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KENNETH C. BALDWIN

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Hartford, CT 06103-3597
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kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

December 28, 2012

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

Re: **EM-VER-064-120904 – 223 Brainard Road, Hartford, Connecticut**
EM-VER-049-120904 – Bright Meadow Boulevard, Enfield, Connecticut
EM-VER-089-120813 – 35 Wildwood Street, New Britain, Connecticut
EM-VER-107-120725 – 617 Orange Center Road, Orange, Connecticut
EM-VER-148-120702 – 90 North Plains Industrial Road, Wallingford, Connecticut
EM-VER-003-120906 – 20 Seles Road, Ashford, Connecticut

Completion of Construction Activity

Dear Ms. Roberts:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced Cellco Partnership d/b/a Verizon Wireless telecommunications facilities has been completed.

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

12012070-v1

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

October 5, 2012

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

RE: **EM-VER-003-120906** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 20 Seles Road, Ashford, Connecticut.

Dear Attorney Baldwin:

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

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

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated September 5, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

Very truly yours,

Linda Roberts/CDM

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Ralph H. Fletcher, First Selectman, Town of Ashford
Michael Gardner, Zoning Enforcement Officer, Town of Ashford
Cordless Data Transfer

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

September 17, 2012

The Honorable Ralph H. Fletcher
First Selectman
Town of Ashford
Knowlton Memorial Town Hall
5 Town Hall Road
Ashford, CT 06278

RE: **EM-VER-003-120906** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 20 Seles Road, Ashford, Connecticut.

Dear First Selectman Fletcher:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by October 1, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Michael Gardner, Zoning Enforcement Officer, Town of Ashford

ROBINSON & COLE LLP

KENNETH C. BALDWIN

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Direct (860) 275-8345

Also admitted in Massachusetts

EM-VER-003-120906

September 5, 2012

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

Re: **Notice of Exempt Modification – Antenna Swap**
20 Seles Road, Ashford, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the top of the existing 190-foot tower at the above-referenced address. The tower is owned by Cordless Data Transfer. Cellco's use of the tower was approved by the Council in 2001. Cellco now intends to replace all of its antennas with four (4) model LPA-80063-4CF cellular antennas; two (2) model LPA-80080-4CF cellular antennas; two (2) model BXA-171063-8BF PCS antennas; one (1) model BXA-171085-8BF PCS antenna; and three (3) model BXA-70063-6CF LTE antennas, all at the same 190-foot level. Cellco also intends to install six (6) coax cable diplexers behind its antennas. Attached behind Tab 1 are the specifications for the replacement antennas and cable diplexers.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Ralph H. Fletcher, First Selectman of the Town of Ashford. A copy of this letter is also being sent to Raymond and Kathleen Baker, the owners of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and diplexers will be located at the 190-foot level on the tower.

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

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

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

Also attached is a Structural Analysis confirming that the tower and foundation can support Cellco's proposed modifications. (See Tab 3).

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Ralph H. Fletcher, Ashford First Selectman
Raymond and Kathleen Baker
Sandy M. Carter

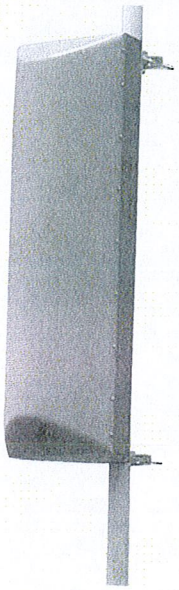
Amphenol ANTENNA SOLUTIONS

LPA-80063-4CF-EDIN-X

V-Pol | Log Periodic | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt.

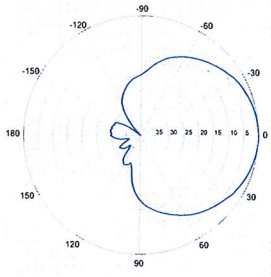
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.



Electrical Characteristics		
Frequency bands	806-960 MHz	
Polarization	Vertical	
Horizontal beamwidth	63°	
Vertical beamwidth	15°	
Gain	13.0 dBd (15.1 dBi)	
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.4:1	
Upper sidelobe suppression (0°)	-15.7 dB	
Front-to-back ratio (+/-30°)	-31.7 dB	
Null fill	5% (-26.02 dB)	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 385 x 332 mm	47.4 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	9.1 kg	20 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.46 m² Side: 0.39 m²	Front: 5.0 ft² Side: 4.2 ft²
Wind load @ 161 km/hr (100 mph)	Front: 660 N Side: 550 N	Front: 149 lbf Side: 124 lbf

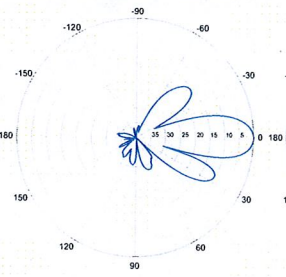
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80063-4CF-EDIN-X



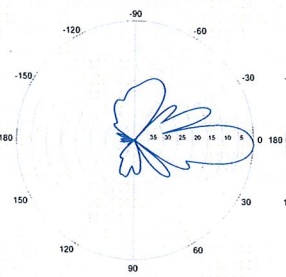
Horizontal

LPA-80063-4CF-EDIN-0



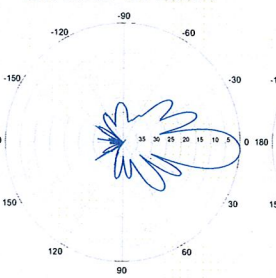
0° | Vertical

LPA-80063-4CF-EDIN-2



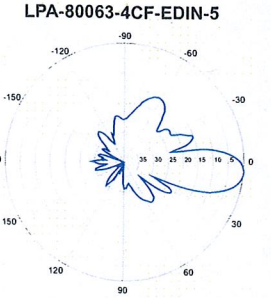
2° | Vertical

LPA-80063-4CF-EDIN-4



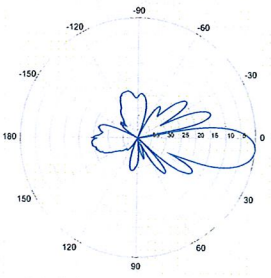
4° | Vertical

LPA-80063-4CF-EDIN-5



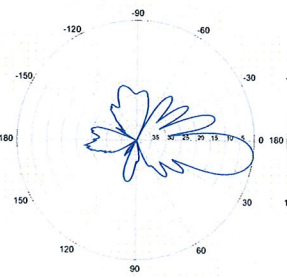
5° | Vertical

LPA-80063-4CF-EDIN-6



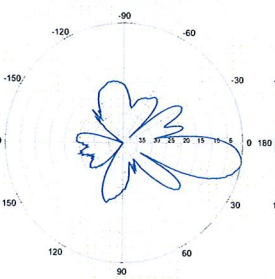
6° | Vertical

LPA-80063-4CF-EDIN-8



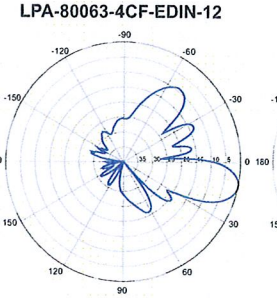
8° | Vertical

LPA-80063-4CF-EDIN-10



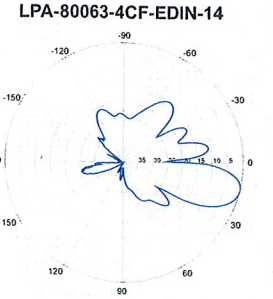
10° | Vertical

LPA-80063-4CF-EDIN-12



12° | Vertical

LPA-80063-4CF-EDIN-14



14° | Vertical

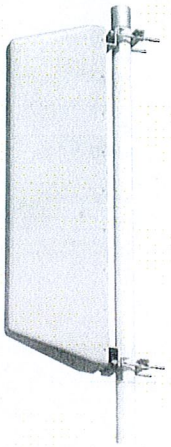
Amphenol ANTENNA SOLUTIONS

LPA-80080-4CF-EDIN-X

V-Pol | Log Periodic | 80° | 12.5 dBd

Replace 'X' with desired electrical downtilt.

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

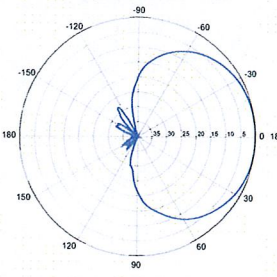


Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	80°
Vertical beamwidth	15°
Gain	12.5 dBd (14.6 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-14.2 dB
Front-to-back ratio (+/-30°)	-34.7 dB
Null fill	15% (-16.48 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)

Mechanical Characteristics		
Dimensions Length x Width x Depth	1200 x 140 x 335 mm	47.2 x 5.5 x 13.2 in
Depth of antenna with z-bracket	375 mm	14.8 in
Weight without mounting brackets	5.4 kg	12 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.17 m² Side: 0.40 m²	Front: 1.8 ft² Side: 4.3 ft²
Wind load @ 161 km/hr (100 mph)	Front: 254 N Side: 574 N	Front: 57 lbf Side: 129 lbf

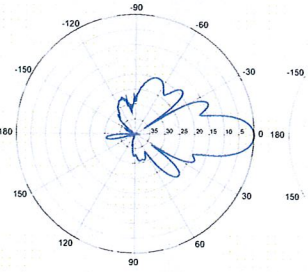
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80080-4CF-EDIN-X



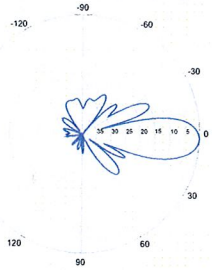
Horizontal

LPA-80080-4CF-EDIN-0



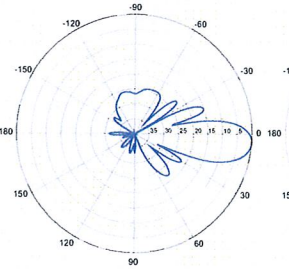
0° | Vertical

LPA-80080-4CF-EDIN-2



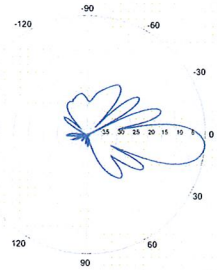
2° | Vertical

LPA-80080-4CF-EDIN-4



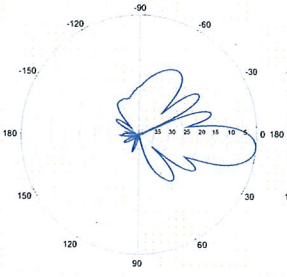
2° | Vertical

LPA-80080-4CF-EDIN-5



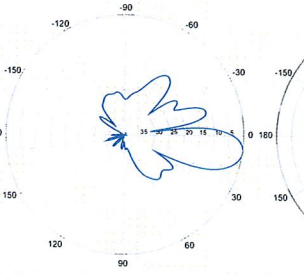
5° | Vertical

LPA-80080-4CF-EDIN-6



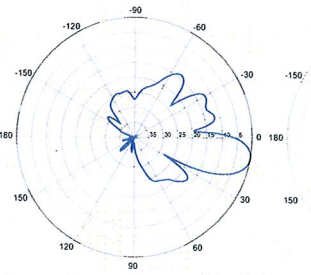
6° | Vertical

LPA-80080-4CF-EDIN-8



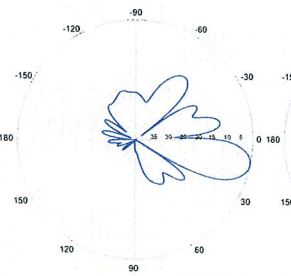
8° | Vertical

LPA-80080-4CF-EDIN-10



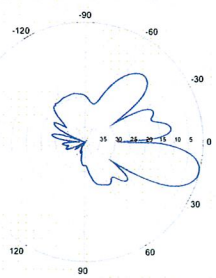
10° | Vertical

LPA-80080-4CF-EDIN-12



12° | Vertical

LPA-80080-4CF-EDIN-14



14° | Vertical

Amphenol ANTENNA SOLUTIONS

BXA-171063-8BF-EDIN-X

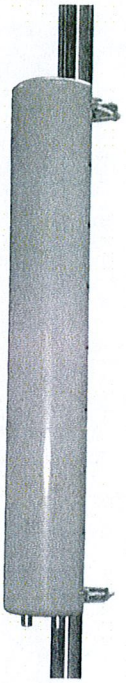
Replace 'X' with desired electrical downtilt

X-Pol | FET Panel | 63° | 17.4 dBi

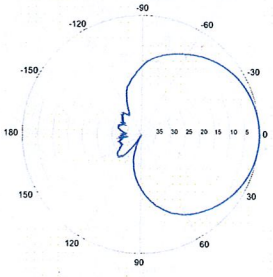
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	7°	7°	7°
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi
Electrical downtilt (X)	0, 2, 4, 8		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-8BF-EDIN-X-FP		

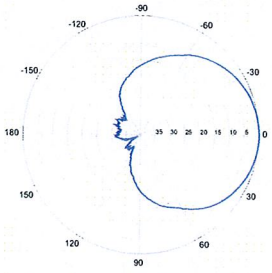


BXA-171063-8BF-EDIN-X



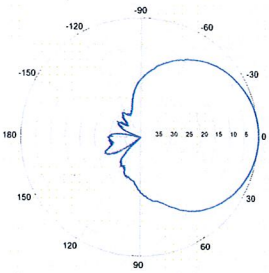
Horizontal | 1710-1880 MHz

BXA-171063-8BF-EDIN-X



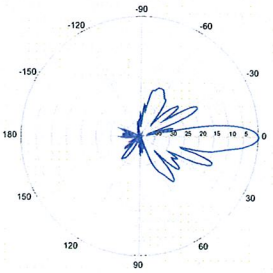
Horizontal | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



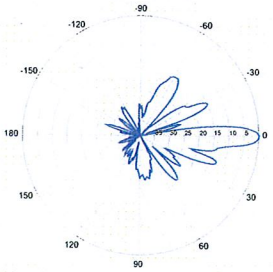
Horizontal | 1920-2170 MHz

BXA-171063-8BF-EDIN-0



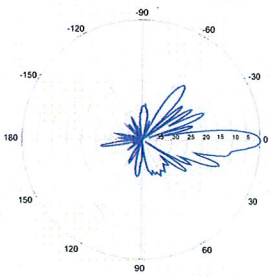
0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-0

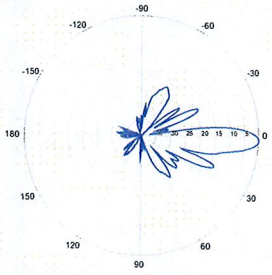


0° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-X

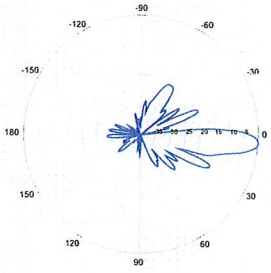
X-Pol | FET Panel | 63° | 17.4 dBi

BXA-171063-8BF-EDIN-2



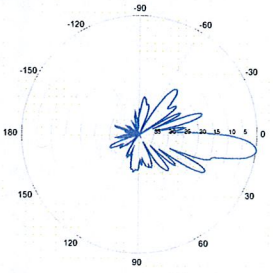
2° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-4



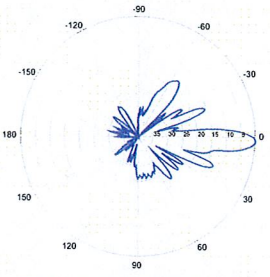
4° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-8



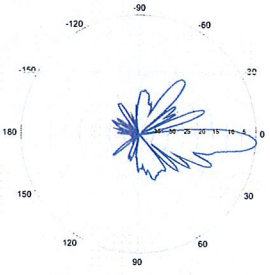
8° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-2



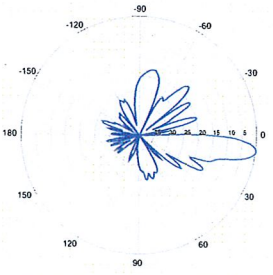
2° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-4



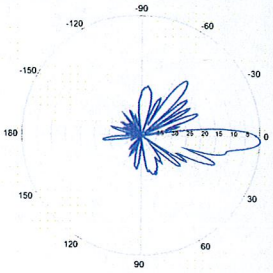
4° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-8



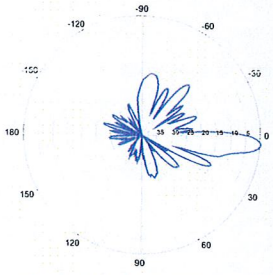
8° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-2



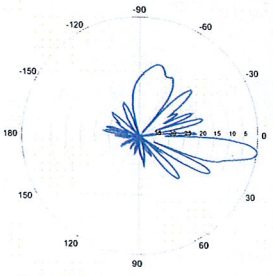
2° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-8



8° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-171085-8BF-EDIN-X

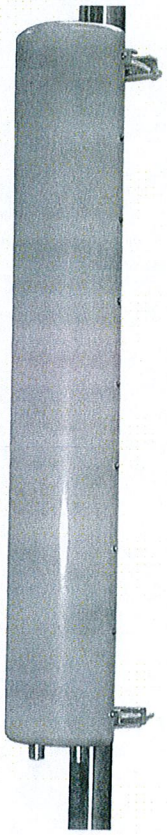
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 16.4 dBi

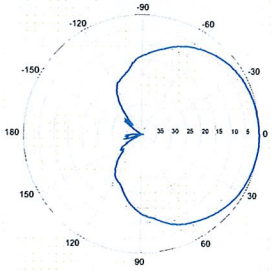
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-8BF-EDIN-X-FP		

