



**Crown Castle**  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

July 27, 2016

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

**RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 881536**  
**AT&T Site ID: CT5107**  
**120 Universal Drive, North Haven, CT 06473**  
**Latitude: 41° 20' 40.01"/ Longitude: -72° 52' 14.92"**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 121-foot level of the existing 120-foot monopole at 120 Universal Drive in North Haven, CT. The tower is owned by Crown Castle. The property is owned by 120 Universal Drive Associates, LLC. AT&T now intends to replace three (3) antennas with three (3) new CCI 1.9 GHz antennas. These antennas would be installed at the 121-foot level of the tower. AT&T also intends to install three (3) RRUs and one (1) squid.

This facility was approved by the by the Town of North Haven Planning and Zoning Commission in Special Permit Application P2000-44 on November 13, 2000. This approval included the conditions that:

1. Submit three (3) revised plans which include:
  - a.) Revised plans must address/include all comments/conditions of this approval and the related site plan approval #P200-45.
  - b.) Live certification.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. Michael J. Freda, First Selectman, Town of North Haven as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.

Melanie A. Bachman

July 27, 2016

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3. The proposed modification 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 Communication Commission safety standard.
5. The proposed modifications 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-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

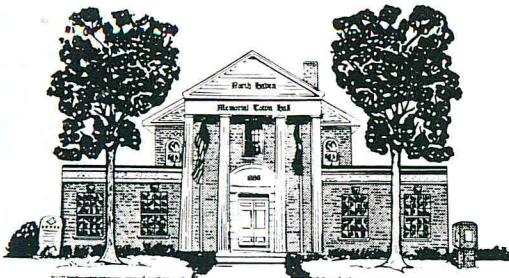
Jeffrey Barbadora  
Real Estate Specialist  
12 Gill Street, Suite 5800, Woburn, MA 01801  
781-729-0053  
[Jeff.Barbadora@crowncastle.com](mailto:Jeff.Barbadora@crowncastle.com)

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes  
Tab 2: Exhibit-2: Structural Modification Report  
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Michael Freda, First Selectman  
Town of North Haven  
18 Church Street  
North Haven, CT 06473

120 Universal Drive Associates, LLC  
120 Universal Drive  
North Haven, CT 06473



## TOWN OF NORTH HAVEN

MEMORIAL TOWN HALL / 18 CHURCH STREET  
NORTH HAVEN, CONNECTICUT 06473



REPLY TO:

PLANNING & ZONING COMMISSION

Tel. (203) 239-5321  
Fax (203) 234-2130

November 20, 2000

Mr. Stephen Longobardi  
Candid Communications of North Haven, II LLC  
110 Washington Avenue  
North Haven, CT 06473

Re: #P2000-44 Special Permit application, (as authorized by Section 3A.6.), of Candid Communications of North Haven, II LLC, relative to 120 Universal Drive South, (Map 11, Route 1). Plan Entitled: Candid Communications, LLC, Multi-User Wireless Communications Facility, North Haven Tower Site, Universal Drive, North Haven, Connecticut, Prepared By URS Greiner Woodward Clyde A-E-S, Dated 9-8-00, Rev. 11-1-00 Scale 1" = 30'. IL-30 Zoning District.

Dear Mr. Longobardi:

Please be advised that during the deliberation session of the Planning & Zoning Commission meeting held on Monday, November 13, 2000, the Commission unanimously voted to approve the above referenced application subject to the following conditions:

1. Submit three (3) revised plans which include:
  - a.) Revised plans must address/include all comments and conditions of this approval and the related Site Plan approval #P2000-45.
  - b.) Live certification.

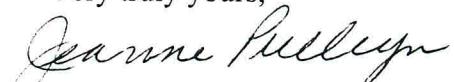
In accordance with the Connecticut State Statutes, Section 8-3d, the Special Permit is not effective until a certified copy of the Commission's decision has been recorded on the Land Records, at the owner's expense. Accordingly, you must record this certified decision letter at the Town Clerk's Office, 18 Church Street, North Haven, CT. Immediately after filing with the Town Clerk, please submit a copy of the decision letter, stamped as recorded, to the Land Use Office, for our permanent record.

**Please note that one (1) set of revised drawings should be submitted for review after all outstanding issues (conditions of approval as set forth above), are adequately addressed. If there are any questions relative to the conditions of approval, please call the Town prior to submitting the revised plans. This will avoid costly and time consuming revisions and reviews, therefore expediting the process for you as the applicant.**

This approval is subject to compliance with any and all Zoning Regulations of the Town of North Haven.

You may not proceed with this approval until you have received a signed plan from the Land Use Office.

