

# 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](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

January 24, 2012

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

RE: **EM-VER-001-120105**- Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 104 Bunker Hill Road, Andover, 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 January 3, 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.

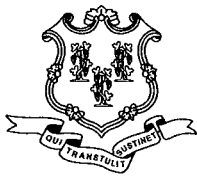
Very truly yours,

Linda Roberts

Executive Director

LR/CDM/laf

c: The Honorable Robert Burbank, First Selectman, Town of Andover  
Bill Warner, Zoning Agent & Planner, Town of Andover  
American Tower Corporation



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[www.ct.gov/csc](http://www.ct.gov/csc)

January 9, 2012

The Honorable Robert Burbank  
First Selectman  
Town of Andover  
Town Office Building  
17 School Road  
Andover, CT 06232

RE: **EM-VER-001-120105**- Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 104 Bunker Hill Road, Andover, Connecticut.

Dear First Selectman Burbank:

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 January 24, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

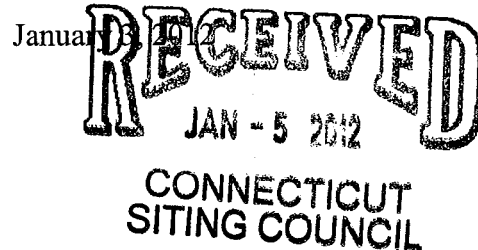
Linda Roberts  
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Bill Warner, Zoning Agent & Planner, Town of Andover

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



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

Re: **Notice of Exempt Modification – Antenna Swap**  
**104 Bunker Hill Road, Andover, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 158-foot level on the existing 180-foot tower at the above-referenced address. The tower is owned by American Tower Corporation. The Council approved Cellco’s shared use of the existing tower in 2000. Cellco now intends to modify its installation by replacing all of its existing antennas with six (6) model LPA-80080/4CF cellular antennas; three (3) model BXA-171085-8BF PCS antennas; and three (3) model BXA-70063/6CF LTE antennas, all at the same 158-foot level on the tower. Cellco also intends to install six coax cable diplexers on its antenna platform. Attached behind Tab 1 are the specifications for the proposed replacement antennas and cable diplexers.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Robert Burbank, First Selectman of the Town of Andover. A copy of this letter is also being sent to Leon and Benjamin Price, the owner of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the overall height of the existing tower. Cellco’s replacement antennas and diplexers will be located at the 158-foot level on the existing 180-foot tower.



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11442941-v1

Linda Roberts  
January 3, 2012  
Page 2

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) power density levels 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:

Robert Burbank, Andover First Selectman  
Leon and Benjamin Price  
Sandy M. Carter





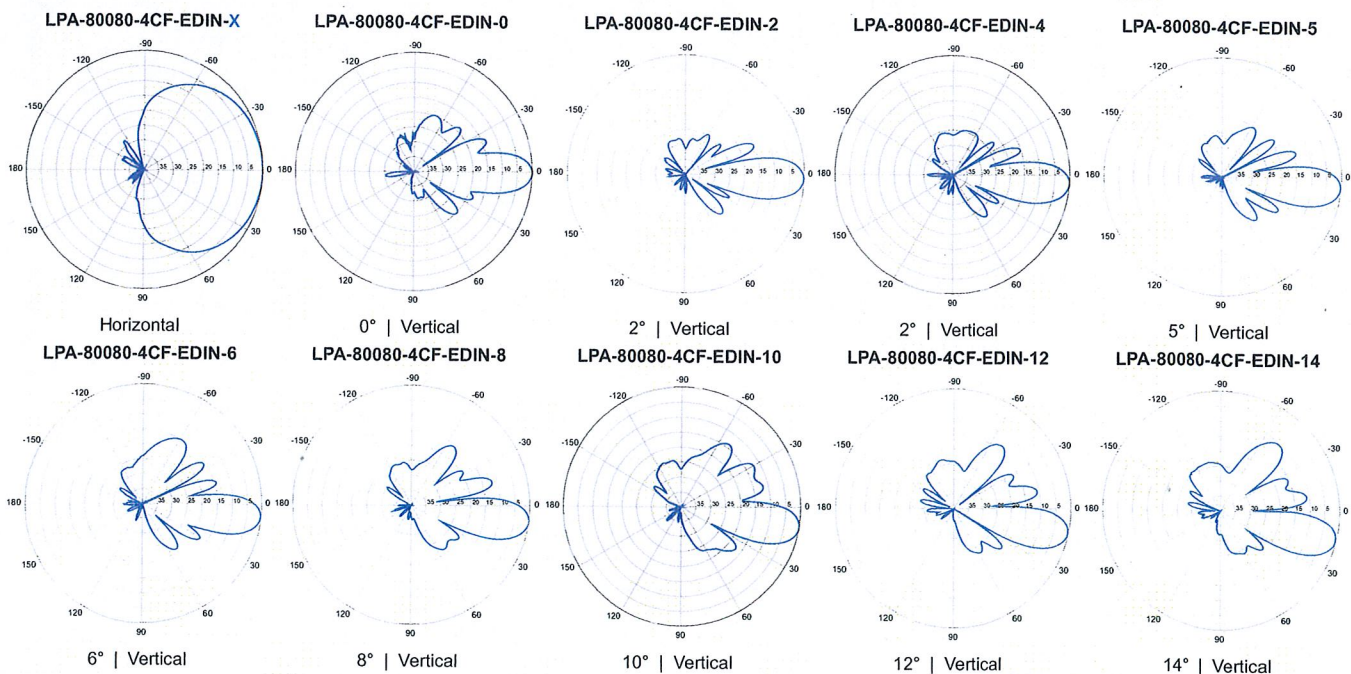
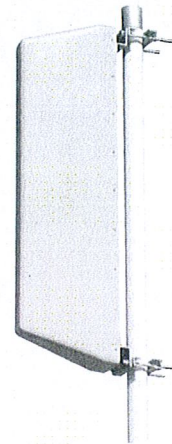
## LPA-80080-4CF-EDIN-X

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 mm47.2 x 5.5 x 13.2 in                                                                   |
| Depth of antenna with z-bracket                 | 375 mm14.8 in                                                                                             |
| Weight without mounting brackets                | 5.4 kg12 lbs                                                                                              |
| Survival wind speed                             | > 201 km/hr> 125 mph                                                                                      |
| Wind area                                       | Front: 0.17 m <sup>2</sup> Side: 0.40 m <sup>2</sup> Front: 1.8 ft <sup>2</sup> Side: 4.3 ft <sup>2</sup> |
| Wind load @ 161 km/hr (100 mph)                 | Front: 254 N Side: 574 NFront: 57 lbf Side: 129 lbf                                                       |
| Mounting Options                                |                                                                                                           |
|                                                 | Part NumberFits Pipe DiameterWeight                                                                       |
| 2-Point Mounting & Downtilt Bracket Kit (0-20°) | 2169999950-102 mm2.0-4.0 in5.4 kg12 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.           |



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

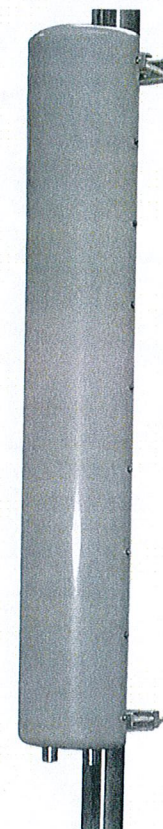


## BXA-171085-8BF-EDIN-X

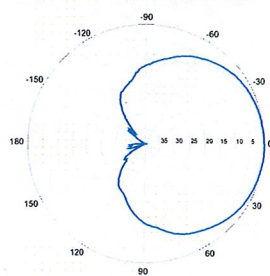
Replace "X" with desired electrical downtilt.

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                                            |                      |                     |
| Depth with t-brackets                   | 133 mm                                                         |                      |                     |
| Weight without mounting brackets        | 4.8 kg                                                         |                      |                     |
| Survival wind speed                     | 296 km/hr                                                      |                      |                     |
| Wind area                               | Front: 0.19 m <sup>2</sup> Side: 0.14 m <sup>2</sup>           |                      |                     |
| Wind load @ 161 km/hr (100 mph)         | Front: 281 N Side: 223 N                                       |                      |                     |
| 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 |                      |                     |

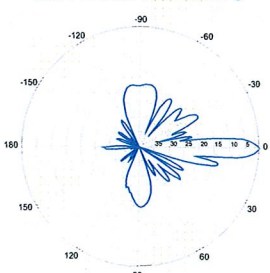


BXA-171085-8BF-EDIN-X



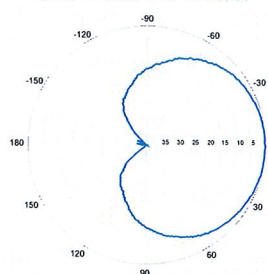
Horizontal | 1710-1880 MHz

BXA-171085-8BF-EDIN-0



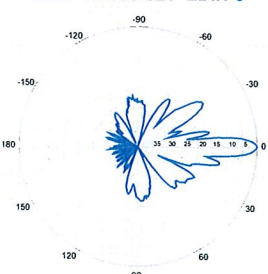
0° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-X



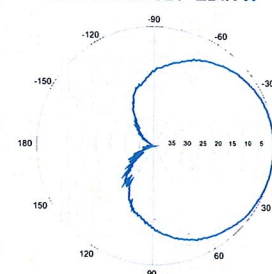
Horizontal | 1850-1990 MHz

BXA-171085-8BF-EDIN-0



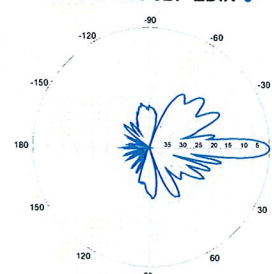
0° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-X



Horizontal | 1920-2170 MHz

BXA-171085-8BF-EDIN-0



0° | Vertical | 1920-2170 MHz

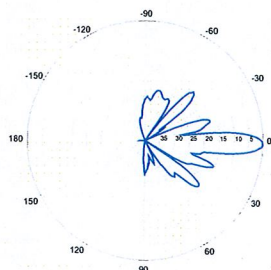
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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



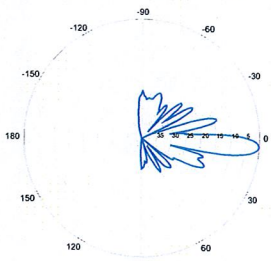
# BXA-171085-8BF-EDIN-X

X-Pol | FET Panel | 85° | 16.4 dBi

**BXA-171085-8BF-EDIN-2**

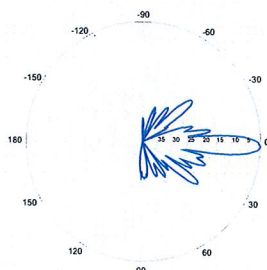


2° | Vertical | 1710-1880 MHz  
**BXA-171085-8BF-EDIN-4**

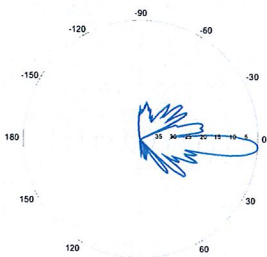


4° | Vertical | 1710-1880 MHz

**BXA-171085-8BF-EDIN-2**

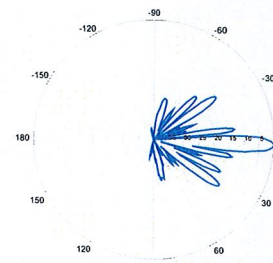


2° | Vertical | 1850-1990 MHz  
**BXA-171085-8BF-EDIN-4**

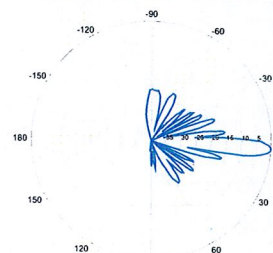


4° | Vertical | 1850-1990 MHz

**BXA-171085-8BF-EDIN-2**



2° | Vertical | 1920-2170 MHz  
**BXA-171085-8BF-EDIN-4**



4° | Vertical | 1920-2170 MHz

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

## BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

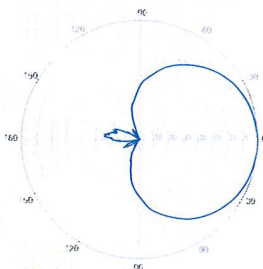
Replace "X" with desired electrical downtilt.

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

| Electrical Characteristics              | 696-900 MHz                                                   |                           |                            |                           |
|-----------------------------------------|---------------------------------------------------------------|---------------------------|----------------------------|---------------------------|
| Frequency bands                         | 696-806 MHz                                                   |                           | 806-900 MHz                |                           |
| Polarization                            | ±45°                                                          |                           |                            |                           |
| Horizontal beamwidth                    | 65°                                                           |                           | 63°                        |                           |
| Vertical beamwidth                      | 13°                                                           |                           | 11°                        |                           |
| Gain                                    | 14.0 dBd (16.1 dBi)                                           |                           | 14.5 dBd (16.6 dBi)        |                           |
| Electrical downtilt (X)                 | 0, 2, 3, 4, 5, 6, 8, 10                                       |                           |                            |                           |
| Impedance                               | 50Ω                                                           |                           |                            |                           |
| VSWR                                    | ≤1.35:1                                                       |                           |                            |                           |
| Upper sidelobe suppression (0°)         | -18.3 dB                                                      |                           | -18.2 dB                   |                           |
| Front-to-back ratio (+/-30°)            | -33.4 dB                                                      |                           | -36.3 dB                   |                           |
| Null fill                               | 5% (-26.02 dB)                                                |                           |                            |                           |
| Isolation between ports                 | < -25 dB                                                      |                           |                            |                           |
| Input power with EDIN connectors        | 500 W                                                         |                           |                            |                           |
| Input power with NE connectors          | 300 W                                                         |                           |                            |                           |
| Lightning protection                    | Direct Ground                                                 |                           |                            |                           |
| Connector(s)                            | 2 Ports / EDIN or NE / Female / Center (Back)                 |                           |                            |                           |
| Mechanical Characteristics              |                                                               |                           |                            |                           |
| Dimensions Length x Width x Depth       | 1804 x 285 x 132 mm                                           |                           | 71.0 x 11.2 x 5.2 in       |                           |
| Depth with z-brackets                   | 172 mm                                                        |                           | 6.8 in                     |                           |
| Weight without mounting brackets        | 7.9 kg                                                        |                           | 17 lbs                     |                           |
| Survival wind speed                     | > 201 km/hr                                                   |                           | > 125 mph                  |                           |
| Wind area                               | Front: 0.51 m <sup>2</sup>                                    | Side: 0.24 m <sup>2</sup> | Front: 5.5 ft <sup>2</sup> | Side: 2.6 ft <sup>2</sup> |
| 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 |                           |                            |                           |

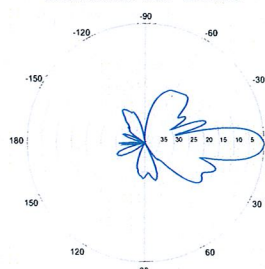


BXA-70063-6CF-EDIN-X



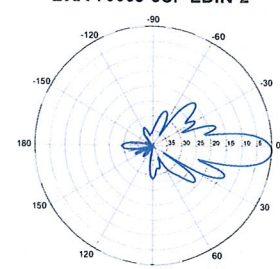
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

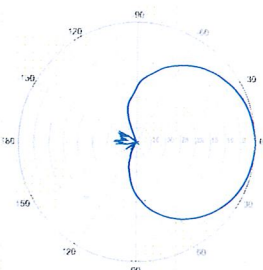


0° | Vertical | 750 MHz

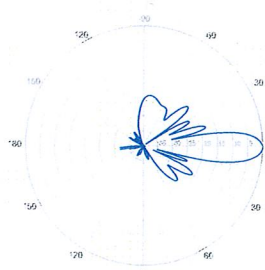
BXA-70063-6CF-EDIN-2



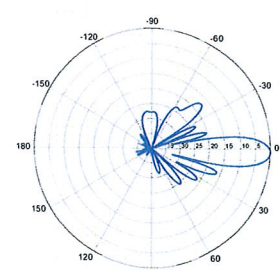
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



2° | Vertical | 850 MHz

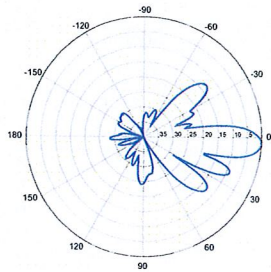
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# BXA-70063-6CF-EDIN-X

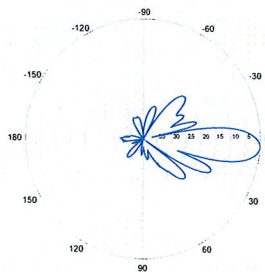
X-Pol | FET Panel | 63° | 14.5 dBd

**BXA-70063-6CF-EDIN-3**



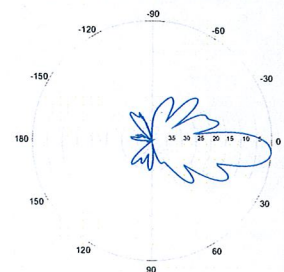
3° | Vertical | 750 MHz

**BXA-70063-6CF-EDIN-4**

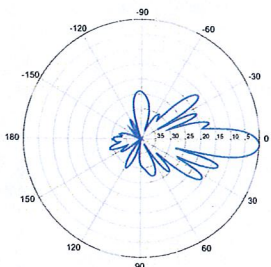


4° | Vertical | 750 MHz

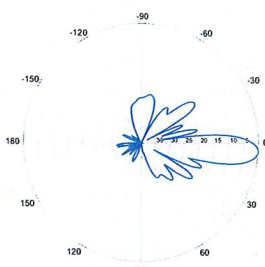
**BXA-70063-6CF-EDIN-5**



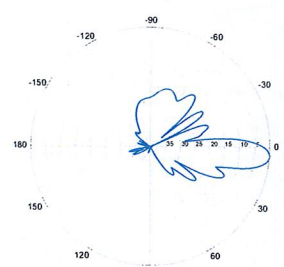
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

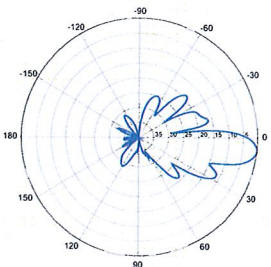


4° | Vertical | 850 MHz



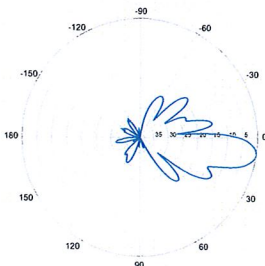
5° | Vertical | 850 MHz

**BXA-70063-6CF-EDIN-6**



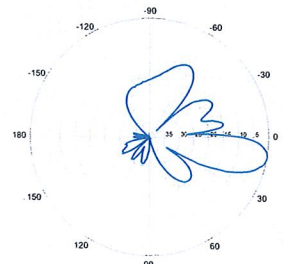
6° | Vertical | 750 MHz

**BXA-70063-6CF-EDIN-8**

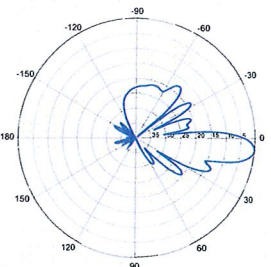


8° | Vertical | 750 MHz

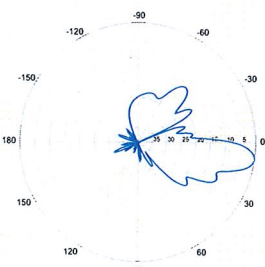
**BXA-70063-6CF-EDIN-10**



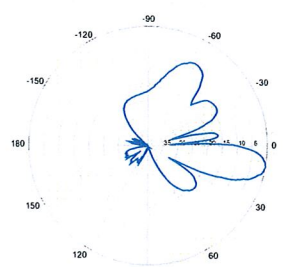
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

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

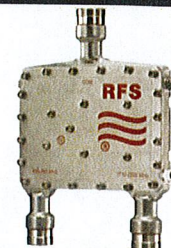




# ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, full DC pass

## Product Description

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



## Features/Benefits

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

## Technical Specifications

|                                         |                                                                                                                                           |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Product Type                            | Diplexer/Cross Band Coupler                                                                                                               |
| Frequency Range 1, MHz                  | 698-960                                                                                                                                   |
| Frequency Range 2, MHz                  | 1710-2200                                                                                                                                 |
| Application                             | LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS                                                                                          |
| Configuration                           | Sharelite Single diplexer, outdoor, full DC pass, 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; 60/70@1710-2200MHz                                                                                                      |
| IMP Level at the COM Port, Typ, dBm     | -112 @ 2x43                                                                                                                               |
| DC Pass in Low Frequency Path           | Yes                                                                                                                                       |
| 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

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



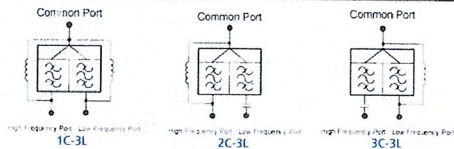


## ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, full DC pass

## Other Documentation

FD9R6004/1C-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: Columbia (Andover)  |            |           |         |                  |        |                    |              |        |  |
| Tower Height: Verizon @ 160 ft |            |           |         |                  |        |                    |              |        |  |
| CARRIER                        | # OF CHAN. | WATTS ERP | HEIGHT  | CALC. POWER DENS | FREQ.  | MAX. PERMISS. EXP. | FRACTION MPE | Total  |  |
| *Cingular UMTS                 | 1          | 500       | 137     | 0.0096           | 880    | 0.5867             | 1.63%        |        |  |
| *Cingular GSM                  | 4          | 296       | 137     | 0.0227           | 880    | 0.5867             | 3.87%        |        |  |
| *Cingular GSM                  | 2          | 427       | 137     | 0.0164           | 1900   | 1.0000             | 1.64%        |        |  |
| *Nextel                        | 9          | 100       | 178     | 0.0102           | 851    | 0.5673             | 1.80%        |        |  |
| *Sprint                        | 11         | 411       | 168     | 0.0576           | 1962.5 | 1.0000             | 5.76%        |        |  |
| *VoiceStream                   | 4          | 282       | 148     | 0.0185           | 1930   | 1.0000             | 1.85%        |        |  |
| Verizon PCS                    | 7          | 262       | 158     | 0.0264           | 1970   | 1.0000             | 2.64%        |        |  |
| Verizon Cellular               | 9          | 260       | 158     | 0.0337           | 869    | 0.5793             | 5.82%        |        |  |
| Verizon AWS                    | 1          | 654       | 158     | 0.0094           | 2145   | 1.0000             | 0.94%        |        |  |
| Verizon 700                    | 2          | 770       | 158     | 0.0222           | 698    | 0.4653             | 4.77%        | 30.72% |  |
| * Source: Siting Council       |            |           |         |                  |        |                    |              |        |  |
|                                |            |           |         |                  |        |                    |              |        |  |
|                                |            |           |         |                  |        |                    |              |        |  |
|                                |            |           |         |                  |        |                    |              |        |  |





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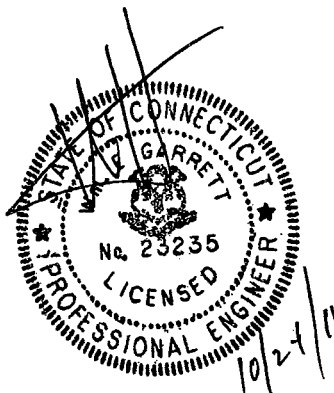
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## Structural Analysis Report

**Structure** : 178 ft Summit Manufacturing Monopole  
**ATC Site Name** : Andover-bunker Hill Road, CT  
**ATC Site Number** : 302472  
**Proposed Carrier** : Verizon  
**Carrier Site Name** : Columbia CT  
**Carrier Site Number** : 118621  
**County** : Tolland  
**Engineering Number** : 48166622  
**Date** : October 21, 2011 \*  
**Usage** : 89%  
**Portholes Required** : No  
**Result** : Pass

Submitted by:  
Christopher L. Jolly  
Project Engineer

**American Tower Engineering Services**  
400 Regency Forest Drive  
Cary, NC 27518  
Phone: 919-468-0112



## **Introduction**

The purpose of this report is to summarize results of the structural analysis performed on the 178 ft Summit Manufacturing Monopole located at 104 Bunker Hill Road, Andover, Connecticut, 06232, Tolland County (ATC Site No. 302472). The tower was originally designed and manufactured by Summit Manufacturing (Paul J. Ford Job No. 29200-028, dated January 14, 200).

