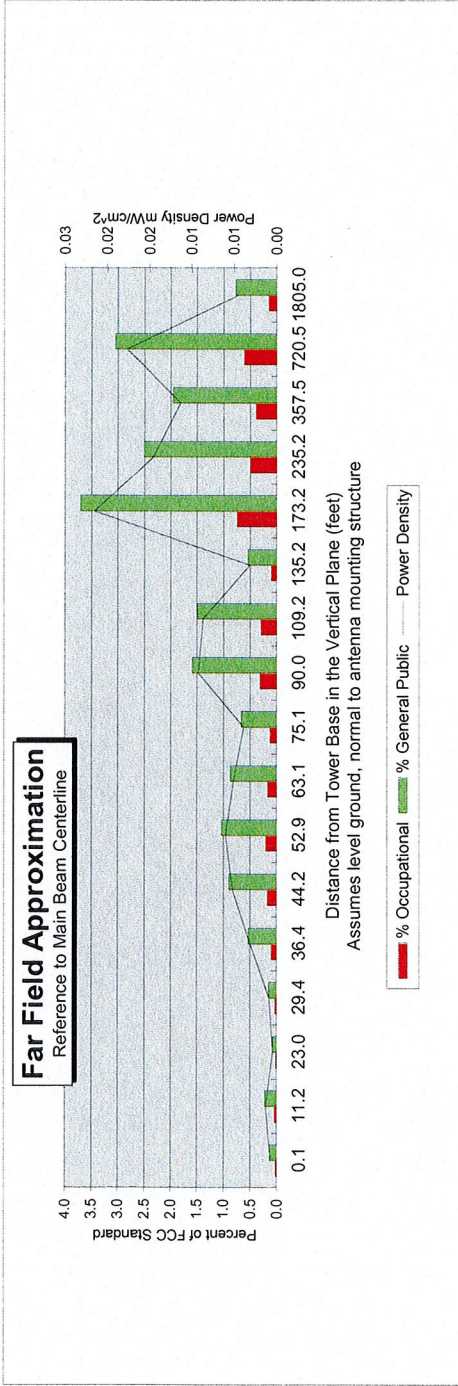
Far Field Approximation
with downtilt variation

Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types



Location:	Meriden E, CT
Site #:	
Date:	01/17/13
Name:	Justin Kober
File Name:	Meriden E, CT - FF Power Cell

Operating Freq. (MHz):	869.0
Antenna Height (ft):	66.0
Antenna Gain (dBi):	16.2
Antenna Size (in.):	70.9
Downtilt (degrees):	0.0
Feedline Loss (dB):	2.0
Power @ J4 (w):	2538.0



Enter Main Beam
Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	2.0
Solve for r, dx to antenna	63.0	64.0	67.1	69.5	72.8	76.9	82.3	89.1	98.1	109.9	126.1	149.1	184.3	243.5	363.0	723.2	1806.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.2	23.0	29.4	36.4	44.2	52.9	63.1	75.1	90.0	109.2	135.2	173.2	235.2	357.5	720.5	1805.0
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.01	0.01	0.02	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.1	0.7	0.5	0.4	0.6	0.2
Percent of General Population Standard	0.1	0.2	0.1	0.2	0.5	0.9	1.0	0.9	0.7	1.6	1.5	0.5	3.7	2.5	2.0	3.0	0.8

Antenna Type LPA-80080/6CF
Max% 3.70%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna.
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

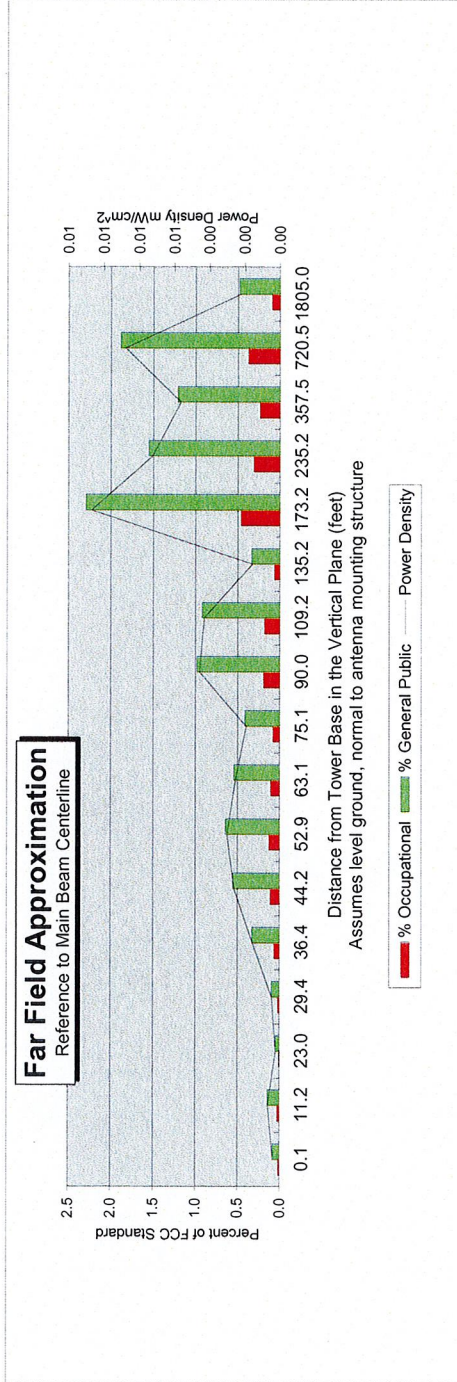
Estimated Radiated Emission
Single Emitter Far Field Model
Dipole / Wire/ Yagi Antenna Types

Far Field Approximation
with downtilt variation



Location:	Meriden E, CT
Site #:	
Date:	01/17/13
Name:	Justin Kober
File Name:	Meriden E, CT - FF Power LTE

Operating Freq. (MHz):	698.0
Antenna Height (ft):	66.0
Antenna Gain (dBi):	15.6
Antenna Size (in.):	72.1
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	914.0



Enter Main Beam
Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	2.0
Solve for r, dx to antenna	63.0	64.0	67.1	69.5	72.8	76.9	82.3	89.1	98.1	109.9	126.1	149.1	184.3	243.5	363.0	723.2	1806.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.2	23.0	29.4	36.4	44.2	52.9	63.1	75.1	90.0	109.2	135.2	173.2	235.2	357.5	720.5	1805.0
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Percent of Occupational Standard	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.5	0.3	0.2	0.4	0.1
Percent of General Population Standard	0.1	0.1	0.0	0.1	0.3	0.6	0.6	0.5	0.4	1.0	0.9	0.3	2.3	1.6	1.2	1.9	0.5

Antenna Type P65-16-XL-2
Max% 2.29%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenn
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

Far Field Approximation
with downtilt variation

Estimated Radiated Emission

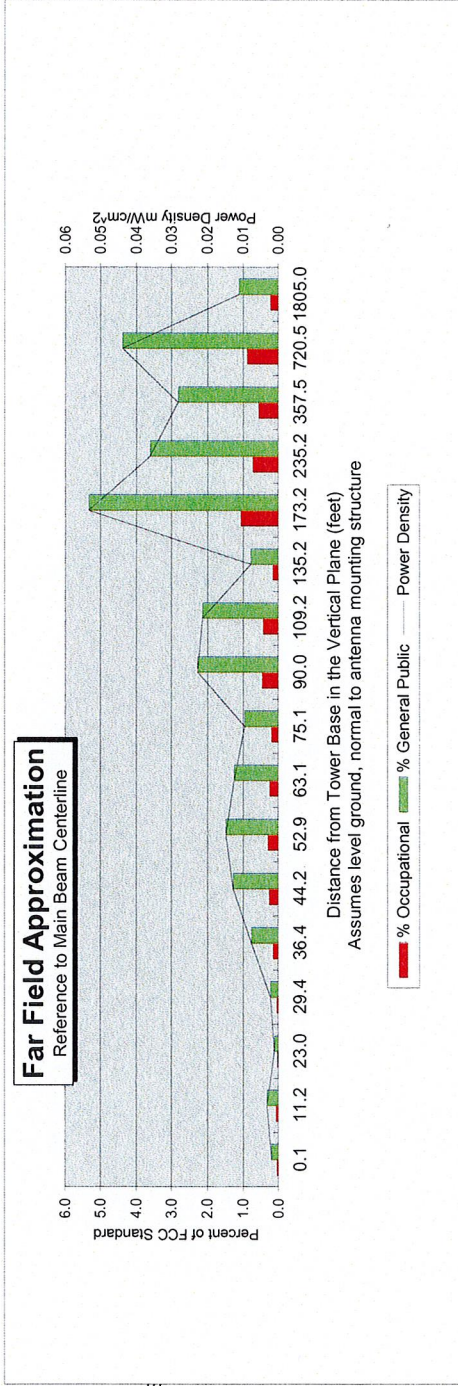
Single Emitter Far Field Model

Dipole / Wire/ Yagi Antenna Types



Location:	Meriden E, CT
Site #:	
Date:	01/17/13
Name:	Justin Kober
File Name:	Meriden E, CT - FF Power PCS

Operating Freq. (MHz):	1970.0
Antenna Height (ft):	66.0
Antenna Gain (dBi):	16.1
Antenna Size (in.):	48.5
Downtilt (degrees):	0.0
Feedline Loss (dB):	0.0
Power @ J4 (w):	4060.0



Enter Main Beam

Distance in feet below:

Calc Angle	90.0	80.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	2.0
Solve for r, dx to antenna	63.0	64.0	67.1	69.5	72.8	76.9	82.3	89.1	98.1	109.9	126.1	149.1	184.3	243.5	363.0	723.2	1806.1
Distance from Antenna Structure Base in Horizontal plane	0.1	11.2	23.0	29.4	36.4	44.2	52.9	63.1	75.1	90.0	109.2	135.2	173.2	235.2	357.5	720.5	1805.0
Angle from Main Beam (reference to horizontal plane)	90	80	70	65	60	55	50	45	40	35	30	25	20	15	10	5	2
dB down from centerline (referenced to centerline)	36.76	34.35	38.52	35.34	29.54	26.8	25.59	25.63	25.99	21.21	20.29	23.24	13.03	12.3	9.92	2	0
Reflection Coefficient (1 to 4, 2.56 typical)	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Power Density (mW/cm²)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.05	0.04	0.03	0.04	0.01
Percent of Occupational Standard	0.0	0.1	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.5	0.4	0.2	1.1	0.7	0.6	0.9	0.2
Percent of General Population Standard	0.2	0.3	0.1	0.2	0.8	1.3	1.5	1.2	1.0	2.3	2.1	0.8	5.3	3.6	2.8	4.4	1.1

Antenna Type: BXA-171085-8CF
Max%: 5.32%

Instructions:

- 1) Fill in Site Location, Site number, Date, Name of Person Responsible for Date, and enter File Name to be saved as.
- 2) References to J4 refer to a point where the transmission line exits the equipment shelter and proceeds to the antenna(s). There is typically a connector located here where power measurements are made.
- 3) Enter Antenna Height (in feet to bottom of antenna), Antenna Gain (expressed as dBi, add 2.17 to dBd to obtain dBi), Antenna Size (vertical size in inches), Downtilt (in Degrees, enter zero if none), Feedline loss from J4 to Antenna
- 4) From manufacturer's plots, or data sheet, input Angle from mainbeam and dB below mainbeam centerline.
- 5) Enter Reflection coefficient (2.56 would be typical, 1 for free space)
- 6) Spreadsheet calculates actual power density, then relates as Occupational or General Population percentage of FCC Standard.
- 7) An odd distance may be entered in the rightmost column of the lower table.

