

March 7, 2024

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification
1440 Litchfield Turnpike, New Hartford, Connecticut**

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains a wireless telecommunications facility at the above-referenced address (the “Property”). Cellco’s facility consists of antennas and remote radio heads attached to a bell tower and related equipment located inside a basement area near the bell tower. The bell tower and Cellco’s use of the bell tower was approved by the Council in December of 2004 in Petition No. 687. A copy of Cellco’s Petition No. 687 Decision and Order is included in Attachment 1.

Cellco’s proposed modification involves the installation of two (2) interference mitigation filters (“Filters”) on the existing antenna mounting structure. The specification sheet for the Filter is included in Attachment 2.

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 New Hartford’s Chief Elected Official and Land Use Officer. A copy of this letter is being sent to the Harvest Baptist Church, Inc., the owner of the Property.

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

1. The proposed modifications will not result in an increase in the height of the existing bell tower. The Filters will be installed on Cellco’s existing antenna mounting structure.

Melanie A. Bachman, Esq.

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2. The proposed modifications will not involve any change to Cellco's equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The installation of the Filters will not result in a change to radio frequency (RF) emissions from the facility. Therefore, no new RF emissions information is included in this filing.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. According to the attached Structural Analysis Report ("SA") and Mount Analysis Report ("MA"), the existing bell tower structure, foundation, and antenna assembly, with certain modifications, can support Cellco's proposed modifications. A copy of the SA and MA are included in Attachment 3.

A copy of the parcel map and Property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 5.

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:

Daniel V. Jerram, New Hartford First Selectman

Michael Lucas, New Hartford Inland Wetlands/Zoning Enforcement Officer

Harvest Baptist Church Inc.

Alex Tyurin, Verizon Wireless

ATTACHMENT 1

| | | |
|--|---|------------------|
| PETITION NO. 687 - Cellco Partnership d/b/a Verizon Wireless petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the establishment of a wireless telecommunications facility at the Harvest Baptist Church, 1440 Litchfield Turnpike (Route 202), New Hartford, Connecticut. | } | Connecticut |
| | } | Siting |
| | } | Council |
| | | December 1, 2004 |

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the environmental effects associated with the construction, operation, and maintenance of a telecommunications facility at the Harvest Baptist Church, 1440 Litchfield Turnpike (Route 202), New Hartford, Connecticut are not significant and therefore are not sufficient reason to deny this petition.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as specified in the petition, designed as a 125-foot bell tower placed on a platform within the Town approved pavilion structure. The bell tower shall not exceed 125 feet above the level of the pavilion platform. The pavilion platform shall not exceed a height of six feet above ground level.

2. The facility owner shall prepare a Development and Management (D&M) Plan for this site that complies with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of New Hartford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction. The D&M shall include:
 - a. a final site plan(s) of site development, approved by a professional engineer, that includes specifications for the pavilion, bell tower, bell tower foundation, antennas, radio equipment, access road, utility line, and landscaping; and
 - b. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The facility owner shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The facility owner shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council when circumstances in operation cause a change in power

density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The facility owner shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The facility owner shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void. The facility owner shall remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Any proposed modifications to this Decision and Order shall be served to all parties and intervenors and the Town of New Hartford as listed in the service list.

Pursuant to General Statutes § 16-50p, the Council hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in Hartford Courant and the Register Citizen.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

| <u>Applicant</u> | <u>Its Representative</u> |
|---|--|
| Cellco Partnership d/b/a Verizon Wireless | Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103 |
| James J. Grustas Patricia A. Grustas 1460 Litchfield Turnpike New Hartford, CT 06057 | |

| | |
|--|---|
| Silas Kinsey 98 Kinsey Road New Hartford, CT 06057 | Jaime M. LaMere, Esq. Cramer & Anderson LLP 46 West Street P.O. Box 278 Litchfield, CT 06759-0278 |
| Thomas Fabiaschi 43 Wood Land Road New Hartford, CT 06057 | |
| Charles Yanavich 1474 Litchfield Turnpike New Hartford, CT 06057 | |
| Marcia Wyman Kim Wyman P.O. Box 161 Harwinton, CT 06791 | |

ATTACHMENT 2

KA-6030

TWIN BANDSTOP 900MHZ INTERFERENCE MITIGATION FILTER

The KA-6030 is ideal for co-located 700, 850 and 900 networks. Utilising a 2.6MHz guardband the KA-6030 provides rejection of the 900 UL band while passing 700/850 UL and DL bands. Capable of being used in an outdoor environment the KA-6030 contains two identical bandstop filters, suitable for 2x2 MIMO configuration, offering excellent insertion loss, group delay and rejection.

FEATURES

- Passes full 700 and 850 bands
- Low insertion loss
- Rejection of 900MHz uplink
- DC/AISG pass
- Twin unit
- Dual twin mounting available



TECHNICAL SPECIFICATIONS

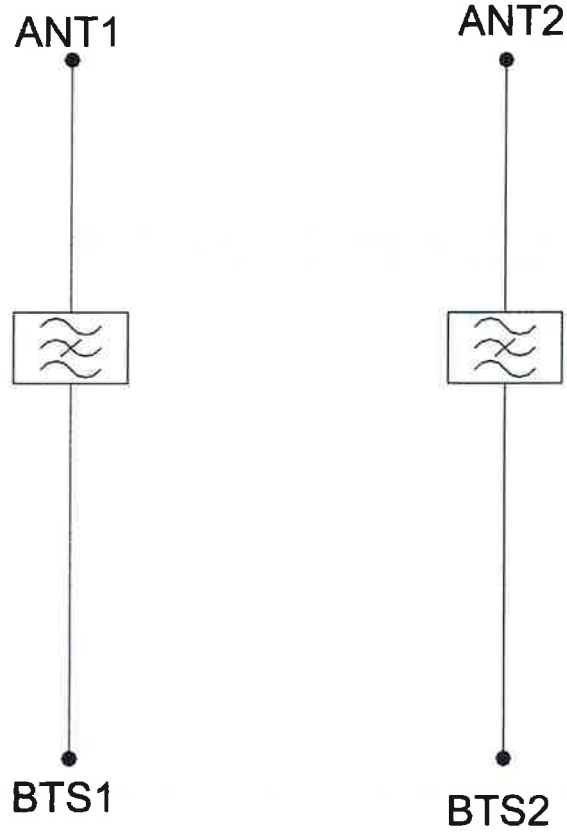
| BAND NAME | 700 PATH / 850 UPLINK PATH | 850 DOWNLINK PATH |
|---|--|-------------------------------|
| Passband | 698 - 849MHz | 869 - 891.5MHz |
| Insertion loss | 0.1dB typical / 0.3dB maximum | 0.5dB typical, 1.45dB maximum |
| Return loss | 24dB typical, 18dB minimum | |
| Maximum input power (Per Port) | 100W average | 200W average and 66W per 5MHz |
| Rejection | 53dB minimum @ 894.1 - 896.5MHz | |
| ELECTRICAL | | |
| Impedance | 50Ohms | |
| Intermodulation products | -160dBc maximum in UL Band (assuming 20MHz Signal), with 2 x 43dBm carriers -153dBc maximum with 2 x 43dBm | |
| DC / AISG | | |
| Passband | 0 - 13MHz | |
| Insertion loss | 0.3dB maximum | |
| Return loss | 15dB minimum | |
| Input voltage range | ± 33V | |
| DC current rating | 2A continuous, 4A peak | |
| Compliance | 3GPP TS 25.461 | |
| ENVIRONMENTAL | | |
| For further details of environmental compliance, please contact Kaelus. | | |
| Temperature range | -20°C to +60°C -4°F to +140°F | |
| Ingress protection | IP67 | |
| Altitude | 2600m 8530ft | |
| Lightning protection | RF port: ±5kA maximum (8/20us), IEC 61000-4-5 – Unit must be terminated with some lightning protection circuits. | |
| MTBF | >1,000,000 hours | |
| Compliance | ETSI EN 300 019 class 4.1H, RoHS, NEBS GR-487-CORE | |

| MECHANICAL | |
|----------------------|--|
| Dimensions H x D x W | 269 x 277 x 80mm 10.60 x 10.90 x 3.15in (Excluding brackets and connectors) |
| Weight | 0.0 kg 17.0 lbs (no bracket) |
| Finish | Powder coated, light grey (RAL7035) |
| Connectors | RF: 4.3-10 (F) x 4 |
| Mounting | Optional pole/wall bracket supplied with two metal clamps 45-178mm diameter poles or custom bracket. See ordering information. |

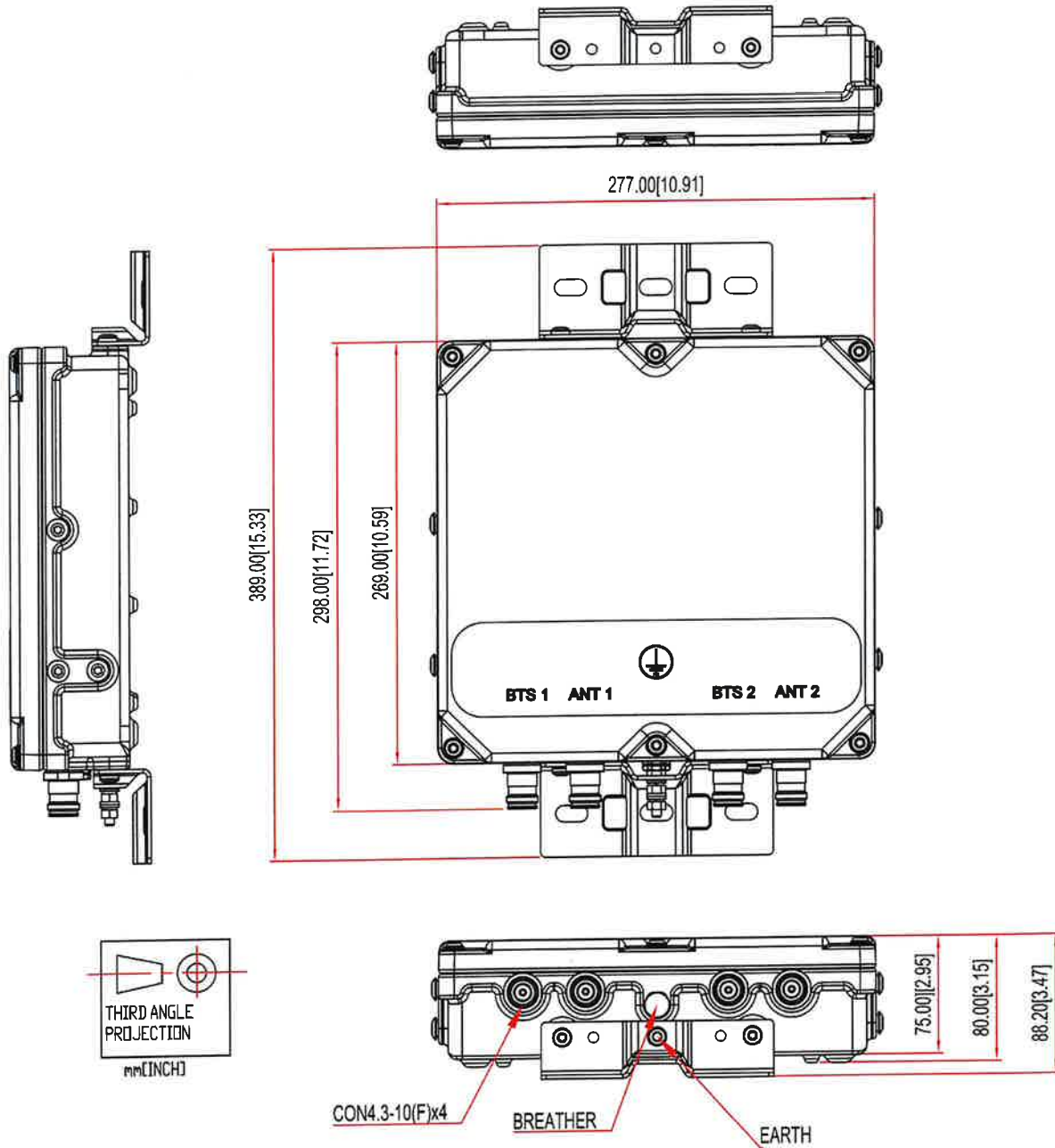
ORDERING INFORMATION

| PART NUMBER | CONFIGURATION | OPTIONAL FEATURES | CONNECTORS |
|--------------|--------------------|-------------------|------------|
| KA-6030-2032 | TWIN, 2 in / 2 out | DC/AISG PASS | 4.3-10 (F) |

ELECTRICAL BLOCK DIAGRAM



MECHANICAL BLOCK DIAGRAM



ATTACHMENT 3



Structural Analysis Report

Location Code: 467556
Site Name: NEW HARTFORD W CT
FUZE Project ID: 17123737
Project Name: RF Filter Add
Address: 1440 Litchfield Turnpike,
New Hartford, CT 06057

Client:

verizon ✓

**20 ALEXANDER DRIVE
WALLINGFORD, CT 06492**

Date: 10/13/2023



Centerline Engineering Services, PA
750 W Center St, Suite 301
West Bridgewater, MA 02379
781-713-4725



Scope of Work:

Centerline Communications was authorized by Verizon Wireless to perform an analysis of the existing 124'-5-3/8" self-supported to determine its capacity to support the existing and proposed equipment listed in this report.

Existing & Proposed Equipment:

| Carrier | Mounting Level (ft) | Center Line Elevation (ft) | Number of Appurtenances | Antenna Manufacturer | Appurtenance Model | Feed Lines (in) |
|------------------|---------------------|----------------------------|-------------------------|----------------------|---------------------------------------|---|
| Verizon Wireless | 96.0 | 97.5 | 3 | Samsung | MT6407-77A | (1) 12x24 Low Inductance Hybrid Cables, (6) Coax Cables |
| | | 96.0 | 6 | Andrew | NHH-65B-R2B | |
| | | | 3 | Samsung | B2/B66A RRH-BR049 (RFV01U-D1A) | |
| | | | 3 | Samsung | B5/B13 RRH-BR04C (RFV01U-D2A) | |
| | | | 1 | Raycap | RVZDC-6627-PF-48 | |
| | | | 3 | CommScope | CHB626-43-2X | |
| | | | 2 | Kealus | KA-6030 | |
| | | | 1 | Site Pro 1 | RRUDSM Dual Swivel Mount Kit | |

Note: Proposed equipment shown in **bold**.

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 781-713-4725



Design Criteria:

Design Codes:

2022 Connecticut State Building Code
2021 International Building Code
ASCE 7-16
TIA-222-H Standards

| | |
|---|-------------|
| Basic Design Wind Speed (V) | 115 mph |
| Wind Speed with Ice | 50 mph |
| Ice Thickness | 1.00 in. |
| Exposure Category | C |
| Topographic Category | 1 |
| Risk Category | II |
| Site Soil Class (Assumed) | D – Default |
| Seismic Design Category | B |
| Spectral Response Acceleration Parameter at a Short Periods, S_s | 0.172 g |
| Spectral Response Acceleration Parameter at a Period of 1 Second, S_1 | 0.054 g |
| Short Period Site Coefficient, F_a | 1.60 |
| Long Period Site Coefficient, F_v | 2.40 |

***Refer to calculations for additional design criteria.**

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Conclusion:

Tower Section Capacity (Summary)

| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | ϕP_{allow} lb | % Capacity | Pass Fail |
|-------------|--------------|----------------|---------------|------------------|------------|---------------------|-----------------|------------------|
| T1 | 104 - 87 | Leg | P30x0.375 | 3 | -21195.50 | 1468960.00 | 8.7 | Pass |
| T2 | 87 - 74 | Leg | P30x0.375 | 12 | -33500.80 | 1456180.00 | 9.6 | Pass |
| T3 | 74 - 60 | Leg | P30x0.375 | 18 | -36770.30 | 1452630.00 | 18.3 | Pass |
| T4 | 60 - 39 | Leg | P30x0.375 | 21 | -102407.00 | 1420830.00 | 29.7 | Pass |
| T5 | 39 - 35 | Leg | P30x0.375 | 27 | -104492.00 | 1476450.00 | 23.0 | Pass |
| T6 | 35 - 0 | Leg | P30x0.375 | 30 | -203001.00 | 1323680.00 | 51.9 | Pass |
| T1 | 104 - 87 | Horizontal | TS10x10x.25 | 8 | -737.98 | 325013.00 | 37.3 | Pass |
| T2 | 87 - 74 | Horizontal | TS10x10x.25 | 15 | -208.91 | 325013.00 | 43.2 | Pass |
| T4 | 60 - 39 | Horizontal | TS18x18x0.375 | 24 | -4250.44 | 1030160.00 | 62.3 | Pass |
| T6 | 35 - 0 | Horizontal | TS18x18x0.375 | 33 | -3469.30 | 607044.00 | 94.7 | Pass |
| T1 | 104 - 87 | Top Girt | TS10x10x.25 | 6 | 1690.69 | 397026.00 | 38.7 | Pass |
| | | | | | | | Summary | |
| | | | | | | | Leg (T6) | 51.9 Pass |
| | | | | | | | Horizontal (T6) | 94.7 Pass |
| | | | | | | | Top Girt (T1) | 38.7 Pass |
| | | | | | | | RATING = | 94.7 Pass |

| | |
|---|--------------|
| Structure Rating (Max From All Components) = | 94.7% |
|---|--------------|

Foundation Capacity (Summary)

| Component | % Capacity | Pass Fail |
|--------------|------------|-----------|
| Flange Plate | 10.6 | Pass |
| Flange Bolts | 18.1 | Pass |
| Anchor Rods | 12.1 | Pass |

| | |
|--|--------------|
| Foundation Rating (Max From All Components) = | 18.1% |
|--|--------------|

Recommendations:

The existing tower and its foundation have sufficient capacity to support the existing and proposed loading for the final loading configuration.

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Reference Documents:

- Structural Analysis Report by All-Points Technology Corporation dated April 22, 2021.
- Lease Exhibit by Centerline, dated October 3, 2023

Assumptions and Limitations:

- The tower and structures were built and maintained with the manufacturer's specifications.
- The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in this report and the referenced drawings.
- Existing appurtenance information obtained from the Structural Analysis Report by All-Points Technology Corporation, dated April 22, 2021.
- No foundation information was available at the time of this analysis, therefore the below grade capacity could not be checked.

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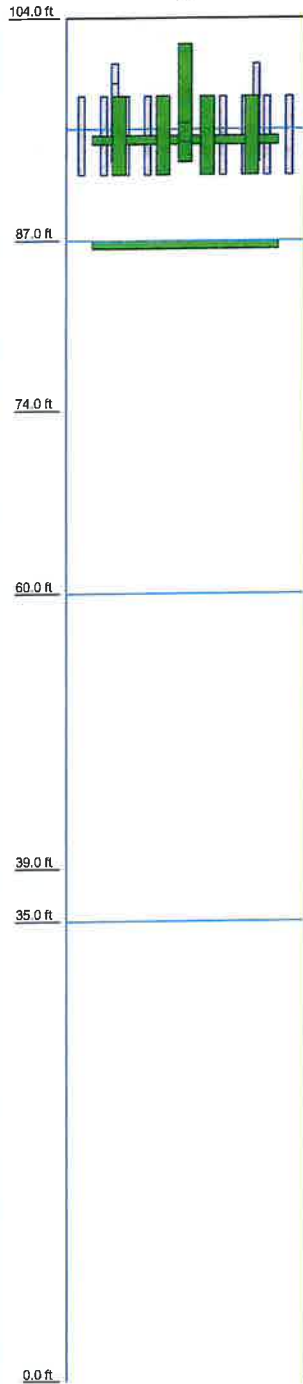
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Design Calculations

Centerline Engineering Services, PA
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781-713-4725

| | | | | | | |
|---------------------|-------------|--------|--------|---------------|--------|---------------|
| Section | 11 | 12 | 13 | 14 | 15 | 16 |
| Legs | | | | P30x0.375 | | |
| Leg Grade | | | | A572-50 | | |
| Diagonals | | | | N.A. | | |
| Diagonal Grade | | | | N.A. | | |
| Top Girts | TS10x10x.25 | | | N.A. | | |
| Horizontals | TS10x10x.25 | | N.A. | TS18x18x0.375 | N.A. | TS18x18x0.375 |
| Face Width (ft) | | | | 18 | | |
| # Panels @ (ft) | 2 @ 6.5 | 1 @ 13 | 1 @ 14 | 1 @ 21 | 1 @ 4 | 1 @ 35 |
| Weight (lb) 52055 x | 9581.1 | 6039.9 | 4980.0 | 12301.6 | 1425.1 | 17277.8 |



DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|--------------------------------|-----------|--------------------------------|-----------|
| 30"Ø Radomes (Light) | 119 | RVZDC-6627-PF-48 | 96 |
| 30"Ø Radomes (Light) | 109 | (2) KA-6030 | 96 |
| 30"Ø Radomes (Light) | 109 | Dual Swivel Mount Kit | 96 |
| 30"Ø Radomes (Heavy_Medium) | 109 | (2) NHH-65B-R2B panel antennas | 96 |
| 30"Ø Radomes (Heavy_Medium) | 99 | (2) NHH-65B-R2B panel antennas | 96 |
| 30"Ø Radomes (Heavy_Medium) | 99 | CHB626-43-2X Twin Diplexers | 96 |
| 30"Ø Radomes (Heavy_Medium) | 99 | CHB626-43-2X Twin Diplexers | 96 |
| MT6407-77A panel antennas | 97.5 | CHB626-43-2X Twin Diplexers | 96 |
| MT6407-77A panel antennas | 97.5 | (2) NHH-65B-R2B panel antennas | 96 |
| MT6407-77A panel antennas | 97.5 | B2/B66A RRH-BR049 (RFV01U-D1A) | 96 |
| B2/B66A RRH-BR049 (RFV01U-D1A) | 96 | 16'x18' RF transparent panel | 95 |
| B2/B66A RRH-BR049 (RFV01U-D1A) | 96 | 18' Platform w/ grating | 95 |
| B5/B13 RRH-BR04C (RFV01U-D2A) | 96 | 16'x18' RF transparent panel | 95 |
| B5/B13 RRH-BR04C (RFV01U-D2A) | 96 | 16'x18' RF transparent panel | 95 |
| B5/B13 RRH-BR04C (RFV01U-D2A) | 96 | 18' Platform w/ grating | 87 |

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

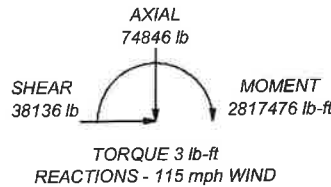
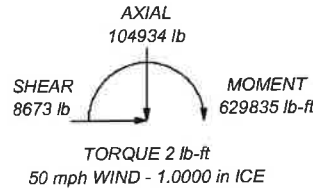
1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in 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


ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

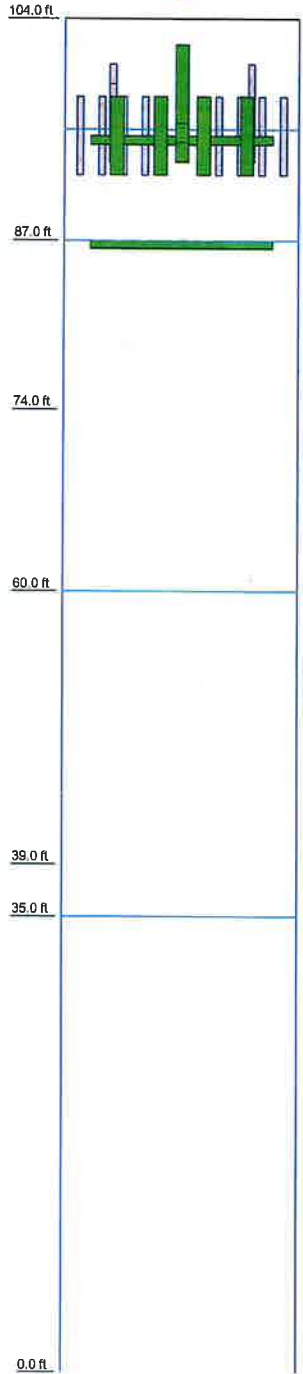
DOWN: 205690 lb
SHEAR: 12290 lb

UPLIFT: -157750 lb
SHEAR: 16379 lb



| | | | | | |
|---|--|--|--------------------------|-----------------------------|--------------------|
|  | Centerline Engineering Services, PA | | Job: Hartford WCT | | |
| | 750 W Center St. Suite 301 | | Project: 17123737 | | |
| | West Bridgewater, MA 02379 | | Client: Verizon | Drawn by: emanavoglu | App'd: |
| | Phone: 781-713-4725 | | Code: TIA-222-H | Date: 10/13/23 | Scale: NTS |
| | FAX: | | Path: | | Dwg No. E-1 |

| | | | | | | |
|---------------------|---------------|-------|---------------|--------|-------------|-------------|
| Section | 16 | 15 | 14 | 13 | 12 | 11 |
| Legs | | | P30x0.375 | | | |
| Leg Grade | | | A572-50 | | | |
| Diagonals | | | N.A. | | | |
| Diagonal Grade | | | N.A. | | | |
| Top Chords | | | N.A. | | | TS10x10x.25 |
| Horizontals | TS18x18x0.375 | N.A. | TS18x18x0.375 | N.A. | TS10x10x.25 | |
| Face Width (ft) | | | 18 | | | |
| # Panels @ (ft) | 1 @ 35 | 1 @ 4 | 1 @ 21 | 1 @ 14 | 1 @ 13 | 2 @ 8.5 |
| Weight (lb) S2065.6 | 1727.5 | 162.1 | 1203.6 | 466.0 | 636.9 | 958.1 |




MATERIAL STRENGTH

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

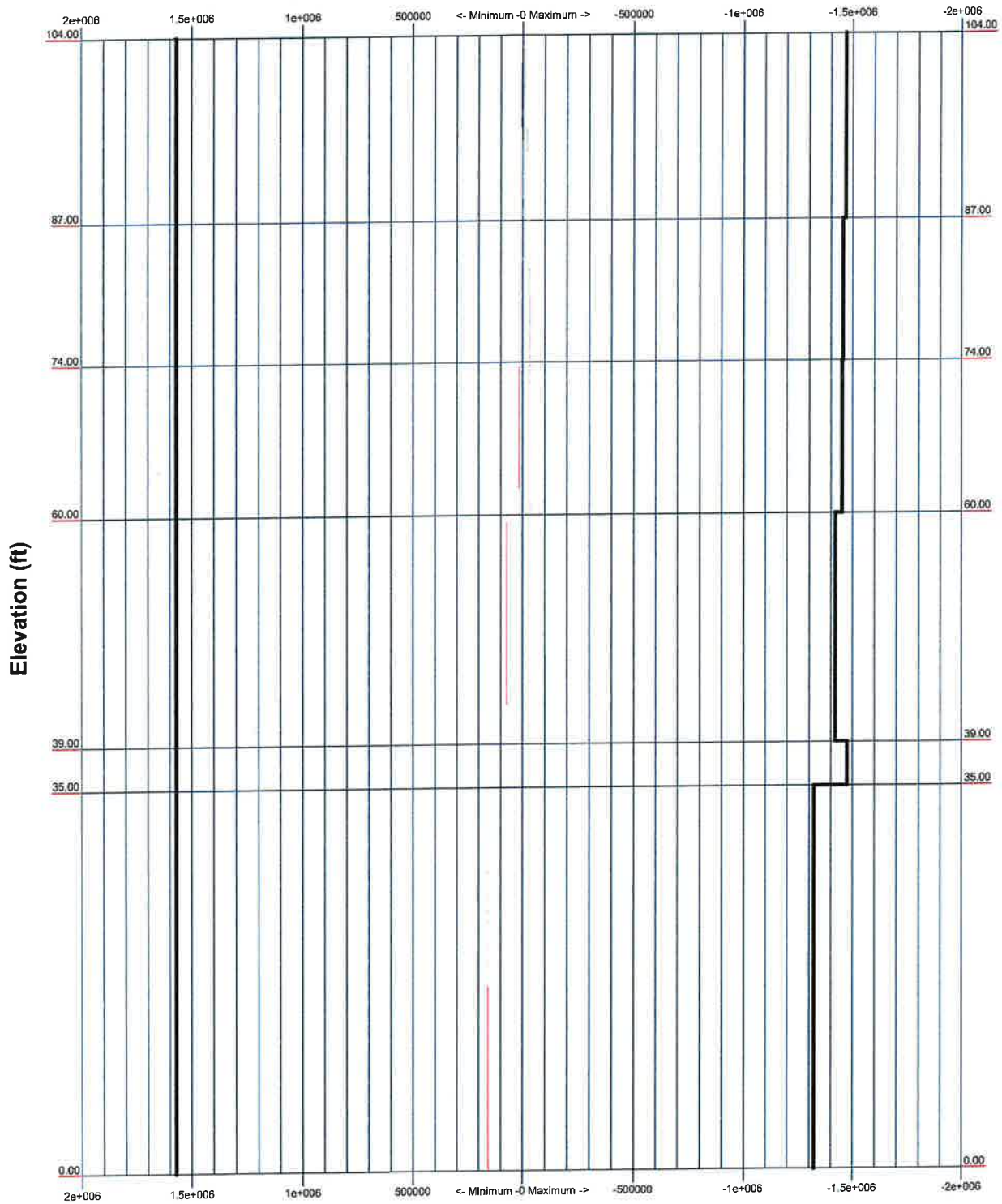
TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 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. Seismic calculations are in accordance with TIA-222-H
9. Seismic load do not control this analysis.

