

Date: **May 21, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00039A
Site Name: CT-CCI-T-803843

Crown Castle Designation: **BU Number:** 803843
Site Name: CT NEW BRITAIN 4 CAC 803843
JDE Job Number: 650037
Work Order Number: 1962719
Order Number: 556643 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1962719

Site Data: **200 Stanley Street, New Britain, Hartford County, CT**
Latitude 41° 39' 16.4", Longitude -72° 46' 9.59"
192 Foot - Monopole Tower

Crown Castle is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration

Sufficient Capacity – 44.9%

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Matthew Schmitt

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

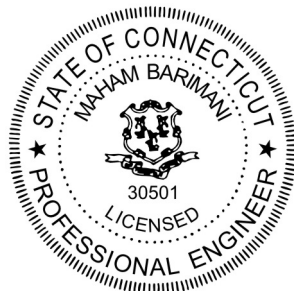


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1) INTRODUCTION

This tower is a 192 ft Monopole tower designed by Summit.

2) ANALYSIS CRITERIA

| | |
|-----------------------------|-----------|
| TIA-222 Revision: | TIA-222-H |
| Risk Category: | II |
| Wind Speed: | 125 mph |
| Exposure Category: | B |
| Topographic Factor: | 1 |
| Ice Thickness: | 2 in |
| Wind Speed with Ice: | 50 mph |
| Service Wind Speed: | 60 mph |

Table 1 - Proposed Equipment Configuration

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------|-----------------------------|----------------------|---------------------|
| 155.0 | 155.0 | 3 | fujitsu | TA08025-B604 | 1 | 1-3/4 |
| | | 3 | fujitsu | TA08025-B605 | | |
| | | 3 | jma wireless | MX08FRO665-21 w/ Mount Pipe | | |
| | | 1 | raycap | RDIDC-9181-PF-48 | | |
| | | 1 | tower mounts | Commscope MC-PK8-DSH | | |

Table 2 - Other Considered Equipment

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------|--------------------------------------|----------------------|--------------------------------|
| 193.0 | 193.0 | 1 | cci antennas | DMP65R-BU6D w/ Mount Pipe | 6 8 2 4 | 1-5/8 3/4 3/8 Conduit |
| | | 2 | cci antennas | DMP65R-BU8D w/ Mount Pipe | | |
| | | 3 | cci antennas | OPA-65R-LCUU-H8 w/ Mount Pipe | | |
| | | 3 | cci antennas | TPA65R-BU8D_CCIV2 w/ Mount Pipe | | |
| | | 3 | ericsson | RRUS 32 B30 | | |
| | | 3 | ericsson | RRUS 4449 B5/B12 | | |
| | | 3 | ericsson | RRUS 4478 B14 | | |
| | | 3 | ericsson | RRUS 8843 B2/B66A | | |
| | | 3 | ericsson | RRUS E2 B29 | | |
| | | 2 | raycap | DC6-48-60-0-8F | | |
| | | 2 | raycap | DC6-48-60-18-8F | | |
| | | 1 | tower mounts | Platform Mount [LP 1201-1_KCKR-HR-1] | | |
| 185.0 | 188.0 | 3 | rfs celwave | APXV18-206517S-C w/ Mount Pipe | 6 | 1-5/8 |
| | 185.0 | 1 | tower mounts | Platform Mount [LP 1201-1_KCKR] | | |

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|----------------------------|-----------------------------|-------------------------------------|-----------------------|--|
| 175.0 | 179.0 | 1 | dragonwave | HORIZON COMPACT | 3 1 3 7 2 | 1-5/8 5/8 1/2 5/16 Conduit |
| | 175.0 | 1 | andrew | VHLP2-23 | | |
| | | 3 | argus technologies | LLPX310R-V4 | | |
| | | 3 | commscope | NNVV-65B-R4 | | |
| | | 1 | motorola | TIMING 2000 | | |
| | | 3 | nokia | AHCC | | |
| | | 3 | nokia | AHFIB_CCIV2 | | |
| | 1 | tower mounts | Platform Mount [LP 301-1] | | | |
| 172.0 | 3 | samsung telecommunications | RRH-2WB | | | |
| 161.0 | 164.0 | 1 | sigfox | CXL 900-3LW | 1 | 1/2 |
| | 161.0 | 1 | sigfox | CAVITY FILTER | | |
| | | 1 | sigfox | LNA | | |
| | | 1 | tower mounts | Side Arm Mount [SO 104-3] | | |
| | | 1 | tower mounts | Side Arm Mount [SO 306-1] | | |
| 103.0 | 105.0 | 3 | samsung telecommunications | MT6407-77A w/ Mount Pipe | 8 | 1-5/8 |
| | 104.0 | 2 | raycap | RRFDC-3315-PF-48 | | |
| | | 3 | samsung telecommunications | RFV01U-D1A | | |
| | | 3 | samsung telecommunications | RFV01U-D2A | | |
| | 103.0 | 6 | andrew | SBNHH-1D65B w/ Mount Pipe | | |
| | | 1 | tower mounts | Platform Mount [LP 303-1_KCKR-HR-1] | | |
| | 101.0 | 3 | samsung telecommunications | CBRS w/ Mount Pipe | | |
| | 100.0 | 2 | antel | BXA-80080/4CF w/ Mount Pipe | | |
| 1 | | antel | BXA-80090/4CF w/ Mount Pipe | | | |

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

| Document | Reference | Source |
|--|-----------|----------|
| 4-GEOTECHNICAL REPORTS | 2384583 | CCISITES |
| 4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS | 1118798 | CCISITES |
| 4-TOWER MANUFACTURER DRAWINGS | 925033 | CCISITES |

3.1) Analysis Method

tnxTower (version 8.0.9.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

| Section No. | Elevation (ft) | Component Type | Size | Critical Element | P (K) | SF*P_allow (K) | % Capacity | Pass / Fail |
|-------------|-----------------|----------------|--------------------|------------------|---------|----------------|------------|-------------|
| L1 | 192 - 151.25 | Pole | TP39.25x26x0.31 | 1 | -17.13 | 2272.99 | 23.7 | Pass |
| L2 | 151.25 - 111.25 | Pole | TP51.62x36.99x0.44 | 2 | -31.70 | 4185.56 | 26.3 | Pass |
| L3 | 111.25 - 72.75 | Pole | TP63.26x48.63x0.5 | 3 | -51.99 | 5864.38 | 28.0 | Pass |
| L4 | 72.75 - 35.75 | Pole | TP74.29x59.66x0.56 | 4 | -73.81 | 7755.19 | 27.7 | Pass |
| L5 | 35.75 - 0 | Pole | TP84.78x70.15x0.56 | 5 | -106.15 | 9235.85 | 31.0 | Pass |
| | | | | | | | Summary | |
| | | | | | | Pole (L5) | 31.0 | Pass |
| | | | | | | Rating = | 31.0 | Pass |

Table 5 - Tower Component Stresses vs. Capacity - LC7

| Notes | Component | Elevation (ft) | % Capacity | Pass / Fail |
|-------|--|----------------|------------|-------------|
| 1 | Anchor Rods | 0 | 42.3 | Pass |
| 1 | Base Plate | 0 | 34.2 | Pass |
| 1,2 | Base Foundation Structural (Drilled Pier Foundation) | 0 | 44.9 | Pass |
| 1,2 | Base Foundation Soil Interaction (Drilled Pier Foundation) | 0 | 37.3 | Pass |
| 1,2 | Base Foundation Structural (Pier and Pad Foundation) | 0 | 23.1 | Pass |
| 1,2 | Base Foundation Soil Interaction (Pier and Pad Foundation) | 0 | 42.9 | Pass |

| | |
|---|--------------|
| Structure Rating (max from all components) = | 44.9% |
|---|--------------|

Notes:

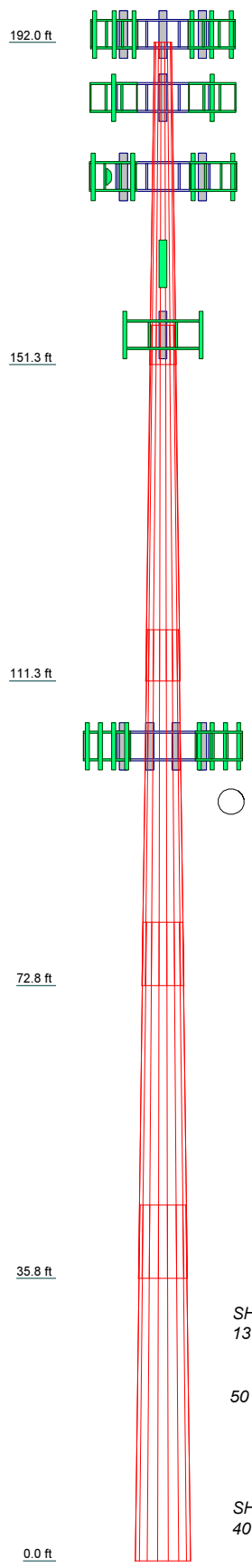
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) It is unknown whether the foundation is a drilled shaft or pier and pad. Both designs were analyzed and determined to be sufficient.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

| | | | | | | |
|--------------------|-------|-------|---------|-------|-------|------|
| Section | 1 | 2 | 3 | 4 | 5 | 66.4 |
| Length (ft) | 40.75 | 45.00 | 45.00 | 45.00 | 45.00 | |
| Number of Sides | 18 | 18 | 18 | 18 | 18 | |
| Thickness (in) | 0.31 | 0.44 | 0.50 | 0.56 | 0.56 | |
| Socket Length (ft) | 5.00 | 6.50 | 8.00 | 9.25 | 70.15 | |
| Top Dia (in) | 26.00 | 36.99 | 48.63 | 59.66 | 84.78 | |
| Bot Dia (in) | 39.24 | 51.62 | 63.26 | 74.28 | | |
| Grade | | | A607-65 | | | |
| Weight (K) | 4.4 | 9.3 | 13.5 | 18.2 | 21.0 | |



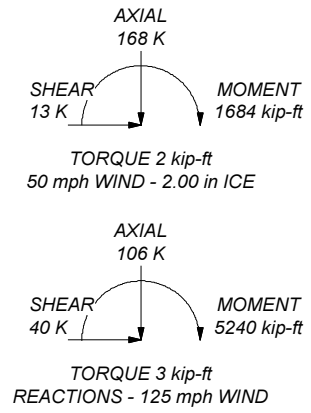
MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|---------|--------|--------|-------|----|----|
| A607-65 | 65 ksi | 80 ksi | | | |

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 31%

ALL REACTIONS ARE FACTORED




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| | | | |
|----------|---|-----------|-----------------|
| Job: | BU# 803843 | | |
| Project: | | | |
| Client: | Crown Castle | Drawn by: | Matthew Schmitt |
| Code: | TIA-222-H | Date: | 05/21/21 |
| Path: | C:\Work Area\803843\WO 1962719 - SAIProd\803843.ent | Scale: | NTS |
| | | Dwg No.: | E-1 |

Tower Input Data

The tower is a monopole.
 This tower is designed using the TIA-222-H standard.
 The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 112.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 2.00 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

| | | |
|--|---|---|
| Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs | Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets ✓ Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|---|

Tapered Pole Section Geometry

| Section | Elevation ft | Section Length ft | Splice Length ft | Number of Sides | Top Diameter in | Bottom Diameter in | Wall Thickness in | Bend Radius in | Pole Grade |
|---------|-----------------|-------------------------|------------------------|-----------------------|-----------------------|--------------------------|-------------------------|----------------------|---------------------|
| L1 | 192.00-151.25 | 40.75 | 5.00 | 18 | 26.00 | 39.24 | 0.31 | 1.25 | A607-65 (65 ksi) |
| L2 | 151.25-111.25 | 45.00 | 6.50 | 18 | 36.99 | 51.62 | 0.44 | 1.75 | A607-65 (65 ksi) |
| L3 | 111.25-72.75 | 45.00 | 8.00 | 18 | 48.63 | 63.26 | 0.50 | 2.00 | A607-65 (65 ksi) |
| L4 | 72.75-35.75 | 45.00 | 9.25 | 18 | 59.66 | 74.28 | 0.56 | 2.25 | A607-65 (65 ksi) |
| L5 | 35.75-0.00 | 45.00 | | 18 | 70.15 | 84.78 | 0.56 | 2.25 | A607-65 (65 ksi) |

Tapered Pole Properties

| Section | Tip Dia. in | Area in ² | I in ⁴ | r in | C in | I/C in ³ | J in ⁴ | It/Q in ² | w in | w/t |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|--------|
| L1 | 26.35 | 25.48 | 2124.03 | 9.12 | 13.21 | 160.81 | 4250.85 | 12.74 | 4.03 | 12.883 |
| | 39.80 | 38.62 | 7394.88 | 13.82 | 19.94 | 370.92 | 14799.50 | 19.31 | 6.36 | 20.343 |
| L2 | 39.15 | 50.76 | 8571.30 | 12.98 | 18.79 | 456.08 | 17153.87 | 25.39 | 5.74 | 13.122 |
| | 52.35 | 71.07 | 23524.06 | 18.17 | 26.22 | 897.06 | 47079.08 | 35.54 | 8.32 | 19.006 |
| L3 | 51.45 | 76.39 | 22358.99 | 17.09 | 24.71 | 905.01 | 44747.40 | 38.20 | 7.68 | 15.359 |
| | 64.16 | 99.60 | 49561.27 | 22.28 | 32.14 | 1542.26 | 99187.75 | 49.81 | 10.25 | 20.507 |
| L4 | 63.13 | 105.51 | 46553.20 | 20.98 | 30.31 | 1536.07 | 93167.66 | 52.76 | 9.51 | 16.907 |
| | 75.34 | 131.62 | 90378.90 | 26.17 | 37.74 | 2394.98 | 180876.73 | 65.82 | 12.08 | 21.483 |
| L5 | 74.20 | 124.25 | 76019.76 | 24.70 | 35.64 | 2133.11 | 152139.55 | 62.13 | 11.36 | 20.19 |
| | 86.00 | 150.36 | 134732.99 | 29.90 | 43.07 | 3128.36 | 269643.26 | 75.19 | 13.93 | 24.767 |

| Tower Elevation ft | Gusset Area (per face) ft ² | Gusset Thickness in | Gusset Grade | Adjust. Factor A _r | Adjust. Factor A _r | Weight Mult. | Double Angle Stitch Bolt Spacing Diagonals in | Double Angle Stitch Bolt Spacing Horizontal in | Double Angle Stitch Bolt Spacing Redundants in |
|--------------------------|---|---------------------------|--------------|----------------------------------|-------------------------------------|--------------|---|--|--|
| L1 192.00- 151.25 | | | | 1 | 1 | 1 | | | |
| L2 151.25- 111.25 | | | | 1 | 1 | 1 | | | |
| L3 111.25- 72.75 | | | | 1 | 1 | 1 | | | |
| L4 72.75- 35.75 | | | | 1 | 1 | 1 | | | |
| L5 35.75-0.00 | | | | 1 | 1 | 1 | | | |