## **Analysis**

The tower was analyzed using Semaan Engineering Solutions, Inc., Software.

Basic Wind Speed: 85 mph (Fastest Mile)  
Radial Ice: 74 mph (Fastest Mile) w/ ½" ice  
Code: ANSI/TIA/EIA-222-F / 2003 International Building Code Criteria per Section 1609.1.1, Exception (5) and Section 3108.4 / 2005 Connecticut Supplement and 2009 Connecticut Amendments

## **Antenna Loads**

The following antenna loads were used in the tower analysis.

### **Existing Antennas**

| Elev.<br>(ft) | Qty | Antennas             | Mount                | Coax        | Carrier       |
|---------------|-----|----------------------|----------------------|-------------|---------------|
| 178.0         | 3   | 72" x 12" Panels     | Low Profile Platform | (12) 1 5/8" | Sprint Nextel |
|               | 9   | Allgon 7120.16.05.00 |                      |             |               |
| 168.0         | 6   | Decibel DB980H90A-KL | Low Profile Platform | (6) 1 5/8"  | T-Mobile      |
| 148.0         | 4   | Allgon 7250.02       | Low Profile Platform | (12) 1 5/8" |               |
|               | 2   | EMS RR90-17-02DP     |                      |             |               |
| 137.0         | 6   | Powerwave 7770.00    | Low Profile Platform | (12) 1 1/4" | AT&T Mobility |
|               | 6   | Powerwave LGP21401   |                      |             |               |
|               | 6   | Powerwave LGP21903   |                      |             |               |
| 108.0         | 1   | GPS                  | Standoff             | (1) 1/2"    | Verizon       |
| 95.0          | 1   | GPS                  | Standoff             | (1) 1/2"    | Sprint Nextel |
| 86.0          | 1   | GPS                  | Standoff             | (1) 1/2"    |               |



**Proposed Antennas**

| Elev.<br>(ft) | Qty | Antennas                    | Mount                | Coax        | Carrier |
|---------------|-----|-----------------------------|----------------------|-------------|---------|
| 158.0         | 3   | Antel BXA-171085-8BF-EDIN-X | Low Profile Platform | (12) 1 5/8" | Verizon |
|               | 3   | Antel BXA-70063/6CF         |                      |             |         |
|               | 6   | Antel LPA-80080/4CF         |                      |             |         |
|               | 6   | RFS FD9R6004/1C-3L          |                      |             |         |

Install proposed coax inside monopole.

**Results**

The maximum structure usage is: 89%

Additional exit and/or entry ports may be required to accommodate the running of the proposed lines to the proposed antennas. These additional ports **may not** be installed without installation drawings providing the location, size and welding requirements of each port.

To ensure compliance with all conditions of this structural analysis, port installation drawings shall be provided by American Tower's Engineering Department under a subsequent project.

| Pole Reactions   | Original Design Reactions | Current Analysis Reactions | % Of Design |
|------------------|---------------------------|----------------------------|-------------|
| Moment (ft-kips) | 4,675.0                   | 3,899.2                    | 83          |
| Shear (kips)     | 35.5                      | 30.6                       | 86          |

The structure base reactions resulting from this analysis are acceptable when compared to the reactions shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

The foundation and connections to the tower have factors of safety exceeding 2.0 with respect to wind.

**Conclusion**

Based on the analysis results, the structure meets the requirements per the ANSI/TIA/EIA-222-F standard and the 2003 IBC with 2005 CT Supplements and 2009 CT Amendments. The tower and foundation can support the existing and proposed antennas with the transmission line distribution as described in this report.

If you have any questions or require additional information, please call 919-466-5007.

## **Standard Conditions**

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

- Information supplied by the client regarding the structure itself, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Engineering Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/EIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

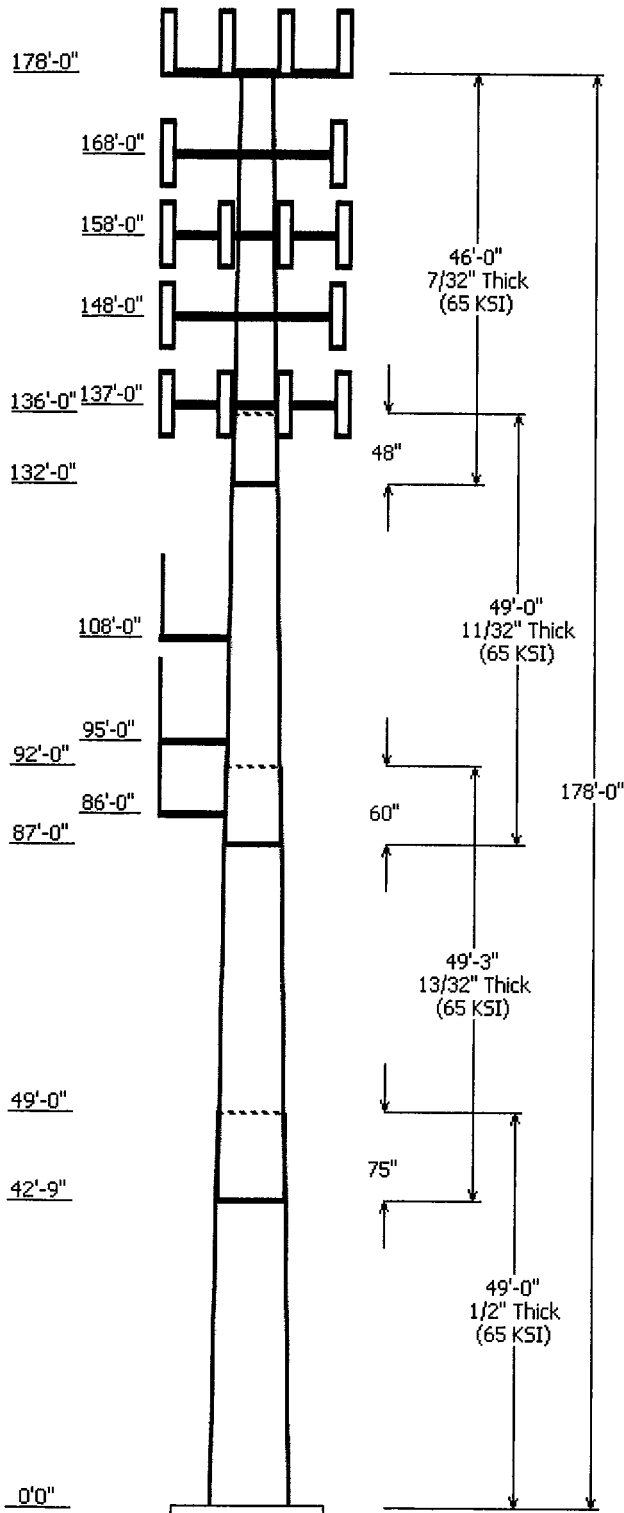
| Job Information |                              |                 |                   |
|-----------------|------------------------------|-----------------|-------------------|
| Pole :          | 302472                       | Code:           | TIA/EIA-222 Rev F |
| Description :   | 178' Summit Monopole         |                 |                   |
| Client :        | Verizon Wireless             |                 |                   |
| Location :      | Andover Bunker Hill Road, CT |                 |                   |
| Shape :         | 18 Sides                     | Base Elev (ft): | 0.00              |
| Height :        | 178.00 (ft)                  | Taper:          | 0.207008(in/ft)   |

| Sections Properties |             |                  |                     |                  |            |                     |               |                   |
|---------------------|-------------|------------------|---------------------|------------------|------------|---------------------|---------------|-------------------|
| Shaft Section       | Length (ft) | Diameter (in)    |                     | Thick Joint (in) | Type       | Overlap Length (in) | Taper (in/ft) | Steel Grade (ksi) |
|                     |             | Across Flats Top | Across Flats Bottom |                  |            |                     |               |                   |
| 1                   | 49.000      | 46.76            | 56.91               | 0.500            |            | 0.000               | 0.207008      | 65                |
| 2                   | 49.250      | 38.67            | 48.87               | 0.406            | Slip Joint | 75.000              | 0.207008      | 65                |
| 3                   | 49.000      | 30.25            | 40.40               | 0.344            | Slip Joint | 60.000              | 0.207008      | 65                |
| 4                   | 46.000      | 22.00            | 31.52               | 0.219            | Slip Joint | 48.000              | 0.207008      | 65                |

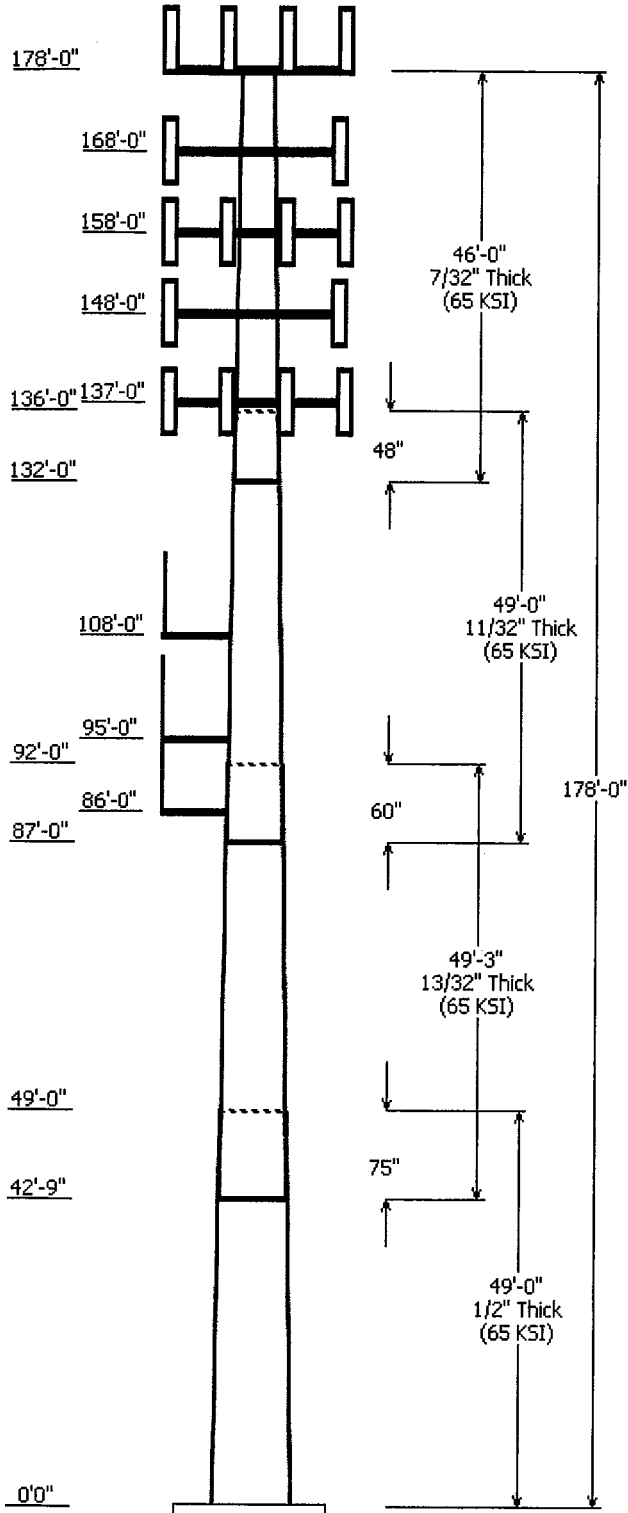
| Discrete Appurtenance |                 |     |                             |  |
|-----------------------|-----------------|-----|-----------------------------|--|
| Attach Elev (ft)      | Force Elev (ft) | Qty | Description                 |  |
| 178.000               | 180.000         | 3   | 72" x 12" Panels            |  |
| 178.000               | 180.000         | 9   | Allgon 7120.16.05.00        |  |
| 178.000               | 178.000         | 1   | Low Profile Platform        |  |
| 168.000               | 168.000         | 6   | Decibel DB980H90A-KL        |  |
| 168.000               | 168.000         | 1   | Low Profile Platform        |  |
| 158.000               | 158.000         | 6   | Antel LPA-80080/4CF         |  |
| 158.000               | 158.000         | 6   | RFS FD9R6004/1C-3L          |  |
| 158.000               | 158.000         | 3   | Antel BXA-70063/6CF         |  |
| 158.000               | 158.000         | 1   | Low Profile Platform        |  |
| 158.000               | 158.000         | 3   | Antel BXA-171085-8BF-EDIN-X |  |
| 148.000               | 148.000         | 1   | Low Profile Platform        |  |
| 148.000               | 148.000         | 2   | EMS RR90-17-02DP            |  |
| 148.000               | 148.000         | 4   | Allgon 7250.02              |  |
| 137.000               | 137.000         | 6   | Powerwave 7770.00           |  |
| 137.000               | 137.000         | 6   | Powerwave LGP21401          |  |
| 137.000               | 137.000         | 6   | Powerwave LGP21903          |  |
| 137.000               | 137.000         | 1   | Low Profile Platform        |  |
| 108.000               | 108.000         | 1   | Standoff                    |  |
| 108.000               | 108.500         | 1   | GPS                         |  |
| 95.000                | 95.000          | 1   | Standoff                    |  |
| 95.000                | 95.500          | 1   | GPS                         |  |
| 86.000                | 86.000          | 1   | Standoff                    |  |
| 86.000                | 86.500          | 1   | GPS                         |  |

| Linear Appurtenance |        |             |                 |
|---------------------|--------|-------------|-----------------|
| Elev (ft)           |        | Description | Exposed To Wind |
| From                | To     |             |                 |
| 0.000               | 86.000 | 1/2" Coax   | No              |
| 0.000               | 95.000 | 1/2" Coax   | No              |
| 0.000               | 108.0  | 1/2" Coax   | No              |
| 0.000               | 137.0  | 1 1/4" Coax | No              |
| 0.000               | 148.0  | 1 5/8 Coax  | No              |
| 0.000               | 158.0  | 1 5/8 Coax  | No              |
| 0.000               | 168.0  | 1 5/8 Coax  | No              |
| 0.000               | 178.0  | 1 5/8" Coax | No              |

| Load Cases |                            |
|------------|----------------------------|
| No Ice     | 85.00 mph Wind with No Ice |
| Ice        | 73.61 mph Wind with Ice    |
| Twist/Sway | 50.00 mph Wind with No Ice |



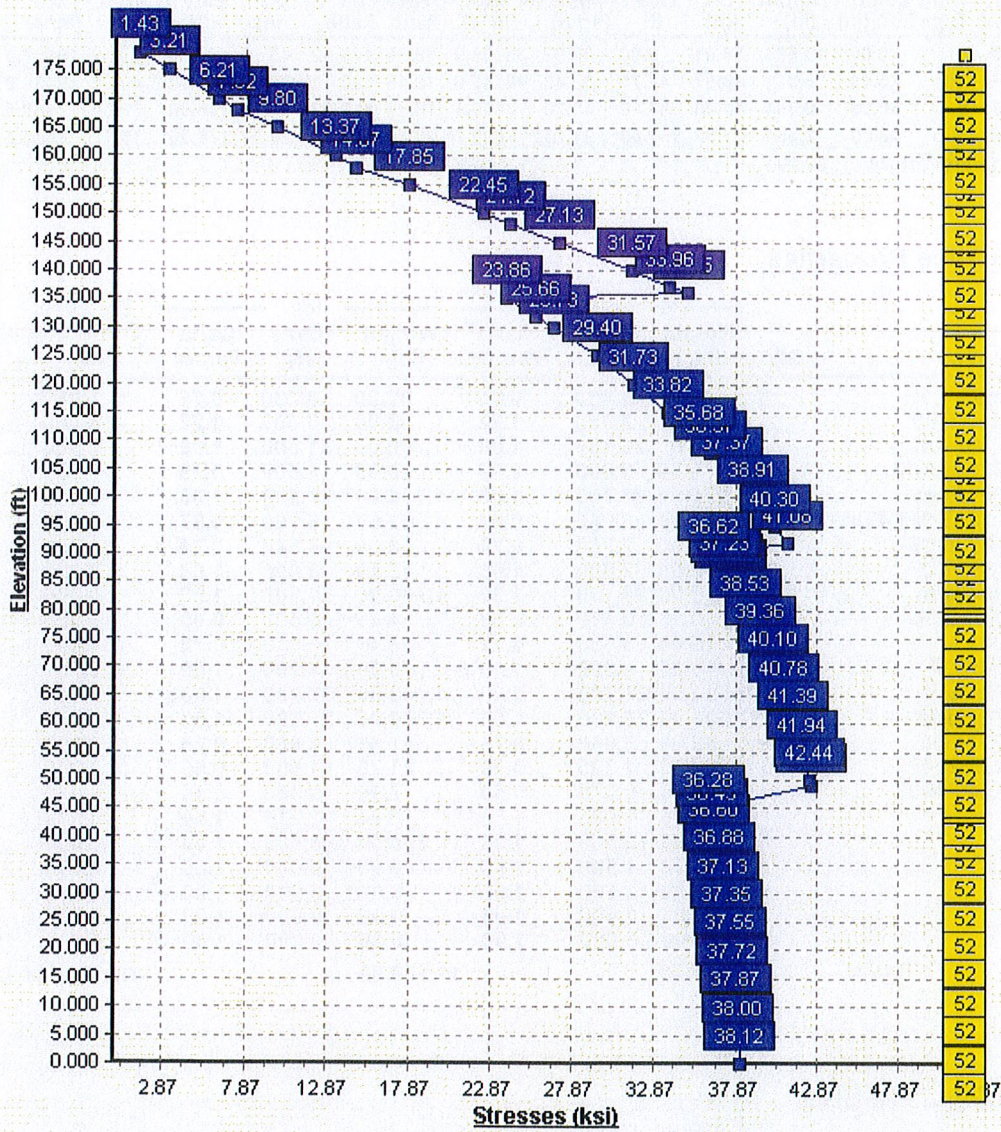




| Reactions  |                    |                 |                 |
|------------|--------------------|-----------------|-----------------|
| Load Case  | Moment<br>(Kip-ft) | Shear<br>(Kips) | Axial<br>(Kips) |
| No Ice     | 3899.18            | 30.58           | 47.87           |
| Ice        | 3698.24            | 27.32           | 54.38           |
| Twist/Sway | 1351.02            | 10.58           | 47.90           |

| Dish Deflections |                     |                    |                   |
|------------------|---------------------|--------------------|-------------------|
| Load Case        | Attach<br>Elev (ft) | Deflection<br>(in) | Rotation<br>(deg) |
| Twist/Sway       | 0.00                | 0.000              | 0.000             |

**Load Case : No Ice**  
**Max Stress 81.8% at 49.0ft**



Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

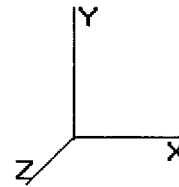
Code: TIA/EIA-222 Rev F

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Page: 1

Base Elev : 0.000 (ft)

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### Shaft Section Properties

| Slip         |             |            |          |            |                |             | Bottom   |           |             |           |           |           | Top      |           |             |           |           |           |               |
|--------------|-------------|------------|----------|------------|----------------|-------------|----------|-----------|-------------|-----------|-----------|-----------|----------|-----------|-------------|-----------|-----------|-----------|---------------|
| Sect Info    | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Joint Len (in) | Weight (lb) | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Taper (in/ft) |
| 1-18         | 49.000      | 0.5000     | 65       |            | 0.00           | 13,584      | 56.91    | 0.00      | 89.52       | 35989.9   | 18.31     | 113.82    | 46.76    | 49.00     | 73.42       | 19857.0   | 14.73     | 93.53     | 0.207008      |
| 2-18         | 49.250      | 0.4063     | 65       | Slip       | 75.00          | 9,371       | 48.87    | 42.75     | 62.49       | 18546.6   | 19.45     | 120.30    | 38.67    | 92.00     | 49.35       | 9131.9    | 15.02     | 95.21     | 0.207008      |
| 3-18         | 49.000      | 0.3438     | 65       | Slip       | 60.00          | 6,364       | 40.40    | 87.00     | 43.70       | 8859.4    | 18.96     | 117.53    | 30.25    | 136.00    | 32.64       | 3689.5    | 13.76     | 88.02     | 0.207008      |
| 4-18         | 46.000      | 0.2188     | 65       | Slip       | 48.00          | 2,884       | 31.52    | 132.00    | 21.73       | 2690.7    | 23.65     | 144.10    | 22.00    | 178.00    | 15.12       | 906.4     | 15.97     | 100.57    | 0.207008      |
| Shaft Weight |             |            |          |            |                | 32,204      |          |           |             |           |           |           |          |           |             |           |           |           |               |