| | | | |
|--|---------------------------|-----------------------------|--------------------|
|  <p>Centerline Engineering Services, PA 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX:</p> | Job: Hartford W CT | | |
| | Project: 17123737 | | |
| | Client: Verizon | Drawn by: emanavoglu | App'd: |
| | Code: TIA-222-H | Date: 10/13/23 | Scale: NTS |
| | Path: | | Dwg No. E-1 |

TIA-222-H - 115 mph/50 mph 1.0000 in Ice Exposure C

Leg Capacity ——— Leg Compression (lb)



| | | | | | | |
|---|---|--|--|---------------------------|----------------------|--------|
|  | Centerline Engineering Services, PA 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | | | Job: Hartford W CT | | |
| | Project: 17123737 | | | Client: Verizon | Drawn by: emanavoglu | App'd: |
| | Code: TIA-222-H | | | Date: 10/13/23 | Scale: NTS | |
| | Path: | | | Dwg No: E-3 | | |
| | _____ | | | | | |

TIA-222-H - 115 mph/50 mph 1.0000 in Ice Exposure C

Maximum Values

Vx

Vz

Mx

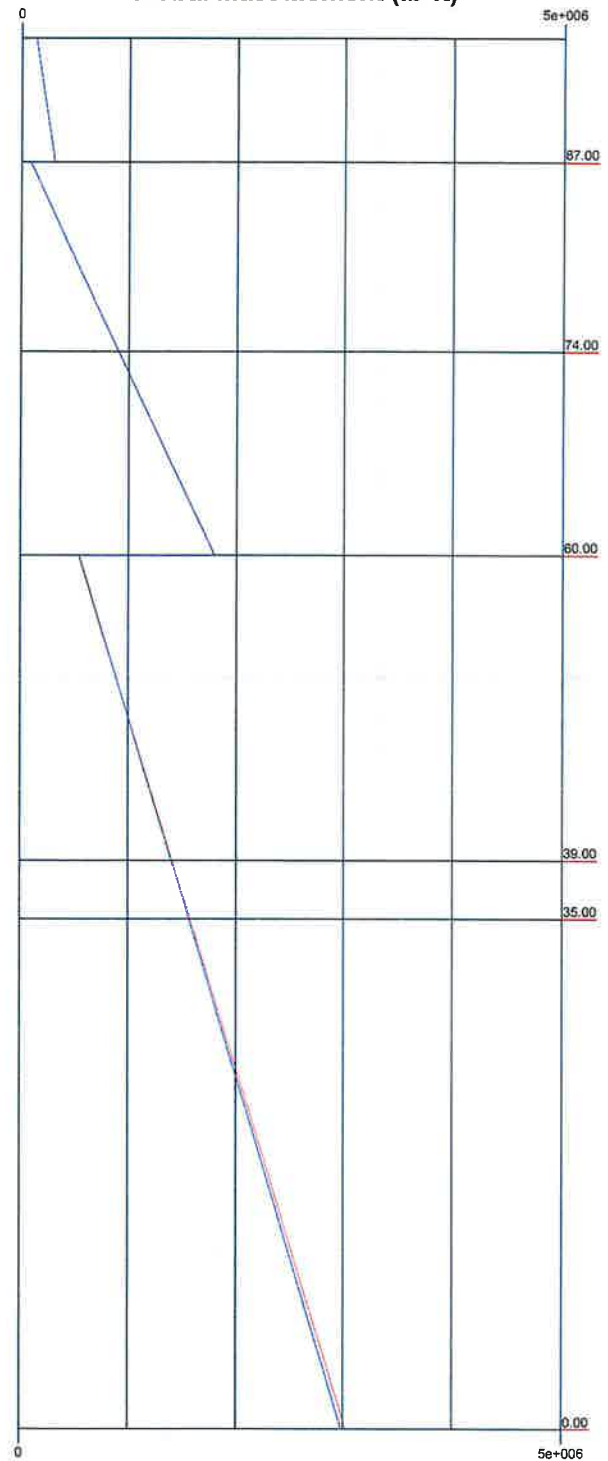
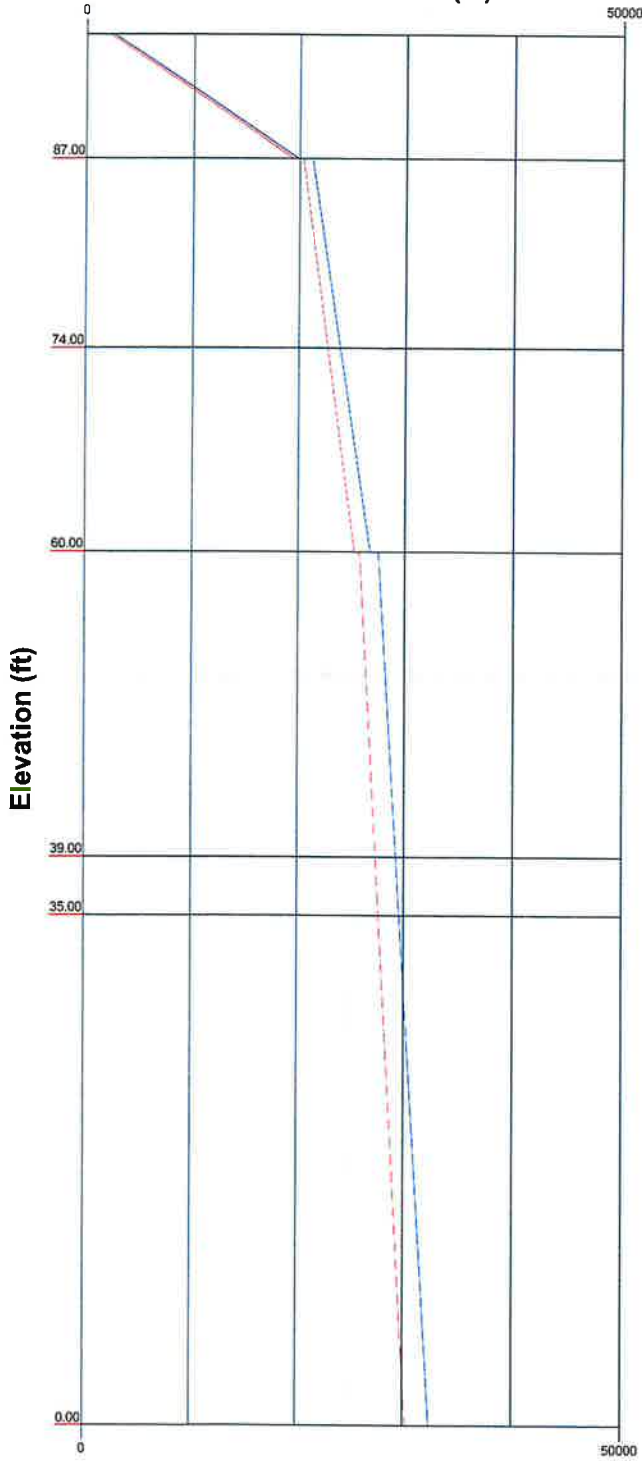
Mz

104.00

104.00

Global Mast Shear (lb)

Global Mast Moment (lb-ft)



Centerline Engineering Services, PA

750 W Center St. Suite 301
West Bridgewater, MA 02379

Phone: 781-713-4725

FAX:

Job: Hartford W CT

Project: 17123737

Client: Verizon

Drawn by: emanavoglu

App'd:

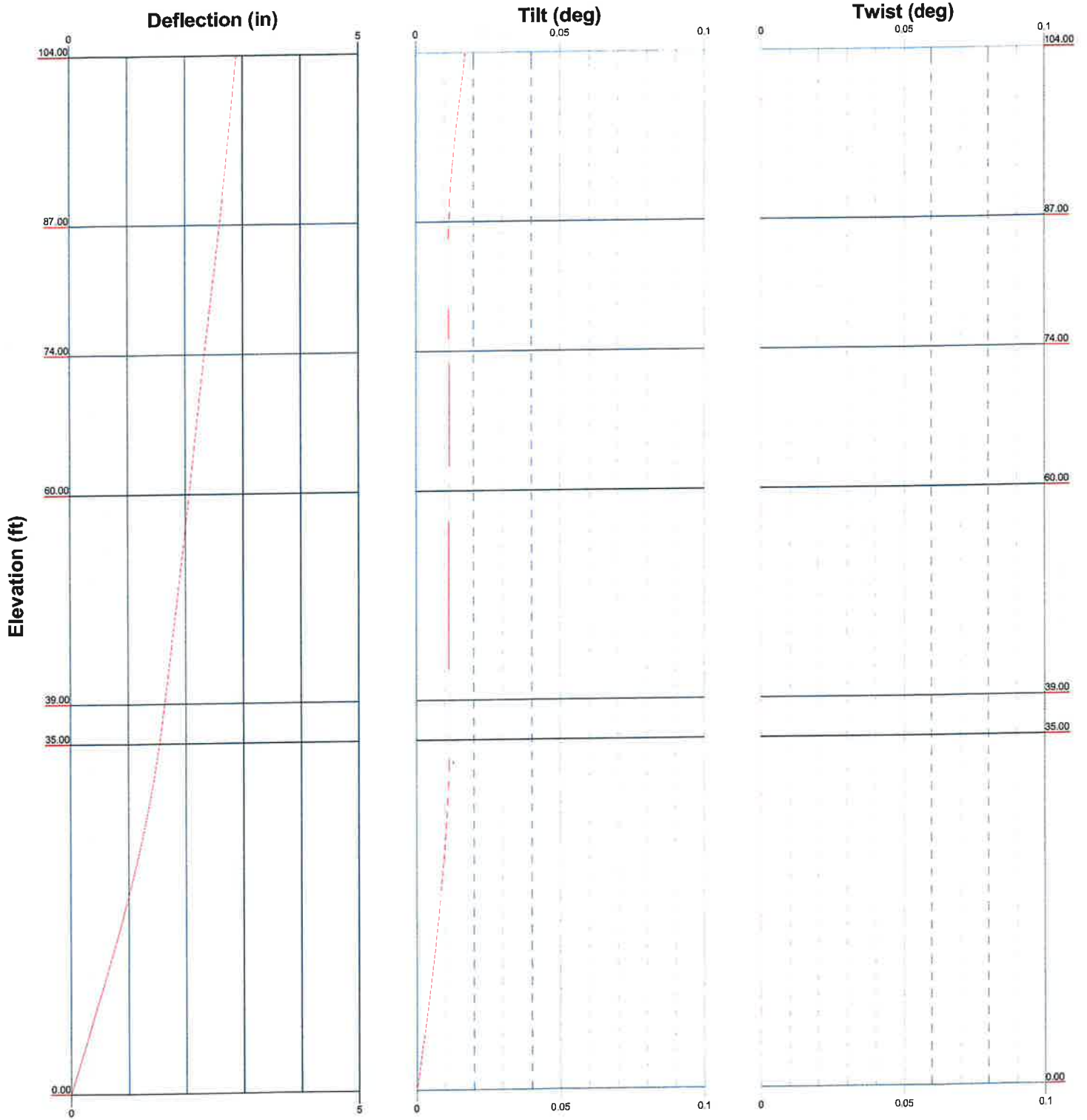
Code: TIA-222-H


Date: 10/13/23

Scale: NTS

Path:

Dwg No. E-4

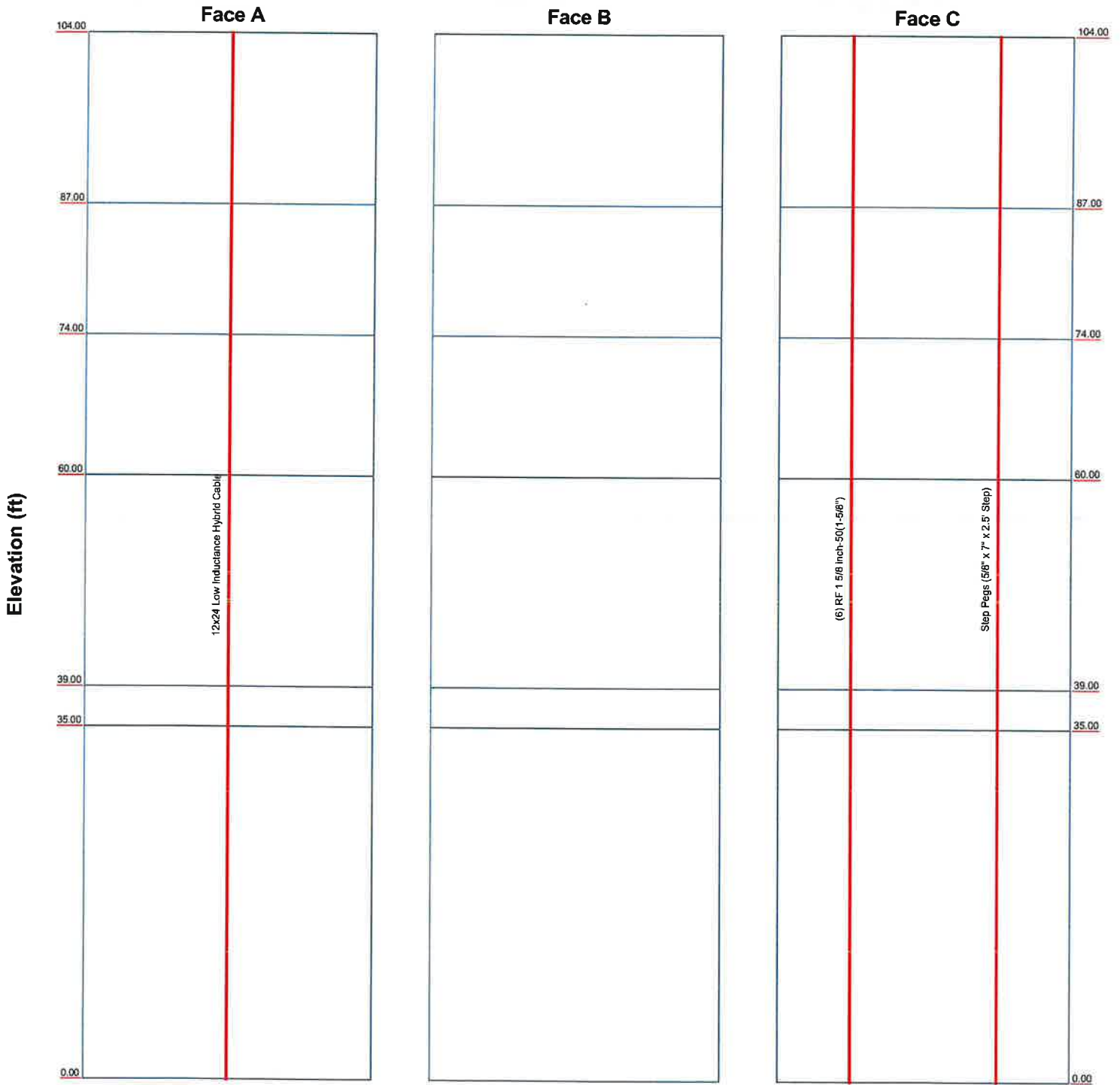


| | | | |
|---|---|-----------------------------|-------------------|
|  | Centerline Engineering Services, PA 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | | |
| | Job: Hartford W CT | | |
| | Project: 17123737 | | |
| | Client: Verizon | Drawn by: emanavoglu | App'd: |
| | Code: TIA-222-H | Date: 10/13/23 | Scale: NTS |
| Path: | Dwg No. E-5 | | |

Feed Line Distribution Chart

0' - 104'

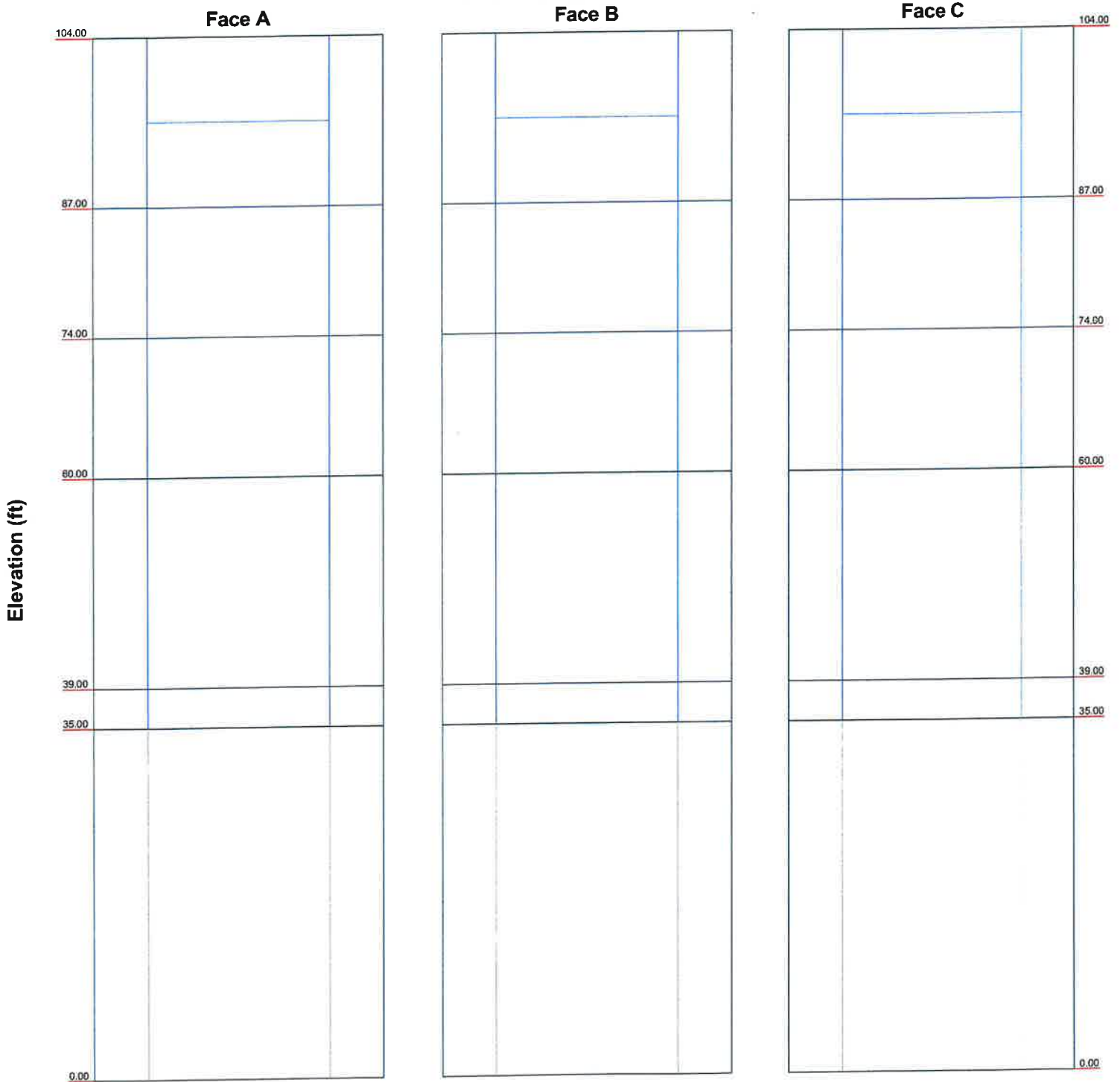
— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



| | | | | | |
|--|--|--|--------------------------|----------------------|------------|
| | Centerline Engineering Services, PA | | Job: Hartford WCT | | |
| | 750 W Center St. Suite 301 | | Project: 17123737 | | |
| | West Bridgewater, MA 02379 | | Client: Verizon | Drawn by: emanavoglu | App'd: |
| | Phone: 781-713-4725 | | Code: TIA-222-H | Date: 10/13/23 | Scale: NTS |
| | FAX: | | Path: | Dwg No. E-7 | |

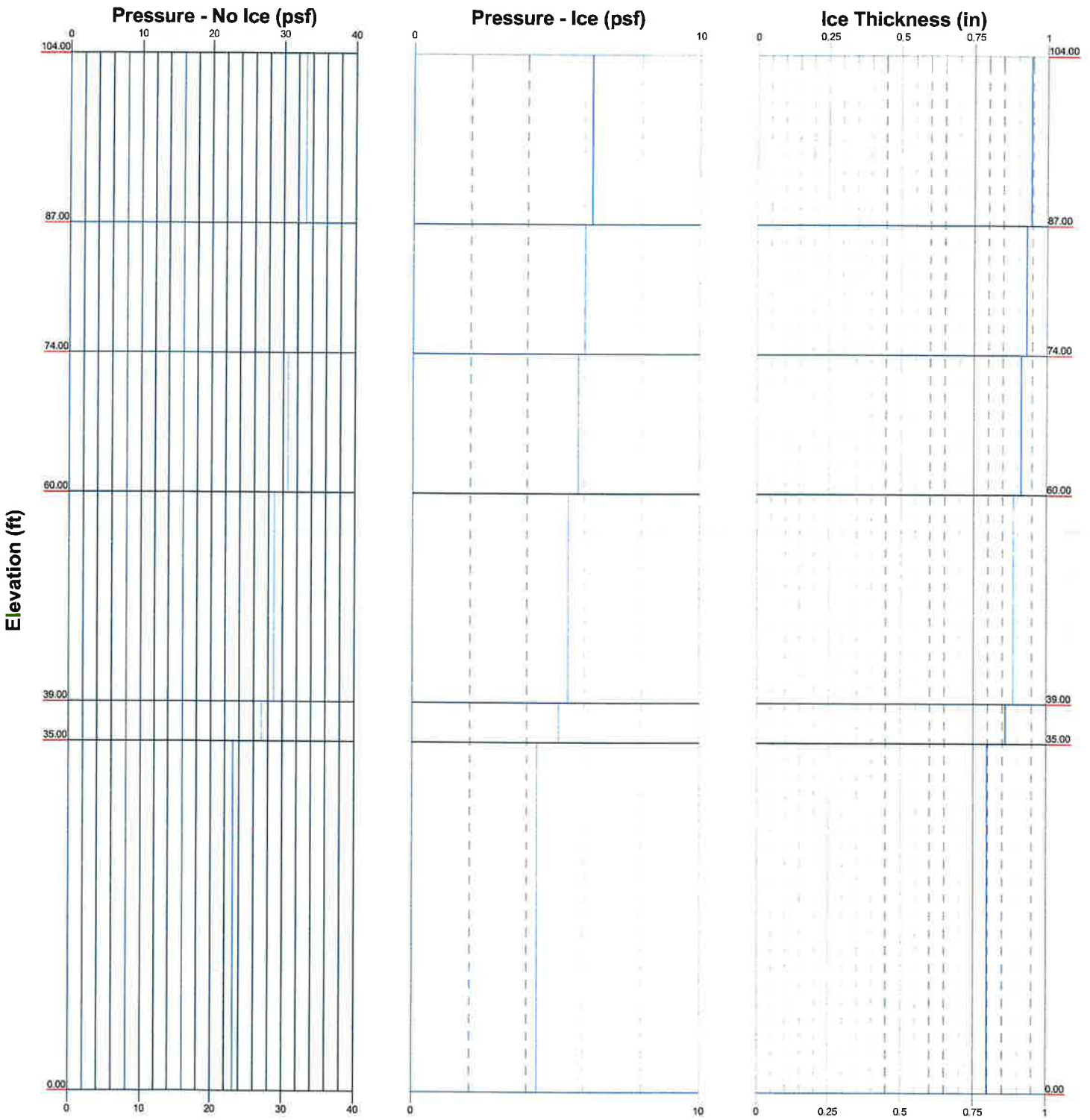
Stress Distribution Chart 0' - 104'


■ > 100%
 ■ 90%-100%
 ■ 75%-90%
 ■ 50%-75%
 ■ < 50%
 Overstress



| | | | |
|---------------------------|--|-------------|--|
| | Centerline Engineering Services, PA | | |
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| | West Bridgewater, MA 02379 | | |
| | Phone: 781-713-4725 | | |
| | FAX: | | |
| Job: Hartford W CT | | | |
| Project: 17123737 | | | |
| Client: Verizon | Drawn by: emanavoglu | App'd: | |
| Code: TIA-222-H | Date: 10/13/23 | Scale: NTS | |
| Pgt#: | | Dwg No. E-8 | |

Wind Pressures and Ice Thickness
TIA-222-H - 115 mph/50 mph 1.0000 in Ice Exposure C



| | | | | | |
|---|--|--|---------------------------|----------------------|-------------|
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| | 750 W Center St. Suite 301 | | Project: 17123737 | | |
| | West Bridgewater, MA 02379 | | Client: Verizon | Drawn by: emanavoglu | App'd: |
| | Phone: 781-713-4725 | | Code: TIA-222-H | Date: 10/13/23 | Scale: NTS |
| | FAX: | | Path: | | Dwg No. E-9 |

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Tower Input Data

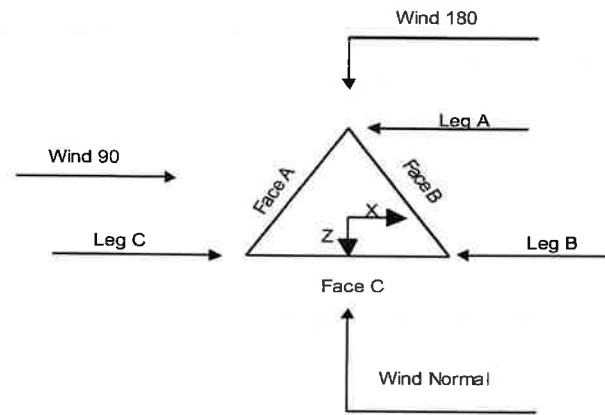
The main tower is a 3x free standing tower with an overall height of 104.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 18.00 ft at the top and 18.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Litchfield County, Connecticut.
- Tower base elevation above sea level: 975.00 ft.
- Basic wind speed of 115 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 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 tower member 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.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> √ Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas 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 | <ul style="list-style-type: none"> 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 <li style="background-color: #e0e0e0;">Poles √ 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 |
|--|---|--|

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Triangular Tower

Tower Section Geometry

| Tower Section | Tower Elevation | Assembly Database | Description | Section Width | Number of Sections | Section Length |
|---------------|-----------------|-------------------|-------------|---------------|--------------------|----------------|
| | ft | | | ft | | ft |
| T1 | 104.00-87.00 | | | 18.00 | 1 | 17.00 |
| T2 | 87.00-74.00 | | | 18.00 | 1 | 13.00 |
| T3 | 74.00-60.00 | | | 18.00 | 1 | 14.00 |
| T4 | 60.00-39.00 | | | 18.00 | 1 | 21.00 |
| T5 | 39.00-35.00 | | | 18.00 | 1 | 4.00 |
| T6 | 35.00-0.00 | | | 18.00 | 1 | 35.00 |

Tower Section Geometry (cont'd)

| Tower Section | Tower Elevation | Diagonal Spacing | Bracing Type | Has K Brace End Panels | Has Horizontals | Top Girt Offset | Bottom Girt Offset |
|---------------|-----------------|------------------|--------------|------------------------|-----------------|-----------------|--------------------|
| | ft | ft | | | | in | in |
| T1 | 104.00-87.00 | 8.50 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T2 | 87.00-74.00 | 13.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T3 | 74.00-60.00 | 14.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T4 | 60.00-39.00 | 21.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T5 | 39.00-35.00 | 4.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T6 | 35.00-0.00 | 35.00 | X Brace | No | Yes | 0.0000 | 0.0000 |

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Tower Section Geometry (cont'd)

| Tower Elevation ft | Leg Type | Leg Size | Leg Grade | Diagonal Type | Diagonal Size | Diagonal Grade |
|-----------------------|----------|-----------|---------------------|---------------|---------------|---------------------|
| T1 104.00-87.00 | Pipe | P30x0.375 | A572-50 (50 ksi) | Solid Round | | A572-50 (50 ksi) |
| T2 87.00-74.00 | Pipe | P30x0.375 | A572-50 (50 ksi) | Solid Round | | A572-50 (50 ksi) |
| T3 74.00-60.00 | Pipe | P30x0.375 | A572-50 (50 ksi) | Solid Round | | A572-50 (50 ksi) |
| T4 60.00-39.00 | Pipe | P30x0.375 | A572-50 (50 ksi) | Solid Round | | A572-50 (50 ksi) |
| T5 39.00-35.00 | Pipe | P30x0.375 | A572-50 (50 ksi) | Solid Round | | A572-50 (50 ksi) |
| T6 35.00-0.00 | Pipe | P30x0.375 | A572-50 (50 ksi) | Solid Round | | A572-50 (50 ksi) |

Tower Section Geometry (cont'd)

| Tower Elevation ft | No. of Mid Girts | Mid Girt Type | Mid Girt Size | Mid Girt Grade | Horizontal Type | Horizontal Size | Horizontal Grade |
|-----------------------|------------------|---------------|---------------|-----------------|-----------------|-----------------|---------------------------|
| T1 104.00-87.00 | None | Flat Bar | | A36 (36 ksi) | Tube | TS10x10x.25 | A500 Gr. B 46 (46 ksi) |
| T2 87.00-74.00 | None | Flat Bar | | A36 (36 ksi) | Tube | TS10x10x.25 | A500 Gr. B 46 (46 ksi) |
| T4 60.00-39.00 | None | Flat Bar | | A36 (36 ksi) | Tube | TS18x18x0.375 | A500 Gr. B 46 (46 ksi) |
| T6 35.00-0.00 | None | Flat Bar | | A36 (36 ksi) | Tube | TS18x18x0.375 | A500 Gr. B 46 (46 ksi) |