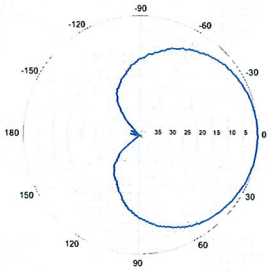


BXA-171085-8BF-EDIN-X



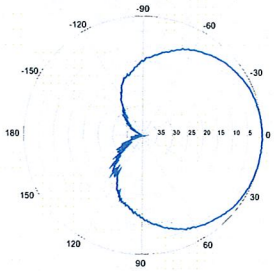
Horizontal | 1710-1880 MHz

BXA-171085-8BF-EDIN-X



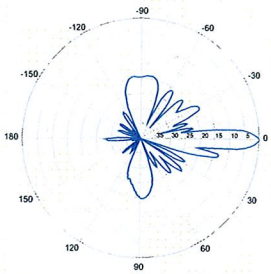
Horizontal | 1850-1990 MHz

BXA-171085-8BF-EDIN-X



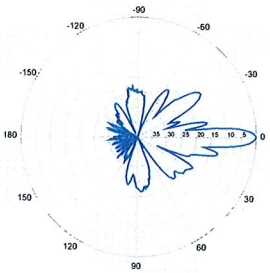
Horizontal | 1920-2170 MHz

BXA-171085-8BF-EDIN-0



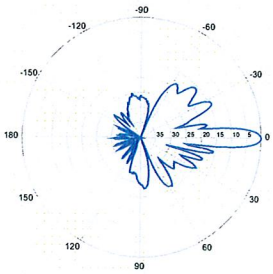
0° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-0

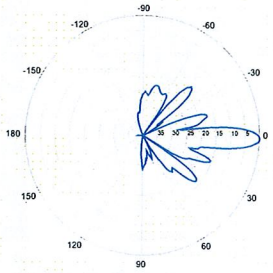


0° | Vertical | 1920-2170 MHz

BXA-171085-8BF-EDIN-X

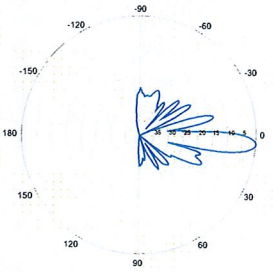
X-Pol | FET Panel | 85° | 16.4 dBi

BXA-171085-8BF-EDIN-2



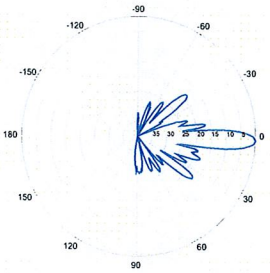
2° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-4



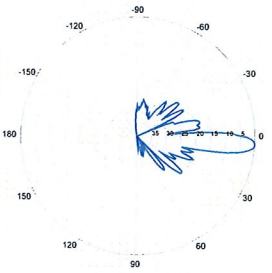
4° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-2



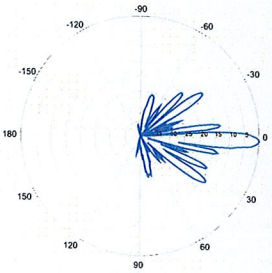
2° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-4



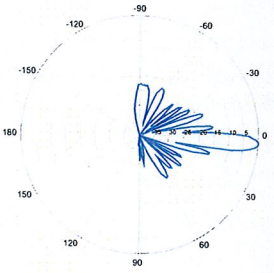
4° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171085-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

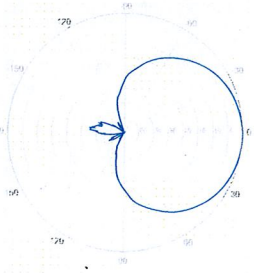
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power 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 m² Side: 0.24 m²	Front: 5.5 ft² Side: 2.6 ft²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

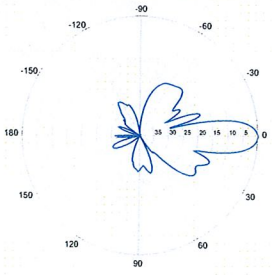
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



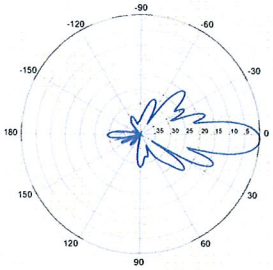
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

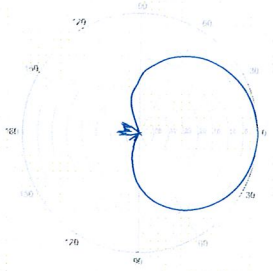


0° | Vertical | 750 MHz

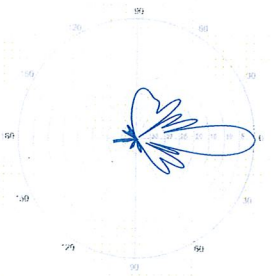
BXA-70063-6CF-EDIN-2



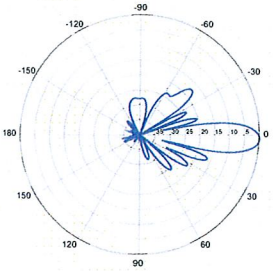
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz

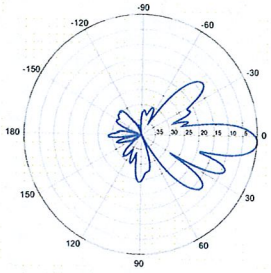


2° | Vertical | 850 MHz

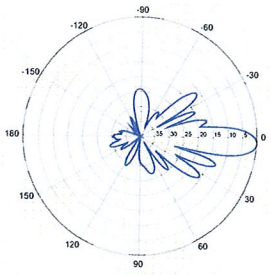
BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3

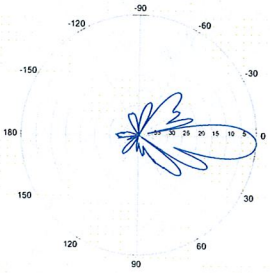


3° | Vertical | 750 MHz

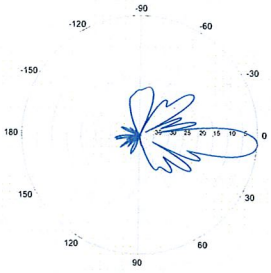


3° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-4

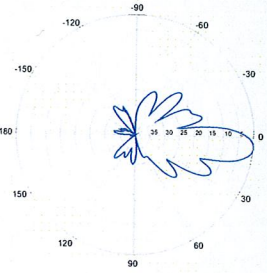


4° | Vertical | 750 MHz

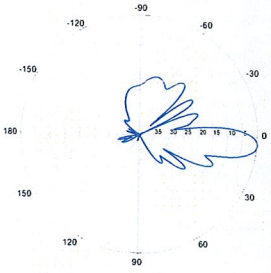


4° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-5

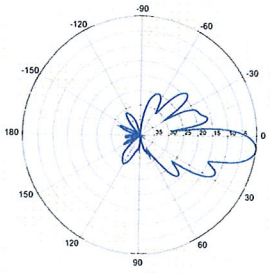


5° | Vertical | 750 MHz

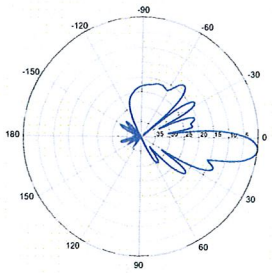


5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6

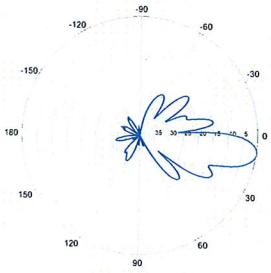


6° | Vertical | 750 MHz

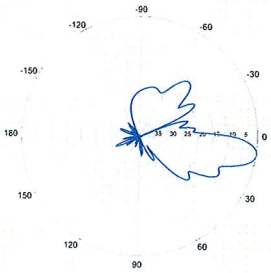


6° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-8

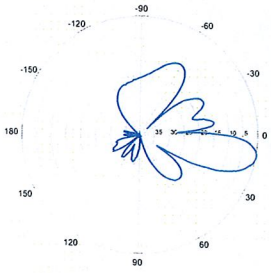


8° | Vertical | 750 MHz

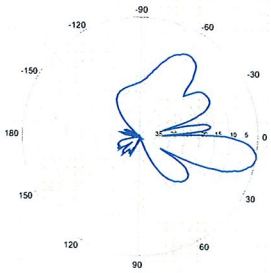


8° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-10



10° | Vertical | 750 MHz



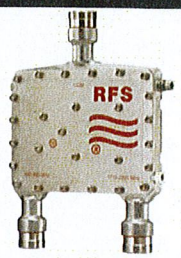
10° | Vertical | 850 MHz

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

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

Product Description

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



Features/Benefits

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

Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Application	LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS
Frequency Range 1, MHz	698-960
Frequency Range 2, MHz	1710-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Return Loss All Ports Min/Typ, dB	19/23
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss, Path 1, dB	0.07 typ.
Insertion Loss, Path 2, dB	0.13 typ.
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 57/70@1710-2200MHz
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

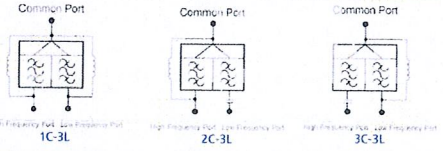
Notes

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

Other Documentation

FD9R6004/2C-3L Installation Instructions: Wideband_Diplexer_Installation_Rev5.pdf

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



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

Mounting Hardware and Ground Cable Ordering Information		
Model Number	Description	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FD9R6004/xC-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 2m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	

	General	Power	Density					
Site Name: Ashford W								
Tower Height: Verizon @ 190Ft.								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Nextel	9	100	182	0.0098	851	0.5673	1.72%	
*Sprint			173	0.0161	1962.5	1.0000	1.61%	
*AT&T UMTS	1	500	140	0.0092	880	0.5867	1.56%	
*AT&T GSM	2	427	140	0.0157	1900	1.0000	1.57%	
*AT&T GSM	4	296	140	0.0217	880	0.5867	3.70%	
Verizon PCS	**11**	**218**	**190**	**0.0239**	**1970**	**1.0000**	**2.39%**	
Verizon Cellular	**9**	**236**	**190**	**0.0212**	**869**	**0.5793**	**3.65%**	
Verizon AWS	**1**	**529**	**190**	**0.0053**	**2145**	**1.0000**	**0.53%**	
Verizon 700	**1**	**781**	**190**	**0.0078**	**698**	**0.4653**	**1.67%**	
								18.40%
* Source: Siting Council								

FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
ONTARIO, NY 14519
(315) 524-2531 FAX (315) 524-4249

www.nuddtowers.com

Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
June 6, 2012

Nudd Job Number: 112-13076

Site Location: Ashford, CT (Lat. & Long. = 41 15 48, -72 10 57)

Subject: Structural Analysis of an existing 190 ft Guyed Tower

Fred A. Nudd Corporation has completed a structural analysis of an existing 190 ft guyed tower. The tower was originally designed by Fred A. Nudd Corporation. The tower analysis was completed considering TIA-222-F design standards, which is the enforced design standard of the 2003 International Building Code, including 2005 Connecticut Building Code Amendments and the 2008 Connecticut Supplement. Additional standards used in this analysis include AISC Manual for Steel Construction, Allowable Stress Design, 9th Edition, and ACI318-05, Building Code Requirements for Structural Concrete and Commentary. Tower and foundation dimensions have been taken from drawings by Fred A. Nudd, project number 00-6111A-1 & 98-6111-2, dated July 28, 2000 & June 1998, respectively. Geotechnical information was taken from a subsurface exploration report by Tower Engineering Professionals, Inc., project number 090004.13, dated September 22, 2009. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of the analysis is to determine if the above noted tower can support new wireless equipment, in addition to wireless equipment already installed. The new design loading condition, including all existing and proposed equipment, is shown on the following page. Results from the analysis confirms the tower and foundation can support the new antennas and conforms to the above noted design standards both the original design loading condition and for the new design loading condition. Specific member usages are shown on the following pages.

Based on these results, the new antennas can be installed on this structure and the structure will still meet the aforementioned standards.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,

Fred. A. Nudd Corporation

Code Design Criteria

TIA-222-F
Windspeed = 85 mph, fastest mile
Exposure = C
Structure Class II
Radial Ice = 0.5 inch
Ice Windspeed = 74 mph, fastest mile
Topographic Category = II
Seismic = Not considered, as seismic activity in this region is low (S_s is less than 1.0)

Appurtenance Loading – Existing and To Remain on Tower

Elevation (ft)[1]	Antenna	Mount	Coax (in)
178	(9) Swedcom ALP-E-9011	(3) 12 ft Boom / Frame	(9) 1-1/4
167	(9) Decibel DB980H90	(3) 12 ft Boom / Frame	(9) 1-5/8
150	-	(3) 12 ft Boom / Frame	-
138	(6) Powerwave 7770 (6) TMA (6) Diplextors	(3) 12 ft Boom / Frame	(12) 1-5/8

[1]*Note elevation is measured from grade to center of antenna*

Proposed Appurtenance Loading – Verizon

Elevation (ft)[1]	Antenna	Mount	Coax (in)[2]
190	(3) Antel BXA-70063-6CF (2) Antel LPA-80080-4CF (4) Antel LPA-80063-4CF (1) Antel BXA-171085-8BF (2) Antel BXA-171063-8BF (6) RFS FD9R6004/2C-3L	(3) 12 ft Sector Frame	(12) 1-5/8

[1]*Note elevation is measured from grade to center of antenna*
[2]*Any new coax replacing old coax should be installed in the same manner and orientation as the coax it is replacing*

Maximum Member Usage Results

Member	Usage (%)[1]
Leg	93.0
Diagonal	84.2
Horizontal	60.1
Guy Wires	78.6
Bolts	50.8
Anchor Rod	90.0

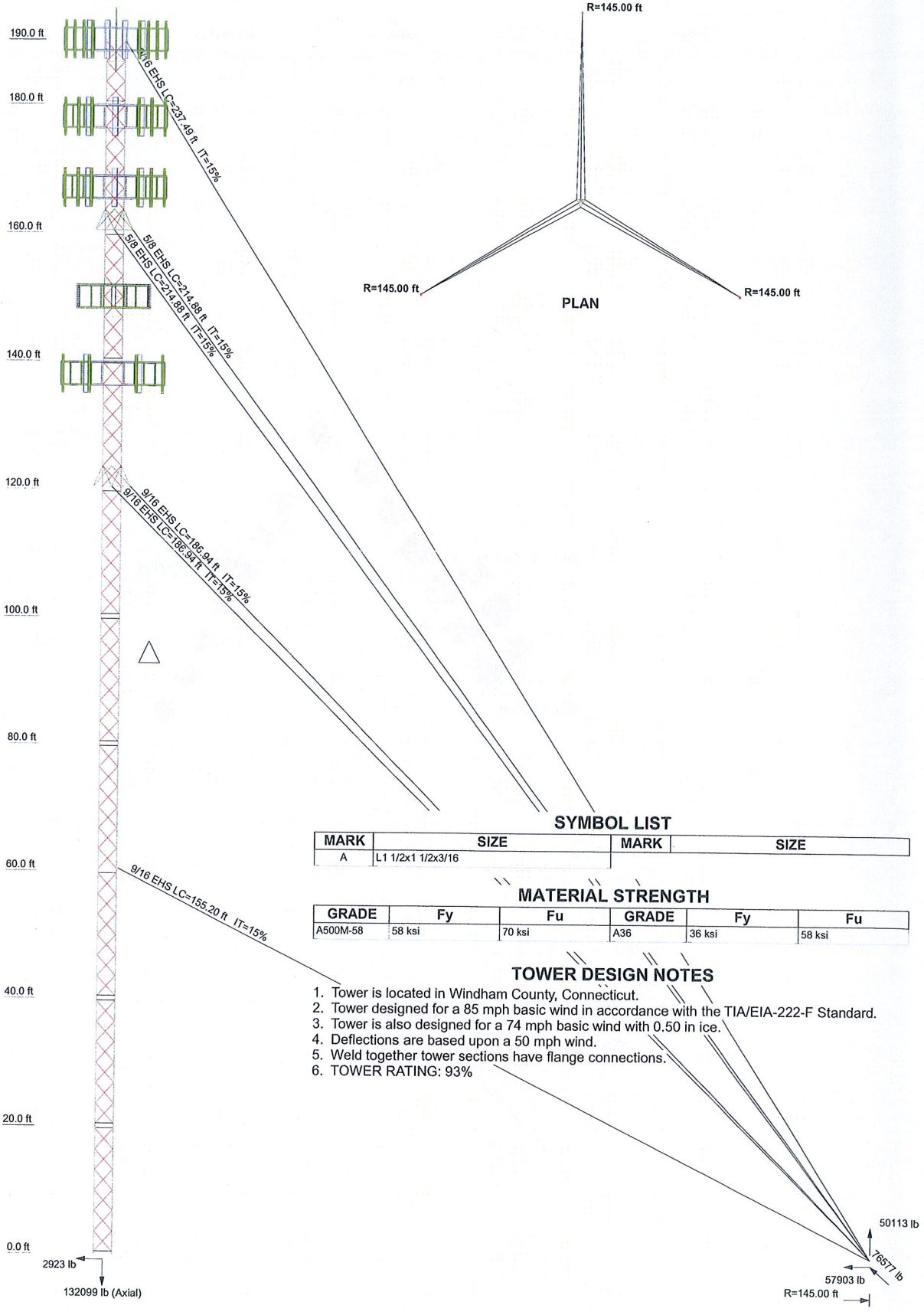
[1]*Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening.*