Feed Line/Linear Appurtenances - Entered As Round Or Flat

| Description | Face or Leg | Allow Shield | Exclude From Torque Calculation | Componen t Type | Placement ft | Total Number | Number Per Row | Clear Spacing in | Width or Diamete r in | Perimete r in | Weight plf |
|-------------|-------------------|-----------------|--|-----------------------|-----------------|-----------------|-------------------|------------------------|--------------------------------|---------------------|---------------|
| ** | | | | | | | | | | | |

Feed Line/Linear Appurtenances - Entered As Area

| Description | Face or Leg | Allow Shield | Exclude From Torque Calculation | Componen t Type | Placement ft | Total Number | C _A A _A ft ² /ft | Weight plf | |
|-----------------|-------------------|-----------------|--|-----------------------|-----------------|-----------------|--|---------------|--------|
| Safety Line 3/8 | A | No | No | CaAa (Out Of Face) | 192.00 - 0.00 | 1 | No Ice 1/2" Ice | 0.04 0.14 | 0 1 |

| Description | Face or Leg | Allow Shield | Exclude From Torque Calculation | Component Type | Placement ft | Total Number | | CAAA ft ² /ft | Weight plf |
|------------------------------|-------------|--------------|---------------------------------|--------------------|---------------|--------------|----------|--------------------------|------------|
| | | | | | | | 1" Ice | 0.24 | 1 |
| | | | | | | | 2" Ice | 0.44 | 2 |
| 5/8 rod/step | A | No | No | CaAa (Out Of Face) | 192.00 - 0.00 | 1 | No Ice | 0.02 | 0 |
| | | | | | | | 1/2" Ice | 0.12 | 1 |
| | | | | | | | 1" Ice | 0.22 | 2 |
| | | | | | | | 2" Ice | 0.42 | 6 |
| ** | | | | | | | | | |
| LDF7-50A(1-5/8) | C | No | No | Inside Pole | 192.00 - 0.00 | 6 | No Ice | 0.00 | 1 |
| | | | | | | | 1/2" Ice | 0.00 | 1 |
| | | | | | | | 1" Ice | 0.00 | 1 |
| | | | | | | | 2" Ice | 0.00 | 1 |
| FB-L98B-034-XXXXXX(3/8) | C | No | No | Inside Pole | 192.00 - 0.00 | 2 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| WR-VG86ST-BRD(3/4) | C | No | No | Inside Pole | 192.00 - 0.00 | 8 | No Ice | 0.00 | 1 |
| | | | | | | | 1/2" Ice | 0.00 | 1 |
| | | | | | | | 1" Ice | 0.00 | 1 |
| | | | | | | | 2" Ice | 0.00 | 1 |
| 2" Flexible Conduit | C | No | No | Inside Pole | 192.00 - 0.00 | 4 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| * | | | | | | | | | |
| LCF158-50JL(1-5/8) | C | No | No | Inside Pole | 185.00 - 0.00 | 6 | No Ice | 0.00 | 1 |
| | | | | | | | 1/2" Ice | 0.00 | 1 |
| | | | | | | | 1" Ice | 0.00 | 1 |
| | | | | | | | 2" Ice | 0.00 | 1 |
| * | | | | | | | | | |
| HJ4.5-50(5/8) | B | No | No | Inside Pole | 175.00 - 0.00 | 1 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| 9207(5/16) | B | No | No | Inside Pole | 175.00 - 0.00 | 1 | No Ice | 0.00 | 1 |
| | | | | | | | 1/2" Ice | 0.00 | 1 |
| | | | | | | | 1" Ice | 0.00 | 1 |
| | | | | | | | 2" Ice | 0.00 | 1 |
| HB158-21U6M48-30F(1-5/8) | B | No | No | Inside Pole | 175.00 - 0.00 | 3 | No Ice | 0.00 | 2 |
| | | | | | | | 1/2" Ice | 0.00 | 2 |
| | | | | | | | 1" Ice | 0.00 | 2 |
| | | | | | | | 2" Ice | 0.00 | 2 |
| 7957A(5/16) | B | No | No | Inside Pole | 175.00 - 0.00 | 6 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| EC4-50(1/2) | B | No | No | Inside Pole | 175.00 - 0.00 | 3 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| 2" Flexible Conduit | B | No | No | Inside Pole | 175.00 - 0.00 | 2 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| * | | | | | | | | | |
| EC4-50(1/2) | B | No | No | Inside Pole | 161.00 - 0.00 | 1 | No Ice | 0.00 | 0 |
| | | | | | | | 1/2" Ice | 0.00 | 0 |
| | | | | | | | 1" Ice | 0.00 | 0 |
| | | | | | | | 2" Ice | 0.00 | 0 |
| * | | | | | | | | | |
| CU12PSM6P4XXX(1-3/4) | C | No | No | Inside Pole | 155.00 - 0.00 | 1 | No Ice | 0.00 | 3 |
| | | | | | | | 1/2" Ice | 0.00 | 3 |
| | | | | | | | 1" Ice | 0.00 | 3 |
| | | | | | | | 2" Ice | 0.00 | 3 |
| * | | | | | | | | | |
| HB158-21U6S12-XXXM-01(1-5/8) | C | No | No | Inside Pole | 103.00 - 0.00 | 2 | No Ice | 0.00 | 2 |
| | | | | | | | 1/2" Ice | 0.00 | 2 |
| | | | | | | | 1" Ice | 0.00 | 2 |
| | | | | | | | 2" Ice | 0.00 | 2 |

| Description | Face or Leg | Allow Shield | Exclude From Torque Calculation | Component Type | Placement ft | Total Number | | C _{AA} A _{AA} ft ² /ft | Weight plf |
|-----------------|-------------|--------------|---------------------------------|----------------|---------------|--------------|----------|---|------------|
| LDF7-50A(1-5/8) | C | No | No | Inside Pole | 103.00 - 0.00 | 6 | No Ice | 0.00 | 1 |
| | | | | | | | 1/2" Ice | 0.00 | 1 |
| | | | | | | | 1" Ice | 0.00 | 1 |
| | | | | | | | 2" Ice | 0.00 | 1 |

**

Feed Line/Linear Appurtenances Section Areas

| Tower Section n | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _{AA} A _{AA} In Face ft ² | C _{AA} A _{AA} Out Face ft ² | Weight K |
|-----------------|--------------------|------|--------------------------------|--------------------------------|---|--|----------|
| L1 | 192.00-151.25 | A | 0.000 | 0.000 | 0.000 | 2.343 | 0.02 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.23 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.57 |
| L2 | 151.25-111.25 | A | 0.000 | 0.000 | 0.000 | 2.300 | 0.02 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.39 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.68 |
| L3 | 111.25-72.75 | A | 0.000 | 0.000 | 0.000 | 2.214 | 0.02 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.38 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.91 |
| L4 | 72.75-35.75 | A | 0.000 | 0.000 | 0.000 | 2.127 | 0.02 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.36 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.95 |
| L5 | 35.75-0.00 | A | 0.000 | 0.000 | 0.000 | 2.056 | 0.02 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.35 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.92 |

Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section n | Tower Elevation ft | Face or Leg | Ice Thickness in | A _R ft ² | A _F ft ² | C _{AA} A _{AA} In Face ft ² | C _{AA} A _{AA} Out Face ft ² | Weight K |
|-----------------|--------------------|-------------|------------------|--------------------------------|--------------------------------|---|--|----------|
| L1 | 192.00-151.25 | A | 2.003 | 0.000 | 0.000 | 0.000 | 34.997 | 0.33 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.23 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.57 |
| L2 | 151.25-111.25 | A | 1.951 | 0.000 | 0.000 | 0.000 | 34.353 | 0.32 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.39 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.68 |
| L3 | 111.25-72.75 | A | 1.883 | 0.000 | 0.000 | 0.000 | 32.252 | 0.30 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.38 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.91 |
| L4 | 72.75-35.75 | A | 1.786 | 0.000 | 0.000 | 0.000 | 29.991 | 0.27 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.36 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.95 |
| L5 | 35.75-0.00 | A | 1.595 | 0.000 | 0.000 | 0.000 | 27.600 | 0.25 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.35 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.92 |

Feed Line Center of Pressure

| Section | Elevation ft | CP _x in | CP _z in | CP _x Ice in | CP _z Ice in |
|---------|---------------|--------------------|--------------------|------------------------|------------------------|
| L1 | 192.00-151.25 | 0.00 | -0.52 | 0.00 | -3.29 |
| L2 | 151.25-111.25 | 0.00 | -0.53 | 0.00 | -3.58 |

| Section | Elevation | CP _x | CP _z | CP _x Ice | CP _z Ice |
|---------|--------------|-----------------|-----------------|------------------------|------------------------|
| | ft | in | in | in | in |
| L3 | 111.25-72.75 | 0.00 | -0.53 | 0.00 | -3.68 |
| L4 | 72.75-35.75 | 0.00 | -0.53 | 0.00 | -3.70 |
| L5 | 35.75-0.00 | 0.00 | -0.53 | 0.00 | -3.63 |