Tower Section Geometry (cont'd)

| Tower Elevation ft | Gusset Area (per face) ft ² | Gusset Thickness in | Gusset Grade | Adjust. Factor A _f | Adjust. Factor A _r | Weight Mult. | Double Angle Stitch Bolt Spacing Diagonals in | Double Angle Stitch Bolt Spacing Horizontals in | Double Angle Stitch Bolt Spacing Redundants in |
|-----------------------|--|------------------------|-----------------|----------------------------------|----------------------------------|--------------|---|---|--|
| T1 104.00-87.00 | 0.00 | 0.0000 | A36 (36 ksi) | 1 | 1 | 1 | 36.0000 | 36.0000 | 36.0000 |
| T2 87.00-74.00 | 0.00 | 0.0000 | A36 (36 ksi) | 1 | 1 | 1 | 36.0000 | 36.0000 | 36.0000 |
| T3 74.00-60.00 | 0.00 | 0.0000 | A36 (36 ksi) | 1 | 1 | 1 | 36.0000 | 36.0000 | 36.0000 |
| T4 60.00-39.00 | 0.00 | 0.0000 | A36 (36 ksi) | 1 | 1 | 1 | 36.0000 | 36.0000 | 36.0000 |
| T5 39.00-35.00 | 0.00 | 0.0000 | A36 (36 ksi) | 1 | 1 | 1 | 36.0000 | 36.0000 | 36.0000 |
| T6 35.00-0.00 | 0.00 | 0.0000 | A36 | 1 | 1 | 1 | 36.0000 | 36.0000 | 36.0000 |

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| Tower Elevation ft | Redundant Horizontal | | Redundant Diagonal | | Redundant Sub-Diagonal | | Redundant Sub-Horizontal | | Redundant Vertical | | Redundant Hip | | Redundant Hip Diagonal | |
|--------------------|----------------------|------|---------------------|------|------------------------|------|--------------------------|------|---------------------|------|---------------------|------|------------------------|------|
| | Net Width Deduct in | U | Net Width Deduct in | U | Net Width Deduct in | U | Net Width Deduct in | U | Net Width Deduct in | U | Net Width Deduct in | U | Net Width Deduct in | U |
| T1 104.00-87.00 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 |
| T2 87.00-74.00 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 |
| T3 74.00-60.00 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 |
| T4 60.00-39.00 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 |
| T5 39.00-35.00 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 |
| T6 35.00-0.00 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 | 0.0000 | 0.75 |

Feed Line/Linear Appurtenances - Entered As Round Or Flat

| Description | Face or Leg | Allow Shield | Exclude From Torque Calculation | Component Type | Placement ft | Total Number | Number Per Row | Clear Spacing in | Width or Diameter in | Perimeter in | Weight plf |
|-----------------------------------|-------------|--------------|---------------------------------|----------------|---------------|--------------|----------------|------------------|----------------------|--------------|------------|
| 12x24 Low Inductance Hybrid Cable | A | No | Yes | Ar (CaAa) | 104.00 - 0.00 | 1 | 1 | 0.0000 | 0.5000 | | 3.20 |
| RF 1 5/8 inch-50(1-5/8") | C | No | Yes | Ar (CaAa) | 104.00 - 0.00 | 6 | 6 | 1.9700 | 1.9700 | | 0.97 |
| Step Pegs (5/8" x 7" x 2.5' Step) | C | No | No | Ar (CaAa) | 104.00 - 0.00 | 1 | 1 | 0.6250 | 0.6250 | | 0.47 |

Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _A A _A In Face ft ² | C _A A _A Out Face ft ² | Weight lb |
|---------------|--------------------|------|--------------------------------|--------------------------------|---|--|-----------|
| T1 | 104.00-87.00 | A | 0.000 | 0.000 | 0.850 | 0.000 | 54.40 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 21.157 | 0.000 | 106.94 |
| T2 | 87.00-74.00 | A | 0.000 | 0.000 | 0.650 | 0.000 | 41.60 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 16.179 | 0.000 | 81.78 |
| T3 | 74.00-60.00 | A | 0.000 | 0.000 | 0.700 | 0.000 | 44.80 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 17.423 | 0.000 | 88.07 |
| T4 | 60.00-39.00 | A | 0.000 | 0.000 | 1.050 | 0.000 | 67.20 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 26.134 | 0.000 | 132.10 |
| T5 | 39.00-35.00 | A | 0.000 | 0.000 | 0.200 | 0.000 | 12.80 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 4.978 | 0.000 | 25.16 |
| T6 | 35.00-0.00 | A | 0.000 | 0.000 | 1.750 | 0.000 | 112.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 43.557 | 0.000 | 220.16 |

Feed Line/Linear Appurtenances Section Areas - With Ice

| | | |
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| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | A _R ft ² | A _F ft ² | C _A A _A In Face ft ² | C _A A _A Out Face ft ² | Weight lb |
|---------------|--------------------|-------------|------------------|--------------------------------|--------------------------------|---|--|-----------|
| T1 | 104.00-87.00 | A | 0.945 | 0.000 | 0.000 | 4.064 | 0.000 | 82.78 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 43.655 | 0.000 | 481.19 |
| T2 | 87.00-74.00 | A | 0.929 | 0.000 | 0.000 | 3.066 | 0.000 | 62.70 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 33.091 | 0.000 | 361.46 |
| T3 | 74.00-60.00 | A | 0.912 | 0.000 | 0.000 | 3.255 | 0.000 | 66.84 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 35.306 | 0.000 | 381.94 |
| T4 | 60.00-39.00 | A | 0.885 | 0.000 | 0.000 | 4.768 | 0.000 | 98.66 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 52.159 | 0.000 | 555.45 |
| T5 | 39.00-35.00 | A | 0.860 | 0.000 | 0.000 | 0.888 | 0.000 | 18.51 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 9.793 | 0.000 | 102.74 |
| T6 | 35.00-0.00 | A | 0.798 | 0.000 | 0.000 | 7.334 | 0.000 | 156.27 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 82.648 | 0.000 | 835.19 |

Feed Line Center of Pressure

| Section | Elevation ft | CP _X in | CP _Z in | CP _X Ice in | CP _Z Ice in |
|---------|--------------|--------------------|--------------------|------------------------|------------------------|
| T1 | 104.00-87.00 | 0.0000 | 0.4296 | 0.0000 | 1.3942 |
| T2 | 87.00-74.00 | 0.0000 | 0.4810 | 0.0000 | 1.5021 |
| T3 | 74.00-60.00 | 0.0000 | 0.6364 | 0.0000 | 1.8116 |
| T4 | 60.00-39.00 | 0.0000 | 0.4686 | 0.0000 | 1.4407 |
| T5 | 39.00-35.00 | 0.0000 | 0.6364 | 0.0000 | 1.7451 |
| T6 | 35.00-0.00 | 0.0000 | 0.5217 | 0.0000 | 1.4559 |

Shielding Factor Ka

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|-----------------------------------|-------------------------|-----------------------|--------------------|
| T1 | 1 | 12x24 Low Inductance Hybrid Cable | 87.00 - 104.00 | 1.0000 | 1.0000 |
| T1 | 2 | RF 1 5/8 inch-50(1-5/8") | 87.00 - 104.00 | 1.0000 | 1.0000 |
| T1 | 3 | Step Pegs (5/8" x 7" x 2.5' Step) | 87.00 - 104.00 | 1.0000 | 1.0000 |
| T2 | 1 | 12x24 Low Inductance Hybrid Cable | 74.00 - 87.00 | 1.0000 | 1.0000 |
| T2 | 2 | RF 1 5/8 inch-50(1-5/8") | 74.00 - 87.00 | 1.0000 | 1.0000 |
| T2 | 3 | Step Pegs (5/8" x 7" x 2.5' Step) | 74.00 - 87.00 | 1.0000 | 1.0000 |
| T3 | 1 | 12x24 Low Inductance Hybrid Cable | 60.00 - 74.00 | 1.0000 | 1.0000 |
| T3 | 2 | RF 1 5/8 inch-50(1-5/8") | 60.00 - 74.00 | 1.0000 | 1.0000 |
| T3 | 3 | Step Pegs (5/8" x 7" x 2.5' Step) | 60.00 - 74.00 | 1.0000 | 1.0000 |

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| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|-----------------------------------|-------------------------|-----------------------|--------------------|
| T4 | 1 | 12x24 Low Inductance Hybrid Cable | 39.00 - 60.00 | 1.0000 | 1.0000 |
| T4 | 2 | RF 1 5/8 inch-50(1-5/8") | 39.00 - 60.00 | 1.0000 | 1.0000 |
| T4 | 3 | Step Pegs (5/8" x 7" x 2.5' Step) | 39.00 - 60.00 | 1.0000 | 1.0000 |
| T5 | 1 | 12x24 Low Inductance Hybrid Cable | 35.00 - 39.00 | 1.0000 | 1.0000 |
| T5 | 2 | RF 1 5/8 inch-50(1-5/8") | 35.00 - 39.00 | 1.0000 | 1.0000 |
| T5 | 3 | Step Pegs (5/8" x 7" x 2.5' Step) | 35.00 - 39.00 | 1.0000 | 1.0000 |
| T6 | 1 | 12x24 Low Inductance Hybrid Cable | 0.00 - 35.00 | 1.0000 | 1.0000 |
| T6 | 2 | RF 1 5/8 inch-50(1-5/8") | 0.00 - 35.00 | 1.0000 | 1.0000 |
| T6 | 3 | Step Pegs (5/8" x 7" x 2.5' Step) | 0.00 - 35.00 | 1.0000 | 1.0000 |

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _{AA} Front ft ² | C _{AA} Side ft ² | Weight lb |
|--------------------------------|-------------|-------------|--|-------------------------|-----------------|--|---|--------------|
| MT6407-77A panel antennas | A | From Face | 1.00 | 0.0000 | 97.50 | No Ice | 0.00 | 87.10 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 87.10 |
| | | | 0.00 | | | 1" Ice | 0.00 | 87.10 |
| MT6407-77A panel antennas | B | From Face | 1.00 | 0.0000 | 97.50 | No Ice | 0.00 | 87.10 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 87.10 |
| | | | 0.00 | | | 1" Ice | 0.00 | 87.10 |
| MT6407-77A panel antennas | C | From Face | 1.00 | 0.0000 | 97.50 | No Ice | 0.00 | 87.10 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 87.10 |
| | | | 0.00 | | | 1" Ice | 0.00 | 87.10 |
| (2) NHH-65B-R2B panel antennas | A | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 43.70 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 43.70 |
| | | | 0.00 | | | 1" Ice | 0.00 | 43.70 |
| (2) NHH-65B-R2B panel antennas | B | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 43.70 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 43.70 |
| | | | 0.00 | | | 1" Ice | 0.00 | 43.70 |
| (2) NHH-65B-R2B panel antennas | C | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 43.70 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 43.70 |
| | | | 0.00 | | | 1" Ice | 0.00 | 43.70 |
| CHB626-43-2X Twin Diplexers | A | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 19.40 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 19.40 |
| | | | 0.00 | | | 1" Ice | 0.00 | 19.40 |
| CHB626-43-2X Twin Diplexers | B | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 19.40 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 19.40 |
| | | | 0.00 | | | 1" Ice | 0.00 | 19.40 |
| CHB626-43-2X Twin Diplexers | C | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 19.40 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 19.40 |
| | | | 0.00 | | | 1" Ice | 0.00 | 19.40 |
| B2/B66A RRH-BR049 (RFV01U-D1A) | A | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 97.50 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 97.50 |
| | | | 0.00 | | | 1" Ice | 0.00 | 97.50 |

| | | | | |
|--|----------------|---------------|--------------------|-------------------|
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| | Client | Verizon | Designed by | emanavoglu |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _A A _A Front | C _A A _A Side | Weight |
|--------------------------------|-------------|-------------|--------------|--------|--------------------|-----------|-------------------------------------|------------------------------------|---------|
| | | | Horz Lateral | Vert | | | | | |
| | | | ft | ft | ° | ft | ft ² | ft ² | lb |
| B2/B66A RRH-BR049 (RFV01U-D1A) | B | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 97.50 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 97.50 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 97.50 |
| B2/B66A RRH-BR049 (RFV01U-D1A) | C | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 97.50 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 97.50 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 97.50 |
| B5/B13 RRH-BR04C (RFV01U-D2A) | A | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 82.00 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 82.00 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 82.00 |
| B5/B13 RRH-BR04C (RFV01U-D2A) | B | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 82.00 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 82.00 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 82.00 |
| B5/B13 RRH-BR04C (RFV01U-D2A) | C | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 82.00 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 82.00 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 82.00 |
| RVZDC-6627-PF-48 | A | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 32.00 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 32.00 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 32.00 |
| 18' Platform w/ grating | A | None | | 0.0000 | 87.00 | No Ice | 0.00 | 0.00 | 1683.00 |
| | | | | | | 1/2" Ice | 0.00 | 0.00 | 2271.00 |
| | | | | | | 1" Ice | 0.00 | 0.00 | 2859.00 |
| 18' Platform w/ grating | A | None | | 0.0000 | 95.00 | No Ice | 0.00 | 0.00 | 1683.00 |
| | | | | | | 1/2" Ice | 0.00 | 0.00 | 2271.00 |
| | | | | | | 1" Ice | 0.00 | 0.00 | 2859.00 |
| 16'x18' RF transparent panel | A | From Face | 1.00 | 0.0000 | 95.00 | No Ice | 345.60 | 24.00 | 177.80 |
| | | | 0.00 | | | 1/2" Ice | 347.87 | 26.08 | 1641.09 |
| | | | 0.00 | | | 1" Ice | 350.15 | 27.37 | 3131.54 |
| 16'x18' RF transparent panel | B | From Face | 1.00 | 0.0000 | 95.00 | No Ice | 345.60 | 24.00 | 177.80 |
| | | | 0.00 | | | 1/2" Ice | 347.87 | 26.08 | 1641.09 |
| | | | 0.00 | | | 1" Ice | 350.15 | 27.37 | 3131.54 |
| 16'x18' RF transparent panel | C | From Face | 1.00 | 0.0000 | 95.00 | No Ice | 345.60 | 24.00 | 177.80 |
| | | | 0.00 | | | 1/2" Ice | 347.87 | 26.08 | 1641.09 |
| | | | 0.00 | | | 1" Ice | 350.15 | 27.37 | 3131.54 |
| (2) KA-6030 | C | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 17.60 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 17.60 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 17.60 |
| Dual Swivel Mount Kit | C | From Face | 1.00 | 0.0000 | 96.00 | No Ice | 0.00 | 0.00 | 39.43 |
| | | | 0.00 | | | 1/2" Ice | 0.00 | 0.00 | 39.43 |
| | | | 0.00 | | | 1" Ice | 0.00 | 0.00 | 39.43 |
| 30"Ø Radomes (Heavy & Medium) | A | None | | 0.0000 | 99.00 | No Ice | 13.33 | 13.33 | 577.07 |
| | | | | | | 1/2" Ice | 19.05 | 19.05 | 787.84 |
| | | | | | | 1" Ice | 19.77 | 19.77 | 1007.93 |
| 30"Ø Radomes (Heavy & Medium) | B | None | | 0.0000 | 99.00 | No Ice | 13.33 | 13.33 | 577.07 |
| | | | | | | 1/2" Ice | 19.05 | 19.05 | 787.84 |
| | | | | | | 1" Ice | 19.77 | 19.77 | 1007.93 |
| 30"Ø Radomes (Heavy & Medium) | C | None | | 0.0000 | 99.00 | No Ice | 13.33 | 13.33 | 577.07 |
| | | | | | | 1/2" Ice | 19.05 | 19.05 | 787.84 |
| | | | | | | 1" Ice | 19.77 | 19.77 | 1007.93 |
| 30"Ø Radomes (Light) | A | None | | 0.0000 | 109.00 | No Ice | 13.33 | 13.33 | 631.52 |
| | | | | | | 1/2" Ice | 19.05 | 19.05 | 842.29 |
| | | | | | | 1" Ice | 19.77 | 19.77 | 1062.38 |
| 30"Ø Radomes (Light) | B | None | | 0.0000 | 109.00 | No Ice | 13.33 | 13.33 | 631.52 |
| | | | | | | 1/2" Ice | 19.05 | 19.05 | 842.29 |
| | | | | | | 1" Ice | 19.77 | 19.77 | 1062.38 |
| 30"Ø Radomes (Heavy & Medium) | C | None | | 0.0000 | 109.00 | No Ice | 13.33 | 13.33 | 577.07 |
| | | | | | | 1/2" Ice | 19.05 | 19.05 | 787.84 |
| | | | | | | 1" Ice | 19.77 | 19.77 | 1007.93 |

| | | |
|--|-----------------------------|----------------------------------|
| tnxTower Centerline Engineering Services 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | Job Hartford W CT | Page 9 of 28 |
| | Project 17123737 | Date 16:33:32 10/13/23 |
| | Client Verizon | Designed by emanavoglu |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _A A _A Front ft ² | C _A A _A Side ft ² | Weight lb |
|----------------------|-------------|-------------|--|-------------------------|-----------------|--|---|-----------------------------|
| 30"Ø Radomes (Light) | C | None | | 0.0000 | 119.00 | No Ice 13.33 1/2" Ice 19.05 1" Ice 19.77 | 13.33 19.05 19.77 | 631.52 842.29 1062.38 |

Tower Pressures - No Ice

$G_H = 0.850$

| Section Elevation ft | z ft | K _Z | q _z psf | A _G ft ² | F a c e ft ² | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|-----------------------------------|----------------------------|-----------------------------------|-----------------------------------|-------------------------------------|--------|--|---|
| T1 104.00-87.00 | 95.50 | 1.253 | 33 | 348.500 | A | 25.833 | 85.000 | 85.000 | 76.69 | 0.850 | 0.000 |
| | | | | | B | 25.833 | 85.000 | 76.69 | 0.000 | 0.000 | |
| | | | | | C | 25.833 | 85.000 | 76.69 | 21.157 | 0.000 | |
| T2 87.00-74.00 | 80.50 | 1.209 | 32 | 266.500 | A | 12.917 | 65.000 | 65.000 | 83.42 | 0.650 | 0.000 |
| | | | | | B | 12.917 | 65.000 | 83.42 | 0.000 | 0.000 | |
| | | | | | C | 12.917 | 65.000 | 83.42 | 16.179 | 0.000 | |
| T3 74.00-60.00 | 67.00 | 1.163 | 31 | 287.000 | A | 0.000 | 70.000 | 70.000 | 100.00 | 0.700 | 0.000 |
| | | | | | B | 0.000 | 70.000 | 100.00 | 0.000 | 0.000 | |
| | | | | | C | 0.000 | 70.000 | 100.00 | 17.423 | 0.000 | |
| T4 60.00-39.00 | 49.50 | 1.091 | 29 | 430.500 | A | 23.250 | 105.000 | 105.000 | 81.87 | 1.050 | 0.000 |
| | | | | | B | 23.250 | 105.000 | 81.87 | 0.000 | 0.000 | |
| | | | | | C | 23.250 | 105.000 | 81.87 | 26.134 | 0.000 | |
| T5 39.00-35.00 | 37.00 | 1.027 | 27 | 82.000 | A | 0.000 | 20.000 | 20.000 | 100.00 | 0.200 | 0.000 |
| | | | | | B | 0.000 | 20.000 | 100.00 | 0.000 | 0.000 | |
| | | | | | C | 0.000 | 20.000 | 100.00 | 4.978 | 0.000 | |
| T6 35.00-0.00 | 17.50 | 0.877 | 23 | 717.500 | A | 23.250 | 175.000 | 175.000 | 88.27 | 1.750 | 0.000 |
| | | | | | B | 23.250 | 175.000 | 88.27 | 0.000 | 0.000 | |
| | | | | | C | 23.250 | 175.000 | 88.27 | 43.557 | 0.000 | |

Tower Pressure - With Ice

$G_H = 0.850$

| Section Elevation ft | z ft | K _Z | q _z psf | t _z in | A _G ft ² | F a c e ft ² | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|----------------------|-----------------------------------|----------------------------|-----------------------------------|-----------------------------------|-------------------------------------|--------|--|---|
| T1 104.00-87.00 | 95.50 | 1.253 | 6 | 0.9453 | 351.178 | A | 25.833 | 95.241 | 90.357 | 74.63 | 4.064 | 0.000 |
| | | | | | | B | 25.833 | 95.241 | 74.63 | 0.000 | 0.000 | |
| | | | | | | C | 25.833 | 95.241 | 74.63 | 43.655 | 0.000 | |
| T2 87.00-74.00 | 80.50 | 1.209 | 6 | 0.9293 | 268.513 | A | 12.917 | 71.428 | 69.027 | 81.84 | 3.066 | 0.000 |
| | | | | | | B | 12.917 | 71.428 | 81.84 | 0.000 | 0.000 | |
| | | | | | | C | 12.917 | 71.428 | 81.84 | 33.091 | 0.000 | |
| T3 74.00-60.00 | 67.00 | 1.163 | 6 | 0.9124 | 289.129 | A | 0.000 | 74.258 | 74.258 | 100.00 | 3.255 | 0.000 |
| | | | | | | B | 0.000 | 74.258 | 100.00 | 0.000 | 0.000 | |

| | | |
|--|-----------------------------|----------------------------------|
| tnxTower Centerline Engineering Services 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | Job Hartford W CT | Page 10 of 28 |
| | Project 17123737 | Date 16:33:32 10/13/23 |
| | Client Verizon | Designed by emanavoglu |

| Section Elevation | z | K _Z | q _z | t _z | A _G | F a c e | A _F | A _R | A _{leg} | Leg % | C _A A _A In Face | C _A A _A Out Face | |
|-------------------|-------|----------------|----------------|----------------|-----------------|---------|-----------------|-----------------|------------------|--------|---------------------------------------|--|-------|
| ft | ft | | psf | in | ft ² | e | ft ² | ft ² | ft ² | | ft ² | ft ² | |
| T4 60.00-39.00 | 49.50 | 1.091 | 5 | 0.8852 | 433.598 | C | 0.000 | 74.258 | 111.196 | 100.00 | 35.306 | 0.000 | |
| | | | | | | A | 23.250 | 113.483 | | | 4.768 | 0.000 | |
| | | | | | | B | 23.250 | 113.483 | | | 0.000 | 0.000 | |
| T5 39.00-35.00 | 37.00 | 1.027 | 5 | 0.8598 | 82.573 | C | 23.250 | 113.483 | 21.146 | 100.00 | 52.159 | 0.000 | |
| | | | | | | A | 0.000 | 21.146 | | | 0.888 | 0.000 | |
| | | | | | | B | 0.000 | 21.146 | | | 0.000 | 0.000 | |
| T6 35.00-0.00 | 17.50 | 0.877 | 4 | 0.7978 | 722.154 | C | 0.000 | 21.146 | 184.307 | 100.00 | 9.793 | 0.000 | |
| | | | | | | A | 23.250 | 186.368 | | | 7.334 | 0.000 | |
| | | | | | | B | 23.250 | 186.368 | | | 0.000 | 0.000 | |
| | | | | | | C | 23.250 | 186.368 | | | 87.93 | 82.648 | 0.000 |

Tower Pressure - Service

$G_H = 0.850$

| Section Elevation | z | K _Z | q _z | A _G | F a c e | A _F | A _R | A _{leg} | Leg % | C _A A _A In Face | C _A A _A Out Face | |
|-------------------|-------|----------------|----------------|-----------------|---------|-----------------|-----------------|------------------|--------|---------------------------------------|--|--------|
| ft | ft | | psf | ft ² | e | ft ² | ft ² | ft ² | | ft ² | ft ² | |
| T1 104.00-87.00 | 95.50 | 1.253 | 9 | 348.500 | A | 25.833 | 85.000 | 85.000 | 76.69 | 0.850 | 0.000 | |
| | | | | | B | 25.833 | 85.000 | | | | 0.000 | 0.000 |
| | | | | | C | 25.833 | 85.000 | | | | 21.157 | 0.000 |
| T2 87.00-74.00 | 80.50 | 1.209 | 9 | 266.500 | A | 12.917 | 65.000 | 65.000 | 83.42 | 0.650 | 0.000 | |
| | | | | | B | 12.917 | 65.000 | | | | 0.000 | 0.000 |
| | | | | | C | 12.917 | 65.000 | | | | 16.179 | 0.000 |
| T3 74.00-60.00 | 67.00 | 1.163 | 9 | 287.000 | A | 0.000 | 70.000 | 70.000 | 100.00 | 0.700 | 0.000 | |
| | | | | | B | 0.000 | 70.000 | | | | 0.000 | 0.000 |
| | | | | | C | 0.000 | 70.000 | | | | 17.423 | 0.000 |
| T4 60.00-39.00 | 49.50 | 1.091 | 8 | 430.500 | A | 23.250 | 105.000 | 105.000 | 81.87 | 1.050 | 0.000 | |
| | | | | | B | 23.250 | 105.000 | | | | 81.87 | 0.000 |
| | | | | | C | 23.250 | 105.000 | | | | 81.87 | 26.134 |
| T5 39.00-35.00 | 37.00 | 1.027 | 8 | 82.000 | A | 0.000 | 20.000 | 20.000 | 100.00 | 0.200 | 0.000 | |
| | | | | | B | 0.000 | 20.000 | | | | 100.00 | 0.000 |
| | | | | | C | 0.000 | 20.000 | | | | 100.00 | 4.978 |
| T6 35.00-0.00 | 17.50 | 0.877 | 7 | 717.500 | A | 23.250 | 175.000 | 175.000 | 88.27 | 1.750 | 0.000 | |
| | | | | | B | 23.250 | 175.000 | | | | 88.27 | 0.000 |
| | | | | | C | 23.250 | 175.000 | | | | 88.27 | 43.557 |

Tower Forces - No Ice - Wind Normal To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|-------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|-----------------|---------|--------|------------|
| ft | lb | lb | e | | | psf | | | ft ² | lb | plf | |
| T1 104.00-87.00 | 161.34 | 9581.15 | A | 0.318 | 2.249 | 33 | 1 | 1 | 70.079 | 5050.38 | 297.08 | C |
| | | | B | 0.318 | 2.249 | 1 | 1 | 70.079 | | | | |
| | | | C | 0.318 | 2.249 | 1 | 1 | 70.079 | | | | |
| T2 87.00-74.00 | 123.38 | 6393.85 | A | 0.292 | 2.316 | 32 | 1 | 1 | 45.624 | 3323.01 | 255.62 | C |
| | | | B | 0.292 | 2.316 | 1 | 1 | 45.624 | | | | |
| | | | C | 0.292 | 2.316 | 1 | 1 | 45.624 | | | | |
| T3 74.00-60.00 | 132.87 | 4987.97 | A | 0.244 | 2.456 | 31 | 1 | 1 | 33.038 | 2590.25 | 185.02 | C |
| | | | B | 0.244 | 2.456 | 1 | 1 | 33.038 | | | | |
| | | | | | | | | | | | | |

| | | | | |
|--|----------------|---------------|--------------------|-------------------|
| tnxTower Centerline Engineering Services 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | Job | Hartford W CT | Page | 11 of 28 |
| | Project | 17123737 | Date | 16:33:32 10/13/23 |
| | Client | Verizon | Designed by | emanavoglu |

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|-------|----------------|-----------------------|----------------|----------------|-----------------------------------|-----------|----------|------------|
| T4 60.00-39.00 | 199.30 | 12339.85 | C | 0.244 | 2.456 | 29 | 1 | 1 | 33.038 | 4974.93 | 236.90 | C |
| | | | A | 0.298 | 2.302 | | | | 76.473 | | | |
| | | | B | 0.298 | 2.302 | | | | 76.473 | | | |
| T5 39.00-35.00 | 37.96 | 1425.14 | C | 0.298 | 2.302 | 27 | 1 | 1 | 76.473 | 653.11 | 163.28 | C |
| | | | A | 0.244 | 2.456 | | | | 9.440 | | | |
| | | | B | 0.244 | 2.456 | | | | 9.440 | | | |
| T6 35.00-0.00 | 332.16 | 17327.82 | C | 0.244 | 2.456 | 23 | 1 | 1 | 9.440 | 5974.37 | 170.70 | C |
| | | | A | 0.276 | 2.361 | | | | 109.456 | | | |
| | | | B | 0.276 | 2.361 | | | | 109.456 | | | |
| Sum Weight: | 987.00 | 52055.78 | C | 0.276 | 2.361 | | | | 109.456 | 22566.06 | | |
| | | | | | | | | | OTM | 1298336.3 | | |
| | | | | | | | | | 2 lb-ft | | | |