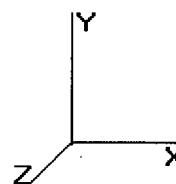
### Discrete Appurtenance Properties

| Attach Elev (ft) | Description                 | Qty | Weight (lb) | No Ice CaAa (sf) | CaAa Factor | Weight (lb) | Ice CaAa (sf) | CaAa Factor | Distance From Face (ft) | Vert Ecc (ft) |
|------------------|-----------------------------|-----|-------------|------------------|-------------|-------------|---------------|-------------|-------------------------|---------------|
| 178.00           | 72" x 12" Panels            | 3   | 40.00       | 8.400            | 0.75        | 87.00       | 9.230         | 0.75        | 0.000                   | 2.000         |
| 178.00           | Allgon 7120.16.05.00        | 9   | 15.00       | 3.990            | 1.22        | 53.00       | 6.390         | 1.22        | 0.000                   | 2.000         |
| 178.00           | Low Profile Platform        | 1   | 1500.00     | 26.100           | 1.00        | 1,700.00    | 31.600        | 1.00        | 0.000                   | 0.000         |
| 168.00           | Decibel DB980H90A-KL        | 6   | 9.00        | 3.800            | 0.79        | 29.00       | 4.500         | 0.79        | 0.000                   | 0.000         |
| 168.00           | Low Profile Platform        | 1   | 1500.00     | 21.700           | 1.00        | 1,700.00    | 27.200        | 1.00        | 0.000                   | 0.000         |
| 158.00           | Antel BXA-171085-8BF-EDIN-X | 3   | 10.50       | 2.940            | 0.87        | 63.00       | 6.190         | 0.87        | 0.000                   | 0.000         |
| 158.00           | Antel BXA-70063/6CF         | 3   | 17.00       | 7.730            | 0.74        | 58.00       | 8.540         | 0.74        | 0.000                   | 0.000         |
| 158.00           | Antel LPA-80080/4CF         | 6   | 12.00       | 2.620            | 1.66        | 45.12       | 6.650         | 1.66        | 0.000                   | 0.000         |
| 158.00           | Low Profile Platform        | 1   | 1500.00     | 26.100           | 1.00        | 1,700.00    | 31.600        | 1.00        | 0.000                   | 0.000         |
| 158.00           | RFS FD9R6004/1C-3L          | 6   | 3.10        | 0.370            | 0.50        | 5.40        | 0.500         | 0.50        | 0.000                   | 0.000         |
| 148.00           | Allgon 7250.02              | 4   | 15.00       | 3.830            | 0.72        | 33.47       | 4.410         | 0.72        | 0.000                   | 0.000         |
| 148.00           | EMS RR90-17-02DP            | 2   | 18.00       | 4.360            | 1.00        | 40.00       | 4.990         | 1.00        | 0.000                   | 0.000         |
| 148.00           | Low Profile Platform        | 1   | 1500.00     | 21.700           | 1.00        | 1,700.00    | 27.200        | 1.00        | 0.000                   | 0.000         |
| 137.00           | Low Profile Platform        | 1   | 1500.00     | 26.100           | 1.00        | 1,700.00    | 31.600        | 1.00        | 0.000                   | 0.000         |
| 137.00           | Powerwave 7770.00           | 6   | 35.00       | 5.880            | 0.75        | 67.63       | 6.530         | 0.75        | 0.000                   | 0.000         |
| 137.00           | Powerwave LGP21401          | 6   | 14.10       | 1.290            | 0.50        | 21.26       | 1.530         | 0.50        | 0.000                   | 0.000         |
| 137.00           | Powerwave LGP21903          | 6   | 5.50        | 0.270            | 0.50        | 7.90        | 0.380         | 0.50        | 0.000                   | 0.000         |
| 108.00           | GPS                         | 1   | 10.00       | 1.000            | 1.00        | 18.24       | 1.210         | 1.00        | 0.000                   | 0.500         |
| 108.00           | Standoff                    | 1   | 200.00      | 3.500            | 1.00        | 300.00      | 4.500         | 1.00        | 0.000                   | 0.000         |
| 95.00            | GPS                         | 1   | 10.00       | 1.000            | 1.00        | 0.00        | 0.000         | 1.00        | 0.000                   | 0.500         |
| 95.00            | Standoff                    | 1   | 200.00      | 3.500            | 1.00        | 0.00        | 0.000         | 1.00        | 0.000                   | 0.000         |
| 86.00            | GPS                         | 1   | 10.00       | 1.000            | 1.00        | 0.00        | 0.000         | 1.00        | 0.000                   | 0.500         |
| 86.00            | Standoff                    | 1   | 200.00      | 3.500            | 1.00        | 0.00        | 0.000         | 1.00        | 0.000                   | 0.000         |
| Totals           |                             | 71  | 9035.70     |                  |             | 11,190.98   |               |             | Number of Loadings : 23 |               |

### Linear Appurtenance Properties

| Elev From (ft) | Elev To (ft) | Description      | Weight (lb/ft) | No Ice CaAa (sf/ft) | Weight (lb/ft) | Ice CaAa (sf/ft) | Exposed To Wind |
|----------------|--------------|------------------|----------------|---------------------|----------------|------------------|-----------------|
| 0.00           | 178.00       | (12) 1 5/8" Coax | 9.84           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 168.00       | (6) 1 5/8 Coax   | 4.92           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 158.00       | (12) 1 5/8 Coax  | 9.84           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 148.00       | (12) 1 5/8 Coax  | 9.84           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 137.00       | (12) 1 1/4" Coax | 7.56           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 108.00       | (1) 1/2" Coax    | 0.15           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 95.00        | (1) 1/2" Coax    | 0.15           | 0.00                | 0.00           | 0.00             | N               |
| 0.00           | 86.00        | (1) 1/2" Coax    | 0.15           | 0.00                | 0.00           | 0.00             | N               |
| Total Weight   |              |                  | 6,668.19 (lb)  |                     | 0.00 (lb)      |                  |                 |





| Seg   | Top             |  | Thick  | Flat   | Area   | Ix       | W/t   | D/t    | Fy    | Fb    | Weight   |
|-------|-----------------|--|--------|--------|--------|----------|-------|--------|-------|-------|----------|
| Elev  | Description     |  | (in)   | Dia    | (in^2) | (in^4)   | Ratio | Ratio  | (ksi) | (ksi) | (lb)     |
| (ft)  |                 |  |        | (in)   |        |          |       |        |       |       |          |
| 0.00  |                 |  | 0.5000 | 56.910 | 89.519 | 35,989.9 | 18.31 | 113.82 | 65    | 52    | 0.0      |
| 5.00  |                 |  | 0.5000 | 55.875 | 87.877 | 34,044.9 | 17.94 | 111.75 | 65    | 52    | 1,509.1  |
| 10.00 |                 |  | 0.5000 | 54.840 | 86.234 | 32,171.3 | 17.58 | 109.68 | 65    | 52    | 1,481.2  |
| 15.00 |                 |  | 0.5000 | 53.805 | 84.592 | 30,367.8 | 17.21 | 107.61 | 65    | 52    | 1,453.2  |
| 20.00 |                 |  | 0.5000 | 52.770 | 82.949 | 28,632.9 | 16.85 | 105.54 | 65    | 52    | 1,425.3  |
| 25.00 |                 |  | 0.5000 | 51.735 | 81.307 | 26,965.4 | 16.48 | 103.47 | 65    | 52    | 1,397.3  |
| 30.00 |                 |  | 0.5000 | 50.700 | 79.664 | 25,363.9 | 16.12 | 101.40 | 65    | 52    | 1,369.4  |
| 35.00 |                 |  | 0.5000 | 49.665 | 78.021 | 23,827.1 | 15.75 | 99.33  | 65    | 52    | 1,341.4  |
| 40.00 |                 |  | 0.5000 | 48.630 | 76.379 | 22,353.7 | 15.39 | 97.26  | 65    | 52    | 1,313.5  |
| 42.75 | Bot - Section 2 |  | 0.5000 | 48.060 | 75.475 | 21,569.9 | 15.19 | 96.12  | 65    | 52    | 710.5    |
| 45.00 |                 |  | 0.5000 | 47.595 | 74.736 | 20,942.4 | 15.02 | 95.19  | 65    | 52    | 1,051.2  |
| 49.00 | Top - Section 1 |  | 0.4063 | 47.579 | 60.824 | 17,100.6 | 18.89 | 117.12 | 65    | 52    | 1,843.5  |
| 50.00 |                 |  | 0.4063 | 47.372 | 60.557 | 16,876.4 | 18.80 | 116.61 | 65    | 52    | 206.5    |
| 55.00 |                 |  | 0.4063 | 46.337 | 59.223 | 15,785.1 | 18.35 | 114.06 | 65    | 52    | 1,019.0  |
| 60.00 |                 |  | 0.4063 | 45.302 | 57.888 | 14,741.8 | 17.90 | 111.51 | 65    | 52    | 996.3    |
| 65.00 |                 |  | 0.4063 | 44.267 | 56.553 | 13,745.5 | 17.45 | 108.96 | 65    | 52    | 973.5    |
| 70.00 |                 |  | 0.4063 | 43.232 | 55.219 | 12,795.2 | 17.00 | 106.42 | 65    | 52    | 950.8    |
| 75.00 |                 |  | 0.4063 | 42.197 | 53.884 | 11,889.7 | 16.55 | 103.87 | 65    | 52    | 928.1    |
| 80.00 |                 |  | 0.4063 | 41.162 | 52.550 | 11,028.0 | 16.10 | 101.32 | 65    | 52    | 905.4    |
| 85.00 |                 |  | 0.4063 | 40.127 | 51.215 | 10,208.9 | 15.65 | 98.77  | 65    | 52    | 882.7    |
| 86.00 |                 |  | 0.4063 | 39.920 | 50.948 | 10,050.1 | 15.56 | 98.26  | 65    | 52    | 173.8    |
| 87.00 | Bot - Section 3 |  | 0.4063 | 39.713 | 50.681 | 9,893.0  | 15.47 | 97.75  | 65    | 52    | 172.9    |
| 90.00 |                 |  | 0.4063 | 39.092 | 49.881 | 9,431.5  | 15.20 | 96.23  | 65    | 52    | 956.0    |
| 92.00 | Top - Section 2 |  | 0.3438 | 39.365 | 42.573 | 8,190.2  | 18.43 | 114.52 | 65    | 52    | 628.9    |
| 95.00 |                 |  | 0.3438 | 38.744 | 41.896 | 7,805.4  | 18.11 | 112.71 | 65    | 52    | 431.1    |
| 100.0 |                 |  | 0.3438 | 37.709 | 40.766 | 7,191.1  | 17.58 | 109.70 | 65    | 52    | 703.2    |
| 105.0 |                 |  | 0.3438 | 36.674 | 39.637 | 6,609.9  | 17.05 | 106.69 | 65    | 52    | 684.0    |
| 108.0 |                 |  | 0.3438 | 36.053 | 38.960 | 6,276.7  | 16.73 | 104.88 | 65    | 52    | 401.2    |
| 110.0 |                 |  | 0.3438 | 35.639 | 38.508 | 6,060.9  | 16.52 | 103.68 | 65    | 52    | 263.6    |
| 115.0 |                 |  | 0.3438 | 34.604 | 37.379 | 5,543.1  | 15.99 | 100.67 | 65    | 52    | 645.6    |
| 120.0 |                 |  | 0.3438 | 33.569 | 36.249 | 5,055.8  | 15.46 | 97.65  | 65    | 52    | 626.3    |
| 125.0 |                 |  | 0.3438 | 32.534 | 35.120 | 4,597.8  | 14.93 | 94.64  | 65    | 52    | 607.1    |
| 130.0 |                 |  | 0.3438 | 31.499 | 33.991 | 4,168.4  | 14.39 | 91.63  | 65    | 52    | 587.9    |
| 132.0 | Bot - Section 4 |  | 0.3438 | 31.085 | 33.539 | 4,004.4  | 14.18 | 90.43  | 65    | 52    | 229.8    |
| 135.0 |                 |  | 0.3438 | 30.464 | 32.862 | 3,766.6  | 13.86 | 88.62  | 65    | 52    | 558.6    |
| 136.0 | Top - Section 3 |  | 0.2188 | 30.694 | 21.159 | 2,482.8  | 22.98 | 140.32 | 65    | 52    | 183.7    |
| 137.0 |                 |  | 0.2188 | 30.487 | 21.015 | 2,432.6  | 22.81 | 139.37 | 65    | 52    | 71.8     |
| 140.0 |                 |  | 0.2188 | 29.866 | 20.584 | 2,285.9  | 22.31 | 136.53 | 65    | 52    | 212.3    |
| 145.0 |                 |  | 0.2188 | 28.831 | 19.865 | 2,054.7  | 21.48 | 131.80 | 65    | 52    | 344.1    |
| 148.0 |                 |  | 0.2188 | 28.210 | 19.434 | 1,923.8  | 20.98 | 128.96 | 65    | 52    | 200.6    |
| 150.0 |                 |  | 0.2188 | 27.796 | 19.147 | 1,839.7  | 20.64 | 127.07 | 65    | 52    | 131.3    |
| 155.0 |                 |  | 0.2188 | 26.761 | 18.428 | 1,640.3  | 19.81 | 122.34 | 65    | 52    | 319.6    |
| 158.0 |                 |  | 0.2188 | 26.140 | 17.997 | 1,527.8  | 19.31 | 119.50 | 65    | 52    | 185.9    |
| 160.0 |                 |  | 0.2188 | 25.726 | 17.709 | 1,455.7  | 18.97 | 117.60 | 65    | 52    | 121.5    |
| 165.0 |                 |  | 0.2188 | 24.691 | 16.991 | 1,285.6  | 18.14 | 112.87 | 65    | 52    | 295.2    |
| 168.0 |                 |  | 0.2188 | 24.070 | 16.560 | 1,190.2  | 17.64 | 110.03 | 65    | 52    | 171.2    |
| 170.0 |                 |  | 0.2188 | 23.656 | 16.272 | 1,129.3  | 17.31 | 108.14 | 65    | 52    | 111.7    |
| 175.0 |                 |  | 0.2188 | 22.621 | 15.554 | 986.2    | 16.47 | 103.41 | 65    | 52    | 270.7    |
| 178.0 |                 |  | 0.2188 | 22.000 | 15.122 | 906.4    | 15.97 | 100.57 | 65    | 52    | 156.6    |
|       |                 |  |        |        |        |          |       |        |       |       | 32,204.2 |

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

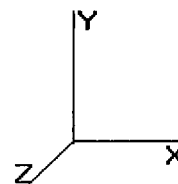
Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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|                             |                            |               |
|-----------------------------|----------------------------|---------------|
| <b>Load Case:</b> No Ice    | 85.00 mph Wind with No Ice | 26 Iterations |
| Gust Response Factor : 1.69 |                            |               |
| Dead Load Factor : 1.00     |                            |               |
| Wind Load Factor : 1.00     |                            |               |

### Shaft Segment Forces

| Seg Top<br>Elev<br>(ft) | Description     | Kz   | qz<br>(psf) | qzGh<br>(psf) | C<br>(mph-ft) | Cf    | Ice<br>Thick<br>(in) | Tributary<br>(ft) | Aa<br>(sf) | CfAa<br>(sf) | Wind<br>Force X<br>(lb) | Dead<br>Load Ice<br>(lb) | Tot Dead<br>Load<br>(lb) |
|-------------------------|-----------------|------|-------------|---------------|---------------|-------|----------------------|-------------------|------------|--------------|-------------------------|--------------------------|--------------------------|
| 0.00                    |                 | 0.00 | 1.00 18.496 | 31.25 403.11  | 0.650         | 0.000 | 0.00                 | 0.000             | 0.00       | 0.00         | 0.0                     | 0.0                      | 0.0                      |
| 5.00                    |                 | 0.00 | 1.00 18.496 | 31.25 395.78  | 0.650         | 0.000 | 5.00                 | 23.497            | 15.27      | 477.4        | 0.0                     | 1,509.1                  | 1,509.1                  |
| 10.00                   |                 | 0.00 | 1.00 18.496 | 31.25 388.44  | 0.650         | 0.000 | 5.00                 | 23.066            | 14.99      | 468.6        | 0.0                     | 1,481.2                  | 1,481.2                  |
| 15.00                   |                 | 0.00 | 1.00 18.496 | 31.25 381.11  | 0.650         | 0.000 | 5.00                 | 22.634            | 14.71      | 459.9        | 0.0                     | 1,453.2                  | 1,453.2                  |
| 20.00                   |                 | 0.00 | 1.00 18.496 | 31.25 373.78  | 0.650         | 0.000 | 5.00                 | 22.203            | 14.43      | 451.1        | 0.0                     | 1,425.3                  | 1,425.3                  |
| 25.00                   |                 | 0.00 | 1.00 18.496 | 31.25 366.45  | 0.650         | 0.000 | 5.00                 | 21.772            | 14.15      | 442.4        | 0.0                     | 1,397.3                  | 1,397.3                  |
| 30.00                   |                 | 0.00 | 1.00 18.496 | 31.25 359.12  | 0.650         | 0.000 | 5.00                 | 21.340            | 13.87      | 433.6        | 0.0                     | 1,369.4                  | 1,369.4                  |
| 35.00                   |                 | 0.00 | 1.01 18.810 | 31.78 354.76  | 0.650         | 0.000 | 5.00                 | 20.909            | 13.59      | 432.0        | 0.0                     | 1,341.4                  | 1,341.4                  |
| 40.00                   |                 | 0.00 | 1.05 19.541 | 33.02 354.05  | 0.650         | 0.000 | 5.00                 | 20.478            | 13.31      | 439.6        | 0.0                     | 1,313.5                  | 1,313.5                  |
| 42.75                   | Bot - Section 2 | 0.00 | 1.07 19.916 | 33.65 353.25  | 0.650         | 0.000 | 2.75                 | 11.079            | 7.20       | 242.4        | 0.0                     | 710.5                    | 710.5                    |
| 45.00                   |                 | 0.00 | 1.09 20.210 | 34.15 352.40  | 0.650         | 0.000 | 2.25                 | 9.120             | 5.93       | 202.5        | 0.0                     | 1,051.2                  | 1,051.2                  |
| 49.00                   | Top - Section 1 | 0.00 | 1.12 20.708 | 34.99 350.50  | 0.650         | 0.000 | 4.00                 | 15.998            | 10.40      | 363.9        | 0.0                     | 1,843.5                  | 1,843.5                  |
| 50.00                   |                 | 0.00 | 1.12 20.827 | 35.19 356.07  | 0.650         | 0.000 | 1.00                 | 3.956             | 2.57       | 90.5         | 0.0                     | 206.5                    | 206.5                    |
| 55.00                   |                 | 0.00 | 1.15 21.402 | 36.17 353.06  | 0.650         | 0.000 | 5.00                 | 19.523            | 12.69      | 459.0        | 0.0                     | 1,019.0                  | 1,019.0                  |
| 60.00                   |                 | 0.00 | 1.18 21.941 | 37.08 349.49  | 0.650         | 0.000 | 5.00                 | 19.091            | 12.41      | 460.1        | 0.0                     | 996.3                    | 996.3                    |
| 65.00                   |                 | 0.00 | 1.21 22.449 | 37.93 345.44  | 0.650         | 0.000 | 5.00                 | 18.660            | 12.13      | 460.2        | 0.0                     | 973.5                    | 973.5                    |
| 70.00                   |                 | 0.00 | 1.24 22.929 | 38.75 340.95  | 0.650         | 0.000 | 5.00                 | 18.229            | 11.85      | 459.1        | 0.0                     | 950.8                    | 950.8                    |
| 75.00                   |                 | 0.00 | 1.26 23.386 | 39.52 336.08  | 0.650         | 0.000 | 5.00                 | 17.798            | 11.57      | 457.2        | 0.0                     | 928.1                    | 928.1                    |
| 80.00                   |                 | 0.00 | 1.28 23.821 | 40.25 330.88  | 0.650         | 0.000 | 5.00                 | 17.366            | 11.29      | 454.4        | 0.0                     | 905.4                    | 905.4                    |
| 85.00                   |                 | 0.00 | 1.31 24.237 | 40.96 325.36  | 0.650         | 0.000 | 5.00                 | 16.935            | 11.01      | 450.9        | 0.0                     | 882.7                    | 882.7                    |
| 86.00                   | Appertunance(s) | 0.00 | 1.31 24.318 | 41.09 324.22  | 0.650         | 0.000 | 1.00                 | 3.335             | 2.17       | 89.1         | 0.0                     | 173.8                    | 173.8                    |
| 87.00                   | Bot - Section 3 | 0.00 | 1.31 24.399 | 41.23 323.08  | 0.650         | 0.000 | 1.00                 | 3.318             | 2.16       | 88.9         | 0.0                     | 172.9                    | 172.9                    |
| 90.00                   |                 | 0.00 | 1.33 24.636 | 41.63 319.57  | 0.650         | 0.000 | 3.00                 | 10.022            | 6.51       | 271.2        | 0.0                     | 956.0                    | 956.0                    |
| 92.00                   | Top - Section 2 | 0.00 | 1.34 24.791 | 41.89 317.18  | 0.650         | 0.000 | 2.00                 | 6.595             | 4.29       | 179.6        | 0.0                     | 628.9                    | 628.9                    |
| 95.00                   | Appertunance(s) | 0.00 | 1.35 25.020 | 42.28 319.18  | 0.650         | 0.000 | 3.00                 | 9.764             | 6.35       | 268.3        | 0.0                     | 431.1                    | 431.1                    |
| 100.0                   |                 | 0.00 | 1.37 25.389 | 42.90 312.94  | 0.650         | 0.000 | 5.00                 | 15.928            | 10.35      | 444.2        | 0.0                     | 703.2                    | 703.2                    |
| 105.0                   |                 | 0.00 | 1.39 25.745 | 43.51 306.48  | 0.650         | 0.000 | 5.00                 | 15.496            | 10.07      | 438.3        | 0.0                     | 684.0                    | 684.0                    |
| 108.0                   | Appertunance(s) | 0.00 | 1.40 25.953 | 43.86 302.50  | 0.650         | 0.000 | 3.00                 | 9.091             | 5.91       | 259.2        | 0.0                     | 401.2                    | 401.2                    |
| 110.0                   |                 | 0.00 | 1.41 26.090 | 44.09 299.81  | 0.650         | 0.000 | 2.00                 | 5.974             | 3.88       | 171.2        | 0.0                     | 263.6                    | 263.6                    |
| 115.0                   |                 | 0.00 | 1.42 26.423 | 44.65 292.96  | 0.650         | 0.000 | 5.00                 | 14.634            | 9.51       | 424.8        | 0.0                     | 645.6                    | 645.6                    |
| 120.0                   |                 | 0.00 | 1.44 26.747 | 45.20 285.93  | 0.650         | 0.000 | 5.00                 | 14.203            | 9.23       | 417.3        | 0.0                     | 626.3                    | 626.3                    |
| 125.0                   |                 | 0.00 | 1.46 27.060 | 45.73 278.74  | 0.650         | 0.000 | 5.00                 | 13.771            | 8.95       | 409.4        | 0.0                     | 607.1                    | 607.1                    |
| 130.0                   |                 | 0.00 | 1.48 27.365 | 46.24 271.39  | 0.650         | 0.000 | 5.00                 | 13.340            | 8.67       | 401.0        | 0.0                     | 587.9                    | 587.9                    |
| 132.0                   | Bot - Section 4 | 0.00 | 1.48 27.485 | 46.45 268.40  | 0.650         | 0.000 | 2.00                 | 5.215             | 3.39       | 157.5        | 0.0                     | 229.8                    | 229.8                    |
| 135.0                   |                 | 0.00 | 1.49 27.662 | 46.74 263.89  | 0.650         | 0.000 | 3.00                 | 7.803             | 5.07       | 237.1        | 0.0                     | 558.6                    | 558.6                    |
| 136.0                   | Top - Section 3 | 0.00 | 1.49 27.720 | 46.84 262.37  | 0.650         | 0.000 | 1.00                 | 2.566             | 1.67       | 78.2         | 0.0                     | 183.7                    | 183.7                    |
| 137.0                   | Appertunance(s) | 0.00 | 1.50 27.778 | 46.94 264.65  | 0.650         | 0.000 | 1.00                 | 2.549             | 1.66       | 77.8         | 0.0                     | 71.8                     | 71.8                     |
| 140.0                   |                 | 0.00 | 1.51 27.951 | 47.23 260.06  | 0.650         | 0.000 | 3.00                 | 7.544             | 4.90       | 231.6        | 0.0                     | 212.3                    | 212.3                    |
| 145.0                   |                 | 0.00 | 1.52 28.233 | 47.71 252.31  | 0.650         | 0.000 | 5.00                 | 12.229            | 7.95       | 379.3        | 0.0                     | 344.1                    | 344.1                    |
| 148.0                   | Appertunance(s) | 0.00 | 1.53 28.398 | 47.99 247.60  | 0.650         | 0.000 | 3.00                 | 7.130             | 4.63       | 222.4        | 0.0                     | 200.6                    | 200.6                    |
| 150.0                   |                 | 0.00 | 1.54 28.507 | 48.17 244.43  | 0.650         | 0.000 | 2.00                 | 4.667             | 3.03       | 146.2        | 0.0                     | 131.3                    | 131.3                    |
| 155.0                   |                 | 0.00 | 1.55 28.776 | 48.63 236.43  | 0.650         | 0.000 | 5.00                 | 11.366            | 7.39       | 359.3        | 0.0                     | 319.6                    | 319.6                    |
| 158.0                   | Appertunance(s) | 0.00 | 1.56 28.934 | 48.89 231.58  | 0.650         | 0.000 | 3.00                 | 6.613             | 4.30       | 210.2        | 0.0                     | 185.9                    | 185.9                    |
| 160.0                   |                 | 0.00 | 1.57 29.038 | 49.07 228.32  | 0.650         | 0.000 | 2.00                 | 4.322             | 2.81       | 137.9        | 0.0                     | 121.5                    | 121.5                    |
| 165.0                   |                 | 0.00 | 1.58 29.294 | 49.50 220.10  | 0.650         | 0.000 | 5.00                 | 10.504            | 6.83       | 338.0        | 0.0                     | 295.2                    | 295.2                    |
| 168.0                   | Appertunance(s) | 0.00 | 1.59 29.446 | 49.76 215.12  | 0.650         | 0.000 | 3.00                 | 6.095             | 3.96       | 197.2        | 0.0                     | 171.2                    | 171.2                    |
| 170.0                   |                 | 0.00 | 1.59 29.545 | 49.93 211.77  | 0.650         | 0.000 | 2.00                 | 3.977             | 2.59       | 129.1        | 0.0                     | 111.7                    | 111.7                    |
| 175.0                   |                 | 0.00 | 1.61 29.791 | 50.34 203.35  | 0.650         | 0.000 | 5.00                 | 9.641             | 6.27       | 315.5        | 0.0                     | 270.7                    | 270.7                    |
| 178.0                   | Appertunance(s) | 0.00 | 1.61 29.936 | 50.59 198.25  | 0.650         | 0.000 | 3.00                 | 5.578             | 3.63       | 183.4        | 0.0                     | 156.6                    | 156.6                    |
| Totals:                 |                 |      |             |               |               |       | 178.00               |                   |            |              | 14,967.8                | 0.0                      | 32,204.2                 |