CEN TEK engineering

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Structural Analysis Report

45-ft Existing ROHN Lattice Tower

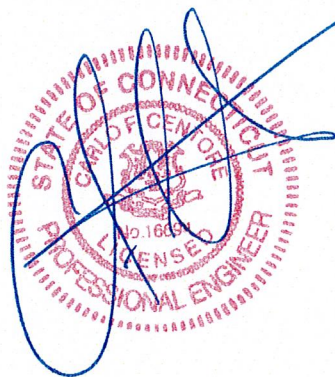
*Proposed Verizon Wireless
Antenna Upgrade*

Verizon Site Ref: Meriden East

*38 Elm Street
Meriden, CT*

Centek Project No. 13075.CO3

Date: April 19, 2013



Prepared for:

*Verizon Wireless
99 East River Road, 9th Floor
East Hartford, CT 06108*

CEN TEK Engineering, Inc.

Structural Analysis – 45-ft ROHN Roof Mounted Lattice Tower

Verizon Wireless Antenna Upgrade – Meriden East

Meriden, CT

April 19, 2013

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Introduction

The purpose of this report is to summarize the results of the non-linear, P- Δ structural analysis of the antenna installation proposed by Verizon Wireless on the existing self supporting lattice tower located in Meriden, Connecticut.

The host tower is a 65-ft AGL (45-ft tower mounted on a steel dunage frame $\pm 24'$ above grade), three legged, tapered lattice tower originally designed and manufactured by ROHN eng. file no. 31065JC, dated November 1994. The tower geometry and structure member sizes were obtained from the aforementioned ROHN design documents.

Antenna and appurtenance information were obtained from a previous structural report prepared by Centek Engineering job no. 12124.CO52 dated January 24, 2013 and a Verizon RF data sheet.

The tower is made of three (3) tapered vertical sections consisting of pipe legs and diagonal lateral support bracing consisting of structural steel angle shapes. The vertical tower sections are connected by bolted flange plates while legs and bracing are connected by bolted gusset connections. The width of the tower face is 6.52-ft at the top and 8.56-ft at the base.

Verizon Wireless proposes the replacement of three (3) existing panel antenna with three (3) proposed panel antennas mounted to the existing three (3) 15' Boom Gates. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- TOWN (Reserved):
 - Antennas: One (1) 8-ft parabolic dish mounted on one (1) 6-ft pipe with a RAD center elevation of ± 55 -ft above finished grade (± 31 -ft above tower base).
 - Coax Cables: One (1) WE65 coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing to Remain):
 - Antennas: Four (4) Antel LPA-80080/6CF panel antennas, two (2) Antel LPA-80063/6CF panel antennas, three (3) Antel BXA-171063-8CF panel antennas, three (3) Antel BXA-171085-8CF panel antennas, three (3) Alcatel-Lucent RRH2x40-AWS Remote Radio Heads, three (3) Alcatel-Lucent RRH2x40-07-U Remote Radio Heads and one (1) RFS DB-T1-6Z-8AB-0Z main distribution box mounted on three (3) 15' Boom Gates with a RAD center elevation of ± 66 -ft above finished grade (± 42 -ft above tower base).
 - Coax Cables: Twelve (12) 1-5/8" \varnothing coax cables and one (1) 1-5/8" \varnothing fiber line running on a leg/face of the existing tower as specified in Section 3 of this report.

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Structural Analysis – 45-ft ROHN Roof Mounted Lattice Tower

Verizon Wireless Antenna Upgrade – Meriden East

Meriden, CT

April 19, 2013

- **VERIZON (Existing to Remove):**
Antennas: Three (3) Powerwave P65-16-XL-2 panel antennas mounted on three (3) 15' Boom Gates with a RAD center elevation of ± 66 -ft above finished grade (± 42 -ft above tower base).
- **VERIZON (PROPOSED):**
Antennas: Three (3) Antel BXA-70063-6CF panel antennas mounted on three (3) 15' Boom Gates with a RAD center elevation of ± 66 -ft above finished grade (± 42 -ft above tower base).

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables routed as specified in Section 3 of this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled *tnxTower*. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (fastest mile) with no ice and a 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix K of the CSBC¹ and the wind speed data available in the TIA/EIA-222-F-96 Standard. The higher of the two wind speeds is utilized in preparation on the tower analysis.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice on the tower structure and its components.

Basic Wind Speed:	New Haven; v = 85 mph (fastest mile)	[Section 16 of TIA/EIA-222-F-96]
	Meriden; v = 100 mph (3 second gust) equivalent to v = 80 mph (fastest mile)	[Appendix K of the 2005 CT Building Code Supplement]
	<i>TIA/EIA wind speed controls.</i>	
Load Cases:	<u>Load Case 1</u> ; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	[Section 2.3.16 of TIA/EIA-222-F-96]
	<u>Load Case 2</u> ; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 74 mph wind speed velocity represents 75% of the wind pressure generated by the 85 mph wind speed.	[Section 2.3.16 of TIA/EIA-222-F-96]
	<u>Load Case 3</u> ; Seismic – not checked	[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type

¹ The 2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)

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Structural Analysis – 45-ft ROHN Roof Mounted Lattice Tower

Verizon Wireless Antenna Upgrade – Meriden East

Meriden, CT

April 19, 2013

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

Calculated stresses were found to be within allowable limits. In Load Case 1, per tnxTower "Section Capacity Table", this tower was found to be at **84.0%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T3)	24'-0"-44'-0"	70.7%	PASS
Diagonal (T2)	44'-0"-64'-0"	84.0%	PASS

Steel Dunnage Frame and Anchors

The existing steel dunnage frame consists of W beams and bracing bearing on four (4) HSS14x14 steel columns.

Tower legs are connected to the steel dunnage frame by means of (4) 5/8" Ø, ASTM A325 anchor bolts per leg via a 5"x5"x3/4" base plate.

Review of the steel dunnage frame and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower leg reactions developed from the governing Load Case 1 were used in the verification of the steel dunnage frame. The steel dunnage frame was found to be within allowable limits

Reactions	Design Loading ⁽¹⁾	Proposed Loading	Result
Compression	50.9 kips	48.8 kips	PASS
Tension	46.3 kips	44.3 kips	PASS
Overturing Moment	356.3 ft-kips	349 kip-ft	PASS

Note: (1) Design loading taken from ROHN design documents eng. file no. 31065JC, drawing no. C941513 dated November 1994.

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Structural Analysis – 45-ft ROHN Roof Mounted Lattice Tower

Verizon Wireless Antenna Upgrade – Meriden East

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April 19, 2013

- The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	58.4%	PASS

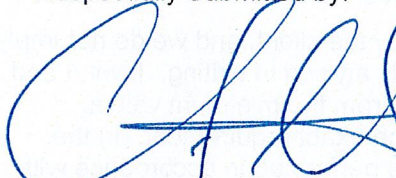
Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

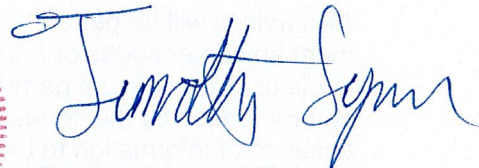
Please feel free to call with any questions or comments.

Respectfully Submitted by:


Carlo F. Centore, PE
Principal ~ Structural Engineer



Prepared by:


Timothy J. Lynn, EIT
Structural Engineer

CENTEK Engineering, Inc.

Structural Analysis – 45-ft ROHN Roof Mounted Lattice Tower

Verizon Wireless Antenna Upgrade – Meriden East

Meriden, CT

April 19, 2013

Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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Structural Analysis – 45-ft ROHN Roof Mounted Lattice Tower

Verizon Wireless Antenna Upgrade – Meriden East

Meriden, CT

April 19, 2013

General Description of Structural Analysis Program

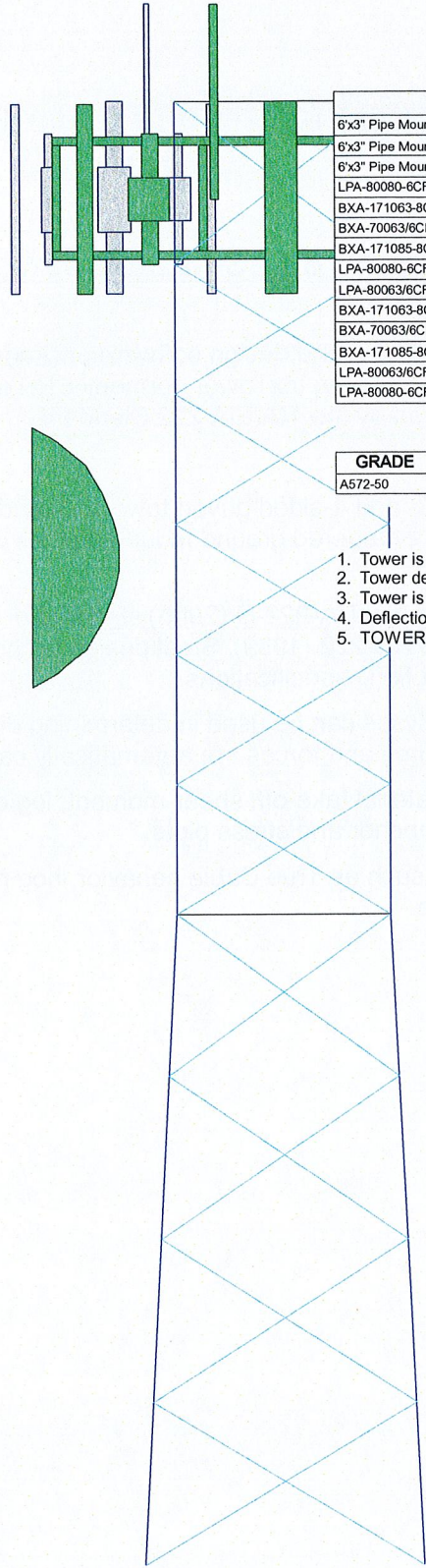
tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	T1	T2	T3
Legs	ROHN 2 EH	ROHN 2 X-STR	ROHN 2.5 EH
Leg Grade		A572-50	
Diagonals	L1 1/2x1 1/2x3/16	L1 1/2x1 1/2x3/16	L1 3/4x1 3/4x3/16
Diagonal Grade		A36	
Top Chis	L1 1/2x1 1/2x3/16	N.A.	L1 1/2x1 1/2x3/16
Face Width (ft)	6.521		6.563
# Panels @ (ft)	1 @ 5	5 @ 4	4 @ 5
Weight (lb)	194.9	681.7	995.5

69.0 ft
64.0 ft
44.0 ft
24.0 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
6'x3" Pipe Mount (Empty)	69	BXA-171063-8CF (Verizon - Existing)	66
6'x3" Pipe Mount (Empty)	69	BXA-70063/6CF (Verizon - Proposed)	66
6'x3" Pipe Mount (Empty)	69	BXA-171085-8CF (Verizon - Existing)	66
LPA-80080-6CF (Verizon - Existing)	66	LPA-80080-6CF (Verizon - Existing)	66
BXA-171063-8CF (Verizon - Existing)	66	Rohn 6'x15' Boom Gate (3) (Verizon - Existing)	66
BXA-70063/6CF (Verizon - Proposed)	66	DB-T1-6Z-8AB-0Z (Verizon - Existing)	66
BXA-171085-8CF (Verizon - Existing)	66	RRH2x40-AWS (Verizon - Existing)	66
LPA-80080-6CF (Verizon - Existing)	66	RRH2x40-AWS (Verizon - Existing)	66
LPA-80063/6CF (Verizon - Existing)	66	RRH2x40-AWS (Verizon - Existing)	66
BXA-171063-8CF (Verizon - Existing)	66	RRH2x40-AWS (Verizon - Existing)	66
BXA-70063/6CF (Verizon - Proposed)	66	RRH2x40-07-U (Verizon - Existing)	66
BXA-171085-8CF (Verizon - Existing)	66	RRH2x40-07-U (Verizon - Existing)	66
LPA-80063/6CF (Verizon - Existing)	66	RRH2x40-07-U (Verizon - Existing)	66
LPA-80080-6CF (Verizon - Existing)	66	8 FT DISH (Town Reserved)	55