Tower Forces - No Ice - Wind 60 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|-------|----------------|-----------------------|----------------|----------------|-----------------------------------|----------|----------|------------|
| T1 104.00-87.00 | 161.34 | 9581.15 | A | 0.318 | 2.249 | 33 | 0.8 | 1 | 64.912 | 4723.65 | 277.86 | A |
| | | | B | 0.318 | 2.249 | | | | 64.912 | | | |
| | | | C | 0.318 | 2.249 | | | | 64.912 | | | |
| T2 87.00-74.00 | 123.38 | 6393.85 | A | 0.292 | 2.316 | 32 | 0.8 | 1 | 43.041 | 3160.70 | 243.13 | A |
| | | | B | 0.292 | 2.316 | | | | 43.041 | | | |
| | | | C | 0.292 | 2.316 | | | | 43.041 | | | |
| T3 74.00-60.00 | 132.87 | 4987.97 | A | 0.244 | 2.456 | 31 | 0.8 | 1 | 33.038 | 2590.25 | 185.02 | A |
| | | | B | 0.244 | 2.456 | | | | 33.038 | | | |
| | | | C | 0.244 | 2.456 | | | | 33.038 | | | |
| T4 60.00-39.00 | 199.30 | 12339.85 | A | 0.298 | 2.302 | 29 | 0.8 | 1 | 71.823 | 4712.90 | 224.42 | A |
| | | | B | 0.298 | 2.302 | | | | 71.823 | | | |
| | | | C | 0.298 | 2.302 | | | | 71.823 | | | |
| T5 39.00-35.00 | 37.96 | 1425.14 | A | 0.244 | 2.456 | 27 | 0.8 | 1 | 9.440 | 653.11 | 163.28 | A |
| | | | B | 0.244 | 2.456 | | | | 9.440 | | | |
| | | | C | 0.244 | 2.456 | | | | 9.440 | | | |
| T6 35.00-0.00 | 332.16 | 17327.82 | A | 0.276 | 2.361 | 23 | 0.8 | 1 | 104.806 | 5758.43 | 164.53 | A |
| | | | B | 0.276 | 2.361 | | | | 104.806 | | | |
| | | | C | 0.276 | 2.361 | | | | 104.806 | | | |
| Sum Weight: | 987.00 | 52055.78 | | | | | | | 1237317.7 | 21599.03 | | |
| | | | | | | | | | OTM | | | |
| | | | | | | | | | 0 lb-ft | | | |

Tower Forces - No Ice - Wind 90 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|-------|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| T1 104.00-87.00 | 161.34 | 9581.15 | A | 0.318 | 2.249 | 33 | 0.85 | 1 | 66.204 | 4805.34 | 282.67 | B |
| | | | B | 0.318 | 2.249 | | 0.85 | 1 | 66.204 | | | |
| | | | C | 0.318 | 2.249 | | 0.85 | 1 | 66.204 | | | |

| | | | | |
|--|----------------|---------------|--------------------|-------------------|
| tnxTower Centerline Engineering Services 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | Job | Hartford W CT | Page | 12 of 28 |
| | Project | 17123737 | Date | 16:33:32 10/13/23 |
| | Client | Verizon | Designed by | emanavoglu |

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|-------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|----------------------|----------|--------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| T2 87.00-74.00 | 123.38 | 6393.85 | A | 0.292 | 2.316 | 32 | 0.85 | 1 | 43.686 | 3201.27 | 246.25 | B |
| | | | B | 0.292 | 2.316 | | 0.85 | 1 | 43.686 | | | |
| | | | C | 0.292 | 2.316 | | 0.85 | 1 | 43.686 | | | |
| T3 74.00-60.00 | 132.87 | 4987.97 | A | 0.244 | 2.456 | 31 | 0.85 | 1 | 33.038 | 2590.25 | 185.02 | B |
| | | | B | 0.244 | 2.456 | | 0.85 | 1 | 33.038 | | | |
| | | | C | 0.244 | 2.456 | | 0.85 | 1 | 33.038 | | | |
| T4 60.00-39.00 | 199.30 | 12339.85 | A | 0.298 | 2.302 | 29 | 0.85 | 1 | 72.986 | 4778.41 | 227.54 | B |
| | | | B | 0.298 | 2.302 | | 0.85 | 1 | 72.986 | | | |
| | | | C | 0.298 | 2.302 | | 0.85 | 1 | 72.986 | | | |
| T5 39.00-35.00 | 37.96 | 1425.14 | A | 0.244 | 2.456 | 27 | 0.85 | 1 | 9.440 | 653.11 | 163.28 | B |
| | | | B | 0.244 | 2.456 | | 0.85 | 1 | 9.440 | | | |
| | | | C | 0.244 | 2.456 | | 0.85 | 1 | 9.440 | | | |
| T6 35.00-0.00 | 332.16 | 17327.82 | A | 0.276 | 2.361 | 23 | 0.85 | 1 | 105.968 | 5812.41 | 166.07 | B |
| | | | B | 0.276 | 2.361 | | 0.85 | 1 | 105.968 | | | |
| | | | C | 0.276 | 2.361 | | 0.85 | 1 | 105.968 | | | |
| Sum Weight: | 987.00 | 52055.78 | | | | | | OTM | 1252572.3 6 lb-ft | 21840.79 | | |

Tower Forces - With Ice - Wind Normal To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|--------------------|---------|-------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| T1 104.00-87.00 | 563.96 | 12769.40 | A | 0.345 | 2.184 | 6 | 1 | 1 | 84.323 | 1232.33 | 72.49 | C |
| | | | B | 0.345 | 2.184 | | 1 | 1 | 84.323 | | | |
| | | | C | 0.345 | 2.184 | | 1 | 1 | 84.323 | | | |
| T2 87.00-74.00 | 424.16 | 8433.58 | A | 0.314 | 2.259 | 6 | 1 | 1 | 56.019 | 834.26 | 64.17 | C |
| | | | B | 0.314 | 2.259 | | 1 | 1 | 56.019 | | | |
| | | | C | 0.314 | 2.259 | | 1 | 1 | 56.019 | | | |
| T3 74.00-60.00 | 448.78 | 6435.18 | A | 0.257 | 2.417 | 6 | 1 | 1 | 43.567 | 709.69 | 50.69 | C |
| | | | B | 0.257 | 2.417 | | 1 | 1 | 43.567 | | | |
| | | | C | 0.257 | 2.417 | | 1 | 1 | 43.567 | | | |
| T4 60.00-39.00 | 654.10 | 15547.17 | A | 0.315 | 2.256 | 5 | 1 | 1 | 91.776 | 1221.74 | 58.18 | C |
| | | | B | 0.315 | 2.256 | | 1 | 1 | 91.776 | | | |
| | | | C | 0.315 | 2.256 | | 1 | 1 | 91.776 | | | |
| T5 39.00-35.00 | 121.25 | 1814.12 | A | 0.256 | 2.419 | 5 | 1 | 1 | 12.403 | 177.12 | 44.28 | C |
| | | | B | 0.256 | 2.419 | | 1 | 1 | 12.403 | | | |
| | | | C | 0.256 | 2.419 | | 1 | 1 | 12.403 | | | |
| T6 35.00-0.00 | 991.46 | 21469.14 | A | 0.29 | 2.322 | 4 | 1 | 1 | 134.317 | 1494.40 | 42.70 | C |
| | | | B | 0.29 | 2.322 | | 1 | 1 | 134.317 | | | |
| | | | C | 0.29 | 2.322 | | 1 | 1 | 134.317 | | | |
| Sum Weight: | 3203.72 | 66468.60 | | | | | | OTM | 325576.32 lb-ft | 5669.54 | | |

Tower Forces - With Ice - Wind 60 To Face

| | | |
|--|-----------------------------|----------------------------------|
| tnxTower Centerline Engineering Services 750 W Center St. Suite 301 West Bridgewater, MA 02379 Phone: 781-713-4725 FAX: | Job Hartford W CT | Page 13 of 28 |
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| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|--------------------|---------|-------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| T1 104.00-87.00 | 563.96 | 12769.40 | A | 0.345 | 2.184 | 6 | 0.8 | 1 | 79.156 | 1172.36 | 68.96 | A |
| | | | B | 0.345 | 2.184 | | | | 79.156 | | | |
| | | | C | 0.345 | 2.184 | | | | 79.156 | | | |
| T2 87.00-74.00 | 424.16 | 8433.58 | A | 0.314 | 2.259 | 6 | 0.8 | 1 | 53.436 | 804.34 | 61.87 | A |
| | | | B | 0.314 | 2.259 | | | | 53.436 | | | |
| | | | C | 0.314 | 2.259 | | | | 53.436 | | | |
| T3 74.00-60.00 | 448.78 | 6435.18 | A | 0.257 | 2.417 | 6 | 0.8 | 1 | 43.567 | 709.69 | 50.69 | A |
| | | | B | 0.257 | 2.417 | | | | 43.567 | | | |
| | | | C | 0.257 | 2.417 | | | | 43.567 | | | |
| T4 60.00-39.00 | 654.10 | 15547.17 | A | 0.315 | 2.256 | 5 | 0.8 | 1 | 87.126 | 1173.19 | 55.87 | A |
| | | | B | 0.315 | 2.256 | | | | 87.126 | | | |
| | | | C | 0.315 | 2.256 | | | | 87.126 | | | |
| T5 39.00-35.00 | 121.25 | 1814.12 | A | 0.256 | 2.419 | 5 | 0.8 | 1 | 12.403 | 177.12 | 44.28 | A |
| | | | B | 0.256 | 2.419 | | | | 12.403 | | | |
| | | | C | 0.256 | 2.419 | | | | 12.403 | | | |
| T6 35.00-0.00 | 991.46 | 21469.14 | A | 0.29 | 2.322 | 4 | 0.8 | 1 | 129.667 | 1454.24 | 41.55 | A |
| | | | B | 0.29 | 2.322 | | | | 129.667 | | | |
| | | | C | 0.29 | 2.322 | | | | 129.667 | | | |
| Sum Weight: | 3203.72 | 66468.60 | | | | | | OTM | 314334.60 lb-ft | 5490.95 | | |

Tower Forces - With Ice - Wind 90 To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|--------------------|---------|-------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| T1 104.00-87.00 | 563.96 | 12769.40 | A | 0.345 | 2.184 | 6 | 0.85 | 1 | 80.448 | 1187.35 | 69.84 | B |
| | | | B | 0.345 | 2.184 | | | | 80.448 | | | |
| | | | C | 0.345 | 2.184 | | | | 80.448 | | | |
| T2 87.00-74.00 | 424.16 | 8433.58 | A | 0.314 | 2.259 | 6 | 0.85 | 1 | 54.081 | 811.82 | 62.45 | B |
| | | | B | 0.314 | 2.259 | | | | 54.081 | | | |
| | | | C | 0.314 | 2.259 | | | | 54.081 | | | |
| T3 74.00-60.00 | 448.78 | 6435.18 | A | 0.257 | 2.417 | 6 | 0.85 | 1 | 43.567 | 709.69 | 50.69 | B |
| | | | B | 0.257 | 2.417 | | | | 43.567 | | | |
| | | | C | 0.257 | 2.417 | | | | 43.567 | | | |
| T4 60.00-39.00 | 654.10 | 15547.17 | A | 0.315 | 2.256 | 5 | 0.85 | 1 | 88.289 | 1185.33 | 56.44 | B |
| | | | B | 0.315 | 2.256 | | | | 88.289 | | | |
| | | | C | 0.315 | 2.256 | | | | 88.289 | | | |
| T5 39.00-35.00 | 121.25 | 1814.12 | A | 0.256 | 2.419 | 5 | 0.85 | 1 | 12.403 | 177.12 | 44.28 | B |
| | | | B | 0.256 | 2.419 | | | | 12.403 | | | |
| | | | C | 0.256 | 2.419 | | | | 12.403 | | | |
| T6 35.00-0.00 | 991.46 | 21469.14 | A | 0.29 | 2.322 | 4 | 0.85 | 1 | 130.829 | 1464.28 | 41.84 | B |
| | | | B | 0.29 | 2.322 | | | | 130.829 | | | |
| | | | C | 0.29 | 2.322 | | | | 130.829 | | | |
| Sum Weight: | 3203.72 | 66468.60 | | | | | | OTM | 317145.03 lb-ft | 5535.59 | | |

Tower Forces - Service - Wind Normal To Face

| | | |
|--|-----------------------------|----------------------------------|
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| | Client Verizon | Designed by emanavoglu |

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|--------------------|---------|-------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| T1 104.00-87.00 | 161.34 | 9581.15 | A | 0.318 | 2.249 | 9 | 1 | 1 | 70.079 | 1447.13 | 85.13 | C |
| | | | B | 0.318 | 2.249 | | 1 | 1 | 70.079 | | | |
| | | | C | 0.318 | 2.249 | | 1 | 1 | 70.079 | | | |
| T2 87.00-74.00 | 123.38 | 6393.85 | A | 0.292 | 2.316 | 9 | 1 | 1 | 45.624 | 952.17 | 73.24 | C |
| | | | B | 0.292 | 2.316 | | 1 | 1 | 45.624 | | | |
| | | | C | 0.292 | 2.316 | | 1 | 1 | 45.624 | | | |
| T3 74.00-60.00 | 132.87 | 4987.97 | A | 0.244 | 2.456 | 9 | 1 | 1 | 33.038 | 742.21 | 53.01 | C |
| | | | B | 0.244 | 2.456 | | 1 | 1 | 33.038 | | | |
| | | | C | 0.244 | 2.456 | | 1 | 1 | 33.038 | | | |
| T4 60.00-39.00 | 199.30 | 12339.85 | A | 0.298 | 2.302 | 8 | 1 | 1 | 76.473 | 1425.51 | 67.88 | C |
| | | | B | 0.298 | 2.302 | | 1 | 1 | 76.473 | | | |
| | | | C | 0.298 | 2.302 | | 1 | 1 | 76.473 | | | |
| T5 39.00-35.00 | 37.96 | 1425.14 | A | 0.244 | 2.456 | 8 | 1 | 1 | 9.440 | 187.14 | 46.79 | C |
| | | | B | 0.244 | 2.456 | | 1 | 1 | 9.440 | | | |
| | | | C | 0.244 | 2.456 | | 1 | 1 | 9.440 | | | |
| T6 35.00-0.00 | 332.16 | 17327.82 | A | 0.276 | 2.361 | 7 | 1 | 1 | 109.456 | 1711.89 | 48.91 | C |
| | | | B | 0.276 | 2.361 | | 1 | 1 | 109.456 | | | |
| | | | C | 0.276 | 2.361 | | 1 | 1 | 109.456 | | | |
| Sum Weight: | 987.00 | 52055.78 | | | | | | OTM | 372023.54 lb-ft | 6466.05 | | |

Tower Forces - Service - Wind 60 To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|--------------------|------------|-------------|---------|-------|----------------|----------------|----------------|----------------|--------------------|---------|-------|------------|
| ft | lb | lb | | | | psf | | | ft ² | lb | plf | |
| T1 104.00-87.00 | 161.34 | 9581.15 | A | 0.318 | 2.249 | 9 | 0.8 | 1 | 64.912 | 1353.51 | 79.62 | A |
| | | | B | 0.318 | 2.249 | | 0.8 | 1 | 64.912 | | | |
| | | | C | 0.318 | 2.249 | | 0.8 | 1 | 64.912 | | | |
| T2 87.00-74.00 | 123.38 | 6393.85 | A | 0.292 | 2.316 | 9 | 0.8 | 1 | 43.041 | 905.66 | 69.67 | A |
| | | | B | 0.292 | 2.316 | | 0.8 | 1 | 43.041 | | | |
| | | | C | 0.292 | 2.316 | | 0.8 | 1 | 43.041 | | | |
| T3 74.00-60.00 | 132.87 | 4987.97 | A | 0.244 | 2.456 | 9 | 0.8 | 1 | 33.038 | 742.21 | 53.01 | A |
| | | | B | 0.244 | 2.456 | | 0.8 | 1 | 33.038 | | | |
| | | | C | 0.244 | 2.456 | | 0.8 | 1 | 33.038 | | | |
| T4 60.00-39.00 | 199.30 | 12339.85 | A | 0.298 | 2.302 | 8 | 0.8 | 1 | 71.823 | 1350.43 | 64.31 | A |
| | | | B | 0.298 | 2.302 | | 0.8 | 1 | 71.823 | | | |
| | | | C | 0.298 | 2.302 | | 0.8 | 1 | 71.823 | | | |
| T5 39.00-35.00 | 37.96 | 1425.14 | A | 0.244 | 2.456 | 8 | 0.8 | 1 | 9.440 | 187.14 | 46.79 | A |
| | | | B | 0.244 | 2.456 | | 0.8 | 1 | 9.440 | | | |
| | | | C | 0.244 | 2.456 | | 0.8 | 1 | 9.440 | | | |
| T6 35.00-0.00 | 332.16 | 17327.82 | A | 0.276 | 2.361 | 7 | 0.8 | 1 | 104.806 | 1650.01 | 47.14 | A |
| | | | B | 0.276 | 2.361 | | 0.8 | 1 | 104.806 | | | |
| | | | C | 0.276 | 2.361 | | 0.8 | 1 | 104.806 | | | |
| Sum Weight: | 987.00 | 52055.78 | | | | | | OTM | 354539.35 lb-ft | 6188.96 | | |

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| | Client Verizon | Designed by emanavoglu |

Tower Forces - Service - Wind 90 To Face

| Section Elevation ft | Add Weight lb | Self Weight lb | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F lb | w plf | Ctrl. Face |
|-------------------------|------------------|-------------------|---------|-------|----------------|-----------------------|----------------|----------------|-----------------------------------|---------|----------|------------|
| T1 104.00-87.00 | 161.34 | 9581.15 | A | 0.318 | 2.249 | 9 | 0.85 | 1 | 66.204 | 1376.91 | 80.99 | B |
| | | | B | 0.318 | 2.249 | | 0.85 | 1 | 66.204 | | | |
| | | | C | 0.318 | 2.249 | | 0.85 | 1 | 66.204 | | | |
| T2 87.00-74.00 | 123.38 | 6393.85 | A | 0.292 | 2.316 | 9 | 0.85 | 1 | 43.686 | 917.29 | 70.56 | B |
| | | | B | 0.292 | 2.316 | | 0.85 | 1 | 43.686 | | | |
| | | | C | 0.292 | 2.316 | | 0.85 | 1 | 43.686 | | | |
| T3 74.00-60.00 | 132.87 | 4987.97 | A | 0.244 | 2.456 | 9 | 0.85 | 1 | 33.038 | 742.21 | 53.01 | B |
| | | | B | 0.244 | 2.456 | | 0.85 | 1 | 33.038 | | | |
| | | | C | 0.244 | 2.456 | | 0.85 | 1 | 33.038 | | | |
| T4 60.00-39.00 | 199.30 | 12339.85 | A | 0.298 | 2.302 | 8 | 0.85 | 1 | 72.986 | 1369.20 | 65.20 | B |
| | | | B | 0.298 | 2.302 | | 0.85 | 1 | 72.986 | | | |
| | | | C | 0.298 | 2.302 | | 0.85 | 1 | 72.986 | | | |
| T5 39.00-35.00 | 37.96 | 1425.14 | A | 0.244 | 2.456 | 8 | 0.85 | 1 | 9.440 | 187.14 | 46.79 | B |
| | | | B | 0.244 | 2.456 | | 0.85 | 1 | 9.440 | | | |
| | | | C | 0.244 | 2.456 | | 0.85 | 1 | 9.440 | | | |
| T6 35.00-0.00 | 332.16 | 17327.82 | A | 0.276 | 2.361 | 7 | 0.85 | 1 | 105.968 | 1665.48 | 47.59 | B |
| | | | B | 0.276 | 2.361 | | 0.85 | 1 | 105.968 | | | |
| | | | C | 0.276 | 2.361 | | 0.85 | 1 | 105.968 | | | |
| Sum Weight: | 987.00 | 52055.78 | | | | | | OTM | 358910.40 lb-ft | 6258.23 | | |

Force Totals

| Load Case | Vertical Forces lb | Sum of Forces X lb | Sum of Forces Z lb | Sum of Overturning Moments, M _x lb-ft | Sum of Overturning Moments, M _z lb-ft | Sum of Torques lb-ft |
|--------------------------|-----------------------|-----------------------|-----------------------|---|---|-------------------------|
| Leg Weight | 37053.51 | | | | | |
| Bracing Weight | 15002.27 | | | | | |
| Total Member Self-Weight | 52055.78 | | | 2945.46 | 1675.32 | |
| Total Weight | 62371.85 | | | 2945.46 | 1675.32 | |
| Wind 0 deg - No Ice | | 0.00 | -38136.65 | -2774596.77 | 1675.32 | 0.00 |
| Wind 30 deg - No Ice | | 18705.69 | -32399.20 | -2362843.92 | -1364213.82 | 406.46 |
| Wind 60 deg - No Ice | | 31499.34 | -18186.15 | -1333001.13 | -2312252.05 | 704.00 |
| Wind 90 deg - No Ice | | 35080.76 | 0.00 | 2945.46 | -2599644.74 | 812.91 |
| Wind 120 deg - No Ice | | 32336.81 | 18669.66 | 1369401.36 | -2365095.72 | 704.00 |
| Wind 150 deg - No Ice | | 18705.69 | 32399.20 | 2368734.85 | -1364213.82 | 406.46 |
| Wind 180 deg - No Ice | | 0.00 | 37169.62 | 2719469.09 | 1675.32 | 0.00 |
| Wind 210 deg - No Ice | | -18705.69 | 32399.20 | 2368734.85 | 1367564.46 | -406.46 |
| Wind 240 deg - No Ice | | -32336.81 | 18669.66 | 1369401.36 | 2368446.36 | -704.00 |
| Wind 270 deg - No Ice | | -35080.76 | 0.00 | 2945.46 | 2602995.38 | -812.91 |
| Wind 300 deg - No Ice | | -31499.34 | -18186.15 | -1333001.13 | 2315602.69 | -704.00 |
| Wind 330 deg - No Ice | | -18705.69 | -32399.20 | -2362843.92 | 1367564.46 | -406.46 |
| Member Ice | 14412.82 | | | | | |
| Total Weight Ice | 92459.28 | | | 13430.19 | 2366.37 | |
| Wind 0 deg - Ice | | 0.00 | -8672.85 | -597460.31 | 2366.37 | 0.00 |
| Wind 30 deg - Ice | | 4269.45 | -7394.91 | -508314.79 | -298863.24 | 293.66 |
| Wind 60 deg - Ice | | 6884.12 | -3974.55 | -270778.55 | -489897.61 | 508.63 |
| Wind 90 deg - Ice | | 7703.90 | 0.00 | 13430.19 | -552637.02 | 587.31 |
| Wind 120 deg - Ice | | 7038.79 | 4063.85 | 303259.79 | -499633.23 | 508.63 |
| Wind 150 deg - Ice | | 4269.45 | 7394.91 | 535175.17 | -298863.24 | 293.66 |

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| Load Case | Vertical Forces lb | Sum of Forces X lb | Sum of Forces Z lb | Sum of Overturning Moments, M_x lb-ft | Sum of Overturning Moments, M_z lb-ft | Sum of Torques lb-ft |
|------------------------|-----------------------|--------------------------|--------------------------|--|--|-------------------------|
| Wind 180 deg - Ice | | 0.00 | 8494.25 | 613078.97 | 2366.37 | 0.00 |
| Wind 210 deg - Ice | | -4269.45 | 7394.91 | 535175.17 | 303595.97 | -293.66 |
| Wind 240 deg - Ice | | -7038.79 | 4063.85 | 303259.79 | 504365.96 | -508.63 |
| Wind 270 deg - Ice | | -7703.90 | 0.00 | 13430.19 | 557369.75 | -587.31 |
| Wind 300 deg - Ice | | -6884.12 | -3974.55 | -270778.55 | 494630.34 | -508.63 |
| Wind 330 deg - Ice | | -4269.45 | -7394.91 | -508314.79 | 303595.97 | -293.66 |
| Total Weight | 62371.85 | | | 2945.46 | 1675.32 | |
| Wind 0 deg - Service | | 0.00 | -10927.62 | -795509.93 | 171.71 | 0.00 |
| Wind 30 deg - Service | | 5359.90 | -9283.62 | -677526.82 | -391208.32 | 116.47 |
| Wind 60 deg - Service | | 9025.78 | -5211.04 | -382437.06 | -662857.92 | 201.72 |
| Wind 90 deg - Service | | 10051.99 | 0.00 | 363.28 | -745207.03 | 232.93 |
| Wind 120 deg - Service | | 9265.75 | 5349.58 | 391905.71 | -677999.67 | 201.72 |
| Wind 150 deg - Service | | 5359.90 | 9283.62 | 678253.38 | -391208.32 | 116.47 |
| Wind 180 deg - Service | | 0.00 | 10650.53 | 778752.30 | 171.71 | 0.00 |
| Wind 210 deg - Service | | -5359.90 | 9283.62 | 678253.38 | 391551.75 | -116.47 |
| Wind 240 deg - Service | | -9265.75 | 5349.58 | 391905.71 | 678343.10 | -201.72 |
| Wind 270 deg - Service | | -10051.99 | 0.00 | 363.28 | 745550.46 | -232.93 |
| Wind 300 deg - Service | | -9025.78 | -5211.04 | -382437.06 | 663201.34 | -201.72 |
| Wind 330 deg - Service | | -5359.90 | -9283.62 | -677526.82 | 391551.75 | -116.47 |

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 |

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| Comb. No. | Description |
|-----------|--|
| 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 lb | Major Axis Moment lb-ft | Minor Axis Moment lb-ft | | |
|-------------|--------------|----------------|------------------|-----------------|------------------|-------------------------|-------------------------|-----------|-----------|
| T1 | 104 - 87 | Leg | Max Tension | 15 | 11495.45 | 0.62 | 84378.30 | | |
| | | | Max. Compression | 2 | -22220.78 | 1.88 | -19007.10 | | |
| | | | Max. Mx | 8 | -17513.33 | 78369.79 | 9882.13 | | |
| | | | Max. My | 2 | -20170.20 | 1.52 | -87521.63 | | |
| | | | Max. Vy | 20 | -7526.52 | -19295.20 | -3795.93 | | |
| | | | Max. Vx | 2 | -8652.57 | 1.88 | -19007.10 | | |
| | | Horizontal | Max Tension | 14 | 1736.63 | -982.40 | 10.69 | | |
| | | | Max. Compression | 3 | -1651.50 | -861.91 | 42.67 | | |
| | | | Max. Mx | 4 | 106.94 | -42621.69 | 58.07 | | |
| | | | Max. My | 23 | -743.84 | 34493.73 | -113.56 | | |
| | | | Max. Vy | 4 | 4971.18 | -42621.69 | 58.07 | | |
| | | | Max. Vx | 22 | 12.85 | -36488.49 | 102.86 | | |
| | | Top Girt | Max Tension | 3 | 3651.60 | -999.93 | 45.22 | | |
| | | | Max. Compression | 14 | -3924.42 | -823.44 | 7.34 | | |
| | | | Max. Mx | 4 | -170.06 | -38347.42 | -131.68 | | |
| | | | Max. My | 10 | -2056.05 | -33334.70 | -151.22 | | |
| | | | Max. Vy | 4 | 4497.73 | -38347.42 | -131.68 | | |
| | | | Max. Vx | 10 | -15.19 | -33334.70 | -151.22 | | |
| T2 | 87 - 74 | Leg | Max Tension | 15 | 18484.61 | 0.95 | 89252.23 | | |
| | | | Max. Compression | 2 | -34748.86 | 2.35 | 35663.17 | | |
| | | | Max. Mx | 10 | -32029.92 | 79627.55 | 45936.81 | | |
| | | | Max. My | 2 | -32252.71 | 2.32 | -93233.99 | | |
| | | | Max. Vy | 10 | 8850.99 | -30875.40 | -17853.99 | | |
| | | | Max. Vx | 2 | -10319.26 | 2.35 | 35663.17 | | |
| | | Horizontal | Max Tension | 2 | 630.21 | -1005.19 | 46.83 | | |
| | | | Max. Compression | 15 | -524.25 | -836.06 | 11.22 | | |
| | | | Max. Mx | 4 | 86.63 | -48582.18 | -23.62 | | |
| | | | Max. My | 8 | 522.25 | -23957.10 | 85.98 | | |
| | | | Max. Vy | 4 | 5633.37 | -48582.18 | -23.62 | | |
| | | | Max. Vx | 8 | -8.15 | -23957.10 | 85.98 | | |
| | | T3 | 74 - 60 | Leg | Max Tension | 15 | 16568.89 | 1.60 | -34529.32 |
| | | | | | Max. Compression | 2 | -36770.33 | 2.38 | 188084.05 |
| | | | | | Max. Mx | 18 | -36706.33 | 161228.81 | -93049.31 |
| | | | | | Max. My | 2 | -36770.33 | 2.38 | 188084.05 |
| | | | | | Max. Vy | 18 | -9673.12 | 161228.81 | -93049.31 |

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| | Client Verizon | Designed by emanavoglu |