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

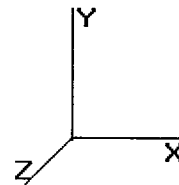
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Base Elev : 0.000 (ft)

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**Load Case:** No Ice

85.00 mph Wind with No Ice

26 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Discrete Appurtenance Segment Forces

| Elev<br>(ft) | Description          | Qty | qz<br>(psf) | qzGh<br>(psf) | CaAa<br>Factor | Total<br>CaAa<br>(sf) | Horiz<br>Ecc<br>(ft) | Vert<br>Ecc<br>(ft) | Wind<br>FX<br>(lb) | Mom<br>Y<br>(lb-ft) | Mom<br>Z<br>(lb-ft) | Dead<br>Load<br>(lb) |
|--------------|----------------------|-----|-------------|---------------|----------------|-----------------------|----------------------|---------------------|--------------------|---------------------|---------------------|----------------------|
| 86.00        | GPS                  | 1   | 24.358      | 41.166        | 1.00           | 1.00                  | 0.000                | 0.500               | 41.17              | 0.00                | 20.58               | 10.00                |
| 86.00        | Standoff             | 1   | 24.318      | 41.098        | 1.00           | 3.50                  | 0.000                | 0.000               | 143.84             | 0.00                | 0.00                | 200.00               |
| 95.00        | GPS                  | 1   | 25.057      | 42.347        | 1.00           | 1.00                  | 0.000                | 0.500               | 42.35              | 0.00                | 21.17               | 10.00                |
| 95.00        | Standoff             | 1   | 25.020      | 42.283        | 1.00           | 3.50                  | 0.000                | 0.000               | 147.99             | 0.00                | 0.00                | 200.00               |
| 108.0        | GPS                  | 1   | 25.988      | 43.919        | 1.00           | 1.00                  | 0.000                | 0.500               | 43.92              | 0.00                | 21.96               | 10.00                |
| 108.0        | Standoff             | 1   | 25.953      | 43.861        | 1.00           | 3.50                  | 0.000                | 0.000               | 153.51             | 0.00                | 0.00                | 200.00               |
| 137.0        | Low Profile Platform | 1   | 27.778      | 46.946        | 1.00           | 26.10                 | 0.000                | 0.000               | 1,225.28           | 0.00                | 0.00                | 1,500.00             |
| 137.0        | Powerwave 7770.00    | 6   | 27.778      | 46.946        | 0.75           | 26.46                 | 0.000                | 0.000               | 1,242.18           | 0.00                | 0.00                | 210.00               |
| 137.0        | Powerwave LGP21401   | 6   | 27.778      | 46.946        | 0.50           | 3.87                  | 0.000                | 0.000               | 181.68             | 0.00                | 0.00                | 84.60                |
| 137.0        | Powerwave LGP21903   | 6   | 27.778      | 46.946        | 0.50           | 0.81                  | 0.000                | 0.000               | 38.03              | 0.00                | 0.00                | 33.00                |
| 148.0        | Allgon 7250.02       | 4   | 28.398      | 47.993        | 0.72           | 11.03                 | 0.000                | 0.000               | 529.38             | 0.00                | 0.00                | 60.00                |
| 148.0        | EMS RR90-17-02DP     | 2   | 28.398      | 47.993        | 1.00           | 8.72                  | 0.000                | 0.000               | 418.50             | 0.00                | 0.00                | 36.00                |
| 148.0        | Low Profile Platform | 1   | 28.398      | 47.993        | 1.00           | 21.70                 | 0.000                | 0.000               | 1,041.44           | 0.00                | 0.00                | 1,500.00             |
| 158.0        | Antel BXA-171085-8BF | 3   | 28.934      | 48.898        | 0.87           | 7.67                  | 0.000                | 0.000               | 375.21             | 0.00                | 0.00                | 31.50                |
| 158.0        | Antel BXA-70063/6CF  | 3   | 28.934      | 48.898        | 0.74           | 17.16                 | 0.000                | 0.000               | 839.12             | 0.00                | 0.00                | 51.00                |
| 158.0        | Antel LPA-80080/4CF  | 6   | 28.934      | 48.898        | 1.66           | 26.10                 | 0.000                | 0.000               | 1,276.00           | 0.00                | 0.00                | 72.00                |
| 158.0        | Low Profile Platform | 1   | 28.934      | 48.898        | 1.00           | 26.10                 | 0.000                | 0.000               | 1,276.24           | 0.00                | 0.00                | 1,500.00             |
| 158.0        | RFS FD9R6004/1C-3L   | 6   | 28.934      | 48.898        | 0.50           | 1.11                  | 0.000                | 0.000               | 54.28              | 0.00                | 0.00                | 18.60                |
| 168.0        | Decibel DB980H90A-   | 6   | 29.446      | 49.763        | 0.79           | 18.01                 | 0.000                | 0.000               | 896.33             | 0.00                | 0.00                | 54.00                |
| 168.0        | Low Profile Platform | 1   | 29.446      | 49.763        | 1.00           | 21.70                 | 0.000                | 0.000               | 1,079.85           | 0.00                | 0.00                | 1,500.00             |
| 178.0        | 72" x 12" Panels     | 3   | 30.032      | 50.754        | 0.75           | 18.90                 | 0.000                | 2.000               | 959.24             | 0.00                | 1,918.49            | 120.00               |
| 178.0        | Allgon 7120.16.05.00 | 9   | 30.032      | 50.754        | 1.22           | 43.81                 | 0.000                | 2.000               | 2,223.53           | 0.00                | 4,447.05            | 135.00               |
| 178.0        | Low Profile Platform | 1   | 29.936      | 50.592        | 1.00           | 26.10                 | 0.000                | 0.000               | 1,320.45           | 0.00                | 0.00                | 1,500.00             |
|              |                      |     |             |               |                |                       |                      |                     | 15,549.52          |                     |                     | 9,035.70             |

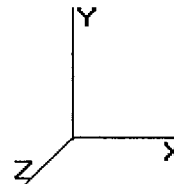


Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** No Ice                      85.00 mph Wind with No Ice                      26 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Applied Segment Forces Summary

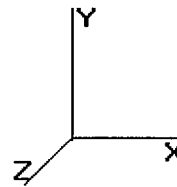
| Seg<br>Elev<br>(ft) | Lateral<br>FX (-)<br>(lb) | Axial<br>FY (-)<br>(lb) | Torsion<br>MY<br>(lb-ft) | Moment<br>MZ<br>(lb-ft) |
|---------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00                | 0.00                      | 0.00                    | 0.00                     | 0.00                    |
| 5.00                | 477.41                    | 1,721.35                | 0.00                     | 0.00                    |
| 10.00               | 468.64                    | 1,693.40                | 0.00                     | 0.00                    |
| 15.00               | 459.88                    | 1,665.46                | 0.00                     | 0.00                    |
| 20.00               | 451.12                    | 1,637.51                | 0.00                     | 0.00                    |
| 25.00               | 442.36                    | 1,609.56                | 0.00                     | 0.00                    |
| 30.00               | 433.59                    | 1,581.62                | 0.00                     | 0.00                    |
| 35.00               | 432.03                    | 1,553.67                | 0.00                     | 0.00                    |
| 40.00               | 439.58                    | 1,525.72                | 0.00                     | 0.00                    |
| 42.75               | 242.38                    | 827.24                  | 0.00                     | 0.00                    |
| 45.00               | 202.47                    | 1,146.70                | 0.00                     | 0.00                    |
| 49.00               | 363.90                    | 2,013.25                | 0.00                     | 0.00                    |
| 50.00               | 90.52                     | 248.97                  | 0.00                     | 0.00                    |
| 55.00               | 458.99                    | 1,231.21                | 0.00                     | 0.00                    |
| 60.00               | 460.15                    | 1,208.50                | 0.00                     | 0.00                    |
| 65.00               | 460.16                    | 1,185.80                | 0.00                     | 0.00                    |
| 70.00               | 459.14                    | 1,163.09                | 0.00                     | 0.00                    |
| 75.00               | 457.20                    | 1,140.39                | 0.00                     | 0.00                    |
| 80.00               | 454.43                    | 1,117.68                | 0.00                     | 0.00                    |
| 85.00               | 450.89                    | 1,094.97                | 0.00                     | 0.00                    |
| 86.00               | 274.10                    | 426.27                  | 0.00                     | 20.58                   |
| 87.00               | 88.93                     | 215.21                  | 0.00                     | 0.00                    |
| 90.00               | 271.23                    | 1,082.86                | 0.00                     | 0.00                    |
| 92.00               | 179.61                    | 713.52                  | 0.00                     | 0.00                    |
| 95.00               | 458.68                    | 768.04                  | 0.00                     | 21.17                   |
| 100.0               | 444.22                    | 913.95                  | 0.00                     | 0.00                    |
| 105.0               | 438.26                    | 894.74                  | 0.00                     | 0.00                    |
| 108.0               | 456.61                    | 737.62                  | 0.00                     | 21.96                   |
| 110.0               | 171.22                    | 347.60                  | 0.00                     | 0.00                    |
| 115.0               | 424.77                    | 855.56                  | 0.00                     | 0.00                    |
| 120.0               | 417.29                    | 836.35                  | 0.00                     | 0.00                    |
| 125.0               | 409.37                    | 817.14                  | 0.00                     | 0.00                    |
| 130.0               | 401.02                    | 797.92                  | 0.00                     | 0.00                    |
| 132.0               | 157.46                    | 313.79                  | 0.00                     | 0.00                    |
| 135.0               | 237.11                    | 684.58                  | 0.00                     | 0.00                    |
| 136.0               | 78.15                     | 225.68                  | 0.00                     | 0.00                    |
| 137.0               | 2,764.96                  | 1,941.35                | 0.00                     | 0.00                    |
| 140.0               | 231.64                    | 315.65                  | 0.00                     | 0.00                    |
| 145.0               | 379.25                    | 516.30                  | 0.00                     | 0.00                    |
| 148.0               | 2,211.75                  | 1,899.91                | 0.00                     | 0.00                    |
| 150.0               | 146.15                    | 180.48                  | 0.00                     | 0.00                    |
| 155.0               | 359.28                    | 442.65                  | 0.00                     | 0.00                    |
| 158.0               | 4,031.03                  | 1,932.82                | 0.00                     | 0.00                    |
| 160.0               | 137.87                    | 151.02                  | 0.00                     | 0.00                    |
| 165.0               | 338.00                    | 368.99                  | 0.00                     | 0.00                    |
| 168.0               | 2,173.33                  | 1,769.53                | 0.00                     | 0.00                    |
| 170.0               | 129.08                    | 131.40                  | 0.00                     | 0.00                    |
| 175.0               | 315.51                    | 319.94                  | 0.00                     | 0.00                    |
| 178.0               | 4,686.63                  | 1,941.10                | 0.00                     | 6,365.54                |

Pole : 302472  
Location : Andover Bunker Hill Road, CT  
Height : 178.0 (ft)  
Base Dia : 56.91 (in)  
Top Dia : 22.00 (in)  
Shape : 18 Sides  
Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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|                             |                            |               |
|-----------------------------|----------------------------|---------------|
| <b>Load Case:</b> No Ice    | 85.00 mph Wind with No Ice | 26 Iterations |
| Gust Response Factor : 1.69 |                            |               |
| Dead Load Factor : 1.00     |                            |               |
| Wind Load Factor : 1.00     |                            |               |

|         |           |           |      |          |
|---------|-----------|-----------|------|----------|
| Totals: | 30,517.36 | 47,908.06 | 0.00 | 6,429.25 |
|---------|-----------|-----------|------|----------|

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
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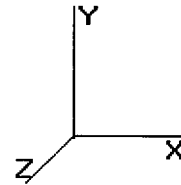
Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** No Ice

85.00 mph Wind with No Ice

26 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Calculated Shaft Forces and Deflections

| Seg Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | X Deflect (in) | Z Deflect (in) | Total Deflect (in) | Rotation (deg) |
|---------------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|--------------------|----------------|
| 0.00          | -30.581               | -47.867             | 0.000             | 0.000               | 0.000                | -3,899.185          | 0.000          | 0.000          | 0.000              | 0.000          |
| 5.00          | -30.224               | -46.066             | 0.000             | 0.000               | 0.000                | -3,746.283          | -0.081         | 0.000          | 0.081              | -0.151         |
| 10.00         | -29.868               | -44.294             | 0.000             | 0.000               | 0.000                | -3,595.167          | -0.322         | 0.000          | 0.322              | -0.304         |
| 15.00         | -29.514               | -42.551             | 0.000             | 0.000               | 0.000                | -3,445.829          | -0.724         | 0.000          | 0.724              | -0.460         |
| 20.00         | -29.161               | -40.837             | 0.000             | 0.000               | 0.000                | -3,298.264          | -1.290         | 0.000          | 1.290              | -0.618         |
| 25.00         | -28.809               | -39.152             | 0.000             | 0.000               | 0.000                | -3,152.464          | -2.024         | 0.000          | 2.024              | -0.778         |
| 30.00         | -28.459               | -37.496             | 0.000             | 0.000               | 0.000                | -3,008.422          | -2.926         | 0.000          | 2.926              | -0.941         |
| 35.00         | -28.103               | -35.869             | 0.000             | 0.000               | 0.000                | -2,866.131          | -4.000         | 0.000          | 4.000              | -1.106         |
| 40.00         | -27.710               | -34.290             | 0.000             | 0.000               | 0.000                | -2,725.618          | -5.247         | 0.000          | 5.247              | -1.272         |
| 42.75         | -27.498               | -33.427             | 0.000             | 0.000               | 0.000                | -2,649.417          | -6.008         | 0.000          | 6.008              | -1.367         |
| 45.00         | -27.329               | -32.235             | 0.000             | 0.000               | 0.000                | -2,587.547          | -6.671         | 0.000          | 6.671              | -1.444         |
| 49.00         | -26.957               | -30.191             | 0.000             | 0.000               | 0.000                | -2,478.234          | -7.940         | 0.000          | 7.940              | -1.582         |
| 50.00         | -26.922               | -29.889             | 0.000             | 0.000               | 0.000                | -2,451.277          | -8.275         | 0.000          | 8.275              | -1.617         |
| 55.00         | -26.527               | -28.579             | 0.000             | 0.000               | 0.000                | -2,316.670          | -10.076        | 0.000          | 10.076             | -1.818         |
| 60.00         | -26.124               | -27.294             | 0.000             | 0.000               | 0.000                | -2,184.037          | -12.089        | 0.000          | 12.089             | -2.021         |
| 65.00         | -25.713               | -26.034             | 0.000             | 0.000               | 0.000                | -2,053.420          | -14.315        | 0.000          | 14.315             | -2.225         |
| 70.00         | -25.297               | -24.799             | 0.000             | 0.000               | 0.000                | -1,924.855          | -16.755        | 0.000          | 16.755             | -2.431         |
| 75.00         | -24.875               | -23.590             | 0.000             | 0.000               | 0.000                | -1,798.372          | -19.412        | 0.000          | 19.412             | -2.638         |
| 80.00         | -24.449               | -22.407             | 0.000             | 0.000               | 0.000                | -1,673.998          | -22.285        | 0.000          | 22.285             | -2.846         |
| 85.00         | -23.989               | -21.285             | 0.000             | 0.000               | 0.000                | -1,551.754          | -25.376        | 0.000          | 25.376             | -3.054         |
| 86.00         | -23.708               | -20.856             | 0.000             | 0.000               | 0.000                | -1,527.745          | -26.021        | 0.000          | 26.021             | -3.097         |
| 87.00         | -23.638               | -20.611             | 0.000             | 0.000               | 0.000                | -1,504.037          | -26.674        | 0.000          | 26.674             | -3.140         |
| 90.00         | -23.343               | -19.502             | 0.000             | 0.000               | 0.000                | -1,433.124          | -28.687        | 0.000          | 28.687             | -3.267         |
| 92.00         | -23.157               | -18.757             | 0.000             | 0.000               | 0.000                | -1,386.439          | -30.073        | 0.000          | 30.073             | -3.352         |
| 95.00         | -22.710               | -17.947             | 0.000             | 0.000               | 0.000                | -1,316.948          | -32.219        | 0.000          | 32.219             | -3.478         |
| 100.0         | -22.277               | -16.974             | 0.000             | 0.000               | 0.000                | -1,203.402          | -35.983        | 0.000          | 35.983             | -3.708         |
| 105.0         | -21.831               | -16.042             | 0.000             | 0.000               | 0.000                | -1,092.019          | -39.985        | 0.000          | 39.985             | -3.935         |
| 108.0         | -21.354               | -15.295             | 0.000             | 0.000               | 0.000                | -1,026.506          | -42.500        | 0.000          | 42.500             | -4.071         |
| 110.0         | -21.199               | -14.903             | 0.000             | 0.000               | 0.000                | -983.799            | -44.224        | 0.000          | 44.224             | -4.163         |
| 115.0         | -20.764               | -14.004             | 0.000             | 0.000               | 0.000                | -877.805            | -48.698        | 0.000          | 48.698             | -4.381         |
| 120.0         | -20.331               | -13.129             | 0.000             | 0.000               | 0.000                | -773.984            | -53.396        | 0.000          | 53.396             | -4.593         |
| 125.0         | -19.898               | -12.279             | 0.000             | 0.000               | 0.000                | -672.332            | -58.312        | 0.000          | 58.312             | -4.796         |
| 130.0         | -19.457               | -11.474             | 0.000             | 0.000               | 0.000                | -572.841            | -63.434        | 0.000          | 63.434             | -4.989         |
| 132.0         | -19.291               | -11.144             | 0.000             | 0.000               | 0.000                | -533.927            | -65.538        | 0.000          | 65.538             | -5.065         |
| 135.0         | -19.007               | -10.460             | 0.000             | 0.000               | 0.000                | -476.055            | -68.752        | 0.000          | 68.752             | -5.172         |
| 136.0         | -18.915               | -10.231             | 0.000             | 0.000               | 0.000                | -457.048            | -69.838        | 0.000          | 69.838             | -5.207         |
| 137.0         | -15.998               | -8.524              | 0.000             | 0.000               | 0.000                | -438.134            | -70.931        | 0.000          | 70.931             | -5.242         |
| 140.0         | -15.765               | -8.180              | 0.000             | 0.000               | 0.000                | -390.141            | -74.268        | 0.000          | 74.268             | -5.387         |
| 145.0         | -15.360               | -7.658              | 0.000             | 0.000               | 0.000                | -311.319            | -80.022        | 0.000          | 80.022             | -5.606         |
| 148.0         | -12.981               | -5.964              | 0.000             | 0.000               | 0.000                | -265.240            | -83.579        | 0.000          | 83.579             | -5.725         |
| 150.0         | -12.830               | -5.772              | 0.000             | 0.000               | 0.000                | -239.278            | -85.990        | 0.000          | 85.990             | -5.800         |
| 155.0         | -12.438               | -5.343              | 0.000             | 0.000               | 0.000                | -175.129            | -92.144        | 0.000          | 92.144             | -5.960         |
| 158.0         | -8.231                | -3.833              | 0.000             | 0.000               | 0.000                | -137.814            | -95.910        | 0.000          | 95.910             | -6.042         |
| 160.0         | -8.083                | -3.687              | 0.000             | 0.000               | 0.000                | -121.351            | -98.447        | 0.000          | 98.447             | -6.090         |
| 165.0         | -7.712                | -3.347              | 0.000             | 0.000               | 0.000                | -80.935             | -104.869       | 0.000          | 104.869            | -6.189         |
| 168.0         | -5.361                | -1.820              | 0.000             | 0.000               | 0.000                | -57.799             | -108.766       | 0.000          | 108.766            | -6.235         |
| 170.0         | -5.219                | -1.700              | 0.000             | 0.000               | 0.000                | -47.077             | -111.378       | 0.000          | 111.378            | -6.260         |
| 175.0         | -4.872                | -1.414              | 0.000             | 0.000               | 0.000                | -20.980             | -117.947       | 0.000          | 117.947            | -6.303         |
| 178.0         | -4.687                | 0.000               | 0.000             | 0.000               | 0.000                | -6.366              | -121.904       | 0.000          | 121.904            | -6.314         |



Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

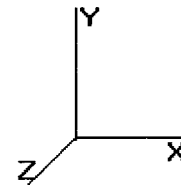
Code: TIA/EIA-222 Rev F

Base Elev: 0.000 (ft)

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|                             |                            |               |
|-----------------------------|----------------------------|---------------|
| <b>Load Case:</b> No Ice    | 85.00 mph Wind with No Ice | 26 Iterations |
| Gust Response Factor : 1.69 |                            |               |
| Dead Load Factor : 1.00     |                            |               |
| Wind Load Factor : 1.00     |                            |               |