MATERIAL STRENGTH

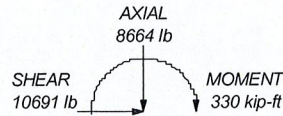
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

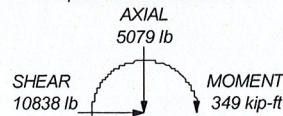
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 84%

MAX. CORNER REACTIONS AT BASE:

DOWN: 48814 lb
UPLIFT: -44282 lb
SHEAR: 6357 lb



TORQUE 12 kip-ft
74 mph WIND - 0.5000 in ICE



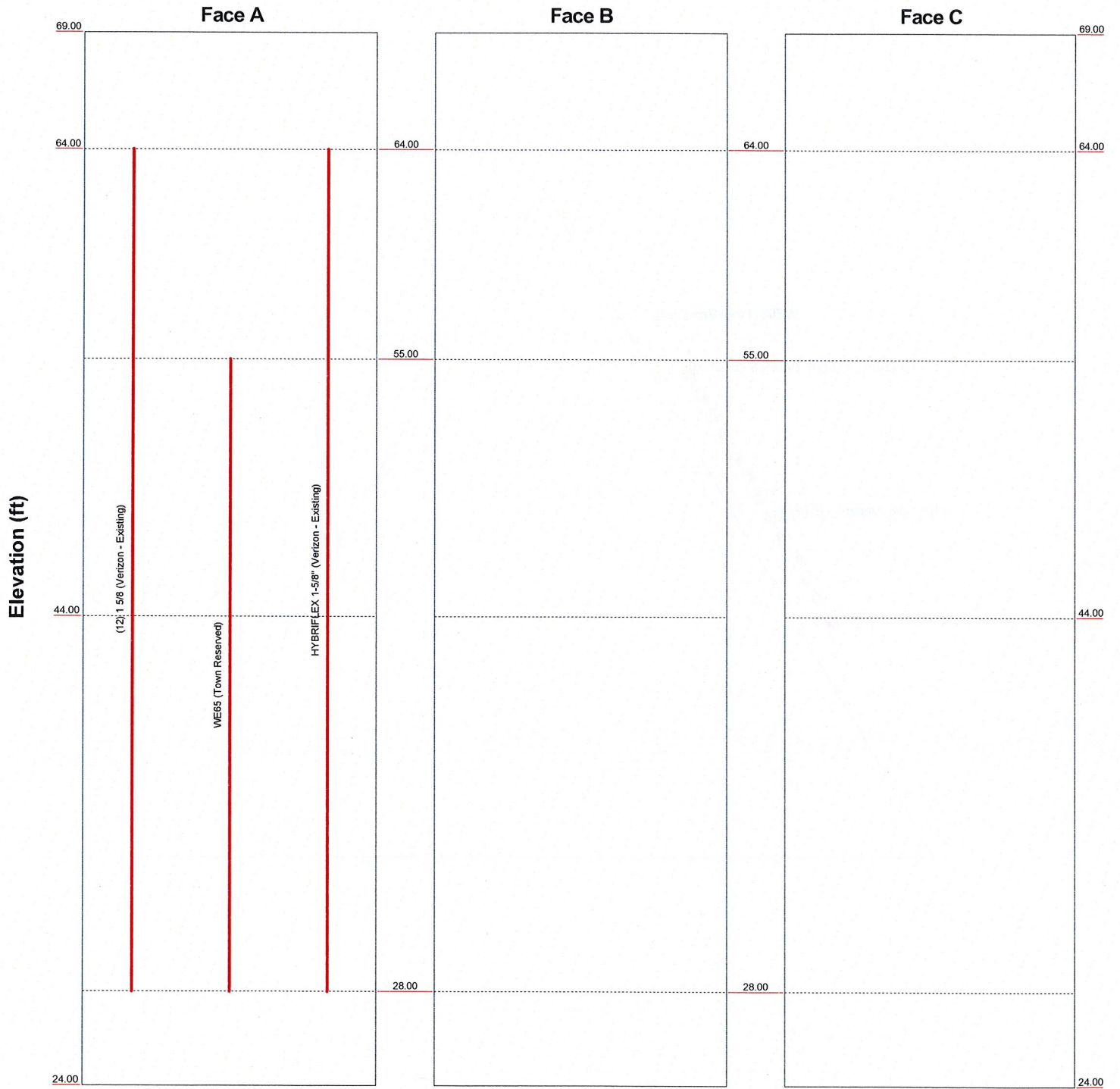
TORQUE 14 kip-ft
REACTIONS - 85 mph WIND

Centek Engineering Inc.		Job: 13075.CO3 - Meriden East	
63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587			
Project: 45ft ROHN Lattice Tower - 38 Elm St., Meriden, CT		Client: Verizon Wireless	Drawn by: T.JL
Code: TIA/EIA-222-F	Date: 04/19/13	App'd:	Scale: NTS
Path: \\lbn1307500\W\CO3-Meriden East\Calc\ERI\Fig\45-F_Rohn_SSV_Lattice.dwg		Dwg No. E-1	

Feedline Distribution Chart

24' - 69'

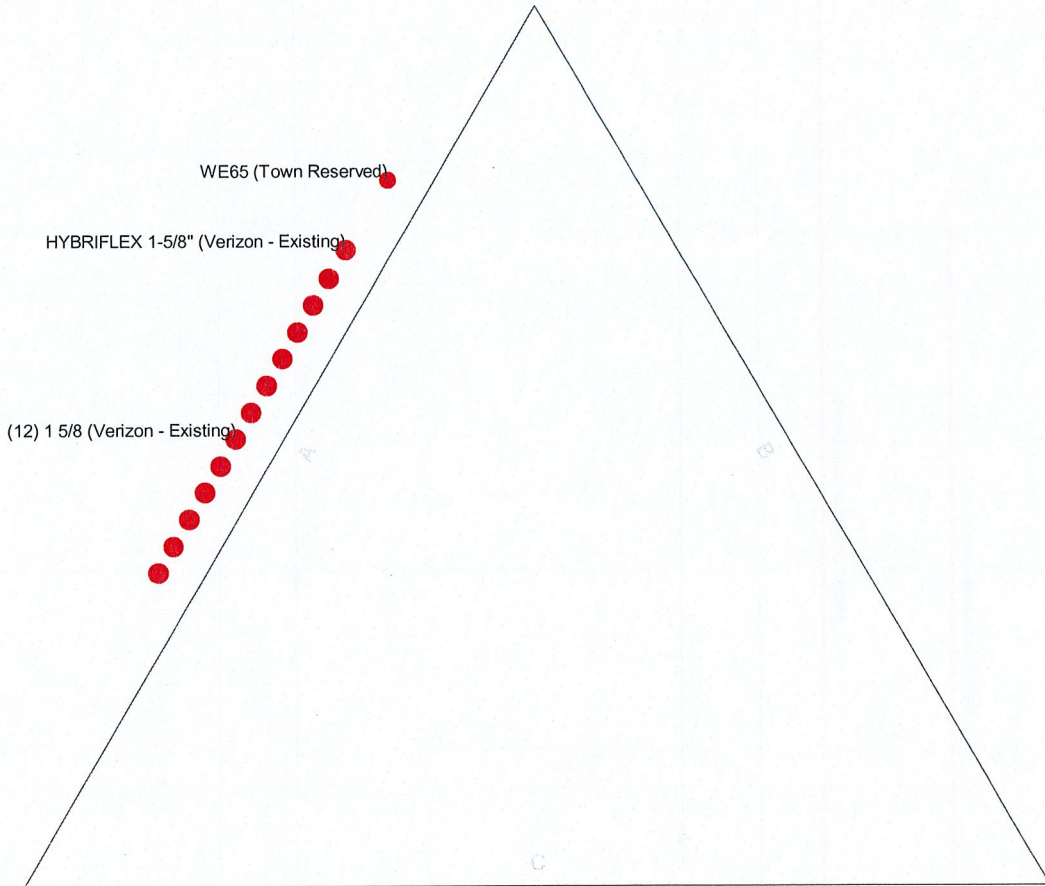
— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



Centek Engineering Inc.		Job: 13075.CO3 - Meriden East	
63-2 North Branford Rd.		Project: 45ft ROHN Lattice Tower - 38 Elm St., Meriden, CT	
Branford, CT 06405		Client: Verizon Wireless	Drawn by: T.JL
Phone: (203) 488-0580		Code: TIA/EIA-222-F	Date: 04/19/13
FAX: (203) 488-8587		Path:	Scale: NTS
		Dwg No. E-7	

Feedline Plan

Round Flat App In Face App Out Face



Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: 13075.CO3 - Meriden East		
	Project: 45ft ROHN Lattice Tower - 38 Elm St., Meriden, CT		
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 04/19/13	Scale: NTS
	Path: J:\Jobs\1307500\W\CO3-Meriden East\Cat\ERIFiles\45-Ft_Rohn_SSV_Lattice.ctb	Dwg No. E-7	

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Tower Input Data

The main tower is a 3x free standing tower with an overall height of 69.00 ft above the ground line.
 The base of the tower is set at an elevation of 24.00 ft above the ground line.
 The face width of the tower is 6.52 ft at the top and 8.56 ft at the base.
 This tower is designed using the TIA/EIA-222-F standard.

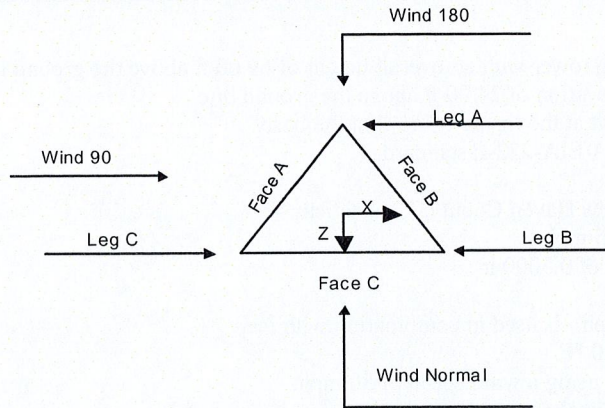
The following design criteria apply:

- Tower is located in New Haven County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 50 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333.
- Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension Bypass Mast Stability Checks Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="padding-left: 20px;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	69.00-64.00			6.52	1	5.00
T2	64.00-44.00			6.52	1	20.00
T3	44.00-24.00			6.56	1	20.00

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
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	69.00-64.00	5.00	X Brace	No	No	0.0000	0.0000
T2	64.00-44.00	4.00	X Brace	No	No	0.0000	0.0000
T3	44.00-24.00	5.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

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Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 69.00-64.00	Pipe	ROHN 2 EH	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 64.00-44.00	Pipe	ROHN 2 X-STR	A572-50 (50 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 44.00-24.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 69.00-64.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 44.00-24.00	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

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 Horizontal in
T1 69.00-64.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 64.00-44.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 44.00-24.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
T1 69.00-64.00	Yes	No	1	X Y	X Y	X Y	X Y	X Y	X Y	X Y
T2 64.00-44.00	Yes	No	1	X Y	X Y	X Y	X Y	X Y	X Y	X Y
T3 44.00-24.00	Yes	No	1	X Y	X Y	X Y	X Y	X Y	X Y	X Y

¹Note: 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.