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Axial lb | Major Axis Moment lb-ft | Minor Axis Moment lb-ft |
|-------------|--------------|----------------|------------------|-----------------|------------|-------------------------|-------------------------|
| T4 | 60 - 39 | Leg | Max. Vx | 2 | -11324.18 | 2.38 | 188084.05 |
| | | | Max Tension | 15 | 74342.98 | 1.88 | 274825.25 |
| | | | Max. Compression | 2 | -103879.41 | 3.65 | 131115.95 |
| | | | Max. Mx | 10 | -99836.49 | 244456.11 | 141065.11 |
| | | | Max. My | 2 | -100934.06 | 4.58 | -287362.57 |
| | | | Max. Vy | 18 | -17496.43 | 112091.09 | -64699.67 |
| | | Horizontal | Max. Vx | 2 | -20524.66 | 3.65 | 131115.95 |
| | | | Max Tension | 2 | 8566.30 | -12519.89 | 463.69 |
| | | | Max. Compression | 14 | -8623.90 | 7203.32 | 72.78 |
| | | | Max. Mx | 4 | 166.90 | -320638.61 | -928.62 |
| | | | Max. My | 10 | -4177.27 | -273431.90 | -1005.43 |
| | | | Max. Vy | 4 | 36316.01 | -320638.61 | -928.62 |
| | | | Max. Vx | 10 | -92.03 | -273431.90 | -1005.43 |
| | | | Max Tension | 15 | 72096.01 | 1.67 | -124724.22 |
| T5 | 39 - 35 | Leg | Max. Compression | 2 | -104492.09 | 3.44 | 214510.13 |
| | | | Max. Mx | 18 | -103597.25 | 183087.88 | -105660.74 |
| | | | Max. My | 2 | -104492.09 | 3.44 | 214510.13 |
| | | Horizontal | Max. Vy | 18 | -17840.85 | 183087.88 | -105660.74 |
| | | | Max. Vx | 2 | -20959.07 | 3.44 | 214510.13 |
| | | | Max Tension | 15 | 161661.41 | -2.61 | 469821.49 |
| T6 | 35 - 0 | Leg | Max. Compression | 2 | -205451.40 | -0.08 | 0.03 |
| | | | Max. Mx | 20 | -166697.21 | -419947.56 | 53030.05 |
| | | | Max. My | 2 | -200549.98 | 4.75 | -486802.41 |
| | | | Max. Vy | 20 | -12754.45 | 0.03 | -2.43 |
| | | | Max. Vx | 2 | -14688.09 | -0.08 | 0.03 |
| | | | Max Tension | 14 | 8713.91 | 23093.73 | 578.60 |
| | | Horizontal | Max. Compression | 2 | -9540.62 | -28573.43 | 247.63 |
| | | | Max. Mx | 16 | 1500.70 | -482717.00 | 529.71 |
| | | | Max. My | 14 | -3469.27 | 398270.69 | -1626.71 |
| | | | Max. Vy | 16 | -54333.02 | -482717.00 | 529.71 |
| | | | Max. Vx | 14 | -164.89 | -428698.40 | 1282.08 |

Maximum Reactions

| Location | Condition | Gov. Load Comb. | Vertical lb | Horizontal, X lb | Horizontal, Z lb |
|----------|---------------------|-----------------|-------------|------------------|------------------|
| Leg C | Max. Vert | 18 | 203230.62 | 10450.69 | -6027.77 |
| | Max. H _x | 21 | 165076.36 | 10844.78 | -1500.18 |
| | Max. H _z | 2 | -65310.00 | -1587.36 | 12921.95 |
| | Min. Vert | 7 | -154511.62 | -13856.92 | 7993.76 |
| | Min. H _x | 8 | -121590.04 | -14281.10 | 1477.65 |
| | Min. H _z | 15 | 107026.03 | 1592.57 | -10394.51 |
| Leg B | Max. Vert | 10 | 203007.02 | -10452.95 | -6028.84 |
| | Max. H _x | 20 | -121813.66 | 14283.51 | 1477.68 |
| | Max. H _z | 2 | -65533.62 | 1587.56 | 12924.21 |
| | Min. Vert | 23 | -154679.29 | 13858.60 | 7994.58 |
| | Min. H _x | 9 | 164908.70 | -10846.54 | -1500.15 |
| | Min. H _z | 15 | 106858.37 | -1592.70 | -10396.12 |
| Leg A | Max. Vert | 2 | 205689.88 | -0.20 | 12290.10 |
| | Max. H _x | 18 | -64306.49 | 10160.97 | -7667.84 |
| | Max. H _z | 3 | 198801.34 | -0.15 | 12292.92 |
| | Min. Vert | 15 | -157749.71 | 0.13 | -16378.74 |
| | Min. H _x | 10 | -64306.50 | -10160.81 | -7667.83 |
| | Min. H _z | 14 | -152261.02 | 0.18 | -16400.95 |

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| | Client Verizon | Designed by emanavoglu |

Tower Mast Reaction Summary

| Load Combination | Vertical lb | Shear _x lb | Shear _z lb | Overturning Moment, M _x lb-ft | Overturning Moment, M _z lb-ft | Torque lb-ft |
|---|----------------|--------------------------|--------------------------|---|---|-----------------|
| Dead Only | 62371.85 | -0.00 | 0.00 | 2945.46 | 1675.32 | 0.00 |
| 1.2 Dead+1.0 Wind 0 deg - No Ice | 74846.26 | -0.00 | -38136.26 | -2817475.31 | 2012.56 | -1.32 |
| 0.9 Dead+1.0 Wind 0 deg - No Ice | 56134.69 | -0.00 | -38136.39 | -2807321.82 | 1509.01 | -0.99 |
| 1.2 Dead+1.0 Wind 30 deg - No Ice | 74846.26 | 18705.50 | -32398.88 | -2399228.32 | -1385164.09 | 407.22 |
| 0.9 Dead+1.0 Wind 30 deg - No Ice | 56134.69 | 18705.56 | -32398.99 | -2390719.90 | -1380244.48 | 407.20 |
| 1.2 Dead+1.0 Wind 60 deg - No Ice | 74846.26 | 31499.02 | -18185.97 | -1353214.67 | -2347951.80 | 705.00 |
| 0.9 Dead+1.0 Wind 60 deg - No Ice | 56134.69 | 31499.13 | -18186.03 | -1348804.97 | -2339284.44 | 704.67 |
| 1.2 Dead+1.0 Wind 90 deg - No Ice | 74846.25 | 35080.40 | 0.00 | 3585.89 | -2639768.53 | 813.98 |
| 0.9 Dead+1.0 Wind 90 deg - No Ice | 56134.69 | 35080.52 | 0.00 | 2700.57 | -2629989.25 | 813.44 |
| 1.2 Dead+1.0 Wind 120 deg - No Ice | 74846.26 | 32336.48 | 18669.48 | 1391351.72 | -2401751.42 | 706.31 |
| 0.9 Dead+1.0 Wind 120 deg - No Ice | 56134.69 | 32336.59 | 18669.54 | 1385043.60 | -2392862.09 | 705.65 |
| 1.2 Dead+1.0 Wind 150 deg - No Ice | 74846.26 | 18705.50 | 32398.88 | 2406251.99 | -1385256.20 | 409.47 |
| 0.9 Dead+1.0 Wind 150 deg - No Ice | 56134.69 | 18705.57 | 32398.99 | 2395973.19 | -1380336.09 | 408.88 |
| 1.2 Dead+1.0 Wind 180 deg - No Ice | 74846.26 | -0.00 | 37169.25 | 2762427.05 | 2012.48 | 1.29 |
| 0.9 Dead+1.0 Wind 180 deg - No Ice | 56134.69 | -0.00 | 37169.37 | 2750759.04 | 1508.96 | 0.96 |
| 1.2 Dead+1.0 Wind 210 deg - No Ice | 74846.26 | -18705.50 | 32398.88 | 2406251.93 | 1389281.18 | -407.23 |
| 0.9 Dead+1.0 Wind 210 deg - No Ice | 56134.69 | -18705.57 | 32398.99 | 2395973.14 | 1383354.01 | -407.20 |
| 1.2 Dead+1.0 Wind 240 deg - No Ice | 74846.26 | -32336.48 | 18669.48 | 1391351.61 | 2405776.44 | -705.01 |
| 0.9 Dead+1.0 Wind 240 deg - No Ice | 56134.69 | -32336.59 | 18669.54 | 1385043.51 | 2395880.03 | -704.68 |
| 1.2 Dead+1.0 Wind 270 deg - No Ice | 74846.25 | -35080.40 | 0.00 | 3585.75 | 2643793.59 | -813.98 |
| 0.9 Dead+1.0 Wind 270 deg - No Ice | 56134.69 | -35080.52 | 0.00 | 2700.47 | 2633007.23 | -813.44 |
| 1.2 Dead+1.0 Wind 300 deg - No Ice | 74846.26 | -31499.02 | -18185.97 | -1353214.80 | 2351976.90 | -706.26 |
| 0.9 Dead+1.0 Wind 300 deg - No Ice | 56134.69 | -31499.13 | -18186.03 | -1348805.07 | 2342302.44 | -705.62 |
| 1.2 Dead+1.0 Wind 330 deg - No Ice | 74846.26 | -18705.50 | -32398.88 | -2399228.40 | 1389189.20 | -409.46 |
| 0.9 Dead+1.0 Wind 330 deg - No Ice | 56134.69 | -18705.56 | -32398.99 | -2390719.96 | 1383262.50 | -408.88 |
| 1.2 Dead+1.0 Ice+1.0 Temp | 104933.65 | -0.00 | 0.00 | 14019.29 | 2701.43 | 0.00 |
| 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp | 104933.65 | 0.00 | -8672.71 | -610906.41 | 2705.05 | -0.39 |
| 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp | 104933.65 | 4269.38 | -7394.79 | -519702.09 | -305446.88 | 294.32 |
| 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp | 104933.65 | 6884.01 | -3974.49 | -276678.01 | -500829.63 | 510.05 |

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| | Client Verizon | Designed by emanavoglu |

| Load Combination | Vertical lb | Shear _x lb | Shear _z lb | Overturning Moment, M _x lb-ft | Overturning Moment, M _z lb-ft | Torque lb-ft |
|--|----------------|--------------------------|--------------------------|--|--|-----------------|
| Ice+1.0 Temp | | | | | | |
| 1.2 Dead+1.0 Wind 90 deg+1.0 | 104933.65 | 7703.77 | 0.00 | 14040.05 | -564982.61 | 589.12 |
| Ice+1.0 Temp | | | | | | |
| 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp | 104933.65 | 7038.68 | 4063.78 | 310511.67 | -510802.69 | 510.46 |
| 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp | 104933.65 | 4269.38 | 7394.79 | 547775.40 | -305451.47 | 294.99 |
| 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp | 104933.65 | 0.00 | 8494.12 | 627466.05 | 2705.02 | 0.39 |
| 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp | 104933.65 | -4269.38 | 7394.79 | 547775.36 | 310861.52 | -294.32 |
| 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp | 104933.65 | -7038.68 | 4063.78 | 310511.59 | 516212.75 | -510.08 |
| 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp | 104933.65 | -7703.77 | 0.00 | 14039.96 | 570392.69 | -589.12 |
| 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp | 104933.65 | -6884.01 | -3974.49 | -276678.09 | 506239.72 | -510.42 |
| 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp | 104933.65 | -4269.38 | -7394.79 | -519702.14 | 310856.98 | -294.99 |
| Dead+Wind 0 deg - Service | 62371.85 | 0.00 | -10927.54 | -803291.46 | 1676.82 | -0.32 |
| Dead+Wind 30 deg - Service | 62371.85 | 5359.86 | -9283.55 | -683761.97 | -394790.44 | 116.49 |
| Dead+Wind 60 deg - Service | 62371.85 | 9025.71 | -5211.00 | -384820.68 | -669958.39 | 202.03 |
| Dead+Wind 90 deg - Service | 62371.85 | 10051.91 | 0.00 | 2952.00 | -753354.89 | 233.43 |
| Dead+Wind 120 deg - Service | 62371.85 | 9265.67 | 5349.54 | 399583.16 | -685315.27 | 202.35 |
| Dead+Wind 150 deg - Service | 62371.85 | 5359.86 | 9283.55 | 689653.89 | -394797.94 | 117.03 |
| Dead+Wind 180 deg - Service | 62371.85 | 0.00 | 10650.45 | 791454.84 | 1676.80 | 0.31 |
| Dead+Wind 210 deg - Service | 62371.85 | -5359.86 | 9283.55 | 689653.88 | 398151.54 | -116.49 |
| Dead+Wind 240 deg - Service | 62371.85 | -9265.67 | 5349.54 | 399583.13 | 688668.89 | -202.04 |
| Dead+Wind 270 deg - Service | 62371.85 | -10051.91 | 0.00 | 2951.97 | 756708.51 | -233.43 |
| Dead+Wind 300 deg - Service | 62371.85 | -9025.71 | -5211.00 | -384820.71 | 673312.02 | -202.34 |
| Dead+Wind 330 deg - Service | 62371.85 | -5359.86 | -9283.55 | -683761.99 | 398144.08 | -117.03 |

Solution Summary

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|-----------|-----------|------------------|----------|-----------|---------|
| | PX lb | PY lb | PZ lb | PX lb | PY lb | PZ lb | |
| 1 | 0.00 | -62371.85 | 0.00 | 0.00 | 62371.85 | -0.00 | 0.000% |
| 2 | 0.00 | -74846.22 | -38136.65 | 0.00 | 74846.26 | 38136.26 | 0.000% |
| 3 | 0.00 | -56134.67 | -38136.65 | 0.00 | 56134.69 | 38136.39 | 0.000% |
| 4 | 18705.69 | -74846.22 | -32399.20 | -18705.50 | 74846.26 | 32398.88 | 0.000% |
| 5 | 18705.69 | -56134.67 | -32399.20 | -18705.56 | 56134.69 | 32398.99 | 0.000% |
| 6 | 31499.34 | -74846.22 | -18186.15 | -31499.02 | 74846.26 | 18185.97 | 0.000% |
| 7 | 31499.34 | -56134.67 | -18186.15 | -31499.13 | 56134.69 | 18186.03 | 0.000% |
| 8 | 35080.76 | -74846.22 | 0.00 | -35080.40 | 74846.25 | -0.00 | 0.000% |
| 9 | 35080.76 | -56134.67 | 0.00 | -35080.52 | 56134.69 | -0.00 | 0.000% |
| 10 | 32336.81 | -74846.22 | 18669.66 | -32336.48 | 74846.26 | -18669.48 | 0.000% |
| 11 | 32336.81 | -56134.67 | 18669.66 | -32336.59 | 56134.69 | -18669.54 | 0.000% |
| 12 | 18705.69 | -74846.22 | 32399.20 | -18705.50 | 74846.26 | -32398.88 | 0.000% |
| 13 | 18705.69 | -56134.67 | 32399.20 | -18705.57 | 56134.69 | -32398.99 | 0.000% |
| 14 | 0.00 | -74846.22 | 37169.62 | 0.00 | 74846.26 | -37169.25 | 0.000% |
| 15 | 0.00 | -56134.67 | 37169.62 | 0.00 | 56134.69 | -37169.37 | 0.000% |
| 16 | -18705.69 | -74846.22 | 32399.20 | 18705.50 | 74846.26 | -32398.88 | 0.000% |
| 17 | -18705.69 | -56134.67 | 32399.20 | 18705.57 | 56134.69 | -32398.99 | 0.000% |
| 18 | -32336.81 | -74846.22 | 18669.66 | 32336.48 | 74846.26 | -18669.48 | 0.000% |
| 19 | -32336.81 | -56134.67 | 18669.66 | 32336.59 | 56134.69 | -18669.54 | 0.000% |
| 20 | -35080.76 | -74846.22 | 0.00 | 35080.40 | 74846.25 | -0.00 | 0.000% |
| 21 | -35080.76 | -56134.67 | 0.00 | 35080.52 | 56134.69 | -0.00 | 0.000% |

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| | Client Verizon | Designed by emanavoglu |

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|------------|-----------|------------------|-----------|-----------|---------|
| | PX lb | PY lb | PZ lb | PX lb | PY lb | PZ lb | |
| 22 | -31499.34 | -74846.22 | -18186.15 | 31499.02 | 74846.26 | 18185.97 | 0.000% |
| 23 | -31499.34 | -56134.67 | -18186.15 | 31499.13 | 56134.69 | 18186.03 | 0.000% |
| 24 | -18705.69 | -74846.22 | -32399.20 | 18705.50 | 74846.26 | 32398.88 | 0.000% |
| 25 | -18705.69 | -56134.67 | -32399.20 | 18705.56 | 56134.69 | 32398.99 | 0.000% |
| 26 | 0.00 | -104933.65 | 0.00 | 0.00 | 104933.65 | -0.00 | 0.000% |
| 27 | 0.00 | -104933.65 | -8672.85 | -0.00 | 104933.65 | 8672.71 | 0.000% |
| 28 | 4269.45 | -104933.65 | -7394.91 | -4269.38 | 104933.65 | 7394.79 | 0.000% |
| 29 | 6884.12 | -104933.65 | -3974.55 | -6884.01 | 104933.65 | 3974.49 | 0.000% |
| 30 | 7703.90 | -104933.65 | 0.00 | -7703.77 | 104933.65 | -0.00 | 0.000% |
| 31 | 7038.79 | -104933.65 | 4063.85 | -7038.68 | 104933.65 | -4063.78 | 0.000% |
| 32 | 4269.45 | -104933.65 | 7394.91 | -4269.38 | 104933.65 | -7394.79 | 0.000% |
| 33 | 0.00 | -104933.65 | 8494.25 | -0.00 | 104933.65 | -8494.12 | 0.000% |
| 34 | -4269.45 | -104933.65 | 7394.91 | 4269.38 | 104933.65 | -7394.79 | 0.000% |
| 35 | -7038.79 | -104933.65 | 4063.85 | 7038.68 | 104933.65 | -4063.78 | 0.000% |
| 36 | -7703.90 | -104933.65 | 0.00 | 7703.77 | 104933.65 | -0.00 | 0.000% |
| 37 | -6884.12 | -104933.65 | -3974.55 | 6884.01 | 104933.65 | 3974.49 | 0.000% |
| 38 | -4269.45 | -104933.65 | -7394.91 | 4269.38 | 104933.65 | 7394.79 | 0.000% |
| 39 | 0.00 | -62371.85 | -10927.62 | -0.00 | 62371.85 | 10927.54 | 0.000% |
| 40 | 5359.90 | -62371.85 | -9283.62 | -5359.86 | 62371.85 | 9283.55 | 0.000% |
| 41 | 9025.78 | -62371.85 | -5211.04 | -9025.71 | 62371.85 | 5211.00 | 0.000% |
| 42 | 10051.99 | -62371.85 | 0.00 | -10051.91 | 62371.85 | -0.00 | 0.000% |
| 43 | 9265.75 | -62371.85 | 5349.58 | -9265.67 | 62371.85 | -5349.54 | 0.000% |
| 44 | 5359.90 | -62371.85 | 9283.62 | -5359.86 | 62371.85 | -9283.55 | 0.000% |
| 45 | 0.00 | -62371.85 | 10650.53 | -0.00 | 62371.85 | -10650.45 | 0.000% |
| 46 | -5359.90 | -62371.85 | 9283.62 | 5359.86 | 62371.85 | -9283.55 | 0.000% |
| 47 | -9265.75 | -62371.85 | 5349.58 | 9265.67 | 62371.85 | -5349.54 | 0.000% |
| 48 | -10051.99 | -62371.85 | 0.00 | 10051.91 | 62371.85 | -0.00 | 0.000% |
| 49 | -9025.78 | -62371.85 | -5211.04 | 9025.71 | 62371.85 | 5211.00 | 0.000% |
| 50 | -5359.90 | -62371.85 | -9283.62 | 5359.86 | 62371.85 | 9283.55 | 0.000% |

Non-Linear Convergence Results

| Load Combination | Converged? | Number of Cycles | Displacement Tolerance | Force Tolerance |
|------------------|------------|------------------|------------------------|-----------------|
| 1 | Yes | 6 | 0.00000001 | 0.00000001 |
| 2 | Yes | 7 | 0.00000001 | 0.00008937 |
| 3 | Yes | 7 | 0.00000001 | 0.00006426 |
| 4 | Yes | 7 | 0.00000001 | 0.00008929 |
| 5 | Yes | 7 | 0.00000001 | 0.00006423 |
| 6 | Yes | 7 | 0.00000001 | 0.00008911 |
| 7 | Yes | 7 | 0.00000001 | 0.00006415 |
| 8 | Yes | 7 | 0.00000001 | 0.00008841 |
| 9 | Yes | 7 | 0.00000001 | 0.00006368 |
| 10 | Yes | 7 | 0.00000001 | 0.00008888 |
| 11 | Yes | 7 | 0.00000001 | 0.00006393 |
| 12 | Yes | 7 | 0.00000001 | 0.00008913 |
| 13 | Yes | 7 | 0.00000001 | 0.00006414 |
| 14 | Yes | 7 | 0.00000001 | 0.00008933 |
| 15 | Yes | 7 | 0.00000001 | 0.00006434 |
| 16 | Yes | 7 | 0.00000001 | 0.00008907 |
| 17 | Yes | 7 | 0.00000001 | 0.00006411 |
| 18 | Yes | 7 | 0.00000001 | 0.00008879 |
| 19 | Yes | 7 | 0.00000001 | 0.00006387 |
| 20 | Yes | 7 | 0.00000001 | 0.00008830 |
| 21 | Yes | 7 | 0.00000001 | 0.00006362 |
| 22 | Yes | 7 | 0.00000001 | 0.00008901 |

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| | | | | |
|----|-----|---|------------|------------|
| 23 | Yes | 7 | 0.00000001 | 0.00006410 |
| 24 | Yes | 7 | 0.00000001 | 0.00008924 |
| 25 | Yes | 7 | 0.00000001 | 0.00006420 |
| 26 | Yes | 6 | 0.00000001 | 0.00000001 |
| 27 | Yes | 7 | 0.00000001 | 0.00007877 |
| 28 | Yes | 7 | 0.00000001 | 0.00007797 |
| 29 | Yes | 7 | 0.00000001 | 0.00007430 |
| 30 | Yes | 7 | 0.00000001 | 0.00007259 |
| 31 | Yes | 7 | 0.00000001 | 0.00007497 |
| 32 | Yes | 7 | 0.00000001 | 0.00007724 |
| 33 | Yes | 7 | 0.00000001 | 0.00007691 |
| 34 | Yes | 7 | 0.00000001 | 0.00007716 |
| 35 | Yes | 7 | 0.00000001 | 0.00007484 |
| 36 | Yes | 7 | 0.00000001 | 0.00007244 |
| 37 | Yes | 7 | 0.00000001 | 0.00007417 |
| 38 | Yes | 7 | 0.00000001 | 0.00007789 |
| 39 | Yes | 7 | 0.00000001 | 0.00006221 |
| 40 | Yes | 7 | 0.00000001 | 0.00006188 |
| 41 | Yes | 7 | 0.00000001 | 0.00006131 |
| 42 | Yes | 7 | 0.00000001 | 0.00006043 |
| 43 | Yes | 7 | 0.00000001 | 0.00006162 |
| 44 | Yes | 7 | 0.00000001 | 0.00006164 |
| 45 | Yes | 7 | 0.00000001 | 0.00006150 |
| 46 | Yes | 7 | 0.00000001 | 0.00006156 |
| 47 | Yes | 7 | 0.00000001 | 0.00006148 |
| 48 | Yes | 7 | 0.00000001 | 0.00006028 |
| 49 | Yes | 7 | 0.00000001 | 0.00006117 |
| 50 | Yes | 7 | 0.00000001 | 0.00006180 |

Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|--------------|---------------------|-----------------|--------|---------|
| T1 | 104 - 87 | 2.895 | 39 | 0.0145 | 0.0004 |
| T2 | 87 - 74 | 2.596 | 39 | 0.0142 | 0.0004 |
| T3 | 74 - 60 | 2.330 | 39 | 0.0137 | 0.0003 |
| T4 | 60 - 39 | 2.068 | 39 | 0.0132 | 0.0003 |
| T5 | 39 - 35 | 1.633 | 39 | 0.0104 | 0.0002 |
| T6 | 35 - 0 | 1.543 | 39 | 0.0098 | 0.0002 |

Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|--------------|--------------------------------|-----------------|---------------|--------|---------|------------------------|
| 119.00 | 30"Ø Radomes (Light) | 39 | 2.895 | 0.0145 | 0.0004 | 112598 |
| 109.00 | 30"Ø Radomes (Light) | 39 | 2.895 | 0.0145 | 0.0004 | 112598 |
| 99.00 | 30"Ø Radomes (Heavy & Medium) | 39 | 2.812 | 0.0145 | 0.0004 | 112598 |
| 97.50 | MT6407-77A panel antennas | 39 | 2.786 | 0.0145 | 0.0004 | 86614 |
| 96.00 | (2) NHH-65B-R2B panel antennas | 39 | 2.761 | 0.0144 | 0.0004 | 70374 |
| 95.00 | 18' Platform w/ grating | 39 | 2.743 | 0.0144 | 0.0004 | 62554 |
| 87.00 | 18' Platform w/ grating | 39 | 2.596 | 0.0142 | 0.0004 | 40134 |

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Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-----------------|------------------------|-----------------|-----------|------------|
| T1 | 104 - 87 | 10.134 | 2 | 0.0509 | 0.0013 |
| T2 | 87 - 74 | 9.088 | 2 | 0.0499 | 0.0013 |
| T3 | 74 - 60 | 8.158 | 2 | 0.0481 | 0.0012 |
| T4 | 60 - 39 | 7.243 | 2 | 0.0463 | 0.0010 |
| T5 | 39 - 35 | 5.718 | 2 | 0.0363 | 0.0008 |
| T6 | 35 - 0 | 5.404 | 2 | 0.0345 | 0.0008 |

Critical Deflections and Radius of Curvature - Design Wind

| Elevation ft | Appurtenance | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|-----------------|--------------------------------|-----------------|------------------|-----------|------------|---------------------------|
| 119.00 | 30"Ø Radomes (Light) | 2 | 10.134 | 0.0509 | 0.0013 | 32210 |
| 109.00 | 30"Ø Radomes (Light) | 2 | 10.134 | 0.0509 | 0.0013 | 32210 |
| 99.00 | 30"Ø Radomes (Heavy & Medium) | 2 | 9.843 | 0.0508 | 0.0013 | 32210 |
| 97.50 | MT6407-77A panel antennas | 2 | 9.754 | 0.0507 | 0.0013 | 24777 |
| 96.00 | (2) NHH-65B-R2B panel antennas | 2 | 9.664 | 0.0506 | 0.0013 | 20131 |
| 95.00 | 18' Platform w/ grating | 2 | 9.603 | 0.0506 | 0.0013 | 17894 |
| 87.00 | 18' Platform w/ grating | 2 | 9.088 | 0.0499 | 0.0013 | 11481 |

Compression Checks

Leg Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _n lb | Ratio P _u / φP _n |
|-------------|-----------------|-----------|---------|----------------------|----------------|----------------------|----------------------|-----------------------|--|
| T1 | 104 - 87 | P30x0.375 | 17.00 | 8.50 | 9.7 K=1.00 | 34.9011 | -21195.50 | 1468960.00 | 0.014 |
| T2 | 87 - 74 | P30x0.375 | 13.00 | 13.00 | 14.9 K=1.00 | 34.9011 | -33500.80 | 1456180.00 | 0.023 |
| T3 | 74 - 60 | P30x0.375 | 14.00 | 14.00 | 16.0 K=1.00 | 34.9011 | -36770.30 | 1452630.00 | 0.025 |
| T4 | 60 - 39 | P30x0.375 | 21.00 | 21.00 | 24.1 K=1.00 | 34.9011 | -102407.00 | 1420830.00 | 0.072 |
| T5 | 39 - 35 | P30x0.375 | 4.00 | 4.00 | 4.6 K=1.00 | 34.9011 | -104492.00 | 1476450.00 | 0.071 |
| T6 | 35 - 0 | P30x0.375 | 35.00 | 35.00 | 40.1 K=1.00 | 34.9011 | -203001.00 | 1323680.00 | 0.153 |

Leg Bending Design Data (Compression)

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| Section No. | Elevation ft | Size | M_{ux} | ϕM_{ux} | Ratio | M_{uy} | ϕM_{uy} | Ratio |
|-------------|-----------------|-----------|-----------|---------------|------------------------------|----------|---------------|------------------------------|
| | | | lb-ft | lb-ft | $\frac{M_{ux}}{\phi M_{ux}}$ | lb-ft | lb-ft | $\frac{M_{uy}}{\phi M_{uy}}$ |
| T1 | 104 - 87 | P30x0.375 | 87521.67 | 1101033.33 | 0.079 | 0.00 | 1101033.33 | 0.000 |
| T2 | 87 - 74 | P30x0.375 | 93234.17 | 1101033.33 | 0.085 | 0.00 | 1101033.33 | 0.000 |
| T3 | 74 - 60 | P30x0.375 | 188084.17 | 1101033.33 | 0.171 | 0.00 | 1101033.33 | 0.000 |
| T4 | 60 - 39 | P30x0.375 | 287362.50 | 1101033.33 | 0.261 | 0.00 | 1101033.33 | 0.000 |
| T5 | 39 - 35 | P30x0.375 | 214510.00 | 1101033.33 | 0.195 | 0.00 | 1101033.33 | 0.000 |
| T6 | 35 - 0 | P30x0.375 | 486802.50 | 1101033.33 | 0.442 | 0.00 | 1101033.33 | 0.000 |