Foundation Usage Results

Base Reaction	Capacity (kips)	Analysis (kips)	Usage (%)[1]
Compression	211.8	132.1	64.0
Uplift	50.1	65.3	77.0
Overturning	57.9	64.7	90.0

[1]*Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening.*

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs					P2.5x.203					
Leg Grade					A500M-58					
Diagonals					SR 5/8					
Diagonal Grade					A36					
Top Girts					L1 1/2x1 1/2x3/16					N.A.
Bottom Girts		L1 1/2x1 1/2x3/16		N.A.		L1 1/2x1 1/2x3/16	N.A.	L1 1/2x1 1/2x3/16	N.A.	A
Horizontals					L1 1/2x1 1/2x3/16					
Top Guy Pull-Offs		N.A.		L1 1/2x1 1/2x3/16		N.A.	L1 1/2x1 1/2x3/16	N.A.	L1 1/2x1 1/2x3/16	
Bot Guy Pull-Offs				N.A.			L1 1/2x1 1/2x3/16	N.A.	L1 1/2x1 1/2x3/16	N.A.
Face Width (ft)					3.5					
# Panels @ (ft)					54 @ 3.20833					3 @ 3.08333
Weight (lb)	6689.9	658.2	658.2	658.2	658.2	658.2	872.6	659.2	872.6	337.0



PLAN

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500M-58	58 ksi	70 ksi	A36	36 ksi	58 ksi

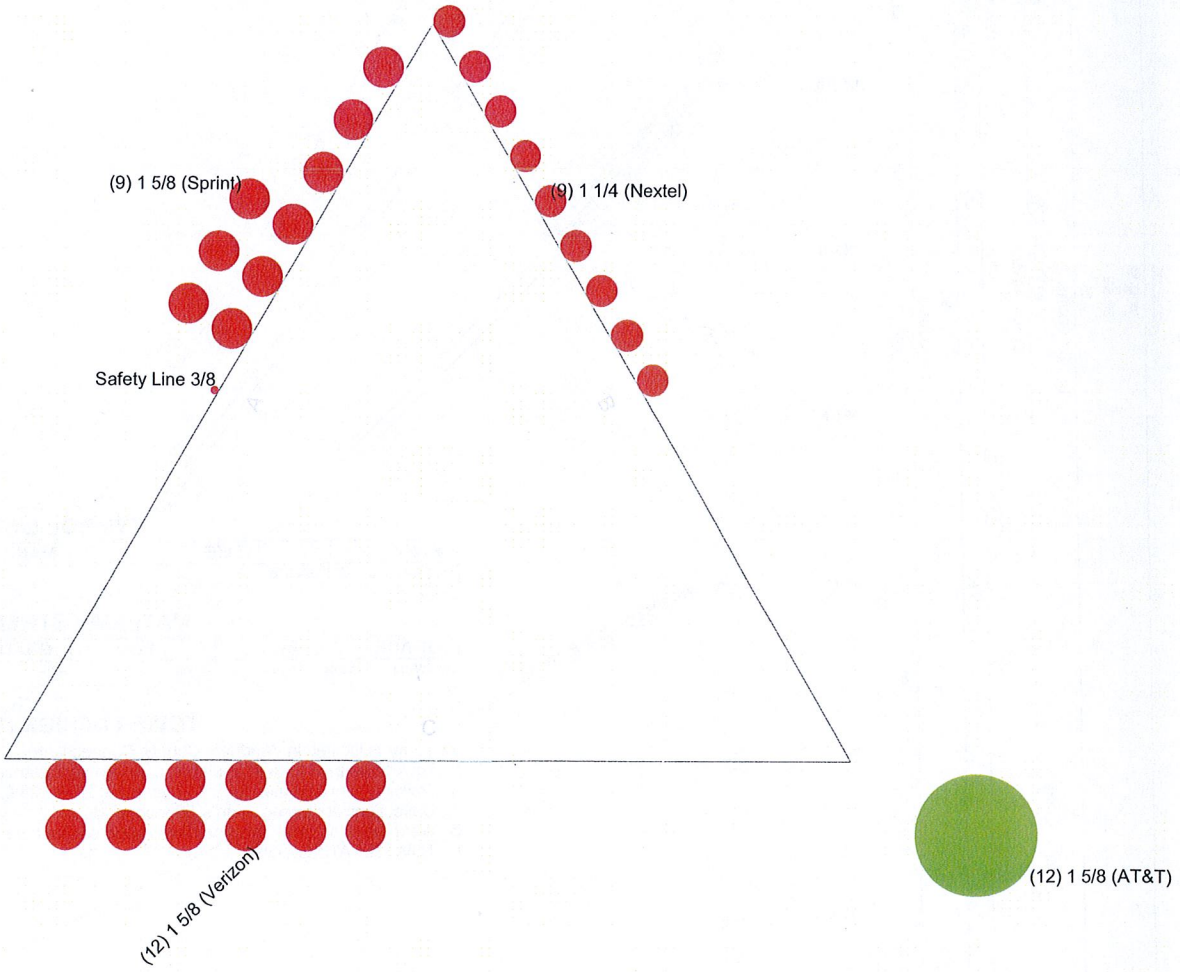
TOWER DESIGN NOTES

1. Tower is located in Windham 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. Weld together tower sections have flange connections.
6. TOWER RATING: 93%

Phone: FAX:	Job: 112-13076			
	Project: Ashford, CT			
	Client: Mark LeGault	Drawn by: FAN	App'd:	
	Code: TIA/EIA-222-F	Date: 06/06/12	Scale: NTS	
	Path:		Dwg No. E-1	

Feedline Plan

Round _____ Flat _____ App In Face _____ App Out Face _____



Phone: FAX:	Job: 112-13076			
	Project: Ashford, CT			
	Client: Mark LeGault	Drawn by: FAN	App'd:	
	Code: TIA/EIA-222-F	Date: 06/06/12	Scale: NTS	
	Path:		Dwg No. E-7	

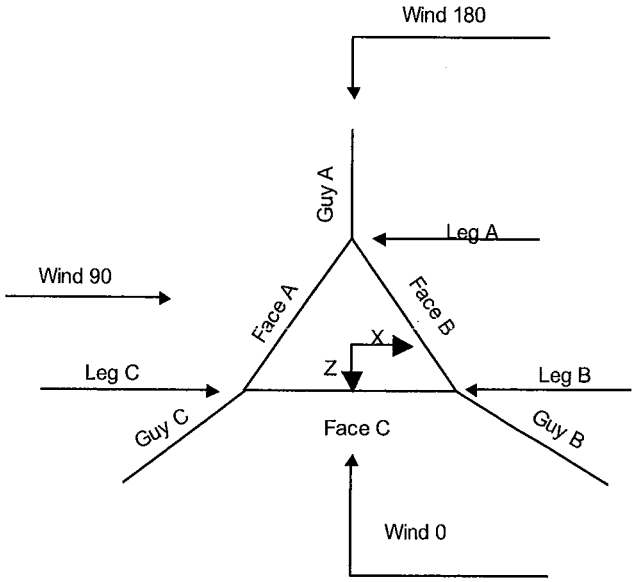
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 190.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 3.50 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

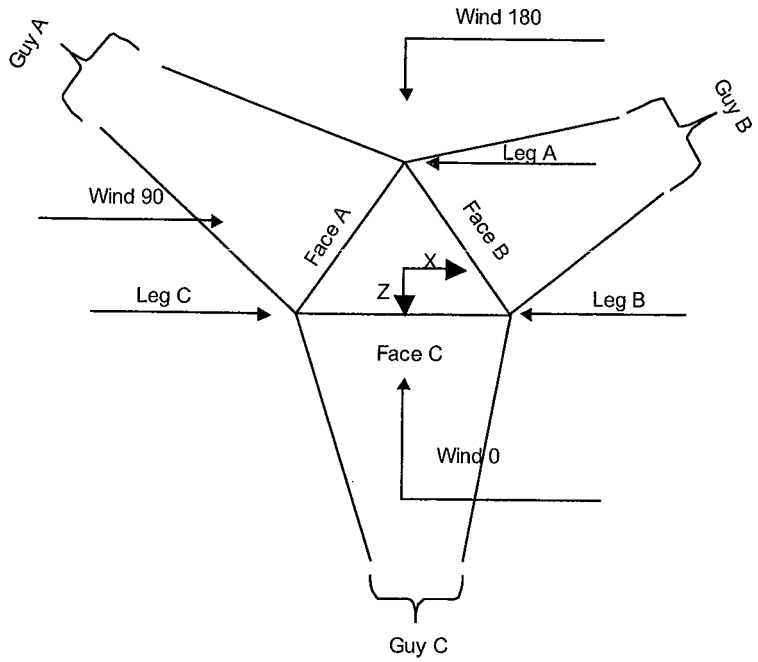
Tower is located in Windham County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Weld together tower sections have flange connections..
Tension only take-up is 0.0313 in.
Pressures are calculated at each section.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	190.00-180.00			3.50	1	10.00
T2	180.00-160.00			3.50	1	20.00
T3	160.00-140.00			3.50	1	20.00
T4	140.00-120.00			3.50	1	20.00
T5	120.00-100.00			3.50	1	20.00
T6	100.00-80.00			3.50	1	20.00
T7	80.00-60.00			3.50	1	20.00
T8	60.00-40.00			3.50	1	20.00
T9	40.00-20.00			3.50	1	20.00
T10	20.00-0.00			3.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	190.00-180.00	3.08	TX Brace	No	Yes	4.5000	4.5000
T2	180.00-160.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T3	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T10	20.00-0.00	3.21	TX Brace	No	Yes	4.5000	4.5000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 190.00-180.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-160.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 160.00-140.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 140.00-120.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 120.00-100.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 100.00-80.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 80.00-60.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 60.00-40.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 40.00-20.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 20.00-0.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	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 190.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 20.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 190.00-180.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 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 Horizontals in
T1 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft²	in					in	in
160.00-140.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000
140.00-120.00			(36 ksi)					
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000
120.00-100.00			(36 ksi)					
T6	0.00	0.0000	A36	1	1	1	36.0000	36.0000
100.00-80.00			(36 ksi)					
T7 80.00-60.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T8 60.00-40.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T9 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					
T10 20.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags	K Brace Diags	K Factors[1] Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
ft				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1	No	Yes	1	1	1	1	0.65	0.65	1	1
190.00-180.00				1	1	1	0.65	0.65	1	1
T2	No	Yes	1	1	1	1	0.65	0.65	1	1
180.00-160.00				1	1	1	0.65	0.65	1	1
T3	No	Yes	1	1	1	1	0.65	0.65	1	1
160.00-140.00				1	1	1	0.65	0.65	1	1
T4	No	Yes	1	1	1	1	0.65	0.65	1	1
140.00-120.00				1	1	1	0.65	0.65	1	1
T5	No	Yes	1	1	1	1	0.65	0.65	1	1
120.00-100.00				1	1	1	0.65	0.65	1	1
T6	No	Yes	1	1	1	1	0.65	0.65	1	1
100.00-80.00				1	1	1	0.65	0.65	1	1
T7	No	Yes	1	1	1	1	0.65	0.65	1	1
80.00-60.00				1	1	1	0.65	0.65	1	1
T8	No	Yes	1	1	1	1	0.65	0.65	1	1
60.00-40.00				1	1	1	0.65	0.65	1	1
T9	No	Yes	1	1	1	1	0.65	0.65	1	1
40.00-20.00				1	1	1	0.65	0.65	1	1
T10	No	Yes	1	1	1	1	0.65	0.65	1	1
20.00-0.00				1	1	1	0.65	0.65	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		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 190.00-180.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 190.00-180.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-0.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
160.375	EHS	A	5/8	6360.00	15%	21000	0.813	214.61	145.00	0.0000	0.00	100%
		B	5/8	6360.00	15%	21000	0.813	214.61	145.00	0.0000	0.00	100%
		C	5/8	6360.00	15%	21000	0.813	214.61	145.00	0.0000	0.00	100%
120.375	EHS	A	9/16	5250.00	15%	21000	0.671	186.70	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	186.70	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	186.70	145.00	0.0000	0.00	100%
60.375	EHS	A	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
189.625	EHS	A	9/16	5250.00	15%	21000	0.671	237.18	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	237.18	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	237.18	145.00	0.0000	0.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
160.375	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
120.375	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
60.375	Corner						
189.625	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
160.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
120.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
60.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
189.63	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
160.375	174.48	174.48	174.48		2.92 2.9 sec/pulse	2.92 2.9 sec/pulse	2.92 2.9 sec/pulse	
120.375	125.27	125.27	125.27		2.21 2.6 sec/pulse	2.21 2.6 sec/pulse	2.21 2.6 sec/pulse	
60.375	104.01	104.01	104.01		1.53 2.1 sec/pulse	1.53 2.1 sec/pulse	1.53 2.1 sec/pulse	
189.625	159.15	159.15	159.15		3.56 3.3 sec/pulse	3.56 3.3 sec/pulse	3.56 3.3 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
160.375	No	No	1	1	0.65	0.65	1	1
120.375	No	No	1	1	0.65	0.65	1	1
60.375	No	No			0.65	0.65	1	1
189.625	No	No			0.65	0.65	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
160.375	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
120.375	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
60.375	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
189.625	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
160.375	A	80.19	24	18	0.5000
	B	80.19	24	18	0.5000
	C	80.19	24	18	0.5000
120.375	A	60.19	22	16	0.5000
	B	60.19	22	16	0.5000
	C	60.19	22	16	0.5000
60.375	A	30.19	18	14	0.5000
	B	30.19	18	14	0.5000

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	C	30.19	18	14	0.5000
189.625	A	94.81	25	19	0.5000
	B	94.81	25	19	0.5000
	C	94.81	25	19	0.5000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom lb	F_x lb	F_y lb	F_z lb	M_x lb-ft	M_y lb-ft	M_z lb-ft
160.375	A	48.2735	6490.22 / 6360.00	-104.64	4882.39	-4274.84	-9865.97	15173.38	-17088.36
	A	48.2735	6490.22 / 6360.00	104.64	4882.39	-4274.84	-9865.97	-15173.38	17088.36
	B	48.2735	6490.22 / 6360.00	3754.44	4882.39	2046.79	19731.94	15173.38	0.00
	B	48.2735	6490.22 / 6360.00	3649.79	4882.39	2228.04	-9865.97	-15173.38	-17088.36
	C	48.2735	6490.22 / 6360.00	-3649.79	4882.39	2228.04	-9865.97	15173.38	17088.36
	C	48.2735	6490.22 / 6360.00	-3754.44	4882.39	2046.79	19731.94	-15173.38	0.00
			Sum:	0.00	29294.33	0.00	-0.00	0.00	0.00
120.375	A	40.0857	5330.67 / 5250.00	-99.04	3469.21	-4046.08	-7010.33	14361.42	-12142.24
	A	40.0857	5330.67 / 5250.00	99.04	3469.21	-4046.08	-7010.33	-14361.42	12142.24
	B	40.0857	5330.67 / 5250.00	3553.53	3469.21	1937.27	14020.66	14361.42	0.00
	B	40.0857	5330.67 / 5250.00	3454.49	3469.21	2108.82	-7010.33	-14361.42	-12142.24
	C	40.0857	5330.67 / 5250.00	-3454.49	3469.21	2108.82	-7010.33	14361.42	12142.24
	C	40.0857	5330.67 / 5250.00	-3553.53	3469.21	1937.27	14020.66	-14361.42	0.00
			Sum:	0.00	20815.27	0.00	-0.00	0.00	0.00
60.375	A	22.8926	5290.46 / 5250.00	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
	B	22.8926	5290.46 / 5250.00	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
	C	22.8926	5290.46 / 5250.00	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00
189.625	A	52.9833	5377.07 / 5250.00	0.00	4322.16	-3198.73	-8733.90	0.00	0.00
	B	52.9833	5377.07 / 5250.00	2770.18	4322.16	1599.36	4366.95	0.00	-7563.78
	C	52.9833	5377.07 / 5250.00	-2770.18	4322.16	1599.36	4366.95	-0.00	7563.78
			Sum:	0.00	12966.47	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
160.375	A	48.2735	8233.12 / 7992.84	-132.12	6215.76	-5397.33	-12560.35	19157.63	-21755.17
	A	48.2735	8233.12 / 7992.84	132.12	6215.76	-5397.33	-12560.35	-19157.63	21755.17
	B	48.2735	8233.12 / 7992.84	4740.29	6215.76	2584.24	25120.71	19157.63	0.00
	B	48.2735	8233.12 / 7992.84	4608.16	6215.76	2813.09	-12560.35	-19157.63	-21755.17
	C	48.2735	8233.12 / 7992.84	-4608.16	6215.76	2813.09	-12560.35	19157.63	21755.17
	C	48.2735	8233.12 / 7992.84	-4740.29	6215.76	2584.24	25120.71	-19157.63	0.00
			Sum:	0.00	37294.58	0.00	-0.00	0.00	0.00
120.375	A	40.0857	6777.01 / 6618.32	-125.38	4435.90	-5122.00	-8963.74	18180.36	-15525.66
	A	40.0857	6777.01 / 6618.32	125.38	4435.90	-5122.00	-8963.74	-18180.36	15525.66
	B	40.0857	6777.01 / 6618.32	4498.47	4435.90	2452.42	17927.48	18180.36	0.00
	B	40.0857	6777.01 / 6618.32	4373.09	4435.90	2669.58	-8963.74	-18180.36	-15525.66
	C	40.0857	6777.01 / 6618.32	-4373.09	4435.90	2669.58	-8963.74	18180.36	15525.66
	C	40.0857	6777.01 / 6618.32	-4498.47	4435.90	2452.42	17927.48	-18180.36	0.00
			Sum:	0.00	26615.41	0.00	-0.00	0.00	0.00
60.375	A	22.8926	6717.98 / 6638.39	0.00	2700.07	-6151.50	-5456.09	0.00	0.00
	B	22.8926	6717.98 / 6638.39	5327.35	2700.07	3075.75	2728.05	0.00	-4725.12
	C	22.8926	6717.98 / 6638.39	-5327.35	2700.07	3075.75	2728.05	-0.00	4725.12
			Sum:	0.00	8100.20	0.00	0.00	0.00	0.00
189.625	A	52.9833	6845.85 / 6595.87	0.00	5522.71	-4045.41	-11159.87	0.00	0.00
	B	52.9833	6845.85 / 6595.87	3503.43	5522.71	2022.71	5579.94	0.00	-9664.73
	C	52.9833	6845.85 / 6595.87	-3503.43	5522.71	2022.71	5579.94	-0.00	9664.73
			Sum:	0.00	16568.12	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
160.375	A	48.2735	6490.22 / 6360.00	-104.64	4882.39	-4274.84	-9865.97	15173.38	-17088.36
	A	48.2735	6490.22	104.64	4882.39	-4274.84	-9865.97	-15173.38	17088.36