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Tower Section Geometry (cont'd)

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
T1 69.00-64.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 64.00-44.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 44.00-24.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
	in	in	in	in	in	in	in	in
T1 69.00-64.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 64.00-44.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 44.00-24.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

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.		
T1 69.00-64.00	Flange	0.6250	4	0.5000	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 64.00-44.00	Flange	0.6250	4	0.5000	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 44.00-24.00	Flange	0.6250	4	0.5000	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

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
1 5/8 (Verizon - Existing)	A	Yes	Ar (CfAe)	64.00 - 28.00	3.0000	0	12	12	1.0000 1.9800	1.9800		1.04

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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
WE65 (Town Reserved)	A	Yes	Ar (CfAe)	55.00 - 28.00	3.0000	0.28	1	1	1.5836	1.5836		0.53
HYBRIFLEX 1-5/8" (Verizon - Existing)	A	Yes	Ar (CfAe)	64.00 - 28.00	3.0000	0.2	1	1	1.9800	1.9800		1.90

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T1	69.00-64.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	64.00-44.00	A	44.352	0.000	0.000	0.000	293.43
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	44.00-24.00	A	36.431	0.000	0.000	0.000	238.56
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

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} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T1	69.00-64.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	64.00-44.00	A	0.500	12.302	54.633	0.000	0.000	864.36
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T3	44.00-24.00	A	0.500	11.391	43.707	0.000	0.000	704.47
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

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	69.00-64.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	64.00-44.00	A	0.000	3.269	3.249	4.903
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000

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Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft ²	ft ²	ft ²	ft ²
T3	44.00-24.00	A	0.000	2.436	2.781	4.206
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	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	69.00-64.00	0.0000	0.0000	0.0000	0.0000
T2	64.00-44.00	-9.8853	-6.6814	-8.5941	-5.9190
T3	44.00-24.00	-8.5506	-6.0452	-7.6857	-5.5739

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C_{AA} Front	C_{AA} Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	lb	
6'x3" Pipe Mount (Empty)	A	From Face	4.00	0.0000	69.00	No Ice	1.77	1.77	34.74
			2.00			1/2" Ice	2.13	2.13	47.98
			0.00						
6'x3" Pipe Mount (Empty)	B	From Face	4.00	0.0000	69.00	No Ice	1.77	1.77	34.74
			2.00			1/2" Ice	2.13	2.13	47.98
			0.00						
6'x3" Pipe Mount (Empty)	C	From Face	4.00	0.0000	69.00	No Ice	1.77	1.77	34.74
			2.00			1/2" Ice	2.13	2.13	47.98
			0.00						
LPA-80080-6CF (Verizon - Existing)	A	From Face	4.00	0.0000	66.00	No Ice	4.33	9.09	21.00
			-6.00			1/2" Ice	4.76	9.64	69.24
			0.00						
BXA-171063-8CF (Verizon - Existing)	A	From Face	4.00	0.0000	66.00	No Ice	2.94	2.16	11.00
			-4.00			1/2" Ice	3.26	2.46	29.78
			0.00						
BXA-70063/6CF (Verizon - Proposed)	A	From Face	4.00	0.0000	66.00	No Ice	7.73	4.16	17.00
			0.00			1/2" Ice	8.27	4.60	59.49
			0.00						
BXA-171085-8CF (Verizon - Existing)	A	From Face	4.00	0.0000	66.00	No Ice	2.94	2.16	10.50
			4.00			1/2" Ice	3.26	2.46	29.28
			0.00						
LPA-80080-6CF (Verizon - Existing)	A	From Face	4.00	0.0000	66.00	No Ice	4.33	9.09	21.00
			6.00			1/2" Ice	4.76	9.64	69.24
			0.00						
LPA-80063/6CF (Verizon - Existing)	B	From Face	4.00	0.0000	66.00	No Ice	10.31	9.01	27.00
			-6.00			1/2" Ice	10.87	9.55	100.95
			0.00						
BXA-171063-8CF (Verizon - Existing)	B	From Face	4.00	0.0000	66.00	No Ice	2.94	2.16	11.00
			-4.00			1/2" Ice	3.26	2.46	29.78
			0.00						

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAA Front ft ²	CAA Side ft ²	Weight lb
BXA-70063/6CF (Verizon - Proposed)	B	From Face	4.00 0.00 0.00	0.0000	66.00	No Ice 1/2" Ice 7.73 8.27	4.16 4.60	17.00 59.49
BXA-171085-8CF (Verizon - Existing)	B	From Face	4.00 4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.94 3.26	2.16 2.46	10.50 29.28
LPA-80063/6CF (Verizon - Existing)	B	From Face	4.00 6.00 0.00	0.0000	66.00	No Ice 1/2" Ice 10.31 10.87	9.01 9.55	27.00 100.95
LPA-80080-6CF (Verizon - Existing)	C	From Face	4.00 -6.00 0.00	0.0000	66.00	No Ice 1/2" Ice 4.33 4.76	9.09 9.64	21.00 69.24
BXA-171063-8CF (Verizon - Existing)	C	From Face	4.00 -4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.94 3.26	2.16 2.46	11.00 29.78
BXA-70063/6CF (Verizon - Proposed)	C	From Face	4.00 0.00 0.00	0.0000	66.00	No Ice 1/2" Ice 7.73 8.27	4.16 4.60	17.00 59.49
BXA-171085-8CF (Verizon - Existing)	C	From Face	4.00 4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.94 3.26	2.16 2.46	10.50 29.28
LPA-80080-6CF (Verizon - Existing)	C	From Face	4.00 6.00 0.00	0.0000	66.00	No Ice 1/2" Ice 4.33 4.76	9.09 9.64	21.00 69.24
Rohn 6'x15' Boom Gate (3) (Verizon - Existing)	A	None		0.0000	66.00	No Ice 1/2" Ice 53.20 63.30	53.20 63.30	1790.00 2230.00
DB-T1-6Z-8AB-0Z (Verizon - Existing)	A	From Face	4.00 0.00 0.00	0.0000	66.00	No Ice 1/2" Ice 5.60 5.92	2.33 2.56	44.00 80.13
RRH2x40-AWS (Verizon - Existing)	A	From Face	4.00 -4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.52 2.75	1.59 1.80	44.00 61.40
RRH2x40-AWS (Verizon - Existing)	B	From Face	4.00 -4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.52 2.75	1.59 1.80	44.00 61.40
RRH2x40-AWS (Verizon - Existing)	C	From Face	4.00 -4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.52 2.75	1.59 1.80	44.00 61.40
RRH2x40-07-U (Verizon - Existing)	A	From Face	4.00 4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.25 2.45	1.23 1.39	50.00 66.85
RRH2x40-07-U (Verizon - Existing)	B	From Face	4.00 4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.25 2.45	1.23 1.39	50.00 66.85
RRH2x40-07-U (Verizon - Existing)	C	From Face	4.00 4.00 0.00	0.0000	66.00	No Ice 1/2" Ice 2.25 2.45	1.23 1.39	50.00 66.85

Dishes

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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 ²	lb
8 FT DISH (Town Reserved)	C	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	Worst		55.00	8.00	No Ice 1/2" Ice	251.00 514.30

Tower Pressures - No Ice

$G_H = 1.224$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T1 69.00-64.00	66.50	1.222	23	33.597	A	2.747	1.983	1.983	41.93	0.000	0.000
					B	2.747	1.983	41.93	0.000	0.000	
					C	2.747	1.983	41.93	0.000	0.000	
T2 64.00-44.00	54.00	1.151	21	134.798	A	5.809	52.268	7.917	13.63	0.000	0.000
					B	9.058	7.917	46.64	0.000	0.000	
					C	9.058	7.917	46.64	0.000	0.000	
T3 44.00-24.00	34.00	1.009	19	156.058	A	8.119	46.031	9.599	17.73	0.000	0.000
					B	10.900	9.599	46.83	0.000	0.000	
					C	10.900	9.599	46.83	0.000	0.000	

Tower Pressure - With Ice

$G_H = 1.224$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T1 69.00-64.00	66.50	1.222	17	0.5000	34.013	A	2.747	4.648	2.817	38.09	0.000	0.000
						B	2.747	4.648	38.09	0.000	0.000	
						C	2.747	4.648	38.09	0.000	0.000	
T2 64.00-44.00	54.00	1.151	16	0.5000	136.465	A	58.787	26.321	11.250	13.22	0.000	0.000
						B	9.058	17.288	42.70	0.000	0.000	
						C	9.058	17.288	42.70	0.000	0.000	
T3 44.00-24.00	34.00	1.009	14	0.5000	157.726	A	50.401	28.198	12.938	16.46	0.000	0.000
						B	10.900	19.243	42.92	0.000	0.000	
						C	10.900	19.243	42.92	0.000	0.000	

Tower Pressure - Service

$G_H = 1.224$

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Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _I In Face	C _A A _I Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T1 69.00-64.00	66.50	1.222	8	33.597	A	2.747	1.983	1.983	41.93	0.000	0.000
					B	2.747	1.983		41.93	0.000	0.000
					C	2.747	1.983		41.93	0.000	0.000
T2 64.00-44.00	54.00	1.151	7	134.798	A	5.809	52.268	7.917	13.63	0.000	0.000
					B	9.058	7.917		46.64	0.000	0.000
					C	9.058	7.917		46.64	0.000	0.000
T3 44.00-24.00	34.00	1.009	6	156.058	A	8.119	46.031	9.599	17.73	0.000	0.000
					B	10.900	9.599		46.83	0.000	0.000
					C	10.900	9.599		46.83	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	1	1	3.897	302.43	60.49	C
			B	0.141	2.806	0.58	1	1	3.897			
			C	0.141	2.806	0.58	1	1	3.897			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	1	1	40.550	2119.92	106.00	A
			B	0.126	2.862	0.578	1	1	13.634			
			C	0.126	2.862	0.578	1	1	13.634			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	1	1	37.183	1849.56	92.48	A
			B	0.131	2.841	0.579	1	1	16.456			
			C	0.131	2.841	0.579	1	1	16.456			
Sum Weight:	531.99	1822.13						OTM	94.95 kip-ft	4271.92		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	0.825	1	3.417	265.13	53.03	C
			B	0.141	2.806	0.58	0.825	1	3.417			
			C	0.141	2.806	0.58	0.825	1	3.417			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	0.825	1	39.533	2066.78	103.34	A
			B	0.126	2.862	0.578	0.825	1	12.049			
			C	0.126	2.862	0.578	0.825	1	12.049			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	0.825	1	35.762	1778.89	88.94	A
			B	0.131	2.841	0.579	0.825	1	14.549			
			C	0.131	2.841	0.579	0.825	1	14.549			
Sum Weight:	531.99	1822.13						OTM	91.06 kip-ft	4110.80		

Tower Forces - No Ice - Wind 60 To Face

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	0.8	1	3.348	259.80	51.96	C
			B	0.141	2.806	0.58	0.8	1	3.348			
			C	0.141	2.806	0.58	0.8	1	3.348			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	0.8	1	39.388	2059.19	102.96	A
			B	0.126	2.862	0.578	0.8	1	11.823			
			C	0.126	2.862	0.578	0.8	1	11.823			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	0.8	1	35.559	1768.79	88.44	A
			B	0.131	2.841	0.579	0.8	1	14.276			
			C	0.131	2.841	0.579	0.8	1	14.276			
Sum Weight:	531.99	1822.13						OTM	90.51 kip-ft	4087.78		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	0.85	1	3.485	270.46	54.09	C
			B	0.141	2.806	0.58	0.85	1	3.485			
			C	0.141	2.806	0.58	0.85	1	3.485			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	0.85	1	39.678	2074.37	103.72	A
			B	0.126	2.862	0.578	0.85	1	12.275			
			C	0.126	2.862	0.578	0.85	1	12.275			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	0.85	1	35.965	1788.99	89.45	A
			B	0.131	2.841	0.579	0.85	1	14.821			
			C	0.131	2.841	0.579	0.85	1	14.821			
Sum Weight:	531.99	1822.13						OTM	91.62 kip-ft	4133.81		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	324.34	A	0.217	2.539	0.594	1	1	5.508	290.08	58.02	C
			B	0.217	2.539	0.594	1	1	5.508			
			C	0.217	2.539	0.594	1	1	5.508			
T2 64.00-44.00	864.36	1133.67	A	0.624	1.791	0.768	1	1	79.012	2766.12	138.31	A
			B	0.193	2.619	0.589	1	1	19.241			
			C	0.193	2.619	0.589	1	1	19.241			
T3 44.00-24.00	704.47	1452.18	A	0.498	1.902	0.697	1	1	70.045	2281.67	114.08	A
			B	0.191	2.626	0.589	1	1	22.227			
			C	0.191	2.626	0.589	1	1	22.227			
Sum Weight:	1568.84	2910.19						OTM	118.13 kip-ft	5337.88		