Leg Interaction Design Data (Compression)

| Section No. | Elevation ft | Size | Ratio | Ratio | Ratio | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|-----------|------------|---------------|---------------|--------------------|---------------------|----------|
| | | | P_u | M_{ux} | M_{uy} | | | |
| | | | ϕP_n | ϕM_{ux} | ϕM_{uy} | | | |
| T1 | 104 - 87 | P30x0.375 | 0.014 | 0.079 | 0.000 | 0.087 | 1.000 | 4.8.1 ✓ |
| T2 | 87 - 74 | P30x0.375 | 0.023 | 0.085 | 0.000 | 0.096 | 1.000 | 4.8.1 ✓ |
| T3 | 74 - 60 | P30x0.375 | 0.025 | 0.171 | 0.000 | 0.183 | 1.000 | 4.8.1 ✓ |
| T4 | 60 - 39 | P30x0.375 | 0.072 | 0.261 | 0.000 | 0.297 | 1.000 | 4.8.1 ✓ |
| T5 | 39 - 35 | P30x0.375 | 0.071 | 0.195 | 0.000 | 0.230 | 1.000 | 4.8.1 ✓ |
| T6 | 35 - 0 | P30x0.375 | 0.153 | 0.442 | 0.000 | 0.519 | 1.000 | 4.8.1 ✓ |

Horizontal Design Data (Compression)

| Section No. | Elevation ft | Size | L | L_u | Kl/r | A | P_u | ϕP_n | Ratio |
|-------------|-----------------|---------------|-------|-------|--------|-----------------|----------|------------|------------------------|
| | | | ft | ft | | in ² | lb | lb | $\frac{P_u}{\phi P_n}$ |
| T1 | 104 - 87 | TS10x10x.25 | 18.00 | 18.00 | 54.5 | 9.5900 | -737.98 | 325013.00 | 0.002 |
| T2 | 87 - 74 | TS10x10x.25 | 18.00 | 18.00 | 54.5 | 9.5900 | -208.91 | 325013.00 | 0.001 |
| T4 | 60 - 39 | TS18x18x0.375 | 18.00 | 18.00 | 30.0 | 26.4375 | -4250.44 | 1030160.00 | 0.004 |
| T6 | 35 - 0 | TS18x18x0.375 | 18.00 | 18.00 | 30.0 | 26.4375 | -3469.30 | 607044.00 | 0.006 |

Horizontal Bending Design Data

| Section No. | Elevation ft | Size | M_{ux} | ϕM_{ux} | Ratio | M_{uy} | ϕM_{uy} | Ratio |
|-------------|-----------------|-------------|-----------|---------------|------------------------------|----------|---------------|------------------------------|
| | | | lb-ft | lb-ft | $\frac{M_{ux}}{\phi M_{ux}}$ | lb-ft | lb-ft | $\frac{M_{uy}}{\phi M_{uy}}$ |
| T1 | 104 - 87 | TS10x10x.25 | -36911.08 | 99492.50 | 0.371 | 95.22 | 99492.50 | 0.001 |
| T2 | 87 - 74 | TS10x10x.25 | -42840.25 | 99492.50 | 0.431 | -77.13 | 99492.50 | 0.001 |

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| Section No. | Elevation ft | Size | M_{ux} lb-ft | ϕM_{ux} lb-ft | Ratio $\frac{M_{ux}}{\phi M_{ux}}$ | M_{uy} lb-ft | ϕM_{uy} lb-ft | Ratio $\frac{M_{uy}}{\phi M_{uy}}$ |
|-------------|-----------------|---------------|-------------------|------------------------|---------------------------------------|-------------------|------------------------|---------------------------------------|
| T4 | 60 - 39 | TS18x18x0.375 | 282357.50 | 455499.17 | 0.620 | 597.55 | 455499.17 | 0.001 |
| T6 | 35 - 0 | TS18x18x0.375 | -428706.67 | 455499.17 | 0.941 | 1278.41 | 455499.17 | 0.003 |

Horizontal Interaction Design Data

| Section No. | Elevation ft | Size | Ratio P_u ϕP_n | Ratio M_{ux} ϕM_{ux} | Ratio M_{uy} ϕM_{uy} | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|---------------|------------------------------|------------------------------------|------------------------------------|--------------------------|---------------------------|----------|
| T1 | 104 - 87 | TS10x10x.25 | 0.002 | 0.371 | 0.001 | 0.373 ✓ | 1.000 | 4.8.1 ✓ |
| T2 | 87 - 74 | TS10x10x.25 | 0.001 | 0.431 | 0.001 | 0.432 ✓ | 1.000 | 4.8.1 ✓ |
| T4 | 60 - 39 | TS18x18x0.375 | 0.004 | 0.620 | 0.001 | 0.623 ✓ | 1.000 | 4.8.1 ✓ |
| T6 | 35 - 0 | TS18x18x0.375 | 0.006 | 0.941 | 0.003 | 0.947 ✓ | 1.000 | 4.8.1 ✓ |

Top Girt Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | L_u ft | Kl/r | A in ² | P_u lb | ϕP_n lb | Ratio $\frac{P_u}{\phi P_n}$ |
|-------------|-----------------|-------------|---------|-------------|----------------|----------------------|-------------|------------------|---------------------------------|
| T1 | 104 - 87 | TS10x10x.25 | 18.00 | 18.00 | 54.5 K=1.00 | 9.5900 | -170.06 | 325013.00 | 0.001 |

Top Girt Bending Design Data

| Section No. | Elevation ft | Size | M_{ux} lb-ft | ϕM_{ux} lb-ft | Ratio $\frac{M_{ux}}{\phi M_{ux}}$ | M_{uy} lb-ft | ϕM_{uy} lb-ft | Ratio $\frac{M_{uy}}{\phi M_{uy}}$ |
|-------------|-----------------|-------------|-------------------|------------------------|---------------------------------------|-------------------|------------------------|---------------------------------------|
| T1 | 104 - 87 | TS10x10x.25 | -38347.42 | 99492.50 | 0.385 | -131.68 | 99492.50 | 0.001 |

Top Girt Interaction Design Data

| Section No. | Elevation ft | Size | Ratio P_u ϕP_n | Ratio M_{ux} ϕM_{ux} | Ratio M_{uy} ϕM_{uy} | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|-------------|------------------------------|------------------------------------|------------------------------------|--------------------------|---------------------------|----------|
| T1 | 104 - 87 | TS10x10x.25 | 0.001 | 0.385 | 0.001 | 0.387 ✓ | 1.000 | 4.8.1 ✓ |

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Tension Checks

Leg Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _n lb | Ratio P _u / φP _n |
|-------------|-----------------|-----------|---------|----------------------|------|----------------------|----------------------|-----------------------|--|
| T1 | 104 - 87 | P30x0.375 | 17.00 | 8.50 | 9.7 | 34.9011 | 11495.50 | 1570550.00 | 0.007 |
| T2 | 87 - 74 | P30x0.375 | 13.00 | 13.00 | 14.9 | 34.9011 | 18484.60 | 1570550.00 | 0.012 |
| T3 | 74 - 60 | P30x0.375 | 14.00 | 14.00 | 16.0 | 34.9011 | 15833.00 | 1570550.00 | 0.010 |
| T4 | 60 - 39 | P30x0.375 | 21.00 | 21.00 | 24.1 | 34.9011 | 74343.00 | 1570550.00 | 0.047 |
| T5 | 39 - 35 | P30x0.375 | 4.00 | 4.00 | 4.6 | 34.9011 | 71885.70 | 1570550.00 | 0.046 |
| T6 | 35 - 0 | P30x0.375 | 35.00 | 35.00 | 40.1 | 34.9011 | 157421.00 | 1570550.00 | 0.100 |

Leg Bending Design Data (Tension)

| Section No. | Elevation ft | Size | M _{xx} lb-ft | φM _{xx} lb-ft | Ratio M _{xx} / φM _{xx} | M _{yy} lb-ft | φM _{yy} lb-ft | Ratio M _{yy} / φM _{yy} |
|-------------|-----------------|-----------|--------------------------|---------------------------|--|--------------------------|---------------------------|--|
| T1 | 104 - 87 | P30x0.375 | 84378.33 | 1101033.33 | 0.077 | 0.00 | 1101033.33 | 0.000 |
| T2 | 87 - 74 | P30x0.375 | 89252.50 | 1101033.33 | 0.081 | 0.00 | 1101033.33 | 0.000 |
| T3 | 74 - 60 | P30x0.375 | 181524.17 | 1101033.33 | 0.165 | 0.00 | 1101033.33 | 0.000 |
| T4 | 60 - 39 | P30x0.375 | 274825.00 | 1101033.33 | 0.250 | 0.00 | 1101033.33 | 0.000 |
| T5 | 39 - 35 | P30x0.375 | 204510.83 | 1101033.33 | 0.186 | 0.00 | 1101033.33 | 0.000 |
| T6 | 35 - 0 | P30x0.375 | 472353.33 | 1101033.33 | 0.429 | 0.00 | 1101033.33 | 0.000 |

Leg Interaction Design Data (Tension)

| Section No. | Elevation ft | Size | Ratio P _u / φP _n | Ratio M _{xx} / φM _{xx} | Ratio M _{yy} / φM _{yy} | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|-----------|--|--|--|--------------------------|---------------------------|----------|
| T1 | 104 - 87 | P30x0.375 | 0.007 | 0.077 | 0.000 | 0.080 | 1.000 | 4.8.1 ✓ |
| T2 | 87 - 74 | P30x0.375 | 0.012 | 0.081 | 0.000 | 0.087 | 1.000 | 4.8.1 ✓ |
| T3 | 74 - 60 | P30x0.375 | 0.010 | 0.165 | 0.000 | 0.170 | 1.000 | 4.8.1 ✓ |
| T4 | 60 - 39 | P30x0.375 | 0.047 | 0.250 | 0.000 | 0.273 | 1.000 | 4.8.1 ✓ |
| T5 | 39 - 35 | P30x0.375 | 0.046 | 0.186 | 0.000 | 0.209 | 1.000 | 4.8.1 ✓ |
| T6 | 35 - 0 | P30x0.375 | 0.100 | 0.429 | 0.000 | 0.479 | 1.000 | 4.8.1 ✓ |

Horizontal Design Data (Tension)

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| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _n lb | Ratio P _u φP _n |
|-------------|-----------------|---------------|---------|----------------------|------|----------------------|----------------------|-----------------------|--|
| T1 | 104 - 87 | TS10x10x.25 | 18.00 | 18.00 | 54.5 | 9.5900 | 107.37 | 397026.00 | 0.000 |
| T2 | 87 - 74 | TS10x10x.25 | 18.00 | 18.00 | 54.5 | 9.5900 | 86.93 | 397026.00 | 0.000 |
| T4 | 60 - 39 | TS18x18x0.375 | 18.00 | 18.00 | 30.0 | 26.4375 | 167.67 | 1094510.00 | 0.000 |
| T6 | 35 - 0 | TS18x18x0.375 | 18.00 | 18.00 | 30.0 | 26.4375 | 1501.28 | 1094510.00 | 0.001 |

Horizontal Bending Design Data

| Section No. | Elevation ft | Size | M _{ux} lb-ft | φM _{ux} lb-ft | Ratio M _{ux} φM _{ux} | M _{uy} lb-ft | φM _{uy} lb-ft | Ratio M _{uy} φM _{uy} |
|-------------|-----------------|---------------|--------------------------|---------------------------|--|--------------------------|---------------------------|--|
| T1 | 104 - 87 | TS10x10x.25 | -42620.92 | 120405.00 | 0.354 | 58.34 | 99492.50 | 0.001 |
| T2 | 87 - 74 | TS10x10x.25 | -48582.17 | 120405.00 | 0.403 | -23.62 | 99492.50 | 0.000 |
| T4 | 60 - 39 | TS18x18x0.375 | -320638.33 | 602928.33 | 0.532 | -928.63 | 455499.17 | 0.002 |
| T6 | 35 - 0 | TS18x18x0.375 | -482716.67 | 602928.33 | 0.801 | 529.72 | 455499.17 | 0.001 |

Horizontal Interaction Design Data

| Section No. | Elevation ft | Size | Ratio P _u φP _n | Ratio M _{ux} φM _{ux} | Ratio M _{uy} φM _{uy} | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|---------------|--|--|--|--------------------------|---------------------------|----------|
| T1 | 104 - 87 | TS10x10x.25 | 0.000 | 0.354 | 0.001 | 0.355 | 1.000 | 4.8.1 ✓ |
| T2 | 87 - 74 | TS10x10x.25 | 0.000 | 0.403 | 0.000 | 0.404 | 1.000 | 4.8.1 ✓ |
| T4 | 60 - 39 | TS18x18x0.375 | 0.000 | 0.532 | 0.002 | 0.534 | 1.000 | 4.8.1 ✓ |
| T6 | 35 - 0 | TS18x18x0.375 | 0.001 | 0.801 | 0.001 | 0.802 | 1.000 | 4.8.1 ✓ |

Top Girt Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _n lb | Ratio P _u φP _n |
|-------------|-----------------|-------------|---------|----------------------|------|----------------------|----------------------|-----------------------|--|
| T1 | 104 - 87 | TS10x10x.25 | 18.00 | 18.00 | 54.5 | 9.5900 | 1690.54 | 397026.00 | 0.004 |

Top Girt Bending Design Data

| Section No. | Elevation ft | Size | M _{ux} lb-ft | φM _{ux} lb-ft | Ratio M _{ux} φM _{ux} | M _{uy} lb-ft | φM _{uy} lb-ft | Ratio M _{uy} φM _{uy} |
|-------------|-----------------|-------------|--------------------------|---------------------------|--|--------------------------|---------------------------|--|
| T1 | 104 - 87 | TS10x10x.25 | -33296.33 | 120405.00 | 0.277 | -79.17 | 99492.50 | 0.001 |

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Top Girt Interaction Design Data

| Section No. | Elevation ft | Size | Ratio | Ratio | Ratio | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|-----------------|-------------|-------|----------|----------|--------------------|---------------------|----------|
| | | | P_v | M_{ix} | M_{iy} | | | |
| T1 | 104 - 87 | TS10x10x.25 | 0.004 | 0.277 | 0.001 | 0.279 | 1.000 | 4.8.1 ✓ |

Section Capacity Table

| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | ϕP_{allow} lb | % Capacity | Pass Fail |
|-----------------|-----------------|----------------|---------------|------------------|------------|------------------------|---------------|--------------|
| T1 | 104 - 87 | Leg | P30x0.375 | 3 | -21195.50 | 1468960.00 | 8.7 | Pass |
| T2 | 87 - 74 | Leg | P30x0.375 | 12 | -33500.80 | 1456180.00 | 9.6 | Pass |
| T3 | 74 - 60 | Leg | P30x0.375 | 18 | -36770.30 | 1452630.00 | 18.3 | Pass |
| T4 | 60 - 39 | Leg | P30x0.375 | 21 | -102407.00 | 1420830.00 | 29.7 | Pass |
| T5 | 39 - 35 | Leg | P30x0.375 | 27 | -104492.00 | 1476450.00 | 23.0 | Pass |
| T6 | 35 - 0 | Leg | P30x0.375 | 30 | -203001.00 | 1323680.00 | 51.9 | Pass |
| T1 | 104 - 87 | Horizontal | TS10x10x.25 | 8 | -737.98 | 325013.00 | 37.3 | Pass |
| T2 | 87 - 74 | Horizontal | TS10x10x.25 | 15 | -208.91 | 325013.00 | 43.2 | Pass |
| T4 | 60 - 39 | Horizontal | TS18x18x0.375 | 24 | -4250.44 | 1030160.00 | 62.3 | Pass |
| T6 | 35 - 0 | Horizontal | TS18x18x0.375 | 33 | -3469.30 | 607044.00 | 94.7 | Pass |
| T1 | 104 - 87 | Top Girt | TS10x10x.25 | 6 | 1690.69 | 397026.00 | 38.7 | Pass |
| Summary | | | | | | | | |
| Leg (T6) | | | | | | | 51.9 | Pass |
| Horizontal (T6) | | | | | | | 94.7 | Pass |
| Top Girt (T1) | | | | | | | 38.7 | Pass |
| RATING = | | | | | | | 94.7 | Pass |

Program Version 8.1.1.0 - 6/4/2021

File:G:\shortcut-targets-by-id\1XfhsAZRo7FM6igO-1TE2VQwhUCcNgloz/PMA-S23-Projects/Centerline/Verizon/23CLVZ-0016 Hartford W CT/Tower SA/tnxTower/Hartford W CT.eri



Centerline Engineering Services, PA
 750 W. Center St., Suite 301
 West Bridgewater, MA 02379
 Tel: (781) 713-4725
 Fax: (781) 713-4725

| | |
|----------|-------------|
| Job: | 23CLVZ-0016 |
| Project: | 17123737 |
| Client: | Verizon |

| | |
|-----------|------------|
| Engineer: | EM |
| Date: | 10/13/2023 |
| Sheet: | 1 of 1 |

Top Flange Plate and Bolt Analysis (TIA-H) for Elevation 74 ft

Reactions

| | | |
|---------|-------|---------|
| Moment: | 188.1 | ft-kips |
| Axial: | 36.8 | kips |
| Shear: | 0.0 | kips |

Tower Information

| | | |
|-------------|---------|-----|
| Diameter: | 30 | in |
| Thickness: | 0.375 | in |
| Pole Grade: | A572-50 | |
| Fy: | 50 | ksi |
| Fu: | 65 | ksi |
| # of Sides: | Round | |

Bolt Information

| | |
|--------------|---------|
| Quantity: | 24 |
| Diameter: | 1 in |
| Bolt Grade: | A325N |
| Fy: | 92 ksi |
| Fu: | 120 ksi |
| Bolt Circle: | 33 in |

Plate Information

| | | |
|--------------|-----|-----|
| Diameter: | 36 | in |
| Thickness: | 1 | in |
| Plate Grade: | A36 | |
| Fy: | 36 | ksi |
| Fu: | 58 | ksi |

Capacity Results

Bolt Results

| | | |
|--------------------|-------|------|
| Bolt Force: | 9.86 | kips |
| Bolt Capacity: | 54.54 | kips |
| Bolt Stress Ratio: | 18.1% | |

Good

Plate Results

| | | |
|-------------------------|-------|-----|
| Plate Stress: | 12.48 | ksi |
| Allowable Plate Stress: | 32.40 | ksi |
| Plate Stress Ratio: | 38.5% | |
| Tension Side Stress: | 10.6% | |

Good



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| | |
|----------|-------------|
| Job: | 23CLVZ-0016 |
| Project: | 17123737 |
| Client: | Verizon |

| | |
|-----------|------------|
| Engineer: | EM |
| Date: | 10/13/2023 |
| Sheet: | 1 of 1 |

Bottom Flange Plate and Bolt Analysis (TIA-H) for Elevation 74 ft

Reactions

| | | |
|---------|-------|---------|
| Moment: | 188.1 | ft-kips |
| Axial: | 36.8 | kips |
| Shear: | 0.0 | kips |

Tower Information

| | | |
|-------------|---------|-----|
| Diameter: | 30.00 | in |
| Thickness: | 0.375 | in |
| Pole Grade: | A572-50 | |
| Fy: | 50 | ksi |
| Fu: | 65 | ksi |
| # of Sides: | Round | |

Plate Information

| | | |
|--------------|-------|-----|
| Diameter: | 36.00 | in |
| Thickness: | 1.00 | in |
| Plate Grade: | A36 | |
| Fy: | 36 | ksi |
| Fu: | 58 | ksi |

Bolt Information

| | | |
|--------------|-------|-----|
| Quantity: | 24 | |
| Diameter: | 1 | in |
| Bolt Grade: | A325N | |
| Fy: | 92 | ksi |
| Fu: | 120 | ksi |
| Bolt Circle: | 33 | in |

Capacity Results

Bolt Results

| | | |
|--------------------|-------|------|
| Bolt Force: | 9.86 | kips |
| Bolt Capacity: | 54.54 | kips |
| Bolt Stress Ratio: | 18.1% | |

Good

Plate Results

| | | |
|-------------------------|-------|-----|
| Plate Stress: | 12.48 | ksi |
| Allowable Plate Stress: | 32.40 | ksi |
| Plate Stress Ratio: | 38.5% | |
| Tension Side Stress: | 10.6% | |

Good



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West Bridgewater, MA 02379
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|----------|-------------|
| Job: | 23CLVZ-0016 |
| Project: | 17123737 |
| Client: | Verizon |

| | |
|-----------|------------|
| Engineer: | EM |
| Date: | 10/13/2023 |
| Sheet: | 1 of 1 |

Top Flange Plate and Bolt Analysis (TIA-H) for Elevation 39 ft

Reactions

| | | |
|---------|-------|---------|
| Moment: | 214.5 | ft-kips |
| Axial: | 104.5 | kips |
| Shear: | 0.0 | kips |

Tower Information

| | | |
|-------------|---------|-----|
| Diameter: | 30 | in |
| Thickness: | 0.375 | in |
| Pole Grade: | A572-50 | |
| Fy: | 50 | ksi |
| Fu: | 65 | ksi |
| # of Sides: | Round | |

Bolt Information

| | | |
|--------------|-------|-----|
| Quantity: | 24 | |
| Diameter: | 1 | in |
| Bolt Grade: | A325N | |
| Fy: | 92 | ksi |
| Fu: | 120 | ksi |
| Bolt Circle: | 33 | in |

Plate Information

| | | |
|--------------|-----|-----|
| Diameter: | 36 | in |
| Thickness: | 1 | in |
| Plate Grade: | A36 | |
| Fy: | 36 | ksi |
| Fu: | 58 | ksi |

Capacity Results

Bolt Results

| | | |
|--------------------|-------|------|
| Bolt Force: | 8.64 | kips |
| Bolt Capacity: | 54.54 | kips |
| Bolt Stress Ratio: | 15.8% | |

Good

Plate Results

| | | |
|-------------------------|-------|-----|
| Plate Stress: | 16.80 | ksi |
| Allowable Plate Stress: | 32.40 | ksi |
| Plate Stress Ratio: | 51.8% | |
| Tension Side Stress: | 9.3% | |

Good



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 West Bridgewater, MA 02379
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| | |
|----------|-------------|
| Job: | 23CLVZ-0016 |
| Project: | 17123737 |
| Client: | Verizon |

| | |
|-----------|------------|
| Engineer: | EM |
| Date: | 10/13/2023 |
| Sheet: | 1 of 1 |

Bottom Flange Plate and Bolt Analysis (TIA-H) for Elevation 39 ft

Reactions

| | | |
|---------|-------|---------|
| Moment: | 214.5 | ft-kips |
| Axial: | 104.5 | kips |
| Shear: | 0.0 | kips |

Bolt Information

| | |
|--------------|---------|
| Quantity: | 24 |
| Diameter: | 1 in |
| Bolt Grade: | A325N |
| Fy: | 92 ksi |
| Fu: | 120 ksi |
| Bolt Circle: | 33 in |

Tower Information

| | | |
|-------------|---------|-----|
| Diameter: | 30.00 | in |
| Thickness: | 0.375 | in |
| Pole Grade: | A572-50 | |
| Fy: | 50 | ksi |
| Fu: | 65 | ksi |
| # of Sides: | Round | |

Plate Information

| | | |
|--------------|-------|-----|
| Diameter: | 36.00 | in |
| Thickness: | 1.00 | in |
| Plate Grade: | A36 | |
| Fy: | 36 | ksi |
| Fu: | 58 | ksi |

Capacity Results

Bolt Results

| | | |
|--------------------|-------|------|
| Bolt Force: | 8.64 | kips |
| Bolt Capacity: | 54.54 | kips |
| Bolt Stress Ratio: | 15.8% | |

Good

Plate Results

| | | |
|-------------------------|-------|-----|
| Plate Stress: | 16.80 | ksi |
| Allowable Plate Stress: | 32.40 | ksi |
| Plate Stress Ratio: | 51.8% | |
| Tension Side Stress: | 9.3% | |

Good



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Job: 23CLVZ-0016
 Project: 17123737
 Client: Verizon

Engineer: EM
 Date: 10/13/2023
 Sheet: 1 of 1

SST Anchor Rod Check (TIA-H)

Anchor Rod Information

Grout Considered?: No
 Clear Distance, l_{ar} : 1.75 in
 Quantity Per Leg: 12
 Diameter: 1.75 in
 Rod Material: A615-75
 Strength (Fu): 100 ksi
 Yield (Fy): 75 ksi

Reactions

Compression, P_{uc} : 205.5 kips
 Comp Shear, V_{uc} : 12.2 kips
 Tension, P_{ut} : 157.8 kips
 Tension Shear, V_{ut} : 15.4 kips

Capacity Results

Anchor Rod Results

Interaction Equations for $l_{ar} \leq 1(d)$ $(P_{uc}/\phi_c R_{nc}) + [V_{uc}/\phi_c R_{nvc}]^2 \leq 1.0$

$R_{nt} = F_u A_n = 190.00$ kips
 $R_{nc} = F_y A_n = 142.50$ kips
 $R_{nv} = 0.5 F_u A_g = 120.26$ kips

$R_{nvc} = 0.6 F_y A_n / 2 = 42.75$ kips
 $R_{nb} = F_{cr} A_n = 142.04$ kips
 $M_n = F_y Z = 47.03$ ksi

$\phi_t = 0.75$
 $\phi_v = 0.75$
 $\phi_c = 1.0$
 $\phi_f = 0.9$

$P_{uc} = 17.13$ kips
 $P_{ut} = 13.15$ kips

$V_{uc} = 1.02$ kips
 $V_{ut} = 1.28$ kips

$M_{uc} = 1.16$ ksi
 $M_{ut} = 1.46$ ksi

Anchor Rod Stress Ratio = 12.1% Good



**MOUNT ANALYSIS REPORT
130'± BELL TOWER
NEW HARTFORD, CONNECTICUT**



Prepared for
Verizon Wireless

**Verizon Site Ref:
New Hartford W CT**

Site Address: 1440 Litchfield Turnpike, New Hartford, Connecticut 06057

MDG Location I.D.: 5000244937
FUZE ID: 17226299
PSLC Code: 467556
Project Type: Filter Add

APT Filing No. CT141_14420

Rev. 0 ~ February 1, 2024



**MOUNT ANALYSIS REPORT
130'± BELL TOWER
NEW HARTFORD, CONNECTICUT
prepared for
Verizon Wireless**

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of the existing Verizon antenna mount assembly within an existing bell tower FRP enclosure to support a proposed equipment modification.

The subject host structure consists of a 135'± (130'± AGL), three-legged steel wireless communications bell tower with FRP panels supporting staggered FRP antenna concealment canister arrays, originally designed by Engineered Endeavors Incorporated (EEI) circa 2005.

Details of the proposed antenna and appurtenance configuration are included within the table on the following page. Reference can be made to Lease Exhibit Drawings (LE-1 thru LE-3), prepared by Centerline Engineering Services, marked Rev 0, dated 10/03/2023.

Our analysis indicates that the existing assemblies meet the requirements of and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code and the ANSI/TIA-222-H standard.

The mount assembly usage is summarized in the table below:

| Component/Member | Usage (%) |
|------------------|-----------|
| Member | 40% |

INTRODUCTION:

A mount analysis was performed on the above-mentioned host bell tower structure by APT for Verizon Wireless. The bell tower structure is located at 1440 Litchfield Turnpike in New Hartford, Connecticut.

The following information was utilized in the preparation of this analysis:

- Mount and Structural Analysis Report prepared by APT (Project No. CT440150.P02), dated 08/03/2022.
- Condition Assessment and Mapping Report prepared by APT (Project No. CT440150.P01), dated 03/25/2022.
- Structural Analysis Report prepared by APT, dated 04/22/2021.
- Construction Drawings prepared by APT, marked Rev1, dated 04/22/2021.

The mount analysis was conducted utilizing the following inventory (proposed equipment changes shown in **bold** text).

| Antenna and Appurtenance Make/Model | Quantity | Status | Mount Type | Centerline | |
|--|------------------|----------|--|------------|------------|
| Samsung MT6407-77A panel antennas | 3 | ETR | Nine (9) existing single pipe mast antenna mounts, three (3) 1'-0" SitePro1 TAM-2U standoffs, and two (2) new SitePro1 dual swivel mount kit, PN: RRUDSM within existing FRP enclosure. | 97.5'± AGL | |
| Commscope NHH-65B-R2B panel antennas | 6 | ETR | | | |
| KAEUS KA-6030 | 2 (Gamma) | P | | | |
| Samsung B2/B66a RRH-BR049 (RFV01U-D1A) Remote Radio Heads (RRHs) | 3 | ETR | | | 96.0'± AGL |
| Samsung B5/B13 RRH-BR04C (RFV01U-D2A) Remote Radio Heads (RRHs) | 3 | ETR | | | |
| Commscope CHB626-43-2X Diplexers | 3 | ETR | | | |
| Raycap RVZDC-6627-PF-48 (12 OVP) | 1 | ETR | | | |
| 12x24 L.I. Hybrid Cables | 1 | ETR | n/a | n/a | |

1. ETR = Existing to Remain; ERL = Existing to be Relocated; **P** = Proposed.
2. Based upon Lease Exhibit Drawings provided by Centerline dated 10/03/2023.