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
			6360.00						
	B	48.2735	6490.22	3754.44	4882.39	2046.79	19731.94	15173.38	0.00
			6360.00						
	B	48.2735	6490.22	3649.79	4882.39	2228.04	-9865.97	-15173.38	-17088.36
			6360.00						
	C	48.2735	6490.22	-3649.79	4882.39	2228.04	-9865.97	15173.38	17088.36
			6360.00						
	C	48.2735	6490.22	-3754.44	4882.39	2046.79	19731.94	-15173.38	0.00
			6360.00						
			Sum:	0.00	29294.33	0.00	-0.00	0.00	0.00
120.375	A	40.0857	5330.67	-99.04	3469.21	-4046.08	-7010.33	14361.42	-12142.24
			5250.00						
	A	40.0857	5330.67	99.04	3469.21	-4046.08	-7010.33	-14361.42	12142.24
			5250.00						
	B	40.0857	5330.67	3553.53	3469.21	1937.27	14020.66	14361.42	0.00
			5250.00						
	B	40.0857	5330.67	3454.49	3469.21	2108.82	-7010.33	-14361.42	-12142.24
			5250.00						
	C	40.0857	5330.67	-3454.49	3469.21	2108.82	-7010.33	14361.42	12142.24
			5250.00						
	C	40.0857	5330.67	-3553.53	3469.21	1937.27	14020.66	-14361.42	0.00
			5250.00						
			Sum:	0.00	20815.27	0.00	-0.00	0.00	0.00
60.375	A	22.8926	5290.46	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
			5250.00						
	B	22.8926	5290.46	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
			5250.00						
	C	22.8926	5290.46	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			5250.00						
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00
189.625	A	52.9833	5377.07	0.00	4322.16	-3198.73	-8733.90	0.00	0.00
			5250.00						
	B	52.9833	5377.07	2770.18	4322.16	1599.36	4366.95	0.00	-7563.78
			5250.00						
	C	52.9833	5377.07	-2770.18	4322.16	1599.36	4366.95	-0.00	7563.78
			5250.00						
			Sum:	0.00	12966.47	0.00	0.00	0.00	0.00

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)	C	Yes	Ar (CfAe)	190.00 - 0.00	0.0000	0.25	12	6	1.0000 0.5000	1.9800		1.04
1 5/8 (Sprint)	A	Yes	Ar (CfAe)	167.00 - 0.00	0.0000	0.25	9	6	1.0000 0.5000	1.9800		1.04
1 1/4 (Nextel)	B	Yes	Ar (CfAe)	178.00 - 0.00	0.0000	-0.25	9	9	1.0000 0.5000	1.5500		0.66
Safety Line 3/8	A	No	Ar (CfAe)	190.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
1 5/8 (AT&T)	B	No	CaAa (Out Of Face)	138.00 - 0.00	0.0000	0.1	12	No Ice	0.20	1.04
								1/2" Ice	0.30	2.55

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	190.00-180.00	A	0.313	0.000	0.000	0.000	2.20
		B	0.000	0.000	0.000	0.000	0.00
		C	9.900	0.000	0.000	0.000	124.80
T2	180.00-160.00	A	7.555	0.000	0.000	0.000	69.92
		B	20.925	0.000	0.000	0.000	106.92
		C	19.800	0.000	0.000	0.000	249.60
T3	160.00-140.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	0.000	118.80
		C	19.800	0.000	0.000	0.000	249.60
T4	140.00-120.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	42.768	343.44
		C	19.800	0.000	0.000	0.000	249.60
T5	120.00-100.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	47.520	368.40
		C	19.800	0.000	0.000	0.000	249.60
T6	100.00-80.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	47.520	368.40
		C	19.800	0.000	0.000	0.000	249.60
T7	80.00-60.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	47.520	368.40
		C	19.800	0.000	0.000	0.000	249.60
T8	60.00-40.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	47.520	368.40
		C	19.800	0.000	0.000	0.000	249.60
T9	40.00-20.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	47.520	368.40
		C	19.800	0.000	0.000	0.000	249.60
T10	20.00-0.00	A	20.425	0.000	0.000	0.000	191.60
		B	23.250	0.000	0.000	47.520	368.40
		C	19.800	0.000	0.000	0.000	249.60

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	190.00-180.00	A	0.500	1.146	0.000	0.000	0.000	7.55
		B		0.000	0.000	0.000	0.000	0.00
		C		2.483	12.417	0.000	0.000	353.35
T2	180.00-160.00	A	0.500	4.030	8.692	0.000	0.000	197.34
		B		3.825	30.600	0.000	0.000	387.93
		C		4.967	24.833	0.000	0.000	706.70
T3	160.00-140.00	A	0.500	7.258	24.833	0.000	0.000	535.80

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		4.250	34.000	0.000	0.000	431.04
		C		4.967	24.833	0.000	0.000	706.70
T4	140.00-120.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	64.367	981.84
		C		4.967	24.833	0.000	0.000	706.70
T5	120.00-100.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	71.519	1043.04
		C		4.967	24.833	0.000	0.000	706.70
T6	100.00-80.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	71.519	1043.04
		C		4.967	24.833	0.000	0.000	706.70
T7	80.00-60.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	71.519	1043.04
		C		4.967	24.833	0.000	0.000	706.70
T8	60.00-40.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	71.519	1043.04
		C		4.967	24.833	0.000	0.000	706.70
T9	40.00-20.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	71.519	1043.04
		C		4.967	24.833	0.000	0.000	706.70
T10	20.00-0.00	A	0.500	7.258	24.833	0.000	0.000	535.80
		B		4.250	34.000	0.000	71.519	1043.04
		C		4.967	24.833	0.000	0.000	706.70

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	190.00-180.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.412	2.110	0.495	0.745
T2	180.00-160.00	A	0.294	1.454	0.303	0.456
		B	0.887	4.798	0.915	1.506
		C	0.839	4.154	0.866	1.304
T3	160.00-140.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304
T4	140.00-120.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304
T5	120.00-100.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304
T6	100.00-80.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304
T7	80.00-60.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304
T8	60.00-40.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304
T9	40.00-20.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
T10	20.00-0.00	A	0.839	4.154	0.866	1.304
		B	0.986	5.332	1.017	1.673
		C	0.839	4.154	0.866	1.304

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	190.00-180.00	-2.9946	3.8953	-2.1949	2.5376
T2	180.00-160.00	-1.4359	-1.6082	-0.9628	-1.6245
T3	160.00-140.00	-1.9369	-3.5573	-1.3213	-3.0027
T4	140.00-120.00	3.1045	0.8721	3.3279	1.0736
T5	120.00-100.00	3.3021	1.0457	3.5108	1.2340
T6	100.00-80.00	3.3021	1.0457	3.5108	1.2340
T7	80.00-60.00	3.3021	1.0457	3.5108	1.2340
T8	60.00-40.00	3.3021	1.0457	3.5108	1.2340
T9	40.00-20.00	3.3021	1.0457	3.5108	1.2340
T10	20.00-0.00	3.3021	1.0457	3.5108	1.2340

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	lb
Antel BXA-70063-6CF (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	7.59 8.05	2.43 2.91	17.00 59.00
Antel BXA-70063-6CF (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	7.59 8.05	2.43 2.91	17.00 59.00
Antel BXA-70063-6CF (Verizon)	C	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	7.59 8.05	2.43 2.91	17.00 59.00
Sector Frame Mount (Verizon)	A	From Leg	1.50 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Sector Frame Mount (Verizon)	B	From Leg	1.50 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Sector Frame Mount (Verizon)	C	From Leg	1.50 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
(2) Antel LPA-80080-4CF (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	1.51 1.81	6.06 6.40	12.00 45.10
(2) Antel LPA-80063/4CF (Verizon)	B	From Leg	3.00 0.00	0.0000	190.00	No Ice 1/2" Ice	7.00 7.36	3.48 3.82	20.00 72.60

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
				0.00						
(2) Antel LPA-80063/4CF	C	From Leg	3.00		0.0000	190.00	No Ice	7.00	3.48	20.00
(Verizon)			0.00				1/2" Ice	7.36	3.82	72.60
			0.00							
Antel BXA-171085-8BF	A	From Leg	3.00		0.0000	190.00	No Ice	2.94	1.25	10.50
(Verizon)			0.00				1/2" Ice	3.25	1.57	29.30
			0.00							
Antel BXA-171063-8BF	B	From Leg	3.00		0.0000	190.00	No Ice	2.94	1.25	10.50
(Verizon)			0.00				1/2" Ice	3.25	1.57	29.30
			0.00							
Antel BXA-171063-8BF	C	From Leg	3.00		0.0000	190.00	No Ice	2.94	1.25	10.50
(Verizon)			0.00				1/2" Ice	3.25	1.57	29.30
			0.00							
(2) RFS FD9R6004/2C-3L	A	From Leg	3.00		0.0000	190.00	No Ice	0.31	0.08	2.60
(Verizon)			0.00				1/2" Ice	0.39	0.12	4.90
			0.00							
(2) RFS FD9R6004/2C-3L	B	From Leg	3.00		0.0000	190.00	No Ice	0.31	0.08	2.60
(Verizon)			0.00				1/2" Ice	0.39	0.12	4.90
			0.00							
(2) RFS FD9R6004/2C-3L	C	From Leg	3.00		0.0000	190.00	No Ice	0.31	0.08	2.60
(Verizon)			0.00				1/2" Ice	0.39	0.12	4.90
			0.00							
Sector Frame Mount	A	From Leg	1.50		0.0000	167.00	No Ice	13.60	13.60	465.00
(Sprint)			0.00				1/2" Ice	18.40	18.40	600.00
			0.00							
Sector Frame Mount	B	From Leg	1.50		0.0000	167.00	No Ice	13.60	13.60	465.00
(Sprint)			0.00				1/2" Ice	18.40	18.40	600.00
			0.00							
Sector Frame Mount	C	From Leg	1.50		0.0000	167.00	No Ice	13.60	13.60	465.00
(Sprint)			0.00				1/2" Ice	18.40	18.40	600.00
			0.00							
(3) Decibel DB980H90	A	From Leg	3.00		0.0000	167.00	No Ice	3.90	2.29	8.00
(Sprint)			0.00				1/2" Ice	4.28	2.73	29.00
			0.00							
(3) Decibel DB980H90	B	From Leg	3.00		0.0000	167.00	No Ice	3.90	2.29	8.00
(Sprint)			0.00				1/2" Ice	4.28	2.73	29.00
			0.00							
(3) Decibel DB980H90	C	From Leg	3.00		0.0000	167.00	No Ice	3.90	2.29	8.00
(Sprint)			0.00				1/2" Ice	4.28	2.73	29.00
			0.00							
Sector Frame Mount	A	From Leg	1.50		0.0000	178.00	No Ice	13.60	13.60	465.00
(Nextel)			0.00				1/2" Ice	18.40	18.40	600.00
			0.00							
Sector Frame Mount	B	From Leg	1.50		0.0000	178.00	No Ice	13.60	13.60	465.00
(Nextel)			0.00				1/2" Ice	18.40	18.40	600.00
			0.00							
Sector Frame Mount	C	From Leg	1.50		0.0000	178.00	No Ice	13.60	13.60	465.00
(Nextel)			0.00				1/2" Ice	18.40	18.40	600.00
			0.00							
(3) Swedcom ALP-E-9011	A	From Leg	3.00		0.0000	178.00	No Ice	2.68	3.17	20.00
(Nextel)			0.00				1/2" Ice	2.96	3.46	43.80
			0.00							
(3) Swedcom ALP-E-9011	B	From Leg	3.00		0.0000	178.00	No Ice	2.68	3.17	20.00
(Nextel)			0.00				1/2" Ice	2.96	3.46	43.80
			0.00							
(3) Swedcom ALP-E-9011	C	From Leg	3.00		0.0000	178.00	No Ice	2.68	3.17	20.00
(Nextel)			0.00				1/2" Ice	2.96	3.46	43.80

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00						
Sector Frame Mount (AT&T)	A	From Leg	1.50 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Sector Frame Mount (AT&T)	B	From Leg	1.50 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Sector Frame Mount (AT&T)	C	From Leg	1.50 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
(2) Allgon 7770.00 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	5.51 5.88	2.93 3.29	35.00 67.60
(2) Allgon 7770.00 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	5.51 5.88	2.93 3.29	35.00 67.60
(2) Allgon 7770.00 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	5.51 5.88	2.93 3.29	35.00 67.60
(2) TMA (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	1.40 1.32	0.60 0.69	20.00 30.30
(2) TMA (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	1.40 1.32	0.60 0.69	20.00 30.30
(2) TMA (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	1.40 1.32	0.60 0.69	20.00 30.30
(2) Diplexor (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	1.40 1.32	0.60 0.69	20.00 30.30
(2) Diplexor (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	1.40 1.32	0.60 0.69	20.00 30.30
(2) Diplexor (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice	1.40 1.32	0.60 0.69	20.00 30.30
Sector Frame Mount (Empty Mount)	A	From Leg	1.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Sector Frame Mount (Empty Mount)	B	From Leg	1.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Sector Frame Mount (Empty Mount)	C	From Leg	1.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Lightning Rod	C	None		0.0000	190.00	No Ice 1/2" Ice	1.00 2.02	1.00 2.02	40.00 49.26

Tower Pressures - No Ice

$G_H = 1.117$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 190.00-180.00	185.00	1.636	30	37.396	A	1.630	6.462	4.792	59.21	0.000	0.000
					B	1.630	6.150		61.59	0.000	0.000
					C	1.135	15.637		28.57	0.000	0.000
T2 180.00-160.00	170.00	1.597	30	74.792	A	2.550	19.609	9.583	43.25	0.000	0.000
					B	1.937	32.386		27.92	0.000	0.000
					C	1.987	31.308		28.78	0.000	0.000
T3 160.00-140.00	150.00	1.541	29	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	0.000
					C	1.987	31.308		28.78	0.000	0.000
T4 140.00-120.00	130.00	1.48	27	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	42.768
					C	1.987	31.308		28.78	0.000	0.000
T5 120.00-100.00	110.00	1.411	26	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T6 100.00-80.00	90.00	1.332	25	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T7 80.00-60.00	70.00	1.24	23	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T8 60.00-40.00	50.00	1.126	21	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T9 40.00-20.00	30.00	1	18	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T10 20.00-0.00	10.00	1	18	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.117$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 190.00-180.00	185.00	1.636	23	0.5000	38.229	A	1.630	12.221	6.458	46.63	0.000	0.000
						B	1.630	11.076		50.83	0.000	0.000
						C	13.302	11.449		26.09	0.000	0.000
T2 180.00-160.00	170.00	1.597	22	0.5000	76.458	A	11.088	24.582	12.917	36.21	0.000	0.000
						B	31.947	21.032		24.38	0.000	0.000
						C	26.382	22.819		26.25	0.000	0.000
T3 160.00-140.00	150.00	1.541	21	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	0.000
						C	26.382	22.819		26.25	0.000	0.000
T4 140.00-120.00	130.00	1.48	21	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	64.367
						C	26.382	22.819		26.25	0.000	0.000
T5 120.00-100.00	110.00	1.411	20	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	71.519
						C	26.382	22.819		26.25	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T6 100.00-80.00	90.00	1.332	18	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	71.519
						C	26.382	22.819		26.25	0.000	0.000
T7 80.00-60.00	70.00	1.24	17	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	71.519
						C	26.382	22.819		26.25	0.000	0.000
T8 60.00-40.00	50.00	1.126	16	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	71.519
						C	26.382	22.819		26.25	0.000	0.000
T9 40.00-20.00	30.00	1	14	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	71.519
						C	26.382	22.819		26.25	0.000	0.000
T10 20.00-0.00	10.00	1	14	0.5000	76.458	A	26.382	25.110	12.917	25.08	0.000	0.000
						B	35.179	20.924		23.02	0.000	71.519
						C	26.382	22.819		26.25	0.000	0.000