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Tower Forces - With Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	324.34	A	0.217	2.539	0.594	0.825	1	5.028	264.77	52.95	C
			B	0.217	2.539	0.594	0.825	1	5.028			
			C	0.217	2.539	0.594	0.825	1	5.028			
T2 64.00-44.00	864.36	1133.67	A	0.624	1.791	0.768	0.825	1	68.724	2405.96	120.30	A
			B	0.193	2.619	0.589	0.825	1	17.656			
			C	0.193	2.619	0.589	0.825	1	17.656			
T3 44.00-24.00	704.47	1452.18	A	0.498	1.902	0.697	0.825	1	61.225	1994.36	99.72	A
			B	0.191	2.626	0.589	0.825	1	20.319			
			C	0.191	2.626	0.589	0.825	1	20.319			
Sum Weight:	1568.84	2910.19						OTM	103.37 kip-ft	4665.09		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	324.34	A	0.217	2.539	0.594	0.8	1	4.959	261.15	52.23	C
			B	0.217	2.539	0.594	0.8	1	4.959			
			C	0.217	2.539	0.594	0.8	1	4.959			
T2 64.00-44.00	864.36	1133.67	A	0.624	1.791	0.768	0.8	1	67.254	2354.50	117.73	A
			B	0.193	2.619	0.589	0.8	1	17.429			
			C	0.193	2.619	0.589	0.8	1	17.429			
T3 44.00-24.00	704.47	1452.18	A	0.498	1.902	0.697	0.8	1	59.965	1953.32	97.67	A
			B	0.191	2.626	0.589	0.8	1	20.047			
			C	0.191	2.626	0.589	0.8	1	20.047			
Sum Weight:	1568.84	2910.19						OTM	101.27 kip-ft	4568.97		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	324.34	A	0.217	2.539	0.594	0.85	1	5.096	268.39	53.68	C
			B	0.217	2.539	0.594	0.85	1	5.096			
			C	0.217	2.539	0.594	0.85	1	5.096			
T2 64.00-44.00	864.36	1133.67	A	0.624	1.791	0.768	0.85	1	70.194	2457.41	122.87	A
			B	0.193	2.619	0.589	0.85	1	17.882			
			C	0.193	2.619	0.589	0.85	1	17.882			
T3 44.00-24.00	704.47	1452.18	A	0.498	1.902	0.697	0.85	1	62.485	2035.41	101.77	A
			B	0.191	2.626	0.589	0.85	1	20.592			
			C	0.191	2.626	0.589	0.85	1	20.592			
Sum Weight:	1568.84	2910.19						OTM	105.48 kip-ft	4761.20		

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Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	1	1	3.897	104.65	20.93	C
			B	0.141	2.806	0.58	1	1	3.897			
			C	0.141	2.806	0.58	1	1	3.897			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	1	1	40.550	733.54	36.68	A
			B	0.126	2.862	0.578	1	1	13.634			
			C	0.126	2.862	0.578	1	1	13.634			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	1	1	37.183	639.99	32.00	A
			B	0.131	2.841	0.579	1	1	16.456			
			C	0.131	2.841	0.579	1	1	16.456			
Sum Weight:	531.99	1822.13						OTM	32.85 kip-ft	1478.17		

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	0.825	1	3.417	91.74	18.35	C
			B	0.141	2.806	0.58	0.825	1	3.417			
			C	0.141	2.806	0.58	0.825	1	3.417			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	0.825	1	39.533	715.15	35.76	A
			B	0.126	2.862	0.578	0.825	1	12.049			
			C	0.126	2.862	0.578	0.825	1	12.049			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	0.825	1	35.762	615.53	30.78	A
			B	0.131	2.841	0.579	0.825	1	14.549			
			C	0.131	2.841	0.579	0.825	1	14.549			
Sum Weight:	531.99	1822.13						OTM	31.51 kip-ft	1422.42		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	0.8	1	3.348	89.90	17.98	C
			B	0.141	2.806	0.58	0.8	1	3.348			
			C	0.141	2.806	0.58	0.8	1	3.348			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	0.8	1	39.388	712.52	35.63	A
			B	0.126	2.862	0.578	0.8	1	11.823			
			C	0.126	2.862	0.578	0.8	1	11.823			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	0.8	1	35.559	612.04	30.60	A
			B	0.131	2.841	0.579	0.8	1	14.276			
			C	0.131	2.841	0.579	0.8	1	14.276			
Sum Weight:	531.99	1822.13						OTM	31.32	1414.46		

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
									kip-ft			

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 69.00-64.00	0.00	194.95	A	0.141	2.806	0.58	0.85	1	3.485	93.58	18.72	C
			B	0.141	2.806	0.58	0.85	1	3.485			
			C	0.141	2.806	0.58	0.85	1	3.485			
T2 64.00-44.00	293.43	691.69	A	0.431	2.006	0.665	0.85	1	39.678	717.78	35.89	A
			B	0.126	2.862	0.578	0.85	1	12.275			
			C	0.126	2.862	0.578	0.85	1	12.275			
T3 44.00-24.00	238.56	935.50	A	0.347	2.179	0.631	0.85	1	35.965	619.03	30.95	A
			B	0.131	2.841	0.579	0.85	1	14.821			
			C	0.131	2.841	0.579	0.85	1	14.821			
Sum Weight:	531.99	1822.13						OTM	31.70	1430.39		

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Leg Weight	838.05					
Bracing Weight	984.08					
Total Member Self-Weight	1822.13					
Total Weight	5078.84			-0.17	2.43	
Wind 0 deg - No Ice		105.89	-10585.71	-336.62	-2.02	-14.38
Wind 30 deg - No Ice		5421.72	-9100.84	-290.88	-172.44	-10.34
Wind 45 deg - No Ice		7596.38	-7446.18	-238.47	-242.18	-7.20
Wind 60 deg - No Ice		9244.94	-5292.49	-170.02	-295.05	-3.57
Wind 90 deg - No Ice		10660.03	-105.89	-4.61	-339.61	4.10
Wind 120 deg - No Ice		9298.51	5201.15	164.21	-294.45	10.69
Wind 135 deg - No Ice		7446.63	7296.42	231.85	-235.89	13.01
Wind 150 deg - No Ice		5238.31	8994.95	286.10	-164.74	14.44
Wind 180 deg - No Ice		-105.89	10401.57	331.84	6.88	14.28
Wind 210 deg - No Ice		-5421.72	9100.84	290.55	177.30	10.34
Wind 225 deg - No Ice		-7596.38	7446.18	238.47	247.04	7.20
Wind 240 deg - No Ice		-9404.40	5384.56	171.91	303.75	3.69
Wind 270 deg - No Ice		-10660.03	105.89	4.28	344.47	-4.10
Wind 300 deg - No Ice		-9139.05	-5109.08	-162.32	295.46	-10.70
Wind 315 deg - No Ice		-7446.63	-7296.42	-232.18	240.75	-13.01
Wind 330 deg - No Ice		-5238.31	-8994.95	-286.43	169.60	-14.44
Member Ice	1088.05					
Total Weight Ice	8666.60			-0.99	5.69	
Wind 0 deg - Ice		80.82	-10498.34	-317.82	2.29	-12.12
Wind 30 deg - Ice		5112.22	-8632.82	-266.12	-152.76	-8.90
Wind 45 deg - Ice		7119.98	-7004.86	-216.99	-215.14	-6.43

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 60 deg - Ice		8607.34	-4934.71	-153.91	-261.71	-3.53
Wind 90 deg - Ice		10084.47	-80.82	-4.39	-305.33	2.54
Wind 120 deg - Ice		9192.42	5179.18	154.48	-272.92	8.03
Wind 135 deg - Ice		7005.69	6890.57	210.20	-210.34	10.08
Wind 150 deg - Ice		4972.25	8552.00	260.74	-146.88	11.44
Wind 180 deg - Ice		-80.82	9729.44	298.97	9.08	11.61
Wind 210 deg - Ice		-5112.22	8632.82	264.13	164.13	8.90
Wind 225 deg - Ice		-7119.98	7004.86	215.00	226.52	6.43
Wind 240 deg - Ice		-9273.24	5319.16	160.36	287.68	4.09
Wind 270 deg - Ice		-10084.47	80.82	2.40	316.70	-2.54
Wind 300 deg - Ice		-8526.53	-4794.73	-148.03	269.69	-8.08
Wind 315 deg - Ice		-7005.69	-6890.57	-212.19	221.72	-10.08
Wind 330 deg - Ice		-4972.25	-8552.00	-262.72	158.25	-11.44
Total Weight	5078.84			-0.17	2.43	
Wind 0 deg - Service		36.64	-3662.88	-115.86	-0.12	-4.98
Wind 30 deg - Service		1876.03	-3149.08	-100.03	-59.09	-3.58
Wind 45 deg - Service		2628.51	-2576.53	-81.90	-83.22	-2.49
Wind 60 deg - Service		3198.94	-1831.31	-58.21	-101.52	-1.24
Wind 90 deg - Service		3688.59	-36.64	-0.98	-116.93	1.42
Wind 120 deg - Service		3217.48	1799.71	57.44	-101.31	3.70
Wind 135 deg - Service		2576.69	2524.71	80.84	-81.05	4.50
Wind 150 deg - Service		1812.56	3112.44	99.61	-56.43	5.00
Wind 180 deg - Service		-36.64	3599.16	115.44	2.96	4.94
Wind 210 deg - Service		-1876.03	3149.08	101.15	61.93	3.58
Wind 225 deg - Service		-2628.51	2576.53	83.02	86.06	2.49
Wind 240 deg - Service		-3254.12	1863.17	60.10	105.68	1.28
Wind 270 deg - Service		-3688.59	36.64	2.10	119.77	-1.42
Wind 300 deg - Service		-3162.30	-1767.85	-55.55	102.81	-3.70
Wind 315 deg - Service		-2576.69	-2524.71	-79.72	83.88	-4.50
Wind 330 deg - Service		-1812.56	-3112.44	-98.49	59.26	-5.00

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 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp

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Comb. No.	Description
22	Dead+ Wind 60 deg+Ice+Temp
23	Dead+ Wind 90 deg+Ice+Temp
24	Dead+ Wind 120 deg+Ice+Temp
25	Dead+ Wind 135 deg+Ice+Temp
26	Dead+ Wind 150 deg+Ice+Temp
27	Dead+ Wind 180 deg+Ice+Temp
28	Dead+ Wind 210 deg+Ice+Temp
29	Dead+ Wind 225 deg+Ice+Temp
30	Dead+ Wind 240 deg+Ice+Temp
31	Dead+ Wind 270 deg+Ice+Temp
32	Dead+ Wind 300 deg+Ice+Temp
33	Dead+ Wind 315 deg+Ice+Temp
34	Dead+ Wind 330 deg+Ice+Temp
35	Dead+ Wind 0 deg - Service
36	Dead+ Wind 30 deg - Service
37	Dead+ Wind 45 deg - Service
38	Dead+ Wind 60 deg - Service
39	Dead+ Wind 90 deg - Service
40	Dead+ Wind 120 deg - Service
41	Dead+ Wind 135 deg - Service
42	Dead+ Wind 150 deg - Service
43	Dead+ Wind 180 deg - Service
44	Dead+ Wind 210 deg - Service
45	Dead+ Wind 225 deg - Service
46	Dead+ Wind 240 deg - Service
47	Dead+ Wind 270 deg - Service
48	Dead+ Wind 300 deg - Service
49	Dead+ Wind 315 deg - Service
50	Dead+ Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	69 - 64	Leg	Max Tension	32	6.64	-0.01	-0.00
			Max. Compression	19	-1398.95	-0.05	0.84
			Max. Mx	6	-895.41	1.32	0.02
			Max. My	10	-891.78	0.11	1.19
			Max. Vy	14	-1061.37	0.79	-0.02
			Max. Vx	2	-1030.22	-0.11	0.85
		Diagonal	Max Tension	6	1158.38	0.00	0.00
			Max. Compression	6	-1161.47	0.00	0.00
			Max. Mx	22	-864.12	0.01	-0.00
			Max. My	6	-547.85	0.00	0.00
			Max. Vy	22	6.90	0.01	-0.00
			Max. Vx	6	-0.55	0.00	0.00
		Top Girt	Max Tension	5	485.62	0.00	0.00
			Max. Compression	13	-486.99	0.00	0.00
			Max. Mx	18	5.22	-0.02	0.00
			Max. My	34	-2.02	0.00	0.00
Max. Vy	18		10.90	0.00	0.00		
Max. Vx	34		-0.00	0.00	0.00		
T2	64 - 44	Leg	Max Tension	5	21093.19	0.55	-0.01
			Max. Compression	13	-24423.76	0.63	-0.04
			Max. Mx	13	-12473.73	0.76	-0.03
			Max. My	9	-1359.33	0.01	1.08
			Max. Vy	13	-423.85	0.76	-0.03
			Max. Vx	17	1303.18	-0.01	0.22

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T3	44 - 24	Diagonal	Max Tension	10	4174.35	0.00	0.00
			Max. Compression	2	-4256.90	0.00	0.00
			Max. Mx	30	2598.75	0.01	0.00
			Max. My	2	-3665.93	-0.00	0.01
			Max. Vy	30	-8.56	0.01	0.00
		Leg	Max. Vx	2	2.00	-0.00	0.01
			Max Tension	5	42015.42	0.44	-0.02
			Max. Compression	13	-46366.63	0.55	-0.04
			Max. Mx	24	-26746.31	0.84	-0.12
			Max. My	17	-1866.98	-0.00	0.54
		Diagonal	Max. Vy	24	-305.45	0.84	-0.12
			Max. Vx	17	-203.62	-0.00	0.53
			Max Tension	19	3642.08	0.00	0.00
			Max. Compression	19	-3809.29	0.00	0.00
			Max. Mx	21	718.96	0.03	0.00
		Top Girt	Max. My	10	-3460.13	0.00	-0.01
			Max. Vy	21	12.78	0.03	0.00
			Max. Vx	10	2.84	0.00	0.00
			Max Tension	22	285.33	0.00	0.00
			Max. Compression	13	-73.49	0.00	0.00
		Max. Mx	18	261.08	-0.02	0.00	
		Max. My	34	259.52	0.00	0.00	
		Max. Vy	18	10.97	0.00	0.00	
		Max. Vx	34	-0.32	0.00	0.00	

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	13	48813.62	5377.44	-3389.66
	Max. H _x	13	48813.62	5377.44	-3389.66
	Max. H _z	20	-32957.43	-4248.94	3665.77
	Min. Vert	5	-44281.83	-5087.52	3211.13
	Min. H _x	22	-38124.71	-5244.12	3292.28
	Min. H _z	11	42038.16	4115.75	-3735.69
Leg B	Max. Vert	7	47205.53	-5761.78	-2486.53
	Max. H _x	32	-38661.57	5581.63	2584.39
	Max. H _z	33	-37383.20	5394.85	2591.44
	Min. Vert	15	-43810.08	5487.17	2318.30
	Min. H _x	7	47205.53	-5761.78	-2486.53
	Min. H _z	7	47205.53	-5761.78	-2486.53
Leg A	Max. Vert	2	47139.88	-974.40	6198.48
	Max. H _x	11	-37533.24	1183.75	-5125.47
	Max. H _z	2	47139.88	-974.40	6198.48
	Min. Vert	10	-43109.53	972.89	-5865.42
	Min. H _x	3	40965.80	-1197.43	5341.17
	Min. H _z	27	-37500.08	781.77	-6079.63

Tower Mast Reaction Summary

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	5078.48	0.01	-0.00	-0.17	2.43	0.00
Dead+ Wind 0 deg - No Ice	5078.35	105.93	-10586.56	-337.03	-2.00	-14.39
Dead+ Wind 30 deg - No Ice	5078.48	5422.24	-9101.59	-291.24	-172.63	-10.34
Dead+ Wind 45 deg - No Ice	5078.56	7597.09	-7446.81	-238.76	-242.46	-7.20
Dead+ Wind 60 deg - No Ice	5078.59	9245.78	-5292.96	-170.23	-295.40	-3.57
Dead+ Wind 90 deg - No Ice	5078.47	10660.94	-105.94	-4.61	-340.02	4.10
Dead+ Wind 120 deg - No Ice	5078.35	9299.27	5201.56	164.43	-294.79	10.70
Dead+ Wind 135 deg - No Ice	5078.42	7447.36	7297.03	232.15	-236.16	13.02
Dead+ Wind 150 deg - No Ice	5078.45	5238.73	8995.71	286.46	-164.92	14.44
Dead+ Wind 180 deg - No Ice	5078.56	-105.89	10402.49	332.24	6.91	14.28
Dead+ Wind 210 deg - No Ice	5078.45	-5422.13	9101.63	290.89	177.53	10.34
Dead+ Wind 225 deg - No Ice	5078.38	-7596.96	7446.81	238.42	247.35	7.20
Dead+ Wind 240 deg - No Ice	5078.34	-9405.14	5385.00	172.12	304.12	3.69
Dead+ Wind 270 deg - No Ice	5078.45	-10660.91	105.87	4.30	344.88	-4.10
Dead+ Wind 300 deg - No Ice	5078.56	-9139.85	-5109.53	-162.50	295.82	-10.71
Dead+ Wind 315 deg - No Ice	5078.52	-7447.28	-7297.03	-232.45	241.05	-13.02
Dead+ Wind 330 deg - No Ice	5078.45	-5238.77	-8995.68	-286.77	169.82	-14.44
Dead+Ice+Temp	8664.34	-0.00	0.00	-0.99	5.69	0.00
Dead+ Wind 0 deg+Ice+Temp	8653.19	80.82	-10498.61	-318.36	2.31	-12.13
Dead+ Wind 30 deg+Ice+Temp	8653.18	5112.34	-8633.04	-266.58	-153.01	-8.91
Dead+ Wind 45 deg+Ice+Temp	8653.17	7120.14	-7005.03	-217.36	-215.50	-6.44
Dead+ Wind 60 deg+Ice+Temp	8653.16	8607.55	-4934.82	-154.18	-262.15	-3.54
Dead+ Wind 90 deg+Ice+Temp	8653.18	10084.72	-80.80	-4.39	-305.84	2.54
Dead+ Wind 120 deg+Ice+Temp	8653.19	9192.66	5179.32	154.76	-273.37	8.03
Dead+ Wind 135 deg+Ice+Temp	8653.18	7005.88	6890.74	210.58	-210.69	10.09
Dead+ Wind 150 deg+Ice+Temp	8653.17	4972.38	8552.21	261.19	-147.10	11.45
Dead+ Wind 180 deg+Ice+Temp	8653.16	-80.82	9729.66	299.48	9.12	11.63
Dead+ Wind 210 deg+Ice+Temp	8653.18	-5112.37	8633.02	264.58	164.43	8.91
Dead+ Wind 225 deg+Ice+Temp	8653.19	-7120.17	7005.03	215.37	226.91	6.44
Dead+ Wind 240 deg+Ice+Temp	8653.19	-9273.48	5319.30	160.63	288.17	4.10
Dead+ Wind 270 deg+Ice+Temp	8653.17	-10084.72	80.84	2.41	317.24	-2.54
Dead+ Wind 300 deg+Ice+Temp	8653.15	-8526.73	-4794.84	-148.28	270.15	-8.09
Dead+ Wind 315 deg+Ice+Temp	8653.16	-7005.85	-6890.74	-212.55	222.10	-10.09
Dead+ Wind 330 deg+Ice+Temp	8653.17	-4972.36	-8552.22	-263.15	158.55	-11.45
Dead+ Wind 0 deg - Service	5078.47	36.66	-3663.16	-116.73	0.89	-4.98
Dead+ Wind 30 deg - Service	5078.47	1876.20	-3149.33	-100.88	-58.15	-3.58
Dead+ Wind 45 deg - Service	5078.48	2628.74	-2576.74	-82.72	-82.31	-2.49
Dead+ Wind 60 deg - Service	5078.48	3199.22	-1831.46	-59.01	-100.62	-1.24
Dead+ Wind 90 deg - Service	5078.48	3688.87	-36.66	-1.70	-116.06	1.42
Dead+ Wind 120 deg - Service	5078.47	3217.74	1799.84	56.78	-100.42	3.70
Dead+ Wind 135 deg - Service	5078.46	2576.90	2524.90	80.22	-80.13	4.50
Dead+ Wind 150 deg - Service	5078.47	1812.72	3112.69	99.01	-55.48	5.00
Dead+ Wind 180 deg - Service	5078.48	-36.63	3599.45	114.86	3.98	4.94
Dead+ Wind 210 deg - Service	5078.47	-1876.17	3149.34	100.55	63.02	3.58
Dead+ Wind 225 deg - Service	5078.47	-2628.69	2576.74	82.39	87.18	2.49
Dead+ Wind 240 deg - Service	5078.47	-3254.36	1863.31	59.45	106.82	1.28
Dead+ Wind 270 deg - Service	5078.47	-3688.91	36.65	1.38	120.93	-1.42
Dead+ Wind 300 deg - Service	5078.47	-3162.55	-1767.99	-56.34	103.95	-3.71
Dead+ Wind 315 deg - Service	5078.47	-2576.89	-2524.92	-80.54	85.00	-4.50
Dead+ Wind 330 deg - Service	5078.47	-1812.70	-3112.68	-99.34	60.35	-5.00