### Calculated Stresses

| Seg<br>Elev<br>(ft) | Applied Stresses   |                    |                    |                  | Allowable            |                      |                   | Stress<br>Ratio |                      |       |
|---------------------|--------------------|--------------------|--------------------|------------------|----------------------|----------------------|-------------------|-----------------|----------------------|-------|
|                     | Axial (Y)<br>(ksi) | Shear (X)<br>(ksi) | Shear (Z)<br>(ksi) | Torsion<br>(ksi) | Bending (X)<br>(ksi) | Bending (Z)<br>(ksi) | Combined<br>(ksi) |                 | Stress (Fb)<br>(ksi) |       |
| 0.00                | 0.53               | 0.69               | 0.00               | 0.00             | 0.00                 | 37.56                | 38.12             | 52.0            | 0.0                  | 0.733 |
| 5.00                | 0.52               | 0.69               | 0.00               | 0.00             | 0.00                 | 37.46                | 38.00             | 52.0            | 0.0                  | 0.731 |
| 10.00               | 0.51               | 0.70               | 0.00               | 0.00             | 0.00                 | 37.34                | 37.87             | 52.0            | 0.0                  | 0.729 |
| 15.00               | 0.50               | 0.70               | 0.00               | 0.00             | 0.00                 | 37.20                | 37.72             | 52.0            | 0.0                  | 0.726 |
| 20.00               | 0.49               | 0.71               | 0.00               | 0.00             | 0.00                 | 37.03                | 37.55             | 52.0            | 0.0                  | 0.722 |
| 25.00               | 0.48               | 0.71               | 0.00               | 0.00             | 0.00                 | 36.85                | 37.35             | 52.0            | 0.0                  | 0.719 |
| 30.00               | 0.47               | 0.72               | 0.00               | 0.00             | 0.00                 | 36.64                | 37.13             | 52.0            | 0.0                  | 0.714 |
| 35.00               | 0.46               | 0.73               | 0.00               | 0.00             | 0.00                 | 36.40                | 36.88             | 52.0            | 0.0                  | 0.709 |
| 40.00               | 0.45               | 0.73               | 0.00               | 0.00             | 0.00                 | 36.13                | 36.60             | 52.0            | 0.0                  | 0.704 |
| 42.75               | 0.44               | 0.73               | 0.00               | 0.00             | 0.00                 | 35.97                | 36.43             | 52.0            | 0.0                  | 0.701 |
| 45.00               | 0.43               | 0.74               | 0.00               | 0.00             | 0.00                 | 35.83                | 36.28             | 52.0            | 0.0                  | 0.698 |
| 49.00               | 0.50               | 0.89               | 0.00               | 0.00             | 0.00                 | 42.01                | 42.53             | 52.0            | 0.0                  | 0.818 |
| 50.00               | 0.49               | 0.90               | 0.00               | 0.00             | 0.00                 | 41.92                | 42.44             | 52.0            | 0.0                  | 0.817 |
| 55.00               | 0.48               | 0.90               | 0.00               | 0.00             | 0.00                 | 41.43                | 41.94             | 52.0            | 0.0                  | 0.807 |
| 60.00               | 0.47               | 0.91               | 0.00               | 0.00             | 0.00                 | 40.89                | 41.39             | 52.0            | 0.0                  | 0.796 |
| 65.00               | 0.46               | 0.92               | 0.00               | 0.00             | 0.00                 | 40.29                | 40.78             | 52.0            | 0.0                  | 0.785 |
| 70.00               | 0.45               | 0.92               | 0.00               | 0.00             | 0.00                 | 39.62                | 40.10             | 52.0            | 0.0                  | 0.772 |
| 75.00               | 0.44               | 0.93               | 0.00               | 0.00             | 0.00                 | 38.89                | 39.36             | 52.0            | 0.0                  | 0.757 |
| 80.00               | 0.43               | 0.94               | 0.00               | 0.00             | 0.00                 | 38.07                | 38.53             | 52.0            | 0.0                  | 0.741 |
| 85.00               | 0.42               | 0.94               | 0.00               | 0.00             | 0.00                 | 37.16                | 37.61             | 52.0            | 0.0                  | 0.724 |
| 86.00               | 0.41               | 0.94               | 0.00               | 0.00             | 0.00                 | 36.97                | 37.42             | 52.0            | 0.0                  | 0.720 |
| 87.00               | 0.41               | 0.94               | 0.00               | 0.00             | 0.00                 | 36.78                | 37.23             | 52.0            | 0.0                  | 0.716 |
| 90.00               | 0.39               | 0.94               | 0.00               | 0.00             | 0.00                 | 36.19                | 36.62             | 52.0            | 0.0                  | 0.704 |
| 92.00               | 0.44               | 1.10               | 0.00               | 0.00             | 0.00                 | 40.60                | 41.08             | 52.0            | 0.0                  | 0.790 |
| 95.00               | 0.43               | 1.09               | 0.00               | 0.00             | 0.00                 | 39.83                | 40.30             | 52.0            | 0.0                  | 0.775 |
| 100.00              | 0.42               | 1.10               | 0.00               | 0.00             | 0.00                 | 38.45                | 38.91             | 52.0            | 0.0                  | 0.749 |
| 105.00              | 0.40               | 1.11               | 0.00               | 0.00             | 0.00                 | 36.91                | 37.37             | 52.0            | 0.0                  | 0.719 |
| 108.00              | 0.39               | 1.10               | 0.00               | 0.00             | 0.00                 | 35.92                | 36.37             | 52.0            | 0.0                  | 0.700 |
| 110.00              | 0.39               | 1.11               | 0.00               | 0.00             | 0.00                 | 35.24                | 35.68             | 52.0            | 0.0                  | 0.686 |
| 115.00              | 0.37               | 1.12               | 0.00               | 0.00             | 0.00                 | 33.39                | 33.82             | 52.0            | 0.0                  | 0.651 |
| 120.00              | 0.36               | 1.13               | 0.00               | 0.00             | 0.00                 | 31.31                | 31.73             | 52.0            | 0.0                  | 0.610 |
| 125.00              | 0.35               | 1.14               | 0.00               | 0.00             | 0.00                 | 28.98                | 29.40             | 52.0            | 0.0                  | 0.566 |
| 130.00              | 0.34               | 1.15               | 0.00               | 0.00             | 0.00                 | 26.37                | 26.78             | 52.0            | 0.0                  | 0.515 |
| 132.00              | 0.33               | 1.16               | 0.00               | 0.00             | 0.00                 | 25.25                | 25.66             | 52.0            | 0.0                  | 0.494 |
| 135.00              | 0.32               | 1.17               | 0.00               | 0.00             | 0.00                 | 23.46                | 23.86             | 52.0            | 0.0                  | 0.459 |
| 136.00              | 0.48               | 1.80               | 0.00               | 0.00             | 0.00                 | 34.42                | 35.05             | 52.0            | 0.0                  | 0.674 |
| 137.00              | 0.41               | 1.53               | 0.00               | 0.00             | 0.00                 | 33.45                | 33.96             | 52.0            | 0.0                  | 0.653 |
| 140.00              | 0.40               | 1.54               | 0.00               | 0.00             | 0.00                 | 31.06                | 31.57             | 52.0            | 0.0                  | 0.607 |
| 145.00              | 0.39               | 1.56               | 0.00               | 0.00             | 0.00                 | 26.61                | 27.13             | 52.0            | 0.0                  | 0.522 |
| 148.00              | 0.31               | 1.35               | 0.00               | 0.00             | 0.00                 | 23.70                | 24.12             | 52.0            | 0.0                  | 0.464 |
| 150.00              | 0.30               | 1.35               | 0.00               | 0.00             | 0.00                 | 22.03                | 22.45             | 52.0            | 0.0                  | 0.432 |
| 155.00              | 0.29               | 1.36               | 0.00               | 0.00             | 0.00                 | 17.41                | 17.85             | 52.0            | 0.0                  | 0.343 |
| 158.00              | 0.21               | 0.92               | 0.00               | 0.00             | 0.00                 | 14.37                | 14.67             | 52.0            | 0.0                  | 0.282 |
| 160.00              | 0.21               | 0.92               | 0.00               | 0.00             | 0.00                 | 13.07                | 13.37             | 52.0            | 0.0                  | 0.257 |
| 165.00              | 0.20               | 0.91               | 0.00               | 0.00             | 0.00                 | 9.47                 | 9.80              | 52.0            | 0.0                  | 0.188 |
| 168.00              | 0.11               | 0.65               | 0.00               | 0.00             | 0.00                 | 7.12                 | 7.32              | 52.0            | 0.0                  | 0.141 |
| 170.00              | 0.10               | 0.65               | 0.00               | 0.00             | 0.00                 | 6.01                 | 6.21              | 52.0            | 0.0                  | 0.120 |
| 175.00              | 0.09               | 0.63               | 0.00               | 0.00             | 0.00                 | 2.93                 | 3.21              | 52.0            | 0.0                  | 0.062 |
| 178.00              | 0.00               | 0.62               | 0.00               | 0.00             | 0.00                 | 0.94                 | 1.43              | 52.0            | 0.0                  | 0.028 |

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

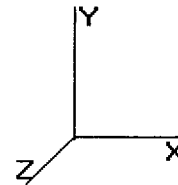
Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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### Load Case: Ice

73.61 mph Wind with Ice

26 Iterations

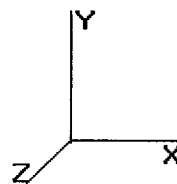
Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Shaft Segment Forces

| Seg Top<br>Elev<br>(ft) | Description     | Kz   | qz<br>(psf) | qzGh<br>(psf) | C<br>(mph-ft) | Cf    | Ice<br>Thick<br>(in) | Tributary<br>(ft) | Aa<br>(sf) | CfAa<br>(sf) | Wind<br>Force X<br>(lb) | Dead<br>Load Ice<br>(lb) | Tot Dead<br>Load<br>(lb) |
|-------------------------|-----------------|------|-------------|---------------|---------------|-------|----------------------|-------------------|------------|--------------|-------------------------|--------------------------|--------------------------|
| 0.00                    |                 | 0.00 | 1.00 13.871 | 23.44 349.09  | 0.650         | 0.500 | 0.00                 | 0.000             | 0.00       | 0.00         | 0.0                     | 0.0                      | 0.0                      |
| 5.00                    |                 | 0.00 | 1.00 13.871 | 23.44 342.74  | 0.650         | 0.500 | 5.00                 | 23.913            | 15.54      | 364.4        | 174.0                   | 1,683.1                  |                          |
| 10.00                   |                 | 0.00 | 1.00 13.871 | 23.44 336.39  | 0.650         | 0.500 | 5.00                 | 23.482            | 15.26      | 357.8        | 170.8                   | 1,651.9                  |                          |
| 15.00                   |                 | 0.00 | 1.00 13.871 | 23.44 330.04  | 0.650         | 0.500 | 5.00                 | 23.051            | 14.98      | 351.2        | 167.6                   | 1,620.8                  |                          |
| 20.00                   |                 | 0.00 | 1.00 13.871 | 23.44 323.69  | 0.650         | 0.500 | 5.00                 | 22.620            | 14.70      | 344.7        | 164.4                   | 1,589.6                  |                          |
| 25.00                   |                 | 0.00 | 1.00 13.871 | 23.44 317.34  | 0.650         | 0.500 | 5.00                 | 22.188            | 14.42      | 338.1        | 161.2                   | 1,558.5                  |                          |
| 30.00                   |                 | 0.00 | 1.00 13.871 | 23.44 311.00  | 0.650         | 0.500 | 5.00                 | 21.757            | 14.14      | 331.5        | 158.0                   | 1,527.4                  |                          |
| 35.00                   |                 | 0.00 | 1.01 14.106 | 23.84 307.22  | 0.650         | 0.500 | 5.00                 | 21.326            | 13.86      | 330.5        | 154.8                   | 1,496.2                  |                          |
| 40.00                   |                 | 0.00 | 1.05 14.655 | 24.76 306.61  | 0.650         | 0.500 | 5.00                 | 20.895            | 13.58      | 336.4        | 151.6                   | 1,465.1                  |                          |
| 42.75                   | Bot - Section 2 | 0.00 | 1.07 14.936 | 25.24 305.91  | 0.650         | 0.500 | 2.75                 | 11.308            | 7.35       | 185.5        | 82.4                    | 792.9                    |                          |
| 45.00                   |                 | 0.00 | 1.09 15.156 | 25.61 305.17  | 0.650         | 0.500 | 2.25                 | 9.307             | 6.05       | 155.0        | 67.9                    | 1,119.1                  |                          |
| 49.00                   | Top - Section 1 | 0.00 | 1.12 15.530 | 26.24 303.54  | 0.650         | 0.500 | 4.00                 | 16.331            | 10.62      | 278.6        | 118.7                   | 1,962.1                  |                          |
| 50.00                   |                 | 0.00 | 1.12 15.620 | 26.39 308.35  | 0.650         | 0.500 | 1.00                 | 4.040             | 2.63       | 69.3         | 29.5                    | 236.1                    |                          |
| 55.00                   |                 | 0.00 | 1.15 16.051 | 27.12 305.75  | 0.650         | 0.500 | 5.00                 | 19.939            | 12.96      | 351.6        | 144.5                   | 1,163.5                  |                          |
| 60.00                   |                 | 0.00 | 1.18 16.455 | 27.80 302.66  | 0.650         | 0.500 | 5.00                 | 19.508            | 12.68      | 352.6        | 141.3                   | 1,137.6                  |                          |
| 65.00                   |                 | 0.00 | 1.21 16.836 | 28.45 299.15  | 0.650         | 0.500 | 5.00                 | 19.077            | 12.40      | 352.8        | 138.1                   | 1,111.7                  |                          |
| 70.00                   |                 | 0.00 | 1.24 17.196 | 29.06 295.26  | 0.650         | 0.500 | 5.00                 | 18.646            | 12.12      | 352.2        | 134.9                   | 1,085.8                  |                          |
| 75.00                   |                 | 0.00 | 1.26 17.538 | 29.63 291.05  | 0.650         | 0.500 | 5.00                 | 18.214            | 11.84      | 350.9        | 131.8                   | 1,059.9                  |                          |
| 80.00                   |                 | 0.00 | 1.28 17.865 | 30.19 286.54  | 0.650         | 0.500 | 5.00                 | 17.783            | 11.56      | 349.0        | 128.6                   | 1,034.0                  |                          |
| 85.00                   |                 | 0.00 | 1.31 18.177 | 30.71 281.76  | 0.650         | 0.500 | 5.00                 | 17.352            | 11.28      | 346.5        | 125.4                   | 1,008.1                  |                          |
| 86.00                   | Appertunance(s) | 0.00 | 1.31 18.237 | 30.82 280.78  | 0.650         | 0.500 | 1.00                 | 3.419             | 2.22       | 68.5         | 24.9                    | 198.8                    |                          |
| 87.00                   | Bot - Section 3 | 0.00 | 1.31 18.298 | 30.92 279.78  | 0.650         | 0.500 | 1.00                 | 3.401             | 2.21       | 68.4         | 24.8                    | 197.7                    |                          |
| 90.00                   |                 | 0.00 | 1.33 18.476 | 31.22 276.74  | 0.650         | 0.500 | 3.00                 | 10.272            | 6.68       | 208.5        | 74.6                    | 1,030.5                  |                          |
| 92.00                   | Top - Section 2 | 0.00 | 1.34 18.592 | 31.42 274.67  | 0.650         | 0.500 | 2.00                 | 6.762             | 4.40       | 138.1        | 49.2                    | 678.1                    |                          |
| 95.00                   | Appertunance(s) | 0.00 | 1.35 18.764 | 31.71 276.41  | 0.650         | 0.500 | 3.00                 | 10.014            | 6.51       | 206.4        | 72.7                    | 503.8                    |                          |
| 100.0                   |                 | 0.00 | 1.37 19.041 | 32.17 271.00  | 0.650         | 0.500 | 5.00                 | 16.344            | 10.62      | 341.9        | 117.9                   | 821.1                    |                          |
| 105.0                   |                 | 0.00 | 1.39 19.308 | 32.63 265.41  | 0.650         | 0.500 | 5.00                 | 15.913            | 10.34      | 337.5        | 114.7                   | 798.7                    |                          |
| 108.0                   | Appertunance(s) | 0.00 | 1.40 19.464 | 32.89 261.97  | 0.650         | 0.500 | 3.00                 | 9.341             | 6.07       | 199.7        | 67.7                    | 468.8                    |                          |
| 110.0                   |                 | 0.00 | 1.41 19.566 | 33.06 259.64  | 0.650         | 0.500 | 2.00                 | 6.141             | 3.99       | 132.0        | 44.6                    | 308.2                    |                          |
| 115.0                   |                 | 0.00 | 1.42 19.816 | 33.49 253.70  | 0.650         | 0.500 | 5.00                 | 15.051            | 9.78       | 327.6        | 108.3                   | 753.9                    |                          |
| 120.0                   |                 | 0.00 | 1.44 20.059 | 33.89 247.62  | 0.650         | 0.500 | 5.00                 | 14.619            | 9.50       | 322.1        | 105.1                   | 731.5                    |                          |
| 125.0                   |                 | 0.00 | 1.46 20.294 | 34.29 241.39  | 0.650         | 0.500 | 5.00                 | 14.188            | 9.22       | 316.3        | 101.9                   | 709.1                    |                          |
| 130.0                   |                 | 0.00 | 1.48 20.523 | 34.68 235.02  | 0.650         | 0.500 | 5.00                 | 13.757            | 8.94       | 310.1        | 98.7                    | 686.7                    |                          |
| 132.0                   | Bot - Section 4 | 0.00 | 1.48 20.612 | 34.83 232.44  | 0.650         | 0.500 | 2.00                 | 5.382             | 3.50       | 121.9        | 39.0                    | 268.8                    |                          |
| 135.0                   |                 | 0.00 | 1.49 20.745 | 35.05 228.52  | 0.650         | 0.500 | 3.00                 | 8.053             | 5.23       | 183.5        | 58.1                    | 616.7                    |                          |
| 136.0                   | Top - Section 3 | 0.00 | 1.49 20.789 | 35.13 227.21  | 0.650         | 0.500 | 1.00                 | 2.650             | 1.72       | 60.5         | 19.3                    | 202.9                    |                          |
| 137.0                   | Appertunance(s) | 0.00 | 1.50 20.833 | 35.20 229.18  | 0.650         | 0.500 | 1.00                 | 2.633             | 1.71       | 60.2         | 19.1                    | 90.9                     |                          |
| 140.0                   |                 | 0.00 | 1.51 20.962 | 35.42 225.21  | 0.650         | 0.500 | 3.00                 | 7.794             | 5.07       | 179.5        | 56.2                    | 268.5                    |                          |
| 145.0                   |                 | 0.00 | 1.52 21.173 | 35.78 218.50  | 0.650         | 0.500 | 5.00                 | 12.645            | 8.22       | 294.1        | 90.5                    | 434.6                    |                          |
| 148.0                   | Appertunance(s) | 0.00 | 1.53 21.297 | 35.99 214.42  | 0.650         | 0.500 | 3.00                 | 7.380             | 4.80       | 172.7        | 53.2                    | 253.7                    |                          |
| 150.0                   |                 | 0.00 | 1.54 21.379 | 36.13 211.68  | 0.650         | 0.500 | 2.00                 | 4.834             | 3.14       | 113.5        | 34.9                    | 166.2                    |                          |
| 155.0                   |                 | 0.00 | 1.55 21.580 | 36.47 204.75  | 0.650         | 0.500 | 5.00                 | 11.783            | 7.66       | 279.3        | 84.1                    | 403.8                    |                          |
| 158.0                   | Appertunance(s) | 0.00 | 1.56 21.699 | 36.67 200.55  | 0.650         | 0.500 | 3.00                 | 6.863             | 4.46       | 163.6        | 49.3                    | 235.2                    |                          |
| 160.0                   |                 | 0.00 | 1.57 21.777 | 36.80 197.73  | 0.650         | 0.500 | 2.00                 | 4.489             | 2.92       | 107.4        | 32.4                    | 153.9                    |                          |
| 165.0                   |                 | 0.00 | 1.58 21.969 | 37.12 190.61  | 0.650         | 0.500 | 5.00                 | 10.920            | 7.10       | 263.5        | 77.7                    | 372.9                    |                          |
| 168.0                   | Appertunance(s) | 0.00 | 1.59 22.083 | 37.32 186.29  | 0.650         | 0.500 | 3.00                 | 6.345             | 4.12       | 153.9        | 45.5                    | 216.7                    |                          |
| 170.0                   |                 | 0.00 | 1.59 22.158 | 37.44 183.40  | 0.650         | 0.500 | 2.00                 | 4.144             | 2.69       | 100.9        | 29.8                    | 141.5                    |                          |
| 175.0                   |                 | 0.00 | 1.61 22.342 | 37.75 176.10  | 0.650         | 0.500 | 5.00                 | 10.058            | 6.54       | 246.8        | 71.3                    | 342.1                    |                          |
| 178.0                   | Appertunance(s) | 0.00 | 1.61 22.451 | 37.94 171.68  | 0.650         | 0.500 | 3.00                 | 5.828             | 3.79       | 143.7        | 41.7                    | 198.2                    |                          |
| Totals:                 |                 |      |             |               |               |       | 178.00               |                   |            |              | 11,520.7                | 4,352.8                  | 36,556.9                 |

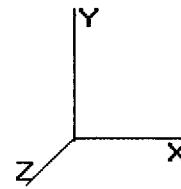
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Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** Ice