Tower Pressure - Service

$G_H = 1.117$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T1 190.00-180.00	185.00	1.636	10	37.396	A	1.630	6.462	4.792	59.21	0.000	0.000
					B	1.630	6.150		61.59	0.000	0.000
					C	1.135	15.637		28.57	0.000	0.000
T2 180.00-160.00	170.00	1.597	10	74.792	A	2.550	19.609	9.583	43.25	0.000	0.000
					B	1.937	32.386		27.92	0.000	0.000
					C	1.987	31.308		28.78	0.000	0.000
T3 160.00-140.00	150.00	1.541	10	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	0.000
					C	1.987	31.308		28.78	0.000	0.000
T4 140.00-120.00	130.00	1.48	9	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	42.768
					C	1.987	31.308		28.78	0.000	0.000
T5 120.00-100.00	110.00	1.411	9	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T6 100.00-80.00	90.00	1.332	9	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T7 80.00-60.00	70.00	1.24	8	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T8 60.00-40.00	50.00	1.126	7	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T9 40.00-20.00	30.00	1	6	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000
T10 20.00-0.00	10.00	1	6	74.792	A	1.987	31.933	9.583	28.25	0.000	0.000
					B	1.836	34.612		26.29	0.000	47.520
					C	1.987	31.308		28.78	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	127.00	336.97	A	0.216	2.542	0.594	1	1	5.468	778.63	77.86	C
190.00-180.00			B	0.208	2.569	0.592	1	1	5.271			
			C	0.449	1.976	0.673	1	1	11.653			
T2	426.44	658.24	A	0.296	2.306	0.615	1	1	14.605	1544.04	77.20	B
180.00-160.00		TA 214.38	B	0.459	1.959	0.677	1	1	23.876			
			C	0.445	1.982	0.671	1	1	22.997			
T3	560.00	658.24	A	0.454	1.968	0.675	1	1	23.538	1572.62	78.63	B
160.00-140.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T4	784.64	658.24	A	0.454	1.968	0.675	1	1	23.538	2817.20	140.86	B
140.00-120.00		TA 214.38	B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T5	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	2824.41	141.22	B
120.00-100.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T6	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	2667.03	133.35	B
100.00-80.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T7	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	2482.24	124.11	B
80.00-60.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T8	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	2254.72	112.74	B
60.00-40.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T9	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	2002.32	100.12	B
40.00-20.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T10	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	2002.32	100.12	B
20.00-0.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
Sum Weight:	6755.68	6689.93								20945.51		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	127.00	336.97	A	0.216	2.542	0.594	0.8	1	5.142	763.46	76.35	C
190.00-180.00			B	0.208	2.569	0.592	0.8	1	4.945			
			C	0.449	1.976	0.673	0.8	1	11.426			
T2	426.44	658.24	A	0.296	2.306	0.615	0.8	1	14.095	1518.99	75.95	B
180.00-160.00		TA 214.38	B	0.459	1.959	0.677	0.8	1	23.488			
			C	0.445	1.982	0.671	0.8	1	22.599			
T3	560.00	658.24	A	0.454	1.968	0.675	0.8	1	23.141	1550.20	77.51	B
160.00-140.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T4	784.64	658.24	A	0.454	1.968	0.675	0.8	1	23.141	2795.68	139.78	B
140.00-120.00		TA 214.38	B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T5	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	2803.89	140.19	B

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
120.00-100.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T6	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	2647.65	132.38	B
100.00-80.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T7	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	2464.21	123.21	B
80.00-60.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T8	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	2238.34	111.92	B
60.00-40.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T9	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	1987.78	99.39	B
40.00-20.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T10	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	1987.78	99.39	B
20.00-0.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
Sum Weight:	6755.68	6689.93								20757.97		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	127.00	336.97	A	0.216	2.542	0.594	0.85	1	5.223	767.25	76.73	C
190.00-180.00			B	0.208	2.569	0.592	0.85	1	5.027			
			C	0.449	1.976	0.673	0.85	1	11.482			
T2	426.44	658.24	A	0.296	2.306	0.615	0.85	1	14.222	1525.25	76.26	B
180.00-160.00		TA 214.38	B	0.459	1.959	0.677	0.85	1	23.585			
			C	0.445	1.982	0.671	0.85	1	22.699			
T3	560.00	658.24	A	0.454	1.968	0.675	0.85	1	23.240	1555.81	77.79	B
160.00-140.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T4	784.64	658.24	A	0.454	1.968	0.675	0.85	1	23.240	2801.06	140.05	B
140.00-120.00		TA 214.38	B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T5	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	2809.02	140.45	B
120.00-100.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T6	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	2652.50	132.62	B
100.00-80.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T7	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	2468.71	123.44	B
80.00-60.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T8	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	2242.43	112.12	B
60.00-40.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T9	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	1991.41	99.57	B
40.00-20.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T10	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	1991.41	99.57	B
20.00-0.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	6755.68	6689.93								20804.85		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	360.90	521.56	A	0.362	2.143	0.637	1	1	9.415	1006.88	100.69	C
190.00-180.00			B	0.332	2.213	0.626	1	1	8.567			
			C	0.647	1.782	0.784	1	1	22.275			
T2	1291.97	1013.22	A	0.467	1.947	0.681	1	1	27.829	2157.90	107.90	B
180.00-160.00		TA 326.59	B	0.693	1.776	0.815	1	1	49.085			
			C	0.644	1.783	0.781	1	1	44.208			
T3	1673.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	2249.65	112.48	B
160.00-140.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T4	2224.34	1013.22	A	0.673	1.777	0.801	1	1	46.504	3635.49	181.77	B
140.00-120.00		TA 326.59	B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T5	2285.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	3622.40	181.12	B
120.00-100.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T6	2285.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	3420.55	171.03	B
100.00-80.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T7	2285.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	3183.55	159.18	B
80.00-60.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T8	2285.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	2891.75	144.59	B
60.00-40.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T9	2285.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	2568.04	128.40	B
40.00-20.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
T10	2285.54	1013.22	A	0.673	1.777	0.801	1	1	46.504	2568.04	128.40	B
20.00-0.00			B	0.734	1.782	0.845	1	1	52.852			
			C	0.644	1.783	0.781	1	1	44.208			
Sum Weight:	19263.97	10293.73								27304.27		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	360.90	521.56	A	0.362	2.143	0.637	0.8	1	9.089	886.63	88.66	C
190.00-180.00			B	0.332	2.213	0.626	0.8	1	8.241			
			C	0.647	1.782	0.784	0.8	1	19.615			
T2	1291.97	1013.22	A	0.467	1.947	0.681	0.8	1	25.611	1877.01	93.85	B
180.00-160.00		TA 326.59	B	0.693	1.776	0.815	0.8	1	42.696			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.644	1.783	0.781	0.8	1	38.932			
T3 160.00-140.00	1673.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	1950.17	97.51	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T4 140.00-120.00	2224.34	1013.22 TA 326.59	A	0.673	1.777	0.801	0.8	1	41.228	3348.01	167.40	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T5 120.00-100.00	2285.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	3348.31	167.42	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T6 100.00-80.00	2285.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	3161.74	158.09	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T7 80.00-60.00	2285.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	2942.67	147.13	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T8 60.00-40.00	2285.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	2672.95	133.65	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T9 40.00-20.00	2285.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	2373.73	118.69	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
T10 20.00-0.00	2285.54	1013.22	A	0.673	1.777	0.801	0.8	1	41.228	2373.73	118.69	B
			B	0.734	1.782	0.845	0.8	1	45.816			
			C	0.644	1.783	0.781	0.8	1	38.932			
Sum Weight:	19263.97	10293.73								24934.96		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1 190.00-180.00	360.90	521.56	A	0.362	2.143	0.637	0.85	1	9.170	916.69	91.67	C
			B	0.332	2.213	0.626	0.85	1	8.323			
			C	0.647	1.782	0.784	0.85	1	20.280			
T2 180.00-160.00	1291.97	1013.22 TA 326.59	A	0.467	1.947	0.681	0.85	1	26.165	1947.24	97.36	B
			B	0.693	1.776	0.815	0.85	1	44.293			
			C	0.644	1.783	0.781	0.85	1	40.251			
T3 160.00-140.00	1673.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	2025.04	101.25	B
			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
T4 140.00-120.00	2224.34	1013.22 TA 326.59	A	0.673	1.777	0.801	0.85	1	42.547	3419.88	170.99	B
			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
T5 120.00-100.00	2285.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	3416.83	170.84	B
			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
T6 100.00-80.00	2285.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	3226.44	161.32	B
			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
T7 80.00-60.00	2285.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	3002.89	150.14	B
			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
T8 60.00-40.00	2285.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	2727.65	136.38	B
			B	0.734	1.782	0.845	0.85	1	47.575			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.644	1.783	0.781	0.85	1	40.251			
T9	2285.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	2422.31	121.12	B
40.00-20.00			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
T10	2285.54	1013.22	A	0.673	1.777	0.801	0.85	1	42.547	2422.31	121.12	B
20.00-0.00			B	0.734	1.782	0.845	0.85	1	47.575			
			C	0.644	1.783	0.781	0.85	1	40.251			
Sum Weight:	19263.97	10293.73								25527.29		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	127.00	336.97	A	0.216	2.542	0.594	1	1	5.468	269.42	26.94	C
190.00-180.00			B	0.208	2.569	0.592	1	1	5.271			
			C	0.449	1.976	0.673	1	1	11.653			
T2	426.44	658.24	A	0.296	2.306	0.615	1	1	14.605	534.27	26.71	B
180.00-160.00		TA 214.38	B	0.459	1.959	0.677	1	1	23.876			
			C	0.445	1.982	0.671	1	1	22.997			
T3	560.00	658.24	A	0.454	1.968	0.675	1	1	23.538	544.16	27.21	B
160.00-140.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T4	784.64	658.24	A	0.454	1.968	0.675	1	1	23.538	974.81	48.74	B
140.00-120.00		TA 214.38	B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T5	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	977.30	48.87	B
120.00-100.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T6	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	922.85	46.14	B
100.00-80.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T7	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	858.91	42.95	B
80.00-60.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T8	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	780.18	39.01	B
60.00-40.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T9	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	692.84	34.64	B
40.00-20.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
T10	809.60	658.24	A	0.454	1.968	0.675	1	1	23.538	692.84	34.64	B
20.00-0.00			B	0.487	1.917	0.691	1	1	25.757			
			C	0.445	1.982	0.671	1	1	22.997			
Sum Weight:	6755.68	6689.93								7247.58		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	127.00	336.97	A	0.216	2.542	0.594	0.8	1	5.142	264.17	26.42	C
190.00-180.00			B	0.208	2.569	0.592	0.8	1	4.945			
			C	0.449	1.976	0.673	0.8	1	11.426			
T2	426.44	658.24	A	0.296	2.306	0.615	0.8	1	14.095	525.60	26.28	B
180.00-160.00		TA 214.38	B	0.459	1.959	0.677	0.8	1	23.488			
			C	0.445	1.982	0.671	0.8	1	22.599			
T3	560.00	658.24	A	0.454	1.968	0.675	0.8	1	23.141	536.40	26.82	B
160.00-140.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T4	784.64	658.24	A	0.454	1.968	0.675	0.8	1	23.141	967.36	48.37	B
140.00-120.00		TA 214.38	B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T5	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	970.20	48.51	B
120.00-100.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T6	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	916.14	45.81	B
100.00-80.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T7	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	852.67	42.63	B
80.00-60.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T8	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	774.51	38.73	B
60.00-40.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T9	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	687.81	34.39	B
40.00-20.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
T10	809.60	658.24	A	0.454	1.968	0.675	0.8	1	23.141	687.81	34.39	B
20.00-0.00			B	0.487	1.917	0.691	0.8	1	25.390			
			C	0.445	1.982	0.671	0.8	1	22.599			
Sum Weight:	6755.68	6689.93								7182.69		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	127.00	336.97	A	0.216	2.542	0.594	0.85	1	5.223	265.48	26.55	C
190.00-180.00			B	0.208	2.569	0.592	0.85	1	5.027			
			C	0.449	1.976	0.673	0.85	1	11.482			
T2	426.44	658.24	A	0.296	2.306	0.615	0.85	1	14.222	527.77	26.39	B
180.00-160.00		TA 214.38	B	0.459	1.959	0.677	0.85	1	23.585			
			C	0.445	1.982	0.671	0.85	1	22.699			
T3	560.00	658.24	A	0.454	1.968	0.675	0.85	1	23.240	538.34	26.92	B
160.00-140.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T4	784.64	658.24	A	0.454	1.968	0.675	0.85	1	23.240	969.22	48.46	B
140.00-120.00		TA 214.38	B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T5	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	971.98	48.60	B
120.00-100.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T6	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	917.82	45.89	B
100.00-80.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	854.23	42.71	B
80.00-60.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T8	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	775.93	38.80	B
60.00-40.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T9	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	689.07	34.45	B
40.00-20.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
T10	809.60	658.24	A	0.454	1.968	0.675	0.85	1	23.240	689.07	34.45	B
20.00-0.00			B	0.487	1.917	0.691	0.85	1	25.481			
			C	0.445	1.982	0.671	0.85	1	22.699			
Sum Weight:	6755.68	6689.93								7198.91		

Discrete Appurtenance Pressures - No Ice $G_H = 1.117$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.26	1.573	29	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.26	1.573	29	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.26	1.573	29	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.26	1.450	27	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.26	1.450	27	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.26	1.450	27	3.54	5.32
Antel BXA-70063-6CF	0.0000	17.00	0.00	-5.02	190.00	1.649	30	7.59	2.43
Antel BXA-70063-6CF	120.0000	17.00	4.35	2.51	190.00	1.649	30	7.59	2.43
Antel BXA-70063-6CF	240.0000	17.00	-4.35	2.51	190.00	1.649	30	7.59	2.43
Sector Frame Mount	0.0000	465.00	0.00	-3.52	190.00	1.649	30	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	190.00	1.649	30	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	190.00	1.649	30	13.60	13.60
Antel LPA-80080-4CF	0.0000	24.00	0.00	-5.02	190.00	1.649	30	3.02	12.12
Antel LPA-80063/4CF	120.0000	40.00	4.35	2.51	190.00	1.649	30	14.00	6.96
Antel LPA-80063/4CF	240.0000	40.00	-4.35	2.51	190.00	1.649	30	14.00	6.96
Antel BXA-171085-8BF	0.0000	10.50	0.00	-5.02	190.00	1.649	30	2.94	1.25
Antel BXA-171063-8BF	120.0000	10.50	4.35	2.51	190.00	1.649	30	2.94	1.25
Antel BXA-171063-8BF	240.0000	10.50	-4.35	2.51	190.00	1.649	30	2.94	1.25
RFS FD9R6004/2C-3L	0.0000	5.20	0.00	-5.02	190.00	1.649	30	0.62	0.16
RFS FD9R6004/2C-3L	120.0000	5.20	4.35	2.51	190.00	1.649	30	0.62	0.16
RFS FD9R6004/2C-3L	240.0000	5.20	-4.35	2.51	190.00	1.649	30	0.62	0.16
Sector Frame Mount	0.0000	465.00	0.00	-3.52	167.00	1.589	29	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	167.00	1.589	29	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	167.00	1.589	29	13.60	13.60
Decibel DB980H90	0.0000	24.00	0.00	-5.02	167.00	1.589	29	11.70	6.87
Decibel DB980H90	120.0000	24.00	4.35	2.51	167.00	1.589	29	11.70	6.87
Decibel DB980H90	240.0000	24.00	-4.35	2.51	167.00	1.589	29	11.70	6.87
Sector Frame Mount	0.0000	465.00	0.00	-3.52	178.00	1.619	30	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	178.00	1.619	30	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	178.00	1.619	30	13.60	13.60
Swedcom ALP-E-9011	0.0000	60.00	0.00	-5.02	178.00	1.619	30	8.04	9.51
Swedcom ALP-E-9011	120.0000	60.00	4.35	2.51	178.00	1.619	30	8.04	9.51
Swedcom ALP-E-9011	240.0000	60.00	-4.35	2.51	178.00	1.619	30	8.04	9.51
Sector Frame Mount	0.0000	465.00	0.00	-3.52	138.00	1.505	28	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	138.00	1.505	28	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	138.00	1.505	28	13.60	13.60
Allgon 7770.00	0.0000	70.00	0.00	-5.02	138.00	1.505	28	11.02	5.86

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Allgon 7770.00	120.0000	70.00	4.35	2.51	138.00	1.505	28	11.02	5.86
Allgon 7770.00	240.0000	70.00	-4.35	2.51	138.00	1.505	28	11.02	5.86
TMA	240.0000	40.00	-4.35	2.51	138.00	1.505	28	2.80	1.20
TMA	0.0000	40.00	0.00	-5.02	138.00	1.505	28	2.80	1.20
TMA	120.0000	40.00	4.35	2.51	138.00	1.505	28	2.80	1.20
Diplexor	240.0000	40.00	-4.35	2.51	138.00	1.505	28	2.80	1.20
Diplexor	0.0000	40.00	0.00	-5.02	138.00	1.505	28	2.80	1.20
Diplexor	120.0000	40.00	4.35	2.51	138.00	1.505	28	2.80	1.20
Sector Frame Mount	0.0000	465.00	0.00	-3.52	150.00	1.541	29	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	150.00	1.541	29	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	150.00	1.541	29	13.60	13.60
Lightning Rod	0.0000	40.00	0.00	0.00	190.00	1.649	30	1.00	1.00
	Sum Weight:	7919.10							