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|---------------------------------|-------------|-------------------|--------------|------|--------------------|-----------|-----------------------|----------------------|--------|------|
| | | | Horz Lateral | Vert | | | | | | ft |
| OPA-65R-LCUU-H8 w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 11.93 | 8.06 | 0.10 |
| | | | | | | | 1/2" Ice | 12.88 | 8.96 | 0.19 |
| | | | | | | | 1" Ice | 13.84 | 9.89 | 0.29 |
| | | | | | | | 1" Ice | 15.82 | 11.78 | 0.54 |
| | | | | | | | 2" Ice | | | |
| OPA-65R-LCUU-H8 w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 11.93 | 8.06 | 0.10 |
| | | | | | | | 1/2" Ice | 12.88 | 8.96 | 0.19 |
| | | | | | | | 1" Ice | 13.84 | 9.89 | 0.29 |
| | | | | | | | 1" Ice | 15.82 | 11.78 | 0.54 |
| | | | | | | | 2" Ice | | | |
| OPA-65R-LCUU-H8 w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 11.93 | 8.06 | 0.10 |
| | | | | | | | 1/2" Ice | 12.88 | 8.96 | 0.19 |
| | | | | | | | 1" Ice | 13.84 | 9.89 | 0.29 |
| | | | | | | | 1" Ice | 15.82 | 11.78 | 0.54 |
| | | | | | | | 2" Ice | | | |
| TPA65R-BU8D_CCIV2 w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 15.89 | 7.89 | 0.12 |
| | | | | | | | 1/2" Ice | 16.81 | 8.74 | 0.23 |
| | | | | | | | 1" Ice | 17.76 | 9.60 | 0.36 |
| | | | | | | | 1" Ice | 19.70 | 11.37 | 0.66 |
| | | | | | | | 2" Ice | | | |
| TPA65R-BU8D_CCIV2 w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 15.89 | 7.89 | 0.12 |
| | | | | | | | 1/2" Ice | 16.81 | 8.74 | 0.23 |
| | | | | | | | 1" Ice | 17.76 | 9.60 | 0.36 |
| | | | | | | | 1" Ice | 19.70 | 11.37 | 0.66 |
| | | | | | | | 2" Ice | | | |
| TPA65R-BU8D_CCIV2 w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 15.89 | 7.89 | 0.12 |
| | | | | | | | 1/2" Ice | 16.81 | 8.74 | 0.23 |
| | | | | | | | 1" Ice | 17.76 | 9.60 | 0.36 |
| | | | | | | | 1" Ice | 19.70 | 11.37 | 0.66 |
| | | | | | | | 2" Ice | | | |
| DMP65R-BU8D w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 15.89 | 7.89 | 0.14 |
| | | | | | | | 1/2" Ice | 16.81 | 8.74 | 0.25 |
| | | | | | | | 1" Ice | 17.76 | 9.60 | 0.38 |
| | | | | | | | 1" Ice | 19.70 | 11.37 | 0.68 |
| | | | | | | | 2" Ice | | | |
| DMP65R-BU8D w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 15.89 | 7.89 | 0.14 |
| | | | | | | | 1/2" Ice | 16.81 | 8.74 | 0.25 |
| | | | | | | | 1" Ice | 17.76 | 9.60 | 0.38 |
| | | | | | | | 1" Ice | 19.70 | 11.37 | 0.68 |
| | | | | | | | 2" Ice | | | |
| DMP65R-BU6D w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 11.96 | 5.97 | 0.11 |
| | | | | | | | 1/2" Ice | 12.70 | 6.63 | 0.20 |
| | | | | | | | 1" Ice | 13.46 | 7.30 | 0.30 |
| | | | | | | | 1" Ice | 15.02 | 8.69 | 0.53 |
| | | | | | | | 2" Ice | | | |
| RRUS 32 B30 | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 2.69 | 1.57 | 0.06 |
| | | | | | | | 1/2" Ice | 2.91 | 1.76 | 0.08 |
| | | | | | | | 1" Ice | 3.14 | 1.95 | 0.10 |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|-------------------|-------------|-------------------|----------|---------|--------------------|-----------|--------------------------|-------------------------|--------|------|
| | | | Horz | Lateral | | | | | | ft |
| | | | | | | | ft ² | ft ² | K | |
| RRUS 32 B30 | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 3.61 | 2.35 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 2.69 | 1.57 | 0.06 |
| | | | | | | | 1/2" Ice | 2.91 | 1.76 | 0.08 |
| RRUS 32 B30 | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 3.61 | 2.35 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 2.69 | 1.57 | 0.06 |
| | | | | | | | 1/2" Ice | 2.91 | 1.76 | 0.08 |
| RRUS E2 B29 | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | Ice | 3.14 | 1.95 | 0.10 |
| | | | | | | | 1" Ice | 3.61 | 2.35 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 2.69 | 1.57 | 0.06 |
| RRUS E2 B29 | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1/2" Ice | 2.91 | 1.76 | 0.08 |
| | | | | | | | Ice | 3.14 | 1.95 | 0.10 |
| | | | | | | | 1" Ice | 3.61 | 2.35 | 0.16 |
| | | | | | | | 2" Ice | | | |
| RRUS E2 B29 | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 3.15 | 1.29 | 0.06 |
| | | | | | | | 1/2" Ice | 3.36 | 1.44 | 0.08 |
| | | | | | | | Ice | 3.59 | 1.60 | 0.11 |
| | | | | | | | 1" Ice | 4.07 | 1.95 | 0.17 |
| RRUS 4478 B14 | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 2" Ice | | | |
| | | | | | | | No Ice | 3.15 | 1.29 | 0.06 |
| | | | | | | | 1/2" Ice | 3.36 | 1.44 | 0.08 |
| | | | | | | | Ice | 3.59 | 1.60 | 0.11 |
| RRUS 4478 B14 | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 4.07 | 1.95 | 0.17 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 3.15 | 1.29 | 0.06 |
| | | | | | | | 1/2" Ice | 3.36 | 1.44 | 0.08 |
| RRUS 4478 B14 | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | Ice | 3.59 | 1.60 | 0.11 |
| | | | | | | | 1" Ice | 4.07 | 1.95 | 0.17 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 3.15 | 1.29 | 0.06 |
| RRUS 4478 B14 | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1/2" Ice | 3.36 | 1.44 | 0.08 |
| | | | | | | | Ice | 3.59 | 1.60 | 0.11 |
| | | | | | | | 1" Ice | 4.07 | 1.95 | 0.17 |
| | | | | | | | 2" Ice | | | |
| RRUS 4478 B14 | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 1.84 | 1.06 | 0.06 |
| | | | | | | | 1/2" Ice | 2.01 | 1.20 | 0.08 |
| | | | | | | | Ice | 2.19 | 1.34 | 0.09 |
| | | | | | | | 1" Ice | 2.57 | 1.66 | 0.14 |
| RRUS 4478 B14 | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 2" Ice | | | |
| | | | | | | | No Ice | 1.84 | 1.06 | 0.06 |
| | | | | | | | 1/2" Ice | 2.01 | 1.20 | 0.08 |
| | | | | | | | Ice | 2.19 | 1.34 | 0.09 |
| RRUS 8843 B2/B66A | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 2.57 | 1.66 | 0.14 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.84 | 1.06 | 0.06 |
| | | | | | | | 1/2" Ice | 2.01 | 1.20 | 0.08 |
| RRUS 8843 B2/B66A | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | Ice | 2.19 | 1.34 | 0.09 |
| | | | | | | | 1" Ice | 2.57 | 1.66 | 0.14 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.84 | 1.06 | 0.06 |
| RRUS 8843 B2/B66A | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1/2" Ice | 2.01 | 1.20 | 0.08 |
| | | | | | | | Ice | 2.19 | 1.34 | 0.09 |
| | | | | | | | 1" Ice | 2.57 | 1.66 | 0.14 |
| | | | | | | | 2" Ice | | | |
| RRUS 8843 B2/B66A | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | No Ice | 1.64 | 1.35 | 0.07 |
| | | | | | | | 1/2" Ice | 1.80 | 1.50 | 0.09 |
| | | | | | | | Ice | 1.97 | 1.65 | 0.11 |
| | | | | | | | 1" Ice | 2.32 | 1.99 | 0.16 |
| RRUS 8843 B2/B66A | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 2" Ice | | | |
| | | | | | | | No Ice | 1.64 | 1.35 | 0.07 |
| | | | | | | | 1/2" Ice | 1.80 | 1.50 | 0.09 |
| | | | | | | | Ice | 1.97 | 1.65 | 0.11 |
| RRUS 8843 B2/B66A | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 2.32 | 1.99 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.64 | 1.35 | 0.07 |
| | | | | | | | 1/2" Ice | 1.80 | 1.50 | 0.09 |
| RRUS 4449 B5/B12 | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | Ice | 1.97 | 1.65 | 0.11 |
| | | | | | | | 1" Ice | 2.32 | 1.99 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.64 | 1.35 | 0.07 |
| RRUS 4449 B5/B12 | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1/2" Ice | 2.01 | 1.20 | 0.08 |
| | | | | | | | Ice | 2.19 | 1.34 | 0.09 |
| | | | | | | | 1" Ice | 2.57 | 1.66 | 0.14 |
| | | | | | | | 2" Ice | | | |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|--------------------------------------|-------------|-------------------|----------|---------|--------------------|-----------|-----------------------|----------------------|--------|------|
| | | | Horz | Lateral | | | | | | Vert |
| | | | ft | ft | ° | ft | ft ² | ft ² | K | |
| RRUS 4449 B5/B12 | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 2.72 | 2.07 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.97 | 1.41 | 0.07 |
| | | | | | | | 1/2" Ice | 2.14 | 1.56 | 0.09 |
| | | | | | | | Ice | 2.33 | 1.73 | 0.11 |
| (2) DC6-48-60-0-8F | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 2.72 | 2.07 | 0.16 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 0.92 | 0.92 | 0.03 |
| | | | | | | | 1/2" Ice | 1.46 | 1.46 | 0.05 |
| | | | | | | | Ice | 1.64 | 1.64 | 0.07 |
| DC6-48-60-18-8F | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 2.04 | 2.04 | 0.12 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.21 | 1.21 | 0.02 |
| | | | | | | | 1/2" Ice | 1.89 | 1.89 | 0.04 |
| | | | | | | | Ice | 2.11 | 2.11 | 0.07 |
| DC6-48-60-18-8F | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 193.00 | 1" Ice | 2.57 | 2.57 | 0.13 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.21 | 1.21 | 0.02 |
| | | | | | | | 1/2" Ice | 1.89 | 1.89 | 0.04 |
| | | | | | | | Ice | 2.11 | 2.11 | 0.07 |
| Platform Mount [LP 1201-1_KCKR-HR-1] | C | None | | | 0.00 | 193.00 | 1" Ice | 2.57 | 2.57 | 0.13 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 37.61 | 37.61 | 2.63 |
| | | | | | | | 1/2" Ice | 45.62 | 45.62 | 3.48 |
| | | | | | | | Ice | 53.59 | 53.59 | 4.46 |
| * APXV18-206517S-C w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 185.00 | 1" Ice | 6.25 | 5.59 | 0.28 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 3.79 | 3.16 | 0.05 |
| | | | | | | | 1/2" Ice | 4.38 | 3.75 | 0.09 |
| | | | | | | | Ice | 4.99 | 4.35 | 0.15 |
| APXV18-206517S-C w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 185.00 | 1" Ice | 6.25 | 5.59 | 0.28 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 3.79 | 3.16 | 0.05 |
| | | | | | | | 1/2" Ice | 4.38 | 3.75 | 0.09 |
| | | | | | | | Ice | 4.99 | 4.35 | 0.15 |
| APXV18-206517S-C w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 185.00 | 1" Ice | 6.25 | 5.59 | 0.28 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 3.79 | 3.16 | 0.05 |
| | | | | | | | 1/2" Ice | 4.38 | 3.75 | 0.09 |
| | | | | | | | Ice | 4.99 | 4.35 | 0.15 |
| Platform Mount [LP 1201-1_KCKR] | C | None | | | 0.00 | 185.00 | 1" Ice | 6.25 | 5.59 | 0.28 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 29.60 | 29.60 | 2.38 |
| | | | | | | | 1/2" Ice | 36.33 | 36.33 | 3.07 |
| | | | | | | | Ice | 43.26 | 43.26 | 3.86 |
| (3) 6' x 2" Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 185.00 | 1" Ice | 57.72 | 57.72 | 5.75 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.43 | 1.43 | 0.02 |
| | | | | | | | 1/2" Ice | 1.92 | 1.92 | 0.03 |
| | | | | | | | Ice | 2.29 | 2.29 | 0.05 |
| (3) 6' x 2" Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 185.00 | 1" Ice | 3.06 | 3.06 | 0.09 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.43 | 1.43 | 0.02 |
| | | | | | | | 1/2" Ice | 1.92 | 1.92 | 0.03 |
| | | | | | | | Ice | 2.29 | 2.29 | 0.05 |
| (3) 6' x 2" Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 185.00 | 1" Ice | 3.06 | 3.06 | 0.09 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.43 | 1.43 | 0.02 |
| | | | | | | | 1/2" Ice | 1.92 | 1.92 | 0.03 |
| | | | | | | | Ice | 2.29 | 2.29 | 0.05 |
| * LLPX310R-V4 | A | From | 4.00 | 0.00 | 0.00 | 175.00 | 1" Ice | 3.06 | 3.06 | 0.09 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.43 | 1.43 | 0.02 |
| | | | | | | | 1/2" Ice | 1.92 | 1.92 | 0.03 |
| | | | | | | | Ice | 2.29 | 2.29 | 0.05 |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|-----------------|-------------|-------------------|----------|---------|--------------------|-----------|-----------------------|----------------------|--------|------|
| | | | Horz | Lateral | | | | | | Vert |
| | | | ft | ft | ° | ft | ft ² | ft ² | K | |
| | | Centroid-Leg | 0.00 | | | 1/2" | 4.30 | 1.86 | 0.07 | |
| | | | 0.00 | | | Ice | 4.74 | 2.24 | 0.10 | |
| | | | | | | 1" Ice | 5.68 | 3.06 | 0.17 | |
| | | | | | | 2" Ice | | | | |
| LLPX310R-V4 | B | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 3.87 | 1.49 | 0.04 |
| | | | 0.00 | | | | 1/2" | 4.30 | 1.86 | 0.07 |
| | | | 0.00 | | | | Ice | 4.74 | 2.24 | 0.10 |
| | | | | | | | 1" Ice | 5.68 | 3.06 | 0.17 |
| | | | | | | | 2" Ice | | | |
| LLPX310R-V4 | C | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 3.87 | 1.49 | 0.04 |
| | | | 0.00 | | | | 1/2" | 4.30 | 1.86 | 0.07 |
| | | | 0.00 | | | | Ice | 4.74 | 2.24 | 0.10 |
| | | | | | | | 1" Ice | 5.68 | 3.06 | 0.17 |
| | | | | | | | 2" Ice | | | |
| NNVV-65B-R4 | A | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 7.62 | 3.01 | 0.08 |
| | | | 0.00 | | | | 1/2" | 8.12 | 3.45 | 0.15 |
| | | | 0.00 | | | | Ice | 8.63 | 3.90 | 0.23 |
| | | | | | | | 1" Ice | 9.68 | 4.82 | 0.41 |
| | | | | | | | 2" Ice | | | |
| NNVV-65B-R4 | B | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 7.62 | 3.01 | 0.08 |
| | | | 0.00 | | | | 1/2" | 8.12 | 3.45 | 0.15 |
| | | | 0.00 | | | | Ice | 8.63 | 3.90 | 0.23 |
| | | | | | | | 1" Ice | 9.68 | 4.82 | 0.41 |
| | | | | | | | 2" Ice | | | |
| NNVV-65B-R4 | C | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 7.62 | 3.01 | 0.08 |
| | | | 0.00 | | | | 1/2" | 8.12 | 3.45 | 0.15 |
| | | | 0.00 | | | | Ice | 8.63 | 3.90 | 0.23 |
| | | | | | | | 1" Ice | 9.68 | 4.82 | 0.41 |
| | | | | | | | 2" Ice | | | |
| TIMING 2000 | B | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 0.11 | 0.11 | 0.00 |
| | | | 0.00 | | | | 1/2" | 0.15 | 0.15 | 0.00 |
| | | | 0.00 | | | | Ice | 0.20 | 0.20 | 0.01 |
| | | | | | | | 1" Ice | 0.33 | 0.33 | 0.01 |
| | | | | | | | 2" Ice | | | |
| HORIZON COMPACT | A | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 0.72 | 0.37 | 0.01 |
| | | | 0.00 | | | | 1/2" | 0.83 | 0.45 | 0.02 |
| | | | 4.00 | | | | Ice | 0.94 | 0.54 | 0.03 |
| | | | | | | | 1" Ice | 1.19 | 0.74 | 0.05 |
| | | | | | | | 2" Ice | | | |
| AHCC | A | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 1.63 | 1.14 | 0.05 |
| | | | 0.00 | | | | 1/2" | 1.79 | 1.28 | 0.06 |
| | | | 0.00 | | | | Ice | 1.96 | 1.43 | 0.08 |
| | | | | | | | 1" Ice | 2.32 | 1.75 | 0.12 |