73.61 mph Wind with Ice

26 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

**Applied Segment Forces Summary**

| Seg<br>Elev<br>(ft) | Lateral<br>FX (-)<br>(lb) | Axial<br>FY (-)<br>(lb) | Torsion<br>MY<br>(lb-ft) | Moment<br>MZ<br>(lb-ft) |
|---------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00                | 0.00                      | 0.00                    | 0.00                     | 0.00                    |
| 5.00                | 364.38                    | 1,895.31                | 0.00                     | 0.00                    |
| 10.00               | 357.81                    | 1,864.17                | 0.00                     | 0.00                    |
| 15.00               | 351.24                    | 1,833.03                | 0.00                     | 0.00                    |
| 20.00               | 344.67                    | 1,801.89                | 0.00                     | 0.00                    |
| 25.00               | 338.10                    | 1,770.74                | 0.00                     | 0.00                    |
| 30.00               | 331.52                    | 1,739.60                | 0.00                     | 0.00                    |
| 35.00               | 330.46                    | 1,708.46                | 0.00                     | 0.00                    |
| 40.00               | 336.37                    | 1,677.32                | 0.00                     | 0.00                    |
| 42.75               | 185.54                    | 909.65                  | 0.00                     | 0.00                    |
| 45.00               | 154.96                    | 1,214.61                | 0.00                     | 0.00                    |
| 49.00               | 278.60                    | 2,131.94                | 0.00                     | 0.00                    |
| 50.00               | 69.31                     | 278.51                  | 0.00                     | 0.00                    |
| 55.00               | 351.57                    | 1,375.74                | 0.00                     | 0.00                    |
| 60.00               | 352.62                    | 1,349.84                | 0.00                     | 0.00                    |
| 65.00               | 352.80                    | 1,323.94                | 0.00                     | 0.00                    |
| 70.00               | 352.21                    | 1,298.04                | 0.00                     | 0.00                    |
| 75.00               | 350.91                    | 1,272.14                | 0.00                     | 0.00                    |
| 80.00               | 348.98                    | 1,246.24                | 0.00                     | 0.00                    |
| 85.00               | 346.46                    | 1,220.33                | 0.00                     | 0.00                    |
| 86.00               | 68.49                     | 241.21                  | 0.00                     | 0.00                    |
| 87.00               | 68.37                     | 240.03                  | 0.00                     | 0.00                    |
| 90.00               | 208.49                    | 1,157.43                | 0.00                     | 0.00                    |
| 92.00               | 138.11                    | 762.73                  | 0.00                     | 0.00                    |
| 95.00               | 206.40                    | 630.70                  | 0.00                     | 0.00                    |
| 100.0               | 341.86                    | 1,031.85                | 0.00                     | 0.00                    |
| 105.0               | 337.51                    | 1,009.45                | 0.00                     | 0.00                    |
| 108.0               | 387.60                    | 913.54                  | 0.00                     | 19.93                   |
| 110.0               | 131.99                    | 392.21                  | 0.00                     | 0.00                    |
| 115.0               | 327.62                    | 963.88                  | 0.00                     | 0.00                    |
| 120.0               | 322.13                    | 941.48                  | 0.00                     | 0.00                    |
| 125.0               | 316.29                    | 919.07                  | 0.00                     | 0.00                    |
| 130.0               | 310.14                    | 896.66                  | 0.00                     | 0.00                    |
| 132.0               | 121.86                    | 352.77                  | 0.00                     | 0.00                    |
| 135.0               | 183.52                    | 742.72                  | 0.00                     | 0.00                    |
| 136.0               | 60.51                     | 244.93                  | 0.00                     | 0.00                    |
| 137.0               | 2,409.08                  | 2,413.62                | 0.00                     | 0.00                    |
| 140.0               | 179.47                    | 371.87                  | 0.00                     | 0.00                    |
| 145.0               | 294.11                    | 606.81                  | 0.00                     | 0.00                    |
| 148.0               | 1,967.99                  | 2,270.95                | 0.00                     | 0.00                    |
| 150.0               | 113.52                    | 215.41                  | 0.00                     | 0.00                    |
| 155.0               | 279.32                    | 526.77                  | 0.00                     | 0.00                    |
| 158.0               | 5,093.97                  | 2,675.16                | 0.00                     | 0.00                    |
| 160.0               | 107.38                    | 183.39                  | 0.00                     | 0.00                    |
| 165.0               | 263.54                    | 446.73                  | 0.00                     | 0.00                    |
| 168.0               | 1,965.05                  | 2,135.02                | 0.00                     | 0.00                    |
| 170.0               | 100.86                    | 161.21                  | 0.00                     | 0.00                    |
| 175.0               | 246.84                    | 391.28                  | 0.00                     | 0.00                    |
| 178.0               | 4,803.72                  | 2,665.75                | 0.00                     | 6,922.09                |

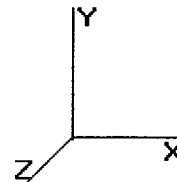


Pole : 302472  
Location : Andover Bunker Hill Road, CT  
Height : 178.0 (ft)  
Base Dia : 56.91 (in)  
Top Dia : 22.00 (in)  
Shape : 18 Sides  
Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** Ice

73.61 mph Wind with Ice

26 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

|         |           |           |      |          |
|---------|-----------|-----------|------|----------|
| Totals: | 27,254.27 | 54,416.10 | 0.00 | 6,942.02 |
|---------|-----------|-----------|------|----------|

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
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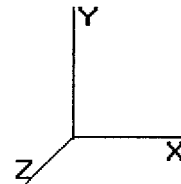
Code: TIA/EIA-222 Rev F

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#### Load Case: Ice

73.61 mph Wind with Ice

26 Iterations

Gust Response Factor : 1.69  
 Dead Load Factor : 1.00  
 Wind Load Factor : 1.00

#### Calculated Shaft Forces and Deflections

| Seg<br>Elev<br>(ft) | Lateral<br>FX (-)<br>(kips) | Axial<br>FY (-)<br>(kips) | Lateral<br>FZ<br>(kips) | Moment<br>MX<br>(ft-kips) | Torsion<br>MY<br>(ft-kips) | Moment<br>MZ<br>(ft-kips) | X<br>Deflect<br>(in) | Z<br>Deflect<br>(in) | Total<br>Deflect<br>(in) | Rotation<br>(deg) |
|---------------------|-----------------------------|---------------------------|-------------------------|---------------------------|----------------------------|---------------------------|----------------------|----------------------|--------------------------|-------------------|
| 0.00                | -27.323                     | -54.381                   | 0.000                   | 0.000                     | 0.000                      | -3,698.245                | 0.000                | 0.000                | 0.000                    | 0.000             |
| 5.00                | -27.089                     | -52.418                   | 0.000                   | 0.000                     | 0.000                      | -3,561.634                | -0.077               | 0.000                | 0.077                    | -0.143            |
| 10.00               | -26.854                     | -50.486                   | 0.000                   | 0.000                     | 0.000                      | -3,426.194                | -0.305               | 0.000                | 0.305                    | -0.289            |
| 15.00               | -26.618                     | -48.586                   | 0.000                   | 0.000                     | 0.000                      | -3,291.929                | -0.688               | 0.000                | 0.688                    | -0.438            |
| 20.00               | -26.381                     | -46.717                   | 0.000                   | 0.000                     | 0.000                      | -3,158.842                | -1.228               | 0.000                | 1.228                    | -0.589            |
| 25.00               | -26.144                     | -44.880                   | 0.000                   | 0.000                     | 0.000                      | -3,026.939                | -1.927               | 0.000                | 1.927                    | -0.743            |
| 30.00               | -25.906                     | -43.074                   | 0.000                   | 0.000                     | 0.000                      | -2,896.221                | -2.788               | 0.000                | 2.788                    | -0.899            |
| 35.00               | -25.662                     | -41.300                   | 0.000                   | 0.000                     | 0.000                      | -2,766.693                | -3.815               | 0.000                | 3.815                    | -1.058            |
| 40.00               | -25.379                     | -39.574                   | 0.000                   | 0.000                     | 0.000                      | -2,638.385                | -5.009               | 0.000                | 5.009                    | -1.219            |
| 42.75               | -25.230                     | -38.633                   | 0.000                   | 0.000                     | 0.000                      | -2,568.593                | -5.738               | 0.000                | 5.738                    | -1.310            |
| 45.00               | -25.115                     | -37.376                   | 0.000                   | 0.000                     | 0.000                      | -2,511.827                | -6.374               | 0.000                | 6.374                    | -1.386            |
| 49.00               | -24.834                     | -35.216                   | 0.000                   | 0.000                     | 0.000                      | -2,411.369                | -7.592               | 0.000                | 7.592                    | -1.519            |
| 50.00               | -24.828                     | -34.889                   | 0.000                   | 0.000                     | 0.000                      | -2,386.536                | -7.914               | 0.000                | 7.914                    | -1.554            |
| 55.00               | -24.552                     | -33.439                   | 0.000                   | 0.000                     | 0.000                      | -2,262.400                | -9.646               | 0.000                | 9.646                    | -1.750            |
| 60.00               | -24.267                     | -32.017                   | 0.000                   | 0.000                     | 0.000                      | -2,139.643                | -11.585              | 0.000                | 11.585                   | -1.948            |
| 65.00               | -23.975                     | -30.623                   | 0.000                   | 0.000                     | 0.000                      | -2,018.308                | -13.732              | 0.000                | 13.732                   | -2.149            |
| 70.00               | -23.677                     | -29.255                   | 0.000                   | 0.000                     | 0.000                      | -1,898.433                | -16.090              | 0.000                | 16.090                   | -2.351            |
| 75.00               | -23.372                     | -27.916                   | 0.000                   | 0.000                     | 0.000                      | -1,780.052                | -18.662              | 0.000                | 18.662                   | -2.556            |
| 80.00               | -23.061                     | -26.604                   | 0.000                   | 0.000                     | 0.000                      | -1,663.196                | -21.448              | 0.000                | 21.448                   | -2.762            |
| 85.00               | -22.709                     | -25.354                   | 0.000                   | 0.000                     | 0.000                      | -1,547.891                | -24.450              | 0.000                | 24.450                   | -2.969            |
| 86.00               | -22.647                     | -25.100                   | 0.000                   | 0.000                     | 0.000                      | -1,525.182                | -25.077              | 0.000                | 25.077                   | -3.012            |
| 87.00               | -22.603                     | -24.830                   | 0.000                   | 0.000                     | 0.000                      | -1,502.536                | -25.712              | 0.000                | 25.712                   | -3.055            |
| 90.00               | -22.375                     | -23.644                   | 0.000                   | 0.000                     | 0.000                      | -1,434.728                | -27.671              | 0.000                | 27.671                   | -3.181            |
| 92.00               | -22.237                     | -22.849                   | 0.000                   | 0.000                     | 0.000                      | -1,389.978                | -29.022              | 0.000                | 29.022                   | -3.266            |
| 95.00               | -22.064                     | -22.162                   | 0.000                   | 0.000                     | 0.000                      | -1,323.268                | -31.114              | 0.000                | 31.114                   | -3.393            |
| 100.0               | -21.745                     | -21.066                   | 0.000                   | 0.000                     | 0.000                      | -1,212.949                | -34.790              | 0.000                | 34.790                   | -3.624            |
| 105.0               | -21.406                     | -20.013                   | 0.000                   | 0.000                     | 0.000                      | -1,104.228                | -38.707              | 0.000                | 38.707                   | -3.854            |
| 108.0               | -20.995                     | -19.086                   | 0.000                   | 0.000                     | 0.000                      | -1,039.991                | -41.172              | 0.000                | 41.172                   | -3.992            |
| 110.0               | -20.888                     | -18.646                   | 0.000                   | 0.000                     | 0.000                      | -998.001                  | -42.863              | 0.000                | 42.863                   | -4.084            |
| 115.0               | -20.558                     | -17.630                   | 0.000                   | 0.000                     | 0.000                      | -893.565                  | -47.256              | 0.000                | 47.256                   | -4.306            |
| 120.0               | -20.226                     | -16.641                   | 0.000                   | 0.000                     | 0.000                      | -790.777                  | -51.879              | 0.000                | 51.879                   | -4.522            |
| 125.0               | -19.892                     | -15.680                   | 0.000                   | 0.000                     | 0.000                      | -689.649                  | -56.724              | 0.000                | 56.724                   | -4.731            |
| 130.0               | -19.543                     | -14.767                   | 0.000                   | 0.000                     | 0.000                      | -590.188                  | -61.780              | 0.000                | 61.780                   | -4.929            |
| 132.0               | -19.415                     | -14.394                   | 0.000                   | 0.000                     | 0.000                      | -551.103                  | -63.860              | 0.000                | 63.860                   | -5.007            |
| 135.0               | -19.184                     | -13.646                   | 0.000                   | 0.000                     | 0.000                      | -492.859                  | -67.038              | 0.000                | 67.038                   | -5.118            |
| 136.0               | -19.110                     | -13.395                   | 0.000                   | 0.000                     | 0.000                      | -473.676                  | -68.113              | 0.000                | 68.113                   | -5.154            |
| 137.0               | -16.512                     | -11.181                   | 0.000                   | 0.000                     | 0.000                      | -454.566                  | -69.195              | 0.000                | 69.195                   | -5.190            |
| 140.0               | -16.335                     | -10.773                   | 0.000                   | 0.000                     | 0.000                      | -405.031                  | -72.502              | 0.000                | 72.502                   | -5.341            |
| 145.0               | -16.015                     | -10.148                   | 0.000                   | 0.000                     | 0.000                      | -323.356                  | -78.213              | 0.000                | 78.213                   | -5.568            |
| 148.0               | -13.848                     | -8.058                    | 0.000                   | 0.000                     | 0.000                      | -275.310                  | -81.747              | 0.000                | 81.747                   | -5.692            |
| 150.0               | -13.731                     | -7.825                    | 0.000                   | 0.000                     | 0.000                      | -247.615                  | -84.145              | 0.000                | 84.145                   | -5.769            |
| 155.0               | -13.415                     | -7.301                    | 0.000                   | 0.000                     | 0.000                      | -178.962                  | -90.270              | 0.000                | 90.270                   | -5.934            |
| 158.0               | -8.075                      | -5.162                    | 0.000                   | 0.000                     | 0.000                      | -138.719                  | -94.020              | 0.000                | 94.020                   | -6.017            |
| 160.0               | -7.956                      | -4.980                    | 0.000                   | 0.000                     | 0.000                      | -122.568                  | -96.547              | 0.000                | 96.547                   | -6.066            |
| 165.0               | -7.652                      | -4.554                    | 0.000                   | 0.000                     | 0.000                      | -82.788                   | -102.944             | 0.000                | 102.944                  | -6.166            |
| 168.0               | -5.470                      | -2.640                    | 0.000                   | 0.000                     | 0.000                      | -59.832                   | -106.828             | 0.000                | 106.828                  | -6.213            |
| 170.0               | -5.354                      | -2.488                    | 0.000                   | 0.000                     | 0.000                      | -48.892                   | -109.431             | 0.000                | 109.431                  | -6.239            |
| 175.0               | -5.067                      | -2.123                    | 0.000                   | 0.000                     | 0.000                      | -22.123                   | -115.980             | 0.000                | 115.980                  | -6.284            |
| 178.0               | -4.804                      | 0.000                     | 0.000                   | 0.000                     | 0.000                      | -6.922                    | -119.925             | 0.000                | 119.925                  | -6.296            |

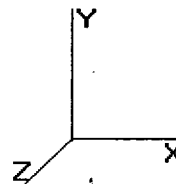
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 Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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### Load Case: Ice

73.61 mph Wind with Ice

26 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Calculated Stresses

| Seg<br>Elev<br>(ft) | Applied Stresses   |                    |                    |                  |                      |                      |                   | Allowable<br>Stress (Fb)<br>(ksi) | Stress<br>Ratio |       |
|---------------------|--------------------|--------------------|--------------------|------------------|----------------------|----------------------|-------------------|-----------------------------------|-----------------|-------|
|                     | Axial (Y)<br>(ksi) | Shear (X)<br>(ksi) | Shear (Z)<br>(ksi) | Torsion<br>(ksi) | Bending (X)<br>(ksi) | Bending (Z)<br>(ksi) | Combined<br>(ksi) |                                   |                 |       |
| 0.00                | 0.61               | 0.62               | 0.00               | 0.00             | 0.00                 | 35.63                | 36.25             | 52.0                              | 0.0             | 0.697 |
| 5.00                | 0.60               | 0.62               | 0.00               | 0.00             | 0.00                 | 35.61                | 36.23             | 52.0                              | 0.0             | 0.697 |
| 10.00               | 0.59               | 0.63               | 0.00               | 0.00             | 0.00                 | 35.58                | 36.18             | 52.0                              | 0.0             | 0.696 |
| 15.00               | 0.57               | 0.63               | 0.00               | 0.00             | 0.00                 | 35.54                | 36.13             | 52.0                              | 0.0             | 0.695 |
| 20.00               | 0.56               | 0.64               | 0.00               | 0.00             | 0.00                 | 35.47                | 36.05             | 52.0                              | 0.0             | 0.694 |
| 25.00               | 0.55               | 0.65               | 0.00               | 0.00             | 0.00                 | 35.38                | 35.95             | 52.0                              | 0.0             | 0.692 |
| 30.00               | 0.54               | 0.66               | 0.00               | 0.00             | 0.00                 | 35.27                | 35.83             | 52.0                              | 0.0             | 0.689 |
| 35.00               | 0.53               | 0.66               | 0.00               | 0.00             | 0.00                 | 35.13                | 35.68             | 52.0                              | 0.0             | 0.686 |
| 40.00               | 0.52               | 0.67               | 0.00               | 0.00             | 0.00                 | 34.97                | 35.51             | 52.0                              | 0.0             | 0.683 |
| 42.75               | 0.51               | 0.67               | 0.00               | 0.00             | 0.00                 | 34.87                | 35.40             | 52.0                              | 0.0             | 0.681 |
| 45.00               | 0.50               | 0.68               | 0.00               | 0.00             | 0.00                 | 34.78                | 35.30             | 52.0                              | 0.0             | 0.679 |
| 49.00               | 0.58               | 0.82               | 0.00               | 0.00             | 0.00                 | 40.88                | 41.48             | 52.0                              | 0.0             | 0.798 |
| 50.00               | 0.58               | 0.83               | 0.00               | 0.00             | 0.00                 | 40.81                | 41.41             | 52.0                              | 0.0             | 0.797 |
| 55.00               | 0.56               | 0.84               | 0.00               | 0.00             | 0.00                 | 40.46                | 41.05             | 52.0                              | 0.0             | 0.790 |
| 60.00               | 0.55               | 0.84               | 0.00               | 0.00             | 0.00                 | 40.06                | 40.64             | 52.0                              | 0.0             | 0.782 |
| 65.00               | 0.54               | 0.85               | 0.00               | 0.00             | 0.00                 | 39.60                | 40.17             | 52.0                              | 0.0             | 0.773 |
| 70.00               | 0.53               | 0.86               | 0.00               | 0.00             | 0.00                 | 39.08                | 39.64             | 52.0                              | 0.0             | 0.763 |
| 75.00               | 0.52               | 0.87               | 0.00               | 0.00             | 0.00                 | 38.49                | 39.04             | 52.0                              | 0.0             | 0.751 |
| 80.00               | 0.51               | 0.88               | 0.00               | 0.00             | 0.00                 | 37.82                | 38.36             | 52.0                              | 0.0             | 0.738 |
| 85.00               | 0.50               | 0.89               | 0.00               | 0.00             | 0.00                 | 37.07                | 37.59             | 52.0                              | 0.0             | 0.723 |
| 86.00               | 0.49               | 0.90               | 0.00               | 0.00             | 0.00                 | 36.91                | 37.43             | 52.0                              | 0.0             | 0.720 |
| 87.00               | 0.49               | 0.90               | 0.00               | 0.00             | 0.00                 | 36.75                | 37.27             | 52.0                              | 0.0             | 0.717 |
| 90.00               | 0.47               | 0.90               | 0.00               | 0.00             | 0.00                 | 36.23                | 36.74             | 52.0                              | 0.0             | 0.707 |
| 92.00               | 0.54               | 1.05               | 0.00               | 0.00             | 0.00                 | 40.70                | 41.28             | 52.0                              | 0.0             | 0.794 |
| 95.00               | 0.53               | 1.06               | 0.00               | 0.00             | 0.00                 | 40.02                | 40.59             | 52.0                              | 0.0             | 0.781 |
| 100.00              | 0.52               | 1.08               | 0.00               | 0.00             | 0.00                 | 38.75                | 39.31             | 52.0                              | 0.0             | 0.756 |
| 105.00              | 0.50               | 1.09               | 0.00               | 0.00             | 0.00                 | 37.33                | 37.88             | 52.0                              | 0.0             | 0.729 |
| 108.00              | 0.49               | 1.09               | 0.00               | 0.00             | 0.00                 | 36.39                | 36.93             | 52.0                              | 0.0             | 0.711 |
| 110.00              | 0.48               | 1.09               | 0.00               | 0.00             | 0.00                 | 35.75                | 36.29             | 52.0                              | 0.0             | 0.698 |
| 115.00              | 0.47               | 1.11               | 0.00               | 0.00             | 0.00                 | 33.99                | 34.51             | 52.0                              | 0.0             | 0.664 |
| 120.00              | 0.46               | 1.12               | 0.00               | 0.00             | 0.00                 | 31.99                | 32.51             | 52.0                              | 0.0             | 0.625 |
| 125.00              | 0.45               | 1.14               | 0.00               | 0.00             | 0.00                 | 29.73                | 30.24             | 52.0                              | 0.0             | 0.582 |
| 130.00              | 0.43               | 1.16               | 0.00               | 0.00             | 0.00                 | 27.17                | 27.68             | 52.0                              | 0.0             | 0.532 |
| 132.00              | 0.43               | 1.17               | 0.00               | 0.00             | 0.00                 | 26.06                | 26.57             | 52.0                              | 0.0             | 0.511 |
| 135.00              | 0.42               | 1.18               | 0.00               | 0.00             | 0.00                 | 24.29                | 24.79             | 52.0                              | 0.0             | 0.477 |
| 136.00              | 0.63               | 1.82               | 0.00               | 0.00             | 0.00                 | 35.68                | 36.45             | 52.0                              | 0.0             | 0.701 |
| 137.00              | 0.53               | 1.58               | 0.00               | 0.00             | 0.00                 | 34.71                | 35.35             | 52.0                              | 0.0             | 0.680 |
| 140.00              | 0.52               | 1.60               | 0.00               | 0.00             | 0.00                 | 32.24                | 32.88             | 52.0                              | 0.0             | 0.633 |
| 145.00              | 0.51               | 1.62               | 0.00               | 0.00             | 0.00                 | 27.64                | 28.29             | 52.0                              | 0.0             | 0.544 |
| 148.00              | 0.41               | 1.44               | 0.00               | 0.00             | 0.00                 | 24.60                | 25.13             | 52.0                              | 0.0             | 0.484 |
| 150.00              | 0.41               | 1.45               | 0.00               | 0.00             | 0.00                 | 22.79                | 23.34             | 52.0                              | 0.0             | 0.449 |
| 155.00              | 0.40               | 1.47               | 0.00               | 0.00             | 0.00                 | 17.79                | 18.36             | 52.0                              | 0.0             | 0.353 |
| 158.00              | 0.29               | 0.90               | 0.00               | 0.00             | 0.00                 | 14.46                | 14.83             | 52.0                              | 0.0             | 0.285 |
| 160.00              | 0.28               | 0.91               | 0.00               | 0.00             | 0.00                 | 13.20                | 13.57             | 52.0                              | 0.0             | 0.261 |
| 165.00              | 0.27               | 0.91               | 0.00               | 0.00             | 0.00                 | 9.69                 | 10.08             | 52.0                              | 0.0             | 0.194 |
| 168.00              | 0.16               | 0.67               | 0.00               | 0.00             | 0.00                 | 7.37                 | 7.62              | 52.0                              | 0.0             | 0.147 |
| 170.00              | 0.15               | 0.66               | 0.00               | 0.00             | 0.00                 | 6.24                 | 6.50              | 52.0                              | 0.0             | 0.125 |
| 175.00              | 0.14               | 0.66               | 0.00               | 0.00             | 0.00                 | 3.09                 | 3.42              | 52.0                              | 0.0             | 0.066 |
| 178.00              | 0.00               | 0.64               | 0.00               | 0.00             | 0.00                 | 1.02                 | 1.51              | 52.0                              | 0.0             | 0.029 |

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

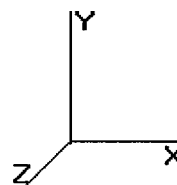
Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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### Load Case: Twist/Sway