Discrete Appurtenance Pressures - With Ice $G_H = 1.117$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.26	1.573	22	4.28	6.36	0.5000
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.26	1.573	22	4.28	6.36	0.5000
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.26	1.573	22	4.28	6.36	0.5000
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.26	1.450	20	4.28	6.36	0.5000
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.26	1.450	20	4.28	6.36	0.5000
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.26	1.450	20	4.28	6.36	0.5000
Antel BXA-70063-6CF	0.0000	59.00	0.00	-5.02	190.00	1.649	23	8.05	2.91	0.5000
Antel BXA-70063-6CF	120.0000	59.00	4.35	2.51	190.00	1.649	23	8.05	2.91	0.5000
Antel BXA-70063-6CF	240.0000	59.00	-4.35	2.51	190.00	1.649	23	8.05	2.91	0.5000
Sector Frame Mount	0.0000	600.00	0.00	-3.52	190.00	1.649	23	18.40	18.40	0.5000
Sector Frame Mount	120.0000	600.00	3.05	1.76	190.00	1.649	23	18.40	18.40	0.5000
Sector Frame Mount	240.0000	600.00	-3.05	1.76	190.00	1.649	23	18.40	18.40	0.5000
Antel LPA-80080-4CF	0.0000	90.20	0.00	-5.02	190.00	1.649	23	3.62	12.80	0.5000
Antel LPA-80063/4CF	120.0000	145.20	4.35	2.51	190.00	1.649	23	14.72	7.64	0.5000
Antel LPA-80063/4CF	240.0000	145.20	-4.35	2.51	190.00	1.649	23	14.72	7.64	0.5000
Antel BXA-171085-8BF	0.0000	29.30	0.00	-5.02	190.00	1.649	23	3.25	1.57	0.5000
Antel BXA-171063-8BF	120.0000	29.30	4.35	2.51	190.00	1.649	23	3.25	1.57	0.5000
Antel BXA-171063-8BF	240.0000	29.30	-4.35	2.51	190.00	1.649	23	3.25	1.57	0.5000
RFS FD9R6004/2C-3L	0.0000	9.80	0.00	-5.02	190.00	1.649	23	0.78	0.24	0.5000
RFS FD9R6004/2C-3L	120.0000	9.80	4.35	2.51	190.00	1.649	23	0.78	0.24	0.5000
RFS FD9R6004/2C-3L	240.0000	9.80	-4.35	2.51	190.00	1.649	23	0.78	0.24	0.5000
Sector Frame Mount	0.0000	600.00	0.00	-3.52	167.00	1.589	22	18.40	18.40	0.5000
Sector Frame Mount	120.0000	600.00	3.05	1.76	167.00	1.589	22	18.40	18.40	0.5000
Sector Frame Mount	240.0000	600.00	-3.05	1.76	167.00	1.589	22	18.40	18.40	0.5000
Decibel DB980H90	0.0000	87.00	0.00	-5.02	167.00	1.589	22	12.84	8.19	0.5000
Decibel DB980H90	120.0000	87.00	4.35	2.51	167.00	1.589	22	12.84	8.19	0.5000
Decibel DB980H90	240.0000	87.00	-4.35	2.51	167.00	1.589	22	12.84	8.19	0.5000
Sector Frame Mount	0.0000	600.00	0.00	-3.52	178.00	1.619	22	18.40	18.40	0.5000
Sector Frame Mount	120.0000	600.00	3.05	1.76	178.00	1.619	22	18.40	18.40	0.5000
Sector Frame Mount	240.0000	600.00	-3.05	1.76	178.00	1.619	22	18.40	18.40	0.5000
Swedcom ALP-E-9011	0.0000	131.40	0.00	-5.02	178.00	1.619	22	8.88	10.38	0.5000
Swedcom ALP-E-9011	120.0000	131.40	4.35	2.51	178.00	1.619	22	8.88	10.38	0.5000
Swedcom ALP-E-9011	240.0000	131.40	-4.35	2.51	178.00	1.619	22	8.88	10.38	0.5000
Sector Frame Mount	0.0000	600.00	0.00	-3.52	138.00	1.505	21	18.40	18.40	0.5000
Sector Frame Mount	120.0000	600.00	3.05	1.76	138.00	1.505	21	18.40	18.40	0.5000
Sector Frame Mount	240.0000	600.00	-3.05	1.76	138.00	1.505	21	18.40	18.40	0.5000
Allgon 7770.00	0.0000	135.20	0.00	-5.02	138.00	1.505	21	11.76	6.58	0.5000
Allgon 7770.00	120.0000	135.20	4.35	2.51	138.00	1.505	21	11.76	6.58	0.5000

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Allgon 7770.00	240.0000	135.20	-4.35	2.51	138.00	1.505	21	11.76	6.58	0.5000
TMA	240.0000	60.60	-4.35	2.51	138.00	1.505	21	2.64	1.38	0.5000
TMA	0.0000	60.60	0.00	-5.02	138.00	1.505	21	2.64	1.38	0.5000
TMA	120.0000	60.60	4.35	2.51	138.00	1.505	21	2.64	1.38	0.5000
Diplexor	240.0000	60.60	-4.35	2.51	138.00	1.505	21	2.64	1.38	0.5000
Diplexor	0.0000	60.60	0.00	-5.02	138.00	1.505	21	2.64	1.38	0.5000
Diplexor	120.0000	60.60	4.35	2.51	138.00	1.505	21	2.64	1.38	0.5000
Sector Frame Mount	0.0000	600.00	0.00	-3.52	150.00	1.541	21	18.40	18.40	0.5000
Sector Frame Mount	120.0000	600.00	3.05	1.76	150.00	1.541	21	18.40	18.40	0.5000
Sector Frame Mount	240.0000	600.00	-3.05	1.76	150.00	1.541	21	18.40	18.40	0.5000
Lightning Rod	0.0000	49.26	0.00	0.00	190.00	1.649	23	2.02	2.02	0.5000
	Sum Weight:	11148.56								

Discrete Appurtenance Pressures - Service $G_H = 1.117$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.26	1.573	10	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.26	1.573	10	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.26	1.573	10	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.26	1.450	9	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.26	1.450	9	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.26	1.450	9	3.54	5.32
Antel BXA-70063-6CF	0.0000	17.00	0.00	-5.02	190.00	1.649	11	7.59	2.43
Antel BXA-70063-6CF	120.0000	17.00	4.35	2.51	190.00	1.649	11	7.59	2.43
Antel BXA-70063-6CF	240.0000	17.00	-4.35	2.51	190.00	1.649	11	7.59	2.43
Sector Frame Mount	0.0000	465.00	0.00	-3.52	190.00	1.649	11	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	190.00	1.649	11	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	190.00	1.649	11	13.60	13.60
Antel LPA-80080-4CF	0.0000	24.00	0.00	-5.02	190.00	1.649	11	3.02	12.12
Antel LPA-80063/4CF	120.0000	40.00	4.35	2.51	190.00	1.649	11	14.00	6.96
Antel LPA-80063/4CF	240.0000	40.00	-4.35	2.51	190.00	1.649	11	14.00	6.96
Antel BXA-171085-8BF	0.0000	10.50	0.00	-5.02	190.00	1.649	11	2.94	1.25
Antel BXA-171063-8BF	120.0000	10.50	4.35	2.51	190.00	1.649	11	2.94	1.25
Antel BXA-171063-8BF	240.0000	10.50	-4.35	2.51	190.00	1.649	11	2.94	1.25
RFS FD9R6004/2C-3L	0.0000	5.20	0.00	-5.02	190.00	1.649	11	0.62	0.16
RFS FD9R6004/2C-3L	120.0000	5.20	4.35	2.51	190.00	1.649	11	0.62	0.16
RFS FD9R6004/2C-3L	240.0000	5.20	-4.35	2.51	190.00	1.649	11	0.62	0.16
Sector Frame Mount	0.0000	465.00	0.00	-3.52	167.00	1.589	10	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	167.00	1.589	10	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	167.00	1.589	10	13.60	13.60
Decibel DB980H90	0.0000	24.00	0.00	-5.02	167.00	1.589	10	11.70	6.87
Decibel DB980H90	120.0000	24.00	4.35	2.51	167.00	1.589	10	11.70	6.87
Decibel DB980H90	240.0000	24.00	-4.35	2.51	167.00	1.589	10	11.70	6.87
Sector Frame Mount	0.0000	465.00	0.00	-3.52	178.00	1.619	10	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	178.00	1.619	10	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	178.00	1.619	10	13.60	13.60
Swedcom ALP-E-9011	0.0000	60.00	0.00	-5.02	178.00	1.619	10	8.04	9.51
Swedcom ALP-E-9011	120.0000	60.00	4.35	2.51	178.00	1.619	10	8.04	9.51
Swedcom ALP-E-9011	240.0000	60.00	-4.35	2.51	178.00	1.619	10	8.04	9.51
Sector Frame Mount	0.0000	465.00	0.00	-3.52	138.00	1.505	10	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	138.00	1.505	10	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	138.00	1.505	10	13.60	13.60
Allgon 7770.00	0.0000	70.00	0.00	-5.02	138.00	1.505	10	11.02	5.86
Allgon 7770.00	120.0000	70.00	4.35	2.51	138.00	1.505	10	11.02	5.86
Allgon 7770.00	240.0000	70.00	-4.35	2.51	138.00	1.505	10	11.02	5.86

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
TMA	240.0000	40.00	-4.35	2.51	138.00	1.505	10	2.80	1.20
TMA	0.0000	40.00	0.00	-5.02	138.00	1.505	10	2.80	1.20
TMA	120.0000	40.00	4.35	2.51	138.00	1.505	10	2.80	1.20
Diplexor	240.0000	40.00	-4.35	2.51	138.00	1.505	10	2.80	1.20
Diplexor	0.0000	40.00	0.00	-5.02	138.00	1.505	10	2.80	1.20
Diplexor	120.0000	40.00	4.35	2.51	138.00	1.505	10	2.80	1.20
Sector Frame Mount	0.0000	465.00	0.00	-3.52	150.00	1.541	10	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	150.00	1.541	10	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	150.00	1.541	10	13.60	13.60
Lightning Rod	0.0000	40.00	0.00	0.00	190.00	1.649	11	1.00	1.00
	Sum Weight:	7919.10							

Load Combinations

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 145 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-4364.63	-3664.28	2120.04
	Max. H_x	10	-4364.63	-3664.28	2120.04
	Max. H_z	17	-50112.89	-50151.91	28940.28
	Min. Vert	17	-50112.89	-50151.91	28940.28
	Min. H_x	17	-50112.89	-50151.91	28940.28
	Min. H_z	10	-4364.63	-3664.28	2120.04
Guy B @ 145 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-4354.63	3654.65	2105.99
	Max. H_x	25	-50097.09	50106.90	28935.59
	Max. H_z	25	-50097.09	50106.90	28935.59
	Min. Vert	25	-50097.09	50106.90	28935.59
	Min. H_x	6	-4354.63	3654.65	2105.99
	Min. H_z	6	-4354.63	3654.65	2105.99
Guy A @ 145 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-4634.19	7.38	-4442.46
	Max. H_x	24	-28424.38	1897.41	-31916.38
	Max. H_z	2	-4634.19	7.38	-4442.46
	Min. Vert	21	-49804.43	-18.44	-57665.78
	Min. H_x	18	-28428.55	-1897.74	-31927.36
	Min. H_z	21	-49804.43	-18.44	-57665.78
Mast	Max. Vert	17	132098.75	-2289.78	1336.78
	Max. H_x	24	130966.54	2705.19	38.33
	Max. H_z	15	128539.62	3.19	2903.95
	Max. M_x	1	0.00	12.53	9.37
	Max. M_z	1	0.00	12.53	9.37
	Max. Torsion	1	0.00	12.53	9.37
	Min. Vert	1	90738.52	12.53	9.37
	Min. H_x	18	130980.09	-2644.79	40.67
	Min. H_z	21	131965.75	23.17	-2647.95
	Min. M_x	1	0.00	12.53	9.37
	Min. M_z	1	0.00	12.53	9.37
	Min. Torsion	1	0.00	12.53	9.37

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	90738.52	-12.53	-9.37	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	94460.38	-5.74	-2417.95	0.00	0.00	0.00
Dead+Wind 30 deg - No Ice+Guy	95663.21	1211.51	-2036.25	0.00	0.00	0.00
Dead+Wind 60 deg - No Ice+Guy	96204.19	2057.24	-1195.02	0.00	0.00	0.00
Dead+Wind 90 deg - No Ice+Guy	95912.30	2364.40	-38.70	0.00	0.00	0.00
Dead+Wind 120 deg - No Ice+Guy	94740.25	2090.57	1198.81	0.00	0.00	0.00
Dead+Wind 150 deg - No	95740.93	1147.29	2054.13	0.00	0.00	0.00

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Ice+Guy						
Dead+Wind 180 deg - No Ice+Guy	96083.82	-10.16	2369.90	0.00	0.00	0.00
Dead+Wind 210 deg - No Ice+Guy	95757.13	-1168.35	2061.18	0.00	0.00	0.00
Dead+Wind 240 deg - No Ice+Guy	94745.66	-2111.09	1203.83	0.00	0.00	0.00
Dead+Wind 270 deg - No Ice+Guy	95911.37	-2390.59	-37.90	0.00	0.00	0.00
Dead+Wind 300 deg - No Ice+Guy	96203.46	-2082.29	-1197.71	0.00	0.00	0.00
Dead+Wind 330 deg - No Ice+Guy	95643.05	-1228.57	-2037.39	0.00	0.00	0.00
Dead+Ice+Temp+Guy	118341.90	-28.09	-15.23	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp+Guy	128539.62	-3.19	-2903.95	0.00	0.00	0.00
Dead+Wind 30 deg+Ice+Temp+Guy	130743.61	1357.62	-2295.32	0.00	0.00	0.00
Dead+Wind 60 deg+Ice+Temp+Guy	132098.75	2289.78	-1336.78	0.00	0.00	0.00
Dead+Wind 90 deg+Ice+Temp+Guy	130980.09	2644.79	-40.67	0.00	0.00	0.00
Dead+Wind 120 deg+Ice+Temp+Guy	128801.12	2488.11	1427.12	0.00	0.00	0.00
Dead+Wind 150 deg+Ice+Temp+Guy	130812.99	1286.44	2300.54	0.00	0.00	0.00
Dead+Wind 180 deg+Ice+Temp+Guy	131965.75	-23.17	2647.95	0.00	0.00	0.00
Dead+Wind 210 deg+Ice+Temp+Guy	130811.58	-1323.56	2322.69	0.00	0.00	0.00
Dead+Wind 240 deg+Ice+Temp+Guy	128783.63	-2536.80	1451.86	0.00	0.00	0.00
Dead+Wind 270 deg+Ice+Temp+Guy	130966.54	-2705.19	-38.33	0.00	0.00	0.00
Dead+Wind 300 deg+Ice+Temp+Guy	132097.58	-2346.66	-1342.93	0.00	0.00	0.00
Dead+Wind 330 deg+Ice+Temp+Guy	130728.04	-1385.60	-2305.22	0.00	0.00	0.00
Dead+Wind 0 deg - Service+Guy	91053.05	-12.49	-847.49	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	91038.46	404.85	-730.81	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	91032.98	709.34	-424.63	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	91034.50	822.94	-8.78	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	91048.01	715.53	409.59	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	91034.79	405.80	711.56	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	91031.91	-12.38	821.49	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	91035.02	-430.72	711.75	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	91047.93	-740.77	409.79	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	91034.27	-848.37	-8.81	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	91032.62	-734.67	-424.91	0.00	0.00	0.00
Dead+Wind 330 deg -	91038.02	-429.96	-731.09	0.00	0.00	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Service+Guy						