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	-0.00	-5078.84	0.00	-0.01	5078.48	0.00	0.007%
2	105.89	-5078.84	-10585.71	-105.93	5078.35	10586.56	0.008%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
3	5421.72	-5078.84	-9100.84	-5422.24	5078.48	9101.59	0.008%
4	7596.38	-5078.84	-7446.18	-7597.09	5078.56	7446.81	0.008%
5	9244.94	-5078.84	-5292.49	-9245.78	5078.59	5292.96	0.008%
6	10660.03	-5078.84	-105.89	-10660.94	5078.47	105.94	0.008%
7	9298.51	-5078.84	5201.15	-9299.27	5078.35	-5201.56	0.008%
8	7446.63	-5078.84	7296.42	-7447.36	5078.42	-7297.03	0.009%
9	5238.31	-5078.84	8994.95	-5238.73	5078.45	-8995.71	0.008%
10	-105.89	-5078.84	10401.57	105.89	5078.56	-10402.49	0.008%
11	-5421.72	-5078.84	9100.84	5422.13	5078.45	-9101.63	0.008%
12	-7596.38	-5078.84	7446.18	7596.96	5078.38	-7446.81	0.008%
13	-9404.40	-5078.84	5384.56	9405.14	5078.34	-5385.00	0.008%
14	-10660.03	-5078.84	105.89	10660.91	5078.45	-105.87	0.008%
15	-9139.05	-5078.84	-5109.08	9139.85	5078.56	5109.53	0.008%
16	-7446.63	-5078.84	-7296.42	7447.28	5078.52	7297.03	0.008%
17	-5238.31	-5078.84	-8994.95	5238.77	5078.45	8995.68	0.008%
18	-0.00	-8666.60	0.00	0.00	8664.34	-0.00	0.026%
19	80.82	-8666.60	-10498.34	-80.82	8653.19	10498.61	0.098%
20	5112.22	-8666.60	-8632.82	-5112.34	8653.18	8633.04	0.101%
21	7119.98	-8666.60	-7004.86	-7120.14	8653.17	7005.03	0.102%
22	8607.34	-8666.60	-4934.71	-8607.55	8653.16	4934.82	0.102%
23	10084.47	-8666.60	-80.82	-10084.72	8653.18	80.80	0.101%
24	9192.42	-8666.60	5179.18	-9192.66	8653.19	-5179.32	0.098%
25	7005.69	-8666.60	6890.57	-7005.88	8653.18	-6890.74	0.102%
26	4972.25	-8666.60	8552.00	-4972.38	8653.17	-8552.21	0.102%
27	-80.82	-8666.60	9729.44	80.82	8653.16	-9729.66	0.103%
28	-5112.22	-8666.60	8632.82	5112.37	8653.18	-8633.02	0.101%
29	-7119.98	-8666.60	7004.86	7120.17	8653.19	-7005.03	0.101%
30	-9273.24	-8666.60	5319.16	9273.48	8653.19	-5319.30	0.097%
31	-10084.47	-8666.60	80.82	10084.72	8653.17	-80.84	0.101%
32	-8526.53	-8666.60	-4794.73	8526.73	8653.15	4794.84	0.103%
33	-7005.69	-8666.60	-6890.57	7005.85	8653.16	6890.74	0.103%
34	-4972.25	-8666.60	-8552.00	4972.36	8653.17	8552.22	0.102%
35	36.64	-5078.84	-3662.88	-36.66	5078.47	3663.16	0.008%
36	1876.03	-5078.84	-3149.08	-1876.20	5078.47	3149.33	0.008%
37	2628.51	-5078.84	-2576.53	-2628.74	5078.48	2576.74	0.008%
38	3198.94	-5078.84	-1831.31	-3199.22	5078.48	1831.46	0.008%
39	3688.59	-5078.84	-36.64	-3688.87	5078.48	36.66	0.007%
40	3217.48	-5078.84	1799.71	-3217.74	5078.47	-1799.84	0.008%
41	2576.69	-5078.84	2524.71	-2576.90	5078.46	-2524.90	0.008%
42	1812.56	-5078.84	3112.44	-1812.72	5078.47	-3112.69	0.008%
43	-36.64	-5078.84	3599.16	36.63	5078.48	-3599.45	0.008%
44	-1876.03	-5078.84	3149.08	1876.17	5078.47	-3149.34	0.008%
45	-2628.51	-5078.84	2576.53	2628.69	5078.47	-2576.74	0.007%
46	-3254.12	-5078.84	1863.17	3254.36	5078.47	-1863.31	0.007%
47	-3688.59	-5078.84	36.64	3688.91	5078.47	-36.65	0.008%
48	-3162.30	-5078.84	-1767.85	3162.55	5078.47	1767.99	0.008%
49	-2576.69	-5078.84	-2524.71	2576.89	5078.47	2524.92	0.008%
50	-1812.56	-5078.84	-3112.44	1812.70	5078.47	3112.68	0.008%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00063588
2	Yes	4	0.00000001	0.00084906
3	Yes	4	0.00000001	0.00086275

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4	Yes	4	0.00000001	0.00087114
5	Yes	4	0.00000001	0.00087441
6	Yes	4	0.00000001	0.00086208
7	Yes	4	0.00000001	0.00084692
8	Yes	4	0.00000001	0.00084920
9	Yes	4	0.00000001	0.00085715
10	Yes	4	0.00000001	0.00087282
11	Yes	4	0.00000001	0.00086750
12	Yes	4	0.00000001	0.00086234
13	Yes	4	0.00000001	0.00086024
14	Yes	4	0.00000001	0.00087172
15	Yes	4	0.00000001	0.00087936
16	Yes	4	0.00000001	0.00087336
17	Yes	4	0.00000001	0.00086267
18	Yes	7	0.00000001	0.00053989
19	Yes	5	0.00000001	0.00039562
20	Yes	5	0.00000001	0.00040775
21	Yes	5	0.00000001	0.00040978
22	Yes	5	0.00000001	0.00041233
23	Yes	5	0.00000001	0.00041043
24	Yes	5	0.00000001	0.00040146
25	Yes	5	0.00000001	0.00041818
26	Yes	5	0.00000001	0.00041592
27	Yes	5	0.00000001	0.00041491
28	Yes	5	0.00000001	0.00040066
29	Yes	5	0.00000001	0.00039850
30	Yes	5	0.00000001	0.00038229
31	Yes	5	0.00000001	0.00039464
32	Yes	5	0.00000001	0.00040489
33	Yes	5	0.00000001	0.00040601
34	Yes	5	0.00000001	0.00040639
35	Yes	4	0.00000001	0.00084180
36	Yes	4	0.00000001	0.00084245
37	Yes	4	0.00000001	0.00084439
38	Yes	4	0.00000001	0.00084462
39	Yes	4	0.00000001	0.00083765
40	Yes	4	0.00000001	0.00083116
41	Yes	4	0.00000001	0.00083360
42	Yes	4	0.00000001	0.00083920
43	Yes	4	0.00000001	0.00085286
44	Yes	4	0.00000001	0.00085958
45	Yes	4	0.00000001	0.00086121
46	Yes	4	0.00000001	0.00086252
47	Yes	4	0.00000001	0.00086802
48	Yes	4	0.00000001	0.00086698
49	Yes	4	0.00000001	0.00086158
50	Yes	4	0.00000001	0.00085404

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	69 - 64	0.590	46	0.0817	0.0488
T2	64 - 44	0.498	46	0.0817	0.0488
T3	44 - 24	0.143	46	0.0503	0.0266

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	Project 45ft ROHN Lattice Tower - 38 Elm St., Meriden, CT	Date 10:09:45 04/19/13
	Client Verizon Wireless	Designed by TJL

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
69.00	6'x3" Pipe Mount	46	0.590	0.0817	0.0488	70260
66.00	LPA-80080-6CF	46	0.535	0.0820	0.0490	70260
55.00	8 FT DISH	46	0.324	0.0727	0.0420	49053

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	69 - 64	1.677	13	0.2315	0.1411
T2	64 - 44	1.416	13	0.2314	0.1411
T3	44 - 24	0.408	13	0.1430	0.0769

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
69.00	6'x3" Pipe Mount	13	1.677	0.2315	0.1411	24489
66.00	LPA-80080-6CF	13	1.522	0.2322	0.1418	24489
55.00	8 FT DISH	13	0.924	0.2063	0.1214	17544

Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load	Ratio Load Allowable	Allowable Ratio	Criteria	
	ft			in		lb	lb				
T1	69	Leg	A325N	0.6250	4	1.66	13491.30	0.000	✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1161.47	4123.34	0.282	✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	485.62	6117.19	0.079	✓	1.333	Member Bearing
T2	64	Leg	A325N	0.6250	4	5273.30	13498.10	0.391	✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4256.90	4123.34	1.032	✓	1.333	Bolt Shear
T3	44	Leg	A325N	0.6250	4	10503.90	13498.60	0.778	✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	3809.29	4123.34	0.924	✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	285.33	6117.19	0.047	✓	1.333	Member Bearing

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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 lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	69 - 64	ROHN 2 EH	5.00	5.00	78.1 K=1.00	19.390	1.4807	-1358.80	28710.10	0.047*
T2	64 - 44	ROHN 2 X-STR	20.00	4.00	62.6 K=1.00	22.265	1.4773	-24423.80	32890.90	0.743 ✓
T3	44 - 24	ROHN 2.5 EH	20.03	5.01	65.0 K=1.00	21.839	2.2535	-46366.60	49214.50	0.942 ✓

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	69 - 64	L1 1/2x1 1/2x3/16	7.83	3.80	155.4 K=1.00	6.185	0.5273	-1161.47	3261.42	0.356 ✓
T2	64 - 44	L1 1/2x1 1/2x3/16	7.26	3.52	143.9 K=1.00	7.211	0.5273	-4256.90	3802.92	1.119 ✓
T3	44 - 24	L1 3/4x1 3/4x3/16	9.28	4.66	162.9 K=1.00	5.625	0.6211	-3415.74	3493.47	0.978 ✓

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 lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	69 - 64	L1 1/2x1 1/2x3/16	6.52	6.05	247.6 K=1.00	2.437	0.5273	-486.98	1284.94	0.379 ✓
T3	44 - 24	KL/R > 200 (C) - 5 L1 1/2x1 1/2x3/16 KL/R > 200 (C) - 50	6.56	6.09	249.3 K=1.00	2.403	0.5273	-73.49	1267.12	0.058 ✓

Tension Checks

Leg Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	69 - 64	ROHN 2 EH	5.00	5.00	78.1	30.000	1.4807	6.64	44420.50	0.000 ✓
T2	64 - 44	ROHN 2 X-STR	20.00	4.00	62.6	30.000	1.4773	21093.20	44317.80	0.476 ✓
T3	44 - 24	ROHN 2.5 EH	20.03	5.01	65.0	30.000	2.2535	42015.40	67606.20	0.621 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	69 - 64	L1 1/2x1 1/2x3/16	7.83	3.80	102.8	29.000	0.3076	1158.38	8920.90	0.130 ✓
T2	64 - 44	L1 1/2x1 1/2x3/16	7.26	3.52	95.4	29.000	0.3076	4174.35	8920.90	0.468 ✓
T3	44 - 24	L1 3/4x1 3/4x3/16	8.45	4.26	97.7	29.000	0.3779	3642.08	10960.00	0.332 ✓

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	69 - 64	L1 1/2x1 1/2x3/16	6.52	6.05	166.1	29.000	0.2900	485.62	8411.13	0.058 ✓
T3	44 - 24	L1 1/2x1 1/2x3/16	6.56	6.09	167.3	29.000	0.2900	261.17	8411.13	0.031* ✓

* DL controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
T1	69 - 64	Leg	ROHN 2 EH	3	-1358.80	28710.10	7.3	Pass
T2	64 - 44	Leg	ROHN 2 X-STR	13	-24423.80	43843.57	55.7	Pass
T3	44 - 24	Leg	ROHN 2.5 EH	46	-46366.60	65602.93	70.7	Pass
T1	69 - 64	Diagonal	L1 1/2x1 1/2x3/16	9	-1161.47	4347.47	26.7	Pass
T2	64 - 44	Diagonal	L1 1/2x1 1/2x3/16	20	-4256.90	5069.29	84.0	Pass
T3	44 - 24	Diagonal	L1 3/4x1 3/4x3/16	56	-3415.74	4656.80	73.3	Pass
T1	69 - 64	Top Girt	L1 1/2x1 1/2x3/16	5	-486.98	1712.82	28.4	Pass
T3	44 - 24	Top Girt	L1 1/2x1 1/2x3/16	50	-73.49	1689.07	4.4	Pass

Summary

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	Client Verizon Wireless	Designed by TJL

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
						Leg (T3)	70.7	Pass
						Diagonal (T2)	84.0	Pass
						Top Girt (T1)	28.4	Pass
						Bolt Checks	77.4	Pass
						RATING =	84.0	Pass

Element Map

Section No.	Section Elevation ft	Component Type	Element List
T1	69.00-64.00	Leg Diagonal Top Girt	1-3 7-12 4-6
T2	64.00-44.00	Leg Diagonal	13-15 16-45
T3	44.00-24.00	Leg Diagonal Top Girt	46-48 52-75 49-51
			Total number of elements: 75