50.00 mph Wind with No Ice

25 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Shaft Segment Forces

| Seg Top |                 |      |       |        |          |        | Ice   |           |      |        | Wind    | Dead     | Tot Dead |         |
|---------|-----------------|------|-------|--------|----------|--------|-------|-----------|------|--------|---------|----------|----------|---------|
| Elev    | Description     | Kz   | qz    | qzGh   | C        | Cf     | Thick | Tributary | Aa   | CfAa   | Force X | Load Ice | Load     |         |
| (ft)    |                 |      | (psf) | (psf)  | (mph-ft) |        | (in)  | (ft)      | (sf) | (sf)   | (lb)    | (lb)     | (lb)     |         |
| 0.00    |                 | 0.00 | 1.00  | 6.400  | 10.81    | 237.12 | 0.650 | 0.000     | 0.00 | 0.000  | 0.00    | 0.0      | 0.0      |         |
| 5.00    |                 | 0.00 | 1.00  | 6.400  | 10.81    | 232.81 | 0.650 | 0.000     | 5.00 | 23.497 | 15.27   | 165.2    | 0.0      | 1,509.1 |
| 10.00   |                 | 0.00 | 1.00  | 6.400  | 10.81    | 228.49 | 0.650 | 0.000     | 5.00 | 23.066 | 14.99   | 162.2    | 0.0      | 1,481.2 |
| 15.00   |                 | 0.00 | 1.00  | 6.400  | 10.81    | 224.18 | 0.650 | 0.000     | 5.00 | 22.634 | 14.71   | 159.1    | 0.0      | 1,453.2 |
| 20.00   |                 | 0.00 | 1.00  | 6.400  | 10.81    | 219.87 | 0.650 | 0.000     | 5.00 | 22.203 | 14.43   | 156.1    | 0.0      | 1,425.3 |
| 25.00   |                 | 0.00 | 1.00  | 6.400  | 10.81    | 215.56 | 0.650 | 0.000     | 5.00 | 21.772 | 14.15   | 153.1    | 0.0      | 1,397.3 |
| 30.00   |                 | 0.00 | 1.00  | 6.400  | 10.81    | 211.24 | 0.650 | 0.000     | 5.00 | 21.340 | 13.87   | 150.0    | 0.0      | 1,369.4 |
| 35.00   |                 | 0.00 | 1.01  | 6.509  | 10.99    | 208.68 | 0.650 | 0.000     | 5.00 | 20.909 | 13.59   | 149.5    | 0.0      | 1,341.4 |
| 40.00   |                 | 0.00 | 1.05  | 6.762  | 11.42    | 208.26 | 0.650 | 0.000     | 5.00 | 20.478 | 13.31   | 152.1    | 0.0      | 1,313.5 |
| 42.75   | Bot - Section 2 | 0.00 | 1.07  | 6.891  | 11.64    | 207.79 | 0.650 | 0.000     | 2.75 | 11.079 | 7.20    | 83.9     | 0.0      | 710.5   |
| 45.00   |                 | 0.00 | 1.09  | 6.993  | 11.81    | 207.29 | 0.650 | 0.000     | 2.25 | 9.120  | 5.93    | 70.1     | 0.0      | 1,051.2 |
| 49.00   | Top - Section 1 | 0.00 | 1.12  | 7.165  | 12.10    | 206.18 | 0.650 | 0.000     | 4.00 | 15.998 | 10.40   | 125.9    | 0.0      | 1,843.5 |
| 50.00   |                 | 0.00 | 1.12  | 7.207  | 12.17    | 209.45 | 0.650 | 0.000     | 1.00 | 3.956  | 2.57    | 31.3     | 0.0      | 206.5   |
| 55.00   |                 | 0.00 | 1.15  | 7.406  | 12.51    | 207.68 | 0.650 | 0.000     | 5.00 | 19.523 | 12.69   | 158.8    | 0.0      | 1,019.0 |
| 60.00   |                 | 0.00 | 1.18  | 7.592  | 12.83    | 205.58 | 0.650 | 0.000     | 5.00 | 19.091 | 12.41   | 159.2    | 0.0      | 996.3   |
| 65.00   |                 | 0.00 | 1.21  | 7.768  | 13.12    | 203.20 | 0.650 | 0.000     | 5.00 | 18.660 | 12.13   | 159.2    | 0.0      | 973.5   |
| 70.00   |                 | 0.00 | 1.24  | 7.934  | 13.40    | 200.56 | 0.650 | 0.000     | 5.00 | 18.229 | 11.85   | 158.9    | 0.0      | 950.8   |
| 75.00   |                 | 0.00 | 1.26  | 8.092  | 13.67    | 197.69 | 0.650 | 0.000     | 5.00 | 17.798 | 11.57   | 158.2    | 0.0      | 928.1   |
| 80.00   |                 | 0.00 | 1.28  | 8.242  | 13.93    | 194.63 | 0.650 | 0.000     | 5.00 | 17.366 | 11.29   | 157.2    | 0.0      | 905.4   |
| 85.00   |                 | 0.00 | 1.31  | 8.387  | 14.17    | 191.39 | 0.650 | 0.000     | 5.00 | 16.935 | 11.01   | 156.0    | 0.0      | 882.7   |
| 86.00   | Appertunance(s) | 0.00 | 1.31  | 8.415  | 14.22    | 190.72 | 0.650 | 0.000     | 1.00 | 3.335  | 2.17    | 30.8     | 0.0      | 173.8   |
| 87.00   | Bot - Section 3 | 0.00 | 1.31  | 8.442  | 14.26    | 190.04 | 0.650 | 0.000     | 1.00 | 3.318  | 2.16    | 30.8     | 0.0      | 172.9   |
| 90.00   |                 | 0.00 | 1.33  | 8.525  | 14.40    | 187.98 | 0.650 | 0.000     | 3.00 | 10.022 | 6.51    | 93.9     | 0.0      | 956.0   |
| 92.00   | Top - Section 2 | 0.00 | 1.34  | 8.578  | 14.49    | 186.57 | 0.650 | 0.000     | 2.00 | 6.595  | 4.29    | 62.1     | 0.0      | 628.9   |
| 95.00   | Appertunance(s) | 0.00 | 1.35  | 8.657  | 14.63    | 187.75 | 0.650 | 0.000     | 3.00 | 9.764  | 6.35    | 92.9     | 0.0      | 431.1   |
| 100.0   |                 | 0.00 | 1.37  | 8.785  | 14.84    | 184.08 | 0.650 | 0.000     | 5.00 | 15.928 | 10.35   | 153.7    | 0.0      | 703.2   |
| 105.0   |                 | 0.00 | 1.39  | 8.908  | 15.05    | 180.28 | 0.650 | 0.000     | 5.00 | 15.496 | 10.07   | 151.6    | 0.0      | 684.0   |
| 108.0   | Appertunance(s) | 0.00 | 1.40  | 8.980  | 15.17    | 177.94 | 0.650 | 0.000     | 3.00 | 9.091  | 5.91    | 89.7     | 0.0      | 401.2   |
| 110.0   |                 | 0.00 | 1.41  | 9.028  | 15.25    | 176.36 | 0.650 | 0.000     | 2.00 | 5.974  | 3.88    | 59.2     | 0.0      | 263.6   |
| 115.0   |                 | 0.00 | 1.42  | 9.143  | 15.45    | 172.33 | 0.650 | 0.000     | 5.00 | 14.634 | 9.51    | 147.0    | 0.0      | 645.6   |
| 120.0   |                 | 0.00 | 1.44  | 9.255  | 15.64    | 168.19 | 0.650 | 0.000     | 5.00 | 14.203 | 9.23    | 144.4    | 0.0      | 626.3   |
| 125.0   |                 | 0.00 | 1.46  | 9.363  | 15.82    | 163.96 | 0.650 | 0.000     | 5.00 | 13.771 | 8.95    | 141.6    | 0.0      | 607.1   |
| 130.0   |                 | 0.00 | 1.48  | 9.469  | 16.00    | 159.64 | 0.650 | 0.000     | 5.00 | 13.340 | 8.67    | 138.8    | 0.0      | 587.9   |
| 132.0   | Bot - Section 4 | 0.00 | 1.48  | 9.510  | 16.07    | 157.88 | 0.650 | 0.000     | 2.00 | 5.215  | 3.39    | 54.5     | 0.0      | 229.8   |
| 135.0   |                 | 0.00 | 1.49  | 9.572  | 16.17    | 155.23 | 0.650 | 0.000     | 3.00 | 7.803  | 5.07    | 82.0     | 0.0      | 558.6   |
| 136.0   | Top - Section 3 | 0.00 | 1.49  | 9.592  | 16.21    | 154.33 | 0.650 | 0.000     | 1.00 | 2.566  | 1.67    | 27.0     | 0.0      | 183.7   |
| 137.0   | Appertunance(s) | 0.00 | 1.50  | 9.612  | 16.24    | 155.67 | 0.650 | 0.000     | 1.00 | 2.549  | 1.66    | 26.9     | 0.0      | 71.8    |
| 140.0   |                 | 0.00 | 1.51  | 9.672  | 16.34    | 152.97 | 0.650 | 0.000     | 3.00 | 7.544  | 4.90    | 80.2     | 0.0      | 212.3   |
| 145.0   |                 | 0.00 | 1.52  | 9.769  | 16.51    | 148.41 | 0.650 | 0.000     | 5.00 | 12.229 | 7.95    | 131.2    | 0.0      | 344.1   |
| 148.0   | Appertunance(s) | 0.00 | 1.53  | 9.826  | 16.60    | 145.64 | 0.650 | 0.000     | 3.00 | 7.130  | 4.63    | 77.0     | 0.0      | 200.6   |
| 150.0   |                 | 0.00 | 1.54  | 9.864  | 16.67    | 143.78 | 0.650 | 0.000     | 2.00 | 4.667  | 3.03    | 50.6     | 0.0      | 131.3   |
| 155.0   |                 | 0.00 | 1.55  | 9.957  | 16.82    | 139.08 | 0.650 | 0.000     | 5.00 | 11.366 | 7.39    | 124.3    | 0.0      | 319.6   |
| 158.0   | Appertunance(s) | 0.00 | 1.56  | 10.012 | 16.92    | 136.22 | 0.650 | 0.000     | 3.00 | 6.613  | 4.30    | 72.7     | 0.0      | 185.9   |
| 160.0   |                 | 0.00 | 1.57  | 10.048 | 16.98    | 134.30 | 0.650 | 0.000     | 2.00 | 4.322  | 2.81    | 47.7     | 0.0      | 121.5   |
| 165.0   |                 | 0.00 | 1.58  | 10.136 | 17.13    | 129.47 | 0.650 | 0.000     | 5.00 | 10.504 | 6.83    | 117.0    | 0.0      | 295.2   |
| 168.0   | Appertunance(s) | 0.00 | 1.59  | 10.189 | 17.21    | 126.54 | 0.650 | 0.000     | 3.00 | 6.095  | 3.96    | 68.2     | 0.0      | 171.2   |
| 170.0   |                 | 0.00 | 1.59  | 10.223 | 17.27    | 124.57 | 0.650 | 0.000     | 2.00 | 3.977  | 2.59    | 44.7     | 0.0      | 111.7   |
| 175.0   |                 | 0.00 | 1.61  | 10.308 | 17.42    | 119.62 | 0.650 | 0.000     | 5.00 | 9.641  | 6.27    | 109.2    | 0.0      | 270.7   |
| 178.0   | Appertunance(s) | 0.00 | 1.61  | 10.358 | 17.50    | 116.61 | 0.650 | 0.000     | 3.00 | 5.578  | 3.63    | 63.5     | 0.0      | 156.6   |
| Totals: |                 |      |       |        |          |        |       | 178.00    |      |        | 5,179.2 | 0.0      | 32,204.2 |         |



Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

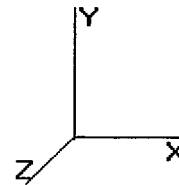
Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)

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**Load Case:** Twist/Sway

50.00 mph Wind with No Ice

25 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

**Discrete Appurtenance Segment Forces**

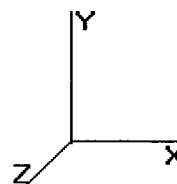
| Elev<br>(ft) | Description          | Qty | qz<br>(psf) | qzGh<br>(psf) | CaAa<br>Factor | Total<br>CaAa<br>(sf) | Horiz<br>Ecc<br>(ft) | Vert<br>Ecc<br>(ft) | Wind<br>FX<br>(lb) | Mom<br>Y<br>(lb-ft) | Mom<br>Z<br>(lb-ft) | Dead<br>Load<br>(lb) |
|--------------|----------------------|-----|-------------|---------------|----------------|-----------------------|----------------------|---------------------|--------------------|---------------------|---------------------|----------------------|
| 86.00        | GPS                  | 1   | 8.429       | 14.244        | 1.00           | 1.00                  | 0.000                | 0.500               | 14.24              | 0.00                | 7.12                | 10.00                |
| 86.00        | Standoff             | 1   | 8.415       | 14.221        | 1.00           | 3.50                  | 0.000                | 0.000               | 49.77              | 0.00                | 0.00                | 200.00               |
| 95.00        | GPS                  | 1   | 8.670       | 14.653        | 1.00           | 1.00                  | 0.000                | 0.500               | 14.65              | 0.00                | 7.33                | 10.00                |
| 95.00        | Standoff             | 1   | 8.657       | 14.631        | 1.00           | 3.50                  | 0.000                | 0.000               | 51.21              | 0.00                | 0.00                | 200.00               |
| 108.0        | GPS                  | 1   | 8.992       | 15.197        | 1.00           | 1.00                  | 0.000                | 0.500               | 15.20              | 0.00                | 7.60                | 10.00                |
| 108.0        | Standoff             | 1   | 8.980       | 15.177        | 1.00           | 3.50                  | 0.000                | 0.000               | 53.12              | 0.00                | 0.00                | 200.00               |
| 137.0        | Low Profile Platform | 1   | 9.612       | 16.244        | 1.00           | 26.10                 | 0.000                | 0.000               | 423.97             | 0.00                | 0.00                | 1,500.00             |
| 137.0        | Powerwave 7770.00    | 6   | 9.612       | 16.244        | 0.75           | 26.46                 | 0.000                | 0.000               | 429.82             | 0.00                | 0.00                | 210.00               |
| 137.0        | Powerwave LGP21401   | 6   | 9.612       | 16.244        | 0.50           | 3.87                  | 0.000                | 0.000               | 62.86              | 0.00                | 0.00                | 84.60                |
| 137.0        | Powerwave LGP21903   | 6   | 9.612       | 16.244        | 0.50           | 0.81                  | 0.000                | 0.000               | 13.16              | 0.00                | 0.00                | 33.00                |
| 148.0        | Allgon 7250.02       | 4   | 9.826       | 16.607        | 0.72           | 11.03                 | 0.000                | 0.000               | 183.18             | 0.00                | 0.00                | 60.00                |
| 148.0        | EMS RR90-17-02DP     | 2   | 9.826       | 16.607        | 1.00           | 8.72                  | 0.000                | 0.000               | 144.81             | 0.00                | 0.00                | 36.00                |
| 148.0        | Low Profile Platform | 1   | 9.826       | 16.607        | 1.00           | 21.70                 | 0.000                | 0.000               | 360.36             | 0.00                | 0.00                | 1,500.00             |
| 158.0        | Antel BXA-171085-8BF | 3   | 10.012      | 16.920        | 0.87           | 7.67                  | 0.000                | 0.000               | 129.83             | 0.00                | 0.00                | 31.50                |
| 158.0        | Antel BXA-70063/6CF  | 3   | 10.012      | 16.920        | 0.74           | 17.16                 | 0.000                | 0.000               | 290.35             | 0.00                | 0.00                | 51.00                |
| 158.0        | Antel LPA-80080/4CF  | 6   | 10.012      | 16.920        | 1.66           | 26.10                 | 0.000                | 0.000               | 441.52             | 0.00                | 0.00                | 72.00                |
| 158.0        | Low Profile Platform | 1   | 10.012      | 16.920        | 1.00           | 26.10                 | 0.000                | 0.000               | 441.60             | 0.00                | 0.00                | 1,500.00             |
| 158.0        | RFS FD9R6004/1C-3L   | 6   | 10.012      | 16.920        | 0.50           | 1.11                  | 0.000                | 0.000               | 18.78              | 0.00                | 0.00                | 18.60                |
| 168.0        | Decibel DB980H90A-   | 6   | 10.189      | 17.219        | 0.79           | 18.01                 | 0.000                | 0.000               | 310.15             | 0.00                | 0.00                | 54.00                |
| 168.0        | Low Profile Platform | 1   | 10.189      | 17.219        | 1.00           | 21.70                 | 0.000                | 0.000               | 373.65             | 0.00                | 0.00                | 1,500.00             |
| 178.0        | 72" x 12" Panels     | 3   | 10.392      | 17.562        | 0.75           | 18.90                 | 0.000                | 2.000               | 331.92             | 0.00                | 663.84              | 120.00               |
| 178.0        | Allgon 7120.16.05.00 | 9   | 10.392      | 17.562        | 1.22           | 43.81                 | 0.000                | 2.000               | 769.39             | 0.00                | 1,538.77            | 135.00               |
| 178.0        | Low Profile Platform | 1   | 10.358      | 17.506        | 1.00           | 26.10                 | 0.000                | 0.000               | 456.90             | 0.00                | 0.00                | 1,500.00             |
|              |                      |     |             |               |                |                       |                      |                     | 5,380.46           |                     |                     | 9,035.70             |

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** Twist/Sway

50.00 mph Wind with No Ice

25 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Applied Segment Forces Summary

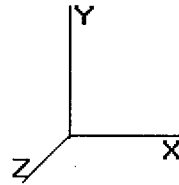
| Seg<br>Elev<br>(ft) | Lateral<br>FX (-)<br>(lb) | Axial<br>FY (-)<br>(lb) | Torsion<br>MY<br>(lb-ft) | Moment<br>MZ<br>(lb-ft) |
|---------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00                | 0.00                      | 0.00                    | 0.00                     | 0.00                    |
| 5.00                | 165.19                    | 1,721.35                | 0.00                     | 0.00                    |
| 10.00               | 162.16                    | 1,693.40                | 0.00                     | 0.00                    |
| 15.00               | 159.13                    | 1,665.46                | 0.00                     | 0.00                    |
| 20.00               | 156.10                    | 1,637.51                | 0.00                     | 0.00                    |
| 25.00               | 153.06                    | 1,609.56                | 0.00                     | 0.00                    |
| 30.00               | 150.03                    | 1,581.62                | 0.00                     | 0.00                    |
| 35.00               | 149.49                    | 1,553.67                | 0.00                     | 0.00                    |
| 40.00               | 152.10                    | 1,525.72                | 0.00                     | 0.00                    |
| 42.75               | 83.87                     | 827.24                  | 0.00                     | 0.00                    |
| 45.00               | 70.06                     | 1,146.70                | 0.00                     | 0.00                    |
| 49.00               | 125.92                    | 2,013.25                | 0.00                     | 0.00                    |
| 50.00               | 31.32                     | 248.97                  | 0.00                     | 0.00                    |
| 55.00               | 158.82                    | 1,231.21                | 0.00                     | 0.00                    |
| 60.00               | 159.22                    | 1,208.50                | 0.00                     | 0.00                    |
| 65.00               | 159.22                    | 1,185.80                | 0.00                     | 0.00                    |
| 70.00               | 158.87                    | 1,163.09                | 0.00                     | 0.00                    |
| 75.00               | 158.20                    | 1,140.39                | 0.00                     | 0.00                    |
| 80.00               | 157.24                    | 1,117.68                | 0.00                     | 0.00                    |
| 85.00               | 156.02                    | 1,094.97                | 0.00                     | 0.00                    |
| 86.00               | 94.85                     | 426.27                  | 0.00                     | 7.12                    |
| 87.00               | 30.77                     | 215.21                  | 0.00                     | 0.00                    |
| 90.00               | 93.85                     | 1,082.86                | 0.00                     | 0.00                    |
| 92.00               | 62.15                     | 713.52                  | 0.00                     | 0.00                    |
| 95.00               | 158.71                    | 768.04                  | 0.00                     | 7.33                    |
| 100.0               | 153.71                    | 913.95                  | 0.00                     | 0.00                    |
| 105.0               | 151.65                    | 894.74                  | 0.00                     | 0.00                    |
| 108.0               | 158.00                    | 737.62                  | 0.00                     | 7.60                    |
| 110.0               | 59.25                     | 347.60                  | 0.00                     | 0.00                    |
| 115.0               | 146.98                    | 855.56                  | 0.00                     | 0.00                    |
| 120.0               | 144.39                    | 836.35                  | 0.00                     | 0.00                    |
| 125.0               | 141.65                    | 817.14                  | 0.00                     | 0.00                    |
| 130.0               | 138.76                    | 797.92                  | 0.00                     | 0.00                    |
| 132.0               | 54.48                     | 313.79                  | 0.00                     | 0.00                    |
| 135.0               | 82.04                     | 684.58                  | 0.00                     | 0.00                    |
| 136.0               | 27.04                     | 225.68                  | 0.00                     | 0.00                    |
| 137.0               | 956.73                    | 1,941.35                | 0.00                     | 0.00                    |
| 140.0               | 80.15                     | 315.65                  | 0.00                     | 0.00                    |
| 145.0               | 131.23                    | 516.30                  | 0.00                     | 0.00                    |
| 148.0               | 765.31                    | 1,899.91                | 0.00                     | 0.00                    |
| 150.0               | 50.57                     | 180.48                  | 0.00                     | 0.00                    |
| 155.0               | 124.32                    | 442.65                  | 0.00                     | 0.00                    |
| 158.0               | 1,394.82                  | 1,932.82                | 0.00                     | 0.00                    |
| 160.0               | 47.71                     | 151.02                  | 0.00                     | 0.00                    |
| 165.0               | 116.96                    | 368.99                  | 0.00                     | 0.00                    |
| 168.0               | 752.02                    | 1,769.53                | 0.00                     | 0.00                    |
| 170.0               | 44.66                     | 131.40                  | 0.00                     | 0.00                    |
| 175.0               | 109.17                    | 319.94                  | 0.00                     | 0.00                    |
| 178.0               | 1,621.67                  | 1,941.10                | 0.00                     | 2,202.61                |

Pole : 302472  
Location : Andover Bunker Hill Road, CT  
Height : 178.0 (ft)  
Base Dia : 56.91 (in)  
Top Dia : 22.00 (in)  
Shape : 18 Sides  
Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** Twist/Sway

50.00 mph Wind with No Ice

25 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

|         |           |           |      |          |
|---------|-----------|-----------|------|----------|
| Totals: | 10,559.64 | 47,908.06 | 0.00 | 2,224.66 |
|---------|-----------|-----------|------|----------|

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
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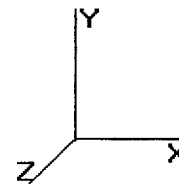
Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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### Load Case: Twist/Sway

50.00 mph Wind with No Ice

25 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Calculated Shaft Forces and Deflections