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-23951.97	0.00	-0.01	23951.97	0.00	0.000%
2	0.00	-24152.41	-36435.88	-2.06	24149.15	36291.49	0.330%
3	18419.15	-23951.97	-31426.61	-18456.52	23949.75	31292.48	0.319%
4	31868.27	-23751.53	-18124.17	-31866.90	23751.64	18122.31	0.005%
5	36838.29	-23951.97	-0.00	-36742.52	23949.54	92.65	0.303%
6	32030.69	-24152.41	18217.94	-31915.15	24149.30	-18150.67	0.304%
7	18419.15	-23951.97	31426.61	-18287.72	23949.59	-31389.35	0.313%
8	-0.00	-23751.53	36248.33	0.48	23751.67	-36246.80	0.004%
9	-18419.15	-23951.97	31426.61	18289.05	23949.69	-31392.01	0.309%
10	-32030.69	-24152.41	18217.94	31913.60	24149.27	-18151.99	0.305%
11	-36838.29	-23951.97	0.00	36743.41	23949.57	91.63	0.300%
12	-31868.27	-23751.53	-18124.17	31866.88	23751.64	18122.06	0.006%
13	-18419.15	-23951.97	-31426.61	18454.33	23949.67	31291.22	0.321%
14	0.00	-45668.46	0.00	0.01	45668.46	0.00	0.000%
15	0.00	-46076.78	-45690.19	-5.09	46069.27	45468.82	0.341%
16	22157.26	-45668.46	-38017.63	-22209.18	45665.58	37872.61	0.243%
17	37876.86	-45260.15	-21660.44	-37881.65	45260.68	21664.29	0.010%
18	44314.53	-45668.46	-0.00	-44216.25	45665.52	106.55	0.228%
19	39928.74	-46076.78	22845.09	-39742.04	46069.44	-22736.19	0.332%
20	22157.26	-45668.46	38017.63	-22012.57	45665.43	-37984.39	0.234%
21	-0.00	-45260.15	43320.88	5.39	45260.72	-43328.01	0.014%
22	-22157.26	-45668.46	38017.63	22012.25	45665.69	-37991.07	0.233%
23	-39928.74	-46076.78	22845.09	39745.23	46069.68	-22743.50	0.322%
24	-44314.53	-45668.46	0.00	44218.67	45665.60	104.01	0.222%
25	-37876.86	-45260.15	-21660.44	37883.69	45260.70	21659.08	0.011%
26	-22157.26	-45668.46	-38017.63	22201.92	45665.39	37872.68	0.239%
27	0.00	-24021.33	-12607.57	-0.00	24021.30	12602.59	0.018%
28	6373.41	-23951.97	-10874.26	-6373.31	23951.96	10870.75	0.013%
29	11027.08	-23882.61	-6271.34	-11025.81	23882.61	6270.53	0.006%
30	12746.81	-23951.97	-0.00	-12743.81	23951.96	1.60	0.013%
31	11083.28	-24021.33	6303.78	-11079.05	24021.30	-6301.32	0.018%
32	6373.41	-23951.97	10874.26	-6370.50	23951.96	-10872.42	0.013%
33	-0.00	-23882.61	12542.68	-0.01	23882.61	-12541.15	0.006%
34	-6373.41	-23951.97	10874.26	6370.50	23951.96	-10872.43	0.013%
35	-11083.28	-24021.33	6303.79	11079.06	24021.30	-6301.34	0.018%
36	-12746.81	-23951.97	0.00	12743.82	23951.96	1.59	0.013%
37	-11027.08	-23882.61	-6271.34	11025.81	23882.61	6270.55	0.006%
38	-6373.41	-23951.97	-10874.26	6373.30	23951.96	10870.77	0.013%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	13	0.00000001	0.00000001
2	Yes	14	0.00131988	0.00085685
3	Yes	13	0.00143201	0.00065079

4	Yes	13	0.00031297	0.00018574
5	Yes	13	0.00143369	0.00060699
6	Yes	14	0.00117492	0.00078302
7	Yes	13	0.00143910	0.00062688
8	Yes	13	0.00031753	0.00019099
9	Yes	13	0.00142055	0.00061931
10	Yes	14	0.00117902	0.00078705
11	Yes	13	0.00142434	0.00060269
12	Yes	13	0.00030549	0.00018197
13	Yes	13	0.00143750	0.00065252
14	Yes	13	0.00000001	0.00000001
15	Yes	17	0.00149029	0.00075043
16	Yes	16	0.00116420	0.00058365
17	Yes	13	0.00079532	0.00066469
18	Yes	16	0.00110019	0.00047274
19	Yes	17	0.00146281	0.00069216
20	Yes	16	0.00112295	0.00050032
21	Yes	13	0.00080166	0.00074863
22	Yes	16	0.00112355	0.00055092
23	Yes	17	0.00140087	0.00069225
24	Yes	16	0.00107545	0.00046139
25	Yes	13	0.00076100	0.00042602
26	Yes	16	0.00113683	0.00051841
27	Yes	13	0.00000001	0.00005935
28	Yes	13	0.00000001	0.00005138
29	Yes	13	0.00000001	0.00004293
30	Yes	13	0.00000001	0.00004664
31	Yes	13	0.00000001	0.00005528
32	Yes	13	0.00000001	0.00004927
33	Yes	13	0.00000001	0.00004573
34	Yes	13	0.00000001	0.00005102
35	Yes	13	0.00000001	0.00005658
36	Yes	13	0.00000001	0.00004655
37	Yes	13	0.00000001	0.00004104
38	Yes	13	0.00000001	0.00004955

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	1.887	37	0.0691	0.0391
T2	180 - 160	1.737	37	0.0766	0.0297
T3	160 - 140	1.414	29	0.0583	0.0191
T4	140 - 120	1.248	29	0.0413	0.0428
T5	120 - 100	1.104	33	0.0101	0.0660
T6	100 - 80	1.149	33	0.0055	0.1403
T7	80 - 60	1.098	33	0.0290	0.1982
T8	60 - 40	0.938	27	0.0319	0.2400
T9	40 - 20	0.823	27	0.0476	0.2729
T10	20 - 0	0.518	27	0.1002	0.2922

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Antel BXA-70063-6CF	37	1.887	0.0691	0.0391	59685
189.63	Guy	37	1.882	0.0695	0.0388	59685
178.00	Sector Frame Mount	37	1.704	0.0765	0.0281	42990
167.00	Sector Frame Mount	37	1.515	0.0668	0.0208	32534
160.38	Guy	29	1.418	0.0587	0.0191	17949
150.00	Sector Frame Mount	29	1.321	0.0501	0.0298	53814
138.00	Sector Frame Mount	29	1.231	0.0386	0.0445	52485
120.38	Guy	33	1.105	0.0106	0.0650	14786
60.38	Guy	27	0.941	0.0319	0.2393	32995

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	7.302	25	0.2711	0.1318
T2	180 - 160	6.748	25	0.2898	0.1081
T3	160 - 140	5.598	17	0.2218	0.1353
T4	140 - 120	4.964	17	0.1541	0.2397
T5	120 - 100	4.457	21	0.0471	0.3530
T6	100 - 80	4.893	15	0.0977	0.7577
T7	80 - 60	5.042	15	0.1231	0.9662
T8	60 - 40	4.564	15	0.1355	1.1755
T9	40 - 20	4.022	15	0.2411	1.3618
T10	20 - 0	2.497	15	0.4881	1.4426

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Antel BXA-70063-6CF	25	7.302	0.2711	0.1318	21599
189.63	Guy	25	7.282	0.2722	0.1307	21599
178.00	Sector Frame Mount	25	6.628	0.2884	0.1087	16654
167.00	Sector Frame Mount	25	5.959	0.2522	0.1171	9212
160.38	Guy	17	5.614	0.2232	0.1338	5325
150.00	Sector Frame Mount	17	5.246	0.1892	0.1881	13050
138.00	Sector Frame Mount	17	4.902	0.1447	0.2463	20741
120.38	Guy	21	4.460	0.0489	0.3478	3210
60.38	Guy	15	4.572	0.1355	1.1713	7823

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	190	Leg	A325N	0.7500	4	0.01	19432.90	0.000 ✔	1.333	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T2	180	Leg	A325N	0.7500	4	0.00	19438.20	0.000 ✓	1.333	Bolt Tension
		Torque Arm Top@160.375	A325N	0.7500	2	6276.59	9277.52	0.677 ✓	1.333	Bolt Shear
		Torque Arm Bottom@160.375	A325N	0.7500	2	4923.62	9277.52	0.531 ✓	1.333	Bolt Shear
T3	160	Leg	A325N	0.7500	4	0.00	19425.10	0.000 ✓	1.333	Bolt Tension
T4	140	Leg	A325N	0.7500	4	0.00	19437.60	0.000 ✓	1.333	Bolt Tension
		Torque Arm Top@120.375	A325N	0.7500	2	4547.30	9277.52	0.490 ✓	1.333	Bolt Shear
		Torque Arm Bottom@120.375	A325N	0.7500	2	4228.97	9277.52	0.456 ✓	1.333	Bolt Shear
T5	120	Leg	A325N	0.7500	4	0.00	19373.70	0.000 ✓	1.333	Bolt Tension
T6	100	Leg	A325N	0.7500	4	0.00	19425.20	0.000 ✓	1.333	Bolt Tension
T7	80	Leg	A325N	0.7500	4	0.00	19433.40	0.000 ✓	1.333	Bolt Tension
T8	60	Leg	A325N	0.7500	4	0.00	19391.40	0.000 ✓	1.333	Bolt Tension
T9	40	Leg	A325N	0.7500	4	0.00	19434.00	0.000 ✓	1.333	Bolt Tension
T10	20	Leg	A325N	0.7500	4	0.00	19435.70	0.000 ✓	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T1	189.63 (A) (615)	9/16 EHS	5250.00	35000.04	12103.50	17500.00	2.000	2.892 ✓
	189.63 (B) (614)	9/16 EHS	5250.00	35000.04	12337.40	17500.00	2.000	2.837 ✓
	189.63 (C) (613)	9/16 EHS	5250.00	35000.04	12299.20	17500.00	2.000	2.846 ✓
T2	160.38 (A) (586)	5/8 EHS	6360.00	42399.99	14259.60	21200.00	2.000	2.973 ✓
	160.38 (A) (587)	5/8 EHS	6360.00	42399.99	14067.20	21200.00	2.000	3.014 ✓
	160.38 (B) (580)	5/8 EHS	6360.00	42399.99	14200.00	21200.00	2.000	2.986 ✓
	160.38 (B) (581)	5/8 EHS	6360.00	42399.99	14362.80	21200.00	2.000	2.952 ✓
	160.38 (C) (574)	5/8 EHS	6360.00	42399.99	14265.70	21200.00	2.000	2.972 ✓
	160.38 (C) (575)	5/8 EHS	6360.00	42399.99	14295.80	21200.00	2.000	2.966 ✓
T4	120.38 (A) (604)	9/16 EHS	5250.00	35000.04	12375.10	17500.00	2.000	2.828 ✓
	120.38 (A) (605)	9/16 EHS	5250.00	35000.04	11829.10	17500.00	2.000	2.959 ✓
	120.38 (B) (598)	9/16 EHS	5250.00	35000.04	11980.10	17500.00	2.000	2.922 ✓

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T7	120.38 (B) (599)	9/16 EHS	5250.00	35000.04	12145.20	17500.00	2.000	2.882 ✓
	120.38 (C) (592)	9/16 EHS	5250.00	35000.04	11903.00	17500.00	2.000	2.940 ✓
	120.38 (C) (593)	9/16 EHS	5250.00	35000.04	12284.40	17500.00	2.000	2.849 ✓
	60.38 (A) (612)	9/16 EHS	5250.00	35000.04	13761.90	17500.00	2.000	2.543 ✓
	60.38 (B) (611)	9/16 EHS	5250.00	35000.04	13714.70	17500.00	2.000	2.552 ✓
	60.38 (C) (610)	9/16 EHS	5250.00	35000.04	13733.80	17500.00	2.000	2.548 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	190 - 180	P2.5x.203	10.00	3.08	39.1 K=1.00	1.00	29.626	1.7040	-15436.30	50483.70	0.306 ✓
T2	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	29.339	1.7040	-38608.20	49995.20	0.772 ✓
T3	160 - 140	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	29.339	1.7040	-36724.50	49995.20	0.735 ✓
T4	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	29.339	1.7040	-56870.80	49995.20	1.138 ✓
T5	120 - 100	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.076	1.7040	-55084.70	49547.70	1.112 ✓
T6	100 - 80	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.033	1.7040	-49051.20	49473.10	0.991 ✓
T7	80 - 60	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.011	1.7040	-46686.40	49436.10	0.944 ✓
T8	60 - 40	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	28.998	1.7040	-56222.80	49413.90	1.138 ✓
T9	40 - 20	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.020	1.7040	-61298.00	49451.10	1.240 ✓
T10	20 - 0	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.007	1.7040	-59672.00	49429.60	1.207 ✓

Horizontal 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 $\frac{P}{P_a}$

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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-4621.40	7695.87	0.601*
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-4293.92	7695.87	0.558*
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3434.06	7695.87	0.446*
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3326.93	7695.87	0.432*
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-5091.14	7695.87	0.662
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2676.37	7695.87	0.348*
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2778.24	7695.87	0.361*
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3526.76	7695.87	0.458
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2392.09	7695.87	0.311*
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2425.39	7695.87	0.315*

* DL controls

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 $\frac{P}{P_a}$
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2277.34	7695.87	0.296*
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2654.34	7695.87	0.345
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1762.66	7695.87	0.229*
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2877.37	7695.87	0.374
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1412.44	7695.87	0.184*
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1392.36	7695.87	0.181*
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1665.75	7695.87	0.216
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1263.63	7695.87	0.164*
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1243.01	7695.87	0.162*

* DL controls

Bottom 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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2351.35	7695.87	0.306* ✓
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1774.24	7695.87	0.231* ✓
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1415.00	7695.87	0.184* ✓
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1394.36	7695.87	0.181* ✓
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1265.33	7695.87	0.164* ✓
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1244.90	7695.87	0.162* ✓
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-131.83	7695.87	0.017* ✓

* DL controls

Top Guy Pull-Off 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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2040.79	7695.87	0.265 ✓
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-6997.86	7695.87	0.909 ✓
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-5536.33	7695.87	0.719 ✓
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-431.38	7695.87	0.056 ✓

Bottom Guy Pull-Off 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 $\frac{P}{P_a}$
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3245.43	7695.87	0.422 ✓
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3739.75	7695.87	0.486 ✓

Torque-Arm Bottom Design Data

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 $\frac{P}{P_a}$
T2	180 - 160 (578)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9591.92	23880.20	0.402
T2	180 - 160 (579)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9460.68	23880.20	0.396
T2	180 - 160 (584)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9847.23	23880.20	0.412
T2	180 - 160 (585)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9714.10	23880.20	0.407
T2	180 - 160 (590)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9750.56	23880.20	0.408
T2	180 - 160 (591)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9752.34	23880.20	0.408
T4	140 - 120 (596)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-7646.83	23880.20	0.320
T4	140 - 120 (597)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-7650.06	23880.20	0.320
T4	140 - 120 (602)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-8316.03	23880.20	0.348
T4	140 - 120 (603)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-8288.53	23880.20	0.347
T4	140 - 120 (608)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-8428.08	23880.20	0.353
T4	140 - 120 (609)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-8457.94	23880.20	0.354

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	190 - 180	P2.5x.203	10.00	3.08	39.1	34.800	1.7040	0.02	59300.90	0.000
T2	180 - 160	P2.5x.203	20.00	3.21	40.6	34.800	1.7040	766.41	59300.90	0.013

Diagonal Design Data (Tension)

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 $\frac{P}{P_a}$

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	190 - 180	5/8	4.66	4.35	333.7	21.600	0.3068	3368.50	6626.80	0.508*
T2	180 - 160	5/8	4.75	4.42	339.7	21.600	0.3068	5699.11	6626.80	0.860
T3	160 - 140	5/8	4.75	4.42	339.7	21.600	0.3068	4124.86	6626.80	0.622
T4	140 - 120	5/8	4.75	4.42	339.7	21.600	0.3068	4729.31	6626.80	0.714
T5	120 - 100	5/8	4.75	4.42	339.7	21.600	0.3068	7433.46	6626.80	1.122
T6	100 - 80	5/8	4.75	4.42	339.7	21.600	0.3068	3836.21	6626.80	0.579
T7	80 - 60	5/8	4.75	4.42	339.7	21.600	0.3068	4361.50	6626.80	0.658
T8	60 - 40	5/8	4.75	4.42	339.7	21.600	0.3068	5299.68	6626.80	0.800
T9	40 - 20	5/8	4.75	4.42	339.7	21.600	0.3068	2608.92	6626.80	0.394
T10	20 - 0	5/8	4.75	4.42	339.7	21.600	0.3068	3374.94	6626.80	0.509

* DL controls

Horizontal Design Data (Tension)

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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	267.36	11390.60	0.023
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	668.71	11390.60	0.059
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	636.09	11390.60	0.056
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	985.03	11390.60	0.086
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	954.09	11390.60	0.084
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	849.59	11390.60	0.075
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	626.69	11390.60	0.055*
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	974.21	11390.60	0.086
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1061.71	11390.60	0.093
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1033.55	11390.60	0.091

* DL controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	374.98	11390.60	0.033 ✓

Bottom Girt Design Data (Tension)

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 $\frac{P}{P_a}$
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	533.57	11390.60	0.047 ✓

Top Guy Pull-Off Design Data (Tension)

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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1678.07	11390.60	0.147 ✓
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	406.27	11390.60	0.036 ✓
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	4687.61	11390.60	0.412 ✓

Bottom Guy Pull-Off Design Data (Tension)

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 $\frac{P}{P_a}$
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1270.76	11390.60	0.112 ✓

Torque-Arm Top Design Data

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 $\frac{P}{P_a}$
T2	180 - 160 (576)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12419.50	24840.00	0.500
T2	180 - 160 (577)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12524.80	24840.00	0.504
T2	180 - 160 (582)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12323.10	24840.00	0.496
T2	180 - 160 (583)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12367.50	24840.00	0.498
T2	180 - 160 (588)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12406.90	24840.00	0.499
T2	180 - 160 (589)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12553.20	24840.00	0.505
T4	140 - 120 (594)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	8972.84	24840.00	0.361
T4	140 - 120 (595)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	9015.47	24840.00	0.363
T4	140 - 120 (600)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	8889.07	24840.00	0.358
T4	140 - 120 (601)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	9086.63	24840.00	0.366
T4	140 - 120 (606)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	8853.66	24840.00	0.356
T4	140 - 120 (607)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	9094.60	24840.00	0.366