STRUCTURAL ANALYSIS:

Antenna Frame Analysis Criteria

The structural analysis has been prepared in accordance with the ANSI/TIA-222-H standard entitled "Structural Standard for Antenna Supporting Structures and Small Wind Turbine Support Structures"; American Institute of Steel Construction (AISC) Manual of Steel Construction, and the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code.

- 115 mph (3-second gust) basic design wind speed
- 50 mph (3-second gust) wind speed w/ 1.0" design ice thickness
- Risk Category: II
- Exposure Category: C
- Topographic Category 1

ANALYSIS RESULTS:

Antenna Mounts:

The analysis of the antenna mount assembly was conducted in accordance with the criteria outlined herein with the aforementioned proposed equipment loading. The following table summarizes the results of the analysis:

| Component/Member | Usage (%) |
|------------------|-----------|
| Member | 40% |

CONCLUSIONS & RECOMMENDATIONS:

In conclusion, our mount analysis indicates that the existing Verizon antenna mount assembly located within the FRP enclosure, and related connections meet the requirements of the 2021 International Building Code (IBC), as amended by the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H standard with Verizon's proposed equipment modification.

Sincerely,
All-Points Technology Corp. P.C.



Michael S. Trodden, P.E
Senior Structural Engineer



Prepared By:
All-Points Technology Corp. P.C.



Jeremy P. Vassell
Project Structural Engineer

LIMITATIONS:

This report is based on the following:

1. Tower/structure is properly installed and maintained.
2. With the exception of the anchor bolts, all members are in a non-deteriorated condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower/structure is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
7. Mount Assembly material yield stress values as follows:
Pipe: ASTM A53, GR B (35 ksi min.)

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or reinforcing bracing members.
2. Reinforcing members in any manner.
3. Installing antenna mounts.
4. Extending tower/structure.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication, and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Appendix A

Design Criteria

| Municipality | Basic Design Wind Speeds, V (mph) | | | | Allowable Stress Design Wind Speeds, V _{asd} (mph) | | | | Ground Snow Load P _g (psf) | MCE Ground Accelerations | | Wind-Borne Debris Region ¹ | | Hurricane-Prone Region |
|---------------|-----------------------------------|--------------|---------------|--------------|---|--------------|---------------|--------------|---------------------------------------|--------------------------|--------------------|---------------------------------------|--------------|------------------------|
| | Risk Cat. I | Risk Cat. II | Risk Cat. III | Risk Cat. IV | Risk Cat. I | Risk Cat. II | Risk Cat. III | Risk Cat. IV | | S _S (g) | S _T (g) | Risk Cat. III Occup. I-2 | Risk Cat. IV | |
| | | | | | | | | | | | | | | |
| Hampton | 115 | 125 | 130 | 135 | 89 | 97 | 101 | 105 | 35 | 0.184 | 0.054 | | Yes | |
| Hartford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.189 | 0.055 | | Yes | |
| Hartland | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.167 | 0.054 | | Yes | |
| Harwinton | 110 | 120 | 125 | 130 | 85 | 93 | 97 | 101 | 35 | 0.177 | 0.054 | | Yes | |
| Hebron | 115 | 125 | 130 | 135 | 89 | 97 | 101 | 105 | 30 | 0.200 | 0.055 | | Yes | |
| Kent | 105 | 115 | 125 | 130 | 81 | 89 | 97 | 101 | 40 | 0.184 | 0.054 | | Yes | |
| Killingly | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 35 | 0.186 | 0.055 | | Yes | |
| Killingworth | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.210 | 0.055 | | Yes | |
| Lebanon | 115 | 125 | 135 | 135 | 89 | 97 | 105 | 105 | 30 | 0.196 | 0.055 | | Yes | |
| Ledyard | 120 | 130 | 140 | 140 | 93 | 101 | 108 | 108 | 30 | 0.190 | 0.053 | | Yes | |
| Lisbon | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.190 | 0.054 | | Yes | |
| Litchfield | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.178 | 0.054 | | Yes | |
| Lyme | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.207 | 0.054 | Type B | Yes | |
| Madison | 115 | 125 | 135 | 140 | 89 | 97 | 105 | 108 | 30 | 0.206 | 0.054 | Type B | Yes | |
| Manchester | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.190 | 0.055 | | Yes | |
| Manchester | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 35 | 0.186 | 0.055 | | Yes | |
| Mansfield | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.205 | 0.056 | | Yes | |
| Marlborough | 110 | 125 | 130 | 135 | 85 | 97 | 101 | 105 | 30 | 0.203 | 0.055 | | Yes | |
| Meriden | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.203 | 0.055 | | Yes | |
| Middlebury | 110 | 120 | 130 | 130 | 85 | 93 | 101 | 101 | 35 | 0.194 | 0.054 | | Yes | |
| Middlefield | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.209 | 0.055 | | Yes | |
| Middletown | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.209 | 0.056 | | Yes | |
| Milford | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.202 | 0.053 | Type B | Yes | |
| Monroe | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.208 | 0.055 | | Yes | |
| Montville | 120 | 125 | 135 | 140 | 93 | 97 | 105 | 108 | 30 | 0.198 | 0.054 | | Yes | |
| Morris | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.182 | 0.054 | | Yes | |
| Naugatuck | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.197 | 0.054 | | Yes | |
| New Britain | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.195 | 0.055 | | Yes | |
| New Canaan | 110 | 120 | 130 | 135 | 85 | 93 | 101 | 105 | 30 | 0.252 | 0.058 | | Yes | |
| New Fairfield | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 30 | 0.219 | 0.056 | | Yes | |
| New Hartford | 110 | 115 | 125 | 130 | 85 | 89 | 97 | 101 | 35 | 0.172 | 0.054 | | Yes | |
| New Haven | 110 | 125 | 130 | 135 | 85 | 97 | 101 | 105 | 30 | 0.201 | 0.054 | Type B | Yes | |
| New London | 120 | 130 | 140 | 140 | 93 | 101 | 108 | 108 | 30 | 0.191 | 0.053 | Type B | Yes | |



ASCE Hazards Report

Address:
1440 Litchfield Tpke
New Hartford, Connecticut
06057

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: undefined

Latitude: 41.822688
Longitude: -73.055266
Elevation: 959.0463619788527 ft
(NAVD 88)



Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Jan 30 2024

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 500-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.

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Appendix B

*Mount & Global
Stability Analysis*



Project ID: CT141_14420
 Site Name: New Hartford W CT
 Date: 2/1/2024
 Prepared By: J. Vassell
 Checked By: M. Trodden

(Based on ANSI/TIA-222-H)

| | |
|----------------------|--|
| <u>Site Name:</u> | New Hartford W CT |
| <u>Site Address:</u> | 1440 Litchfield Turnpike New Hartford, CT 06057 |
| <u>Site County:</u> | Litchfield |

Design Criteria

Risk Category = **II** *Sect. 2.2 & Table 2-1*
 Exposure Category = **C** *Section 2.6.5*
 Ultimate Design Wind Speed, V = **115** mph *Fig. B-2 & ASCE 7-16 Fig. 26.5-1B*
 Design Wind Speed with Ice, V_I = **50** mph *Fig. B-9*
 Design Ice Thickness, t_i = **1.00** in *Fig. B-9*
 Importance Factor, I = **1.00** *Table 2-3*

Wind Pressure Analysis:

$$q_z = 0.00256K_zK_{zt}K_sK_eK_dV^2$$

Section 2.6.11.6

K_z:

See Next Sheet

z_g = 900 *Table 2-4*

α = 9.5 *Table 2-4*

K_{zmin} = 0.85 *Table 2-4*

K_{zt}:

K_{zt} = 1.00 *Section 2.6.6*

K_s:

K_s = 1.00 *Section 2.6.7*

K_e:

K_e = 1.00 *Section 2.6.8*

K_d:

K_d = 0.95 *Section 16.6*

q_z' = 32.16 psf

q_{zi}' = 6.08 psf

$$F = q_z G_h (EPA)_A = q_z G_h K_a [(EPA)_N \cos^2(\Theta) + (EPA)_T \sin^2(\Theta)]$$

Section 2.6.11.2

G_h = 1.00 *Section 16.6*

K_a = 0.90 *Section 16.6*



Project ID: CT141_14420
 Site Name: New Hartford W CT
 Date: 2/1/204
 Prepared By: J. Vassell
 Checked By: M. Troadien

Design Criteria: (From Previous Sheet)
 $q_s = 32.16$ psf
 $q_d = 6.08$ psf
 $t_1 = 1.00$ in

$G_N = 1.00$ Section 16.6
 $K_1 = 0.90$ Section 16.6

$z_p = 900$ Table 2-4
 $\alpha = 9.5$ Table 2-4
 $K_{min} = 0.85$ Table 2-4

| Description | Elev. z, ft | K_1 | q_w , psf | Dimensions | | | Flat Panel Front Coefficient | | | | Flat Panel Side Coefficient | | | | Front Wind | | Side Wind | |
|--------------------|-------------|-------|-------------|------------|-----------|-----------|------------------------------|--------------|----------|-------|-----------------------------|--------------|----------|-------|------------|-------------|------------|-------------|
| | | | | Height, in | Width, in | Depth, in | Area, ft ² | Aspect Ratio | C_{Af} | C_a | Area, ft ² | Aspect Ratio | C_{As} | C_a | Force, lbs | Weight, lbz | Force, lbs | Weight, lbz |
| KAEIUS KA-6030 | 96.0 | 1.255 | 40.36 | 10.6 | 10.9 | 3.2 | 0.80 | 0.972 | 1.20 | 0.96 | 2.32 | 3.365 | 1.24 | 0.287 | 95.0 | 11.0 | 17.6 | |
| MT6407-77A | 97.5 | 1.259 | 40.49 | 35.1 | 16.1 | 5.5 | 3.92 | 2.180 | 1.20 | 4.71 | 1.343 | 6.370 | 1.37 | 1.849 | 172.0 | 68.0 | 87.1 | |
| NHH-65B-R2B | 96.0 | 1.255 | 40.36 | 72.0 | 11.9 | 7.1 | 5.95 | 6.050 | 1.36 | 8.08 | 3.550 | 10.341 | 1.50 | 5.342 | 294.0 | 195.0 | 57.369 | |
| B2/66a Samsung RRH | 96.0 | 1.255 | 40.36 | 14.9 | 14.9 | 10.0 | 1.54 | 1.000 | 1.20 | 1.85 | 1.039 | 1.484 | 1.20 | 1.247 | 68.0 | 46.0 | 97.5 | |
| B5/813 Samsung RRH | 96.0 | 1.255 | 40.36 | 14.9 | 14.9 | 8.1 | 1.54 | 1.000 | 1.20 | 1.85 | 0.842 | 1.830 | 1.20 | 1.011 | 68.0 | 37.0 | 82.0 | |
| CH8626-43-2X | 96.0 | 1.255 | 40.36 | 14.6 | 7.1 | 3.4 | 0.72 | 2.056 | 1.20 | 0.86 | 0.345 | 4.294 | 1.28 | 0.441 | 32.0 | 17.0 | 19.4 | |
| RVZDC-6627-PF-48 | 96.0 | 1.255 | 40.36 | 29.5 | 16.5 | 12.6 | 3.38 | 1.788 | 1.20 | 4.06 | 2.581 | 2.341 | 1.20 | 3.098 | 148.0 | 113.0 | 32.0 | |

| Description | z, ft | K_1 | q_w , psf | Dimensions with Ice | | | Flat Panel Front Coefficient | | | | Flat Panel Side Coefficient | | | | Front Wind | | Side Wind | |
|--------------------|-------|-------|-------------|---------------------|------------|--------|------------------------------|--------------|----------|-------|-----------------------------|--------------|----------|-------|------------|-------------|------------|-------------|
| | | | | Ice Thick., in | Height, in | Dc, in | Area, ft ² | Aspect Ratio | C_{Af} | C_a | Area, ft ² | Aspect Ratio | C_{As} | C_a | Force, lbs | Weight, lbz | Force, lbs | Weight, lbz |
| KAEIUS KA-6030 | 96.0 | 1.255 | 7.629 | 1.11 | 12.83 | 11.35 | 1.17 | 1.13 | 0.70 | 0.818 | 0.479 | 1.13 | 0.70 | 0.335 | 6.0 | 3.0 | 35.7 | |
| MT6407-77A | 97.5 | 1.259 | 7.654 | 1.11 | 37.33 | 17.02 | 4.75 | 2.19 | 0.70 | 3.326 | 2.006 | 2.19 | 0.70 | 1.404 | 23.0 | 10.0 | 163.9 | |
| NHH-65B-R2B | 96.0 | 1.255 | 7.629 | 1.11 | 74.23 | 13.86 | 7.28 | 5.36 | 0.76 | 5.559 | 4.807 | 5.36 | 0.76 | 3.670 | 39.0 | 26.0 | 183.2 | |
| B2/66a Samsung RRH | 96.0 | 1.255 | 7.629 | 1.11 | 17.13 | 17.97 | 2.04 | 0.95 | 0.70 | 1.426 | 1.459 | 0.95 | 0.70 | 1.021 | 10.0 | 6.0 | 134.5 | |
| B5/813 Samsung RRH | 96.0 | 1.255 | 7.629 | 1.11 | 17.13 | 16.98 | 2.04 | 1.01 | 0.70 | 1.426 | 1.233 | 1.01 | 0.70 | 0.863 | 10.0 | 6.0 | 117.1 | |
| CH8626-43-2X | 96.0 | 1.255 | 7.629 | 1.11 | 16.83 | 7.87 | 1.09 | 2.14 | 0.70 | 0.763 | 0.657 | 2.14 | 0.70 | 0.460 | 6.0 | 4.0 | 36.5 | |
| RVZDC-6627-PF-48 | 96.0 | 1.255 | 7.629 | 1.11 | 31.73 | 20.76 | 4.13 | 1.53 | 0.70 | 2.888 | 3.266 | 1.53 | 0.70 | 2.286 | 20.0 | 16.0 | 110.6 | |

Project ID: CT141_14420
 Site Name: New Hartford W CT
 Date: 2/1/204



(Based on ANS/TIA-222-H)

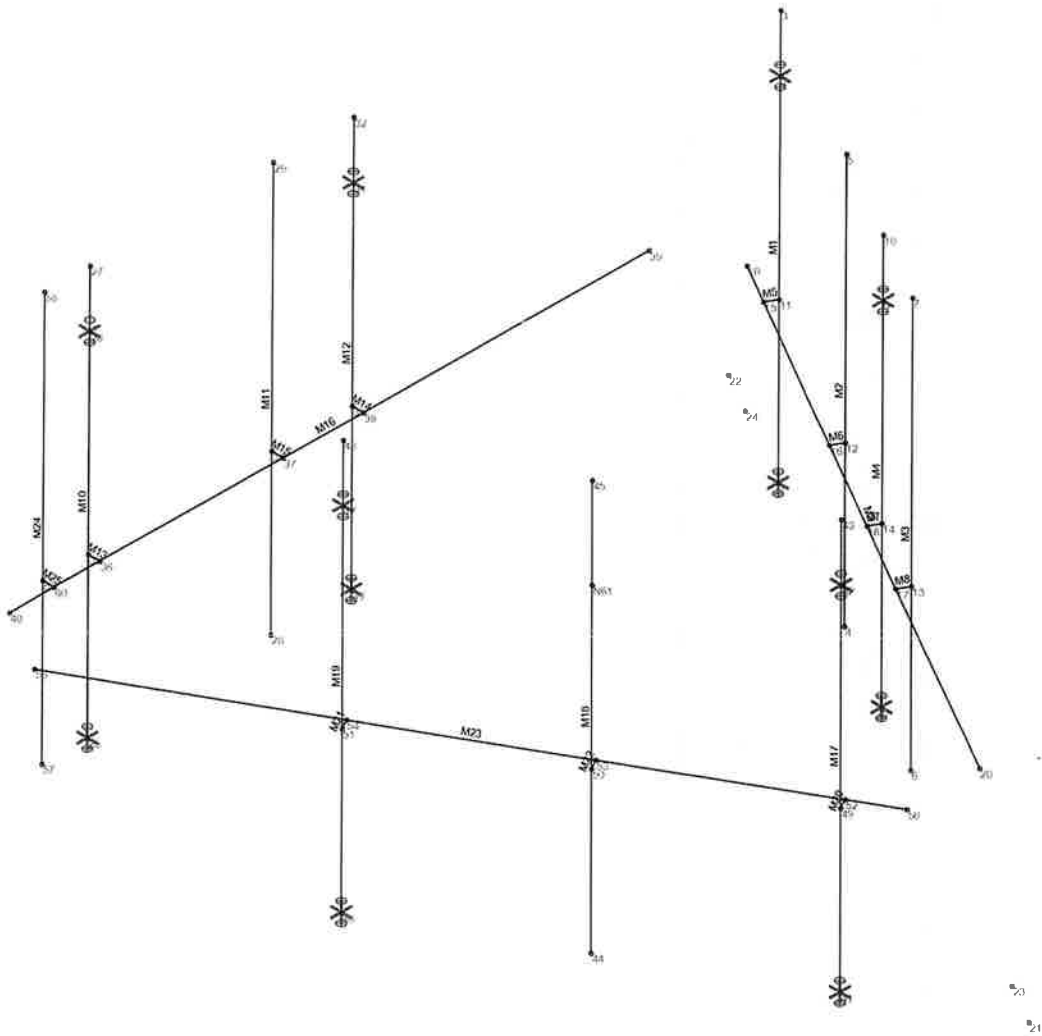
Design Criteria: (From Previous Sheet)

$q_{10} = 32.16$ psf
 $q_{10} = 6.08$ psf
 $t_y = 1.00$ in

$C_{pe} = 1.00$ Section 16.6
 $K_s = 0.90$ Section 16.6

$z_g = 900$ Table 2-4
 $\alpha = 9.5$ Table 2-4
 $K_{min} = 0.85$ Table 2-4

| Description | Elev., z, ft | K_1 | q_w , psf | t_y , in | Ice Thick., t_{iy} , in | q_{ie} , psf | q_{we} , psf | Dimensions | | | Loading, No Ice | | | With Ice | | | | | | |
|---------------|-----------------|-------|-------------|------------|------------------------------|----------------|----------------|----------------------|-----------|------------------|-----------------|-------------------|------------------|----------|-----------------|----------------------|--------|-------------------|------|-----------------|
| | | | | | | | | Width or Dia., in | Depth, in | Thickness, in | f_s | Weight, lbs/ft | Flat or Round | Ca | Wind, lbs/ft | Width or Dia., in | Dc, in | Weight, lbs/ft | Ca | Wind, lbs/ft |
| 2.5" STD Pipe | 96.0 | 1.255 | 40.36 | 1.11 | 1.11 | 7.63 | 2.75 | 2.875 | 2.875 | 0.203 | - | 5.79 | ROUND | 1.20 | 10.44 | 5.10 | 2.875 | 5.42 | 1.20 | 3.50 |
| 2.0" STD Pipe | 96.0 | 1.255 | 40.36 | 1.11 | 1.11 | 7.63 | 2.75 | 2.375 | 2.375 | 0.154 | - | 3.65 | ROUND | 1.20 | 8.63 | 4.60 | 2.375 | 4.74 | 1.20 | 3.16 |
| TS 2x2x3/16 | 96.0 | 1.255 | 40.36 | 1.11 | 1.11 | 7.63 | 2.75 | 2.000 | 2.000 | 0.188 | 0.21 | 4.32 | H55 | 1.25 | 7.57 | 4.23 | 2.828 | 5.36 | 1.20 | 2.90 |



Envelope Only Solution

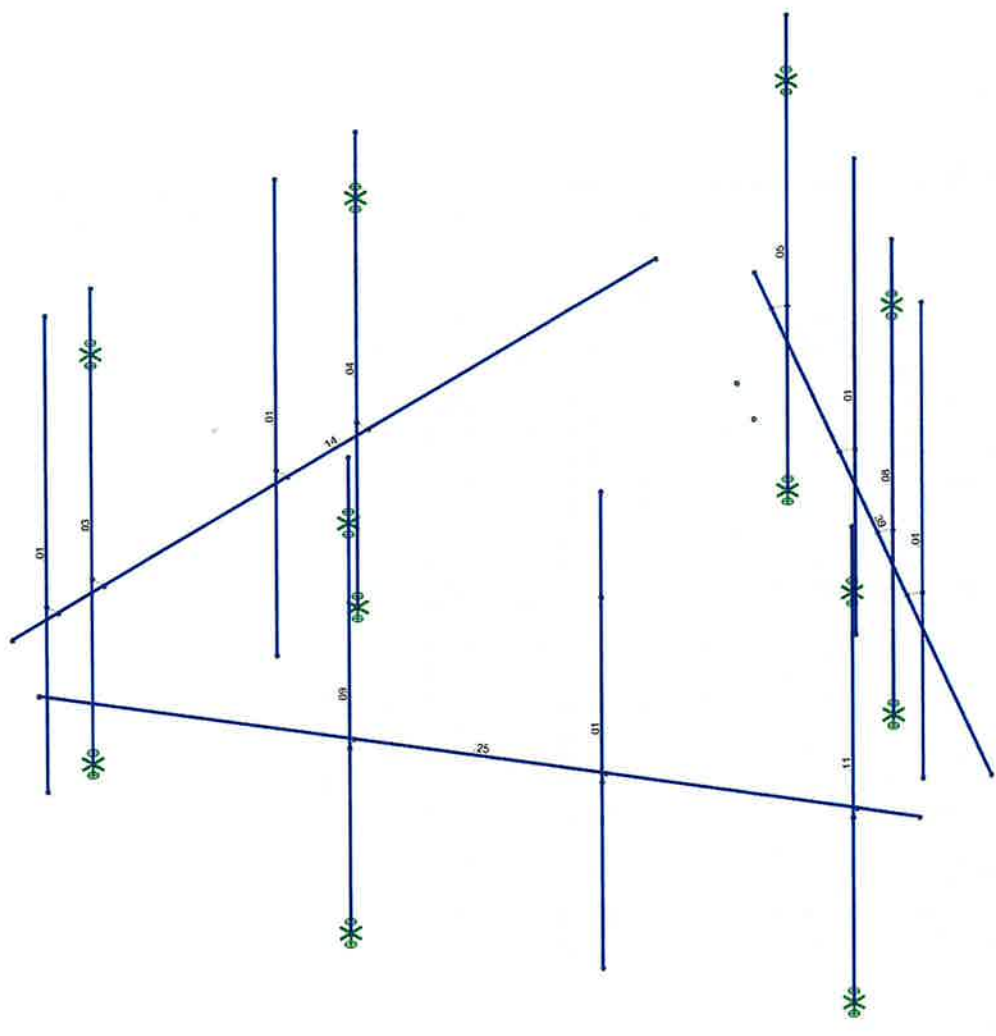
| |
|-------------------|
| APT |
| JV |
| NEW HARTFORD W CT |

EXISTING MOUNTS
Nodes & Labels

Typ Sector.r3d



| Code Check (Err) |
|------------------|
| No Calc |
| > 1.0 |
| .00-1.0 |
| .75-.99 |
| .50-.74 |
| 0-.49 |



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

APT
JV
NEW HARTFORD W CT

EXISTING MOUNTS
Max Stresses

Typ Sector.r3d



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

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 Checked By: MT

Joint Reactions (Continued)

| LC | Joint Label | X [lb] | Y [lb] | Z [lb] | MX [lb-ft] | MY [lb-ft] | MZ [lb-ft] | |
|----|-------------|-----------|------------|-----------|-------------|------------|------------|---|
| 15 | 3 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 16 | 3 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 17 | 3 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 18 | 3 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 19 | 3 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 20 | 3 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 21 | 3 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 22 | 3 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 23 | 3 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 24 | 3 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 25 | 3 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 26 | 3 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 27 | 3 | Totals: | 0 | 2790.535 | 0 | | | |
| 28 | 3 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 29 | 4 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 30 | 4 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 31 | 4 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 32 | 4 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 33 | 4 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 34 | 4 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 35 | 4 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 36 | 4 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 37 | 4 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 38 | 4 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 39 | 4 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 40 | 4 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 41 | 4 | Totals: | 0 | 2790.535 | 0 | | | |
| 42 | 4 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 43 | 5 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 44 | 5 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 45 | 5 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 46 | 5 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 47 | 5 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 48 | 5 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 49 | 5 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 50 | 5 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 51 | 5 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 52 | 5 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 53 | 5 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 54 | 5 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 55 | 5 | Totals: | 0 | 2790.535 | 0 | | | |
| 56 | 5 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 57 | 6 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 58 | 6 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 59 | 6 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 60 | 6 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 61 | 6 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 62 | 6 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 63 | 6 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 64 | 6 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 65 | 6 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 66 | 6 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 67 | 6 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 68 | 6 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 69 | 6 | Totals: | 0 | 2790.535 | 0 | | | |
| 70 | 6 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 71 | 7 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

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 Checked By: MT

Joint Reactions (Continued)

| LC | Joint Label | X [lb] | Y [lb] | Z [lb] | MX [lb-ft] | MY [lb-ft] | MZ [lb-ft] |
|-----|-------------|------------|-----------|-------------|------------|------------|------------|
| 72 | 7 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 73 | 7 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 74 | 7 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 75 | 7 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 76 | 7 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 77 | 7 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 78 | 7 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 79 | 7 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 80 | 7 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 81 | 7 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 82 | 7 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 83 | Totals: | 0 | 2790.535 | 0 | | | |
| 84 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 85 | 8 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 86 | 8 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 87 | 8 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 88 | 8 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 89 | 8 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 90 | 8 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 91 | 8 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 92 | 8 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 93 | 8 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 94 | 8 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 95 | 8 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 96 | 8 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 97 | Totals: | 0 | 2790.535 | 0 | | | |
| 98 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 99 | 9 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 100 | 9 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 101 | 9 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 102 | 9 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 103 | 9 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 104 | 9 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 105 | 9 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 106 | 9 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 107 | 9 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 108 | 9 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 109 | 9 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 110 | 9 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 111 | Totals: | 0 | 2790.535 | 0 | | | |
| 112 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 113 | 10 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 114 | 10 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 115 | 10 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 116 | 10 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 117 | 10 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 118 | 10 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 119 | 10 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 120 | 10 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 121 | 10 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 122 | 10 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 123 | 10 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 124 | 10 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 125 | Totals: | 0 | 2790.535 | 0 | | | |
| 126 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 127 | 11 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 128 | 11 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

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Joint Reactions (Continued)

| LC | Joint Label | X [lb] | Y [lb] | Z [lb] | MX [lb-ft] | MY [lb-ft] | MZ [lb-ft] | |
|-----|-------------|-----------|------------|-----------|-------------|------------|------------|---|
| 129 | 11 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 130 | 11 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 131 | 11 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 132 | 11 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 133 | 11 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 134 | 11 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 135 | 11 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 136 | 11 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 137 | 11 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 138 | 11 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 139 | 11 | Totals: | 0 | 2790.535 | 0 | | | |
| 140 | 11 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 141 | 12 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 142 | 12 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 143 | 12 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 144 | 12 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 145 | 12 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 146 | 12 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 147 | 12 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 148 | 12 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 149 | 12 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 150 | 12 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 151 | 12 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 152 | 12 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 153 | 12 | Totals: | 0 | 2790.535 | 0 | | | |
| 154 | 12 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 155 | 13 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 156 | 13 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 157 | 13 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 158 | 13 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 159 | 13 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 160 | 13 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 161 | 13 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 162 | 13 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 163 | 13 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 164 | 13 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 165 | 13 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 166 | 13 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 167 | 13 | Totals: | 0 | 2790.535 | 0 | | | |
| 168 | 13 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 169 | 14 | 1 | 18.123 | 309.633 | 15.442 | 0 | -.041 | 0 |
| 170 | 14 | 2 | -19.74 | 0 | -16.486 | 0 | -.034 | 0 |
| 171 | 14 | 8 | 27.152 | 652.776 | 23.852 | 0 | .37 | 0 |
| 172 | 14 | 9 | -25.536 | 0 | -22.808 | 0 | .304 | 0 |
| 173 | 14 | 25 | 6.174 | 424.955 | -9.386 | 0 | .264 | 0 |
| 174 | 14 | 26 | -6.087 | 0 | 5.551 | 0 | .217 | 0 |
| 175 | 14 | 30 | 4.003 | 499.052 | 14.793 | 0 | -.54 | 0 |
| 176 | 14 | 31 | -4.091 | 0 | -10.957 | 0 | -.445 | 0 |
| 177 | 14 | 41 | -55.691 | 409.709 | 25.027 | 0 | 1.766 | 0 |
| 178 | 14 | 42 | 41.297 | 0 | -16.768 | 0 | 1.454 | 0 |
| 179 | 14 | 46 | 36.135 | 494.411 | -25.468 | 0 | -1.96 | 0 |
| 180 | 14 | 47 | -21.741 | 0 | 17.209 | 0 | -1.614 | 0 |
| 181 | 14 | Totals: | 0 | 2790.535 | 0 | | | |
| 182 | 14 | COG (in): | X: -45.088 | Y: 49.948 | Z: -265.055 | | | |
| 183 | 16 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 184 | 16 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 185 | 16 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