| | | | | | | | 2" Ice | | | |
| AHCC | B | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 1.63 | 1.14 | 0.05 |
| | | | 0.00 | | | | 1/2" | 1.79 | 1.28 | 0.06 |
| | | | 0.00 | | | | Ice | 1.96 | 1.43 | 0.08 |
| | | | | | | | 1" Ice | 2.32 | 1.75 | 0.12 |
| | | | | | | | 2" Ice | | | |
| AHCC | C | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 1.63 | 1.14 | 0.05 |
| | | | 0.00 | | | | 1/2" | 1.79 | 1.28 | 0.06 |
| | | | 0.00 | | | | Ice | 1.96 | 1.43 | 0.08 |
| | | | | | | | 1" Ice | 2.32 | 1.75 | 0.12 |
| | | | | | | | 2" Ice | | | |
| AHFIB_CCIV2 | A | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 2.79 | 1.53 | 0.07 |
| | | | 0.00 | | | | 1/2" | 3.01 | 1.71 | 0.09 |
| | | | 0.00 | | | | Ice | 3.24 | 1.90 | 0.11 |
| | | | | | | | 1" Ice | 3.72 | 2.29 | 0.17 |
| | | | | | | | 2" Ice | | | |
| AHFIB_CCIV2 | B | From Centroid-Leg | 4.00 | | 0.00 | 175.00 | No Ice | 2.79 | 1.53 | 0.07 |
| | | | 0.00 | | | | 1/2" | 3.01 | 1.71 | 0.09 |
| | | | 0.00 | | | | Ice | 3.24 | 1.90 | 0.11 |
| | | | | | | | 1" Ice | 3.72 | 2.29 | 0.17 |
| | | | | | | | 2" Ice | | | |
| AHFIB_CCIV2 | C | From | 4.00 | | 0.00 | 175.00 | No Ice | 2.79 | 1.53 | 0.07 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | CAAA Front ft² | CAAA Side ft² | Weight K |
|-------------------------------------|-------------|-------------------|--|-------------------------|-----------------|---|----------------------------------|------------------------------|
| | | Centroid-Leg | 0.00 0.00 | | | 1/2" Ice 3.01 1" Ice 3.24 2" Ice 3.72 | 1.71 1.90 2.29 | 0.09 0.11 0.17 |
| RRH-2WB | A | From Centroid-Leg | 4.00 0.00 -3.00 | 0.00 | 175.00 | No Ice 2.30 1/2" Ice 2.50 Ice 2.69 1" Ice 3.11 2" Ice 3.11 | 0.78 0.92 1.06 1.36 | 0.04 0.06 0.08 0.12 |
| RRH-2WB | B | From Centroid-Leg | 4.00 0.00 -3.00 | 0.00 | 175.00 | No Ice 2.30 1/2" Ice 2.50 Ice 2.69 1" Ice 3.11 2" Ice 3.11 | 0.78 0.92 1.06 1.36 | 0.04 0.06 0.08 0.12 |
| RRH-2WB | C | From Centroid-Leg | 4.00 0.00 -3.00 | 0.00 | 175.00 | No Ice 2.30 1/2" Ice 2.50 Ice 2.69 1" Ice 3.11 2" Ice 3.11 | 0.78 0.92 1.06 1.36 | 0.04 0.06 0.08 0.12 |
| Platform Mount [LP 301-1] | C | None | | 0.00 | 175.00 | No Ice 23.81 1/2" Ice 30.24 Ice 36.33 1" Ice 48.05 2" Ice 48.05 | 23.81 30.24 36.33 48.05 | 1.59 2.10 2.73 4.34 |
| * CXL 900-3LW | C | From Face | 4.00 0.00 3.00 | 0.00 | 161.00 | No Ice 0.14 1/2" Ice 0.33 Ice 0.48 1" Ice 0.81 2" Ice 0.81 | 0.14 0.33 0.48 0.81 | 0.00 0.00 0.01 0.02 |
| LNA | C | From Face | 4.00 0.00 0.00 | 0.00 | 161.00 | No Ice 0.14 1/2" Ice 0.19 Ice 0.25 1" Ice 0.39 2" Ice 0.39 | 0.05 0.09 0.13 0.24 | 0.00 0.00 0.00 0.01 |
| CAVITY FILTER | C | From Face | 4.00 0.00 0.00 | 0.00 | 161.00 | No Ice 0.19 1/2" Ice 0.25 Ice 0.32 1" Ice 0.47 2" Ice 0.47 | 0.08 0.12 0.17 0.29 | 0.00 0.00 0.01 0.02 |
| Side Arm Mount [SO 306-1] | C | From Face | 2.00 0.00 0.00 | 0.00 | 161.00 | No Ice 0.41 1/2" Ice 0.81 Ice 1.23 1" Ice 2.08 2" Ice 2.08 | 2.26 3.83 5.48 9.37 | 0.04 0.06 0.09 0.19 |
| Side Arm Mount [SO 104-3] | C | None | | 0.00 | 161.00 | No Ice 2.62 1/2" Ice 3.30 Ice 3.98 1" Ice 5.35 2" Ice 5.35 | 2.62 3.30 3.98 5.35 | 0.29 0.41 0.53 0.77 |
| * MX08FRO665-21 w/ Mount Pipe | A | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | No Ice 8.01 1/2" Ice 8.52 Ice 9.04 1" Ice 10.11 2" Ice 10.11 | 4.23 4.69 5.16 6.12 | 0.11 0.19 0.29 0.52 |
| MX08FRO665-21 w/ Mount Pipe | B | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | No Ice 8.01 1/2" Ice 8.52 Ice 9.04 1" Ice 10.11 2" Ice 10.11 | 4.23 4.69 5.16 6.12 | 0.11 0.19 0.29 0.52 |
| MX08FRO665-21 w/ Mount Pipe | C | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | No Ice 8.01 1/2" Ice 8.52 Ice 9.04 1" Ice 10.11 | 4.23 4.69 5.16 6.12 | 0.11 0.19 0.29 0.52 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustmen t ° | Placement ft | | C _{AA} Front ft ² | C _{AA} Side ft ² | Weight K |
|---------------------------------------|-------------|--------------------------|---|--------------------------------|-----------------|--------|---|--|-------------|
| TA08025-B604 | A | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.96 | 0.98 | 0.06 |
| | | | | | | 1/2" | 2.14 | 1.11 | 0.08 |
| | | | | | | Ice | 2.32 | 1.25 | 0.10 |
| | | | | | | 1" Ice | 2.71 | 1.55 | 0.15 |
| TA08025-B604 | B | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.96 | 0.98 | 0.06 |
| | | | | | | 1/2" | 2.14 | 1.11 | 0.08 |
| | | | | | | Ice | 2.32 | 1.25 | 0.10 |
| | | | | | | 1" Ice | 2.71 | 1.55 | 0.15 |
| TA08025-B604 | C | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.96 | 0.98 | 0.06 |
| | | | | | | 1/2" | 2.14 | 1.11 | 0.08 |
| | | | | | | Ice | 2.32 | 1.25 | 0.10 |
| | | | | | | 1" Ice | 2.71 | 1.55 | 0.15 |
| TA08025-B605 | A | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.96 | 1.13 | 0.08 |
| | | | | | | 1/2" | 2.14 | 1.27 | 0.09 |
| | | | | | | Ice | 2.32 | 1.41 | 0.11 |
| | | | | | | 1" Ice | 2.71 | 1.72 | 0.16 |
| TA08025-B605 | B | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.96 | 1.13 | 0.08 |
| | | | | | | 1/2" | 2.14 | 1.27 | 0.09 |
| | | | | | | Ice | 2.32 | 1.41 | 0.11 |
| | | | | | | 1" Ice | 2.71 | 1.72 | 0.16 |
| TA08025-B605 | C | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.96 | 1.13 | 0.08 |
| | | | | | | 1/2" | 2.14 | 1.27 | 0.09 |
| | | | | | | Ice | 2.32 | 1.41 | 0.11 |
| | | | | | | 1" Ice | 2.71 | 1.72 | 0.16 |
| RDIDC-9181-PF-48 | A | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 2.31 | 1.29 | 0.02 |
| | | | | | | 1/2" | 2.50 | 1.45 | 0.04 |
| | | | | | | Ice | 2.70 | 1.61 | 0.06 |
| | | | | | | 1" Ice | 3.12 | 1.96 | 0.12 |
| Commscope MC-PK8-DSH | C | None | | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 34.24 | 34.24 | 1.75 |
| | | | | | | 1/2" | 62.95 | 62.95 | 2.10 |
| | | | | | | Ice | 91.66 | 91.66 | 2.45 |
| | | | | | | 1" Ice | 149.08 | 149.08 | 3.15 |
| (2) 8' x 2" Mount Pipe | A | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.90 | 1.90 | 0.03 |
| | | | | | | 1/2" | 2.73 | 2.73 | 0.04 |
| | | | | | | Ice | 3.40 | 3.40 | 0.06 |
| | | | | | | 1" Ice | 4.40 | 4.40 | 0.12 |
| (2) 8' x 2" Mount Pipe | B | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.90 | 1.90 | 0.03 |
| | | | | | | 1/2" | 2.73 | 2.73 | 0.04 |
| | | | | | | Ice | 3.40 | 3.40 | 0.06 |
| | | | | | | 1" Ice | 4.40 | 4.40 | 0.12 |
| (2) 8' x 2" Mount Pipe | C | From Leg | 4.00 0.00 0.00 | 0.00 | 155.00 | 2" Ice | | | |
| | | | | | | No Ice | 1.90 | 1.90 | 0.03 |
| | | | | | | 1/2" | 2.73 | 2.73 | 0.04 |
| | | | | | | Ice | 3.40 | 3.40 | 0.06 |
| | | | | | | 1" Ice | 4.40 | 4.40 | 0.12 |
| * (2) SBNHH-1D65B w/ Mount Pipe | A | From Centroid- Leg | 4.00 0.00 0.00 | 0.00 | 103.00 | 2" Ice | | | |
| | | | | | | No Ice | 4.09 | 3.30 | 0.07 |
| | | | | | | 1/2" | 4.49 | 3.68 | 0.13 |
| | | | | | | Ice | 4.89 | 4.07 | 0.20 |
| | | | | | | 1" Ice | 5.72 | 4.87 | 0.39 |
| (2) SBNHH-1D65B w/ Mount Pipe | B | From Centroid- Leg | 4.00 0.00 0.00 | 0.00 | 103.00 | 2" Ice | | | |
| | | | | | | No Ice | 4.09 | 3.30 | 0.07 |
| | | | | | | 1/2" | 4.49 | 3.68 | 0.13 |
| | | | | | | Ice | 4.89 | 4.07 | 0.20 |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|-------------------------------|-------------|-------------------|----------|---------|--------------------|-----------|--------------------------|-------------------------|--------|------|
| | | | Horz | Lateral | | | | | | ft |
| | | | | | | | ft ² | ft ² | K | |
| (2) SBNHH-1D65B w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1" Ice | 5.72 | 4.87 | 0.39 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 4.09 | 3.30 | 0.07 |
| | | | | | | | 1/2" Ice | 4.49 | 3.68 | 0.13 |
| BXA-80080/4CF w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1" Ice | 4.89 | 4.07 | 0.20 |
| | | | | | | | 2" Ice | 5.72 | 4.87 | 0.39 |
| | | | | | | | No Ice | 5.04 | 4.03 | 0.03 |
| | | | | | | | 1/2" Ice | 5.42 | 4.65 | 0.08 |
| BXA-80080/4CF w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | Ice | 5.81 | 5.28 | 0.13 |
| | | | | | | | 1" Ice | 6.62 | 6.56 | 0.25 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 5.04 | 4.03 | 0.03 |
| BXA-80090/4CF w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1/2" Ice | 5.42 | 4.65 | 0.08 |
| | | | | | | | Ice | 5.81 | 5.28 | 0.13 |
| | | | | | | | 1" Ice | 6.62 | 6.56 | 0.25 |
| | | | | | | | 2" Ice | | | |
| CBRS w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | No Ice | 5.04 | 4.03 | 0.03 |
| | | | | | | | 1/2" Ice | 5.42 | 4.65 | 0.08 |
| | | | | | | | Ice | 5.81 | 5.28 | 0.13 |
| | | | | | | | 1" Ice | 6.62 | 6.56 | 0.25 |
| CBRS w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 2" Ice | | | |
| | | | | | | | No Ice | 3.83 | 3.88 | 0.03 |
| | | | | | | | 1/2" Ice | 4.20 | 4.49 | 0.07 |
| | | | | | | | Ice | 4.57 | 5.11 | 0.11 |
| CBRS w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1" Ice | 5.34 | 6.37 | 0.22 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.45 | 0.99 | 0.03 |
| | | | | | | | 1/2" Ice | 1.67 | 1.18 | 0.05 |
| MT6407-77A w/ Mount Pipe | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | Ice | 1.90 | 1.39 | 0.07 |
| | | | | | | | 1" Ice | 2.42 | 1.85 | 0.12 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 1.45 | 0.99 | 0.03 |
| MT6407-77A w/ Mount Pipe | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1/2" Ice | 1.67 | 1.18 | 0.05 |
| | | | | | | | Ice | 1.90 | 1.39 | 0.07 |
| | | | | | | | 1" Ice | 2.42 | 1.85 | 0.12 |
| | | | | | | | 2" Ice | | | |
| MT6407-77A w/ Mount Pipe | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | No Ice | 1.45 | 0.99 | 0.03 |
| | | | | | | | 1/2" Ice | 1.67 | 1.18 | 0.05 |
| | | | | | | | Ice | 1.90 | 1.39 | 0.07 |
| | | | | | | | 1" Ice | 2.42 | 1.85 | 0.12 |
| RFV01U-D2A | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 2" Ice | | | |
| | | | | | | | No Ice | 4.91 | 2.68 | 0.10 |
| | | | | | | | 1/2" Ice | 5.26 | 3.14 | 0.14 |
| | | | | | | | Ice | 5.61 | 3.62 | 0.18 |
| RFV01U-D2A | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1" Ice | 6.36 | 4.63 | 0.29 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 4.91 | 2.68 | 0.10 |
| | | | | | | | 1/2" Ice | 5.26 | 3.14 | 0.14 |
| RFV01U-D2A | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | Ice | 5.61 | 3.62 | 0.18 |
| | | | | | | | 1" Ice | 6.36 | 4.63 | 0.29 |
| | | | | | | | 2" Ice | | | |
| | | | | | | | No Ice | 4.91 | 2.68 | 0.10 |
| RFV01U-D2A | A | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 1/2" Ice | 5.26 | 3.14 | 0.14 |
| | | | | | | | Ice | 5.61 | 3.62 | 0.18 |
| | | | | | | | 1" Ice | 6.36 | 4.63 | 0.29 |
| | | | | | | | 2" Ice | | | |
| RFV01U-D2A | B | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | No Ice | 1.88 | 1.01 | 0.07 |
| | | | | | | | 1/2" Ice | 2.05 | 1.14 | 0.09 |
| | | | | | | | Ice | 2.22 | 1.28 | 0.11 |
| | | | | | | | 1" Ice | 2.60 | 1.59 | 0.15 |
| RFV01U-D2A | C | From Centroid-Leg | 4.00 | 0.00 | 0.00 | 103.00 | 2" Ice | | | |
| | | | | | | | No Ice | 1.88 | 1.01 | 0.07 |
| | | | | | | | 1/2" Ice | 2.05 | 1.14 | 0.09 |
| | | | | | | | Ice | 2.22 | 1.28 | 0.11 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | CAAA Front ft² | CAAA Side ft² | Weight K | |
|-------------------------------------|-------------|-------------------|--|-------------------------|-----------------|-------------------|------------------|-------------|------|
| RFV01U-D1A | A | From Centroid-Leg | 4.00 0.00 1.00 | 0.00 | 103.00 | 1" Ice | 2.60 | 1.59 | 0.15 |
| | | | | | | 2" Ice | 1.88 | 1.25 | 0.08 |
| | | | | | | No Ice | 2.05 | 1.39 | 0.10 |
| | | | | | | 1/2" Ice | 2.22 | 1.54 | 0.12 |
| | | | | | | 1" Ice | 2.60 | 1.86 | 0.18 |
| RFV01U-D1A | B | From Centroid-Leg | 4.00 0.00 1.00 | 0.00 | 103.00 | 1" Ice | 2.60 | 1.86 | 0.18 |
| | | | | | | 2" Ice | 1.88 | 1.25 | 0.08 |
| | | | | | | No Ice | 2.05 | 1.39 | 0.10 |
| | | | | | | 1/2" Ice | 2.22 | 1.54 | 0.12 |
| | | | | | | 1" Ice | 2.60 | 1.86 | 0.18 |
| RFV01U-D1A | C | From Centroid-Leg | 4.00 0.00 1.00 | 0.00 | 103.00 | 1" Ice | 2.60 | 1.86 | 0.18 |
| | | | | | | 2" Ice | 1.88 | 1.25 | 0.08 |
| | | | | | | No Ice | 2.05 | 1.39 | 0.10 |
| | | | | | | 1/2" Ice | 2.22 | 1.54 | 0.12 |
| | | | | | | 1" Ice | 2.60 | 1.86 | 0.18 |
| RRFDC-3315-PF-48 | A | From Centroid-Leg | 4.00 0.00 1.00 | 0.00 | 103.00 | 1" Ice | 4.34 | 3.05 | 0.17 |
| | | | | | | 2" Ice | 3.36 | 2.19 | 0.03 |
| | | | | | | No Ice | 3.60 | 2.39 | 0.06 |
| | | | | | | 1/2" Ice | 3.84 | 2.61 | 0.09 |
| | | | | | | 1" Ice | 4.34 | 3.05 | 0.17 |
| RRFDC-3315-PF-48 | A | From Centroid-Leg | 4.00 0.00 1.00 | 0.00 | 103.00 | 1" Ice | 4.34 | 3.05 | 0.17 |
| | | | | | | 2" Ice | 3.36 | 2.19 | 0.03 |
| | | | | | | No Ice | 3.60 | 2.39 | 0.06 |
| | | | | | | 1/2" Ice | 3.84 | 2.61 | 0.09 |
| | | | | | | 1" Ice | 4.34 | 3.05 | 0.17 |
| Platform Mount [LP 303-1_KCKR-HR-1] | C | None | | 0.00 | 103.00 | 1" Ice | 58.21 | 58.21 | 4.60 |
| | | | | | | 2" Ice | 28.31 | 28.31 | 1.77 |
| | | | | | | No Ice | 35.69 | 35.69 | 2.30 |
| | | | | | | 1/2" Ice | 43.11 | 43.11 | 2.94 |
| | | | | | | 1" Ice | 43.11 | 43.11 | 2.94 |
| 8' x 2" Mount Pipe | A | From Centroid-Leg | 4.00 0.00 0.00 | 0.00 | 103.00 | 1" Ice | 4.40 | 4.40 | 0.12 |
| | | | | | | 2" Ice | 1.90 | 1.90 | 0.03 |
| | | | | | | No Ice | 2.73 | 2.73 | 0.04 |
| | | | | | | 1/2" Ice | 3.40 | 3.40 | 0.06 |
| | | | | | | 1" Ice | 4.40 | 4.40 | 0.12 |
| 8' x 2" Mount Pipe | B | From Centroid-Leg | 4.00 0.00 0.00 | 0.00 | 103.00 | 1" Ice | 4.40 | 4.40 | 0.12 |
| | | | | | | 2" Ice | 1.90 | 1.90 | 0.03 |
| | | | | | | No Ice | 2.73 | 2.73 | 0.04 |
| | | | | | | 1/2" Ice | 3.40 | 3.40 | 0.06 |
| | | | | | | 1" Ice | 4.40 | 4.40 | 0.12 |
| 8' x 2" Mount Pipe | C | From Centroid-Leg | 4.00 0.00 0.00 | 0.00 | 103.00 | 1" Ice | 4.40 | 4.40 | 0.12 |
| | | | | | | 2" Ice | 1.90 | 1.90 | 0.03 |
| | | | | | | No Ice | 2.73 | 2.73 | 0.04 |
| | | | | | | 1/2" Ice | 3.40 | 3.40 | 0.06 |
| | | | | | | 1" Ice | 4.40 | 4.40 | 0.12 |