SITE NAME	MERIDEN E CT			ECP - CELL #	2	151
LATITUDE	41-32-03.35 N			LONGITUDE	72-47-47.35 W	
Additional Comments: 2013 LTE ANTMO. Antenna change across all sectors.				SAVE BUTTON		
				STRUCTURE TYPE	ROOF TOP	
700 Mhz - LTE Current Config	ALPHA		BETA		GAMMA	
EQUIPMENT TYPE	eNodeB		eNodeB		eNodeB	
ANTENNA TYPE	P65-16-XL-2		P65-16-XL-2		P65-16-XL-2	
QTY OF ANTENNAS PER FACE	1		1		1	
ORIENTATION (DEG)	30		150		270	
DOWN TILT (MECH/DEG)	0		0		0	
RAD CTR (FT AGL)	66		66		66	
TMA - QTY / MODEL						
DIPLEXER - QTY / MODEL						
MCPA BRICKS (QTY)						
RRH - QTY/MODEL	1	ALU RH_2X40-700	1	ALU RH_2X40-700	1	ALU RH_2X40-700
SECTOR DISTRIBUTION BOX						
MAIN DISTRIBUTION BOX						
700 Mhz - LTE Future Config	ALPHA		BETA		GAMMA	
EQUIPMENT TYPE	eNodeB		eNodeB		eNodeB	
ANTENNA TYPE	BXA-70063-6CF		BXA-70063-6CF		BXA-70063-6CF	
QTY OF ANTENNAS PER FACE	1		1		1	
ORIENTATION (DEG)	30		150		270	
DOWN TILT (MECH/DEG)	0		0		0	
RAD CTR (FT AGL)	66		66		66	
TMA - QTY / MODEL						
DIPLEXER - QTY / MODEL						
MCPA BRICKS (QTY)						
RRH - QTY/MODEL	1	ALU RH_2X40-700	1	ALU RH_2X40-700	1	ALU RH_2X40-700
SECTOR DISTRIBUTION BOX						
MAIN DISTRIBUTION BOX						
850 Cellular - Current Config	ALPHA		BETA		GAMMA	
EQUIPMENT TYPE	Cellular Mod 4.0B		Cellular Mod 4.0B		Cellular Mod 4.0B	
ANTENNA TYPE	LPA-80080-6CF		LPA-80063-6CF		LPA-80080-6CF	
QTY OF ANTENNAS PER FACE	2		2		2	
ORIENTATION (DEG)	30		150		270	
DOWN TILT (MECH/DEG)	0		0		0	
RAD CTR (FT AGL)	66		66		66	
TMA - QTY / MODEL						
DIPLEXER - QTY / MODEL	0	FD9R6004/2C-3L	0	FD9R6004/2C-3L	0	FD9R6004/2C-3L
DIPLEX WITH LTE CABLE						
MCPA BRICKS (QTY)						
850 Cellular - Future Config	ALPHA		BETA		GAMMA	
EQUIPMENT TYPE	Cellular Mod 4.0B		Cellular Mod 4.0B		Cellular Mod 4.0B	
ANTENNA TYPE	LPA-80080-6CF		LPA-80063-6CF		LPA-80080-6CF	
QTY OF ANTENNAS PER FACE	2		2		2	
ORIENTATION (DEG)	30		150		270	
DOWN TILT (MECH/DEG)	0		0		0	
RAD CTR (FT AGL)	66		66		66	
TMA - QTY / MODEL						
DIPLEXER - QTY / MODEL	0	FD9R6004/2C-3L	0	FD9R6004/2C-3L	0	FD9R6004/2C-3L
DIPLEX WITH LTE CABLE						
MCPA BRICKS (QTY)						
1900 PCS - Current Config	ALPHA		BETA		GAMMA	
EQUIPMENT TYPE	PCS Mod 4.0B		PCS Mod 4.0B		PCS Mod 4.0B	
ANTENNA TYPE	BXA-171085-8CF-2		BXA-171085-8CF-2		BXA-171085-8CF-2	
QTY OF ANTENNAS PER FACE	1		1		1	
ORIENTATION (DEG)	30		150		270	
DOWN TILT (MECH/DEG)	0		0		0	
RAD CTR (FT AGL)	66		66		66	
TMA - QTY / MODEL						
DIPLEXER - QTY / MODEL						
DIPLEX WITH CELLULAR CABLE						
MCPA BRICKS (QTY)						
1900 PCS - Future Config	ALPHA		BETA		GAMMA	
EQUIPMENT TYPE	PCS Mod 4.0B		PCS Mod 4.0B		PCS Mod 4.0B	
ANTENNA TYPE	BXA-171085-8CF-2		BXA-171085-8CF-2		BXA-171085-8CF-2	
QTY OF ANTENNAS PER FACE	1		1		1	
ORIENTATION (DEG)	30		150		270	
DOWN TILT (MECH/DEG)	0		0		0	
RAD CTR (FT AGL)	66		66		66	
TMA - QTY / MODEL						
DIPLEXER - QTY / MODEL						
DIPLEX WITH CELLULAR CABLE						
MCPA BRICKS (QTY)						

2100 AWS - Current Config				ALPHA				BETA				GAMMA																							
EQUIPMENT TYPE				eNodeB				eNodeB				eNodeB																							
ANTENNA TYPE				BXA-171063-8CF				BXA-171063-8CF				BXA-171063-8CF																							
QTY OF ANTENNAS PER FACE				#N/A				#N/A				#N/A																							
ORIENTATION (DEG)				30				150				270																							
DOWN TILT (MECH/DEG)				0				0				0																							
RAD CTR (FT AGL)				66				66				66																							
TMA - QTY / MODEL																																			
DIPLEXER - QTY / MODEL																																			
MCPA BRICKS (QTY)																																			
RRH - QTY/MODEL				1		ALU RH_2X40-AWS		1		ALU RH_2X40-AWS		1		ALU RH_2X40-AWS																					
SECTOR DISTRIBUTION BOX				1		DB-E1-3B-8AB-0Z		1		DB-E1-3B-8AB-0Z		1		DB-E1-3B-8AB-0Z																					
MAIN DISTRIBUTION BOX																																			
2100 AWS - Future Config				ALPHA				BETA				GAMMA																							
EQUIPMENT TYPE				eNodeB				eNodeB				eNodeB																							
ANTENNA TYPE				BXA-171063-8CF				BXA-171063-8CF				BXA-171063-8CF																							
QTY OF ANTENNAS PER FACE				#N/A				#N/A				#N/A																							
ORIENTATION (DEG)				30				150				270																							
DOWN TILT (MECH/DEG)				0				0				0																							
RAD CTR (FT AGL)				66				66				66																							
TMA - QTY / MODEL																																			
DIPLEXER - QTY / MODEL																																			
MCPA BRICKS (QTY)																																			
RRH - QTY/MODEL				1		ALU RH_2X40-AWS		1		ALU RH_2X40-AWS		1		ALU RH_2X40-AWS																					
SECTOR DISTRIBUTION BOX				1		DB-E1-3B-8AB-0Z		1		DB-E1-3B-8AB-0Z		1		DB-E1-3B-8AB-0Z																					
MAIN DISTRIBUTION BOX																																			
NUMBER OF CABLE'S NEEDED								Fiber Lines Model Number																											
TOTAL # FIBER LINES				1				TOTAL # OF MAINLINES				12				FIBER LINE MODEL #				HB158-1-08U8-S8J18 QTY=1															
TOTAL # TOP JUMPERS				12				TOTAL # OF TOP JUMPERS				12				FIBER TOP JUMPER MODEL #				HB114-1-08U8-S4J18 QTY=3															
Equipment Cable Ordering				MAIN CABLE				12				+				0				TOP JUMPER #				12				+				0			
TX / RX FREQUENCIES								TX POWER OUTPUT																											
Cellular A-Band				PCS F-Band				700 Mhz C - B				Cellular (Watts)				20																			
TX - 869-880,890-891.5 MHz				TX - 1970-1975				TX - 746-757				PCS (Watts)				16																			
RX - 824-835,845-846.5 MHz				RX - 1890-1895				RX - 776-787				LTE (Watts)				40																			
ALPHA				BETA				GAMMA																											
Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code																								
A1-A	800	Tx1/Rx0	RED	A5-A	800	Tx2/Rx0	BLUE	A9-A	800	Tx3/Rx0	GREEN																								
A1-B	1900	Tx1/Rx0	RED/	A5-B	1900	Tx2/Rx0	BLUE/ WHITE	A9-B	1900	Tx3/Rx0	GREEN/WHITE																								
A2	700	Tx1/Rx0	RED/	A6	700	Tx2/Rx0	BLUE/ ORANGE	A10	700	Tx3/Rx0	GREEN/ORANGE																								
A3	700	Tx4/Rx1	RED/RED/ ORANGE	A7	700	Tx5/Rx1	BLUE/BLUE/ ORANGE	A11	700	Tx6/Rx1	GREEN/GREEN/ ORANGE																								
A4-B	1900	Tx4/Rx1	RED/RED/ WHITE	A8-B	1900	Tx5/Rx1	BLUE/BLUE/ WHITE	A12-B	1900	Tx6/Rx1	GREEN/GREEN/ WHITE																								
A4-A	800	Tx4/Rx1	RED/RED	A8-A	800	Tx5/Rx1	BLUE/BLUE	A12-A	800	Tx6/Rx1	GREEN/GREEN																								
RF ENGINEER				RF MANAGER				INITIALS				DATE																							
Prepared By : Justin Kober				Robert Hesselbach				JK				4/19/2013																							

LTE 700 & AWS to share fiber line, LTE 700 coax runs to be used for 850/1900 after diplexers removed.

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

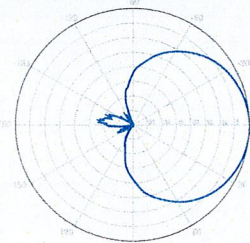
Replace "X" with desired electrical downtilt.

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



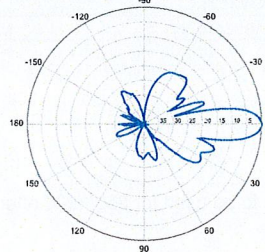
Electrical Characteristics	696-900 MHz		
Frequency bands	696-806 MHz	806-900 MHz	
Polarization	±45°		
Horizontal beamwidth	65°	63°	
Vertical beamwidth	13°	11°	
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10		
Impedance	50Ω		
VSWR	≤1.35:1		
Upper sidelobe 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 with EDIN connectors	500 W		
Input power with NE connectors	300 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 m ² Side: 0.24 m ²	Front: 5.5 ft ² Side: 2.6 ft ²	
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 & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



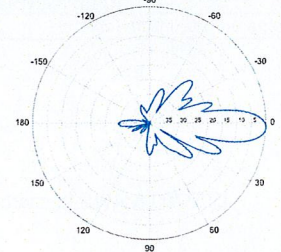
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

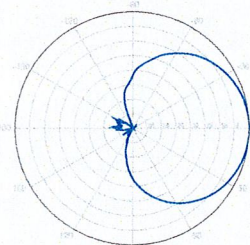


0° | Vertical | 750 MHz

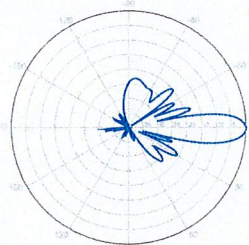
BXA-70063-6CF-EDIN-2



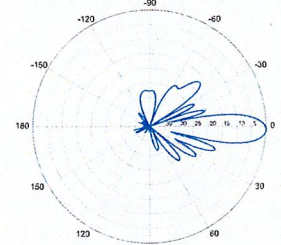
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 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.