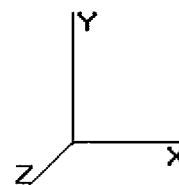
| Seg<br>Elev<br>(ft) | Lateral<br>FX (-)<br>(kips) | Axial<br>FY (-)<br>(kips) | Lateral<br>FZ<br>(kips) | Moment<br>MX<br>(ft-kips) | Torsion<br>MY<br>(ft-kips) | Moment<br>MZ<br>(ft-kips) | X<br>Deflect<br>(in) | Z<br>Deflect<br>(in) | Total<br>Deflect<br>(in) | Rotation<br>(deg) |
|---------------------|-----------------------------|---------------------------|-------------------------|---------------------------|----------------------------|---------------------------|----------------------|----------------------|--------------------------|-------------------|
| 0.00                | -10.581                     | -47.903                   | 0.000                   | 0.000                     | 0.000                      | -1,351.020                | 0.000                | 0.000                | 0.000                    | 0.000             |
| 5.00                | -10.457                     | -46.172                   | 0.000                   | 0.000                     | 0.000                      | -1,298.117                | -0.028               | 0.000                | 0.028                    | -0.052            |
| 10.00               | -10.335                     | -44.469                   | 0.000                   | 0.000                     | 0.000                      | -1,245.831                | -0.111               | 0.000                | 0.111                    | -0.106            |
| 15.00               | -10.212                     | -42.795                   | 0.000                   | 0.000                     | 0.000                      | -1,194.159                | -0.251               | 0.000                | 0.251                    | -0.159            |
| 20.00               | -10.090                     | -41.148                   | 0.000                   | 0.000                     | 0.000                      | -1,143.099                | -0.447               | 0.000                | 0.447                    | -0.214            |
| 25.00               | -9.969                      | -39.529                   | 0.000                   | 0.000                     | 0.000                      | -1,092.649                | -0.701               | 0.000                | 0.701                    | -0.270            |
| 30.00               | -9.848                      | -37.939                   | 0.000                   | 0.000                     | 0.000                      | -1,042.805                | -1.014               | 0.000                | 1.014                    | -0.326            |
| 35.00               | -9.726                      | -36.376                   | 0.000                   | 0.000                     | 0.000                      | -993.564                  | -1.386               | 0.000                | 1.386                    | -0.383            |
| 40.00               | -9.590                      | -34.844                   | 0.000                   | 0.000                     | 0.000                      | -944.936                  | -1.818               | 0.000                | 1.818                    | -0.441            |
| 42.75               | -9.517                      | -34.013                   | 0.000                   | 0.000                     | 0.000                      | -918.564                  | -2.082               | 0.000                | 2.082                    | -0.474            |
| 45.00               | -9.459                      | -32.861                   | 0.000                   | 0.000                     | 0.000                      | -897.151                  | -2.312               | 0.000                | 2.312                    | -0.501            |
| 49.00               | -9.331                      | -30.844                   | 0.000                   | 0.000                     | 0.000                      | -859.316                  | -2.752               | 0.000                | 2.752                    | -0.548            |
| 50.00               | -9.319                      | -30.588                   | 0.000                   | 0.000                     | 0.000                      | -849.986                  | -2.868               | 0.000                | 2.868                    | -0.561            |
| 55.00               | -9.183                      | -29.348                   | 0.000                   | 0.000                     | 0.000                      | -803.392                  | -3.492               | 0.000                | 3.492                    | -0.630            |
| 60.00               | -9.045                      | -28.130                   | 0.000                   | 0.000                     | 0.000                      | -757.476                  | -4.190               | 0.000                | 4.190                    | -0.701            |
| 65.00               | -8.904                      | -26.935                   | 0.000                   | 0.000                     | 0.000                      | -712.254                  | -4.962               | 0.000                | 4.962                    | -0.771            |
| 70.00               | -8.761                      | -25.764                   | 0.000                   | 0.000                     | 0.000                      | -667.736                  | -5.808               | 0.000                | 5.808                    | -0.843            |
| 75.00               | -8.616                      | -24.615                   | 0.000                   | 0.000                     | 0.000                      | -623.934                  | -6.729               | 0.000                | 6.729                    | -0.915            |
| 80.00               | -8.470                      | -23.489                   | 0.000                   | 0.000                     | 0.000                      | -580.856                  | -7.726               | 0.000                | 7.726                    | -0.987            |
| 85.00               | -8.311                      | -22.391                   | 0.000                   | 0.000                     | 0.000                      | -538.508                  | -8.798               | 0.000                | 8.798                    | -1.059            |
| 86.00               | -8.214                      | -21.965                   | 0.000                   | 0.000                     | 0.000                      | -530.190                  | -9.022               | 0.000                | 9.022                    | -1.074            |
| 87.00               | -8.190                      | -21.746                   | 0.000                   | 0.000                     | 0.000                      | -521.976                  | -9.248               | 0.000                | 9.248                    | -1.089            |
| 90.00               | -8.089                      | -20.660                   | 0.000                   | 0.000                     | 0.000                      | -497.405                  | -9.947               | 0.000                | 9.947                    | -1.133            |
| 92.00               | -8.025                      | -19.942                   | 0.000                   | 0.000                     | 0.000                      | -481.228                  | -10.428              | 0.000                | 10.428                   | -1.162            |
| 95.00               | -7.871                      | -19.169                   | 0.000                   | 0.000                     | 0.000                      | -457.146                  | -11.172              | 0.000                | 11.172                   | -1.206            |
| 100.0               | -7.723                      | -18.248                   | 0.000                   | 0.000                     | 0.000                      | -417.789                  | -12.478              | 0.000                | 12.478                   | -1.286            |
| 105.0               | -7.570                      | -17.349                   | 0.000                   | 0.000                     | 0.000                      | -379.174                  | -13.867              | 0.000                | 13.867                   | -1.365            |
| 108.0               | -7.406                      | -16.610                   | 0.000                   | 0.000                     | 0.000                      | -356.457                  | -14.740              | 0.000                | 14.740                   | -1.412            |
| 110.0               | -7.353                      | -16.257                   | 0.000                   | 0.000                     | 0.000                      | -341.646                  | -15.338              | 0.000                | 15.338                   | -1.444            |
| 115.0               | -7.204                      | -15.396                   | 0.000                   | 0.000                     | 0.000                      | -304.882                  | -16.891              | 0.000                | 16.891                   | -1.520            |
| 120.0               | -7.055                      | -14.555                   | 0.000                   | 0.000                     | 0.000                      | -268.862                  | -18.523              | 0.000                | 18.523                   | -1.593            |
| 125.0               | -6.907                      | -13.734                   | 0.000                   | 0.000                     | 0.000                      | -233.585                  | -20.230              | 0.000                | 20.230                   | -1.664            |
| 130.0               | -6.755                      | -12.935                   | 0.000                   | 0.000                     | 0.000                      | -199.050                  | -22.009              | 0.000                | 22.009                   | -1.731            |
| 132.0               | -6.698                      | -12.620                   | 0.000                   | 0.000                     | 0.000                      | -185.540                  | -22.739              | 0.000                | 22.739                   | -1.757            |
| 135.0               | -6.600                      | -11.935                   | 0.000                   | 0.000                     | 0.000                      | -165.446                  | -23.856              | 0.000                | 23.856                   | -1.795            |
| 136.0               | -6.569                      | -11.709                   | 0.000                   | 0.000                     | 0.000                      | -158.845                  | -24.233              | 0.000                | 24.233                   | -1.807            |
| 137.0               | -5.556                      | -9.796                    | 0.000                   | 0.000                     | 0.000                      | -152.277                  | -24.613              | 0.000                | 24.613                   | -1.819            |
| 140.0               | -5.477                      | -9.477                    | 0.000                   | 0.000                     | 0.000                      | -135.608                  | -25.772              | 0.000                | 25.772                   | -1.869            |
| 145.0               | -5.337                      | -8.960                    | 0.000                   | 0.000                     | 0.000                      | -108.225                  | -27.771              | 0.000                | 27.771                   | -1.945            |
| 148.0               | -4.512                      | -7.085                    | 0.000                   | 0.000                     | 0.000                      | -92.213                   | -29.007              | 0.000                | 29.007                   | -1.987            |
| 150.0               | -4.460                      | -6.903                    | 0.000                   | 0.000                     | 0.000                      | -83.190                   | -29.845              | 0.000                | 29.845                   | -2.013            |
| 155.0               | -4.324                      | -6.462                    | 0.000                   | 0.000                     | 0.000                      | -60.891                   | -31.984              | 0.000                | 31.984                   | -2.068            |
| 158.0               | -2.862                      | -4.580                    | 0.000                   | 0.000                     | 0.000                      | -47.918                   | -33.293              | 0.000                | 33.293                   | -2.097            |
| 160.0               | -2.811                      | -4.429                    | 0.000                   | 0.000                     | 0.000                      | -42.194                   | -34.175              | 0.000                | 34.175                   | -2.114            |
| 165.0               | -2.682                      | -4.064                    | 0.000                   | 0.000                     | 0.000                      | -28.139                   | -36.408              | 0.000                | 36.408                   | -2.148            |
| 168.0               | -1.865                      | -2.324                    | 0.000                   | 0.000                     | 0.000                      | -20.093                   | -37.763              | 0.000                | 37.763                   | -2.164            |
| 170.0               | -1.816                      | -2.194                    | 0.000                   | 0.000                     | 0.000                      | -16.364                   | -38.671              | 0.000                | 38.671                   | -2.173            |
| 175.0               | -1.695                      | -1.878                    | 0.000                   | 0.000                     | 0.000                      | -7.286                    | -40.955              | 0.000                | 40.955                   | -2.187            |
| 178.0               | -1.622                      | 0.000                     | 0.000                   | 0.000                     | 0.000                      | -2.203                    | -42.331              | 0.000                | 42.331                   | -2.192            |

Pole : 302472  
 Location : Andover Bunker Hill Road, CT  
 Height : 178.0 (ft)  
 Base Dia : 56.91 (in)  
 Top Dia : 22.00 (in)  
 Shape : 18 Sides  
 Taper : 0.207008 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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**Load Case:** Twist/Sway

50.00 mph Wind with No Ice

25 Iterations

Gust Response Factor : 1.69

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Calculated Stresses

| Seg<br>Elev<br>(ft) | Applied Stresses   |                    |                    |                  |                      |                      |                   | Allowable<br>Stress (Fb)<br>(ksi) |     | Stress<br>Ratio |
|---------------------|--------------------|--------------------|--------------------|------------------|----------------------|----------------------|-------------------|-----------------------------------|-----|-----------------|
|                     | Axial (Y)<br>(ksi) | Shear (X)<br>(ksi) | Shear (Z)<br>(ksi) | Torsion<br>(ksi) | Bending (X)<br>(ksi) | Bending (Z)<br>(ksi) | Combined<br>(ksi) |                                   |     |                 |
| 0.00                | 0.54               | 0.24               | 0.00               | 0.00             | 0.00                 | 13.02                | 13.56             | 52.0                              | 0.0 | 0.261           |
| 5.00                | 0.53               | 0.24               | 0.00               | 0.00             | 0.00                 | 12.98                | 13.51             | 52.0                              | 0.0 | 0.260           |
| 10.00               | 0.52               | 0.24               | 0.00               | 0.00             | 0.00                 | 12.94                | 13.46             | 52.0                              | 0.0 | 0.259           |
| 15.00               | 0.51               | 0.24               | 0.00               | 0.00             | 0.00                 | 12.89                | 13.40             | 52.0                              | 0.0 | 0.258           |
| 20.00               | 0.50               | 0.25               | 0.00               | 0.00             | 0.00                 | 12.84                | 13.34             | 52.0                              | 0.0 | 0.257           |
| 25.00               | 0.49               | 0.25               | 0.00               | 0.00             | 0.00                 | 12.77                | 13.26             | 52.0                              | 0.0 | 0.255           |
| 30.00               | 0.48               | 0.25               | 0.00               | 0.00             | 0.00                 | 12.70                | 13.18             | 52.0                              | 0.0 | 0.254           |
| 35.00               | 0.47               | 0.25               | 0.00               | 0.00             | 0.00                 | 12.62                | 13.09             | 52.0                              | 0.0 | 0.252           |
| 40.00               | 0.46               | 0.25               | 0.00               | 0.00             | 0.00                 | 12.52                | 12.99             | 52.0                              | 0.0 | 0.250           |
| 42.75               | 0.45               | 0.25               | 0.00               | 0.00             | 0.00                 | 12.47                | 12.93             | 52.0                              | 0.0 | 0.249           |
| 45.00               | 0.44               | 0.26               | 0.00               | 0.00             | 0.00                 | 12.42                | 12.87             | 52.0                              | 0.0 | 0.248           |
| 49.00               | 0.51               | 0.31               | 0.00               | 0.00             | 0.00                 | 14.57                | 15.08             | 52.0                              | 0.0 | 0.290           |
| 50.00               | 0.51               | 0.31               | 0.00               | 0.00             | 0.00                 | 14.54                | 15.05             | 52.0                              | 0.0 | 0.290           |
| 55.00               | 0.50               | 0.31               | 0.00               | 0.00             | 0.00                 | 14.37                | 14.87             | 52.0                              | 0.0 | 0.286           |
| 60.00               | 0.49               | 0.31               | 0.00               | 0.00             | 0.00                 | 14.18                | 14.68             | 52.0                              | 0.0 | 0.282           |
| 65.00               | 0.48               | 0.32               | 0.00               | 0.00             | 0.00                 | 13.97                | 14.46             | 52.0                              | 0.0 | 0.278           |
| 70.00               | 0.47               | 0.32               | 0.00               | 0.00             | 0.00                 | 13.75                | 14.22             | 52.0                              | 0.0 | 0.274           |
| 75.00               | 0.46               | 0.32               | 0.00               | 0.00             | 0.00                 | 13.49                | 13.96             | 52.0                              | 0.0 | 0.269           |
| 80.00               | 0.45               | 0.32               | 0.00               | 0.00             | 0.00                 | 13.21                | 13.67             | 52.0                              | 0.0 | 0.263           |
| 85.00               | 0.44               | 0.33               | 0.00               | 0.00             | 0.00                 | 12.90                | 13.34             | 52.0                              | 0.0 | 0.257           |
| 86.00               | 0.43               | 0.32               | 0.00               | 0.00             | 0.00                 | 12.83                | 13.27             | 52.0                              | 0.0 | 0.255           |
| 87.00               | 0.43               | 0.33               | 0.00               | 0.00             | 0.00                 | 12.77                | 13.21             | 52.0                              | 0.0 | 0.254           |
| 90.00               | 0.41               | 0.33               | 0.00               | 0.00             | 0.00                 | 12.56                | 12.99             | 52.0                              | 0.0 | 0.250           |
| 92.00               | 0.47               | 0.38               | 0.00               | 0.00             | 0.00                 | 14.09                | 14.58             | 52.0                              | 0.0 | 0.280           |
| 95.00               | 0.46               | 0.38               | 0.00               | 0.00             | 0.00                 | 13.83                | 14.30             | 52.0                              | 0.0 | 0.275           |
| 100.00              | 0.45               | 0.38               | 0.00               | 0.00             | 0.00                 | 13.35                | 13.81             | 52.0                              | 0.0 | 0.266           |
| 105.00              | 0.44               | 0.38               | 0.00               | 0.00             | 0.00                 | 12.82                | 13.27             | 52.0                              | 0.0 | 0.255           |
| 108.00              | 0.43               | 0.38               | 0.00               | 0.00             | 0.00                 | 12.47                | 12.92             | 52.0                              | 0.0 | 0.249           |
| 110.00              | 0.42               | 0.38               | 0.00               | 0.00             | 0.00                 | 12.24                | 12.68             | 52.0                              | 0.0 | 0.244           |
| 115.00              | 0.41               | 0.39               | 0.00               | 0.00             | 0.00                 | 11.60                | 12.03             | 52.0                              | 0.0 | 0.231           |
| 120.00              | 0.40               | 0.39               | 0.00               | 0.00             | 0.00                 | 10.88                | 11.30             | 52.0                              | 0.0 | 0.217           |
| 125.00              | 0.39               | 0.40               | 0.00               | 0.00             | 0.00                 | 10.07                | 10.48             | 52.0                              | 0.0 | 0.202           |
| 130.00              | 0.38               | 0.40               | 0.00               | 0.00             | 0.00                 | 9.16                 | 9.57              | 52.0                              | 0.0 | 0.184           |
| 132.00              | 0.38               | 0.40               | 0.00               | 0.00             | 0.00                 | 8.77                 | 9.18              | 52.0                              | 0.0 | 0.177           |
| 135.00              | 0.36               | 0.40               | 0.00               | 0.00             | 0.00                 | 8.15                 | 8.54              | 52.0                              | 0.0 | 0.164           |
| 136.00              | 0.55               | 0.63               | 0.00               | 0.00             | 0.00                 | 11.96                | 12.56             | 52.0                              | 0.0 | 0.242           |
| 137.00              | 0.47               | 0.53               | 0.00               | 0.00             | 0.00                 | 11.63                | 12.13             | 52.0                              | 0.0 | 0.233           |
| 140.00              | 0.46               | 0.54               | 0.00               | 0.00             | 0.00                 | 10.79                | 11.29             | 52.0                              | 0.0 | 0.217           |
| 145.00              | 0.45               | 0.54               | 0.00               | 0.00             | 0.00                 | 9.25                 | 9.75              | 52.0                              | 0.0 | 0.188           |
| 148.00              | 0.36               | 0.47               | 0.00               | 0.00             | 0.00                 | 8.24                 | 8.64              | 52.0                              | 0.0 | 0.166           |
| 150.00              | 0.36               | 0.47               | 0.00               | 0.00             | 0.00                 | 7.66                 | 8.06              | 52.0                              | 0.0 | 0.155           |
| 155.00              | 0.35               | 0.47               | 0.00               | 0.00             | 0.00                 | 6.05                 | 6.46              | 52.0                              | 0.0 | 0.124           |
| 158.00              | 0.25               | 0.32               | 0.00               | 0.00             | 0.00                 | 5.00                 | 5.28              | 52.0                              | 0.0 | 0.102           |
| 160.00              | 0.25               | 0.32               | 0.00               | 0.00             | 0.00                 | 4.54                 | 4.82              | 52.0                              | 0.0 | 0.093           |
| 165.00              | 0.24               | 0.32               | 0.00               | 0.00             | 0.00                 | 3.29                 | 3.57              | 52.0                              | 0.0 | 0.069           |
| 168.00              | 0.14               | 0.23               | 0.00               | 0.00             | 0.00                 | 2.48                 | 2.65              | 52.0                              | 0.0 | 0.051           |
| 170.00              | 0.13               | 0.22               | 0.00               | 0.00             | 0.00                 | 2.09                 | 2.26              | 52.0                              | 0.0 | 0.043           |
| 175.00              | 0.12               | 0.22               | 0.00               | 0.00             | 0.00                 | 1.02                 | 1.20              | 52.0                              | 0.0 | 0.023           |
| 178.00              | 0.00               | 0.22               | 0.00               | 0.00             | 0.00                 | 0.33                 | 0.50              | 52.0                              | 0.0 | 0.010           |



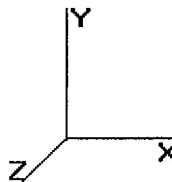
**Pole :** 302472  
**Location :** Andover Bunker Hill Road, CT  
**Height :** 178.0 (ft)  
**Base Dia :** 56.91 (in)  
**Top Dia :** 22.00 (in)  
**Shape :** 18 Sides  
**Taper :** 0.207008 (in/ft)

**Code:** TIA/EIA-222 Rev F

**Base Elev :** 0.000 (ft)

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## Analysis Summary

| Load Case  | Reactions             |                       |                       |                           |                           |                           | Max Stresses                |                              |              |                 |
|------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|---------------------------|-----------------------------|------------------------------|--------------|-----------------|
|            | Shear<br>FX<br>(kips) | Shear<br>FZ<br>(kips) | Axial<br>FY<br>(kips) | Moment<br>MX<br>(ft-kips) | Moment<br>MY<br>(ft-kips) | Moment<br>MZ<br>(ft-kips) | Combined<br>Stress<br>(ksi) | Allowable<br>Stress<br>(ksi) | Elev<br>(ft) | Stress<br>Ratio |
| No Ice     | 30.6                  | 0.00                  | 47.87                 | 0.00                      | 0.00                      | 3899.18                   | 42.53                       | 52.0                         | 49.00        | 0.818           |
| Ice        | 27.3                  | 0.00                  | 54.38                 | 0.00                      | 0.00                      | 3698.24                   | 41.48                       | 52.0                         | 49.00        | 0.798           |
| Twist/Sway | 10.6                  | 0.00                  | 47.90                 | 0.00                      | 0.00                      | 1351.02                   | 15.08                       | 52.0                         | 49.00        | 0.290           |

|                   |                 |                  |
|-------------------|-----------------|------------------|
| Base/Flange Plate | Plate Type      | <b>Baseplate</b> |
|                   | Pole Diameter   | 56.91 in         |
|                   | Pole Thickness  | in               |
|                   | Plate Length    | 64 in            |
|                   | Plate Thickness | 3 in             |
|                   | Plate Fy        | 50 ksi           |
|                   | Weld Length     | 0.25 in          |
|                   | Allowable       | 1654.98 k-in     |
|                   | Applied         | 1475.46 k-in     |
|                   |                 |                  |
| Stiffeners        | #               | 0                |
|                   |                 |                  |

|               |                     |          |
|---------------|---------------------|----------|
| Bolts         | #                   | 20       |
|               | Bolt Circle         | 64 in    |
|               | (R)adial / (S)quare | S        |
|               | Bolt Gap            | 6 in     |
|               | Diameter            | 2.25 in  |
|               | Hole Diameter       | 2.625 in |
|               | Type                | A615-75  |
|               | Fy                  | 75 ksi   |
|               | Fu                  | 100 ksi  |
|               | Allowable           | 174.95 k |
| Reinforcement | #                   | 0        |
|               |                     |          |
| Extra Bolts 0 | #                   | 0        |
|               |                     |          |

Code Rev. **F**  
A.S.I. **1.33**  
Moment **3899.2 k-ft**  
Axial **54.4 k**

Date **10/21/2011**  
Engineer **CLJ**  
Site # **302472**  
Carrier **Verizon**

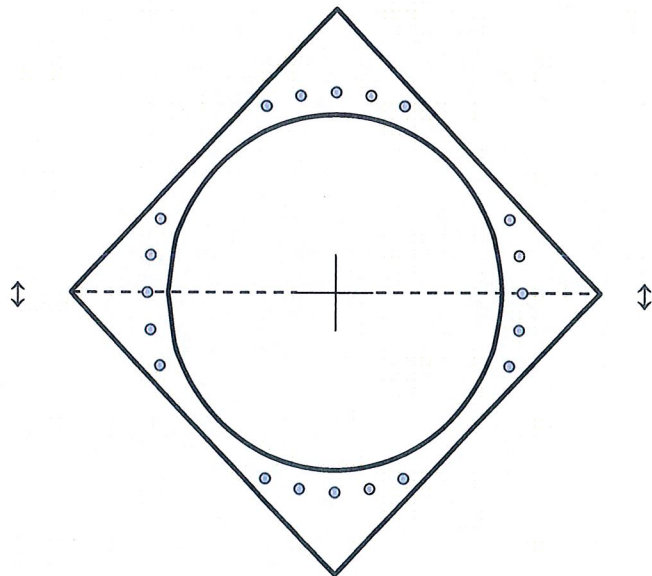


Plate Stress Ratio:

**0.89** (Pass)

Bolt Stress Ratio:

**0.85** (Pass)