Torque-Arm Bottom Design Data

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 $\frac{P}{P_a}$
T2	180 - 160 (578)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2191.85	31104.00	0.070
T2	180 - 160 (579)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2041.68	31104.00	0.066
T2	180 - 160 (584)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2414.67	31104.00	0.078
T2	180 - 160 (585)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2276.93	31104.00	0.073
T2	180 - 160 (590)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2295.78	31104.00	0.074
T2	180 - 160 (591)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2285.83	31104.00	0.073
T4	140 - 120 (596)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	4152.23	31104.00	0.133
T4	140 - 120 (597)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	4054.59	31104.00	0.130
T4	140 - 120 (602)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	4770.69	31104.00	0.153
T4	140 - 120 (603)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	4410.87	31104.00	0.142

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 P / P_a
T4	140 - 120 (608)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	4550.31	31104.00	0.146 ✔
T4	140 - 120 (609)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	4810.99	31104.00	0.155 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	190 - 180	Leg	P2.5x.203	1	-15436.30	67294.77	22.9	Pass
		Diagonal	5/8	33	3368.50	6626.80	50.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	26	-4621.40	7695.87	60.1	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	9	-2351.35	7695.87	30.6	Pass
		Guy A@189.625	9/16	615	12103.50	17500.00	69.2	Pass
		Guy B@189.625	9/16	614	12337.40	17500.00	70.5	Pass
		Guy C@189.625	9/16	613	12299.20	17500.00	70.3	Pass
		Top Guy Pull-Off@189.625	L1 1/2x1 1/2x3/16	6	-2040.79	10258.59	19.9	Pass
T2	180 - 160	Leg	P2.5x.203	34	-38608.20	66643.60	57.9	Pass
		Diagonal	5/8	57	5699.11	8833.52	64.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	86	-4293.92	7695.87	55.8	Pass
		Top Girt	L1 1/2x1 1/2x3/16	38	-2277.34	7695.87	29.6	Pass
		Guy A@160.375	5/8	586	14259.60	21200.00	67.3	Pass
		Guy B@160.375	5/8	581	14362.80	21200.00	67.7	Pass
		Guy C@160.375	5/8	575	14295.80	21200.00	67.4	Pass
		Top Guy Pull-Off@160.375	L1 1/2x1 1/2x3/16	50	-6997.86	10258.59	68.2	Pass
		Bottom Guy Pull-Off@160.375	L1 1/2x1 1/2x3/16	41	-3245.43	10258.59	31.6	Pass
		Torque Arm Top@160.375	L2x2x5/16	589	12553.20	33111.72	37.9 50.8 (b)	Pass
		Torque Arm Bottom@160.375	L3x3x1/4	584	-9847.23	31832.30	30.9 39.8 (b)	Pass
T3	160 - 140	Leg	P2.5x.203	94	-36724.50	66643.60	55.1	Pass
		Diagonal	5/8	151	4124.86	8833.52	46.7	Pass
		Horizontal	L1 1/2x1 1/2x3/16	146	-3434.06	7695.87	44.6	Pass
		Top Girt	L1 1/2x1 1/2x3/16	98	-2654.34	10258.59	25.9	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	100	-1774.24	7695.87	23.1	Pass
T4	140 - 120	Leg	P2.5x.203	154	-56870.80	66643.60	85.3	Pass
		Diagonal	5/8	177	4729.31	8833.52	53.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	206	-3326.93	7695.87	43.2	Pass
		Top Girt	L1 1/2x1 1/2x3/16	158	-1762.66	7695.87	22.9	Pass
		Guy A@120.375	9/16	604	12375.10	17500.00	70.7	Pass
		Guy B@120.375	9/16	599	12145.20	17500.00	69.4	Pass
		Guy C@120.375	9/16	593	12284.40	17500.00	70.2	Pass
		Top Guy Pull-Off@120.375	L1 1/2x1 1/2x3/16	169	-5536.33	10258.59	54.0	Pass
		Bottom Guy Pull-Off@120.375	L1 1/2x1 1/2x3/16	162	-3739.75	10258.59	36.5	Pass
		Torque Arm Top@120.375	L2x2x5/16	607	9094.60	33111.72	27.5 36.8 (b)	Pass
		Torque Arm Bottom@120.375	L3x3x1/4	609	-8457.94	31832.30	26.6 34.2 (b)	Pass
T5	120 - 100	Leg	P2.5x.203	214	-55084.70	66047.08	83.4	Pass
		Diagonal	5/8	271	7433.46	8833.52	84.2	Pass
		Horizontal	L1 1/2x1 1/2x3/16	266	-5091.14	10258.59	49.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
		Top Girt	L1 1/2x1 1/2x3/16	218	-2877.37	10258.59	28.0	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	220	-1415.00	7695.87	18.4	Pass
T6	100 - 80	Leg	P2.5x.203	276	-49051.20	65947.64	74.4	Pass
		Diagonal	5/8	331	3836.21	8833.52	43.4	Pass
		Horizontal	L1 1/2x1 1/2x3/16	325	-2676.37	7695.87	34.8	Pass
		Top Girt	L1 1/2x1 1/2x3/16	279	-1412.44	7695.87	18.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	280	-1394.36	7695.87	18.1	Pass
T7	80 - 60	Leg	P2.5x.203	336	-46686.40	65898.32	70.8	Pass
		Diagonal	5/8	357	4361.50	8833.52	49.4	Pass
		Horizontal	L1 1/2x1 1/2x3/16	351	-2778.24	7695.87	36.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	339	-1392.36	7695.87	18.1	Pass
		Guy A@60.375	9/16	612	13761.90	17500.00	78.6	Pass
		Guy B@60.375	9/16	611	13714.70	17500.00	78.4	Pass
		Guy C@60.375	9/16	610	13733.80	17500.00	78.5	Pass
		Top Guy Pull-Off@60.375	L1 1/2x1 1/2x3/16	340	4687.61	15183.67	30.9	Pass
T8	60 - 40	Leg	P2.5x.203	394	-56222.80	65868.72	85.4	Pass
		Diagonal	5/8	450	5299.68	8833.52	60.0	Pass
		Horizontal	L1 1/2x1 1/2x3/16	446	-3526.76	10258.59	34.4	Pass
		Top Girt	L1 1/2x1 1/2x3/16	398	-1665.75	10258.59	16.2	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	400	-1265.33	7695.87	16.4	Pass
T9	40 - 20	Leg	P2.5x.203	455	-61298.00	65918.32	93.0	Pass
		Diagonal	5/8	511	2608.92	8833.52	29.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	505	-2392.09	7695.87	31.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	459	-1263.63	7695.87	16.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	460	-1244.90	7695.87	16.2	Pass
T10	20 - 0	Leg	P2.5x.203	515	-59672.00	65889.66	90.6	Pass
		Diagonal	5/8	527	3374.94	8833.52	38.2	Pass
		Horizontal	L1 1/2x1 1/2x3/16	531	-2425.39	7695.87	31.5	Pass
		Top Girt	L1 1/2x1 1/2x3/16	519	-1243.01	7695.87	16.2	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	522	533.57	15183.67	3.5	Pass

Summary

Leg (T9)	93.0	Pass
Diagonal (T5)	84.2	Pass
Horizontal (T1)	60.1	Pass
Top Girt (T2)	29.6	Pass
Bottom Girt (T1)	30.6	Pass
Guy A (T7)	78.6	Pass
Guy B (T7)	78.4	Pass
Guy C (T7)	78.5	Pass
Top Guy Pull-Off (T2)	68.2	Pass
Bottom Guy Pull-Off (T4)	36.5	Pass
Torque Arm Top (T2)	50.8	Pass
Torque Arm Bottom (T2)	39.8	Pass
Bolt Checks	50.8	Pass
RATING =	**93.0**	**Pass**

Site Name:	**Ashford, CT**
Job Number:	**112-13076**
Engineer:	**BKL**
Date:	**6/6/2012**

Design Base Loads (Unfactored) per TIA-222-F

Foundation Mapped:	N		
Moment (M):	0.0 k-ft	Concrete Compressive Strength (f'_c):	3000 psi
Shear/Leg (V):	2.9 k	Vertical Steel Rebar Size #:	5
Compression/Leg (P):	132.1 k	Vertical Steel Rebar Area:	0.31 in^2
Uplift/Leg (U):	0.0 k	# of Vertical Steel Rebars:	8
Tower Type (GT / SST):	GT	Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Diameter of Prismatic Portion of Pier (d):	2.0 ft	Tie / Stirrup Size #:	4
Depth to Base of Foundation:	4.5 ft	Tie / Stirrup Area:	0.20 in^2
Pier Height Above Ground (h):	1.00 ft	Tie / Stirrup Spacing:	10.0 in
Length / Width of Pad (w):	5.5 ft	Tie / Stirrup Steel Yield Strength (F_y):	40 ksi
Thickness of Pad (t):	1.5 ft	Rebar Cage Diameter:	16.0 in
Depth Below Ground Surface to Water Table (w):	20.0 ft	Bending/Tension Reduction Factor (ϕ_B):	0.90
Unit Weight of Concrete:	150.0 pcf	Shear Reduction Factor (ϕ_V):	0.75
Unit Weight of Water:	62.4 pcf	Compression Reduction Factor (ϕ_V):	0.65
Unit Weight of Soil Above Water Table:	115.0 pcf	Wind Design Factor:	1.30
Unit Weight of Soil Below Water Table:	50.0 pcf	Steel Elastic Modulus:	29000 ksi
Friction Angle of Uplift from Top of Pad:	33 Degrees	Pad Steel Rebar Size #:	5
Friction Angle of Uplift from Base of Pad:	33 Degrees	Pad Steel Rebar Area:	0.31 in^2
Uplift Angle Started at Top or Base of Pad (T/B):	B	Pad Steel Rebar Yield Strength (F_y):	60 ksi
Allowable Skin Friction:	0 psf	# of Rebar in Top of Pad:	0
Allowable Compressive Bearing Pressure:	7000 psf	# of Rebar in Base of Pad:	5
Capacity Increase (Due to Transient Loads):	1.00	Pad Clear Cover:	3 in

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	8.7 k	
Weight of Soil (Bouyancy Considered):	31.9 k	
Allowable Skin Friction Resistance:	0.0 k	
Controlling Failure Mode (Top / Base):	Base	
Allowable Uplift Capacity per Leg:	22.9 k	
Compressive Design Load:	134.5 k	
Allowable Compression Capacity per Leg:	211.8 k	
Uplift Design Load/Uplift Capacity:	0.00	Result: OK
Compression Design Load/Compression Capacity:	0.64	Result: OK

Depth (ft)		Ultimate Lateral	Increment	γ_{Soil}	Cohesion	ϕ
Top	Bottom	Bearing Pressure (psf)	(psf/ft)	(pcf)	(psf)	(degree)
0.0	2.0	0.0	115.0	115	0	0
2.0	3.0	780.2	390.1	115	0	33

Inflection Point (Below Ground Surface):	3.0 ft
Unfactored Design Moment At Inflection Point:	6.5 k-ft

Pad Strength Capacity

β:	0.85	ACI318-05 - 10.2.7.3
Lower Pad Flexural Reinforcement Ratio:	0.0016	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0000	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Flexural Reinforcement Spacing:	15	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Flexural Reinforcement Spacing:	0	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
One Way Design Shear (V_u):	16.7	k
One Way Shear Capacity (ϕV_c):	81.2	k - ACI318-05 - 11.3.1.1
$V_u / \phi V_c$:	0.21	Result: OK
Punching Design Shear (V_u):	124.5	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	293.3	k - ACI318-05 - 11.12.2.1
$V_u / \phi V_c$:	0.42	Result: OK
Flexural Loading Due to Soil Pressure (M_u):	48.7	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	100.5	k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.48	Result: OK
Flexural Loading Due to Uplift (M_u):	0.0	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	0.0	k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.00	Result: OK

Pier Strength Capacity

Design Moment (M_u):	8.5	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	88.9	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.10	Result: OK
Design Shear (V_u):	3.8	k
Nominal Shear Capacity ($\phi_V V_n$):	67.9	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.06	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	133.9	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	171.7	k
Nominal Compression Capacity ($\phi_P P_n$):	701.9	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.24	Result: OK
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is Satisfactory - ACI318-05 - 10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.10	Result: OK

Site Name:	**Ashford, CT**
Site Number:	**112-13076**
Engineer:	**BKL**
Date:	**6/6/2012**

Design Standard per TIA-222-F

Uplift (Unfactored):	50.1	k
Shear (Unfactored):	57.9	k
Anchor Base Depth (d):	8.0	ft
Width of Anchor (W):	5.5	ft
Length of Anchor (L):	11.5	ft
Thickness of Anchor (t):	2.0	ft
Depth Below Ground Surface to Water Table (w):	20.0	ft
Soil Uplift at Base / Top of Anchor (B/T):	T	
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil Above Water Table:	115.0	pcf
Unit Weight of Water:	62.4	pcf
Submerged Soil Unit Weight:	50.0	pcf
Internal Angle of Friction:	33	Degrees
Cohesion:	0	psf
Allowable Skin Friction of Pad Sides to Soil:	450	psf
Ultimate Coefficient of Shear Friction:	0.30	
Maximum Top Conical Failure Angle:	33	Degrees
Maximum Base Conical Failure Angle:	33	Degrees
Allowable Capacity Increase:	1.00	(Due to Transient Loads)

Uplift

Weight of Concrete (Buoyancy Effect Considered):	19.0	k
Weight of Soil (Buoyancy Effect Considered):	100.3	k
Uplift Resistance from Skin Friction:	20.3	k
Allowable Uplift Resistance (FS = 1.5 to 2):	65.3	k
Uplift Design Load/Allowable Uplift Resistance:	0.77	Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	3.8	k
Ultimate Passive Pressure:	5461	psf
Ultimate Passure Pressure Resistance:	125.6	k
Allowable Shear Resistance (FS = 1.5 to 2):	64.7	k
Shear Design Load/Allowable Shear Resistance:	0.90	Result: OK

Anchor Rod Capacity

# of Anchor Rods:	1	
Anchor Rod Gross Area:	2.41	in^2
Anchor Rod Net Area:	2.41	in^2
Anchor Rod Yield Strength:	48	ksi
Anchor Rod Ultimate Strength:	62	ksi
Allowable Stress Increase:	1.33	
Resultant Tensile Load:	76.6	k
Anchor Rod Tensile Resistance:	92.4	k
Resultant Tensile Load / Anchor Rod Tensile Resistance:	0.83	Result: OK

Strength Analysis of Reinforced Concrete

Concrete Compressive Srength (f'_c):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	6
# Longitudinal Rebar (1 Side):	5
Rebar Size:	4
Wind Load Factor:	1.3
Strength Reduction Factor for Shear (ϕ_v):	0.75
Strength Reduction Factor for Flexure (ϕ_b):	0.9
Compression Zone Factor (β_1):	0.85
Area of Single Rebar:	0.20 in^2
One Way Shear due to Shear Load (V_u):	20.7 k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	122.3 k
$V_u/\phi_v V_n$:	0.17 Result: OK
One Way Shear due to Uplift (V_u):	27.9 k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	108.4 k
$V_u/\phi_v V_n$:	0.26 Result: OK
Pad Flexure due to Shear Load (M_u):	108.2 k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	279.0 k-ft
Pad Flexure due to Uplift (M_u):	93.6 k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	107.9 k-ft
$M_u/\phi_b M_n$ (Max.):	0.87 Result: OK

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Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
June 6, 2012

Nudd Job Number: 112-13076

Site Location: Ashford, CT (Lat. & Long. = 41 15 48, -72 10 57)

Subject: Structural Analysis of an existing 190 ft Guyed Tower

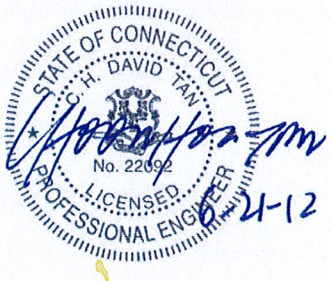
Fred A. Nudd Corporation has completed a structural analysis of an existing 190 ft guyed tower. The tower was originally designed by Fred A. Nudd Corporation. The tower analysis was completed considering TIA-222-F design standards, which is the enforced design standard of the 2003 International Building Code, including 2005 Connecticut Building Code Amendments and the 2008 Connecticut Supplement. Additional standards used in this analysis include AISC Manual for Steel Construction, Allowable Stress Design, 9th Edition, and ACI318-05, Building Code Requirements for Structural Concrete and Commentary. Tower and foundation dimensions have been taken from drawings by Fred A. Nudd, project number 00-6111A-1 & 98-6111-2, dated July 28, 2000 & June 1998, respectively. Geotechnical information was taken from a subsurface exploration report by Tower Engineering Professionals, Inc., project number 090004.13, dated September 22, 2009. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of the analysis is to determine if the above noted tower can support new wireless equipment, in addition to wireless equipment already installed. The new design loading condition, including all existing and proposed equipment, is shown on the following page. Results from the analysis confirms the tower and foundation can support the new antennas and conforms to the above noted design standards both the original design loading condition and for the new design loading condition. Specific member usages are shown on the following pages.

Based on these results, the new antennas can be installed on this structure and the structure will still meet the aforementioned standards.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,
Fred. A. Nudd Corporation



David Tan, P.E. (CT PE No. 22092)