**

Dishes

| Description | Face or Leg | Dish Type | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | 3 dB Beam Width ° | Elevation ft | Outside Diameter ft | Aperture Area ft² | Weight K | |
|-------------|-------------|-----------------------|-------------------|--|-------------------------|----------------------|-----------------|------------------------|----------------------|-------------|------|
| VHLP2-23 | C | Paraboloid w/o Radome | From Centroid-Leg | 4.00 | 90.00 | | 175.00 | 2.17 | 3.72 | 0.03 | |
| | | | | 6.00 | | | | | 1/2" Ice | 4.00 | 0.03 |
| | | | | 0.00 | | | | | 1" Ice | 4.31 | 0.04 |

| Description | Face or Leg | Dish Type | Offset Type | Offsets: Horz Lateral Vert ft | Azimuth Adjustment ° | 3 dB Beam Width ° | Elevation ft | Outside Diameter ft | Aperture Area ft ² | Weight K | |
|-------------|-------------------|--------------|----------------|---|----------------------------|----------------------------|-----------------|---------------------------|-------------------------------------|-------------|------|
| | | | | | | | | | 2" Ice | 4.94 | 0.07 |

Load Combinations

| Comb. No. | Description |
|--------------|--|
| 1 | Dead Only |
| 2 | 1.2 Dead+1.0 Wind 0 deg - No Ice |
| 3 | 0.9 Dead+1.0 Wind 0 deg - No Ice |
| 4 | 1.2 Dead+1.0 Wind 30 deg - No Ice |
| 5 | 0.9 Dead+1.0 Wind 30 deg - No Ice |
| 6 | 1.2 Dead+1.0 Wind 60 deg - No Ice |
| 7 | 0.9 Dead+1.0 Wind 60 deg - No Ice |
| 8 | 1.2 Dead+1.0 Wind 90 deg - No Ice |
| 9 | 0.9 Dead+1.0 Wind 90 deg - No Ice |
| 10 | 1.2 Dead+1.0 Wind 120 deg - No Ice |
| 11 | 0.9 Dead+1.0 Wind 120 deg - No Ice |
| 12 | 1.2 Dead+1.0 Wind 150 deg - No Ice |
| 13 | 0.9 Dead+1.0 Wind 150 deg - No Ice |
| 14 | 1.2 Dead+1.0 Wind 180 deg - No Ice |
| 15 | 0.9 Dead+1.0 Wind 180 deg - No Ice |
| 16 | 1.2 Dead+1.0 Wind 210 deg - No Ice |
| 17 | 0.9 Dead+1.0 Wind 210 deg - No Ice |
| 18 | 1.2 Dead+1.0 Wind 240 deg - No Ice |
| 19 | 0.9 Dead+1.0 Wind 240 deg - No Ice |
| 20 | 1.2 Dead+1.0 Wind 270 deg - No Ice |
| 21 | 0.9 Dead+1.0 Wind 270 deg - No Ice |
| 22 | 1.2 Dead+1.0 Wind 300 deg - No Ice |
| 23 | 0.9 Dead+1.0 Wind 300 deg - No Ice |
| 24 | 1.2 Dead+1.0 Wind 330 deg - No Ice |
| 25 | 0.9 Dead+1.0 Wind 330 deg - No Ice |
| 26 | 1.2 Dead+1.0 Ice+1.0 Temp |
| 27 | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp |
| 28 | 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp |
| 29 | 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp |
| 30 | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp |
| 31 | 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp |
| 32 | 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp |
| 33 | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |
| 34 | 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp |
| 35 | 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp |
| 36 | 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp |
| 37 | 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp |
| 38 | 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp |
| 39 | Dead+Wind 0 deg - Service |
| 40 | Dead+Wind 30 deg - Service |
| 41 | Dead+Wind 60 deg - Service |
| 42 | Dead+Wind 90 deg - Service |
| 43 | Dead+Wind 120 deg - Service |
| 44 | Dead+Wind 150 deg - Service |
| 45 | Dead+Wind 180 deg - Service |
| 46 | Dead+Wind 210 deg - Service |
| 47 | Dead+Wind 240 deg - Service |
| 48 | Dead+Wind 270 deg - Service |
| 49 | Dead+Wind 300 deg - Service |
| 50 | Dead+Wind 330 deg - Service |

Maximum Member Forces

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Axial K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|-------------|-----------------|----------------|------------------|-----------------|---------|--------------------------|--------------------------|
| L1 | 192 - 151.25 | Pole | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -42.18 | -0.11 | 2.41 |
| | | | Max. Mx | 8 | -17.14 | -472.41 | -5.34 |
| | | | Max. My | 14 | -17.14 | -4.11 | -474.73 |
| | | | Max. Vy | 8 | 16.56 | -472.41 | -5.34 |
| | | | Max. Vx | 14 | 16.60 | -4.11 | -474.73 |
| L2 | 151.25 - 111.25 | Pole | Max. Torque | 16 | | | -1.64 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -65.58 | -0.11 | 3.65 |
| | | | Max. Mx | 8 | -31.71 | -1298.00 | -15.67 |
| | | | Max. My | 14 | -31.71 | -11.20 | -1303.04 |
| | | | Max. Vy | 8 | 23.55 | -1298.00 | -15.67 |
| L3 | 111.25 - 72.75 | Pole | Max. Vx | 14 | 23.63 | -11.20 | -1303.04 |
| | | | Max. Torque | 16 | | | -1.65 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -98.73 | -0.21 | 5.71 |
| | | | Max. Mx | 8 | -52.00 | -2322.45 | -25.72 |
| | | | Max. My | 14 | -52.00 | -18.31 | -2332.04 |
| L4 | 72.75 - 35.75 | Pole | Max. Vy | 8 | 31.14 | -2322.45 | -25.72 |
| | | | Max. Vx | 14 | 31.31 | -18.31 | -2332.04 |
| | | | Max. Torque | 20 | | | -2.15 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -127.22 | -0.21 | 6.45 |
| | | | Max. Mx | 8 | -73.82 | -3511.08 | -35.89 |
| L5 | 35.75 - 0 | Pole | Max. My | 14 | -73.81 | -25.39 | -3526.58 |
| | | | Max. Vy | 8 | 35.26 | -3511.08 | -35.89 |
| | | | Max. Vx | 14 | 35.42 | -25.39 | -3526.58 |
| | | | Max. Torque | 20 | | | -2.34 |
| | | | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -168.12 | -0.21 | 7.47 |
| | | | Max. Mx | 8 | -106.15 | -5205.63 | -48.49 |
| | | | Max. My | 14 | -106.15 | -34.17 | -5228.49 |
| | | | Max. Vy | 8 | 39.99 | -5205.63 | -48.49 |
| | | | Max. Vx | 14 | 40.15 | -34.17 | -5228.49 |
| | | | Max. Torque | 20 | | | -2.58 |

Maximum Reactions

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|----------|---------------------|-----------------|------------|-----------------|-----------------|
| Pole | Max. Vert | 26 | 168.12 | -0.00 | 0.00 |
| | Max. H _x | 20 | 106.15 | 39.90 | 0.08 |
| | Max. H _z | 2 | 106.15 | 0.06 | 40.05 |
| | Max. M _x | 2 | 5216.67 | 0.06 | 40.05 |
| | Max. M _z | 8 | 5205.63 | -39.97 | -0.28 |
| | Max. Torsion | 6 | 2.29 | -34.48 | 19.94 |
| | Min. Vert | 19 | 79.62 | 34.49 | -19.93 |
| | Min. H _x | 8 | 106.15 | -39.97 | -0.28 |
| | Min. H _z | 14 | 106.15 | -0.19 | -40.13 |
| | Min. M _x | 14 | -5228.49 | -0.19 | -40.13 |
| | Min. M _z | 20 | -5193.33 | 39.90 | 0.08 |
| | Min. Torsion | 20 | -2.58 | 39.90 | 0.08 |

Tower Mast Reaction Summary

| Load Combination | Vertical K | Shear _x K | Shear _z K | Overturning Moment, M _x kip-ft | Overturning Moment, M _z kip-ft | Torque kip-ft |
|--|---------------|-------------------------|-------------------------|--|--|------------------|
| Dead Only | 88.46 | 0.00 | 0.00 | -0.98 | 0.11 | 0.00 |
| 1.2 Dead+1.0 Wind 0 deg - No Ice | 106.15 | -0.06 | -40.05 | -5216.67 | 11.24 | -0.63 |
| 0.9 Dead+1.0 Wind 0 deg - No Ice | 79.62 | -0.06 | -40.05 | -5183.66 | 11.12 | -0.63 |
| 1.2 Dead+1.0 Wind 30 deg - No Ice | 106.15 | 19.88 | -34.64 | -4509.30 | -2583.69 | -1.72 |
| 0.9 Dead+1.0 Wind 30 deg - No Ice | 79.62 | 19.88 | -34.64 | -4480.73 | -2567.54 | -1.72 |
| 1.2 Dead+1.0 Wind 60 deg - No Ice | 106.15 | 34.48 | -19.94 | -2592.94 | -4484.87 | -2.29 |
| 0.9 Dead+1.0 Wind 60 deg - No Ice | 79.62 | 34.48 | -19.94 | -2576.39 | -4456.80 | -2.28 |
| 1.2 Dead+1.0 Wind 90 deg - No Ice | 106.15 | 39.97 | 0.28 | 48.49 | -5205.63 | -1.46 |
| 0.9 Dead+1.0 Wind 90 deg - No Ice | 79.62 | 39.97 | 0.28 | 48.45 | -5173.02 | -1.45 |
| 1.2 Dead+1.0 Wind 120 deg - No Ice | 106.15 | 34.62 | 20.23 | 2643.34 | -4508.53 | -1.11 |
| 0.9 Dead+1.0 Wind 120 deg - No Ice | 79.62 | 34.62 | 20.23 | 2627.05 | -4480.30 | -1.11 |
| 1.2 Dead+1.0 Wind 150 deg - No Ice | 106.15 | 20.08 | 34.82 | 4538.50 | -2619.00 | -0.42 |
| 0.9 Dead+1.0 Wind 150 deg - No Ice | 79.62 | 20.08 | 34.82 | 4510.34 | -2602.60 | -0.42 |
| 1.2 Dead+1.0 Wind 180 deg - No Ice | 106.15 | 0.19 | 40.13 | 5228.49 | -34.17 | 0.67 |
| 0.9 Dead+1.0 Wind 180 deg - No Ice | 79.62 | 0.19 | 40.13 | 5196.02 | -33.96 | 0.67 |
| 1.2 Dead+1.0 Wind 210 deg - No Ice | 106.15 | -19.74 | 34.80 | 4535.21 | 2559.96 | 2.23 |
| 0.9 Dead+1.0 Wind 210 deg - No Ice | 79.62 | -19.74 | 34.80 | 4507.08 | 2543.91 | 2.22 |
| 1.2 Dead+1.0 Wind 240 deg - No Ice | 106.15 | -34.49 | 19.93 | 2589.86 | 4485.50 | 2.27 |
| 0.9 Dead+1.0 Wind 240 deg - No Ice | 79.62 | -34.49 | 19.93 | 2573.95 | 4457.36 | 2.26 |
| 1.2 Dead+1.0 Wind 270 deg - No Ice | 106.15 | -39.90 | -0.08 | -15.98 | 5193.33 | 2.58 |
| 0.9 Dead+1.0 Wind 270 deg - No Ice | 79.62 | -39.90 | -0.08 | -15.55 | 5160.75 | 2.57 |
| 1.2 Dead+1.0 Wind 300 deg - No Ice | 106.15 | -34.61 | -20.08 | -2618.56 | 4508.04 | 2.13 |
| 0.9 Dead+1.0 Wind 300 deg - No Ice | 79.62 | -34.61 | -20.08 | -2601.83 | 4479.74 | 2.13 |
| 1.2 Dead+1.0 Wind 330 deg - No Ice | 106.15 | -20.03 | -34.74 | -4527.77 | 2611.66 | 0.76 |
| 0.9 Dead+1.0 Wind 330 deg - No Ice | 79.62 | -20.03 | -34.74 | -4499.08 | 2595.24 | 0.76 |
| 1.2 Dead+1.0 Ice+1.0 Temp | 168.12 | 0.00 | -0.00 | -7.47 | -0.21 | 0.00 |
| 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp | 168.12 | -0.01 | -12.72 | -1681.14 | 1.69 | -0.12 |
| 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp | 168.12 | 6.35 | -11.01 | -1455.34 | -835.48 | -1.29 |
| 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp | 168.12 | 11.01 | -6.34 | -841.47 | -1448.53 | -2.10 |
| 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp | 168.12 | 12.75 | 0.06 | 2.45 | -1678.18 | -2.18 |
| 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp | 168.12 | 11.04 | 6.40 | 836.30 | -1453.20 | -1.86 |
| 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp | 168.12 | 6.39 | 11.04 | 1445.90 | -842.32 | -1.03 |
| 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp | 168.12 | 0.04 | 12.74 | 1668.41 | -7.22 | 0.13 |
| 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp | 168.12 | -6.32 | 11.04 | 1445.69 | 829.77 | 1.40 |
| 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp | 168.12 | -11.01 | 6.34 | 825.48 | 1448.16 | 2.10 |
| 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp | 168.12 | -12.73 | -0.01 | -10.64 | 1674.98 | 2.42 |