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 Checked By: MT

Joint Reactions (Continued)

| LC | Joint Label | X [lb] | Y [lb] | Z [lb] | MX [lb-ft] | MY [lb-ft] | MZ [lb-ft] | |
|-----|-------------|-----------|------------|-----------|-------------|------------|------------|---|
| 186 | 16 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 187 | 16 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 188 | 16 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 189 | 16 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 190 | 16 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 191 | 16 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 192 | 16 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 193 | 16 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 194 | 16 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 195 | 16 | Totals: | 0 | 5146.035 | 0 | | | |
| 196 | 16 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 197 | 17 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 198 | 17 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 199 | 17 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 200 | 17 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 201 | 17 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 202 | 17 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 203 | 17 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 204 | 17 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 205 | 17 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 206 | 17 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 207 | 17 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 208 | 17 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 209 | 17 | Totals: | 0 | 5146.035 | 0 | | | |
| 210 | 17 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 211 | 18 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 212 | 18 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 213 | 18 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 214 | 18 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 215 | 18 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 216 | 18 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 217 | 18 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 218 | 18 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 219 | 18 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 220 | 18 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 221 | 18 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 222 | 18 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 223 | 18 | Totals: | 0 | 5146.035 | 0 | | | |
| 224 | 18 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 225 | 19 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 226 | 19 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 227 | 19 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 228 | 19 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 229 | 19 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 230 | 19 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 231 | 19 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 232 | 19 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 233 | 19 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 234 | 19 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 235 | 19 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 236 | 19 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 237 | 19 | Totals: | 0 | 5146.035 | 0 | | | |
| 238 | 19 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 239 | 20 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 240 | 20 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 241 | 20 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 242 | 20 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

Feb 1, 2024
 1:34 PM
 Checked By: MT

Joint Reactions (Continued)

| LC | Joint Label | X [lb] | Y [lb] | Z [lb] | MX [lb-ft] | MY [lb-ft] | MZ [lb-ft] | |
|-----|-------------|-----------|------------|-----------|-------------|------------|------------|---|
| 243 | 20 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 244 | 20 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 245 | 20 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 246 | 20 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 247 | 20 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 248 | 20 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 249 | 20 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 250 | 20 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 251 | 20 | Totals: | 0 | 5146.035 | 0 | | | |
| 252 | 20 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 253 | 21 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 254 | 21 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 255 | 21 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 256 | 21 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 257 | 21 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 258 | 21 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 259 | 21 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 260 | 21 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 261 | 21 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 262 | 21 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 263 | 21 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 264 | 21 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 265 | 21 | Totals: | 0 | 5146.035 | 0 | | | |
| 266 | 21 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 267 | 22 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 268 | 22 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 269 | 22 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 270 | 22 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 271 | 22 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 272 | 22 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 273 | 22 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 274 | 22 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 275 | 22 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 276 | 22 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 277 | 22 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 278 | 22 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 279 | 22 | Totals: | 0 | 5146.035 | 0 | | | |
| 280 | 22 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 281 | 23 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 282 | 23 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 283 | 23 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 284 | 23 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 285 | 23 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 286 | 23 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 287 | 23 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 288 | 23 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 289 | 23 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 290 | 23 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 291 | 23 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 292 | 23 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 293 | 23 | Totals: | 0 | 5146.035 | 0 | | | |
| 294 | 23 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 295 | 24 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 296 | 24 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 297 | 24 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 298 | 24 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 299 | 24 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

Feb 1, 2024
 1:34 PM
 Checked By: MT

Joint Reactions (Continued)

| LC | Joint Label | X [lb] | Y [lb] | Z [lb] | MX [lb-ft] | MY [lb-ft] | MZ [lb-ft] | |
|-----|-------------|-----------|------------|-----------|-------------|------------|------------|---|
| 300 | 24 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 301 | 24 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 302 | 24 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 303 | 24 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 304 | 24 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 305 | 24 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 306 | 24 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 307 | 24 | Totals: | 0 | 5146.035 | 0 | | | |
| 308 | 24 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 309 | 25 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 310 | 25 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 311 | 25 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 312 | 25 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 313 | 25 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 314 | 25 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 315 | 25 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 316 | 25 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 317 | 25 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 318 | 25 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 319 | 25 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 320 | 25 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 321 | 25 | Totals: | 0 | 5146.035 | 0 | | | |
| 322 | 25 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 323 | 26 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 324 | 26 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 325 | 26 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 326 | 26 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 327 | 26 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 328 | 26 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 329 | 26 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 330 | 26 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 331 | 26 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 332 | 26 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 333 | 26 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 334 | 26 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 335 | 26 | Totals: | 0 | 5146.035 | 0 | | | |
| 336 | 26 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |
| 337 | 27 | 1 | 30.446 | 599.271 | 24.577 | 0 | .051 | 0 |
| 338 | 27 | 2 | -33.312 | 0 | -26.515 | 0 | .042 | 0 |
| 339 | 27 | 8 | 45.517 | 1204.898 | 41.413 | 0 | .788 | 0 |
| 340 | 27 | 9 | -42.652 | 0 | -39.476 | 0 | .649 | 0 |
| 341 | 27 | 25 | 8.895 | 786.473 | -3.375 | 0 | .311 | 0 |
| 342 | 27 | 26 | -8.801 | 0 | -1.014 | 0 | .256 | 0 |
| 343 | 27 | 30 | 6.557 | 900.694 | 24.276 | 0 | -.609 | 0 |
| 344 | 27 | 31 | -6.652 | 0 | -19.888 | 0 | -.501 | 0 |
| 345 | 27 | 41 | -95.858 | 779.518 | 44.925 | 0 | 3.154 | 0 |
| 346 | 27 | 42 | 70.591 | 0 | -30.4 | 0 | 2.597 | 0 |
| 347 | 27 | 46 | 64.806 | 875.182 | -44.767 | 0 | -3.39 | 0 |
| 348 | 27 | 47 | -39.538 | 0 | 30.241 | 0 | -2.792 | 0 |
| 349 | 27 | Totals: | 0 | 5146.035 | 0 | | | |
| 350 | 27 | COG (in): | X: -44.795 | Y: 49.657 | Z: -265.785 | | | |



Company : APT
 Designer : JV
 Job Number : NEW HARTFORD W CT
 Model Name : EXISTING MOUNTS

Feb 1, 2024
 1:34 PM
 Checked By: MT

Envelope Joint Reactions

| Joint | | X [lb] | LC | Y [lb] | LC | Z [lb] | LC | MX [lb-ft] | LC | MY [lb-ft] | LC | MZ [lb-ft] | LC | |
|-------|---------|--------|---------|--------|----------|--------|---------|------------|----|------------|--------|------------|----|----|
| 1 | 1 | max | 30.446 | 27 | 599.271 | 27 | 24.577 | 27 | 0 | 27 | .051 | 27 | 0 | 27 |
| 2 | | min | 18.123 | 3 | 309.633 | 3 | 15.442 | 3 | 0 | 1 | -.049 | 1 | 0 | 1 |
| 3 | 2 | max | -19.74 | 14 | 0 | 27 | -16.486 | 14 | 0 | 27 | .042 | 27 | 0 | 27 |
| 4 | | min | -33.312 | 16 | 0 | 1 | -26.515 | 16 | 0 | 1 | -.04 | 1 | 0 | 1 |
| 5 | 8 | max | 45.517 | 27 | 1204.898 | 27 | 41.413 | 27 | 0 | 27 | .788 | 27 | 0 | 27 |
| 6 | | min | 27.152 | 3 | 652.776 | 3 | 23.852 | 3 | 0 | 1 | .37 | 3 | 0 | 1 |
| 7 | 9 | max | -25.536 | 14 | 0 | 27 | -22.808 | 14 | 0 | 27 | .649 | 27 | 0 | 27 |
| 8 | | min | -42.652 | 16 | 0 | 1 | -39.476 | 16 | 0 | 1 | .304 | 3 | 0 | 1 |
| 9 | 25 | max | 8.895 | 27 | 786.473 | 27 | -3.375 | 27 | 0 | 27 | .311 | 27 | 0 | 27 |
| 10 | | min | 6.174 | 3 | 424.955 | 3 | -10.95 | 1 | 0 | 1 | .264 | 3 | 0 | 1 |
| 11 | 26 | max | -6.087 | 14 | 0 | 27 | 6.475 | 1 | 0 | 27 | .256 | 27 | 0 | 27 |
| 12 | | min | -8.801 | 16 | 0 | 1 | -1.014 | 16 | 0 | 1 | .217 | 3 | 0 | 1 |
| 13 | 30 | max | 6.557 | 27 | 900.694 | 27 | 24.276 | 27 | 0 | 27 | -.54 | 14 | 0 | 27 |
| 14 | | min | 4.003 | 3 | 499.052 | 3 | 14.793 | 3 | 0 | 1 | -.63 | 1 | 0 | 1 |
| 15 | 31 | max | -4.091 | 14 | 0 | 27 | -10.957 | 14 | 0 | 27 | -.445 | 14 | 0 | 27 |
| 16 | | min | -6.652 | 16 | 0 | 1 | -19.888 | 16 | 0 | 1 | -.519 | 1 | 0 | 1 |
| 17 | 41 | max | -55.691 | 14 | 779.518 | 27 | 44.925 | 27 | 0 | 27 | 3.154 | 27 | 0 | 27 |
| 18 | | min | -95.858 | 16 | 409.709 | 3 | 25.027 | 3 | 0 | 1 | 1.766 | 3 | 0 | 1 |
| 19 | 42 | max | 70.591 | 27 | 0 | 27 | -16.768 | 14 | 0 | 27 | 2.597 | 27 | 0 | 27 |
| 20 | | min | 41.297 | 3 | 0 | 1 | -30.4 | 16 | 0 | 1 | 1.454 | 3 | 0 | 1 |
| 21 | 46 | max | 64.806 | 27 | 875.182 | 27 | -25.468 | 14 | 0 | 27 | -1.96 | 14 | 0 | 27 |
| 22 | | min | 36.135 | 3 | 494.411 | 3 | -44.767 | 16 | 0 | 1 | -3.39 | 16 | 0 | 1 |
| 23 | 47 | max | -21.741 | 14 | 0 | 27 | 30.241 | 27 | 0 | 27 | -1.614 | 14 | 0 | 27 |
| 24 | | min | -39.538 | 16 | 0 | 1 | 17.209 | 3 | 0 | 1 | -2.792 | 16 | 0 | 1 |
| 25 | Totals: | max | 0 | 14 | 5146.035 | 27 | 0 | 14 | | | | | | |
| 26 | | min | 0 | 16 | 2790.535 | 3 | 0 | 16 | | | | | | |

Appendix C

Reference Documents

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS
verizon
 20 ALEXANDER DRIVE
 WALLINGFORD, CT 06492

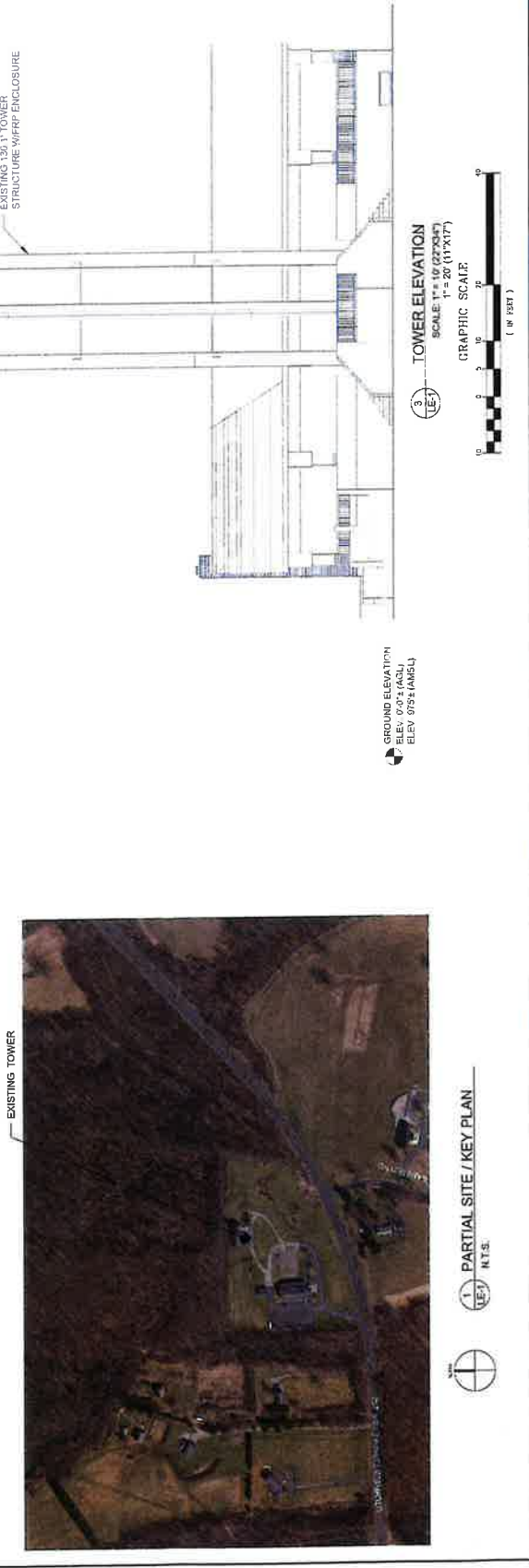
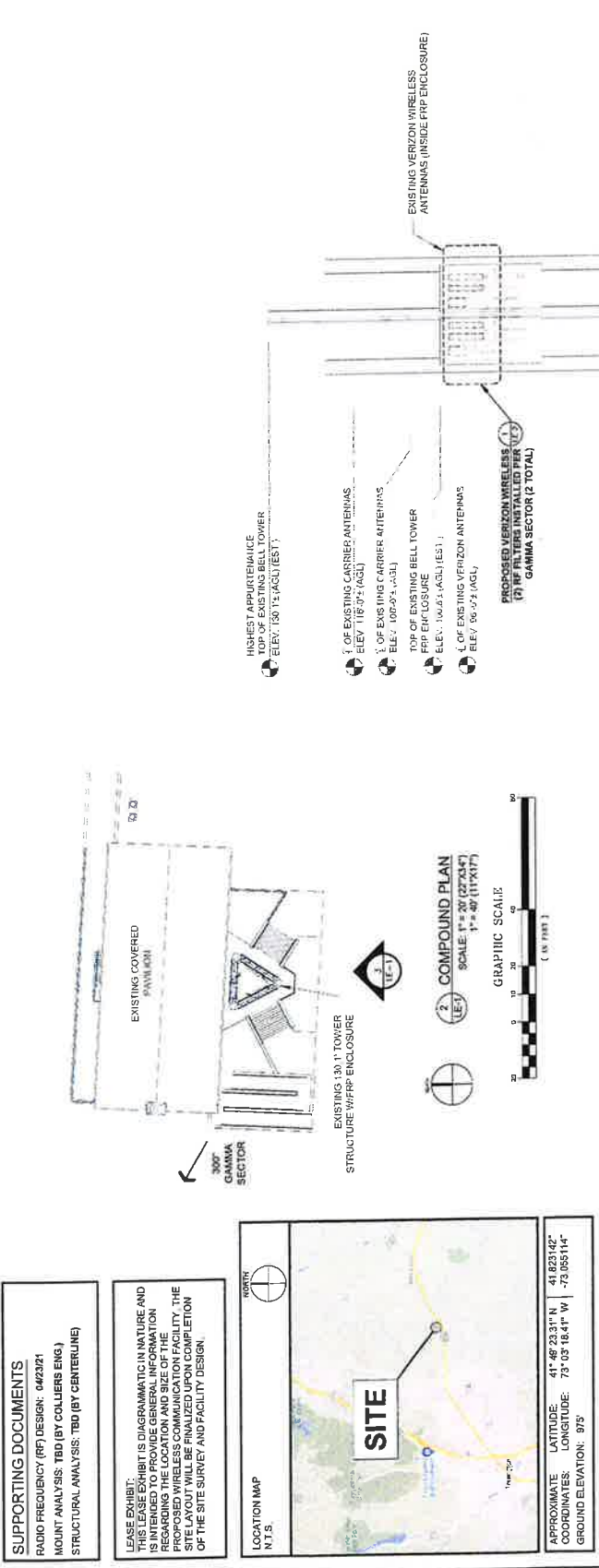
CENTERLINE
 ENGINEERING ARCHITECTS, P.A.
 750 W CENTER ST, SUITE 301
 WEST BRIDGEWATER, MA 02379
 PHONE: 781.718.4725

| REVISIONS | | | |
|-----------|----------|-------------------|-------------|
| NO. | DATE | ISSUED FOR REVIEW | DESCRIPTION |
| 1 | 10/03/21 | | |

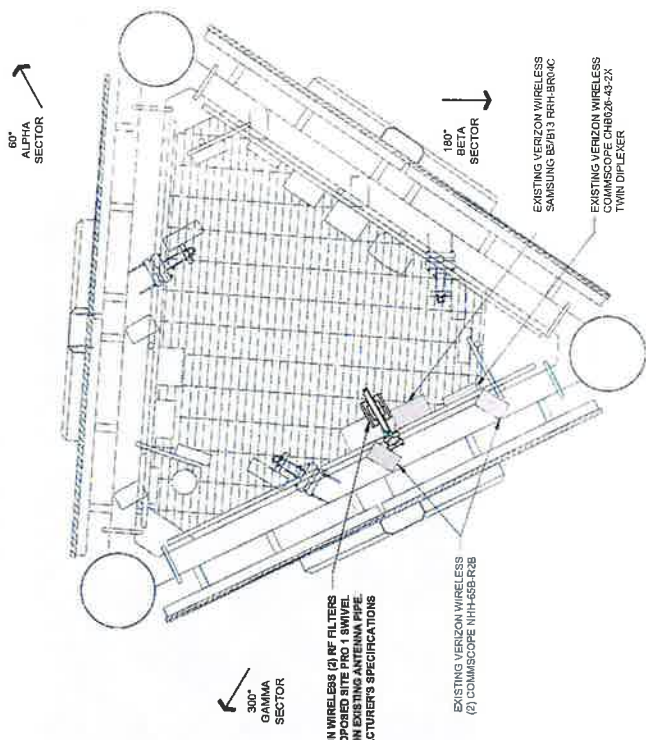
DESIGNED BY: UN
 APPROVED BY: DC

THIS IS A PRELIMINARY DESIGN. IT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE CLIENT ACCEPTS THE DESIGNER'S LIABILITY FOR THE DESIGN AND THE DESIGNER'S LIABILITY FOR THE CONSTRUCTION OF THE PROJECT.

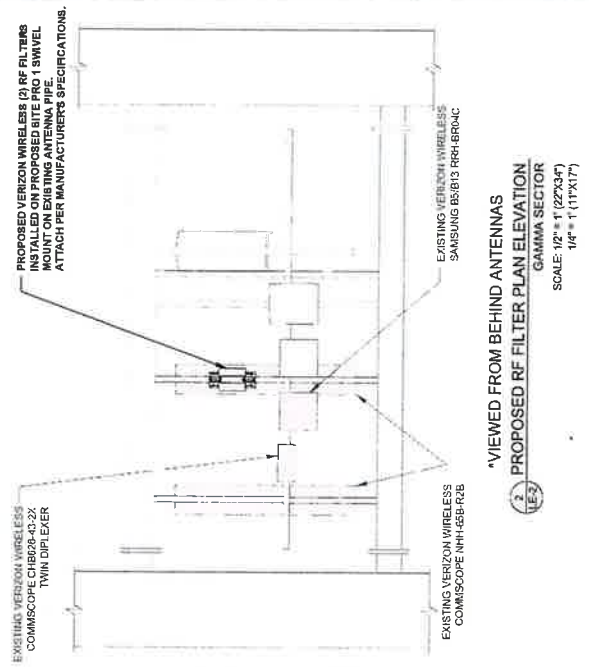
SITE NAME
 NEW HARTFORD W CT
 SITE ADDRESS
 100 FIELD LUNARMS
 NEW HARTFORD, CT 06467
 UTTCHFIELD COUNTY
 LOCATION CODE: PUZE ID: 1723737
 -49.656
 SHEET TITLE: SITE KEY PLAN, SURROUNDING
 PARTIAL AND TOWER ELEVATION
 SCALE: 1" = 20' (1:201.6)



NOTE:
THE EXACT POSITIONS OF EXISTING ANTENNAS,
DIPLEXER & RIPS TO BE VERIFIED IN THE FIELD.



1
LE2
PROPOSED RF FILTER PLAN
SCALE: 1/2" = 1' (22'X34')
1/4" = 1' (11'X17')



CELLULAR PARTNERSHIP 4/14/16 VERIZON WIRELESS
verizon
99 ALEXANDER DRIVE
WALLINGFORD, CT 06492

CENTERLINE
ENGINEERING SERVICES, P.A.
750 W CENTER ST, SUITE 301
WEST BRIDGEWATER, MA 02379
PHONE: 781.713.4725

| RF VERSIONS | | | |
|-------------|----------|-------------------|-------------|
| NO. | DATE | ISSUED FOR REVIEW | DESCRIPTION |
| 1 | 10/03/23 | | |

| | | | |
|--------------|----|--------------|----|
| DESIGNED BY: | DN | APPROVED BY: | DC |
|--------------|----|--------------|----|

THIS PLAN IS THE PROPERTY OF CENTERLINE ENGINEERING SERVICES, P.A. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF CENTERLINE ENGINEERING SERVICES, P.A.

| | |
|----------------|---|
| SITE NAME: | NEW HARTFORD W CT |
| SITE ADDRESS: | 1440 LITCHFIELD TURNPIKE NEW HARTFORD, CT 06057 LITCHFIELD COUNTY |
| LOCATION CODE: | FLZE ID: 467956 17123737 |
| SHEET TITLE: | PROPOSED RF FILTER PLAN |
| SHEET #: | LF-2 REVISION 0 |

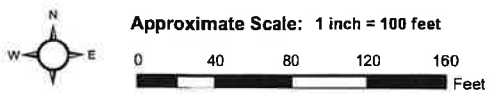
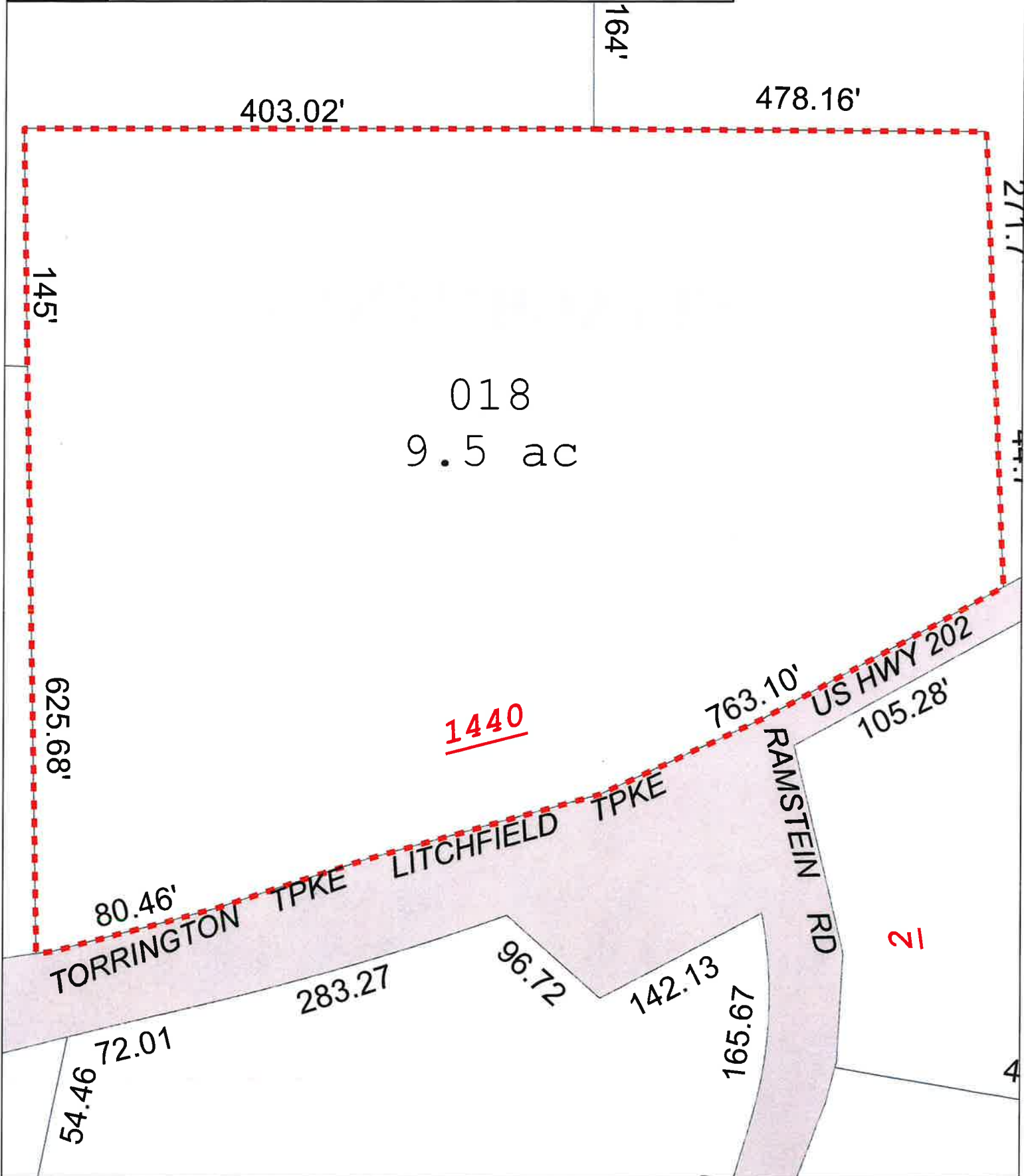
ATTACHMENT 4



Town of New Hartford, Connecticut - Assessment Parcel Map

Parcel: 007-024-018

Address: 1440 LITCHFIELD TPKE



Disclaimer: This map is for informational purposes only.
 All information is subject to verification by any user.
 The Town of New Hartford and its mapping contractors
 assume no legal responsibility for the
 information contained herein.

Map Produced April 2023



Town of New Hartford, CT

Property Listing Report

Map Block Lot

007-024-018

Bldg #

1

Sec #

1

PID

3148

Account

00069600

Property Information

| | |
|-------------------|--|
| Property Location | 1440 LITCHFIELD TPKE |
| Owner | HARVEST BAPTIST CHURCH INC |
| Co-Owner | na |
| Mailing Address | 624 TORRINGFORD WEST STREET TORRINGTON CT 06790 |
| Land Use | 9060 CHURCH |
| Land Class | E |
| Zoning Code | R2 |
| Census Tract | 3061 |

| | |
|------------------|-------------|
| Neighborhood | D |
| Acreage | 9.1 |
| Utilities | Well,Septic |
| Lot Setting/Desc | Rural Level |
| Book / Page | |
| Fire District | 4 |

Photo



Sketch



Primary Construction Details

| | |
|-------------------|-----------------|
| Year Built | 1999 |
| Building Desc. | EXEMPT - MDL-94 |
| Building Style | Churches |
| Building Grade | Average |
| Stories | 1 |
| Occupancy | 1.00 |
| Exterior Walls | Vinyl Siding |
| Exterior Walls 2 | NA |
| Roof Style | Gable |
| Roof Cover | Asphalt |
| Interior Walls | Drywall |
| Interior Walls 2 | NA |
| Interior Floors 1 | Concrete |
| Interior Floors 2 | Carpet |

| | |
|------------------|------------|
| Heating Fuel | Oil |
| Heating Type | Forced Air |
| AC Type | Central |
| Bedrooms | 0 |
| Full Bathrooms | 0 |
| Half Bathrooms | 0 |
| Extra Fixtures | 0 |
| Total Rooms | 0 |
| Bath Style | NA |
| Kitchen Style | NA |
| Fin Bsmt Area | |
| Fin Bsmt Quality | |
| Bsmt Gar | |
| Fireplaces | |

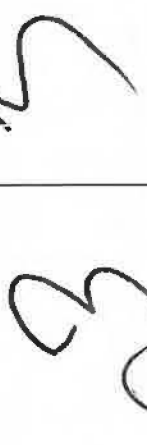


(*Industrial / Commercial Details)

| | |
|--------------------|--------------|
| Building Use | Commercial |
| Building Condition | G |
| Sprinkler % | NA |
| Heat / AC | HEAT/AC PKGS |
| Frame Type | STEEL |
| Baths / Plumbing | AVERAGE |
| Ceiling / Wall | CEIL & WALLS |
| Rooms / Prtns | AVERAGE |
| Wall Height | 16.00 |
| First Floor Use | NA |
| Foundation | NA |

ATTACHMENT 5



Certificate of Mailing — Firm

| Name and Address of Sender | TOTAL NO. of Pieces Listed by Sender | TOTAL NO. of Pieces Received at Post Office™ | Affix Stamp Here Postmark with Date of Receipt. |
|--|--|--|---|
| Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103 |  |  |  |
| USPS® Tracking Number Firm-specific Identifier | Address (Name, Street, City, State, and ZIP Code™) | Postage | Special Handling |
| 1. | Daniel V. Jerram, First Selectman Town of New Hartford 530 Main Street New Hartford, CT 06057 | | |
| 2. | Michael Lucas, Inland Wetlands/Zoning Enforcement Officer Town of New Hartford 530 Main Street New Hartford, CT 06057 | | |
| 3. | Harvest Baptist Church Inc. 1440 Litchfield Turnpike New Hartford, CT 06057 | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |