



*Filed by:*

*Kri Pelletier, Property Specialist - SBA Communications  
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February 17, 2016

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

**Notice of Exempt Modification**  
**225 Grist Mill Road, Simsbury, CT 06070**  
**41.8667231 N**  
**-72.815805 W**  
**AT&T #: 10035290\_LTE**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 150-foot level of the existing 150-foot Monopole Tower at 225 Grist Mill Road. The tower is owned by SBA Towers II, LLC. The property is owned by Ensign-Bickford Realty Corporation. AT&T now intends to swap three (3) existing GSM antennas with three (3) new LTE/GSM antennas. These antennas would be installed at the 150-foot level of the tower. AT&T also intends to:

Remove:

- (12) Kathrein 860 RCUs

Remove and Replace:

- Remove (1) DUL 21 radio unit & replace with (1) DUS41 radio unit with XMU within existing rack in existing equipment shelter
- Remove (1) KMW AM-X-CD Panel Antenna and replace with (1) Quintel QS66512 Panel Antenna
- Remove (2) Powerwave P65-17-XLH Panel Antennas and Replace with (2) CCI TPA-65R Panel Antennas

Install:

- (1) DUS radio unit within existing rack in existing equipment shelter
- (3) Ericsson RRUS-32 Remote Radio Unit
- (1) Raycap DC6 Surge Suppressor



- (3) CCI DTMABP - TMA/TTA
- (1) 1/2" Fiber Cable
- (2) 3/4" DC Power Cable

Existing Equipment to Remain (Entitlements):

- All Existing Equipment located within existing Equipment shelter
- (3) Kathrein 800-10121 Panel Antennas
- (1) KMW AM-X-CD Panel Antenna
- (2) Powerwave P65-17-XLH Panel Antennas
- (6) Ericsson RRUS-11 Remote Radio Unit
- (1) Raycap DC6 Surge Suppressor
- (3) Commscope ABT-DRDM Bias-T
- (3) CCI DTMABP - TMA/TTA
- (3) CSS DBC-750 Combiner
- (3) Kathrein 782 Diplexer
- (1) LMU
- (12) 1-5/8" Coax Lines
- (1) 3" conduit with fiber/DC power cables listed below:
  - (1) 1/2" Fiber Cable
  - (2) 3/4" DC Power Cable

This facility was approved by the Council in docket #203 dated 11/7/01. This approval included the condition that the tower be 130' unless sufficient carriers commit to placement of antennas on the tower and no space on the tower exists below 130', which through petition can be authorized to a maximum of 150'. This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §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 Lisa Heavner, First Selectman for the Town of Simsbury, as well as the property owner. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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 structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.



For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-referenced telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

A handwritten signature in black ink, appearing to read "Kri Pelletier", is positioned below the word "Sincerely,".

Kri Pelletier  
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Attachments

cc: First Selectman Lisa Heavner—as elected official  
*933 Hopmeadow Street, Simsbury CT 06070*  
Ensign-Bickford Realty Corporation—as property owner  
*PO Box 30666, Hartford CT 06150*

## POWER DENSITY

### AT&T Site Inventory and Power Data

| Sector:            | A   | Sector:            | B   | Sector:            | C   |
|--------------------|---|--------------------|---|--------------------|---|
| Antenna #:         | 1   | Antenna #:         | 1   | Antenna #:         | 1   |
| Make / Model:      | Kathrein 800-10121                        | Make / Model:      | Kathrein 800-10121                        | Make / Model:      | Kathrein 800-10121                        |
| Gain:              | 11.45 / 14.35 dBd                         | Gain:              | 11.45 / 14.35 dBd                         | Gain:              | 11.45 / 14.35 dBd                         |
| Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  |
| Frequency Bands    | 850 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 850 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 850 MHz / 1900 MHz (PCS)                  |
| Channel Count      | 4   | Channel Count      | 4   | Channel Count      | 4   |
| Total TX Power(W): | 120                                       | Total TX Power(W): | 120                                       | Total TX Power(W): | 120                                       |
| ERP (W):           | 2,471.44                                  | ERP (W):           | 2,471.44                                  | ERP (W):           | 2,471.44                                  |
| Antenna A1 MPE%    | 0.59                                      | Antenna B1 MPE%    | 0.59                                      | Antenna C1 MPE%    | 0.59                                      |
| Antenna #:         | 2   | Antenna #:         | 2   | Antenna #:         | 2   |
| Make / Model:      | KMW AM-X-CD-16-65-00T-RET                 | Make / Model:      | Powerwave P65-17-XLH-RR                   | Make / Model:      | Powerwave P65-17-XLH-RR                   |
| Gain:              | 13.35 / 15.25 dBd                         | Gain:              | 14.3 / 15.1 dBd                           | Gain:              | 14.3 / 15.1 dBd                           |
| Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  |
| Frequency Bands    | 700 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 700 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 700 MHz / 1900 MHz (PCS)                  |
| Channel Count      | 4   | Channel Count      | 4   | Channel Count      | 4   |
| Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       |
| ERP (W):           | 6,614.85                                  | ERP (W):           | 7,112.97                                  | ERP (W):           | 7,112.97                                  |
| Antenna A2 MPE%    | 1.68                                      | Antenna B2 MPE%    | 1.75                                      | Antenna C2 MPE%    | 1.75                                      |
| Antenna #:         | 3   | Antenna #:         | 3   | Antenna #:         | 3   |
| Make / Model:      | Quintel QS66512-3                         | Make / Model:      | CCI TPA-65R-LCUUUU-H8                     | Make / Model:      | CCI TPA-65R-LCUUUU-H8                     |
| Gain:              | 14.5 / 13.65 / 14.95 dBd                  | Gain:              | 13.45 / 13.75 / 14.45 dBd                 | Gain:              | 13.45 / 13.75 / 14.45 dBd                 |
| Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  |
| Frequency Bands    | 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS) | Frequency Bands    | 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS) | Frequency Bands    | 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS) |
| Channel Count      | 6   | Channel Count      | 6   | Channel Count      | 6   |
| Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       |
| ERP (W):           | 6,852.34                                  | ERP (W):           | 6,094.03                                  | ERP (W):           | 6,094.03                                  |
| Antenna A3 MPE%    | 1.37                                      | Antenna B3 MPE%    | 1.24                                      | Antenna C3 MPE%    | 1.24                                      |

| Site Composite MPE%    |         |
|------------------------|---------|
| Carrier                | MPE%    |
| AT&T – Max per sector  | 3.65 %  |
| Verizon Wireless       | 3.63 %  |
| T-Mobile               | 4.06 %  |
| Nextel                 | 0.52 %  |
| Sprint                 | 0.02 %  |
| New England Site Mngmt | 0.00 %  |
| Town of Simsbury       | 0.00 %  |
| Site Total MPE %:      | 11.88 % |

|                      |         |
|----------------------|---------|
| AT&T Sector 1 Total: | 5.41 %  |
| AT&T Sector 2 Total: | 5.41 %  |
| AT&T Sector 3 Total: | 5.41 %  |
| Site Total:          | 11.88 % |

| AT&T_Per Sector (Max Sector – Sector A) | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density ( $\mu\text{W}/\text{cm}^2$ ) | Frequency (MHz) | Allowable MPE ( $\mu\text{W}/\text{cm}^2$ ) | Calculated % MPE |
|---|------------|-------------------------|---------------|---|-----------------|---|------------------|
| AT&T 850 MHz UMTS                       | 2          | 418.91                  | 150           | 1.45  | 850             | 567   | 0.31 %           |
| T&T 1900 MHz (PCS) UMTS                 | 2          | 816.81                  | 150           | 2.83  | 1900            | 1000  | 0.28 %           |
| AT&T 700 MHz LTE                        | 2          | 1297.63                 | 150           | 4.50  | 700             | 467   | 0.45 %           |
| AT&T 1900 MHz (PCS) LTE                 | 2          | 2009.79                 | 150           | 6.97  | 1900            | 1000  | 1.23 %           |
| AT&T 850 MHz GSM                        | 2          | 855.31                  | 150           | 2.97  | 850             | 567   | 0.30 %           |
| T&T 1900 MHz (PCS) GSM                  | 2          | 695.22                  | 150           | 2.41  | 1900            | 1000  | 0.43 %           |
| T&T 2300 MHz (WCS) LTE                  | 2          | 1875.65                 | 150           | 6.50  | 2300            | 1000  | 0.65 %           |
|   |            |                         |               |   |                 | Total:                                      | 3.65 %           |



**Tower Engineering Solutions**

Phone (972) 483-0607, Fax (972) 975-9615  
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

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**Structural Analysis Report**

**Existing 150 ft. Rohn Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT10022-A**

**Customer Site Name: Simsbury 2, CT**

**Carrier Name: AT&T**

**Carrier Site ID / Name: FA# Code 10035290 USID# 25937**

**Site Location: 225 Grist Mill Road**

**Simsbury, Connecticut**

**Hartford County**

**Latitude: 41.866708**

**Longitude: -72.815772**

**Analysis Result:**

**Max Structural Usage: 99.1% [Pass]**

**Max Foundation Usage: 89.0% [Pass]**

**Report Prepared By : Kyle Wyant**



## Introduction

The purpose of this report is to summarize the analysis results on the 150 ft. Rohn Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

|                              |   |
|------------------------------|---|
| <b>Tower Drawings</b>        | Rohn Industries, Inc., File No. 50754AE, Drawing No. A020293, dated February 13, 2002     |
| <b>Foundation Drawing</b>    | Rohn Industries, Inc., File No. 50754AE, Drawing No. A020294 1-3, dated February 13, 2002 |
| <b>Geotechnical Report</b>   | FDH Engineering, Inc., Project No. 15BGSH1600, dated March 19, 2015                       |
| <b>Modification Drawings</b> | N/A   |

## Analysis Criteria

The analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA-222-F. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

|   |   |
|---|---|
| <b>Basic Wind Speed Used in the Analysis:</b> | 80 mph (Fastest Mile)                                     |
| <b>Basic Wind Speed with Ice:</b>             | 69 mph (Fastest Mile) with 1/2" Radial Ice Concurrent     |
| <b>Operational Wind Speed:</b>                | 50 mph + 0" Radial Ice                                    |
| <b>Standard/Codes:</b>                        | ANSI/TIA/EIA-222-F / 2005 Connecticut State Building Code |

## Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

| Items | Elevation (ft) | Qty.                                   | Antenna Descriptions               | Mount Type & Qty.                    | Transmission Lines  | Owner    |
|-------|----------------|--|------------------------------------|--------------------------------------|---|----------|
| 1     | 151.0          | 3                                      | Andrew ABT-DRDM-ADBH               | Low Profile Platform                 | (12) 1 5/8"<br>(1) 10mm<br>Fiber<br>(2) 12 Gauge<br>DC Cables<br>(1) 3" Conduit | Cingular |
| 2     |                | 3                                      | CCI DTMAPB7819VG12A                |                                      |   |          |
| 3     |                | 3                                      | CSS DBC-750                        |                                      |   |          |
| 4     |                | 6                                      | Ericsson RUS-01                    |                                      |   |          |
| 5     |                | 3                                      | Kathrein 782 10250                 |                                      |   |          |
| 6     |                | 3                                      | Kathrein 800-10121 - Panel         |                                      |   |          |
| 7     |                | 12                                     | Kathrein 860 1006                  |                                      |   |          |
| 8     |                | 2                                      | KMW AM-X-CD-16-65-00T-RET - Panel  |                                      |   |          |
| 9     |                | 1                                      | LMU                                |                                      |   |          |
| 10    |                | 4                                      | Powerwave P65-17-XLH-RR - Panel    |                                      |   |          |
| 11    |                | 1                                      | Raycap DC6-48-60-18-8F             |                                      |   |          |
| 12    | 141.0          | 3                                      | Alcatel Lucent RRH2X60-700 - RRU   | Low Profile Platform                 | (12) 1 5/8"<br>(2) 1 5/8"<br>Hybrid   | Verizon  |
| 13    |                | 3                                      | Alcatel Lucent RRH2X60-AWS - RRU   |                                      |   |          |
| 14    |                | 3                                      | Alcatel Lucent RRH2X60-PCS - RRU   |                                      |   |          |
| 15    |                | 3                                      | Antel BXA-70063-6CF-EDIN-0 - Panel |                                      |   |          |
| 16    |                | 3                                      | Antel BXA-70080-4CF-EDIN-0 - Panel |                                      |   |          |
| 17    |                | 6                                      | Commscope SBNHH-1D65B - Panel      |                                      |   |          |
| 18    | 2              | RFS DB-T1-6Z-8AB-0Z – Distribution Box |                                    |                                      |   |          |
| 19    | 131.0          | 3                                      | Commscope LNX-6515DS - Panel       | (3) T-Arms (Site Pro P/N<br>UDS-NPL) | (18) 7/8"   | T-Mobile |
| 20    |                | 3                                      | Ericsson KRY 144/1                 |                                      |   |          |
| 21    |                | 3                                      | Kathrein 782 11056                 |                                      |   |          |
| 22    |                | 3                                      | RFS APX16DWV-16DWVS-C - Panel      |                                      |   |          |
| 23    | 3              | RFS ATM1412D-1A20                      |                                    |                                      |   |          |
| 24    | 123.0          | 3                                      | Alcatel Lucent 1900 MHz            | Low Profile Platform                 | (4) 1-1/4" Fiber  | Sprint   |
| 25    |                | 6                                      | Alcatel Lucent 800 MHz             |                                      |   |          |
| 26    |                | 3                                      | Alcatel Lucent TD-RRH8x20-25       |                                      |   |          |
| 27    |                | 4                                      | RFS ACU-A20-N                      |                                      |   |          |
| 28    |                | 3                                      | RFS APXVSP18-C-A20 - Panel         |                                      |   |          |
| 29    |                | 3                                      | RFS APXVTM14-C-I30 - Panel         |                                      |   |          |

## Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

| Items | Elevation (ft) | Qty. | Antenna Descriptions                     | Mount Type & Qty.    | Transmission Lines   | Owner |
|-------|----------------|------|--|----------------------|--|-------|
| 1     | 150.0          | 2    | Powerwave P65-17-XLH-RR - Panel          | Low Profile Platform | (12) 1 5/8"<br>(2) 1/2" DC<br>(4) 3/8" Fiber<br>(1) 3" Conduit | AT&T  |
| 2     |                | 1    | KMW AM-X-CD-16-65-00T-RET - Panel        |                      |  |       |
| 3     |                | 3    | Kathrein 800-10121 - Panel               |                      |  |       |
| 4     |                | 2    | CCI TPA-65R-LCUUUU-H8 - Panel            |                      |  |       |
| 5     |                | 1    | Quintel QS66512-3 - Panel                |                      |  |       |
| 6     |                | 6    | CCI DTMA BP7819VG12A - TMA/TTA           |                      |  |       |
| 7     |                | 6    | Ericsson RRUS-11 - RRU                   |                      |  |       |
| 8     |                | 3    | Ericsson RRUS-32 - RRU                   |                      |  |       |
| 9     |                | 3    | Kathrein 782-10250 - Diplexer            |                      |  |       |
| 10    |                | 6    | CCI TPX-070821 - Diplexer                |                      |  |       |
| 11    |                | 2    | Raycap DC6-48-60-18-8F - Surge Protector |                      |  |       |
| 12    |                | 3    | CSS DBC-750 - Combiner                   |                      |  |       |
| 13    |                | 3    | Commscope ABT-DRDM-ADBH - Bias T         |                      |  |       |
| 14    |                | 1    | LMU                                      |                      |  |       |

All transmission lines are considered running inside of the pole shafts.

## Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

|             | Pole shafts  | Anchor Bolts | Base Plate   |
|-------------|--------------|--------------|--------------|
| Max. Usage: | <b>99.1%</b> | <b>88.8%</b> | <b>98.9%</b> |
| Pass/Fail   | <b>Pass</b>  | <b>Pass</b>  | <b>Pass</b>  |

## Foundations

|                    | Moment (Kip-Ft) | Shear (Kips) | Axial (Kips) |
|--------------------|-----------------|--------------|--------------|
| Analysis Reactions | 3350.0          | 29.2         | 46.6         |

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.



### **Operational Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA-222-F for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.7161 degrees under the operational wind speed as specified in the Analysis Criteria.

### **Conclusions**

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard and the 2005 Connecticut State Building Code under the design basic wind speed as specified in the Analysis Criteria.

## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

# Usage Diagram - Max Stress 99.1% at 0.0ft

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

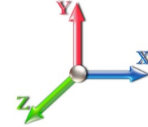
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69

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Dead Load Factor: 1.00  
 Wind Load Factor: 1.00

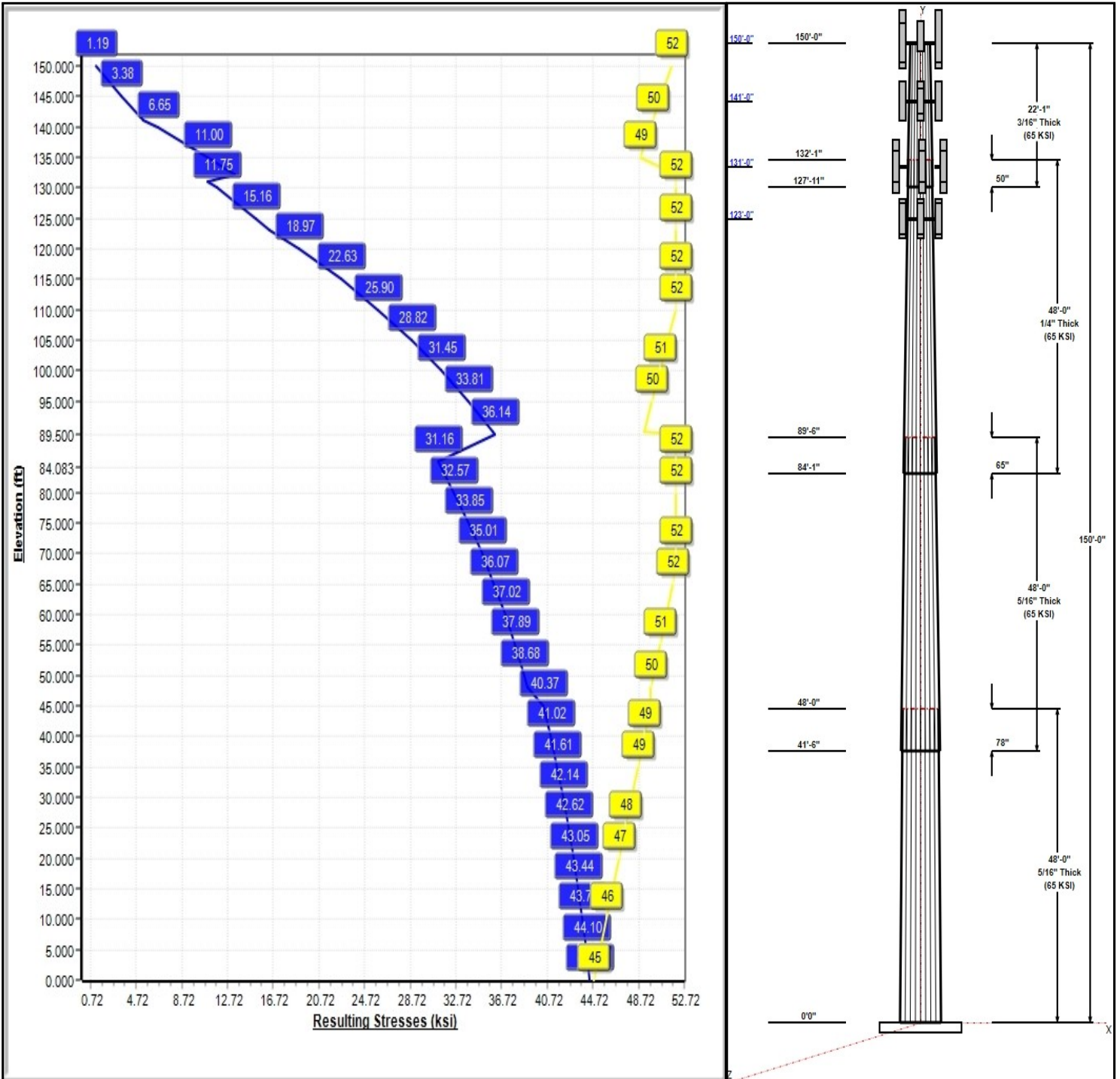
**Load Case : 80 mph Wind with 0 in Ice**



**Iterations:** 23

- 45 Allowable Stress
- 44 Resulting Stress

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## Structure: CT10022-A-SBA

**Type:** Tapered  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23136

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### Shaft Properties

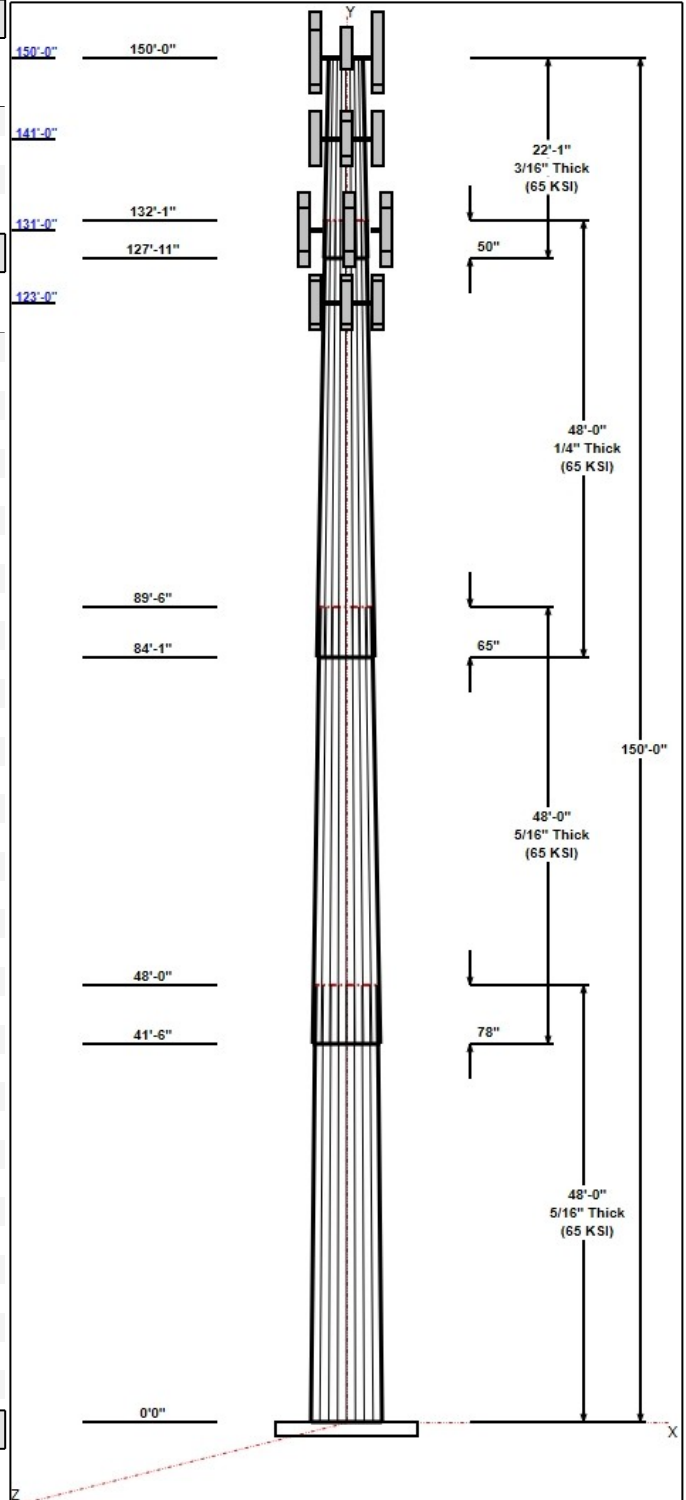
| Seq | Length (ft) | Top (in) | Bottom (in) | Thick (in) | Joint Type | Taper   | Grade (ksi) |
|-----|-------------|----------|-------------|------------|------------|---------|-------------|
| 1   | 48.00       | 50.39    | 61.50       | 0.313      |            | 0.23136 | 65          |
| 2   | 48.00       | 41.42    | 52.52       | 0.313      | Slip       | 0.23136 | 65          |
| 3   | 48.00       | 32.07    | 43.17       | 0.250      | Slip       | 0.23136 | 65          |
| 4   | 22.08       | 28.30    | 33.41       | 0.188      | Slip       | 0.23136 | 65          |

### Discrete Appurtenances

| Attach Elev (ft) | Force Elev (ft) | Qty | Description             | Carrier  |
|------------------|-----------------|-----|-------------------------|----------|
| 150.00           | 150.00          | 3   | 782-10250               | AT&T     |
| 150.00           | 151.00          | 6   | CCI DTMA BP7819VG12A    | AT&T     |
| 150.00           | 150.00          | 2   | CCI                     | AT&T     |
| 150.00           | 150.00          | 6   | CCI TPX-070821          | AT&T     |
| 150.00           | 151.00          | 3   | Commscope               | AT&T     |
| 150.00           | 151.00          | 3   | CSS DBC-750             | AT&T     |
| 150.00           | 151.00          | 6   | Ericsson RRUS-11        | AT&T     |
| 150.00           | 151.00          | 3   | Kathrein 800-10121      | AT&T     |
| 150.00           | 151.00          | 1   | KMW                     | AT&T     |
| 150.00           | 151.00          | 1   | LMU                     | AT&T     |
| 150.00           | 150.00          | 1   | Low Profile Platform    | AT&T     |
| 150.00           | 151.00          | 2   | Powerwave               | AT&T     |
| 150.00           | 150.00          | 1   | Quintel QS66512-3       | AT&T     |
| 150.00           | 151.00          | 2   | Raycap DC6-48-60-18-8F  | AT&T     |
| 150.00           | 150.00          | 3   | RRUS-32                 | AT&T     |
| 141.00           | 141.00          | 3   | Alcatel Lucent          | Verizon  |
| 141.00           | 141.00          | 3   | Alcatel Lucent          | Verizon  |
| 141.00           | 141.00          | 3   | Alcatel Lucent          | Verizon  |
| 141.00           | 141.00          | 3   | Antel                   | Verizon  |
| 141.00           | 141.00          | 3   | Antel                   | Verizon  |
| 141.00           | 141.00          | 6   | Commscope               | Verizon  |
| 141.00           | 141.00          | 1   | Low Profile Platform    | Verizon  |
| 141.00           | 141.00          | 1   | RFS DB-T1-6Z-8AB-0Z     | Verizon  |
| 141.00           | 141.00          | 1   | RFS DB-T1-6Z-8AB-0Z     | Verizon  |
| 131.00           | 131.00          | 3   | Commscope LNX-6515DS    | T-Mobile |
| 131.00           | 131.00          | 3   | Ericsson KRY 144/1      | T-Mobile |
| 131.00           | 131.00          | 3   | Kathrein 782 11056      | T-Mobile |
| 131.00           | 131.00          | 3   | RFS                     | T-Mobile |
| 131.00           | 131.00          | 3   | RFS ATM1412D-1A20       | T-Mobile |
| 131.00           | 131.00          | 3   | T-Arms (Site Pro P/N    | T-Mobile |
| 123.00           | 123.00          | 3   | Alcatel Lucent 1900 MHz | Sprint   |
| 123.00           | 123.00          | 6   | Alcatel Lucent 800 MHz  | Sprint   |
| 123.00           | 123.00          | 3   | Alcatel Lucent          | Sprint   |
| 123.00           | 123.00          | 1   | Low Profile Platform    | Sprint   |
| 123.00           | 123.00          | 4   | RFS ACU-A20-N           | Sprint   |
| 123.00           | 123.00          | 3   | RFS APXVSP18-C-A20      | Sprint   |
| 123.00           | 123.00          | 3   | RFS APXVTM14-C-I30      | Sprint   |

### Linear Appurtenances

| Elev From (ft) | Elev To (ft) | Placement | Description | Carrier |
|----------------|--------------|-----------|-------------|---------|
| 0.00           | 150.00       | Inside    | 1 5/8" Coax | AT&T    |
| 0.00           | 150.00       | Inside    | 1/2" DC     | AT&T    |
| 0.00           | 150.00       | Inside    | 3" Conduit  | AT&T    |
| 0.00           | 150.00       | Inside    | 3/8" Fiber  | AT&T    |
| 0.00           | 141.00       | Inside    | 1 5/8" Coax | Verizon |



## Structure: CT10022-A-SBA

**Type:** Tapered  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23136

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|      |        |        |               |          |
|------|--------|--------|---------------|----------|
| 0.00 | 141.00 | Inside | 1 5/8" Hybrid | Verizon  |
| 0.00 | 131.00 | Inside | 7/8" Coax     | T-Mobile |
| 0.00 | 123.00 | Inside | 1-1/4" Fiber  | Sprint   |

### Anchor Bolts

| Qty | Specifications | Grade (ksi) | Arrangement |
|-----|----------------|-------------|-------------|
| 14  | 2.25" 18J      | 75.0        | Radial      |

### Base Plate

| Thickness (in) | Specifications (in) | Grade (ksi) | Geometry |
|----------------|---------------------|-------------|----------|
| 2.0000         | 73.5                | 50.0        | Round    |

### Reactions

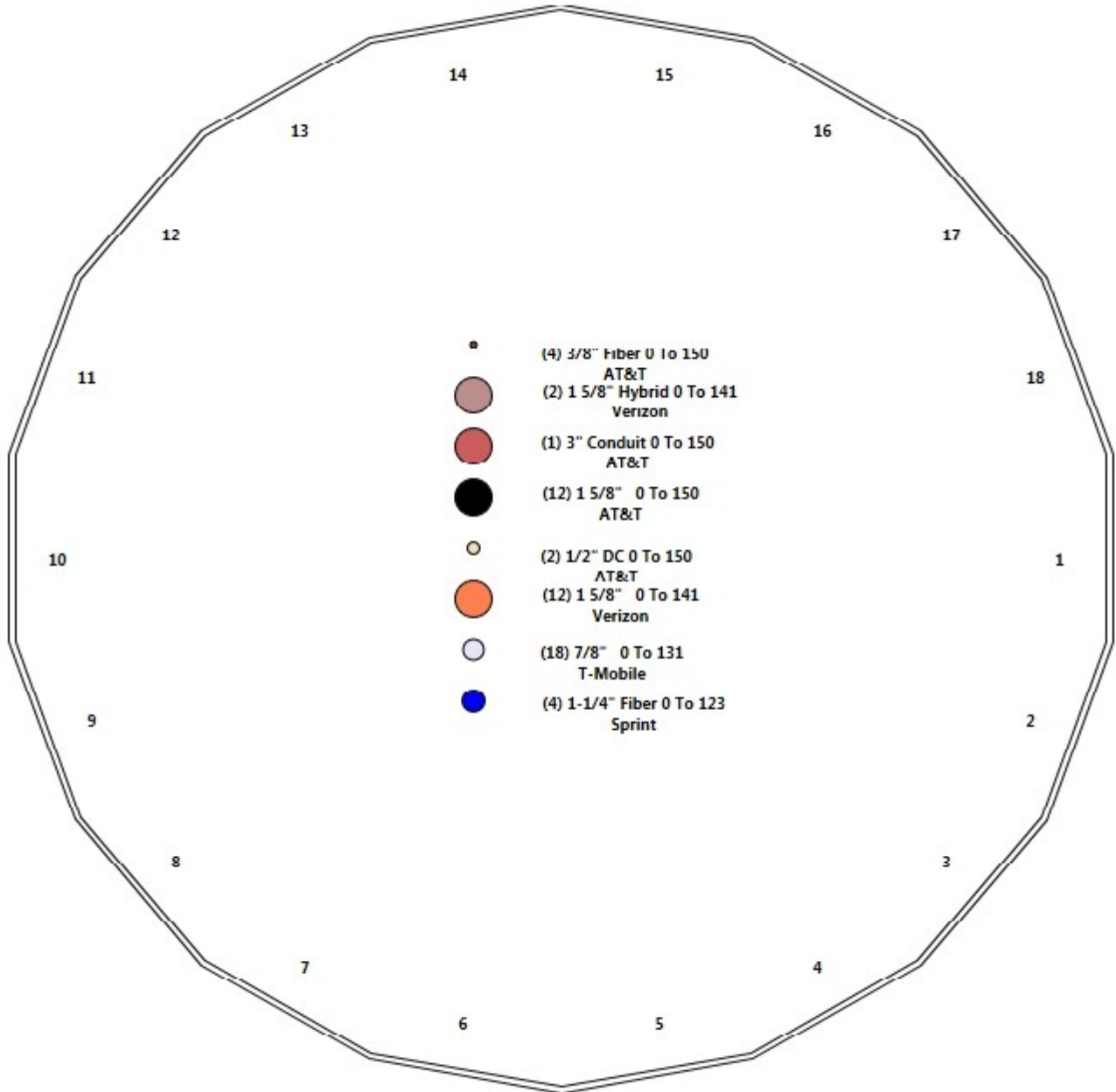
| Load Case                    | Moment | Shear | Axial |
|------------------------------|--------|-------|-------|
| 80 mph Wind with 0" Ice      | 3350.0 | 29.2  | 38.2  |
| 69.28 mph Wind with 0.5" Ice | 2954.6 | 24.9  | 46.6  |
| 50 mph Wind with 0" Ice      | 1309.6 | 11.4  | 38.2  |

# Structure: CT10022-A-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)

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## Shaft Properties

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

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| Sec. No.                   | Shape | Length (ft) | Thick (in) | Fy (ksi) | Joint Type | Overlap (in) | Weight (lb)   |
|----------------------------|-------|-------------|------------|----------|------------|--------------|---------------|
| 1                          | 18    | 48.000      | 0.3125     | 65       |            | 0.00         | 9,013         |
| 2                          | 18    | 48.000      | 0.3125     | 65       | Slip       | 78.00        | 7,559         |
| 3                          | 18    | 48.000      | 0.2500     | 65       | Slip       | 65.00        | 4,843         |
| 4                          | 18    | 22.083      | 0.1875     | 65       | Slip       | 50.00        | 1,371         |
| <b>Total Shaft Weight:</b> |       |             |            |          |            |              | <b>22,786</b> |

### Bottom

### Top

| Sec. No. | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Dia (in) | Elev (ft) | Area (sqin) | Ix (in^4) | W/t Ratio | D/t Ratio | Taper    |
|----------|----------|-----------|-------------|-----------|-----------|-----------|----------|-----------|-------------|-----------|-----------|-----------|----------|
| 1        | 61.50    | 0.00      | 60.69       | 28706.65  | 33.29     | 196.8     | 50.39    | 48.00     | 49.67       | 15741.4   | 27.02     | 161.2     | 0.231360 |
| 2        | 52.52    | 41.50     | 51.78       | 17835.36  | 28.22     | 168.0     | 41.42    | 89.50     | 40.77       | 8703.68   | 21.95     | 132.5     | 0.231360 |
| 3        | 43.17    | 84.08     | 34.06       | 7926.99   | 29.03     | 172.6     | 32.07    | 132.0     | 25.25       | 3228.71   | 21.20     | 128.2     | 0.231360 |
| 4        | 33.41    | 127.9     | 19.77       | 2755.84   | 30.00     | 178.1     | 28.30    | 150.0     | 16.73       | 1669.78   | 25.19     | 150.9     | 0.231360 |

## Loading Summary

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

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### Discrete Appurtenances

| No.            | Elev (ft) | Description                   | Qty        | No Ice          |           |             | Ice              |           |             | Hor. Ecc. (ft) | Vert Ecc (ft) |
|----------------|-----------|-------------------------------|------------|-----------------|-----------|-------------|------------------|-----------|-------------|----------------|---------------|
|                |           |                               |            | Weight (lb)     | CaAa (sf) | CaAa Factor | Weight (lb)      | CaAa (sf) | CaAa Factor |                |               |
| 1              | 150.0     | 782-10250                     | 3          | 40.80           | 0.70      | 1.00        | 10.00            | 0.690     | 1.00        | 0.00           | 0.00          |
| 2              | 150.0     | CCI DTMA BP7819VG12A          | 6          | 19.20           | 1.14      | 0.67        | 26.50            | 1.360     | 0.70        | 0.00           | 1.00          |
| 3              | 150.0     | CCI TPA-65R-LCUUUU-H8         | 2          | 49.40           | 13.62     | 0.79        | 129.50           | 14.71     | 0.84        | 0.00           | 0.00          |
| 4              | 150.0     | CCI TPX-070821                | 6          | 3.30            | 0.54      | 0.67        | 5.80             | 0.580     | 0.75        | 0.00           | 0.00          |
| 5              | 150.0     | Commscope ABT-DRDM-ADBH       | 3          | 1.10            | 0.05      | 0.98        | 1.80             | 0.110     | 1.00        | 0.00           | 1.00          |
| 6              | 150.0     | CSS DBC-750                   | 3          | 4.80            | 0.51      | 0.67        | 7.70             | 0.660     | 0.70        | 0.00           | 1.00          |
| 7              | 150.0     | Ericsson RRUS-11              | 6          | 50.70           | 2.94      | 0.50        | 66.00            | 3.140     | 0.79        | 0.00           | 1.00          |
| 8              | 150.0     | Kathrein 800-10121            | 3          | 62.40           | 5.55      | 0.90        | 101.20           | 6.090     | 0.92        | 0.00           | 1.00          |
| 9              | 150.0     | KMW AM-X-CD-16-65-00T-RET     | 1          | 70.50           | 8.26      | 0.87        | 124.20           | 9.080     | 0.90        | 0.00           | 1.00          |
| 10             | 150.0     | LMU                           | 1          | 28.00           | 0.88      | 1.00        | 35.30            | 0.930     | 1.00        | 0.00           | 1.00          |
| 11             | 150.0     | Low Profile Platform          | 1          | 1500.00         | 22.00     | 1.00        | 1800.00          | 27.00     | 1.00        | 0.00           | 0.00          |
| 12             | 150.0     | Powerwave P65-17-XLH-RR       | 2          | 88.30           | 11.46     | 0.88        | 160.80           | 12.39     | 0.92        | 0.00           | 1.00          |
| 13             | 150.0     | Quintel QS66512-3             | 1          | 77.00           | 8.40      | 0.91        | 128.00           | 8.870     | 0.96        | 0.00           | 0.00          |
| 14             | 150.0     | Raycap DC6-48-60-18-8F        | 2          | 31.80           | 1.47      | 1.00        | 49.50            | 1.670     | 1.00        | 0.00           | 1.00          |
| 15             | 150.0     | RRUS-32                       | 3          | 77.00           | 3.87      | 0.50        | 103.50           | 4.300     | 0.92        | 0.00           | 0.00          |
| 16             | 141.0     | Alcatel Lucent RRH2X60-700    | 3          | 60.00           | 3.96      | 0.50        | 80.10            | 4.230     | 0.79        | 0.00           | 0.00          |
| 17             | 141.0     | Alcatel Lucent RRH2X60-AWS    | 3          | 60.00           | 3.96      | 0.50        | 80.10            | 4.230     | 0.79        | 0.00           | 0.00          |
| 18             | 141.0     | Alcatel Lucent RRH2X60-PCS    | 3          | 55.00           | 2.57      | 0.90        | 70.90            | 2.760     | 0.90        | 0.00           | 0.00          |
| 19             | 141.0     | Antel BXA-70063-6CF-EDIN-0    | 3          | 39.00           | 7.75      | 0.86        | 89.10            | 8.220     | 0.89        | 0.00           | 0.00          |
| 20             | 141.0     | Antel BXA-70080-4CF-EDIN-0    | 3          | 30.30           | 3.90      | 1.02        | 62.00            | 4.300     | 1.04        | 0.00           | 0.00          |
| 21             | 141.0     | Commscope SBNHH-1D65B         | 6          | 72.70           | 8.30      | 0.91        | 129.30           | 8.770     | 0.93        | 0.00           | 0.00          |
| 22             | 141.0     | Low Profile Platform          | 1          | 1500.00         | 22.00     | 1.00        | 1800.00          | 27.00     | 1.00        | 0.00           | 0.00          |
| 23             | 141.0     | RFS DB-T1-6Z-8AB-0Z           | 1          | 21.40           | 4.78      | 0.96        | 51.10            | 5.040     | 0.99        | 0.00           | 0.00          |
| 24             | 141.0     | RFS DB-T1-6Z-8AB-0Z           | 1          | 21.40           | 4.78      | 0.96        | 51.10            | 5.040     | 0.99        | 0.00           | 0.00          |
| 25             | 131.0     | Commscope LNX-6515DS          | 3          | 79.10           | 11.45     | 0.92        | 155.00           | 11.92     | 0.95        | 0.00           | 0.00          |
| 26             | 131.0     | Ericsson KRY 144/1            | 3          | 11.00           | 0.41      | 0.70        | 14.10            | 0.550     | 0.73        | 0.00           | 0.00          |
| 27             | 131.0     | Kathrein 782 11056            | 3          | 11.00           | 0.66      | 0.76        | 15.60            | 0.830     | 0.79        | 0.00           | 0.00          |
| 28             | 131.0     | RFS APX16DWV-16DWVS-C         | 3          | 62.70           | 7.33      | 0.74        | 104.00           | 7.830     | 0.78        | 0.00           | 0.00          |
| 29             | 131.0     | RFS ATM1412D-1A20             | 3          | 13.00           | 1.17      | 0.73        | 20.60            | 1.390     | 0.76        | 0.00           | 0.00          |
| 30             | 131.0     | T-Arms (Site Pro P/N UDS-NPL) | 3          | 132.00          | 3.25      | 0.90        | 420.00           | 10.50     | 0.90        | 0.00           | 0.00          |
| 31             | 123.0     | Alcatel Lucent 1900 MHz       | 3          | 60.00           | 2.71      | 0.98        | 83.10            | 3.070     | 1.00        | 0.00           | 0.00          |
| 32             | 123.0     | Alcatel Lucent 800 MHz        | 6          | 53.00           | 2.49      | 0.92        | 74.10            | 2.820     | 0.95        | 0.00           | 0.00          |
| 33             | 123.0     | Alcatel Lucent TD-RRH8x20-25  | 3          | 70.00           | 4.72      | 0.69        | 92.00            | 4.970     | 0.75        | 0.00           | 0.00          |
| 34             | 123.0     | Low Profile Platform          | 1          | 1500.00         | 22.00     | 1.00        | 1800.00          | 27.00     | 1.00        | 0.00           | 0.00          |
| 35             | 123.0     | RFS ACU-A20-N                 | 4          | 1.00            | 0.14      | 0.79        | 2.30             | 0.220     | 0.82        | 0.00           | 0.00          |
| 36             | 123.0     | RFS APXVSP18-C-A20            | 3          | 79.00           | 8.26      | 0.91        | 135.20           | 8.730     | 0.83        | 0.00           | 0.00          |
| 37             | 123.0     | RFS APXVTM14-C-I30            | 3          | 78.00           | 7.16      | 0.85        | 124.40           | 7.650     | 0.88        | 0.00           | 0.00          |
| <b>Totals:</b> |           |                               | <b>108</b> | <b>9,333.30</b> |           |             | <b>13,599.90</b> |           |             |                |               |

### Linear Appurtenances

| Bottom Elev. (ft) | Top Elev. (ft) | Description      | No Ice         |              | Ice            |              | Exposed |
|-------------------|----------------|------------------|----------------|--------------|----------------|--------------|---------|
|                   |                |                  | Weight (lb/ft) | CaAa (sf/ft) | Weight (lb/ft) | CaAa (sf/ft) |         |
| 0.00              | 150.0          | (12) 1 5/8" Coax | 12.48          | 0.00         | 12.48          | 0.00         | Inside  |
| 0.00              | 150.0          | (2) 1/2" DC      | 0.32           | 0.00         | 0.06           | 0.00         | Inside  |



## Discrete Appurtenances

| No.            | Elev<br>(ft) | Description       | Qty | No Ice          |              |                | Ice             |              |                | Hor.<br>Ecc.<br>(ft) | Vert<br>Ecc<br>(ft) |
|----------------|--------------|-------------------|-----|-----------------|--------------|----------------|-----------------|--------------|----------------|----------------------|---------------------|
|                |              |                   |     | Weight<br>(lb)  | CaAa<br>(sf) | CaAa<br>Factor | Weight<br>(lb)  | CaAa<br>(sf) | CaAa<br>Factor |                      |                     |
| 0.00           | 150.0        | (1) 3" Conduit    |     | 2.40            | 0.00         |                | 2.40            | 0.00         |                | Inside               |                     |
| 0.00           | 150.0        | (4) 3/8" Fiber    |     | 0.24            | 0.00         |                | 0.24            | 0.00         |                | Inside               |                     |
| 0.00           | 141.0        | (12) 1 5/8" Coax  |     | 12.48           | 0.00         |                | 12.48           | 0.00         |                | Inside               |                     |
| 0.00           | 141.0        | (2) 1 5/8" Hybrid |     | 2.20            | 0.00         |                | 2.20            | 0.00         |                | Inside               |                     |
| 0.00           | 131.0        | (18) 7/8" Coax    |     | 9.36            | 0.00         |                | 9.36            | 0.00         |                | Inside               |                     |
| 0.00           | 123.0        | (4) 1-1/4" Fiber  |     | 3.82            | 0.00         |                | 3.82            | 0.00         |                | Inside               |                     |
| <b>Totals:</b> |              |                   |     | <b>6,081.41</b> |              |                | <b>6,042.90</b> |              |                |                      |                     |

## Shaft Section Properties

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

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**Increment Length:** 5 (ft)

| Elev (ft) | Description     | Thick (in) | Dia (in) | Area (in^2) | Ix (in^4) | W/t Ratio | D/t Ratio | Fy (ksi) | Fb (ksi) | Weight (lb)    |
|-----------|-----------------|------------|----------|-------------|-----------|-----------|-----------|----------|----------|----------------|
| 0.00      |                 | 0.3125     | 61.500   | 60.688      | 28706.7   | 33.29     | 196.80    | 65       | 45       | 0.0            |
| 5.00      |                 | 0.3125     | 60.343   | 59.541      | 27109.1   | 32.64     | 193.10    | 65       | 45       | 1022.8         |
| 10.00     |                 | 0.3125     | 59.186   | 58.393      | 25571.9   | 31.99     | 189.40    | 65       | 46       | 1003.3         |
| 15.00     |                 | 0.3125     | 58.030   | 57.246      | 24093.9   | 31.33     | 185.69    | 65       | 46       | 983.7          |
| 20.00     |                 | 0.3125     | 56.873   | 56.099      | 22674.1   | 30.68     | 181.99    | 65       | 47       | 964.2          |
| 25.00     |                 | 0.3125     | 55.716   | 54.951      | 21311.1   | 30.03     | 178.29    | 65       | 48       | 944.7          |
| 30.00     |                 | 0.3125     | 54.559   | 53.804      | 20003.9   | 29.37     | 174.59    | 65       | 48       | 925.2          |
| 35.00     |                 | 0.3125     | 53.402   | 52.657      | 18751.2   | 28.72     | 170.89    | 65       | 49       | 905.7          |
| 40.00     |                 | 0.3125     | 52.246   | 51.509      | 17552.0   | 28.07     | 167.19    | 65       | 49       | 886.1          |
| 41.50     | Bot - Section 2 | 0.3125     | 51.899   | 51.165      | 17202.5   | 27.87     | 166.08    | 65       | 49       | 262.0          |
| 45.00     |                 | 0.3125     | 51.089   | 50.362      | 16405.0   | 27.42     | 163.48    | 65       | 50       | 1216.5         |
| 48.00     | Top - Section 1 | 0.3125     | 51.020   | 50.293      | 16338.2   | 27.38     | 163.26    | 65       | 50       | 1027.5         |
| 50.00     |                 | 0.3125     | 50.557   | 49.834      | 15895.0   | 27.12     | 161.78    | 65       | 50       | 340.7          |
| 55.00     |                 | 0.3125     | 49.400   | 48.687      | 14822.2   | 26.46     | 158.08    | 65       | 51       | 838.1          |
| 60.00     |                 | 0.3125     | 48.243   | 47.540      | 13798.8   | 25.81     | 154.38    | 65       | 51       | 818.6          |
| 65.00     |                 | 0.3125     | 47.087   | 46.392      | 12823.6   | 25.16     | 150.68    | 65       | 52       | 799.1          |
| 70.00     |                 | 0.3125     | 45.930   | 45.245      | 11895.5   | 24.51     | 146.98    | 65       | 52       | 779.6          |
| 75.00     |                 | 0.3125     | 44.773   | 44.098      | 11013.3   | 23.85     | 143.27    | 65       | 52       | 760.0          |
| 80.00     |                 | 0.3125     | 43.616   | 42.950      | 10175.8   | 23.20     | 139.57    | 65       | 52       | 740.5          |
| 84.08     | Bot - Section 3 | 0.3125     | 42.671   | 42.013      | 9524.3    | 22.67     | 136.55    | 65       | 52       | 590.3          |
| 85.00     |                 | 0.3125     | 42.459   | 41.803      | 9381.9    | 22.55     | 135.87    | 65       | 52       | 236.7          |
| 89.50     | Top - Section 2 | 0.2500     | 41.918   | 33.063      | 7252.7    | 28.15     | 167.67    | 65       | 52       | 1144.8         |
| 90.00     |                 | 0.2500     | 41.803   | 32.971      | 7192.5    | 28.07     | 167.21    | 65       | 49       | 56.2           |
| 95.00     |                 | 0.2500     | 40.646   | 32.053      | 6608.3    | 27.26     | 162.58    | 65       | 50       | 553.2          |
| 100.00    |                 | 0.2500     | 39.489   | 31.135      | 6056.7    | 26.44     | 157.96    | 65       | 51       | 537.5          |
| 105.00    |                 | 0.2500     | 38.332   | 30.217      | 5536.7    | 25.63     | 153.33    | 65       | 51       | 521.9          |
| 110.00    |                 | 0.2500     | 37.175   | 29.299      | 5047.3    | 24.81     | 148.70    | 65       | 52       | 506.3          |
| 115.00    |                 | 0.2500     | 36.019   | 28.381      | 4587.6    | 23.99     | 144.07    | 65       | 52       | 490.7          |
| 120.00    |                 | 0.2500     | 34.862   | 27.463      | 4156.8    | 23.18     | 139.45    | 65       | 52       | 475.1          |
| 123.00    |                 | 0.2500     | 34.168   | 26.913      | 3911.7    | 22.69     | 136.67    | 65       | 52       | 277.5          |
| 125.00    |                 | 0.2500     | 33.705   | 26.546      | 3753.8    | 22.36     | 134.82    | 65       | 52       | 181.9          |
| 127.92    | Bot - Section 4 | 0.2500     | 33.030   | 26.010      | 3531.2    | 21.89     | 132.12    | 65       | 52       | 260.8          |
| 130.00    |                 | 0.2500     | 32.548   | 25.628      | 3377.7    | 21.55     | 130.19    | 65       | 52       | 322.2          |
| 131.00    |                 | 0.2500     | 32.317   | 25.444      | 3305.6    | 21.38     | 129.27    | 65       | 52       | 152.9          |
| 132.08    | Top - Section 3 | 0.1875     | 32.441   | 19.194      | 2522.8    | 29.10     | 173.02    | 65       | 52       | 164.5          |
| 135.00    |                 | 0.1875     | 31.766   | 18.793      | 2367.8    | 28.46     | 169.42    | 65       | 49       | 188.5          |
| 140.00    |                 | 0.1875     | 30.610   | 18.104      | 2117.0    | 27.37     | 163.25    | 65       | 50       | 313.9          |
| 141.00    |                 | 0.1875     | 30.378   | 17.967      | 2069.0    | 27.16     | 162.02    | 65       | 50       | 61.4           |
| 145.00    |                 | 0.1875     | 29.453   | 17.416      | 1884.5    | 26.29     | 157.08    | 65       | 51       | 240.8          |
| 150.00    |                 | 0.1875     | 28.296   | 16.727      | 1669.8    | 25.20     | 150.91    | 65       | 52       | 290.5          |
|           |                 |            |          |             |           |           |           |          |          | <b>22785.8</b> |

## Wind Loading - Shaft

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

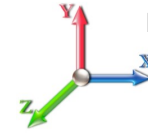
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

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**Load Case:** 80 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| Elev (ft)      | Description     | Kzt  | Kz   | qz (psf) | qzGh (psf) | C (mph-ft) | Cf    | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00           |                 | 0.00 | 1.00 | 16.384   | 27.69      | 410.00     | 0.650 | 0.000          | 0.00           | 0.000   | 0.00      | 0.0               | 0.0                | 0.0                |
| 5.00           |                 | 0.00 | 1.00 | 16.384   | 27.69      | 402.29     | 0.650 | 0.000          | 5.00           | 25.384  | 16.50     | 456.9             | 0.0                | 1022.8             |
| 10.00          |                 | 0.00 | 1.00 | 16.384   | 27.69      | 394.58     | 0.650 | 0.000          | 5.00           | 24.902  | 16.19     | 448.2             | 0.0                | 1003.3             |
| 15.00          |                 | 0.00 | 1.00 | 16.384   | 27.69      | 386.86     | 0.650 | 0.000          | 5.00           | 24.420  | 15.87     | 439.5             | 0.0                | 983.7              |
| 20.00          |                 | 0.00 | 1.00 | 16.384   | 27.69      | 379.15     | 0.650 | 0.000          | 5.00           | 23.938  | 15.56     | 430.8             | 0.0                | 964.2              |
| 25.00          |                 | 0.00 | 1.00 | 16.384   | 27.69      | 371.44     | 0.650 | 0.000          | 5.00           | 23.456  | 15.25     | 422.2             | 0.0                | 944.7              |
| 30.00          |                 | 0.00 | 1.00 | 16.384   | 27.69      | 363.73     | 0.650 | 0.000          | 5.00           | 22.974  | 14.93     | 413.5             | 0.0                | 925.2              |
| 35.00          |                 | 0.00 | 1.02 | 16.662   | 28.16      | 359.02     | 0.650 | 0.000          | 5.00           | 22.492  | 14.62     | 411.7             | 0.0                | 905.7              |
| 40.00          |                 | 0.00 | 1.06 | 17.310   | 29.25      | 358.01     | 0.650 | 0.000          | 5.00           | 22.010  | 14.31     | 418.5             | 0.0                | 886.1              |
| 41.50          | Bot - Section 2 | 0.00 | 1.07 | 17.493   | 29.56      | 357.51     | 0.650 | 0.000          | 1.50           | 6.509   | 4.23      | 125.1             | 0.0                | 262.0              |
| 45.00          |                 | 0.00 | 1.09 | 17.902   | 30.25      | 356.02     | 0.650 | 0.000          | 3.50           | 15.201  | 9.88      | 298.9             | 0.0                | 1216.5             |
| 48.00          | Top - Section 1 | 0.00 | 1.11 | 18.235   | 30.82      | 354.44     | 0.650 | 0.000          | 3.00           | 12.842  | 8.35      | 257.2             | 0.0                | 1027.5             |
| 50.00          |                 | 0.00 | 1.13 | 18.449   | 31.18      | 357.66     | 0.650 | 0.000          | 2.00           | 8.465   | 5.50      | 171.6             | 0.0                | 340.7              |
| 55.00          |                 | 0.00 | 1.16 | 18.959   | 32.04      | 354.27     | 0.650 | 0.000          | 5.00           | 20.824  | 13.54     | 433.7             | 0.0                | 838.1              |
| 60.00          |                 | 0.00 | 1.19 | 19.436   | 32.85      | 350.30     | 0.650 | 0.000          | 5.00           | 20.342  | 13.22     | 434.3             | 0.0                | 818.6              |
| 65.00          |                 | 0.00 | 1.21 | 19.885   | 33.61      | 345.83     | 0.650 | 0.000          | 5.00           | 19.860  | 12.91     | 433.8             | 0.0                | 799.1              |
| 70.00          |                 | 0.00 | 1.24 | 20.311   | 34.33      | 340.92     | 0.650 | 0.000          | 5.00           | 19.378  | 12.60     | 432.4             | 0.0                | 779.6              |
| 75.00          |                 | 0.00 | 1.26 | 20.715   | 35.01      | 335.63     | 0.650 | 0.000          | 5.00           | 18.896  | 12.28     | 430.0             | 0.0                | 760.0              |
| 80.00          |                 | 0.00 | 1.29 | 21.101   | 35.66      | 329.99     | 0.650 | 0.000          | 5.00           | 18.414  | 11.97     | 426.8             | 0.0                | 740.5              |
| 84.08          | Bot - Section 3 | 0.00 | 1.31 | 21.403   | 36.17      | 325.14     | 0.650 | 0.000          | 4.08           | 14.681  | 9.54      | 345.2             | 0.0                | 590.3              |
| 85.00          |                 | 0.00 | 1.31 | 21.469   | 36.28      | 324.03     | 0.650 | 0.000          | 0.92           | 3.290   | 2.14      | 77.6              | 0.0                | 236.7              |
| 89.50          | Top - Section 2 | 0.00 | 1.33 | 21.788   | 36.82      | 318.42     | 0.650 | 0.000          | 4.50           | 15.915  | 10.34     | 380.9             | 0.0                | 1144.8             |
| 90.00          |                 | 0.00 | 1.33 | 21.823   | 36.88      | 321.63     | 0.650 | 0.000          | 0.50           | 1.744   | 1.13      | 41.8              | 0.0                | 56.2               |
| 95.00          |                 | 0.00 | 1.35 | 22.163   | 37.45      | 315.16     | 0.650 | 0.000          | 5.00           | 17.177  | 11.16     | 418.2             | 0.0                | 553.2              |
| 100.00         |                 | 0.00 | 1.37 | 22.490   | 38.01      | 308.44     | 0.650 | 0.000          | 5.00           | 16.695  | 10.85     | 412.4             | 0.0                | 537.5              |
| 105.00         |                 | 0.00 | 1.39 | 22.806   | 38.54      | 301.50     | 0.650 | 0.000          | 5.00           | 16.213  | 10.54     | 406.2             | 0.0                | 521.9              |
| 110.00         |                 | 0.00 | 1.41 | 23.111   | 39.06      | 294.35     | 0.650 | 0.000          | 5.00           | 15.731  | 10.22     | 399.4             | 0.0                | 506.3              |
| 115.00         |                 | 0.00 | 1.43 | 23.406   | 39.56      | 287.01     | 0.650 | 0.000          | 5.00           | 15.249  | 9.91      | 392.1             | 0.0                | 490.7              |
| 120.00         |                 | 0.00 | 1.45 | 23.692   | 40.04      | 279.48     | 0.650 | 0.000          | 5.00           | 14.767  | 9.60      | 384.3             | 0.0                | 475.1              |
| 123.00         | Appurtenance(s) | 0.00 | 1.46 | 23.860   | 40.32      | 274.89     | 0.650 | 0.000          | 3.00           | 8.629   | 5.61      | 226.2             | 0.0                | 277.5              |
| 125.00         |                 | 0.00 | 1.46 | 23.970   | 40.51      | 271.79     | 0.650 | 0.000          | 2.00           | 5.656   | 3.68      | 148.9             | 0.0                | 181.9              |
| 127.92         | Bot - Section 4 | 0.00 | 1.47 | 24.129   | 40.78      | 267.23     | 0.650 | 0.000          | 2.92           | 8.110   | 5.27      | 215.0             | 0.0                | 260.8              |
| 130.00         |                 | 0.00 | 1.48 | 24.241   | 40.97      | 263.94     | 0.650 | 0.000          | 2.08           | 5.758   | 3.74      | 153.3             | 0.0                | 322.2              |
| 131.00         | Appurtenance(s) | 0.00 | 1.48 | 24.294   | 41.06      | 262.35     | 0.650 | 0.000          | 1.00           | 2.734   | 1.78      | 73.0              | 0.0                | 152.9              |
| 132.08         | Top - Section 3 | 0.00 | 1.49 | 24.351   | 41.15      | 260.62     | 0.650 | 0.000          | 1.08           | 2.940   | 1.91      | 78.6              | 0.0                | 164.5              |
| 135.00         |                 | 0.00 | 1.50 | 24.503   | 41.41      | 258.99     | 0.650 | 0.000          | 2.92           | 7.803   | 5.07      | 210.0             | 0.0                | 188.5              |
| 140.00         |                 | 0.00 | 1.51 | 24.759   | 41.84      | 250.86     | 0.650 | 0.000          | 5.00           | 12.995  | 8.45      | 353.4             | 0.0                | 313.9              |
| 141.00         | Appurtenance(s) | 0.00 | 1.51 | 24.810   | 41.93      | 249.21     | 0.650 | 0.000          | 1.00           | 2.541   | 1.65      | 69.3              | 0.0                | 61.4               |
| 145.00         |                 | 0.00 | 1.53 | 25.009   | 42.26      | 242.59     | 0.650 | 0.000          | 4.00           | 9.972   | 6.48      | 273.9             | 0.0                | 240.8              |
| 150.00         | Appurtenance(s) | 0.00 | 1.54 | 25.252   | 42.68      | 234.19     | 0.650 | 0.000          | 5.00           | 12.031  | 7.82      | 333.7             | 0.0                | 290.5              |
| <b>Totals:</b> |                 |      |      |          |            |            |       |                | <b>150.00</b>  |         |           | <b>12,278.4</b>   |                    | <b>22,785.8</b>    |

## Discrete Appurtenance Forces

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

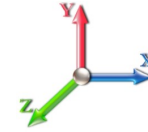
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 10



**Load Case:** 80 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| No. | Elev (ft) | Description                | Qty | qz (psf) | qzGh (psf) | CaAa Factor | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|----------------------------|-----|----------|------------|-------------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1   | 150.00    | Ericsson RRUS-11           | 6   | 25.300   | 42.757     | 0.50        | 8.82            | 304.20         | 0.000          | 1.000         | 377.12       | 0.00          | 377.12        |
| 2   | 150.00    | 782-10250                  | 3   | 25.252   | 42.676     | 1.00        | 2.10            | 122.40         | 0.000          | 0.000         | 89.62        | 0.00          | 0.00          |
| 3   | 150.00    | CCI DTMA BP7819VG12A       | 6   | 25.300   | 42.757     | 0.67        | 4.58            | 115.20         | 0.000          | 1.000         | 195.95       | 0.00          | 195.95        |
| 4   | 150.00    | CCI TPA-65R-LCUUUU-H8      | 2   | 25.252   | 42.676     | 0.79        | 21.52           | 98.80          | 0.000          | 0.000         | 918.38       | 0.00          | 0.00          |
| 5   | 150.00    | CCI TPX-070821             | 6   | 25.252   | 42.676     | 0.67        | 2.17            | 19.80          | 0.000          | 0.000         | 92.64        | 0.00          | 0.00          |
| 6   | 150.00    | Commscope                  | 3   | 25.300   | 42.757     | 0.98        | 0.15            | 3.30           | 0.000          | 1.000         | 6.29         | 0.00          | 6.29          |
| 7   | 150.00    | CSS DBC-750                | 3   | 25.300   | 42.757     | 0.67        | 1.03            | 14.40          | 0.000          | 1.000         | 43.83        | 0.00          | 43.83         |
| 8   | 150.00    | RRUS-32                    | 3   | 25.252   | 42.676     | 0.50        | 5.80            | 231.00         | 0.000          | 0.000         | 247.74       | 0.00          | 0.00          |
| 9   | 150.00    | Kathrein 800-10121         | 3   | 25.300   | 42.757     | 0.90        | 15.05           | 187.20         | 0.000          | 1.000         | 643.57       | 0.00          | 643.57        |
| 10  | 150.00    | KMW                        | 1   | 25.300   | 42.757     | 0.87        | 7.16            | 70.50          | 0.000          | 1.000         | 306.20       | 0.00          | 306.20        |
| 11  | 150.00    | LMU                        | 1   | 25.300   | 42.757     | 1.00        | 0.88            | 28.00          | 0.000          | 1.000         | 37.63        | 0.00          | 37.63         |
| 12  | 150.00    | Low Profile Platform       | 1   | 25.252   | 42.676     | 1.00        | 22.00           | 1500.00        | 0.000          | 0.000         | 938.88       | 0.00          | 0.00          |
| 13  | 150.00    | Powerwave P65-17-XLH-RR    | 2   | 25.300   | 42.757     | 0.88        | 20.15           | 176.60         | 0.000          | 1.000         | 861.42       | 0.00          | 861.42        |
| 14  | 150.00    | Quintel QS66512-3          | 1   | 25.252   | 42.676     | 0.91        | 7.64            | 77.00          | 0.000          | 0.000         | 326.22       | 0.00          | 0.00          |
| 15  | 150.00    | Raycap DC6-48-60-18-8F     | 2   | 25.300   | 42.757     | 1.00        | 2.94            | 63.60          | 0.000          | 1.000         | 125.71       | 0.00          | 125.71        |
| 16  | 141.00    | RFS DB-T1-6Z-8AB-0Z        | 1   | 24.810   | 41.928     | 0.96        | 4.59            | 21.40          | 0.000          | 0.000         | 192.40       | 0.00          | 0.00          |
| 17  | 141.00    | RFS DB-T1-6Z-8AB-0Z        | 1   | 24.810   | 41.928     | 0.96        | 4.59            | 21.40          | 0.000          | 0.000         | 192.40       | 0.00          | 0.00          |
| 18  | 141.00    | Low Profile Platform       | 1   | 24.810   | 41.928     | 1.00        | 22.00           | 1500.00        | 0.000          | 0.000         | 922.42       | 0.00          | 0.00          |
| 19  | 141.00    | Commscope SBNHH-1D65B      | 6   | 24.810   | 41.928     | 0.91        | 45.22           | 436.20         | 0.000          | 0.000         | 1895.93      | 0.00          | 0.00          |
| 20  | 141.00    | Antel                      | 3   | 24.810   | 41.928     | 1.02        | 11.93           | 90.90          | 0.000          | 0.000         | 500.37       | 0.00          | 0.00          |
| 21  | 141.00    | Antel                      | 3   | 24.810   | 41.928     | 0.86        | 20.00           | 117.00         | 0.000          | 0.000         | 838.36       | 0.00          | 0.00          |
| 22  | 141.00    | Alcatel Lucent             | 3   | 24.810   | 41.928     | 0.90        | 6.94            | 165.00         | 0.000          | 0.000         | 290.94       | 0.00          | 0.00          |
| 23  | 141.00    | Alcatel Lucent             | 3   | 24.810   | 41.928     | 0.50        | 5.94            | 180.00         | 0.000          | 0.000         | 249.05       | 0.00          | 0.00          |
| 24  | 141.00    | Alcatel Lucent RRH2X60-700 | 3   | 24.810   | 41.928     | 0.50        | 5.94            | 180.00         | 0.000          | 0.000         | 249.05       | 0.00          | 0.00          |
| 25  | 131.00    | Commscope LNX-6515DS       | 3   | 24.294   | 41.056     | 0.92        | 31.57           | 237.30         | 0.000          | 0.000         | 1296.05      | 0.00          | 0.00          |
| 26  | 131.00    | Ericsson KRY 144/1         | 3   | 24.294   | 41.056     | 0.70        | 0.86            | 33.00          | 0.000          | 0.000         | 35.35        | 0.00          | 0.00          |
| 27  | 131.00    | Kathrein 782 11056         | 3   | 24.294   | 41.056     | 0.76        | 1.50            | 33.00          | 0.000          | 0.000         | 61.78        | 0.00          | 0.00          |
| 28  | 131.00    | RFS                        | 3   | 24.294   | 41.056     | 0.74        | 16.38           | 188.10         | 0.000          | 0.000         | 672.61       | 0.00          | 0.00          |
| 29  | 131.00    | RFS ATM1412D-1A20          | 3   | 24.294   | 41.056     | 0.73        | 2.56            | 39.00          | 0.000          | 0.000         | 105.20       | 0.00          | 0.00          |
| 30  | 131.00    | T-Arms (Site Pro P/N       | 3   | 24.294   | 41.056     | 0.90        | 8.78            | 396.00         | 0.000          | 0.000         | 360.27       | 0.00          | 0.00          |
| 31  | 123.00    | RFS APXVTM14-C-I30         | 3   | 23.860   | 40.324     | 0.85        | 18.30           | 234.00         | 0.000          | 0.000         | 737.96       | 0.00          | 0.00          |
| 32  | 123.00    | RFS APXVSP18-C-A20         | 3   | 23.860   | 40.324     | 0.91        | 22.45           | 237.00         | 0.000          | 0.000         | 905.30       | 0.00          | 0.00          |
| 33  | 123.00    | RFS ACU-A20-N              | 4   | 23.860   | 40.324     | 0.79        | 0.44            | 4.00           | 0.000          | 0.000         | 17.84        | 0.00          | 0.00          |
| 34  | 123.00    | Low Profile Platform       | 1   | 23.860   | 40.324     | 1.00        | 22.00           | 1500.00        | 0.000          | 0.000         | 887.12       | 0.00          | 0.00          |
| 35  | 123.00    | Alcatel Lucent             | 3   | 23.860   | 40.324     | 0.69        | 9.77            | 210.00         | 0.000          | 0.000         | 393.98       | 0.00          | 0.00          |
| 36  | 123.00    | Alcatel Lucent 800 MHz     | 6   | 23.860   | 40.324     | 0.92        | 13.74           | 318.00         | 0.000          | 0.000         | 554.24       | 0.00          | 0.00          |
| 37  | 123.00    | Alcatel Lucent 1900 MHz    | 3   | 23.860   | 40.324     | 0.98        | 7.97            | 180.00         | 0.000          | 0.000         | 321.28       | 0.00          | 0.00          |

**Totals:** 9,333.30

**16,891.09**

## Total Applied Force Summary

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

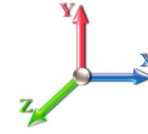
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 11



**Load Case:** 80 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| Elev (ft) | Description        | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|-----------|--------------------|---------------------|-------------------|--------------------|-------------------|
| 0.00      |                    | 0.00                | 0.00              | 0.00               | 0.00              |
| 5.00      |                    | 456.86              | 1239.26           | 0.00               | 0.00              |
| 10.00     |                    | 448.18              | 1219.74           | 0.00               | 0.00              |
| 15.00     |                    | 439.51              | 1200.22           | 0.00               | 0.00              |
| 20.00     |                    | 430.83              | 1180.70           | 0.00               | 0.00              |
| 25.00     |                    | 422.16              | 1161.18           | 0.00               | 0.00              |
| 30.00     |                    | 413.48              | 1141.66           | 0.00               | 0.00              |
| 35.00     |                    | 411.67              | 1122.13           | 0.00               | 0.00              |
| 40.00     |                    | 418.51              | 1102.61           | 0.00               | 0.00              |
| 41.50     |                    | 125.08              | 326.98            | 0.00               | 0.00              |
| 45.00     |                    | 298.94              | 1368.08           | 0.00               | 0.00              |
| 48.00     |                    | 257.24              | 1157.41           | 0.00               | 0.00              |
| 50.00     |                    | 171.55              | 427.30            | 0.00               | 0.00              |
| 55.00     |                    | 433.69              | 1054.60           | 0.00               | 0.00              |
| 60.00     |                    | 434.31              | 1035.08           | 0.00               | 0.00              |
| 65.00     |                    | 433.83              | 1015.56           | 0.00               | 0.00              |
| 70.00     |                    | 432.36              | 996.03            | 0.00               | 0.00              |
| 75.00     |                    | 430.00              | 976.51            | 0.00               | 0.00              |
| 80.00     |                    | 426.83              | 956.99            | 0.00               | 0.00              |
| 84.08     |                    | 345.17              | 767.06            | 0.00               | 0.00              |
| 85.00     |                    | 77.59               | 276.38            | 0.00               | 0.00              |
| 89.50     |                    | 380.91              | 1339.63           | 0.00               | 0.00              |
| 90.00     |                    | 41.81               | 77.82             | 0.00               | 0.00              |
| 95.00     |                    | 418.18              | 769.63            | 0.00               | 0.00              |
| 100.00    |                    | 412.45              | 754.02            | 0.00               | 0.00              |
| 105.00    |                    | 406.16              | 738.40            | 0.00               | 0.00              |
| 110.00    |                    | 399.36              | 722.78            | 0.00               | 0.00              |
| 115.00    |                    | 392.07              | 707.17            | 0.00               | 0.00              |
| 120.00    |                    | 384.32              | 691.55            | 0.00               | 0.00              |
| 123.00    | (23) appurtenances | 4043.88             | 3090.43           | 0.00               | 0.00              |
| 125.00    |                    | 148.93              | 260.87            | 0.00               | 0.00              |
| 127.92    |                    | 214.97              | 375.95            | 0.00               | 0.00              |
| 130.00    |                    | 153.32              | 404.40            | 0.00               | 0.00              |
| 131.00    | (18) appurtenances | 2604.22             | 1118.83           | 0.00               | 0.00              |
| 132.08    |                    | 78.64               | 197.09            | 0.00               | 0.00              |
| 135.00    |                    | 210.03              | 276.36            | 0.00               | 0.00              |
| 140.00    |                    | 353.44              | 464.48            | 0.00               | 0.00              |
| 141.00    | (24) appurtenances | 5400.20             | 2803.39           | 0.00               | 0.00              |
| 145.00    |                    | 273.95              | 302.56            | 0.00               | 0.00              |
| 150.00    | (43) appurtenances | 5544.90             | 3379.66           | 0.00               | 2597.70           |
|           | <b>Totals:</b>     | <b>29,169.53</b>    | <b>38,200.49</b>  | <b>0.00</b>        | <b>2,597.70</b>   |

## Resulting Forces and Deflections

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

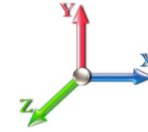
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 12



**Load Case:** 80 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | Deflect X (in) | Deflect Z (in) | Deflect Resultant (in) | Rotation Sway (deg) | Rotation Twist (deg) |
|-----------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|------------------------|---------------------|----------------------|
| 0.00      | -29.225               | -38.158             | 0.000             | 0.000               | 0.000                | -3350.0             | 0.000          | 0.000          | 0.000                  | 0.000               | 0.000                |
| 5.00      | -28.871               | -36.837             | 0.000             | 0.000               | 0.000                | -3203.9             | -0.088         | 0.000          | 0.088                  | -0.162              | 0.000                |
| 10.00     | -28.520               | -35.537             | 0.000             | 0.000               | 0.000                | -3059.5             | -0.346         | 0.000          | 0.346                  | -0.327              | 0.000                |
| 15.00     | -28.172               | -34.258             | 0.000             | 0.000               | 0.000                | -2916.9             | -0.778         | 0.000          | 0.778                  | -0.493              | 0.000                |
| 20.00     | -27.827               | -33.000             | 0.000             | 0.000               | 0.000                | -2776.0             | -1.385         | 0.000          | 1.385                  | -0.661              | 0.000                |
| 25.00     | -27.484               | -31.763             | 0.000             | 0.000               | 0.000                | -2636.9             | -2.169         | 0.000          | 2.169                  | -0.831              | 0.000                |
| 30.00     | -27.145               | -30.546             | 0.000             | 0.000               | 0.000                | -2499.5             | -3.132         | 0.000          | 3.132                  | -1.002              | 0.000                |
| 35.00     | -26.801               | -29.351             | 0.000             | 0.000               | 0.000                | -2363.8             | -4.275         | 0.000          | 4.275                  | -1.175              | 0.000                |
| 40.00     | -26.414               | -28.206             | 0.000             | 0.000               | 0.000                | -2229.8             | -5.599         | 0.000          | 5.599                  | -1.349              | 0.000                |
| 41.50     | -26.324               | -27.841             | 0.000             | 0.000               | 0.000                | -2190.2             | -6.032         | 0.000          | 6.032                  | -1.403              | 0.000                |
| 45.00     | -26.044               | -26.428             | 0.000             | 0.000               | 0.000                | -2098.0             | -7.108         | 0.000          | 7.108                  | -1.527              | 0.000                |
| 48.00     | -25.794               | -25.238             | 0.000             | 0.000               | 0.000                | -2019.9             | -8.103         | 0.000          | 8.103                  | -1.634              | 0.000                |
| 50.00     | -25.663               | -24.762             | 0.000             | 0.000               | 0.000                | -1968.3             | -8.803         | 0.000          | 8.803                  | -1.706              | 0.000                |
| 55.00     | -25.267               | -23.646             | 0.000             | 0.000               | 0.000                | -1840.0             | -10.682        | 0.000          | 10.682                 | -1.877              | 0.000                |
| 60.00     | -24.865               | -22.553             | 0.000             | 0.000               | 0.000                | -1713.7             | -12.740        | 0.000          | 12.740                 | -2.047              | 0.000                |
| 65.00     | -24.457               | -21.481             | 0.000             | 0.000               | 0.000                | -1589.3             | -14.976        | 0.000          | 14.976                 | -2.218              | 0.000                |
| 70.00     | -24.045               | -20.433             | 0.000             | 0.000               | 0.000                | -1467.1             | -17.389        | 0.000          | 17.389                 | -2.387              | 0.000                |
| 75.00     | -23.630               | -19.407             | 0.000             | 0.000               | 0.000                | -1346.8             | -19.980        | 0.000          | 19.980                 | -2.555              | 0.000                |
| 80.00     | -23.208               | -18.410             | 0.000             | 0.000               | 0.000                | -1228.7             | -22.746        | 0.000          | 22.746                 | -2.722              | 0.000                |
| 84.08     | -22.851               | -17.628             | 0.000             | 0.000               | 0.000                | -1133.9             | -25.133        | 0.000          | 25.133                 | -2.857              | 0.000                |
| 85.00     | -22.787               | -17.320             | 0.000             | 0.000               | 0.000                | -1113.0             | -25.684        | 0.000          | 25.684                 | -2.887              | 0.000                |
| 89.50     | -22.360               | -15.971             | 0.000             | 0.000               | 0.000                | -1010.4             | -28.476        | 0.000          | 28.476                 | -3.032              | 0.000                |
| 90.00     | -22.343               | -15.855             | 0.000             | 0.000               | 0.000                | -999.29             | -28.794        | 0.000          | 28.794                 | -3.049              | 0.000                |
| 95.00     | -21.931               | -15.040             | 0.000             | 0.000               | 0.000                | -887.58             | -32.087        | 0.000          | 32.087                 | -3.235              | 0.000                |
| 100.00    | -21.519               | -14.245             | 0.000             | 0.000               | 0.000                | -777.93             | -35.572        | 0.000          | 35.572                 | -3.415              | 0.000                |
| 105.00    | -21.107               | -13.472             | 0.000             | 0.000               | 0.000                | -670.33             | -39.240        | 0.000          | 39.240                 | -3.585              | 0.000                |
| 110.00    | -20.696               | -12.722             | 0.000             | 0.000               | 0.000                | -564.80             | -43.079        | 0.000          | 43.079                 | -3.743              | 0.000                |
| 115.00    | -20.286               | -11.994             | 0.000             | 0.000               | 0.000                | -461.32             | -47.077        | 0.000          | 47.077                 | -3.888              | 0.000                |
| 120.00    | -19.874               | -11.298             | 0.000             | 0.000               | 0.000                | -359.89             | -51.218        | 0.000          | 51.218                 | -4.015              | 0.000                |
| 123.00    | -15.630               | -8.486              | 0.000             | 0.000               | 0.000                | -300.27             | -53.762        | 0.000          | 53.762                 | -4.083              | 0.000                |
| 125.00    | -15.470               | -8.224              | 0.000             | 0.000               | 0.000                | -269.01             | -55.481        | 0.000          | 55.481                 | -4.124              | 0.000                |
| 127.92    | -15.234               | -7.852              | 0.000             | 0.000               | 0.000                | -223.89             | -58.017        | 0.000          | 58.017                 | -4.179              | 0.000                |
| 130.00    | -15.055               | -7.454              | 0.000             | 0.000               | 0.000                | -192.15             | -59.847        | 0.000          | 59.847                 | -4.214              | 0.000                |
| 131.00    | -12.377               | -6.526              | 0.000             | 0.000               | 0.000                | -177.09             | -60.731        | 0.000          | 60.731                 | -4.229              | 0.000                |
| 132.08    | -12.287               | -6.330              | 0.000             | 0.000               | 0.000                | -163.68             | -61.692        | 0.000          | 61.692                 | -4.245              | 0.000                |
| 135.00    | -12.063               | -6.059              | 0.000             | 0.000               | 0.000                | -127.85             | -64.296        | 0.000          | 64.296                 | -4.283              | 0.000                |
| 140.00    | -11.678               | -5.616              | 0.000             | 0.000               | 0.000                | -67.539             | -68.813        | 0.000          | 68.813                 | -4.341              | 0.000                |
| 141.00    | -6.082                | -3.229              | 0.000             | 0.000               | 0.000                | -55.860             | -69.723        | 0.000          | 69.723                 | -4.350              | 0.000                |
| 145.00    | -5.787                | -2.946              | 0.000             | 0.000               | 0.000                | -31.532             | -73.375        | 0.000          | 73.375                 | -4.374              | 0.000                |
| 150.00    | -5.545                | 0.000               | 0.000             | 0.000               | 0.000                | -2.598              | 0.000          | 0.000          | 77.961                 | -4.387              | 0.000                |

## Resulting Stresses

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

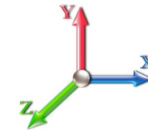
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 13



**Load Case:** 80 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

### Applied Stresses

| Elev (ft) | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | fb Combined (ksi) | Fb Allow Stress (ksi) | f/Fb Stress Ratio |
|-----------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-------------------|-----------------------|-------------------|
| 0.00      | 0.63               | 0.97                | 0.00                | 0.00              | 0.00                  | 43.73                 | 44.39             | 44.8                  | 0.991             |
| 5.00      | 0.62               | 0.98                | 0.00                | 0.00              | 0.00                  | 43.45                 | 44.10             | 45.3                  | 0.973             |
| 10.00     | 0.61               | 0.98                | 0.00                | 0.00              | 0.00                  | 43.14                 | 43.79             | 45.9                  | 0.954             |
| 15.00     | 0.60               | 0.99                | 0.00                | 0.00              | 0.00                  | 42.80                 | 43.44             | 46.4                  | 0.935             |
| 20.00     | 0.59               | 1.00                | 0.00                | 0.00              | 0.00                  | 42.42                 | 43.05             | 47.0                  | 0.916             |
| 25.00     | 0.58               | 1.01                | 0.00                | 0.00              | 0.00                  | 42.00                 | 42.62             | 47.6                  | 0.896             |
| 30.00     | 0.57               | 1.02                | 0.00                | 0.00              | 0.00                  | 41.54                 | 42.14             | 48.1                  | 0.876             |
| 35.00     | 0.56               | 1.03                | 0.00                | 0.00              | 0.00                  | 41.02                 | 41.61             | 48.7                  | 0.855             |
| 40.00     | 0.55               | 1.03                | 0.00                | 0.00              | 0.00                  | 40.44                 | 41.02             | 49.2                  | 0.834             |
| 41.50     | 0.54               | 1.04                | 0.00                | 0.00              | 0.00                  | 40.26                 | 40.84             | 49.4                  | 0.827             |
| 45.00     | 0.52               | 1.04                | 0.00                | 0.00              | 0.00                  | 39.81                 | 40.37             | 49.8                  | 0.811             |
| 48.00     | 0.50               | 1.03                | 0.00                | 0.00              | 0.00                  | 38.43                 | 38.97             | 50.1                  | 0.778             |
| 50.00     | 0.50               | 1.04                | 0.00                | 0.00              | 0.00                  | 38.14                 | 38.68             | 50.0                  | 0.773             |
| 55.00     | 0.49               | 1.05                | 0.00                | 0.00              | 0.00                  | 37.36                 | 37.89             | 50.6                  | 0.749             |
| 60.00     | 0.47               | 1.05                | 0.00                | 0.00              | 0.00                  | 36.50                 | 37.02             | 51.1                  | 0.724             |
| 65.00     | 0.46               | 1.06                | 0.00                | 0.00              | 0.00                  | 35.56                 | 36.07             | 51.7                  | 0.698             |
| 70.00     | 0.45               | 1.07                | 0.00                | 0.00              | 0.00                  | 34.51                 | 35.01             | 52.0                  | 0.674             |
| 75.00     | 0.44               | 1.08                | 0.00                | 0.00              | 0.00                  | 33.36                 | 33.85             | 52.0                  | 0.651             |
| 80.00     | 0.43               | 1.09                | 0.00                | 0.00              | 0.00                  | 32.09                 | 32.57             | 52.0                  | 0.627             |
| 84.08     | 0.42               | 1.10                | 0.00                | 0.00              | 0.00                  | 30.95                 | 31.43             | 52.0                  | 0.605             |
| 85.00     | 0.41               | 1.10                | 0.00                | 0.00              | 0.00                  | 30.69                 | 31.16             | 52.0                  | 0.599             |
| 89.50     | 0.48               | 1.36                | 0.00                | 0.00              | 0.00                  | 35.58                 | 36.14             | 52.0                  | 0.695             |
| 90.00     | 0.48               | 1.37                | 0.00                | 0.00              | 0.00                  | 35.38                 | 35.94             | 49.2                  | 0.730             |
| 95.00     | 0.47               | 1.38                | 0.00                | 0.00              | 0.00                  | 33.26                 | 33.81             | 49.9                  | 0.678             |
| 100.00    | 0.46               | 1.39                | 0.00                | 0.00              | 0.00                  | 30.90                 | 31.45             | 50.6                  | 0.622             |
| 105.00    | 0.45               | 1.41                | 0.00                | 0.00              | 0.00                  | 28.28                 | 28.82             | 51.3                  | 0.562             |
| 110.00    | 0.43               | 1.42                | 0.00                | 0.00              | 0.00                  | 25.34                 | 25.90             | 52.0                  | 0.498             |
| 115.00    | 0.42               | 1.44                | 0.00                | 0.00              | 0.00                  | 22.07                 | 22.63             | 52.0                  | 0.435             |
| 120.00    | 0.41               | 1.46                | 0.00                | 0.00              | 0.00                  | 18.39                 | 18.97             | 52.0                  | 0.365             |
| 123.00    | 0.32               | 1.17                | 0.00                | 0.00              | 0.00                  | 15.98                 | 16.42             | 52.0                  | 0.316             |
| 125.00    | 0.31               | 1.17                | 0.00                | 0.00              | 0.00                  | 14.72                 | 15.16             | 52.0                  | 0.292             |
| 127.92    | 0.30               | 1.18                | 0.00                | 0.00              | 0.00                  | 12.76                 | 13.22             | 52.0                  | 0.254             |
| 130.00    | 0.29               | 1.18                | 0.00                | 0.00              | 0.00                  | 11.28                 | 11.75             | 52.0                  | 0.226             |
| 131.00    | 0.26               | 0.98                | 0.00                | 0.00              | 0.00                  | 10.55                 | 10.94             | 52.0                  | 0.210             |
| 132.08    | 0.33               | 1.29                | 0.00                | 0.00              | 0.00                  | 12.82                 | 13.34             | 52.0                  | 0.257             |
| 135.00    | 0.32               | 1.29                | 0.00                | 0.00              | 0.00                  | 10.45                 | 11.00             | 48.9                  | 0.225             |
| 140.00    | 0.31               | 1.30                | 0.00                | 0.00              | 0.00                  | 5.95                  | 6.65              | 49.8                  | 0.134             |
| 141.00    | 0.18               | 0.68                | 0.00                | 0.00              | 0.00                  | 5.00                  | 5.31              | 50.0                  | 0.106             |
| 145.00    | 0.17               | 0.67                | 0.00                | 0.00              | 0.00                  | 3.00                  | 3.38              | 50.7                  | 0.067             |
| 150.00    | 0.00               | 0.67                | 0.00                | 0.00              | 0.00                  | 0.27                  | 1.19              | 51.6                  | 0.023             |

## Wind Loading - Shaft

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

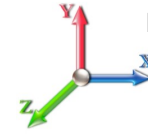
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 14



**Load Case:** 69.28 mph Wind with 0.5" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| Elev (ft)      | Description     | Kzt  | Kz   | qz (psf) | qzGh (psf) | C (mph-ft) | Cf    | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00           |                 | 0.00 | 1.00 | 12.287   | 20.77      | 355.06     | 0.650 | 0.500          | 0.00           | 0.000   | 0.00      | 0.0               | 0.0                | 0.0                |
| 5.00           |                 | 0.00 | 1.00 | 12.287   | 20.77      | 348.38     | 0.650 | 0.500          | 5.00           | 25.801  | 16.77     | 348.2             | 187.7              | 1210.5             |
| 10.00          |                 | 0.00 | 1.00 | 12.287   | 20.77      | 341.70     | 0.650 | 0.500          | 5.00           | 25.319  | 16.46     | 341.7             | 184.2              | 1187.4             |
| 15.00          |                 | 0.00 | 1.00 | 12.287   | 20.77      | 335.02     | 0.650 | 0.500          | 5.00           | 24.837  | 16.14     | 335.2             | 180.6              | 1164.3             |
| 20.00          |                 | 0.00 | 1.00 | 12.287   | 20.77      | 328.35     | 0.650 | 0.500          | 5.00           | 24.355  | 15.83     | 328.7             | 177.0              | 1141.3             |
| 25.00          |                 | 0.00 | 1.00 | 12.287   | 20.77      | 321.67     | 0.650 | 0.500          | 5.00           | 23.873  | 15.52     | 322.2             | 173.5              | 1118.2             |
| 30.00          |                 | 0.00 | 1.00 | 12.287   | 20.77      | 314.99     | 0.650 | 0.500          | 5.00           | 23.391  | 15.20     | 315.7             | 169.9              | 1095.1             |
| 35.00          |                 | 0.00 | 1.02 | 12.496   | 21.12      | 310.91     | 0.650 | 0.500          | 5.00           | 22.909  | 14.89     | 314.5             | 166.3              | 1072.0             |
| 40.00          |                 | 0.00 | 1.06 | 12.982   | 21.94      | 310.04     | 0.650 | 0.500          | 5.00           | 22.427  | 14.58     | 319.8             | 162.8              | 1048.9             |
| 41.50          | Bot - Section 2 | 0.00 | 1.07 | 13.119   | 22.17      | 309.60     | 0.650 | 0.500          | 1.50           | 6.634   | 4.31      | 95.6              | 48.5               | 310.5              |
| 45.00          |                 | 0.00 | 1.09 | 13.426   | 22.69      | 308.32     | 0.650 | 0.500          | 3.50           | 15.493  | 10.07     | 228.5             | 112.8              | 1329.3             |
| 48.00          | Top - Section 1 | 0.00 | 1.11 | 13.676   | 23.11      | 306.94     | 0.650 | 0.500          | 3.00           | 13.092  | 8.51      | 196.7             | 95.4               | 1122.9             |
| 50.00          |                 | 0.00 | 1.13 | 13.836   | 23.38      | 309.73     | 0.650 | 0.500          | 2.00           | 8.631   | 5.61      | 131.2             | 63.0               | 403.7              |
| 55.00          |                 | 0.00 | 1.16 | 14.218   | 24.03      | 306.79     | 0.650 | 0.500          | 5.00           | 21.241  | 13.81     | 331.8             | 154.0              | 992.1              |
| 60.00          |                 | 0.00 | 1.19 | 14.576   | 24.63      | 303.36     | 0.650 | 0.500          | 5.00           | 20.759  | 13.49     | 332.4             | 150.4              | 969.0              |
| 65.00          |                 | 0.00 | 1.21 | 14.913   | 25.20      | 299.49     | 0.650 | 0.500          | 5.00           | 20.277  | 13.18     | 332.2             | 146.8              | 945.9              |
| 70.00          |                 | 0.00 | 1.24 | 15.232   | 25.74      | 295.24     | 0.650 | 0.500          | 5.00           | 19.795  | 12.87     | 331.2             | 143.3              | 922.8              |
| 75.00          |                 | 0.00 | 1.26 | 15.536   | 26.26      | 290.66     | 0.650 | 0.500          | 5.00           | 19.313  | 12.55     | 329.6             | 139.7              | 899.7              |
| 80.00          |                 | 0.00 | 1.29 | 15.825   | 26.74      | 285.77     | 0.650 | 0.500          | 5.00           | 18.831  | 12.24     | 327.3             | 136.1              | 876.6              |
| 84.08          | Bot - Section 3 | 0.00 | 1.31 | 16.051   | 27.13      | 281.57     | 0.650 | 0.500          | 4.08           | 15.021  | 9.76      | 264.9             | 108.8              | 699.1              |
| 85.00          |                 | 0.00 | 1.31 | 16.101   | 27.21      | 280.61     | 0.650 | 0.500          | 0.92           | 3.366   | 2.19      | 59.5              | 24.6               | 261.3              |
| 89.50          | Top - Section 2 | 0.00 | 1.33 | 16.340   | 27.61      | 275.75     | 0.650 | 0.500          | 4.50           | 16.290  | 10.59     | 292.4             | 117.8              | 1262.6             |
| 90.00          |                 | 0.00 | 1.33 | 16.366   | 27.66      | 278.53     | 0.650 | 0.500          | 0.50           | 1.786   | 1.16      | 32.1              | 13.1               | 69.2               |
| 95.00          |                 | 0.00 | 1.35 | 16.621   | 28.09      | 272.93     | 0.650 | 0.500          | 5.00           | 17.593  | 11.44     | 321.2             | 127.0              | 680.1              |
| 100.00         |                 | 0.00 | 1.37 | 16.866   | 28.50      | 267.11     | 0.650 | 0.500          | 5.00           | 17.111  | 11.12     | 317.0             | 123.4              | 660.9              |
| 105.00         |                 | 0.00 | 1.39 | 17.103   | 28.90      | 261.10     | 0.650 | 0.500          | 5.00           | 16.629  | 10.81     | 312.4             | 119.8              | 641.7              |
| 110.00         |                 | 0.00 | 1.41 | 17.332   | 29.29      | 254.91     | 0.650 | 0.500          | 5.00           | 16.147  | 10.50     | 307.4             | 116.3              | 622.6              |
| 115.00         |                 | 0.00 | 1.43 | 17.554   | 29.67      | 248.55     | 0.650 | 0.500          | 5.00           | 15.665  | 10.18     | 302.1             | 112.7              | 603.4              |
| 120.00         |                 | 0.00 | 1.45 | 17.768   | 30.03      | 242.03     | 0.650 | 0.500          | 5.00           | 15.183  | 9.87      | 296.4             | 109.1              | 584.2              |
| 123.00         | Appurtenance(s) | 0.00 | 1.46 | 17.894   | 30.24      | 238.05     | 0.650 | 0.500          | 3.00           | 8.879   | 5.77      | 174.5             | 64.2               | 341.7              |
| 125.00         |                 | 0.00 | 1.46 | 17.977   | 30.38      | 235.37     | 0.650 | 0.500          | 2.00           | 5.823   | 3.78      | 115.0             | 42.2               | 224.1              |
| 127.92         | Bot - Section 4 | 0.00 | 1.47 | 18.096   | 30.58      | 231.42     | 0.650 | 0.500          | 2.92           | 8.353   | 5.43      | 166.0             | 60.4               | 321.2              |
| 130.00         |                 | 0.00 | 1.48 | 18.179   | 30.72      | 228.57     | 0.650 | 0.500          | 2.08           | 5.931   | 3.86      | 118.4             | 43.0               | 365.1              |
| 131.00         | Appurtenance(s) | 0.00 | 1.48 | 18.219   | 30.79      | 227.19     | 0.650 | 0.500          | 1.00           | 2.817   | 1.83      | 56.4              | 20.5               | 173.4              |
| 132.08         | Top - Section 3 | 0.00 | 1.49 | 18.262   | 30.86      | 225.69     | 0.650 | 0.500          | 1.08           | 3.030   | 1.97      | 60.8              | 22.0               | 186.5              |
| 135.00         |                 | 0.00 | 1.50 | 18.376   | 31.06      | 224.28     | 0.650 | 0.500          | 2.92           | 8.046   | 5.23      | 162.4             | 58.1               | 246.6              |
| 140.00         |                 | 0.00 | 1.51 | 18.568   | 31.38      | 217.24     | 0.650 | 0.500          | 5.00           | 13.412  | 8.72      | 273.6             | 96.0               | 409.9              |
| 141.00         | Appurtenance(s) | 0.00 | 1.51 | 18.606   | 31.44      | 215.82     | 0.650 | 0.500          | 1.00           | 2.624   | 1.71      | 53.6              | 19.1               | 80.4               |
| 145.00         |                 | 0.00 | 1.53 | 18.755   | 31.70      | 210.08     | 0.650 | 0.500          | 4.00           | 10.305  | 6.70      | 212.3             | 73.9               | 314.7              |
| 150.00         | Appurtenance(s) | 0.00 | 1.54 | 18.938   | 32.01      | 202.81     | 0.650 | 0.500          | 5.00           | 12.448  | 8.09      | 259.0             | 88.9               | 379.3              |
| <b>Totals:</b> |                 |      |      |          |            |            |       |                | <b>150.00</b>  |         |           | <b>9,420.1</b>    | <b>26,938.5</b>    |                    |



## Discrete Appurtenance Forces

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

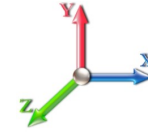
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 15



**Load Case:** 69.28 mph Wind with 0.5" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| No. | Elev (ft) | Description                | Qty | qz (psf) | qzGh (psf) | CaAa Factor | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|----------------------------|-----|----------|------------|-------------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1   | 150.00    | Ericsson RRUS-11           | 6   | 18.974   | 32.066     | 0.79        | 14.88           | 396.00         | 0.000          | 1.000         | 477.26       | 0.00          | 477.26        |
| 2   | 150.00    | 782-10250                  | 3   | 18.938   | 32.005     | 1.00        | 2.07            | 30.00          | 0.000          | 0.000         | 66.25        | 0.00          | 0.00          |
| 3   | 150.00    | CCI DTMA BP7819VG12A       | 6   | 18.974   | 32.066     | 0.70        | 5.71            | 159.00         | 0.000          | 1.000         | 183.16       | 0.00          | 183.16        |
| 4   | 150.00    | CCI TPA-65R-LCUUUU-H8      | 2   | 18.938   | 32.005     | 0.84        | 24.71           | 259.00         | 0.000          | 0.000         | 790.94       | 0.00          | 0.00          |
| 5   | 150.00    | CCI TPX-070821             | 6   | 18.938   | 32.005     | 0.75        | 2.61            | 34.80          | 0.000          | 0.000         | 83.53        | 0.00          | 0.00          |
| 6   | 150.00    | Commscope                  | 3   | 18.974   | 32.066     | 1.00        | 0.33            | 5.40           | 0.000          | 1.000         | 10.58        | 0.00          | 10.58         |
| 7   | 150.00    | CSS DBC-750                | 3   | 18.974   | 32.066     | 0.70        | 1.39            | 23.10          | 0.000          | 1.000         | 44.44        | 0.00          | 44.44         |
| 8   | 150.00    | RRUS-32                    | 3   | 18.938   | 32.005     | 0.92        | 11.87           | 310.50         | 0.000          | 0.000         | 379.84       | 0.00          | 0.00          |
| 9   | 150.00    | Kathrein 800-10121         | 3   | 18.974   | 32.066     | 0.92        | 16.88           | 303.60         | 0.000          | 1.000         | 541.32       | 0.00          | 541.32        |
| 10  | 150.00    | KMW                        | 1   | 18.974   | 32.066     | 0.90        | 8.13            | 124.20         | 0.000          | 1.000         | 260.59       | 0.00          | 260.59        |
| 11  | 150.00    | LMU                        | 1   | 18.974   | 32.066     | 1.00        | 0.93            | 35.30          | 0.000          | 1.000         | 29.82        | 0.00          | 29.82         |
| 12  | 150.00    | Low Profile Platform       | 1   | 18.938   | 32.005     | 1.00        | 27.00           | 1800.00        | 0.000          | 0.000         | 864.14       | 0.00          | 0.00          |
| 13  | 150.00    | Powerwave P65-17-XLH-RR    | 2   | 18.974   | 32.066     | 0.92        | 22.70           | 321.60         | 0.000          | 1.000         | 727.85       | 0.00          | 727.85        |
| 14  | 150.00    | Quintel QS66512-3          | 1   | 18.938   | 32.005     | 0.96        | 8.52            | 128.00         | 0.000          | 0.000         | 272.53       | 0.00          | 0.00          |
| 15  | 150.00    | Raycap DC6-48-60-18-8F     | 2   | 18.974   | 32.066     | 1.00        | 3.34            | 99.00          | 0.000          | 1.000         | 107.10       | 0.00          | 107.10        |
| 16  | 141.00    | RFS DB-T1-6Z-8AB-OZ        | 1   | 18.606   | 31.444     | 0.99        | 4.99            | 51.10          | 0.000          | 0.000         | 156.90       | 0.00          | 0.00          |
| 17  | 141.00    | RFS DB-T1-6Z-8AB-OZ        | 1   | 18.606   | 31.444     | 0.99        | 4.99            | 51.10          | 0.000          | 0.000         | 156.90       | 0.00          | 0.00          |
| 18  | 141.00    | Low Profile Platform       | 1   | 18.606   | 31.444     | 1.00        | 27.00           | 1800.00        | 0.000          | 0.000         | 849.00       | 0.00          | 0.00          |
| 19  | 141.00    | Commscope SBNHH-1D65B      | 6   | 18.606   | 31.444     | 0.93        | 49.15           | 775.80         | 0.000          | 0.000         | 1545.40      | 0.00          | 0.00          |
| 20  | 141.00    | Antel                      | 3   | 18.606   | 31.444     | 1.04        | 13.38           | 186.00         | 0.000          | 0.000         | 420.64       | 0.00          | 0.00          |
| 21  | 141.00    | Antel                      | 3   | 18.606   | 31.444     | 0.89        | 21.92           | 267.30         | 0.000          | 0.000         | 689.35       | 0.00          | 0.00          |
| 22  | 141.00    | Alcatel Lucent             | 3   | 18.606   | 31.444     | 0.90        | 7.44            | 212.70         | 0.000          | 0.000         | 233.80       | 0.00          | 0.00          |
| 23  | 141.00    | Alcatel Lucent             | 3   | 18.606   | 31.444     | 0.79        | 10.03           | 240.30         | 0.000          | 0.000         | 315.23       | 0.00          | 0.00          |
| 24  | 141.00    | Alcatel Lucent RRH2X60-700 | 3   | 18.606   | 31.444     | 0.79        | 10.03           | 240.30         | 0.000          | 0.000         | 315.23       | 0.00          | 0.00          |
| 25  | 131.00    | Commscope LNX-6515DS       | 3   | 18.219   | 30.790     | 0.95        | 34.15           | 465.00         | 0.000          | 0.000         | 1051.52      | 0.00          | 0.00          |
| 26  | 131.00    | Ericsson KRY 144/1         | 3   | 18.219   | 30.790     | 0.73        | 1.20            | 42.30          | 0.000          | 0.000         | 37.09        | 0.00          | 0.00          |
| 27  | 131.00    | Kathrein 782 11056         | 3   | 18.219   | 30.790     | 0.79        | 1.97            | 46.80          | 0.000          | 0.000         | 60.57        | 0.00          | 0.00          |
| 28  | 131.00    | RFS                        | 3   | 18.219   | 30.790     | 0.78        | 18.23           | 312.00         | 0.000          | 0.000         | 561.26       | 0.00          | 0.00          |
| 29  | 131.00    | RFS ATM1412D-1A20          | 3   | 18.219   | 30.790     | 0.76        | 3.17            | 61.80          | 0.000          | 0.000         | 97.58        | 0.00          | 0.00          |
| 30  | 131.00    | T-Arms (Site Pro P/N       | 3   | 18.219   | 30.790     | 0.90        | 28.35           | 1260.00        | 0.000          | 0.000         | 872.91       | 0.00          | 0.00          |
| 31  | 123.00    | RFS APXVTM14-C-I30         | 3   | 17.894   | 30.241     | 0.88        | 20.17           | 373.20         | 0.000          | 0.000         | 610.05       | 0.00          | 0.00          |
| 32  | 123.00    | RFS APXVSP18-C-A20         | 3   | 17.894   | 30.241     | 0.83        | 21.79           | 405.60         | 0.000          | 0.000         | 658.96       | 0.00          | 0.00          |
| 33  | 123.00    | RFS ACU-A20-N              | 4   | 17.894   | 30.241     | 0.82        | 0.72            | 9.20           | 0.000          | 0.000         | 21.82        | 0.00          | 0.00          |
| 34  | 123.00    | Low Profile Platform       | 1   | 17.894   | 30.241     | 1.00        | 27.00           | 1800.00        | 0.000          | 0.000         | 816.51       | 0.00          | 0.00          |
| 35  | 123.00    | Alcatel Lucent             | 3   | 17.894   | 30.241     | 0.75        | 11.18           | 276.00         | 0.000          | 0.000         | 338.17       | 0.00          | 0.00          |
| 36  | 123.00    | Alcatel Lucent 800 MHz     | 6   | 17.894   | 30.241     | 0.95        | 16.07           | 444.60         | 0.000          | 0.000         | 486.09       | 0.00          | 0.00          |
| 37  | 123.00    | Alcatel Lucent 1900 MHz    | 3   | 17.894   | 30.241     | 1.00        | 9.21            | 249.30         | 0.000          | 0.000         | 278.52       | 0.00          | 0.00          |

**Totals:** 13,599.90

15,412.87

## Total Applied Force Summary

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

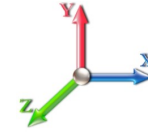
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 16



**Load Case:** 69.28 mph Wind with 0.5" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| Elev (ft)      | Description        | Lateral FX (-) (lb) | Axial FY (-) (lb) | Torsion MY (lb-ft) | Moment MZ (lb-ft) |
|----------------|--------------------|---------------------|-------------------|--------------------|-------------------|
| 0.00           |                    | 0.00                | 0.00              | 0.00               | 0.00              |
| 5.00           |                    | 348.25              | 1427.01           | 0.00               | 0.00              |
| 10.00          |                    | 341.74              | 1403.92           | 0.00               | 0.00              |
| 15.00          |                    | 335.23              | 1380.83           | 0.00               | 0.00              |
| 20.00          |                    | 328.73              | 1357.73           | 0.00               | 0.00              |
| 25.00          |                    | 322.22              | 1334.64           | 0.00               | 0.00              |
| 30.00          |                    | 315.72              | 1311.55           | 0.00               | 0.00              |
| 35.00          |                    | 314.45              | 1288.46           | 0.00               | 0.00              |
| 40.00          |                    | 319.81              | 1265.37           | 0.00               | 0.00              |
| 41.50          |                    | 95.60               | 375.48            | 0.00               | 0.00              |
| 45.00          |                    | 228.49              | 1480.86           | 0.00               | 0.00              |
| 48.00          |                    | 196.67              | 1252.80           | 0.00               | 0.00              |
| 50.00          |                    | 131.19              | 490.32            | 0.00               | 0.00              |
| 55.00          |                    | 331.76              | 1208.58           | 0.00               | 0.00              |
| 60.00          |                    | 332.39              | 1185.49           | 0.00               | 0.00              |
| 65.00          |                    | 332.18              | 1162.39           | 0.00               | 0.00              |
| 70.00          |                    | 331.22              | 1139.30           | 0.00               | 0.00              |
| 75.00          |                    | 329.59              | 1116.21           | 0.00               | 0.00              |
| 80.00          |                    | 327.35              | 1093.12           | 0.00               | 0.00              |
| 84.08          |                    | 264.86              | 875.86            | 0.00               | 0.00              |
| 85.00          |                    | 59.54               | 300.96            | 0.00               | 0.00              |
| 89.50          |                    | 292.39              | 1457.43           | 0.00               | 0.00              |
| 90.00          |                    | 32.11               | 90.88             | 0.00               | 0.00              |
| 95.00          |                    | 321.22              | 896.60            | 0.00               | 0.00              |
| 100.00         |                    | 317.04              | 877.41            | 0.00               | 0.00              |
| 105.00         |                    | 312.43              | 858.22            | 0.00               | 0.00              |
| 110.00         |                    | 307.43              | 839.04            | 0.00               | 0.00              |
| 115.00         |                    | 302.07              | 819.85            | 0.00               | 0.00              |
| 120.00         |                    | 296.36              | 800.67            | 0.00               | 0.00              |
| 123.00         | (23) appurtenances | 3384.65             | 4029.52           | 0.00               | 0.00              |
| 125.00         |                    | 114.98              | 303.09            | 0.00               | 0.00              |
| 127.92         |                    | 166.05              | 436.31            | 0.00               | 0.00              |
| 130.00         |                    | 118.45              | 447.38            | 0.00               | 0.00              |
| 131.00         | (18) appurtenances | 2737.30             | 2400.81           | 0.00               | 0.00              |
| 132.08         |                    | 60.79               | 219.11            | 0.00               | 0.00              |
| 135.00         |                    | 162.42              | 334.44            | 0.00               | 0.00              |
| 140.00         |                    | 273.56              | 560.48            | 0.00               | 0.00              |
| 141.00         | (24) appurtenances | 4736.10             | 3935.15           | 0.00               | 0.00              |
| 145.00         |                    | 212.32              | 376.50            | 0.00               | 0.00              |
| 150.00         | (43) appurtenances | 5098.32             | 4486.01           | 0.00               | 2382.13           |
| <b>Totals:</b> |                    | <b>24,833.00</b>    | <b>46,619.77</b>  | <b>0.00</b>        | <b>2,382.13</b>   |

## Resulting Forces and Deflections

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

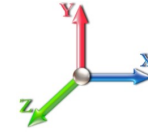
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 17



**Load Case:** 69.28 mph Wind with 0.5" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

| Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | Deflect X (in) | Deflect Z (in) | Deflect Resultant (in) | Rotation Sway (deg) | Rotation Twist (deg) |
|-----------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|------------------------|---------------------|----------------------|
| 0.00      | -24.892               | -46.588             | 0.000             | 0.000               | 0.000                | -2954.6             | 0.000          | 0.000          | 0.000                  | 0.000               | 0.000                |
| 5.00      | -24.656               | -45.099             | 0.000             | 0.000               | 0.000                | -2830.1             | -0.077         | 0.000          | 0.077                  | -0.143              | 0.000                |
| 10.00     | -24.420               | -43.634             | 0.000             | 0.000               | 0.000                | -2706.8             | -0.306         | 0.000          | 0.306                  | -0.289              | 0.000                |
| 15.00     | -24.186               | -42.193             | 0.000             | 0.000               | 0.000                | -2584.7             | -0.687         | 0.000          | 0.687                  | -0.436              | 0.000                |
| 20.00     | -23.952               | -40.776             | 0.000             | 0.000               | 0.000                | -2463.8             | -1.224         | 0.000          | 1.224                  | -0.585              | 0.000                |
| 25.00     | -23.718               | -39.383             | 0.000             | 0.000               | 0.000                | -2344.1             | -1.918         | 0.000          | 1.918                  | -0.736              | 0.000                |
| 30.00     | -23.486               | -38.013             | 0.000             | 0.000               | 0.000                | -2225.5             | -2.770         | 0.000          | 2.770                  | -0.888              | 0.000                |
| 35.00     | -23.249               | -36.667             | 0.000             | 0.000               | 0.000                | -2108.0             | -3.784         | 0.000          | 3.784                  | -1.042              | 0.000                |
| 40.00     | -22.967               | -35.368             | 0.000             | 0.000               | 0.000                | -1991.8             | -4.959         | 0.000          | 4.959                  | -1.198              | 0.000                |
| 41.50     | -22.912               | -34.963             | 0.000             | 0.000               | 0.000                | -1957.4             | -5.343         | 0.000          | 5.343                  | -1.246              | 0.000                |
| 45.00     | -22.710               | -33.446             | 0.000             | 0.000               | 0.000                | -1877.2             | -6.299         | 0.000          | 6.299                  | -1.357              | 0.000                |
| 48.00     | -22.528               | -32.167             | 0.000             | 0.000               | 0.000                | -1809.0             | -7.183         | 0.000          | 7.183                  | -1.453              | 0.000                |
| 50.00     | -22.444               | -31.638             | 0.000             | 0.000               | 0.000                | -1764.0             | -7.805         | 0.000          | 7.805                  | -1.517              | 0.000                |
| 55.00     | -22.160               | -30.380             | 0.000             | 0.000               | 0.000                | -1651.8             | -9.477         | 0.000          | 9.477                  | -1.670              | 0.000                |
| 60.00     | -21.870               | -29.147             | 0.000             | 0.000               | 0.000                | -1541.0             | -11.308        | 0.000          | 11.308                 | -1.823              | 0.000                |
| 65.00     | -21.574               | -27.938             | 0.000             | 0.000               | 0.000                | -1431.6             | -13.300        | 0.000          | 13.300                 | -1.977              | 0.000                |
| 70.00     | -21.274               | -26.755             | 0.000             | 0.000               | 0.000                | -1323.8             | -15.453        | 0.000          | 15.453                 | -2.129              | 0.000                |
| 75.00     | -20.969               | -25.597             | 0.000             | 0.000               | 0.000                | -1217.4             | -17.764        | 0.000          | 17.764                 | -2.281              | 0.000                |
| 80.00     | -20.655               | -24.470             | 0.000             | 0.000               | 0.000                | -1112.5             | -20.235        | 0.000          | 20.235                 | -2.432              | 0.000                |
| 84.08     | -20.383               | -23.580             | 0.000             | 0.000               | 0.000                | -1028.2             | -22.368        | 0.000          | 22.368                 | -2.554              | 0.000                |
| 85.00     | -20.343               | -23.253             | 0.000             | 0.000               | 0.000                | -1009.5             | -22.861        | 0.000          | 22.861                 | -2.582              | 0.000                |
| 89.50     | -20.011               | -21.786             | 0.000             | 0.000               | 0.000                | -918.03             | -25.359        | 0.000          | 25.359                 | -2.713              | 0.000                |
| 90.00     | -20.010               | -21.663             | 0.000             | 0.000               | 0.000                | -908.02             | -25.644        | 0.000          | 25.644                 | -2.728              | 0.000                |
| 95.00     | -19.705               | -20.726             | 0.000             | 0.000               | 0.000                | -807.97             | -28.592        | 0.000          | 28.592                 | -2.898              | 0.000                |
| 100.00    | -19.398               | -19.813             | 0.000             | 0.000               | 0.000                | -709.45             | -31.716        | 0.000          | 31.716                 | -3.061              | 0.000                |
| 105.00    | -19.089               | -18.923             | 0.000             | 0.000               | 0.000                | -612.46             | -35.006        | 0.000          | 35.006                 | -3.217              | 0.000                |
| 110.00    | -18.778               | -18.057             | 0.000             | 0.000               | 0.000                | -517.02             | -38.453        | 0.000          | 38.453                 | -3.362              | 0.000                |
| 115.00    | -18.465               | -17.217             | 0.000             | 0.000               | 0.000                | -423.13             | -42.045        | 0.000          | 42.045                 | -3.494              | 0.000                |
| 120.00    | -18.145               | -16.408             | 0.000             | 0.000               | 0.000                | -330.81             | -45.768        | 0.000          | 45.768                 | -3.611              | 0.000                |
| 123.00    | -14.521               | -12.590             | 0.000             | 0.000               | 0.000                | -276.37             | -48.057        | 0.000          | 48.057                 | -3.673              | 0.000                |
| 125.00    | -14.397               | -12.283             | 0.000             | 0.000               | 0.000                | -247.33             | -49.604        | 0.000          | 49.604                 | -3.711              | 0.000                |
| 127.92    | -14.211               | -11.849             | 0.000             | 0.000               | 0.000                | -205.34             | -51.887        | 0.000          | 51.887                 | -3.762              | 0.000                |
| 130.00    | -14.068               | -11.405             | 0.000             | 0.000               | 0.000                | -175.73             | -53.535        | 0.000          | 53.535                 | -3.793              | 0.000                |
| 131.00    | -11.180               | -9.188              | 0.000             | 0.000               | 0.000                | -161.67             | -54.331        | 0.000          | 54.331                 | -3.808              | 0.000                |
| 132.08    | -11.108               | -8.968              | 0.000             | 0.000               | 0.000                | -149.56             | -55.196        | 0.000          | 55.196                 | -3.822              | 0.000                |
| 135.00    | -10.931               | -8.637              | 0.000             | 0.000               | 0.000                | -117.16             | -57.541        | 0.000          | 57.541                 | -3.856              | 0.000                |
| 140.00    | -10.624               | -8.091              | 0.000             | 0.000               | 0.000                | -62.507             | -61.610        | 0.000          | 61.610                 | -3.910              | 0.000                |
| 141.00    | -5.631                | -4.487              | 0.000             | 0.000               | 0.000                | -51.883             | -62.429        | 0.000          | 62.429                 | -3.918              | 0.000                |
| 145.00    | -5.395                | -4.124              | 0.000             | 0.000               | 0.000                | -29.358             | -65.720        | 0.000          | 65.720                 | -3.940              | 0.000                |
| 150.00    | -5.098                | 0.000               | 0.000             | 0.000               | 0.000                | -2.382              | 0.000          | 0.000          | 69.853                 | -3.952              | 0.000                |

## Resulting Stresses

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

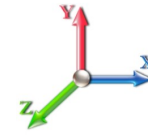
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 18



**Load Case:** 69.28 mph Wind with 0.5" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 23

### Applied Stresses

| Elev (ft) | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | fb Combined (ksi) | Fb Allow Stress (ksi) | f/Fb Stress Ratio |
|-----------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-------------------|-----------------------|-------------------|
| 0.00      | 0.77               | 0.83                | 0.00                | 0.00              | 0.00                  | 38.57                 | 39.36             | 44.8                  | 0.879             |
| 5.00      | 0.76               | 0.83                | 0.00                | 0.00              | 0.00                  | 38.38                 | 39.17             | 45.3                  | 0.864             |
| 10.00     | 0.75               | 0.84                | 0.00                | 0.00              | 0.00                  | 38.17                 | 38.95             | 45.9                  | 0.849             |
| 15.00     | 0.74               | 0.85                | 0.00                | 0.00              | 0.00                  | 37.93                 | 38.69             | 46.4                  | 0.833             |
| 20.00     | 0.73               | 0.86                | 0.00                | 0.00              | 0.00                  | 37.65                 | 38.41             | 47.0                  | 0.817             |
| 25.00     | 0.72               | 0.87                | 0.00                | 0.00              | 0.00                  | 37.34                 | 38.08             | 47.6                  | 0.801             |
| 30.00     | 0.71               | 0.88                | 0.00                | 0.00              | 0.00                  | 36.98                 | 37.72             | 48.1                  | 0.784             |
| 35.00     | 0.70               | 0.89                | 0.00                | 0.00              | 0.00                  | 36.58                 | 37.31             | 48.7                  | 0.767             |
| 40.00     | 0.69               | 0.90                | 0.00                | 0.00              | 0.00                  | 36.12                 | 36.84             | 49.2                  | 0.749             |
| 41.50     | 0.68               | 0.90                | 0.00                | 0.00              | 0.00                  | 35.98                 | 36.70             | 49.4                  | 0.743             |
| 45.00     | 0.66               | 0.91                | 0.00                | 0.00              | 0.00                  | 35.62                 | 36.32             | 49.8                  | 0.730             |
| 48.00     | 0.64               | 0.90                | 0.00                | 0.00              | 0.00                  | 34.42                 | 35.09             | 50.1                  | 0.700             |
| 50.00     | 0.63               | 0.91                | 0.00                | 0.00              | 0.00                  | 34.18                 | 34.85             | 50.0                  | 0.697             |
| 55.00     | 0.62               | 0.92                | 0.00                | 0.00              | 0.00                  | 33.54                 | 34.20             | 50.6                  | 0.676             |
| 60.00     | 0.61               | 0.93                | 0.00                | 0.00              | 0.00                  | 32.82                 | 33.48             | 51.1                  | 0.655             |
| 65.00     | 0.60               | 0.94                | 0.00                | 0.00              | 0.00                  | 32.03                 | 32.67             | 51.7                  | 0.632             |
| 70.00     | 0.59               | 0.95                | 0.00                | 0.00              | 0.00                  | 31.14                 | 31.77             | 52.0                  | 0.611             |
| 75.00     | 0.58               | 0.96                | 0.00                | 0.00              | 0.00                  | 30.15                 | 30.78             | 52.0                  | 0.592             |
| 80.00     | 0.57               | 0.97                | 0.00                | 0.00              | 0.00                  | 29.05                 | 29.67             | 52.0                  | 0.571             |
| 84.08     | 0.56               | 0.98                | 0.00                | 0.00              | 0.00                  | 28.07                 | 28.68             | 52.0                  | 0.552             |
| 85.00     | 0.56               | 0.98                | 0.00                | 0.00              | 0.00                  | 27.84                 | 28.44             | 52.0                  | 0.547             |
| 89.50     | 0.66               | 1.22                | 0.00                | 0.00              | 0.00                  | 32.33                 | 33.05             | 52.0                  | 0.636             |
| 90.00     | 0.66               | 1.22                | 0.00                | 0.00              | 0.00                  | 32.15                 | 32.88             | 49.2                  | 0.668             |
| 95.00     | 0.65               | 1.24                | 0.00                | 0.00              | 0.00                  | 30.28                 | 31.00             | 49.9                  | 0.621             |
| 100.00    | 0.64               | 1.26                | 0.00                | 0.00              | 0.00                  | 28.18                 | 28.90             | 50.6                  | 0.571             |
| 105.00    | 0.63               | 1.27                | 0.00                | 0.00              | 0.00                  | 25.83                 | 26.55             | 51.3                  | 0.518             |
| 110.00    | 0.62               | 1.29                | 0.00                | 0.00              | 0.00                  | 23.20                 | 23.92             | 52.0                  | 0.460             |
| 115.00    | 0.61               | 1.31                | 0.00                | 0.00              | 0.00                  | 20.24                 | 20.97             | 52.0                  | 0.403             |
| 120.00    | 0.60               | 1.33                | 0.00                | 0.00              | 0.00                  | 16.90                 | 17.65             | 52.0                  | 0.340             |
| 123.00    | 0.47               | 1.09                | 0.00                | 0.00              | 0.00                  | 14.71                 | 15.29             | 52.0                  | 0.294             |
| 125.00    | 0.46               | 1.09                | 0.00                | 0.00              | 0.00                  | 13.53                 | 14.12             | 52.0                  | 0.272             |
| 127.92    | 0.46               | 1.10                | 0.00                | 0.00              | 0.00                  | 11.70                 | 12.31             | 52.0                  | 0.237             |
| 130.00    | 0.45               | 1.11                | 0.00                | 0.00              | 0.00                  | 10.32                 | 10.93             | 52.0                  | 0.210             |
| 131.00    | 0.36               | 0.89                | 0.00                | 0.00              | 0.00                  | 9.63                  | 10.11             | 52.0                  | 0.194             |
| 132.08    | 0.47               | 1.17                | 0.00                | 0.00              | 0.00                  | 11.72                 | 12.35             | 52.0                  | 0.238             |
| 135.00    | 0.46               | 1.17                | 0.00                | 0.00              | 0.00                  | 9.58                  | 10.24             | 48.9                  | 0.209             |
| 140.00    | 0.45               | 1.18                | 0.00                | 0.00              | 0.00                  | 5.51                  | 6.30              | 49.8                  | 0.126             |
| 141.00    | 0.25               | 0.63                | 0.00                | 0.00              | 0.00                  | 4.64                  | 5.01              | 50.0                  | 0.100             |
| 145.00    | 0.24               | 0.62                | 0.00                | 0.00              | 0.00                  | 2.80                  | 3.22              | 50.7                  | 0.063             |
| 150.00    | 0.00               | 0.61                | 0.00                | 0.00              | 0.00                  | 0.25                  | 1.09              | 51.6                  | 0.021             |

## Wind Loading - Shaft

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

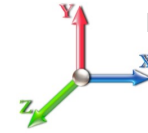
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
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**Load Case:** 50 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 22

| Elev (ft)      | Description     | Kzt  | Kz   | qz (psf) | qzGh (psf) | C (mph-ft) | Cf    | Ice Thick (in) | Tributary (ft) | Aa (sf) | CfAa (sf) | Wind Force X (lb) | Dead Load Ice (lb) | Tot Dead Load (lb) |
|----------------|-----------------|------|------|----------|------------|------------|-------|----------------|----------------|---------|-----------|-------------------|--------------------|--------------------|
| 0.00           |                 | 0.00 | 1.00 | 6.400    | 10.82      | 256.25     | 0.650 | 0.000          | 0.00           | 0.000   | 0.00      | 0.0               | 0.0                | 0.0                |
| 5.00           |                 | 0.00 | 1.00 | 6.400    | 10.82      | 251.43     | 0.650 | 0.000          | 5.00           | 25.384  | 16.50     | 178.5             | 0.0                | 1022.8             |
| 10.00          |                 | 0.00 | 1.00 | 6.400    | 10.82      | 246.61     | 0.650 | 0.000          | 5.00           | 24.902  | 16.19     | 175.1             | 0.0                | 1003.3             |
| 15.00          |                 | 0.00 | 1.00 | 6.400    | 10.82      | 241.79     | 0.650 | 0.000          | 5.00           | 24.420  | 15.87     | 171.7             | 0.0                | 983.7              |
| 20.00          |                 | 0.00 | 1.00 | 6.400    | 10.82      | 236.97     | 0.650 | 0.000          | 5.00           | 23.938  | 15.56     | 168.3             | 0.0                | 964.2              |
| 25.00          |                 | 0.00 | 1.00 | 6.400    | 10.82      | 232.15     | 0.650 | 0.000          | 5.00           | 23.456  | 15.25     | 164.9             | 0.0                | 944.7              |
| 30.00          |                 | 0.00 | 1.00 | 6.400    | 10.82      | 227.33     | 0.650 | 0.000          | 5.00           | 22.974  | 14.93     | 161.5             | 0.0                | 925.2              |
| 35.00          |                 | 0.00 | 1.02 | 6.509    | 11.00      | 224.39     | 0.650 | 0.000          | 5.00           | 22.492  | 14.62     | 160.8             | 0.0                | 905.7              |
| 40.00          |                 | 0.00 | 1.06 | 6.762    | 11.43      | 223.76     | 0.650 | 0.000          | 5.00           | 22.010  | 14.31     | 163.5             | 0.0                | 886.1              |
| 41.50          | Bot - Section 2 | 0.00 | 1.07 | 6.833    | 11.55      | 223.44     | 0.650 | 0.000          | 1.50           | 6.509   | 4.23      | 48.9              | 0.0                | 262.0              |
| 45.00          |                 | 0.00 | 1.09 | 6.993    | 11.82      | 222.51     | 0.650 | 0.000          | 3.50           | 15.201  | 9.88      | 116.8             | 0.0                | 1216.5             |
| 48.00          | Top - Section 1 | 0.00 | 1.11 | 7.123    | 12.04      | 221.52     | 0.650 | 0.000          | 3.00           | 12.842  | 8.35      | 100.5             | 0.0                | 1027.5             |
| 50.00          |                 | 0.00 | 1.13 | 7.207    | 12.18      | 223.54     | 0.650 | 0.000          | 2.00           | 8.465   | 5.50      | 67.0              | 0.0                | 340.7              |
| 55.00          |                 | 0.00 | 1.16 | 7.406    | 12.52      | 221.42     | 0.650 | 0.000          | 5.00           | 20.824  | 13.54     | 169.4             | 0.0                | 838.1              |
| 60.00          |                 | 0.00 | 1.19 | 7.592    | 12.83      | 218.94     | 0.650 | 0.000          | 5.00           | 20.342  | 13.22     | 169.7             | 0.0                | 818.6              |
| 65.00          |                 | 0.00 | 1.21 | 7.768    | 13.13      | 216.14     | 0.650 | 0.000          | 5.00           | 19.860  | 12.91     | 169.5             | 0.0                | 799.1              |
| 70.00          |                 | 0.00 | 1.24 | 7.934    | 13.41      | 213.08     | 0.650 | 0.000          | 5.00           | 19.378  | 12.60     | 168.9             | 0.0                | 779.6              |
| 75.00          |                 | 0.00 | 1.26 | 8.092    | 13.68      | 209.77     | 0.650 | 0.000          | 5.00           | 18.896  | 12.28     | 168.0             | 0.0                | 760.0              |
| 80.00          |                 | 0.00 | 1.29 | 8.242    | 13.93      | 206.24     | 0.650 | 0.000          | 5.00           | 18.414  | 11.97     | 166.7             | 0.0                | 740.5              |
| 84.08          | Bot - Section 3 | 0.00 | 1.31 | 8.361    | 14.13      | 203.21     | 0.650 | 0.000          | 4.08           | 14.681  | 9.54      | 134.8             | 0.0                | 590.3              |
| 85.00          |                 | 0.00 | 1.31 | 8.387    | 14.17      | 202.52     | 0.650 | 0.000          | 0.92           | 3.290   | 2.14      | 30.3              | 0.0                | 236.7              |
| 89.50          | Top - Section 2 | 0.00 | 1.33 | 8.511    | 14.38      | 199.01     | 0.650 | 0.000          | 4.50           | 15.915  | 10.34     | 148.8             | 0.0                | 1144.8             |
| 90.00          |                 | 0.00 | 1.33 | 8.525    | 14.41      | 201.02     | 0.650 | 0.000          | 0.50           | 1.744   | 1.13      | 16.3              | 0.0                | 56.2               |
| 95.00          |                 | 0.00 | 1.35 | 8.657    | 14.63      | 196.97     | 0.650 | 0.000          | 5.00           | 17.177  | 11.16     | 163.4             | 0.0                | 553.2              |
| 100.00         |                 | 0.00 | 1.37 | 8.785    | 14.85      | 192.77     | 0.650 | 0.000          | 5.00           | 16.695  | 10.85     | 161.1             | 0.0                | 537.5              |
| 105.00         |                 | 0.00 | 1.39 | 8.908    | 15.06      | 188.44     | 0.650 | 0.000          | 5.00           | 16.213  | 10.54     | 158.7             | 0.0                | 521.9              |
| 110.00         |                 | 0.00 | 1.41 | 9.028    | 15.26      | 183.97     | 0.650 | 0.000          | 5.00           | 15.731  | 10.22     | 156.0             | 0.0                | 506.3              |
| 115.00         |                 | 0.00 | 1.43 | 9.143    | 15.45      | 179.38     | 0.650 | 0.000          | 5.00           | 15.249  | 9.91      | 153.2             | 0.0                | 490.7              |
| 120.00         |                 | 0.00 | 1.45 | 9.255    | 15.64      | 174.68     | 0.650 | 0.000          | 5.00           | 14.767  | 9.60      | 150.1             | 0.0                | 475.1              |
| 123.00         | Appurtenance(s) | 0.00 | 1.46 | 9.320    | 15.75      | 171.80     | 0.650 | 0.000          | 3.00           | 8.629   | 5.61      | 88.3              | 0.0                | 277.5              |
| 125.00         |                 | 0.00 | 1.46 | 9.363    | 15.82      | 169.87     | 0.650 | 0.000          | 2.00           | 5.656   | 3.68      | 58.2              | 0.0                | 181.9              |
| 127.92         | Bot - Section 4 | 0.00 | 1.47 | 9.425    | 15.93      | 167.02     | 0.650 | 0.000          | 2.92           | 8.110   | 5.27      | 84.0              | 0.0                | 260.8              |
| 130.00         |                 | 0.00 | 1.48 | 9.469    | 16.00      | 164.96     | 0.650 | 0.000          | 2.08           | 5.758   | 3.74      | 59.9              | 0.0                | 322.2              |
| 131.00         | Appurtenance(s) | 0.00 | 1.48 | 9.490    | 16.04      | 163.97     | 0.650 | 0.000          | 1.00           | 2.734   | 1.78      | 28.5              | 0.0                | 152.9              |
| 132.08         | Top - Section 3 | 0.00 | 1.49 | 9.512    | 16.08      | 162.89     | 0.650 | 0.000          | 1.08           | 2.940   | 1.91      | 30.7              | 0.0                | 164.5              |
| 135.00         |                 | 0.00 | 1.50 | 9.572    | 16.18      | 161.87     | 0.650 | 0.000          | 2.92           | 7.803   | 5.07      | 82.0              | 0.0                | 188.5              |
| 140.00         |                 | 0.00 | 1.51 | 9.672    | 16.35      | 156.79     | 0.650 | 0.000          | 5.00           | 12.995  | 8.45      | 138.1             | 0.0                | 313.9              |
| 141.00         | Appurtenance(s) | 0.00 | 1.51 | 9.691    | 16.38      | 155.76     | 0.650 | 0.000          | 1.00           | 2.541   | 1.65      | 27.1              | 0.0                | 61.4               |
| 145.00         |                 | 0.00 | 1.53 | 9.769    | 16.51      | 151.62     | 0.650 | 0.000          | 4.00           | 9.972   | 6.48      | 107.0             | 0.0                | 240.8              |
| 150.00         | Appurtenance(s) | 0.00 | 1.54 | 9.864    | 16.67      | 146.37     | 0.650 | 0.000          | 5.00           | 12.031  | 7.82      | 130.4             | 0.0                | 290.5              |
| <b>Totals:</b> |                 |      |      |          |            |            |       |                | <b>150.00</b>  |         |           | <b>4,796.3</b>    |                    | <b>22,785.8</b>    |

## Discrete Appurtenance Forces

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

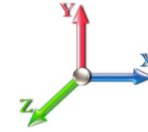
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
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**Load Case:** 50 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 22

| No. | Elev (ft) | Description                | Qty | qz (psf) | qzGh (psf) | CaAa Factor | Total CaAa (sf) | Dead Load (lb) | Horiz Ecc (ft) | Vert Ecc (ft) | Wind FX (lb) | Mom Y (lb-ft) | Mom Z (lb-ft) |
|-----|-----------|----------------------------|-----|----------|------------|-------------|-----------------|----------------|----------------|---------------|--------------|---------------|---------------|
| 1   | 150.00    | Ericsson RRUS-11           | 6   | 9.883    | 16.702     | 0.50        | 8.82            | 304.20         | 0.000          | 1.000         | 147.31       | 0.00          | 147.31        |
| 2   | 150.00    | 782-10250                  | 3   | 9.864    | 16.670     | 1.00        | 2.10            | 122.40         | 0.000          | 0.000         | 35.01        | 0.00          | 0.00          |
| 3   | 150.00    | CCI DTMA BP7819VG12A       | 6   | 9.883    | 16.702     | 0.67        | 4.58            | 115.20         | 0.000          | 1.000         | 76.54        | 0.00          | 76.54         |
| 4   | 150.00    | CCI TPA-65R-LCUUUU-H8      | 2   | 9.864    | 16.670     | 0.79        | 21.52           | 98.80          | 0.000          | 0.000         | 358.74       | 0.00          | 0.00          |
| 5   | 150.00    | CCI TPX-070821             | 6   | 9.864    | 16.670     | 0.67        | 2.17            | 19.80          | 0.000          | 0.000         | 36.19        | 0.00          | 0.00          |
| 6   | 150.00    | Commscope                  | 3   | 9.883    | 16.702     | 0.98        | 0.15            | 3.30           | 0.000          | 1.000         | 2.46         | 0.00          | 2.46          |
| 7   | 150.00    | CSS DBC-750                | 3   | 9.883    | 16.702     | 0.67        | 1.03            | 14.40          | 0.000          | 1.000         | 17.12        | 0.00          | 17.12         |
| 8   | 150.00    | RRUS-32                    | 3   | 9.864    | 16.670     | 0.50        | 5.80            | 231.00         | 0.000          | 0.000         | 96.77        | 0.00          | 0.00          |
| 9   | 150.00    | Kathrein 800-10121         | 3   | 9.883    | 16.702     | 0.90        | 15.05           | 187.20         | 0.000          | 1.000         | 251.39       | 0.00          | 251.39        |
| 10  | 150.00    | KMW                        | 1   | 9.883    | 16.702     | 0.87        | 7.16            | 70.50          | 0.000          | 1.000         | 119.61       | 0.00          | 119.61        |
| 11  | 150.00    | LMU                        | 1   | 9.883    | 16.702     | 1.00        | 0.88            | 28.00          | 0.000          | 1.000         | 14.70        | 0.00          | 14.70         |
| 12  | 150.00    | Low Profile Platform       | 1   | 9.864    | 16.670     | 1.00        | 22.00           | 1500.00        | 0.000          | 0.000         | 366.75       | 0.00          | 0.00          |
| 13  | 150.00    | Powerwave P65-17-XLH-RR    | 2   | 9.883    | 16.702     | 0.88        | 20.15           | 176.60         | 0.000          | 1.000         | 336.49       | 0.00          | 336.49        |
| 14  | 150.00    | Quintel QS66512-3          | 1   | 9.864    | 16.670     | 0.91        | 7.64            | 77.00          | 0.000          | 0.000         | 127.43       | 0.00          | 0.00          |
| 15  | 150.00    | Raycap DC6-48-60-18-8F     | 2   | 9.883    | 16.702     | 1.00        | 2.94            | 63.60          | 0.000          | 1.000         | 49.10        | 0.00          | 49.10         |
| 16  | 141.00    | RFS DB-T1-6Z-8AB-0Z        | 1   | 9.691    | 16.378     | 0.96        | 4.59            | 21.40          | 0.000          | 0.000         | 75.16        | 0.00          | 0.00          |
| 17  | 141.00    | RFS DB-T1-6Z-8AB-0Z        | 1   | 9.691    | 16.378     | 0.96        | 4.59            | 21.40          | 0.000          | 0.000         | 75.16        | 0.00          | 0.00          |
| 18  | 141.00    | Low Profile Platform       | 1   | 9.691    | 16.378     | 1.00        | 22.00           | 1500.00        | 0.000          | 0.000         | 360.32       | 0.00          | 0.00          |
| 19  | 141.00    | Commscope SBNHH-1D65B      | 6   | 9.691    | 16.378     | 0.91        | 45.22           | 436.20         | 0.000          | 0.000         | 740.60       | 0.00          | 0.00          |
| 20  | 141.00    | Antel                      | 3   | 9.691    | 16.378     | 1.02        | 11.93           | 90.90          | 0.000          | 0.000         | 195.46       | 0.00          | 0.00          |
| 21  | 141.00    | Antel                      | 3   | 9.691    | 16.378     | 0.86        | 20.00           | 117.00         | 0.000          | 0.000         | 327.48       | 0.00          | 0.00          |
| 22  | 141.00    | Alcatel Lucent             | 3   | 9.691    | 16.378     | 0.90        | 6.94            | 165.00         | 0.000          | 0.000         | 113.65       | 0.00          | 0.00          |
| 23  | 141.00    | Alcatel Lucent             | 3   | 9.691    | 16.378     | 0.50        | 5.94            | 180.00         | 0.000          | 0.000         | 97.29        | 0.00          | 0.00          |
| 24  | 141.00    | Alcatel Lucent RRH2X60-700 | 3   | 9.691    | 16.378     | 0.50        | 5.94            | 180.00         | 0.000          | 0.000         | 97.29        | 0.00          | 0.00          |
| 25  | 131.00    | Commscope LNX-6515DS       | 3   | 9.490    | 16.038     | 0.92        | 31.57           | 237.30         | 0.000          | 0.000         | 506.27       | 0.00          | 0.00          |
| 26  | 131.00    | Ericsson KRY 144/1         | 3   | 9.490    | 16.038     | 0.70        | 0.86            | 33.00          | 0.000          | 0.000         | 13.81        | 0.00          | 0.00          |
| 27  | 131.00    | Kathrein 782 11056         | 3   | 9.490    | 16.038     | 0.76        | 1.50            | 33.00          | 0.000          | 0.000         | 24.13        | 0.00          | 0.00          |
| 28  | 131.00    | RFS                        | 3   | 9.490    | 16.038     | 0.74        | 16.38           | 188.10         | 0.000          | 0.000         | 262.74       | 0.00          | 0.00          |
| 29  | 131.00    | RFS ATM1412D-1A20          | 3   | 9.490    | 16.038     | 0.73        | 2.56            | 39.00          | 0.000          | 0.000         | 41.09        | 0.00          | 0.00          |
| 30  | 131.00    | T-Arms (Site Pro P/N       | 3   | 9.490    | 16.038     | 0.90        | 8.78            | 396.00         | 0.000          | 0.000         | 140.73       | 0.00          | 0.00          |
| 31  | 123.00    | RFS APXVTM14-C-I30         | 3   | 9.320    | 15.751     | 0.85        | 18.30           | 234.00         | 0.000          | 0.000         | 288.27       | 0.00          | 0.00          |
| 32  | 123.00    | RFS APXVSP18-C-A20         | 3   | 9.320    | 15.751     | 0.91        | 22.45           | 237.00         | 0.000          | 0.000         | 353.63       | 0.00          | 0.00          |
| 33  | 123.00    | RFS ACU-A20-N              | 4   | 9.320    | 15.751     | 0.79        | 0.44            | 4.00           | 0.000          | 0.000         | 6.97         | 0.00          | 0.00          |
| 34  | 123.00    | Low Profile Platform       | 1   | 9.320    | 15.751     | 1.00        | 22.00           | 1500.00        | 0.000          | 0.000         | 346.53       | 0.00          | 0.00          |
| 35  | 123.00    | Alcatel Lucent             | 3   | 9.320    | 15.751     | 0.69        | 9.77            | 210.00         | 0.000          | 0.000         | 153.90       | 0.00          | 0.00          |
| 36  | 123.00    | Alcatel Lucent 800 MHz     | 6   | 9.320    | 15.751     | 0.92        | 13.74           | 318.00         | 0.000          | 0.000         | 216.50       | 0.00          | 0.00          |
| 37  | 123.00    | Alcatel Lucent 1900 MHz    | 3   | 9.320    | 15.751     | 0.98        | 7.97            | 180.00         | 0.000          | 0.000         | 125.50       | 0.00          | 0.00          |

**Totals:** 9,333.30

**6,598.08**

## Total Applied Force Summary

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

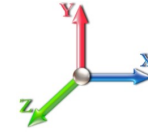
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
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**Load Case:** 50 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 22

| Elev<br>(ft)   | Description        | Lateral<br>FX (-)<br>(lb) | Axial<br>FY (-)<br>(lb) | Torsion<br>MY<br>(lb-ft) | Moment<br>MZ<br>(lb-ft) |
|----------------|--------------------|---------------------------|-------------------------|--------------------------|-------------------------|
| 0.00           |                    | 0.00                      | 0.00                    | 0.00                     | 0.00                    |
| 5.00           |                    | 178.46                    | 1239.26                 | 0.00                     | 0.00                    |
| 10.00          |                    | 175.07                    | 1219.74                 | 0.00                     | 0.00                    |
| 15.00          |                    | 171.68                    | 1200.22                 | 0.00                     | 0.00                    |
| 20.00          |                    | 168.29                    | 1180.70                 | 0.00                     | 0.00                    |
| 25.00          |                    | 164.91                    | 1161.18                 | 0.00                     | 0.00                    |
| 30.00          |                    | 161.52                    | 1141.66                 | 0.00                     | 0.00                    |
| 35.00          |                    | 160.81                    | 1122.13                 | 0.00                     | 0.00                    |
| 40.00          |                    | 163.48                    | 1102.61                 | 0.00                     | 0.00                    |
| 41.50          |                    | 48.86                     | 326.98                  | 0.00                     | 0.00                    |
| 45.00          |                    | 116.77                    | 1368.08                 | 0.00                     | 0.00                    |
| 48.00          |                    | 100.48                    | 1157.41                 | 0.00                     | 0.00                    |
| 50.00          |                    | 67.01                     | 427.30                  | 0.00                     | 0.00                    |
| 55.00          |                    | 169.41                    | 1054.60                 | 0.00                     | 0.00                    |
| 60.00          |                    | 169.65                    | 1035.08                 | 0.00                     | 0.00                    |
| 65.00          |                    | 169.47                    | 1015.56                 | 0.00                     | 0.00                    |
| 70.00          |                    | 168.89                    | 996.03                  | 0.00                     | 0.00                    |
| 75.00          |                    | 167.97                    | 976.51                  | 0.00                     | 0.00                    |
| 80.00          |                    | 166.73                    | 956.99                  | 0.00                     | 0.00                    |
| 84.08          |                    | 134.83                    | 767.06                  | 0.00                     | 0.00                    |
| 85.00          |                    | 30.31                     | 276.38                  | 0.00                     | 0.00                    |
| 89.50          |                    | 148.79                    | 1339.63                 | 0.00                     | 0.00                    |
| 90.00          |                    | 16.33                     | 77.82                   | 0.00                     | 0.00                    |
| 95.00          |                    | 163.35                    | 769.63                  | 0.00                     | 0.00                    |
| 100.00         |                    | 161.11                    | 754.02                  | 0.00                     | 0.00                    |
| 105.00         |                    | 158.66                    | 738.40                  | 0.00                     | 0.00                    |
| 110.00         |                    | 156.00                    | 722.78                  | 0.00                     | 0.00                    |
| 115.00         |                    | 153.15                    | 707.17                  | 0.00                     | 0.00                    |
| 120.00         |                    | 150.13                    | 691.55                  | 0.00                     | 0.00                    |
| 123.00         | (23) appurtenances | 1579.64                   | 3090.43                 | 0.00                     | 0.00                    |
| 125.00         |                    | 58.18                     | 260.87                  | 0.00                     | 0.00                    |
| 127.92         |                    | 83.97                     | 375.95                  | 0.00                     | 0.00                    |
| 130.00         |                    | 59.89                     | 404.40                  | 0.00                     | 0.00                    |
| 131.00         | (18) appurtenances | 1017.27                   | 1118.83                 | 0.00                     | 0.00                    |
| 132.08         |                    | 30.72                     | 197.09                  | 0.00                     | 0.00                    |
| 135.00         |                    | 82.04                     | 276.36                  | 0.00                     | 0.00                    |
| 140.00         |                    | 138.06                    | 464.48                  | 0.00                     | 0.00                    |
| 141.00         | (24) appurtenances | 2109.45                   | 2803.39                 | 0.00                     | 0.00                    |
| 145.00         |                    | 107.01                    | 302.56                  | 0.00                     | 0.00                    |
| 150.00         | (43) appurtenances | 2165.98                   | 3379.66                 | 0.00                     | 1014.73                 |
| <b>Totals:</b> |                    | <b>11,394.35</b>          | <b>38,200.49</b>        | <b>0.00</b>              | <b>1,014.73</b>         |

## Resulting Forces and Deflections

**Structure:** CT10022-A-SB  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

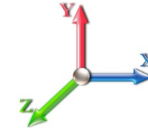
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
 Page: 22



**Load Case:** 50 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 22

| Elev (ft) | Lateral FX (-) (kips) | Axial FY (-) (kips) | Lateral FZ (kips) | Moment MX (ft-kips) | Torsion MY (ft-kips) | Moment MZ (ft-kips) | Deflect X (in) | Deflect Z (in) | Deflect Resultant (in) | Rotation Sway (deg) | Rotation Twist (deg) |
|-----------|-----------------------|---------------------|-------------------|---------------------|----------------------|---------------------|----------------|----------------|------------------------|---------------------|----------------------|
| 0.00      | -11.415               | -38.194             | 0.000             | 0.000               | 0.000                | -1309.6             | 0.000          | 0.000          | 0.000                  | 0.000               | 0.000                |
| 5.00      | -11.277               | -36.942             | 0.000             | 0.000               | 0.000                | -1252.5             | -0.034         | 0.000          | 0.034                  | -0.063              | 0.000                |
| 10.00     | -11.140               | -35.710             | 0.000             | 0.000               | 0.000                | -1196.1             | -0.135         | 0.000          | 0.135                  | -0.128              | 0.000                |
| 15.00     | -11.005               | -34.498             | 0.000             | 0.000               | 0.000                | -1140.4             | -0.304         | 0.000          | 0.304                  | -0.193              | 0.000                |
| 20.00     | -10.870               | -33.305             | 0.000             | 0.000               | 0.000                | -1085.4             | -0.542         | 0.000          | 0.542                  | -0.258              | 0.000                |
| 25.00     | -10.737               | -32.133             | 0.000             | 0.000               | 0.000                | -1031.0             | -0.848         | 0.000          | 0.848                  | -0.325              | 0.000                |
| 30.00     | -10.605               | -30.980             | 0.000             | 0.000               | 0.000                | -977.40             | -1.224         | 0.000          | 1.224                  | -0.392              | 0.000                |
| 35.00     | -10.471               | -29.846             | 0.000             | 0.000               | 0.000                | -924.38             | -1.671         | 0.000          | 1.671                  | -0.459              | 0.000                |
| 40.00     | -10.320               | -28.737             | 0.000             | 0.000               | 0.000                | -872.02             | -2.189         | 0.000          | 2.189                  | -0.528              | 0.000                |
| 41.50     | -10.285               | -28.404             | 0.000             | 0.000               | 0.000                | -856.54             | -2.359         | 0.000          | 2.359                  | -0.549              | 0.000                |
| 45.00     | -10.176               | -27.030             | 0.000             | 0.000               | 0.000                | -820.55             | -2.779         | 0.000          | 2.779                  | -0.597              | 0.000                |
| 48.00     | -10.079               | -25.867             | 0.000             | 0.000               | 0.000                | -790.02             | -3.168         | 0.000          | 3.168                  | -0.639              | 0.000                |
| 50.00     | -10.028               | -25.432             | 0.000             | 0.000               | 0.000                | -769.86             | -3.442         | 0.000          | 3.442                  | -0.667              | 0.000                |
| 55.00     | -9.874                | -24.368             | 0.000             | 0.000               | 0.000                | -719.72             | -4.177         | 0.000          | 4.177                  | -0.734              | 0.000                |
| 60.00     | -9.718                | -23.324             | 0.000             | 0.000               | 0.000                | -670.35             | -4.982         | 0.000          | 4.982                  | -0.801              | 0.000                |
| 65.00     | -9.560                | -22.300             | 0.000             | 0.000               | 0.000                | -621.76             | -5.856         | 0.000          | 5.856                  | -0.867              | 0.000                |
| 70.00     | -9.400                | -21.296             | 0.000             | 0.000               | 0.000                | -573.96             | -6.800         | 0.000          | 6.800                  | -0.934              | 0.000                |
| 75.00     | -9.239                | -20.312             | 0.000             | 0.000               | 0.000                | -526.96             | -7.814         | 0.000          | 7.814                  | -0.999              | 0.000                |
| 80.00     | -9.074                | -19.349             | 0.000             | 0.000               | 0.000                | -480.77             | -8.896         | 0.000          | 8.896                  | -1.064              | 0.000                |
| 84.08     | -8.935                | -18.580             | 0.000             | 0.000               | 0.000                | -443.72             | -9.829         | 0.000          | 9.829                  | -1.117              | 0.000                |
| 85.00     | -8.911                | -18.299             | 0.000             | 0.000               | 0.000                | -435.53             | -10.045        | 0.000          | 10.045                 | -1.129              | 0.000                |
| 89.50     | -8.744                | -16.957             | 0.000             | 0.000               | 0.000                | -395.43             | -11.137        | 0.000          | 11.137                 | -1.186              | 0.000                |
| 90.00     | -8.738                | -16.874             | 0.000             | 0.000               | 0.000                | -391.06             | -11.262        | 0.000          | 11.262                 | -1.192              | 0.000                |
| 95.00     | -8.579                | -16.097             | 0.000             | 0.000               | 0.000                | -347.37             | -12.551        | 0.000          | 12.551                 | -1.265              | 0.000                |
| 100.00    | -8.419                | -15.337             | 0.000             | 0.000               | 0.000                | -304.48             | -13.914        | 0.000          | 13.914                 | -1.336              | 0.000                |
| 105.00    | -8.259                | -14.593             | 0.000             | 0.000               | 0.000                | -262.38             | -15.350        | 0.000          | 15.350                 | -1.402              | 0.000                |
| 110.00    | -8.099                | -13.866             | 0.000             | 0.000               | 0.000                | -221.09             | -16.852        | 0.000          | 16.852                 | -1.464              | 0.000                |
| 115.00    | -7.940                | -13.156             | 0.000             | 0.000               | 0.000                | -180.59             | -18.417        | 0.000          | 18.417                 | -1.521              | 0.000                |
| 120.00    | -7.780                | -12.464             | 0.000             | 0.000               | 0.000                | -140.89             | -20.038        | 0.000          | 20.038                 | -1.571              | 0.000                |
| 123.00    | -6.118                | -9.416              | 0.000             | 0.000               | 0.000                | -117.56             | -21.034        | 0.000          | 21.034                 | -1.597              | 0.000                |
| 125.00    | -6.056                | -9.155              | 0.000             | 0.000               | 0.000                | -105.32             | -21.707        | 0.000          | 21.707                 | -1.613              | 0.000                |
| 127.92    | -5.964                | -8.779              | 0.000             | 0.000               | 0.000                | -87.660             | -22.699        | 0.000          | 22.699                 | -1.635              | 0.000                |
| 130.00    | -5.894                | -8.376              | 0.000             | 0.000               | 0.000                | -75.235             | -23.416        | 0.000          | 23.416                 | -1.648              | 0.000                |
| 131.00    | -4.846                | -7.286              | 0.000             | 0.000               | 0.000                | -69.341             | -23.762        | 0.000          | 23.762                 | -1.655              | 0.000                |
| 132.08    | -4.811                | -7.089              | 0.000             | 0.000               | 0.000                | -64.091             | -24.138        | 0.000          | 24.138                 | -1.661              | 0.000                |
| 135.00    | -4.723                | -6.814              | 0.000             | 0.000               | 0.000                | -50.060             | -25.158        | 0.000          | 25.158                 | -1.675              | 0.000                |
| 140.00    | -4.573                | -6.353              | 0.000             | 0.000               | 0.000                | -26.444             | -26.926        | 0.000          | 26.926                 | -1.698              | 0.000                |
| 141.00    | -2.382                | -3.613              | 0.000             | 0.000               | 0.000                | -21.871             | -27.283        | 0.000          | 27.283                 | -1.702              | 0.000                |
| 145.00    | -2.266                | -3.313              | 0.000             | 0.000               | 0.000                | -12.345             | -28.713        | 0.000          | 28.713                 | -1.711              | 0.000                |
| 150.00    | -2.166                | 0.000               | 0.000             | 0.000               | 0.000                | -1.015              | 0.000          | 0.000          | 30.508                 | -1.716              | 0.000                |



## Resulting Stresses

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

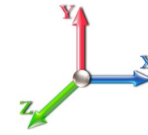
**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
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**Load Case:** 50 mph Wind with 0" Ice

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations:** 22

### Applied Stresses

| Elev (ft) | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | fb Combined (ksi) | Fb Allow Stress (ksi) | f/Fb Stress Ratio |
|-----------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-------------------|-----------------------|-------------------|
| 0.00      | 0.63               | 0.38                | 0.00                | 0.00              | 0.00                  | 17.09                 | 17.74             | 44.8                  | 0.396             |
| 5.00      | 0.62               | 0.38                | 0.00                | 0.00              | 0.00                  | 16.99                 | 17.62             | 45.3                  | 0.389             |
| 10.00     | 0.61               | 0.38                | 0.00                | 0.00              | 0.00                  | 16.87                 | 17.49             | 45.9                  | 0.381             |
| 15.00     | 0.60               | 0.39                | 0.00                | 0.00              | 0.00                  | 16.73                 | 17.35             | 46.4                  | 0.374             |
| 20.00     | 0.59               | 0.39                | 0.00                | 0.00              | 0.00                  | 16.59                 | 17.19             | 47.0                  | 0.366             |
| 25.00     | 0.58               | 0.39                | 0.00                | 0.00              | 0.00                  | 16.42                 | 17.02             | 47.6                  | 0.358             |
| 30.00     | 0.58               | 0.40                | 0.00                | 0.00              | 0.00                  | 16.24                 | 16.83             | 48.1                  | 0.350             |
| 35.00     | 0.57               | 0.40                | 0.00                | 0.00              | 0.00                  | 16.04                 | 16.62             | 48.7                  | 0.342             |
| 40.00     | 0.56               | 0.40                | 0.00                | 0.00              | 0.00                  | 15.81                 | 16.39             | 49.2                  | 0.333             |
| 41.50     | 0.56               | 0.41                | 0.00                | 0.00              | 0.00                  | 15.74                 | 16.31             | 49.4                  | 0.330             |
| 45.00     | 0.54               | 0.41                | 0.00                | 0.00              | 0.00                  | 15.57                 | 16.12             | 49.8                  | 0.324             |
| 48.00     | 0.51               | 0.40                | 0.00                | 0.00              | 0.00                  | 15.03                 | 15.56             | 50.1                  | 0.311             |
| 50.00     | 0.51               | 0.41                | 0.00                | 0.00              | 0.00                  | 14.92                 | 15.45             | 50.0                  | 0.309             |
| 55.00     | 0.50               | 0.41                | 0.00                | 0.00              | 0.00                  | 14.61                 | 15.13             | 50.6                  | 0.299             |
| 60.00     | 0.49               | 0.41                | 0.00                | 0.00              | 0.00                  | 14.28                 | 14.79             | 51.1                  | 0.289             |
| 65.00     | 0.48               | 0.42                | 0.00                | 0.00              | 0.00                  | 13.91                 | 14.41             | 51.7                  | 0.279             |
| 70.00     | 0.47               | 0.42                | 0.00                | 0.00              | 0.00                  | 13.50                 | 13.99             | 52.0                  | 0.269             |
| 75.00     | 0.46               | 0.42                | 0.00                | 0.00              | 0.00                  | 13.05                 | 13.53             | 52.0                  | 0.260             |
| 80.00     | 0.45               | 0.43                | 0.00                | 0.00              | 0.00                  | 12.56                 | 13.03             | 52.0                  | 0.251             |
| 84.08     | 0.44               | 0.43                | 0.00                | 0.00              | 0.00                  | 12.11                 | 12.58             | 52.0                  | 0.242             |
| 85.00     | 0.44               | 0.43                | 0.00                | 0.00              | 0.00                  | 12.01                 | 12.47             | 52.0                  | 0.240             |
| 89.50     | 0.51               | 0.53                | 0.00                | 0.00              | 0.00                  | 13.92                 | 14.47             | 52.0                  | 0.278             |
| 90.00     | 0.51               | 0.53                | 0.00                | 0.00              | 0.00                  | 13.85                 | 14.39             | 49.2                  | 0.292             |
| 95.00     | 0.50               | 0.54                | 0.00                | 0.00              | 0.00                  | 13.02                 | 13.55             | 49.9                  | 0.272             |
| 100.00    | 0.49               | 0.54                | 0.00                | 0.00              | 0.00                  | 12.09                 | 12.62             | 50.6                  | 0.249             |
| 105.00    | 0.48               | 0.55                | 0.00                | 0.00              | 0.00                  | 11.07                 | 11.59             | 51.3                  | 0.226             |
| 110.00    | 0.47               | 0.56                | 0.00                | 0.00              | 0.00                  | 9.92                  | 10.44             | 52.0                  | 0.201             |
| 115.00    | 0.46               | 0.56                | 0.00                | 0.00              | 0.00                  | 8.64                  | 9.15              | 52.0                  | 0.176             |
| 120.00    | 0.45               | 0.57                | 0.00                | 0.00              | 0.00                  | 7.20                  | 7.72              | 52.0                  | 0.148             |
| 123.00    | 0.35               | 0.46                | 0.00                | 0.00              | 0.00                  | 6.26                  | 6.65              | 52.0                  | 0.128             |
| 125.00    | 0.34               | 0.46                | 0.00                | 0.00              | 0.00                  | 5.76                  | 6.16              | 52.0                  | 0.118             |
| 127.92    | 0.34               | 0.46                | 0.00                | 0.00              | 0.00                  | 5.00                  | 5.39              | 52.0                  | 0.104             |
| 130.00    | 0.33               | 0.46                | 0.00                | 0.00              | 0.00                  | 4.42                  | 4.81              | 52.0                  | 0.093             |
| 131.00    | 0.29               | 0.38                | 0.00                | 0.00              | 0.00                  | 4.13                  | 4.47              | 52.0                  | 0.086             |
| 132.08    | 0.37               | 0.51                | 0.00                | 0.00              | 0.00                  | 5.02                  | 5.46              | 52.0                  | 0.105             |
| 135.00    | 0.36               | 0.51                | 0.00                | 0.00              | 0.00                  | 4.09                  | 4.54              | 48.9                  | 0.093             |
| 140.00    | 0.35               | 0.51                | 0.00                | 0.00              | 0.00                  | 2.33                  | 2.82              | 49.8                  | 0.057             |
| 141.00    | 0.20               | 0.27                | 0.00                | 0.00              | 0.00                  | 1.96                  | 2.21              | 50.0                  | 0.044             |
| 145.00    | 0.19               | 0.26                | 0.00                | 0.00              | 0.00                  | 1.18                  | 1.44              | 50.7                  | 0.028             |
| 150.00    | 0.00               | 0.26                | 0.00                | 0.00              | 0.00                  | 0.10                  | 0.46              | 51.6                  | 0.009             |

## Final Analysis Summary

**Structure:** CT10022-A-SBA  
**Site Name:** Simsbury 2, CT  
**Height:** 150.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-F  
**Exposure:** C  
**Gh:** 1.69  
**Struct Class:** II

1/8/2016  
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### Reactions

| Load Case                    | Shear FX (kips) | Shear FZ (kips) | Axial FY (kips) | Moment MX (ft-kips) | Moment MY (ft-kips) | Moment MZ (ft-kips) |
|------------------------------|-----------------|-----------------|-----------------|---------------------|---------------------|---------------------|
| 80 mph Wind with 0" Ice      | 29.2            | 0.00            | 38.16           | 0.00                | 0.00                | 3350.03             |
| 69.28 mph Wind with 0.5" Ice | 24.9            | 0.00            | 46.59           | 0.00                | 0.00                | 2954.63             |
| 50 mph Wind with 0" Ice      | 11.4            | 0.00            | 38.19           | 0.00                | 0.00                | 1309.62             |

### Max Stresses

| Load Case                    | fa Axial (Y) (ksi) | fvx Shear (X) (ksi) | fvz Shear (Z) (ksi) | fvT Torsion (ksi) | fbx Bending (X) (ksi) | fbz Bending (Z) (ksi) | Combined Stress (ksi) | Allowable Stress (ksi) | Elev (ft) | Stress Ratio |
|------------------------------|--------------------|---------------------|---------------------|-------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------|--------------|
| 80 mph Wind with 0" Ice      | 0.63               | 0.97                | 0.00                | 0.00              | 0.00                  | 43.73                 | 44.39                 | 44.8                   | 0.00      | 0.991        |
| 69.28 mph Wind with 0.5" Ice | 0.77               | 0.83                | 0.00                | 0.00              | 0.00                  | 38.57                 | 39.36                 | 44.8                   | 0.00      | 0.879        |
| 50 mph Wind with 0" Ice      | 0.63               | 0.38                | 0.00                | 0.00              | 0.00                  | 17.09                 | 17.74                 | 44.8                   | 0.00      | 0.396        |



# Monopole Mat Foundation Design

Date

1/8/2016

|                       |                |                                |           |
|-----------------------|----------------|--------------------------------|-----------|
| <b>Customer Name:</b> | AT&T           | <b>EIA/TIA Standard:</b>       | EIA-222-F |
| <b>Site Name:</b>     | Simsbury 2, CT | <b>Structure Height (Ft.):</b> | 150       |
| <b>Site Number:</b>   | CT10022-A-SBA  | <b>Engineer Name:</b>          | K. Wyant  |
| <b>Engr. Number:</b>  | 19858          | <b>Engineer Login ID:</b>      |           |

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

**Base Reactions (Unfactored)**

|                      |      |                     |        |
|----------------------|------|---------------------|--------|
| Axial Load (Kips):   | 38.2 | Shear Force (Kips): | 29.2   |
| Uplift Force (Kips): | 0.0  | Moment (Kips-ft):   | 3350.0 |

Allowable overstress %: 5.0%

**Foundation Geometries:**

|                          |      |                         |      |
|--------------------------|------|-------------------------|------|
| Diameter of Pier (ft.):  | 7.5  | Depth of Base BG (ft.): | 6.0  |
| Pier Height A. G. (ft.): | 0.50 | Thickness of Pad (ft.): | 3.50 |
| Length of Pad (ft.):     | 23.5 | Width of Pad (ft.):     | 23.5 |

|                             |      |                             |      |
|-----------------------------|------|-----------------------------|------|
| Final Length of pad (ft)    | 23.5 | Final width of pad (ft):    | 23.5 |
| Control Value for Cell D18: | 0    | Control Value for Cell F18: | 0    |

**Material Properties and Rebar Info:**

|                          |      |                           |       |     |
|--------------------------|------|---------------------------|-------|-----|
| Concrete Strength (psi): | 3000 | Steel Elastic Modulus:    | 29000 | ksi |
| Vertical bar yield (ksi) | 60   | Tie steel yield (ksi):    | 60    |     |
| Vertical Rebar Size #:   | 9    | Tie / Stirrup Size #:     | 4     |     |
| Qty. of Vertical Rebars: | 34   | Tie Spacing (in):         | 3.0   |     |
| Pad Rebar Yield (Ksi):   | 60   | Pad Steel Rebar Size (#): | 8     |     |
| Concrete Cover (in.):    | 3    | Unit Weight of Concrete:  | 150.0 | pcf |

|  |    |                           |    |
|--|----|---------------------------|----|
| Rebar at the bottom of the concrete pad: |    |                           |    |
| Qty. of Rebar in Pad (L):                | 24 | Qty. of Rebar in Pad (W): | 24 |
| Rebar at the top of the concrete pad:    |    |                           |    |
| Qty. of Rebar in Pad (L):                | 24 | Qty. of Rebar in Pad (W): | 24 |

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

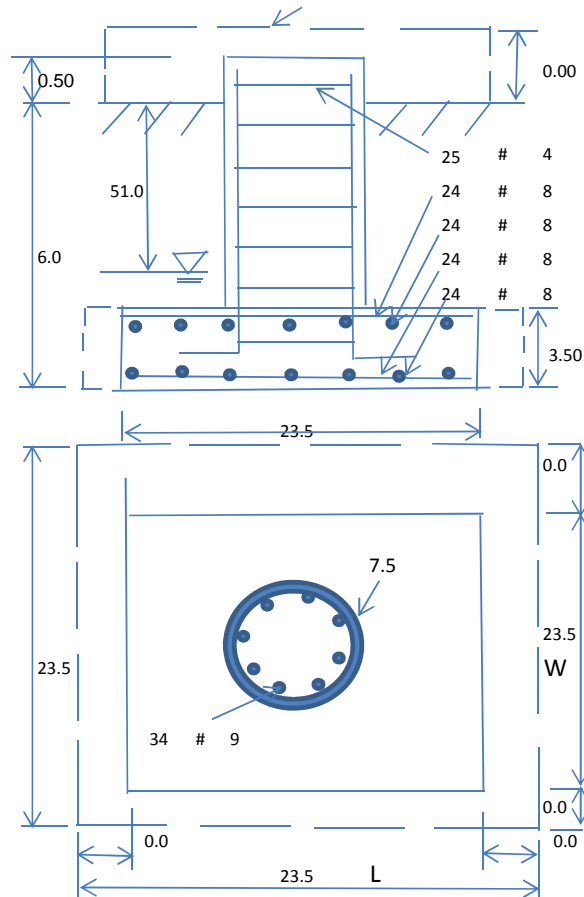
|                                       |       |  |      |     |                          |    |
|---------------------------------------|-------|--|------|-----|--------------------------|----|
| Soil Unit Weight (pcf):               | 125.0 | Soil Buoyant Weight:                                   | 60.0 | Pcf |                          |    |
| Water Table B.G.S. (ft):              | 51.0  | Unit Weight of Water:                                  | 62.4 | pcf | Angle from Top of Pad:   | 30 |
| Allowable Net Soil Bearing (psf):     | 7000  | Allowable Skin Friction:                               | 0    | Psf | Angle from Bottm of Pad: | 25 |
| Consider Friction for O.T.M. (Y/N):   | No    | Consider Friction for bearing (Y/N):                   | No   |     | Angle from Bottm of Pad: | 25 |
| Consider soil hori. force for O.T.M.: | No    | Reduction factor on the maximum soil bearing pressure: | 1.00 |     |                          |    |

**Foundation Analysis and Design:**

|  |         |  |        |
|--|---------|--|--------|
| Total Dry Soil Volume (cu. Ft.):         | 1270.18 | Total Dry Soil Weight (Kips):              | 158.77 |
| Total Buoyant Soil Volume (cu. Ft.):     | 0.00    | Total Buoyant Soil Weight (Kips):          | 0.00   |
| Total Effective Soil Weight (Kips):      | 158.77  | Weight from the Concrete Block at Top (K): | 0.00   |
| Total Dry Concrete Volume (cu. Ft.):     | 2065.41 | Total Dry Concrete Weight (Kips):          | 309.81 |
| Total Buoyant Concrete Volume (cu. Ft.): | 0.00    | Total Buoyant Concrete Weight (Kips):      | 0.00   |
| Total Effective Concrete Weight (Kips):  | 309.81  | Total Vertical Load on Base (Kips):        | 506.74 |

**Check Soil Capacities:**

|  |        |   |                               |      |      |     |
|--|--------|---|-------------------------------|------|------|-----|
| Calculated Maxium Net Soil Pressure under the base (psf):          | 3324   | < | Allowable Soil Bearing (psf): | 7000 | 0.47 | OK! |
| Allowable Foundation Overturning Resistance (SF=1.5, kips-ft.):    | 3969.5 | > | Applied Momont (kips-ft):     | 3540 | 0.89 | OK! |
| Factor of Safety Against Overturning (O. R. Moment/Design Moment): | 1.68   |   |                               |      |      | OK! |



**Check the capacities of Reinforcing Concrete:**

|  |      |                                      |      |  |
|--|------|--------------------------------------|------|--|
| Strength reduction factor (Flexure and axial tension): | 0.90 | Strength reduction factor (Shear):   | 0.75 |  |
| Strength reduction factor (Axial compression):         | 0.65 | Wind Load Factor on Concrete Design: | 1.30 |  |

Load/  
Capacity  
Ratio

(1) Concrete Pier:

|   |        |  |        |          |
|---|--------|--|--------|----------|
| Vertical Steel Rebar Area (sq. in./each):         | 1.00   | Tie / Stirrup Area (sq. in./each):       | 0.20   |          |
| Calculated Moment Capacity (Mn,Kips-Ft):          | 6200.6 | > Design Factored Moment (Mu, Kips-Ft):  | 4468.9 | 0.72 OK! |
| Calculated Shear Capacity (Kips):                 | 1098.7 | > Design Factored Shear (Kips):          | 38.0   | 0.03 OK! |
| Calculated Tension Capacity (Tn, Kips):           | 1836.0 | > Design Factored Tension (Tu Kips):     | 0.0    | 0.00 OK! |
| Calculated Compression Capacity (Pn, Kips):       | 8390.6 | > Design Factored Axial Load (Pu Kips):  | 49.6   | 0.01 OK! |
| Moment & Axial Strength Combination(Pu/Pn+Mu/Mn): | 0.73   | OK! Check Tie Spacing (Design/Required): |        | 0.25 OK! |
| Pier Reinforcement Ratio:                         | 0.005  | Reinforcement Ratio is satisfied per ACI |        |          |

(2).Concrete Pad:

|   |        |  |        |          |
|---|--------|--|--------|----------|
| One-Way Design Shear Capacity (L-Direction, Kips):      | 881.9  | > One-Way Factored Shear (L-D. Kips):      | 256.6  | 0.29 OK! |
| One-Way Design Shear Capacity (W-Direction, Kips):      | 881.9  | > One-Way Factored Shear (W-D., Kips)      | 256.6  | 0.29 OK! |
| One-Way Design Shear Capacity (Corner-Corner. Kips):    | 965.7  | > One-Way Factored Shear (C-C, Kips):      | 509.1  | 0.53 OK! |
| Lower Steel Pad Reinforcement Ratio (L-Direct. ):       | 0.0018 | OK! Lower Steel Pad Reinf. Ratio (W-Direc  | 0.0018 |          |
| Lower Steel Pad Moment Capacity (L-Direction. Kips-ft): | 3180.0 | > Moment at Bottom ( L-Direct. K-Ft):      | 476.5  | 0.15 OK! |
| Lower Steel Pad Moment Capacity (W-Direction. Kips-ft): | 3180.0 | > Moment at Bottom ( W-Direct. K-Ft):      | 476.5  | 0.15 OK! |
| Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):   | 4469.4 | > Moment at Bottom ( C-C Dir. K-Ft):       | 673.9  | 0.15 OK! |
| Upper Steel Pad Reinforcement Ratio (L-Direct. ):       | 0.0018 | OK! Upper Steel Reinf. Ratio (W-Direct. ): | 0.0018 |          |
| Upper Steel Pad Moment Capacity (L-Direction. Kips-ft): | 3180.0 | > Moment at the top (L-Dir Kips-Ft):       | 388.8  | 0.12 OK! |
| Upper Steel Pad Moment Capacity (W-Direction. Kips-ft): | 3180.0 | > Moment at the top (W-Dir Kips-Ft):       | 388.8  | 0.12 OK! |
| Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):  | 4469.4 | > Moment at the top (C-C Direc. K-Ft):     | 689.4  | 0.15 OK! |

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT  
EVALUATION OF HUMAN EXPOSURE POTENTIAL  
TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT1151

Simsbury Central  
Grist Mill Road  
Simsbury, CT 06070

**January 19, 2016**

**EBI Project Number: 6216000226**

| Site Compliance Summary                                      |                  |
|--|------------------|
| Compliance Status:   | <b>COMPLIANT</b> |
| Site total MPE% of<br>FCC general public<br>allowable limit: | <b>11.88 %</b>   |

January 19, 2016

AT&T Mobility – New England  
Attn: Cameron Syme, RF Manager  
550 Cochituate Road  
Suite 550 – 13&14  
Framingham, MA 06040

Emissions Analysis for Site: **CT1151 – Simsbury Central**

EBI Consulting was directed to analyze the proposed AT&T facility located at **Grist Mill Road, Simsbury, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed AT&T Wireless antenna facility located at **Grist Mill Road, Simsbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 6) 2 GSM channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 7) 2 LTE channels (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 9) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antennas used in this modeling are the Kathrein 800-10121, KMW AM-X-CD-16-65-00T-RET, Quintel QS66512-3, Powerwave P65-17-XLH-RR and the CCI TPA-65R-LCUUUU-H8 for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerline of the proposed antennas is **150 feet** above ground level (AGL).
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.



### AT&T Site Inventory and Power Data

| Sector:            | A   | Sector:            | B   | Sector:            | C   |
|--------------------|---|--------------------|---|--------------------|---|
| Antenna #:         | 1   | Antenna #:         | 1   | Antenna #:         | 1   |
| Make / Model:      | Kathrein 800-10121                        | Make / Model:      | Kathrein 800-10121                        | Make / Model:      | Kathrein 800-10121                        |
| Gain:              | 11.45 / 14.35 dBd                         | Gain:              | 11.45 / 14.35 dBd                         | Gain:              | 11.45 / 14.35 dBd                         |
| Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  |
| Frequency Bands    | 850 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 850 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 850 MHz / 1900 MHz (PCS)                  |
| Channel Count      | 4   | Channel Count      | 4   | Channel Count      | 4   |
| Total TX Power(W): | 120                                       | Total TX Power(W): | 120                                       | Total TX Power(W): | 120                                       |
| ERP (W):           | 2,471.44                                  | ERP (W):           | 2,471.44                                  | ERP (W):           | 2,471.44                                  |
| Antenna A1 MPE%    | <b>0.59</b>                               | Antenna B1 MPE%    | <b>0.59</b>                               | Antenna C1 MPE%    | <b>0.59</b>                               |
| Antenna #:         | 2   | Antenna #:         | 2   | Antenna #:         | 2   |
| Make / Model:      | KMW AM-X-CD-16-65-00T-RET                 | Make / Model:      | Powerwave P65-17-XLH-RR                   | Make / Model:      | Powerwave P65-17-XLH-RR                   |
| Gain:              | 13.35 / 15.25 dBd                         | Gain:              | 14.3 / 15.1 dBd                           | Gain:              | 14.3 / 15.1 dBd                           |
| Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  |
| Frequency Bands    | 700 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 700 MHz / 1900 MHz (PCS)                  | Frequency Bands    | 700 MHz / 1900 MHz (PCS)                  |
| Channel Count      | 4   | Channel Count      | 4   | Channel Count      | 4   |
| Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       |
| ERP (W):           | 6,614.85                                  | ERP (W):           | 7,112.97                                  | ERP (W):           | 7,112.97                                  |
| Antenna A2 MPE%    | <b>1.68</b>                               | Antenna B2 MPE%    | <b>1.75</b>                               | Antenna C2 MPE%    | <b>1.75</b>                               |
| Antenna #:         | 3   | Antenna #:         | 3   | Antenna #:         | 3   |
| Make / Model:      | Quintel QS66512-3                         | Make / Model:      | CCI TPA-65R-LCUUUU-H8                     | Make / Model:      | TPA-65R-LCUUUU-H8                         |
| Gain:              | 14.5 / 13.65 / 14.95 dBd                  | Gain:              | 13.45 / 13.75 / 14.45 dBd                 | Gain:              | 13.45 / 13.75 / 14.45 dBd                 |
| Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  | Height (AGL):      | 150 feet                                  |
| Frequency Bands    | 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS) | Frequency Bands    | 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS) | Frequency Bands    | 850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS) |
| Channel Count      | 6   | Channel Count      | 6   | Channel Count      | 6   |
| Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       | Total TX Power(W): | 240                                       |
| ERP (W):           | 6,852.34                                  | ERP (W):           | 6,094.03                                  | ERP (W):           | 6,094.03                                  |
| Antenna A3 MPE%    | <b>1.37</b>                               | Antenna B3 MPE%    | <b>1.24</b>                               | Antenna C3 MPE%    | <b>1.24</b>                               |

| Site Composite MPE%      |                |
|--------------------------|----------------|
| Carrier                  | MPE%           |
| AT&T – Max per sector    | <b>3.65 %</b>  |
| Verizon Wireless         | 3.63 %         |
| T-Mobile                 | 4.06 %         |
| Nextel                   | 0.52 %         |
| Sprint                   | 0.02 %         |
| New England Site Mngmt   | 0.00 %         |
| Town of Simsbury         | 0.00 %         |
| <b>Site Total MPE %:</b> | <b>11.88 %</b> |

|                      |                |
|----------------------|----------------|
| AT&T Sector 1 Total: | 5.41 %         |
| AT&T Sector 2 Total: | 5.41 %         |
| AT&T Sector 3 Total: | 5.41 %         |
| <b>Site Total:</b>   | <b>11.88 %</b> |

| AT&T _ Per Sector (Max Sector – Sector A) | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density ( $\mu\text{W}/\text{cm}^2$ ) | Frequency (MHz) | Allowable MPE ( $\mu\text{W}/\text{cm}^2$ ) | Calculated % MPE |
|---|------------|-------------------------|---------------|---|-----------------|---|------------------|
| AT&T 850 MHz UMTS                         | 2          | 418.91                  | 150           | 1.45  | 850             | 567   | 0.31 %           |
| AT&T 1900 MHz (PCS) UMTS                  | 2          | 816.81                  | 150           | 2.83  | 1900            | 1000  | 0.28 %           |
| AT&T 700 MHz LTE                          | 2          | 1297.63                 | 150           | 4.50  | 700             | 467   | 0.45 %           |
| AT&T 1900 MHz (PCS) LTE                   | 2          | 2009.79                 | 150           | 6.97  | 1900            | 1000  | 1.23 %           |
| AT&T 850 MHz GSM                          | 2          | 855.31                  | 150           | 2.97  | 850             | 567   | 0.30 %           |
| AT&T 1900 MHz (PCS) GSM                   | 2          | 695.22                  | 150           | 2.41  | 1900            | 1000  | 0.43 %           |
| AT&T 2300 MHz (WCS) LTE                   | 2          | 1875.65                 | 150           | 6.50  | 2300            | 1000  | 0.65 %           |
|   |            |                         |               |   |                 | <b>Total:</b>                               | <b>3.65 %</b>    |

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

| AT&T Sector                         | Power Density Value (%) |
|-------------------------------------|-------------------------|
| Sector 1:                           | 3.65 %                  |
| Sector 2:                           | 3.59 %                  |
| Sector 3 :                          | 3.59 %                  |
| AT&T Maximum Total<br>(per sector): | 3.65 %                  |
|                                     |                         |
| Site Total:                         | 11.88 %                 |
|                                     |                         |
| Site Compliance Status:             | <b>COMPLIANT</b>        |

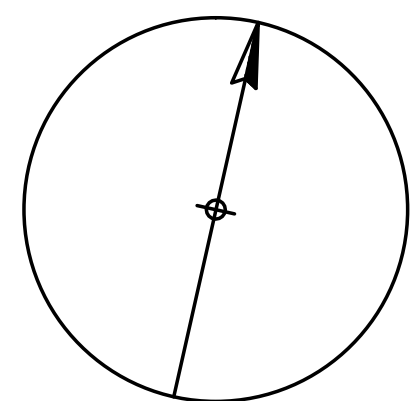
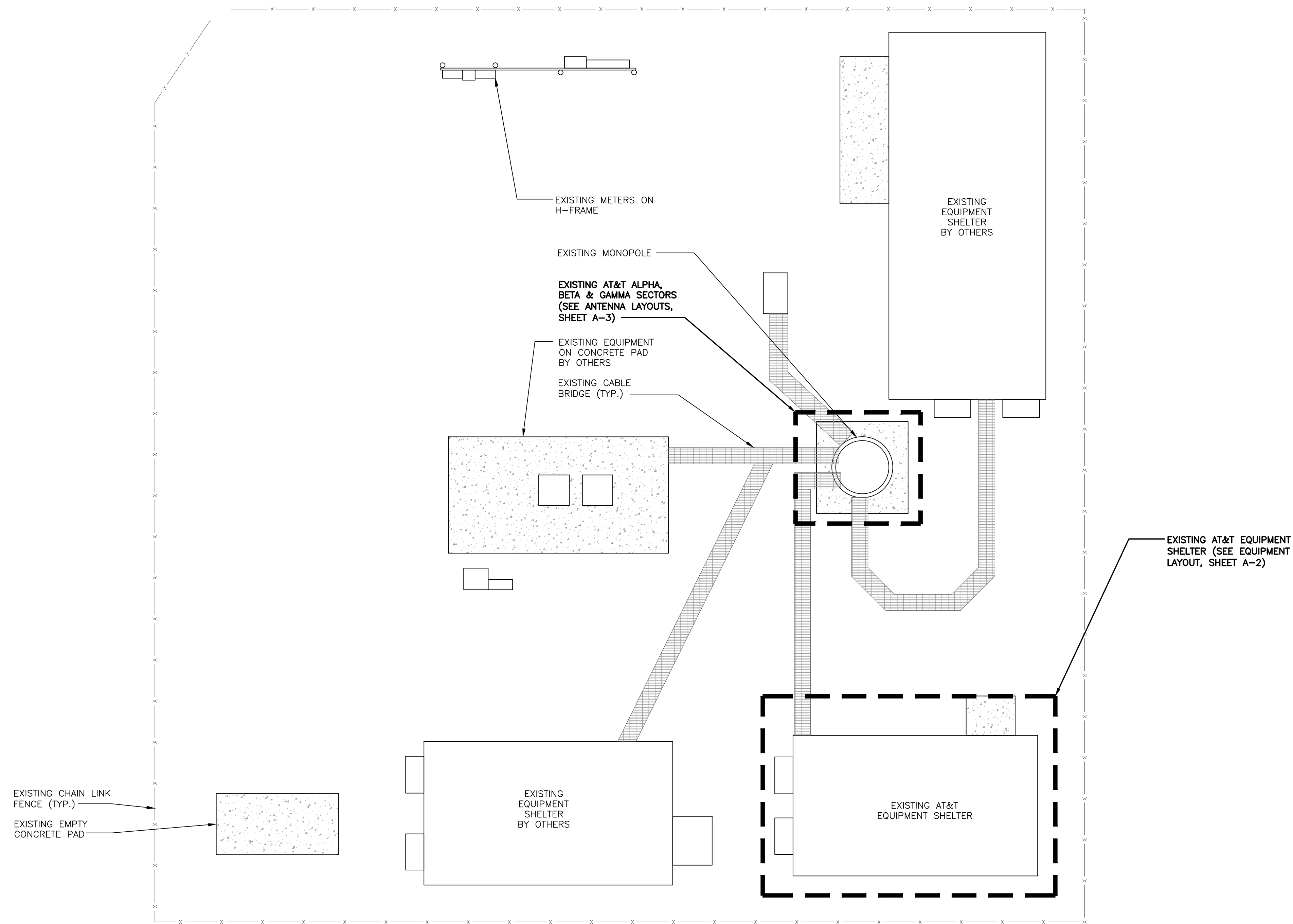
The anticipated composite MPE value for this site assuming all carriers present is **11.88%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



Scott Heffernan  
RF Engineering Director

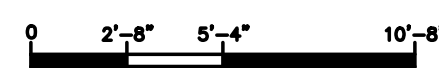
**EBI Consulting**  
21 B Street  
Burlington, MA 01803



NORTH

**COMPOUND LAYOUT**

SCALE: 3/16" = 1'-0"



GRAPHIC SCALE: 3/16" = 1'-0"

NOTE:  
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

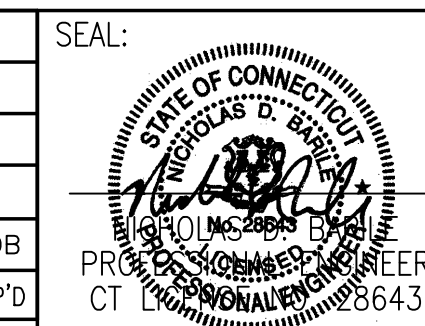
**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

**SITE NUMBER: CT1151**  
**SITE NAME: SIMSBURY CENTRAL**

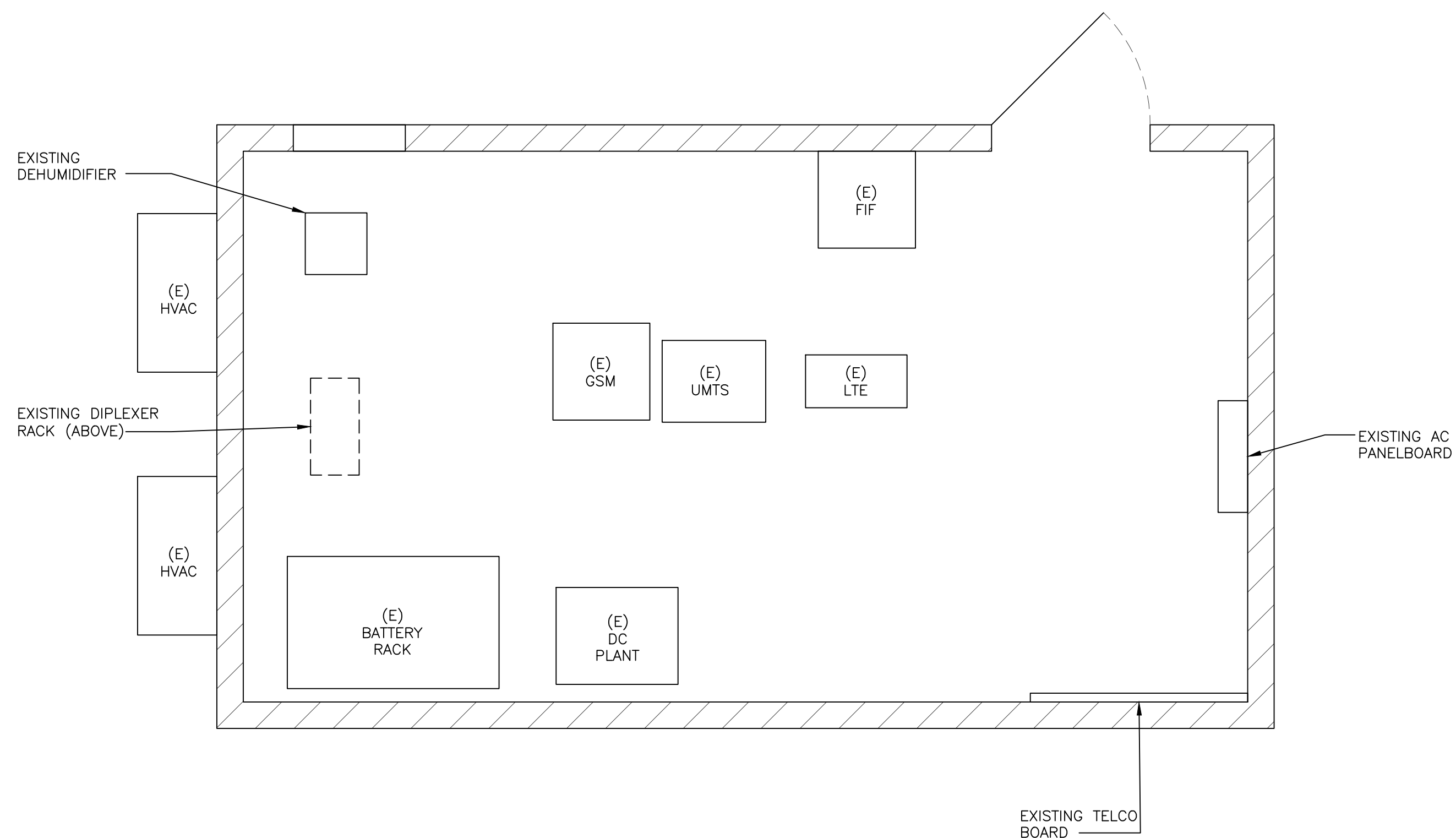
GRIST MILL ROAD  
SIMSBURY, CT 06070  
HARTFORD COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

| 0               | 01/27/16 | ISSUED AS FINAL  | NJM           | NDB | NDB   |
|-----------------|----------|------------------|---------------|-----|-------|
| NO.             | DATE     | REVISIONS        | BY            | CHK | APP'D |
| SCALE: AS SHOWN |          | DESIGNED BY: NJM | DRAWN BY: NJM |     |       |



|  |                       |          |
|--|-----------------------|----------|
| <b>AT&amp;T</b>                          |                       |          |
| DRAWING TITLE:<br><b>COMPOUND LAYOUT</b> |                       |          |
| JOB NUMBER<br>15113-EMP                  | DRAWING NUMBER<br>A-1 | REV<br>0 |

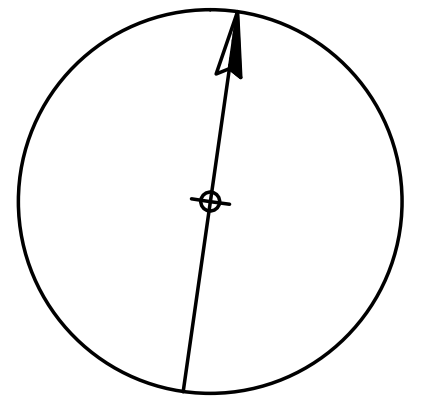


**EXISTING EQUIPMENT LAYOUT**

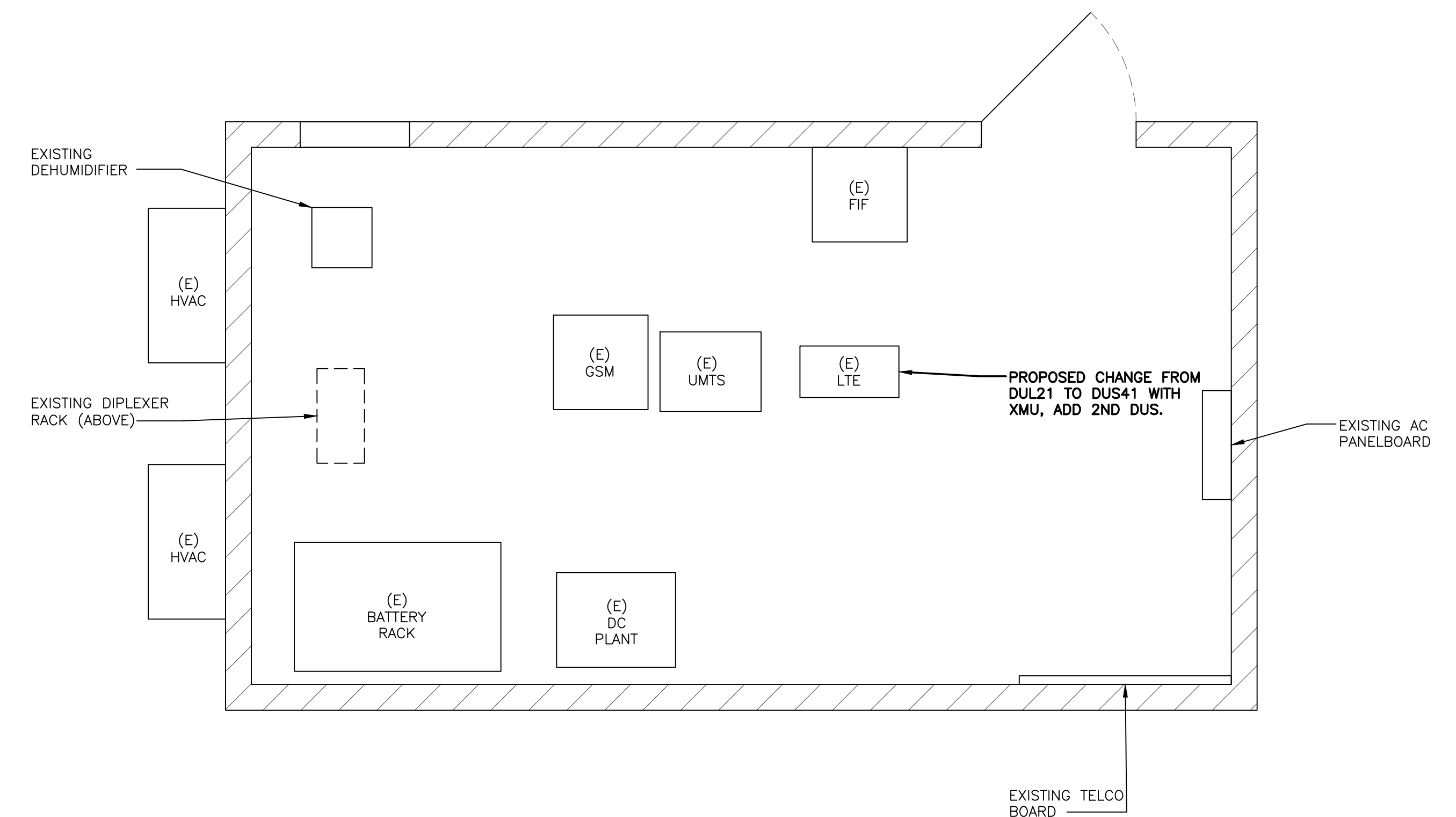
SCALE: 1" = 2'-0"



( IN FEET )  
1/2 Inch = 1 Foot



NORTH

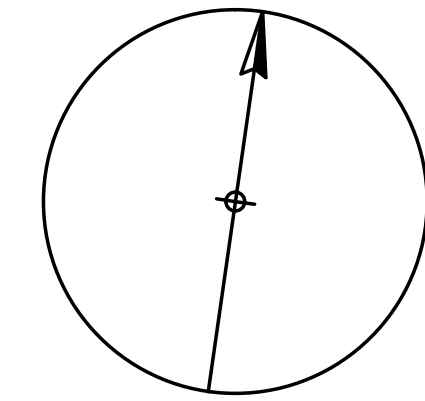


**PROPOSED EQUIPMENT LAYOUT**

SCALE: 1" = 2'-0"



( IN FEET )  
1/2 Inch = 1 Foot



NORTH

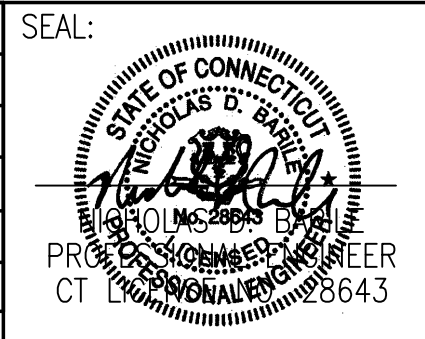
**COM-EX**  
Consultants  
115 ROUTE 46  
SUITE E39  
MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

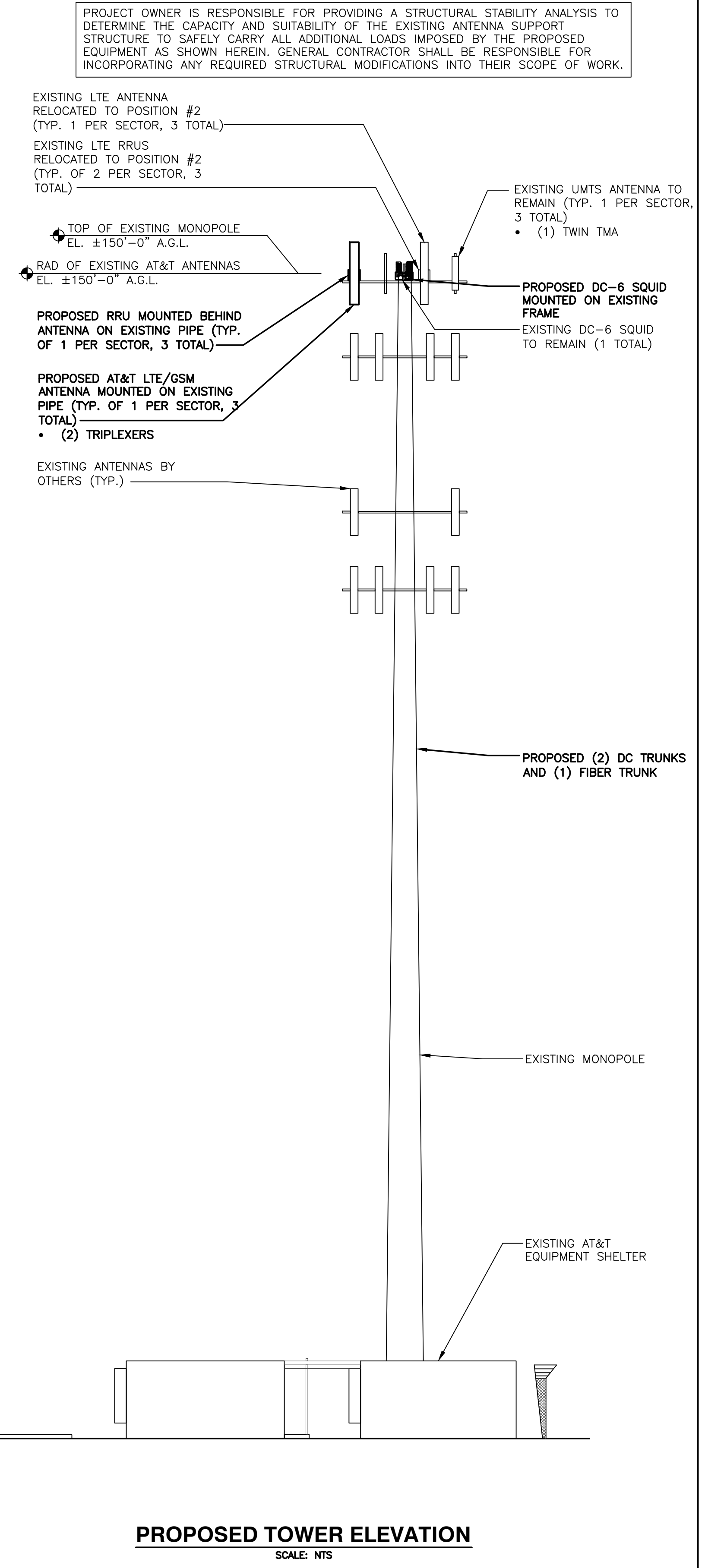
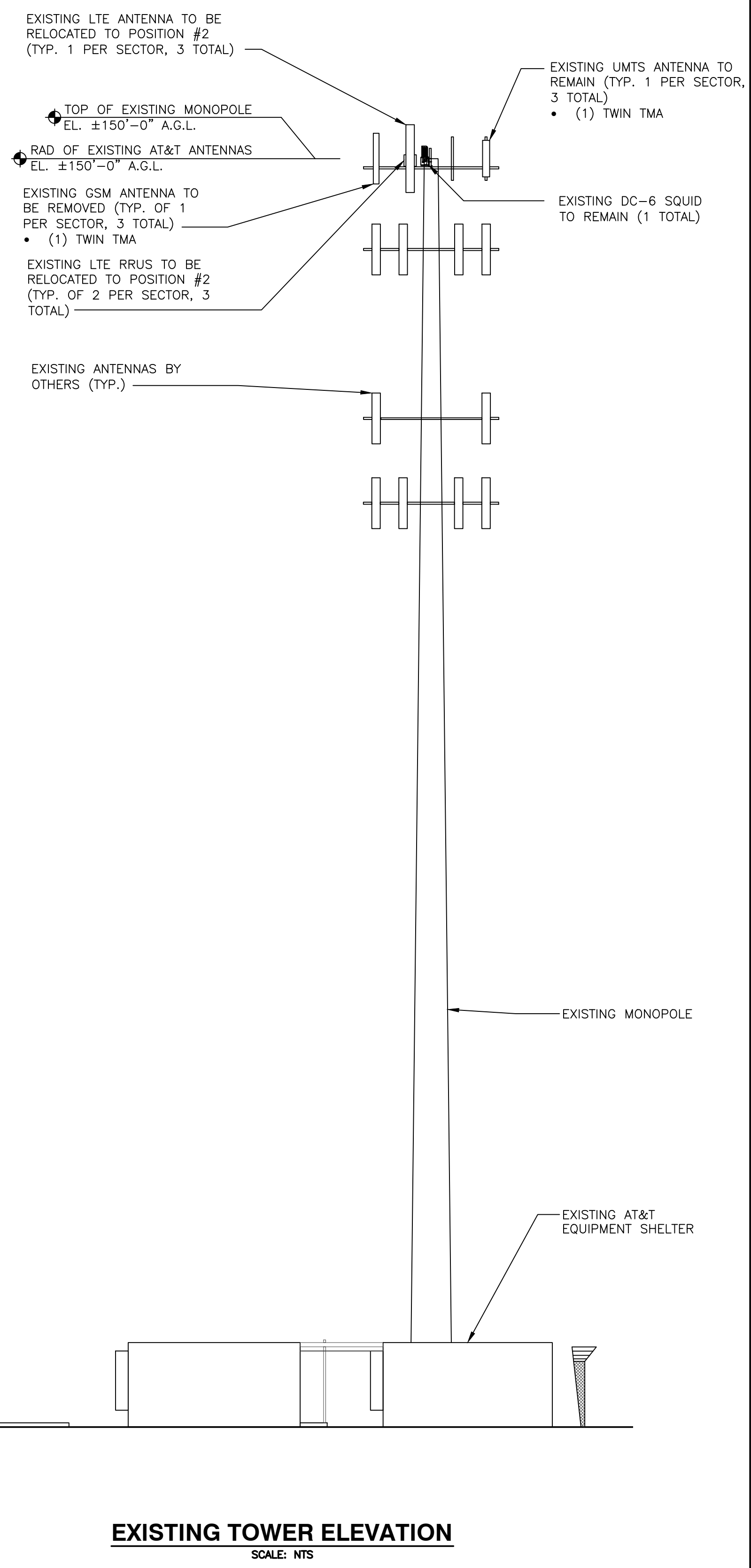
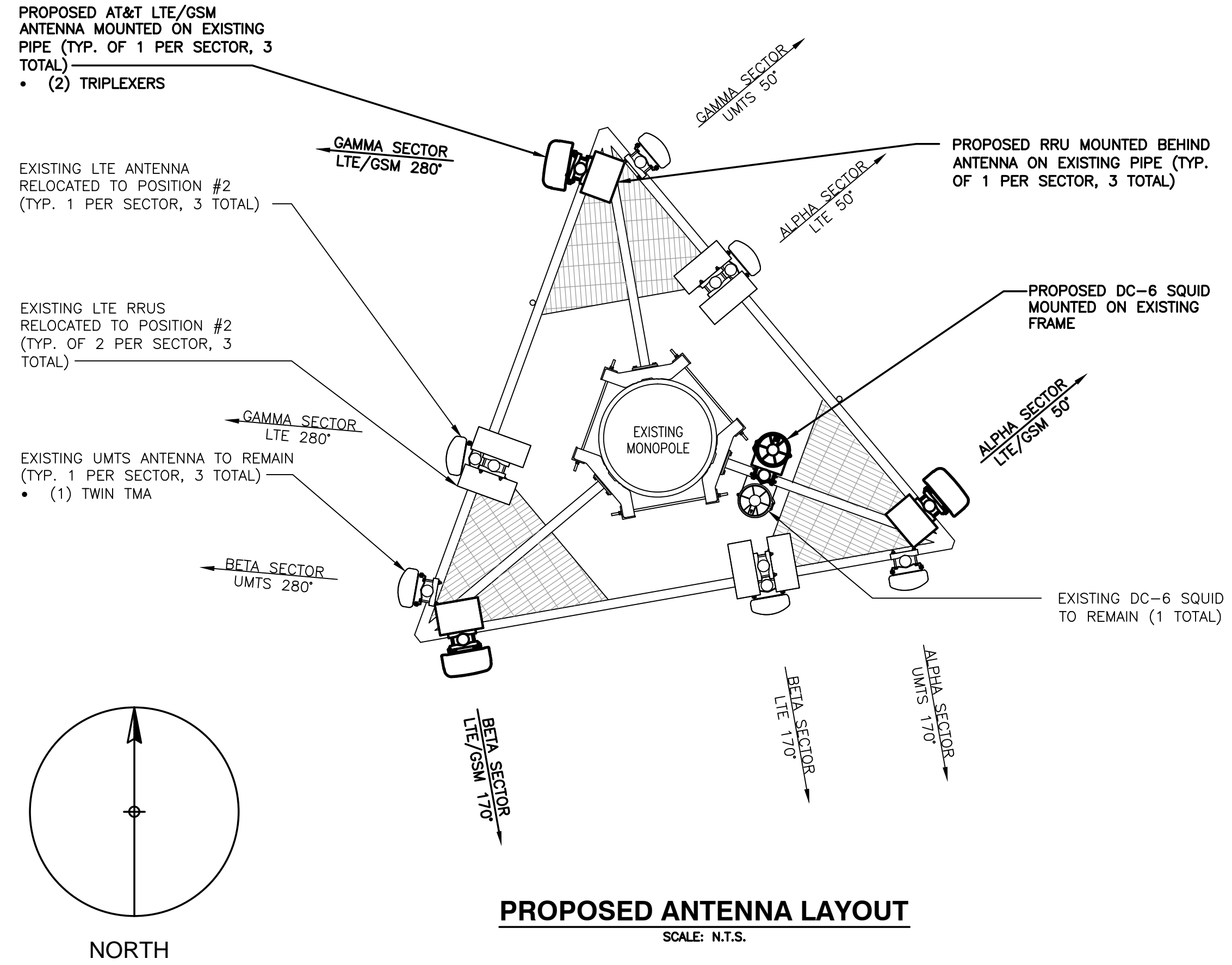
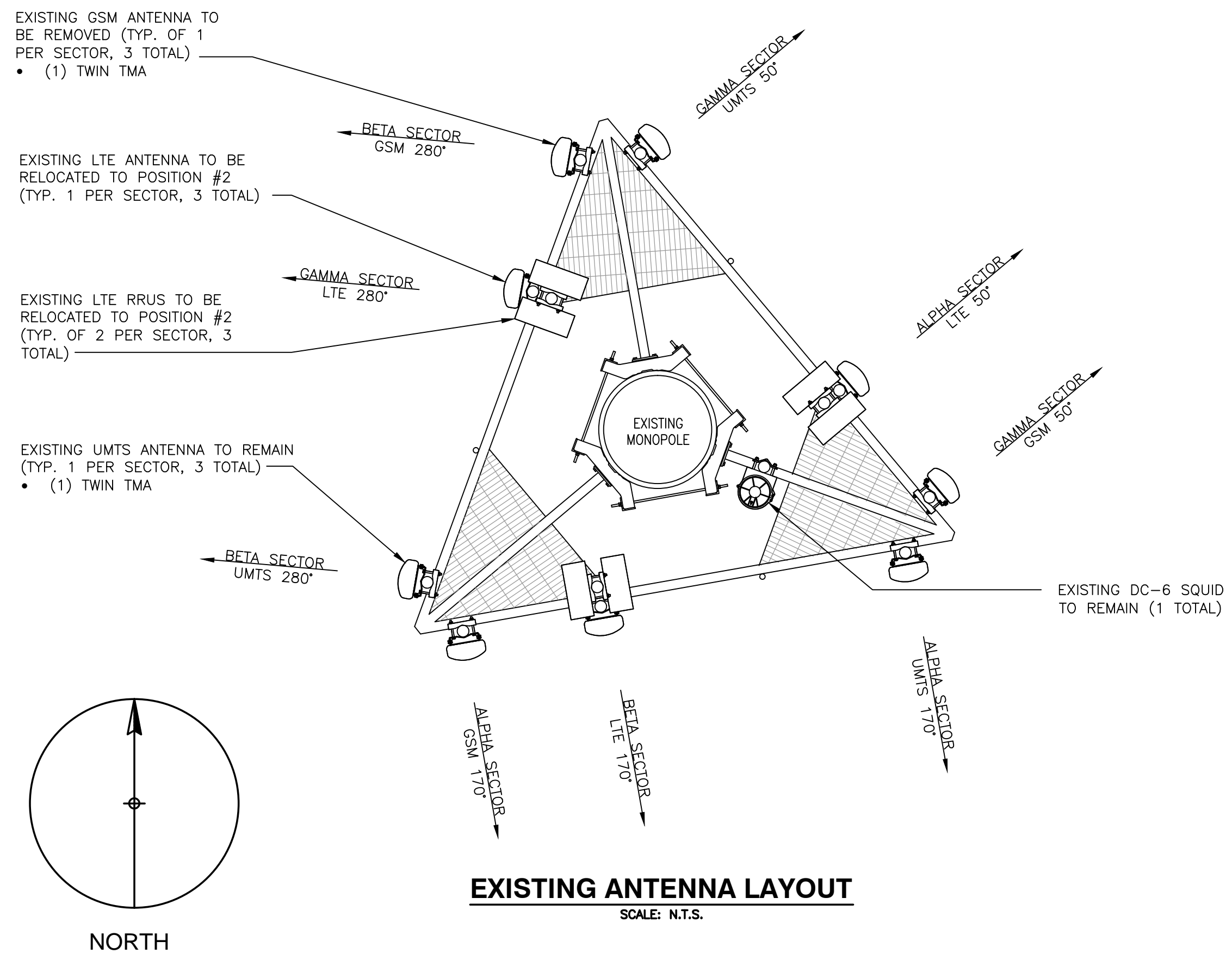
**SITE NUMBER: CT1151**  
**SITE NAME: SIMSBURY CENTRAL**  
GRIST MILL ROAD  
SIMSBURY, CT 06070  
HARTFORD COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

| 0               | 01/27/16 | ISSUED AS FINAL  | NJM           | NDB | NDB   |
|-----------------|----------|------------------|---------------|-----|-------|
| NO.             | DATE     | REVISIONS        | BY            | CHK | APP'D |
| SCALE: AS SHOWN |          | DESIGNED BY: NJM | DRAWN BY: NJM |     |       |



|   |                       |          |
|---|-----------------------|----------|
| <b>AT&amp;T</b>                           |                       |          |
| DRAWING TITLE:<br><b>EQUIPMENT LAYOUT</b> |                       |          |
| JOB NUMBER<br>15113-EMP                   | DRAWING NUMBER<br>A-2 | REV<br>0 |



**COM-EX**  
Consultants  
115 ROUTE 46  
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MOUNTAIN LAKES, NJ 07046  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

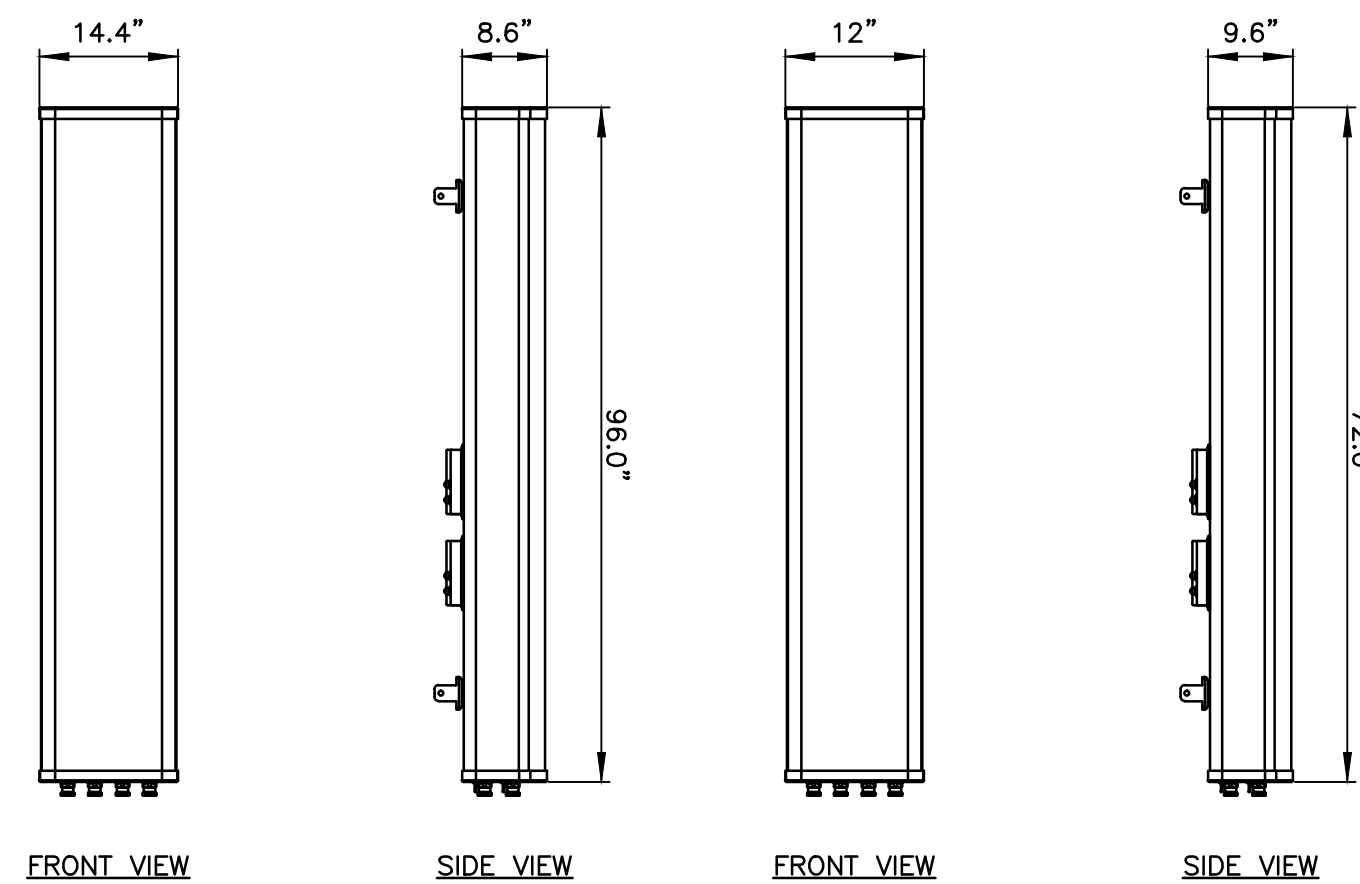
**SITE NUMBER: CT1151**  
**SITE NAME: SIMSBURY CENTRAL**  
GRIST MILL ROAD  
SIMSBURY, CT 06070  
HARTFORD COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

|                 |          |                  |               |     |       |
|-----------------|----------|------------------|---------------|-----|-------|
| 0               | 01/27/16 | ISSUED AS FINAL  | NJM           | NDB | NDB   |
| NO.             | DATE     | REVISIONS        | BY            | CHK | APP'D |
| SCALE: AS SHOWN |          | DESIGNED BY: NJM | DRAWN BY: NJM |     |       |

SEAL:  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
28643

|   |                       |          |
|---|-----------------------|----------|
| <b>AT&amp;T</b>   |                       |          |
| DRAWING TITLE:<br><b>ANTENNA LAYOUTS &amp; ELEVATIONS</b> |                       |          |
| JOB NUMBER<br>15113-EMP                                   | DRAWING NUMBER<br>A-3 | REV<br>0 |

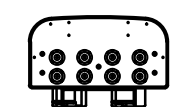


FRONT VIEW

SIDE VIEW

FRONT VIEW

SIDE VIEW

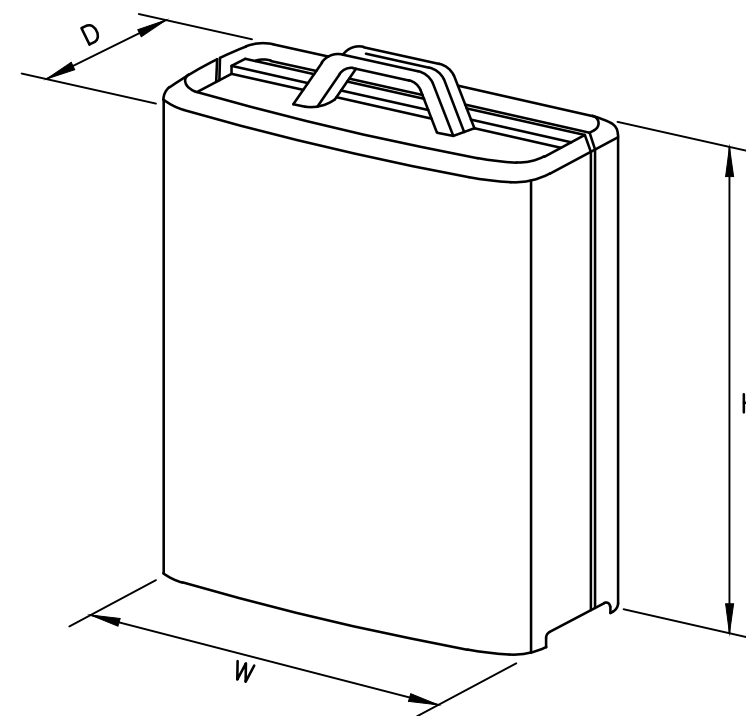


BOTTOM VIEW

| MANUFACTURER | CCI               | QUINTEL   |
|--------------|-------------------|-----------|
| MODEL        | TPA-65R-LCUUUU-H8 | QS66512-3 |
| WEIGHT       | 73 LBS            | 105 LBS   |

**LTE ANTENNA DETAIL**

SCALE: N.T.S.

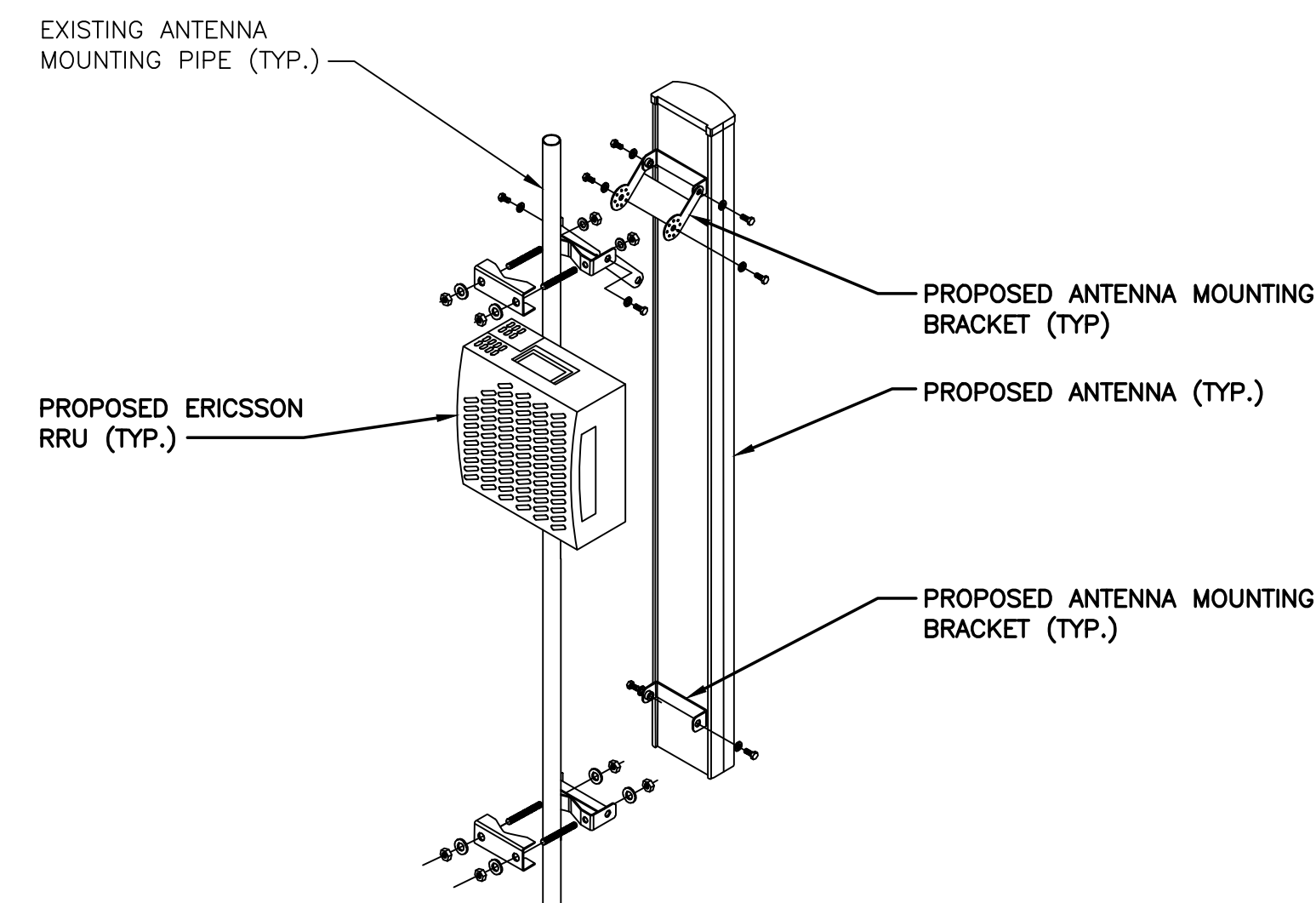


| MODEL    | L x W x H               | WEIGHT   |
|----------|-------------------------|----------|
| *RRUS-11 | 19.69" x 16.97" x 7.17" | 50.7 LBS |
| RRUS-32  | 29.9"x13.3"x9.5"        | 77 LBS   |

\*DENOTES EXISTING.

**RRUS DETAIL**

SCALE: N.T.S.



**ANTENNA AND RRU MOUNTING DETAIL**

SCALE: N.T.S.

**EXISTING ANTENNA SCHEDULE**

| SECTOR | POSITION | MAKE      | MODEL                 | SIZE (INCHES)    |
|--------|----------|-----------|-----------------------|------------------|
| ALPHA  | A1       | KATHREIN  | 800-10121 @850        | 54.5"x10.3"x5.9" |
|        | A2       | -         | -                     | -                |
|        | A3       | KMW       | AM-X-CD-16-65-OOT-RET | 72"x11.8"x5.9"   |
|        | A4       | POWERWAVE | P65E-17-XLH-RR        | 96"x12"x6"       |
| BETA   | B1       | KATHREIN  | 800-10121 @850        | 54.5"x10.3"x5.9" |
|        | B2       | -         | -                     | -                |
|        | B3       | POWERWAVE | P65E-17-XLH-RR        | 96"x12"x6"       |
|        | B4       | POWERWAVE | P65E-17-XLH-RR        | 96"x12"x6"       |
| GAMMA  | G1       | KATHREIN  | 800-10121 @850        | 54.5"x10.3"x5.9" |
|        | G2       | -         | -                     | -                |
|        | G3       | POWERWAVE | P65E-17-XLH-RR        | 96"x12"x6"       |
|        | G4       | KMW       | AM-X-CD-16-65-OOT-RET | 72"x11.8"x5.9"   |

**FINAL ANTENNA SCHEDULE**

| SECTOR | POSITION | MAKE      | MODEL                 | SIZE (INCHES)    |
|--------|----------|-----------|-----------------------|------------------|
| ALPHA  | A1       | KATHREIN  | 800-10121 @850        | 54.5"x10.3"x5.9" |
|        | A2       | KMW       | AM-X-CD-16-65-OOT-RET | 72"x11.8"x5.9"   |
|        | A3       | -         | -                     | -                |
|        | A4       | CCI       | TPA-65R-LCUUUU-H8     | 96"x14.4"x8.6"   |
| BETA   | B1       | KATHREIN  | 800-10121 @850        | 54.5"x10.3"x5.9" |
|        | B2       | POWERWAVE | P65E-17-XLH-RR        | 96"x12"x6"       |
|        | B3       | -         | -                     | -                |
|        | B4       | CCI       | TPA-65R-LCUUUU-H8     | 96"x14.4"x8.6"   |
| GAMMA  | G1       | KATHREIN  | 800-10121 @850        | 54.5"x10.3"x5.9" |
|        | G2       | POWERWAVE | P65E-17-XLH-RR        | 96"x12"x6"       |
|        | G3       | -         | -                     | -                |
|        | G4       | QUINTEL   | QS66512-3             | 72"x12"x9.6"     |

**PROPOSED RRU SCHEDULE**

| SECTOR | MAKE     | MODEL              | SIZE (INCHES)    | ADDITIONAL COMPONENT | SIZE (INCHES) |
|--------|----------|--------------------|------------------|----------------------|---------------|
| ALPHA  | ERICSSON | RRUS-32            | 29.9"x13.3"x9.5" | -                    | -             |
|        | ERICSSON | RRUS-11 (EXISTING) | 19.7"x16.9"x7.2" | -                    | -             |
|        | ERICSSON | RRUS-11 (EXISTING) | 19.7"x16.9"x7.2" | -                    | -             |
| BETA   | ERICSSON | RRUS-32            | 29.9"x13.3"x9.5" | -                    | -             |
|        | ERICSSON | RRUS-12 (EXISTING) | 20.4"x18.5"x9.5" | -                    | -             |
|        | ERICSSON | RRUS-11 (EXISTING) | 19.7"x16.9"x7.2" | -                    | -             |
| GAMMA  | ERICSSON | RRUS-32            | 29.9"x13.3"x9.5" | -                    | -             |
|        | ERICSSON | RRUS-12 (EXISTING) | 20.4"x18.5"x9.5" | -                    | -             |
|        | ERICSSON | RRUS-11 (EXISTING) | 19.7"x16.9"x7.2" | -                    | -             |

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.