| Load Combination | Vertical K | Shear _x K | Shear _z K | Overturning Moment, M _x kip-ft | Overturning Moment, M _z kip-ft | Torque kip-ft |
|---|---------------|-------------------------|-------------------------|--|--|------------------|
| deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 300 | 168.12 | -11.04 | -6.37 | -846.19 | 1452.58 | 2.08 |
| deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 330 | 168.12 | -6.38 | -11.03 | -1458.87 | 840.21 | 1.11 |
| deg+1.0 Ice+1.0 Temp Dead+Wind 0 deg - Service | 88.46 | -0.01 | -8.70 | -1129.41 | 2.51 | -0.14 |
| Dead+Wind 30 deg - Service | 88.46 | 4.32 | -7.52 | -976.37 | -558.92 | -0.39 |
| Dead+Wind 60 deg - Service | 88.46 | 7.49 | -4.33 | -561.75 | -970.25 | -0.52 |
| Dead+Wind 90 deg - Service | 88.46 | 8.68 | 0.06 | 9.72 | -1126.19 | -0.34 |
| Dead+Wind 120 deg - Service | 88.46 | 7.52 | 4.39 | 571.14 | -975.37 | -0.26 |
| Dead+Wind 150 deg - Service | 88.46 | 4.36 | 7.56 | 981.18 | -566.55 | -0.10 |
| Dead+Wind 180 deg - Service | 88.46 | 0.04 | 8.71 | 1130.46 | -7.30 | 0.15 |
| Dead+Wind 210 deg - Service | 88.46 | -4.29 | 7.56 | 980.46 | 553.96 | 0.50 |
| Dead+Wind 240 deg - Service | 88.46 | -7.49 | 4.33 | 559.58 | 970.56 | 0.51 |
| Dead+Wind 270 deg - Service | 88.46 | -8.66 | -0.02 | -4.20 | 1123.70 | 0.58 |
| Dead+Wind 300 deg - Service | 88.46 | -7.52 | -4.36 | -567.29 | 975.43 | 0.48 |
| Dead+Wind 330 deg - Service | 88.46 | -4.35 | -7.54 | -980.36 | 565.13 | 0.18 |

Solution Summary

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|---------|---------|------------------|---------|---------|---------|
| | PX K | PY K | PZ K | PX K | PY K | PZ K | |
| 1 | 0.00 | -88.46 | 0.00 | 0.00 | 88.46 | 0.00 | 0.000% |
| 2 | -0.06 | -106.15 | -40.05 | 0.06 | 106.15 | 40.05 | 0.000% |
| 3 | -0.06 | -79.62 | -40.05 | 0.06 | 79.62 | 40.05 | 0.000% |
| 4 | 19.88 | -106.15 | -34.64 | -19.88 | 106.15 | 34.64 | 0.000% |
| 5 | 19.88 | -79.62 | -34.64 | -19.88 | 79.62 | 34.64 | 0.000% |
| 6 | 34.48 | -106.15 | -19.94 | -34.48 | 106.15 | 19.94 | 0.000% |
| 7 | 34.48 | -79.62 | -19.94 | -34.48 | 79.62 | 19.94 | 0.000% |
| 8 | 39.97 | -106.15 | 0.28 | -39.97 | 106.15 | -0.28 | 0.000% |
| 9 | 39.97 | -79.62 | 0.28 | -39.97 | 79.62 | -0.28 | 0.000% |
| 10 | 34.62 | -106.15 | 20.23 | -34.62 | 106.15 | -20.23 | 0.000% |
| 11 | 34.62 | -79.62 | 20.23 | -34.62 | 79.62 | -20.23 | 0.000% |
| 12 | 20.08 | -106.15 | 34.82 | -20.08 | 106.15 | -34.82 | 0.000% |
| 13 | 20.08 | -79.62 | 34.82 | -20.08 | 79.62 | -34.82 | 0.000% |
| 14 | 0.19 | -106.15 | 40.13 | -0.19 | 106.15 | -40.13 | 0.000% |
| 15 | 0.19 | -79.62 | 40.13 | -0.19 | 79.62 | -40.13 | 0.000% |
| 16 | -19.74 | -106.15 | 34.80 | 19.74 | 106.15 | -34.80 | 0.000% |
| 17 | -19.74 | -79.62 | 34.80 | 19.74 | 79.62 | -34.80 | 0.000% |
| 18 | -34.49 | -106.15 | 19.93 | 34.49 | 106.15 | -19.93 | 0.000% |
| 19 | -34.49 | -79.62 | 19.93 | 34.49 | 79.62 | -19.93 | 0.000% |
| 20 | -39.90 | -106.15 | -0.08 | 39.90 | 106.15 | 0.08 | 0.000% |
| 21 | -39.90 | -79.62 | -0.08 | 39.90 | 79.62 | 0.08 | 0.000% |
| 22 | -34.61 | -106.15 | -20.08 | 34.61 | 106.15 | 20.08 | 0.000% |
| 23 | -34.61 | -79.62 | -20.08 | 34.61 | 79.62 | 20.08 | 0.000% |
| 24 | -20.03 | -106.15 | -34.74 | 20.03 | 106.15 | 34.74 | 0.000% |
| 25 | -20.03 | -79.62 | -34.74 | 20.03 | 79.62 | 34.74 | 0.000% |
| 26 | 0.00 | -168.12 | 0.00 | -0.00 | 168.12 | 0.00 | 0.000% |
| 27 | -0.01 | -168.12 | -12.72 | 0.01 | 168.12 | 12.72 | 0.000% |
| 28 | 6.35 | -168.12 | -11.01 | -6.35 | 168.12 | 11.01 | 0.000% |
| 29 | 11.01 | -168.12 | -6.34 | -11.01 | 168.12 | 6.34 | 0.000% |
| 30 | 12.75 | -168.12 | 0.06 | -12.75 | 168.12 | -0.06 | 0.000% |
| 31 | 11.04 | -168.12 | 6.40 | -11.04 | 168.12 | -6.40 | 0.000% |
| 32 | 6.39 | -168.12 | 11.04 | -6.39 | 168.12 | -11.04 | 0.000% |
| 33 | 0.04 | -168.12 | 12.74 | -0.04 | 168.12 | -12.74 | 0.000% |
| 34 | -6.32 | -168.12 | 11.04 | 6.32 | 168.12 | -11.04 | 0.000% |
| 35 | -11.01 | -168.12 | 6.34 | 11.01 | 168.12 | -6.34 | 0.000% |

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|---------|--------|------------------|--------|-------|---------|
| | PX K | PY K | PZ K | PX K | PY K | PZ K | |
| 36 | -12.73 | -168.12 | -0.01 | 12.73 | 168.12 | 0.01 | 0.000% |
| 37 | -11.04 | -168.12 | -6.37 | 11.04 | 168.12 | 6.37 | 0.000% |
| 38 | -6.38 | -168.12 | -11.03 | 6.38 | 168.12 | 11.03 | 0.000% |
| 39 | -0.01 | -88.46 | -8.70 | 0.01 | 88.46 | 8.70 | 0.000% |
| 40 | 4.32 | -88.46 | -7.52 | -4.32 | 88.46 | 7.52 | 0.000% |
| 41 | 7.49 | -88.46 | -4.33 | -7.49 | 88.46 | 4.33 | 0.000% |
| 42 | 8.68 | -88.46 | 0.06 | -8.68 | 88.46 | -0.06 | 0.000% |
| 43 | 7.52 | -88.46 | 4.39 | -7.52 | 88.46 | -4.39 | 0.000% |
| 44 | 4.36 | -88.46 | 7.56 | -4.36 | 88.46 | -7.56 | 0.000% |
| 45 | 0.04 | -88.46 | 8.71 | -0.04 | 88.46 | -8.71 | 0.000% |
| 46 | -4.29 | -88.46 | 7.56 | 4.29 | 88.46 | -7.56 | 0.000% |
| 47 | -7.49 | -88.46 | 4.33 | 7.49 | 88.46 | -4.33 | 0.000% |
| 48 | -8.66 | -88.46 | -0.02 | 8.66 | 88.46 | 0.02 | 0.000% |
| 49 | -7.52 | -88.46 | -4.36 | 7.52 | 88.46 | 4.36 | 0.000% |
| 50 | -4.35 | -88.46 | -7.54 | 4.35 | 88.46 | 7.54 | 0.000% |

Non-Linear Convergence Results

| Load Combination | Converged? | Number of Cycles | Displacement Tolerance | Force Tolerance |
|------------------|------------|------------------|------------------------|-----------------|
| 1 | Yes | 4 | 0.00000001 | 0.00000001 |
| 2 | Yes | 4 | 0.00000001 | 0.00011852 |
| 3 | Yes | 4 | 0.00000001 | 0.00006596 |
| 4 | Yes | 5 | 0.00000001 | 0.00003984 |
| 5 | Yes | 4 | 0.00000001 | 0.00084261 |
| 6 | Yes | 5 | 0.00000001 | 0.00004286 |
| 7 | Yes | 4 | 0.00000001 | 0.00090843 |
| 8 | Yes | 4 | 0.00000001 | 0.00011201 |
| 9 | Yes | 4 | 0.00000001 | 0.00006017 |
| 10 | Yes | 5 | 0.00000001 | 0.00004188 |
| 11 | Yes | 4 | 0.00000001 | 0.00088694 |
| 12 | Yes | 5 | 0.00000001 | 0.00004242 |
| 13 | Yes | 4 | 0.00000001 | 0.00089831 |
| 14 | Yes | 4 | 0.00000001 | 0.00011101 |
| 15 | Yes | 4 | 0.00000001 | 0.00005925 |
| 16 | Yes | 5 | 0.00000001 | 0.00004323 |
| 17 | Yes | 4 | 0.00000001 | 0.00091670 |
| 18 | Yes | 5 | 0.00000001 | 0.00003934 |
| 19 | Yes | 4 | 0.00000001 | 0.00083241 |
| 20 | Yes | 4 | 0.00000001 | 0.00017291 |
| 21 | Yes | 4 | 0.00000001 | 0.00010961 |
| 22 | Yes | 5 | 0.00000001 | 0.00004358 |
| 23 | Yes | 4 | 0.00000001 | 0.00092359 |
| 24 | Yes | 5 | 0.00000001 | 0.00004164 |
| 25 | Yes | 4 | 0.00000001 | 0.00088127 |
| 26 | Yes | 4 | 0.00000001 | 0.00006222 |
| 27 | Yes | 5 | 0.00000001 | 0.00013909 |
| 28 | Yes | 5 | 0.00000001 | 0.00014402 |
| 29 | Yes | 5 | 0.00000001 | 0.00014392 |
| 30 | Yes | 5 | 0.00000001 | 0.00013846 |
| 31 | Yes | 5 | 0.00000001 | 0.00014324 |
| 32 | Yes | 5 | 0.00000001 | 0.00014295 |
| 33 | Yes | 5 | 0.00000001 | 0.00013699 |
| 34 | Yes | 5 | 0.00000001 | 0.00014219 |
| 35 | Yes | 5 | 0.00000001 | 0.00014207 |
| 36 | Yes | 5 | 0.00000001 | 0.00013815 |
| 37 | Yes | 5 | 0.00000001 | 0.00014454 |
| 38 | Yes | 5 | 0.00000001 | 0.00014462 |
| 39 | Yes | 4 | 0.00000001 | 0.00001879 |
| 40 | Yes | 4 | 0.00000001 | 0.00002641 |
| 41 | Yes | 4 | 0.00000001 | 0.00002855 |
| 42 | Yes | 4 | 0.00000001 | 0.00001879 |
| 43 | Yes | 4 | 0.00000001 | 0.00002710 |
| 44 | Yes | 4 | 0.00000001 | 0.00002752 |
| 45 | Yes | 4 | 0.00000001 | 0.00001877 |

| | | | | |
|----|-----|---|------------|------------|
| 46 | Yes | 4 | 0.00000001 | 0.00002877 |
| 47 | Yes | 4 | 0.00000001 | 0.00002619 |
| 48 | Yes | 4 | 0.00000001 | 0.00001954 |
| 49 | Yes | 4 | 0.00000001 | 0.00002879 |
| 50 | Yes | 4 | 0.00000001 | 0.00002714 |

Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-----------------|---------------------------|-----------------------|-----------|------------|
| L1 | 192 - 151.25 | 10.66 | 50 | 0.56 | 0.00 |
| L2 | 156.25 - 111.25 | 6.80 | 44 | 0.45 | 0.00 |
| L3 | 117.75 - 72.75 | 3.68 | 44 | 0.31 | 0.00 |
| L4 | 80.75 - 35.75 | 1.68 | 44 | 0.20 | 0.00 |
| L5 | 45 - 0 | 0.53 | 44 | 0.10 | 0.00 |

Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|-----------------------------------|-----------------------|------------------|-----------|------------|------------------------------|
| 193.00 | OPA-65R-LCUU-H8 w/ Mount Pipe | 50 | 10.66 | 0.56 | 0.00 | 93883 |
| 185.00 | APXV18-206517S-C w/ Mount Pipe | 50 | 9.86 | 0.54 | 0.00 | 67059 |
| 175.00 | VHLP2-23 | 44 | 8.75 | 0.51 | 0.00 | 27612 |
| 161.00 | CXL 900-3LW | 44 | 7.27 | 0.47 | 0.00 | 15142 |
| 155.00 | MX08FRO665-21 w/ Mount Pipe | 44 | 6.68 | 0.45 | 0.00 | 13394 |
| 103.00 | (2) SBNHH-1D65B w/ Mount Pipe | 44 | 2.78 | 0.26 | 0.00 | 18596 |

Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-----------------|---------------------------|-----------------------|-----------|------------|
| L1 | 192 - 151.25 | 49.33 | 12 | 2.56 | 0.01 |
| L2 | 156.25 - 111.25 | 31.48 | 12 | 2.09 | 0.00 |
| L3 | 117.75 - 72.75 | 17.04 | 12 | 1.45 | 0.00 |
| L4 | 80.75 - 35.75 | 7.77 | 12 | 0.91 | 0.00 |
| L5 | 45 - 0 | 2.43 | 12 | 0.48 | 0.00 |

Critical Deflections and Radius of Curvature - Design Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|-----------------------------------|-----------------------|------------------|-----------|------------|------------------------------|
| 193.00 | OPA-65R-LCUU-H8 w/ Mount Pipe | 12 | 49.33 | 2.56 | 0.01 | 20489 |
| 185.00 | APXV18-206517S-C w/ Mount Pipe | 12 | 45.67 | 2.48 | 0.01 | 14635 |
| 175.00 | VHLP2-23 | 12 | 40.51 | 2.35 | 0.00 | 6025 |
| 161.00 | CXL 900-3LW | 12 | 33.66 | 2.16 | 0.00 | 3303 |
| 155.00 | MX08FRO665-21 w/ Mount Pipe | 12 | 30.92 | 2.07 | 0.00 | 2920 |
| 103.00 | (2) SBNHH-1D65B w/ Mount Pipe | 12 | 12.86 | 1.22 | 0.00 | 4018 |

| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|-----------|--------------|-----------------|------------|------|-------|---------------------|
| ft | | | in | ° | ° | ft |
| Pipe | | | | | | |

Compression Checks

Pole Design Data

| Section No. | Elevation | Size | L | L _u | Kl/r | A | P _u | φP _n | Ratio P _u / φP _n |
|-------------|---------------------|--------------------|-------|----------------|------|-----------------|----------------|-----------------|--|
| | ft | | ft | ft | | in ² | K | K | |
| L1 | 192 - 151.25 (1) | TP39.25x26x0.31 | 40.75 | 0.00 | 0.0 | 37.00 | -17.13 | 2164.75 | 0.008 |
| L2 | 151.25 - 111.25 (2) | TP51.62x36.99x0.44 | 45.00 | 0.00 | 0.0 | 68.14 | -31.70 | 3986.25 | 0.008 |
| L3 | 111.25 - 72.75 (3) | TP63.26x48.63x0.5 | 45.00 | 0.00 | 0.0 | 95.47 | -51.99 | 5585.12 | 0.009 |
| L4 | 72.75 - 35.75 (4) | TP74.29x59.66x0.56 | 45.00 | 0.00 | 0.0 | 126.25 | -73.81 | 7385.90 | 0.010 |
| L5 | 35.75 - 0 (5) | TP84.78x70.15x0.56 | 45.00 | 0.00 | 0.0 | 150.36 | -106.15 | 8796.05 | 0.012 |

Pole Bending Design Data

| Section No. | Elevation | Size | M _{ux} | φM _{nx} | Ratio M _{ux} / φM _{nx} | M _{uy} | φM _{ny} | Ratio M _{uy} / φM _{ny} |
|-------------|---------------------|--------------------|-----------------|------------------|--|-----------------|------------------|--|
| | ft | | kip-ft | kip-ft | | kip-ft | kip-ft | |
| L1 | 192 - 151.25 (1) | TP39.25x26x0.31 | 476.37 | 1979.46 | 0.241 | 0.00 | 1979.46 | 0.000 |
| L2 | 151.25 - 111.25 (2) | TP51.62x36.99x0.44 | 1307.40 | 4884.23 | 0.268 | 0.00 | 4884.23 | 0.000 |
| L3 | 111.25 - 72.75 (3) | TP63.26x48.63x0.5 | 2338.75 | 8215.23 | 0.285 | 0.00 | 8215.23 | 0.000 |
| L4 | 72.75 - 35.75 (4) | TP74.29x59.66x0.56 | 3535.42 | 12590.33 | 0.281 | 0.00 | 12590.33 | 0.000 |
| L5 | 35.75 - 0 (5) | TP84.78x70.15x0.56 | 5239.95 | 16713.83 | 0.314 | 0.00 | 16713.83 | 0.000 |

Pole Shear Design Data

| Section No. | Elevation | Size | Actual V _u | φV _n | Ratio V _u / φV _n | Actual T _u | φT _n | Ratio T _u / φT _n |
|-------------|---------------------|--------------------|-----------------------|-----------------|--|-----------------------|-----------------|--|
| | ft | | K | K | | kip-ft | kip-ft | |
| L1 | 192 - 151.25 (1) | TP39.25x26x0.31 | 16.68 | 649.42 | 0.026 | 0.40 | 2121.79 | 0.000 |
| L2 | 151.25 - 111.25 (2) | TP51.62x36.99x0.44 | 23.70 | 1195.87 | 0.020 | 0.19 | 5139.13 | 0.000 |
| L3 | 111.25 - 72.75 (3) | TP63.26x48.63x0.5 | 31.37 | 1675.54 | 0.019 | 0.21 | 8827.42 | 0.000 |
| L4 | 72.75 - 35.75 (4) | TP74.29x59.66x0.56 | 35.48 | 2215.77 | 0.016 | 0.30 | 13722.17 | 0.000 |
| L5 | 35.75 - 0 (5) | TP84.78x70.15x0.56 | 40.21 | 2638.81 | 0.015 | 0.42 | 19462.17 | 0.000 |

Pole Interaction Design Data

| Section No. | Elevation ft | Ratio P_u | Ratio M_{ux} | Ratio M_{uy} | Ratio V_u | Ratio T_u | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|------------------------|----------------|-------------------|-------------------|----------------|----------------|--------------------------|---------------------------|----------|
| | | ϕP_n | ϕM_{nx} | ϕM_{ny} | ϕV_n | ϕT_n | | | |
| L1 | 192 - 151.25 (1) | 0.008 | 0.241 | 0.000 | 0.026 | 0.000 | 0.249 | 1.050 | 4.8.2 |
| L2 | 151.25 - 111.25 (2) | 0.008 | 0.268 | 0.000 | 0.020 | 0.000 | 0.276 | 1.050 | 4.8.2 |
| L3 | 111.25 - 72.75 (3) | 0.009 | 0.285 | 0.000 | 0.019 | 0.000 | 0.294 | 1.050 | 4.8.2 |
| L4 | 72.75 - 35.75 (4) | 0.010 | 0.281 | 0.000 | 0.016 | 0.000 | 0.291 | 1.050 | 4.8.2 |
| L5 | 35.75 - 0 (5) | 0.012 | 0.314 | 0.000 | 0.015 | 0.000 | 0.326 | 1.050 | 4.8.2 |

Section Capacity Table

| Section No. | Elevation ft | Component Type | Size | Critical Element | P K | ϕP_{allow} K | % Capacity | Pass Fail |
|-----------------|-----------------|-------------------|--------------------|---------------------|---------|-----------------------|---------------|--------------|
| L1 | 192 - 151.25 | Pole | TP39.25x26x0.31 | 1 | -17.13 | 2272.99 | 23.7 | Pass |
| L2 | 151.25 - 111.25 | Pole | TP51.62x36.99x0.44 | 2 | -31.70 | 4185.56 | 26.3 | Pass |
| L3 | 111.25 - 72.75 | Pole | TP63.26x48.63x0.5 | 3 | -51.99 | 5864.38 | 28.0 | Pass |
| L4 | 72.75 - 35.75 | Pole | TP74.29x59.66x0.56 | 4 | -73.81 | 7755.19 | 27.7 | Pass |
| L5 | 35.75 - 0 | Pole | TP84.78x70.15x0.56 | 5 | -106.15 | 9235.85 | 31.0 | Pass |
| Summary | | | | | | | | |
| Pole (L5) | | | | | | | 31.0 | Pass |
| RATING = | | | | | | | 31.0 | Pass |

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-3/4" TO 155 FT LEVEL

(OTHER CONSIDERED EQUIPMENT—IN CONDUIT)
(7) 5/16" TO 175 FT LEVEL
(1) 5/8" TO 175 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1/2" TO 175 FT LEVEL
(3) 1-5/8" TO 175 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 161 FT LEVEL

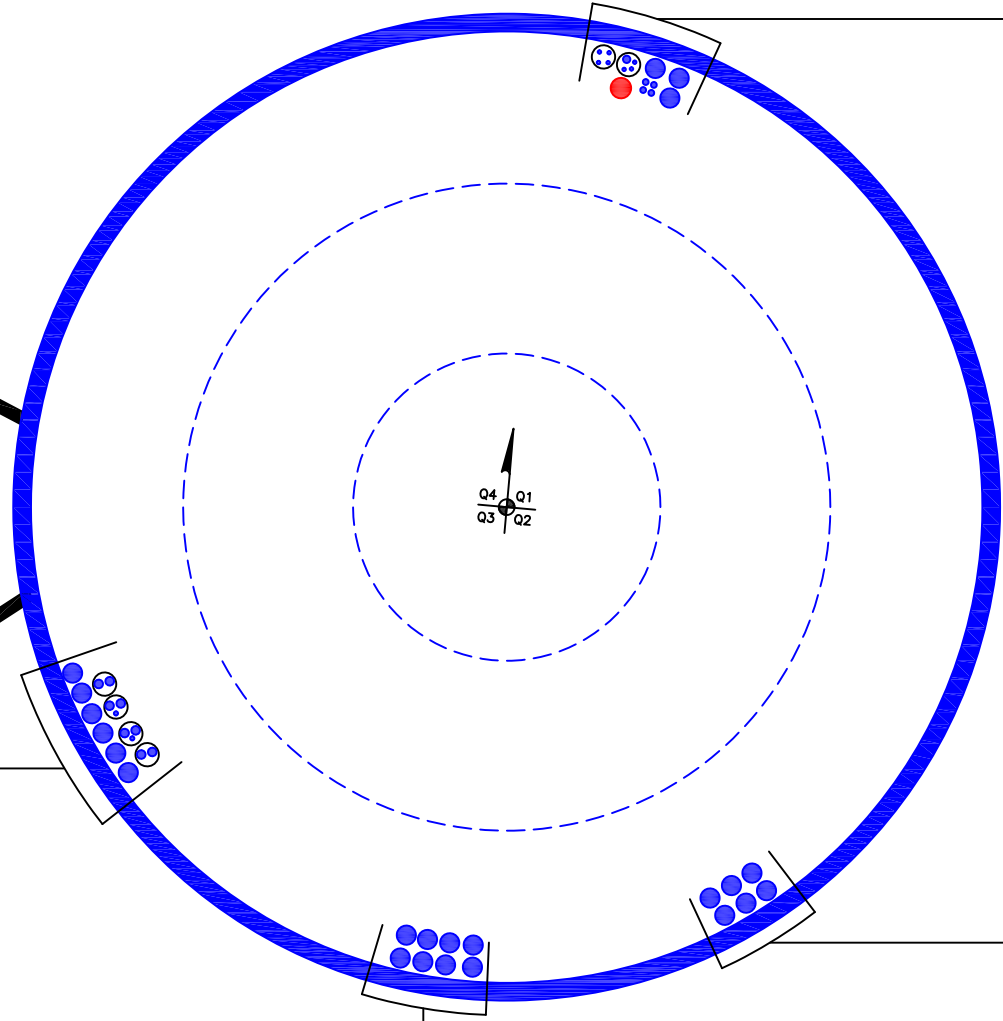
CLIMBING PEGS
W/ SAFETY CLIMB

Q4
Q1
Q3
Q2

(OTHER CONSIDERED EQUIPMENT—IN (4) 2" CONDUITS)
(2) 3/8" TO 195 FT LEVEL
(8) 3/4" TO 195 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 195 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 185 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(8) 1-5/8" TO 103 FT LEVEL



APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

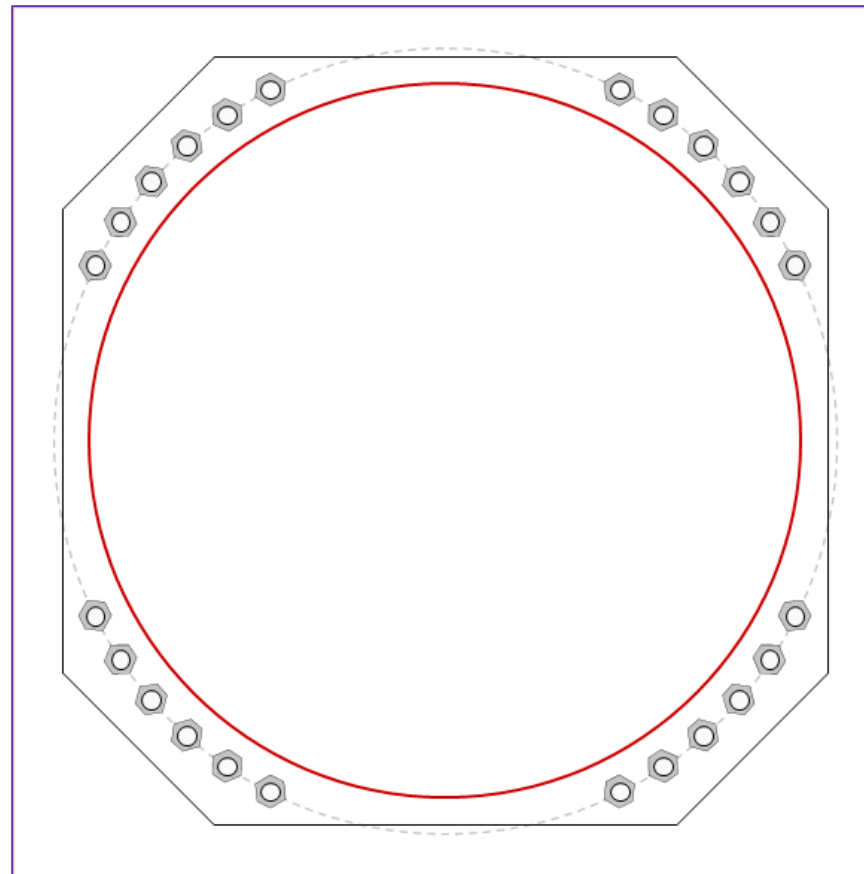


| Site Info | |
|-----------|----------------------|
| BU # | 803843 |
| Site Name | EW BRITAIN 4 CAC 803 |
| Order # | 556643 Rev 0 |

| Analysis Considerations | |
|-------------------------|------|
| TIA-222 Revision | H |
| Grout Considered: | No |
| l_{ar} (in) | 1.75 |

| Applied Loads | |
|--------------------|---------|
| Moment (kip-ft) | 5239.95 |
| Axial Force (kips) | 106.15 |
| Shear Force (kips) | 40.21 |

*TIA-222-H Section 15.5 Applied



| Connection Properties | Analysis Results |
|-----------------------|------------------|
|-----------------------|------------------|

| Anchor Rod Data |
|--|
| (24) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 93" BC <i>Anchor Spacing: 6 in</i> |
| Base Plate Data |
| 91" W x 3.25" Plate (A572-55; $F_y=55$ ksi, $F_u=70$ ksi); Clip: 18 in |
| Stiffener Data |
| N/A |
| Pole Data |
| 84.78" x 0.5625" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi) |

| Anchor Rod Summary | | | <i>(units of kips, kip-in)</i> |
|-------------------------|-------------------------|----------------------|--------------------------------|
| $P_{u_t} = 108.24$ | $\phi P_{n_t} = 243.75$ | Stress Rating | |
| $V_u = 1.68$ | $\phi V_n = 149.1$ | 42.3% | |
| $M_u = n/a$ | $\phi M_n = n/a$ | Pass | |
| Base Plate Summary | | | |
| Max Stress (ksi): | 17.79 | (Flexural) | |
| Allowable Stress (ksi): | 49.5 | | |
| Stress Rating: | 34.2% | Pass | |

Drilled Pier Foundation



| | |
|---------------|--------------------|
| BU #: | 803843 |
| Site Name: | CT NEW BRITAIN 4 C |
| Order Number: | 556643 Rev 0 |

| | |
|------------------|----------|
| TIA-222 Revison: | H |
| Tower Type: | Monopole |

| Applied Loads | | |
|--------------------|---------|--------|
| | Comp. | Uplift |
| Moment (kip-ft) | 5239.96 | |
| Axial Force (kips) | 106.15 | |
| Shear Force (kips) | 40.2 | |

| Material Properties | | |
|--------------------------|----|-----|
| Concrete Strength, f'c: | 3 | ksi |
| Rebar Strength, Fy: | 60 | ksi |
| Tie Yield Strength, Fyt: | 40 | ksi |

| Pier Design Data | | |
|---|------|----|
| Depth | 28.5 | ft |
| Ext. Above Grade | 0.5 | ft |
| Pier Section 1 | | |
| <i>From 0.5' above grade to 28.5' below grade</i> | | |
| Pier Diameter | 10 | ft |
| Rebar Quantity | 40 | |
| Rebar Size | 11 | |
| Clear Cover to Ties | 4 | in |
| Tie Size | 5 | |
| Tie Spacing | | in |

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results

| Soil Lateral Check | Compression | Uplift |
|--------------------------------|-------------|--------|
| D _{v=0} (ft from TOC) | 7.71 | - |
| Soil Safety Factor | 3.40 | - |
| Max Moment (kip-ft) | 5514.55 | - |
| Rating* | 37.3% | - |

| Soil Vertical Check | Compression | Uplift |
|---------------------------|-------------|--------|
| Skin Friction (kips) | 553.71 | - |
| End Bearing (kips) | 1413.72 | - |
| Weight of Concrete (kips) | 318.82 | - |
| Total Capacity (kips) | 1967.42 | - |
| Axial (kips) | 424.97 | - |
| Rating* | 20.6% | - |

| Reinforced Concrete Flexure | Compression | Uplift |
|------------------------------|-------------|--------|
| Critical Depth (ft from TOC) | 7.40 | - |
| Critical Moment (kip-ft) | 5513.48 | - |
| Critical Moment Capacity | 14656.56 | - |
| Rating* | 35.8% | - |

| Reinforced Concrete Shear | Compression | Uplift |
|------------------------------|-------------|--------|
| Critical Depth (ft from TOC) | 20.62 | - |
| Critical Shear (kip) | 532.40 | - |
| Critical Shear Capacity | 1128.42 | - |
| Rating* | 44.9% | - |

| | |
|-------------------------------|-------|
| Soil Interaction Rating* | 37.3% |
| Structural Foundation Rating* | 44.9% |

*Rating per TIA-222-H Section 15.5

| Check Limitation | |
|-------------------------------------|-------------------------------------|
| Apply TIA-222-H Section 15.5: | <input checked="" type="checkbox"/> |
| N/A | <input type="checkbox"/> |
| Shear Design Options | |
| Check Shear along Depth of Pier: | <input checked="" type="checkbox"/> |
| Utilize Shear-Friction Methodology: | <input type="checkbox"/> |
| Override Critical Depth: | <input type="checkbox"/> |

[Go to Soil Calculations](#)

Soil Profile

| | | | |
|-------------------|----|-------------|---|
| Groundwater Depth | 13 | # of Layers | 5 |
|-------------------|----|-------------|---|

| Layer | Top (ft) | Bottom (ft) | Thickness (ft) | γ _{soil} (pcf) | γ _{concrete} (pcf) | Cohesion (ksf) | Angle of Friction (degrees) | Calculated Ultimate Skin Friction Comp (ksf) | Calculated Ultimate Skin Friction Uplift (ksf) | Ultimate Skin Friction Comp Override (ksf) | Ultimate Skin Friction Uplift Override (ksf) | Ult. Gross Bearing Capacity (ksf) | SPT Blow Count | Soil Type |
|-------|----------|-------------|----------------|-------------------------|-----------------------------|----------------|-----------------------------|--|--|--|--|-----------------------------------|----------------|--------------|
| 1 | 0 | 5 | 5 | 115 | 150 | 0 | 0 | 0.000 | 0.000 | 0.00 | 0.00 | | | Cohesionless |
| 2 | 5 | 13 | 8 | 115 | 150 | 0 | 30 | 0.000 | 0.000 | 1.00 | 1.00 | | | Cohesionless |
| 3 | 13 | 15 | 2 | 52.6 | 87.6 | 0 | 30 | 0.000 | 0.000 | 1.00 | 1.00 | | | Cohesionless |
| 4 | 15 | 23 | 8 | 70 | 87.6 | 0 | 34 | 0.000 | 0.000 | 1.00 | 1.00 | | | Cohesionless |
| 5 | 23 | 28.5 | 5.5 | 70 | 87.6 | 0 | 34 | 0.000 | 0.000 | 1.00 | 1.00 | 24 | | Cohesionless |

Pier and Pad Foundation



BU #: 803843
Site Name: CT NEW BRITAIN
App. Number: 556643 Rev 0

TIA-222 Revision: H
Tower Type: Monopole

Top & Bot. Pad Rein. Different?:
Block Foundation?:
Rectangular Pad?:

| Superstructure Analysis Reactions | | |
|-----------------------------------|---------|---------|
| Compression, P_{comp} : | 106.15 | kips |
| Base Shear, Vu_{comp} : | 40.2 | kips |
| | | |
| Moment, M_u : | 5239.96 | ft-kips |
| Tower Height, H : | 192 | ft |
| | | |
| BP Dist. Above Fdn, bp_{dist} : | 4 | in |

| Foundation Analysis Checks | | | | |
|---------------------------------------|----------|---------|---------|-------|
| | Capacity | Demand | Rating* | Check |
| <i>Lateral (Sliding) (kips)</i> | 500.40 | 40.20 | 7.7% | Pass |
| <i>Bearing Pressure (ksf)</i> | 4.50 | 1.97 | 41.6% | Pass |
| <i>Overturning (kip*ft)</i> | 12958.99 | 5554.86 | 42.9% | Pass |
| <i>Pier Flexure (Comp.) (kip*ft)</i> | 22137.88 | 5380.66 | 23.1% | Pass |
| | | | | |
| <i>Pier Compression (kip)</i> | 37491.77 | 155.63 | 0.4% | Pass |
| <i>Pad Flexure (kip*ft)</i> | 16873.89 | 1770.21 | 10.0% | Pass |
| <i>Pad Shear - 1-way (kips)</i> | 1374.11 | 213.42 | 14.8% | Pass |
| <i>Pad Shear - 2-way (Comp) (ksi)</i> | 0.164 | 0.023 | 13.5% | Pass |
| <i>Flexural 2-way (Comp) (kip*ft)</i> | 22895.15 | 3228.40 | 13.4% | Pass |

| Pier Properties | | |
|----------------------------------|----------|----|
| Pier Shape: | Circular | |
| Pier Diameter, $dpier$: | 10 | ft |
| Ext. Above Grade, E : | 0.5 | ft |
| Pier Rebar Size, Sc : | 11 | |
| Pier Rebar Quantity, mc : | 64 | |
| Pier Tie/Spiral Size, St : | 4 | |
| Pier Tie/Spiral Quantity, mt : | 10 | |
| Pier Reinforcement Type: | Tie | |
| Pier Clear Cover, cc_{pier} : | 3 | in |

*Rating per TIA-222-H Section 15.5

| | |
|---------------------|-------|
| Soil Rating*: | 42.9% |
| Structural Rating*: | 23.1% |

| Pad Properties | | |
|--|------|----|
| Depth, D : | 7 | ft |
| Pad Width, W_1 : | 32.5 | ft |
| Pad Thickness, T : | 4 | ft |
| Pad Rebar Size (Bottom dir. 2), Sp_2 : | 11 | |
| Pad Rebar Quantity (Bottom dir. 2), mp_2 : | 60 | |
| Pad Clear Cover, cc_{pad} : | 3 | in |

| Material Properties | | |
|---|-----|-----|
| Rebar Grade, F_y : | 60 | ksi |
| Concrete Compressive Strength, F'_c : | 3 | ksi |
| Dry Concrete Density, δ_c : | 150 | pcf |

| Soil Properties | | |
|-------------------------------------|-------|---------|
| Total Soil Unit Weight, γ : | 125 | pcf |
| Ultimate Gross Bearing, Q_{ult} : | 6.000 | ksf |
| Cohesion, C_u : | 0.000 | ksf |
| Friction Angle, ϕ : | 32 | degrees |
| SPT Blow Count, N_{blows} : | 13 | |
| Base Friction, μ : | 0.5 | |
| Neglected Depth, N : | 5.00 | ft |
| Foundation Bearing on Rock? | No | |
| Groundwater Depth, gw : | n/a | ft |

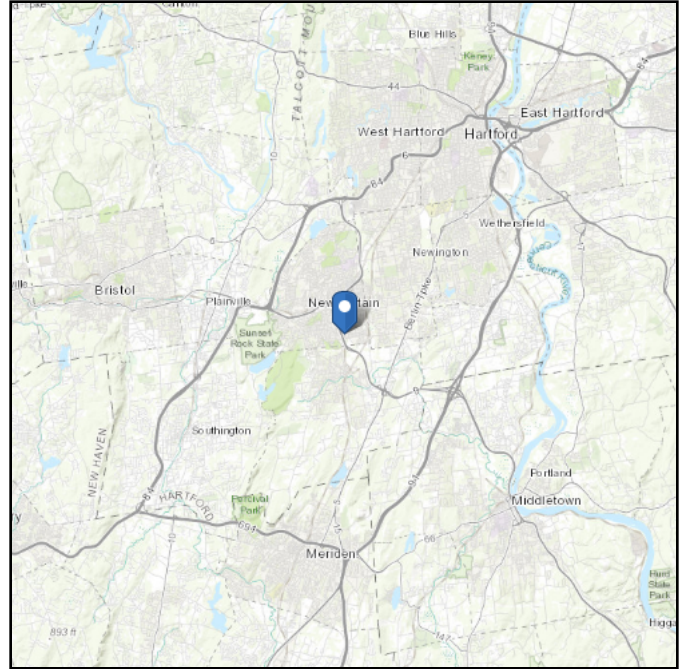
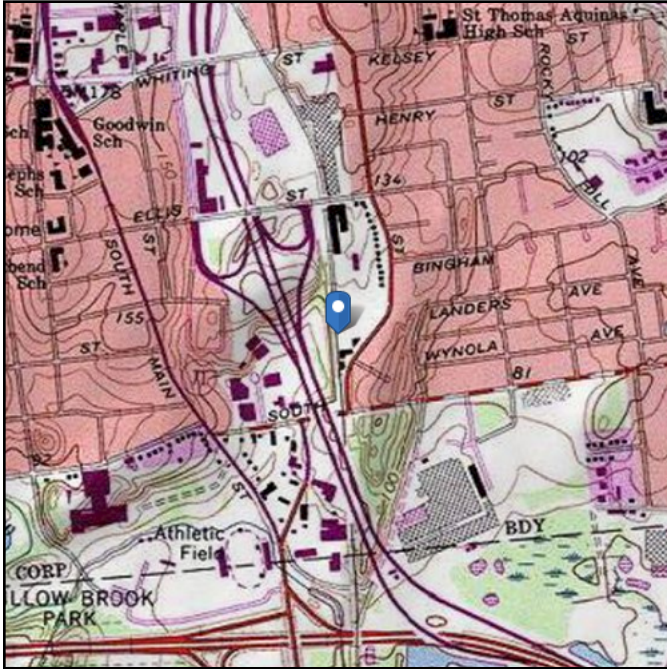
--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 111.66 ft (NAVD 88)
Latitude: 41.654556
Longitude: -72.769331

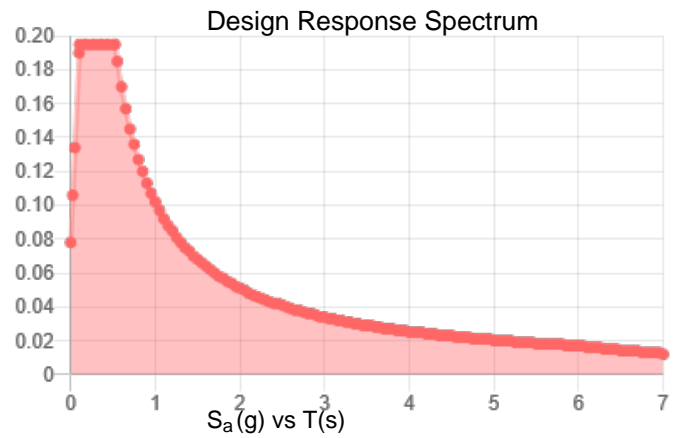
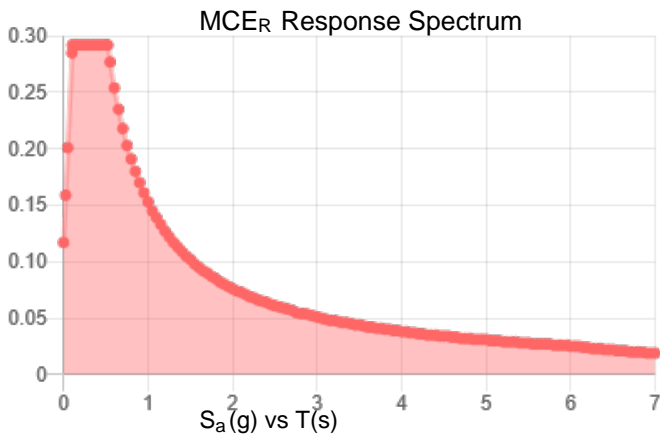


Site Soil Class: D - Stiff Soil

Results:

| | | | |
|------------|-------|--------------------|-------|
| S_S : | 0.183 | S_{DS} : | 0.195 |
| S_1 : | 0.064 | S_{D1} : | 0.102 |
| F_a : | 1.6 | T_L : | 6 |
| F_v : | 2.4 | PGA : | 0.093 |
| S_{MS} : | 0.292 | PGA _M : | 0.149 |
| S_{M1} : | 0.153 | F _{PGA} : | 1.6 |
| | | I_e : | 1 |

Seismic Design Category B



Data Accessed:

Fri May 21 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Fri May 21 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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