Very truly yours,



Jeanne Pulleyn, Secretary  
Planning & Zoning Commission

JP/ts

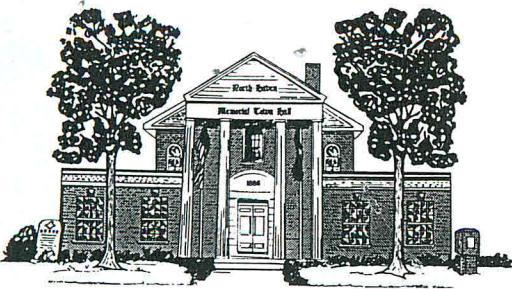
cc: First Selectman  
Engineering Dept.  
Building Dept.  
CERTIFIED MAIL R/R

RECEIVED AND FILED  
TOWN CLERKS OFFICE  
NORTH HAVEN, CONN.

MAR 20 2001 @ 1:15 PM



TOWN CLERK



## TOWN OF NORTH HAVEN

MEMORIAL TOWN HALL / 18 CHURCH STREET

NORTH HAVEN, CONNECTICUT 06473



REPLY TO:

PLANNING & ZONING COMMISSION

Tel. (203) 239-5321  
Fax (203) 234-2130

November 20, 2000

Mr. Stephen Longobardi  
Candid Communications of North Haven, II LLC  
110 Washington Avenue  
North Haven, CT 06473

Re: #P2000-45 Site Plan application of Candid Communications of North Haven, II LLC, relative to 120 Universal Drive South, (Map 11, Route 1). Plan Entitled: Candid Communications, LLC, Multi-User Wireless Communications Facility, North Haven Tower Site, Universal Drive, North Haven, Connecticut, Prepared By URS Greiner Woodward Clyde A-E-S, Dated 9-8-00, Rev. 11-1-00 Scale 1" = 30'. IL-30 Zoning District.

Dear Mr. Longobardi:

Please be advised that during the deliberation session of the Planning & Zoning Commission meeting held on Monday, November 13, 2000, the Commission unanimously voted to approve the above referenced application subject to the following conditions:

1. Submit eight (8) revised plans which include:
  - a.) The zoning table must reference the following:

|                                 |                        |                           |
|---------------------------------|------------------------|---------------------------|
| Minimum lot area (sq ft)        | 30,000 (req'd column), | 130,929 (existing column) |
| Minimum lot width (ft.)         | 100 (req'd column)     |                           |
| Building height                 | 12' (proposed column)  |                           |
| Minimum side yard setback       | 30' (existing column), | 52' (proposed column)     |
| Minimum rear yard setback       | 27' (existing column)  |                           |
| Minimum side yard tower setback | 90' (proposed column)  |                           |
  - b.) Plans must be numbered to indicate a submission set of 5 sheets (1 of 5 through 5 of 5).
  - c.) The boundary/survey plan must be referenced in the sheet index on Sheet T-1.
  - d.) Provide all the information required by Section 3A.6. (b) (1) (iii) and (xi).
  - e.) Siltation control must be provided along the rear property line.
  - f.) The remaining access drive off the rear of the existing building must be marked as a fire lane.

- g.) The proposed parking area must be permanently marked with signage and curbing/islands so that the area does not remain open for use as spillover storage of vehicles, etc.
- h.) Limits of green (lawn or non-impervious) areas need to be more clearly indicated. Note, said areas must be protected by curbing.
- i.) The relocated scrap metal recycle dumpster must include respective enclosure and island protection with landscaping.
- j.) Curbing and grass/landscaped areas along the rear property line must be provided in order to discourage continuance of unapproved outside storage activities.

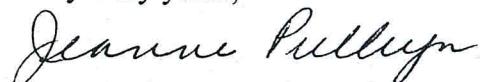
2. The property owner and/or applicant must remove all outside storage (several trailer bodies, steel hoist, debris) located at the west side of the property as well as on the railroad property. All outside storage must be removed from the site. No building permit will be issued until the cleanup of this area occurs.
3. Proposed contours and/or spot elevations must be provided.
4. Parking spaces must be line striped.
5. Proposed fencing must be reviewed by the Zoning Enforcement Officer prior to installation to insure zoning compliance.
6. Soil and erosion controls must be inspected by the Zoning Enforcement Officer before work may commence.
7. The property owner must maintain (repair/replace when necessary) the siltation control until all development activity is completed and all disturbed areas are permanently stabilized.
8. Submit an as-built prior to bond release.
9. Submit a bond in the amount of \$15,000.00 (forms are enclosed). Note, two separate bonds (for \$10,000.00 and \$5,000.00) are recommended, considering that the \$5,000.00 amount covering the required site cleanup work can be released prior to issuance of a building permit, contingent on completion and acceptance of said cleanup.

Please note that one (1) set of revised drawings should be submitted for review after all outstanding issues (conditions of approval as set forth above), are adequately addressed. If there are any questions relative to the conditions of approval, please call the Town prior to submitting the revised plans. This will avoid costly and time consuming revisions and reviews, therefore expediting the process for you as the applicant.

This approval is subject to compliance with any and all Zoning Regulations of the Town of North Haven.

You may not proceed with this approval until you have received a signed plan from the Land Use Office.

Very truly yours,



Jeanne Pulleyn, Secretary  
Planning & Zoning Commission

JP/ts

cc: First Selectman  
Engineering Dept.  
Building Dept.  
CERTIFIED MAIL R/R  
Enclosures

**120 UNIVERSAL DR****Location** 120 UNIVERSAL DR**Mblu** 011/ / 001/ /**Acct#** 027540**Owner** 120 UNIVERSAL DRIVE  
ASSOCIATES LLC**Assessment** \$996,030**Appraisal** \$1,422,900**PID** 8457**Building Count** 1**Current Value**

| <b>Appraisal</b>      |                     |             |              |
|-----------------------|---------------------|-------------|--------------|
| <b>Valuation Year</b> | <b>Improvements</b> | <b>Land</b> | <b>Total</b> |
| 2014                  | \$1,025,400         | \$397,500   | \$1,422,900  |
| <b>Assessment</b>     |                     |             |              |
| <b>Valuation Year</b> | <b>Improvements</b> | <b>Land</b> | <b>Total</b> |
| 2014                  | \$717,780           | \$278,250   | \$996,030    |

**Owner of Record**

**Owner** 120 UNIVERSAL DRIVE ASSOCIATES LLC      **Sale Price** \$0  
**Co-Owner**  
**Address** 120 UNIVERSAL DR  
NORTH HAVEN, CT 06473      **Certificate**  
**Book & Page** 799/ 46  
**Sale Date** 10/28/2008

**Ownership History**

| <b>Ownership History</b>           |                   |                    |                        |                  |
|------------------------------------|-------------------|--------------------|------------------------|------------------|
| <b>Owner</b>                       | <b>Sale Price</b> | <b>Certificate</b> | <b>Book &amp; Page</b> | <b>Sale Date</b> |
| 120 UNIVERSAL DRIVE ASSOCIATES LLC | \$0               |                    | 799/ 46                | 10/28/2008       |
| BERLUTI MARIO                      | \$0               | 1                  | 482/ 458               | 07/18/1995       |
| BERLUTI, MARIO & HELEN             | \$0               | 3                  |                        | 09/01/1990       |
| BERLUTI MARIO & HELEN & SURV       | \$0               | 4                  | 305/ 427               | 12/06/1978       |

**Building Information****Building 1 : Section 1**

**Year Built:** 1985  
**Living Area:** 19,180  
**Replacement Cost:** \$1,089,079  
**Building Percent** 78  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$849,500

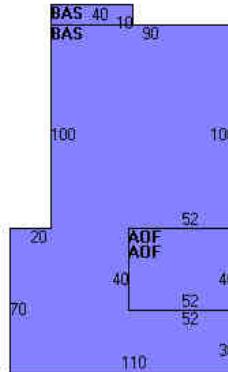
**Building Photo****Building Attributes**

| Field            | Description    |
|------------------|----------------|
| STYLE            | Service Shop   |
| MODEL            | Comm/Ind       |
| Grade            | C +            |
| Stories:         | 1              |
| Occupancy        | 1              |
| Exterior Wall 1  | Metal          |
| Exterior Wall 2  |                |
| Roof Structure   | Flat           |
| Roof Cover       | Metal/Tin      |
| Interior Wall 1  | Drywall        |
| Interior Wall 2  |                |
| Interior Floor 1 | Average        |
| Interior Floor 2 |                |
| Heating Fuel     | Gas            |
| Heating Type     | Hot Air-no Duc |
| AC Type          | None           |
| Bldg Use         | AUTO REPAIR    |
| Total Rooms      |                |
| Total Bedrms     |                |
| Total Baths      |                |
| 1st Floor Use:   |                |
| Heat/AC          | NONE           |
| Frame Type       | WOOD FRAME     |
| Baths/Plumbing   | AVERAGE        |
| Ceiling/Wall     | SUS-CEIL/MN WL |
| Rooms/Prtns      | AVERAGE        |
| Wall Height      | 20             |
| % Comm Wall      |                |



(<http://images.vgsi.com/photos/NorthHavenCTPhotos//00\01\26/42.jpg>)

### Building Layout



| Building Sub-Areas (sq ft) |             | Legend     |             |
|----------------------------|-------------|------------|-------------|
| Code                       | Description | Gross Area | Living Area |
| BAS                        | First Floor | 15,020     | 15,020      |
| AOF                        | Office      | 4,160      | 4,160       |
|                            |             | 19,180     | 19,180      |

### Extra Features

| Extra Features |                |            |          |        | Legend |
|----------------|----------------|------------|----------|--------|--------|
| Code           | Description    | Size       | Value    | Bldg # |        |
| A/C            | AIR CONDITION  | 6612 S.F.  | \$10,300 |        | 1      |
| SPR1           | SPRINKLERS-WET | 19220 S.F. | \$13,500 |        | 1      |
| MEZ1           | MEZZANINE-UNF  | 2500 S.F.  | \$17,600 |        | 1      |

### Land

#### Land Use

|              |             |
|--------------|-------------|
| Use Code     | 3320        |
| Description  | AUTO REPAIR |
| Zone         | IL30        |
| Neighborhood | 305         |

#### Land Line Valuation

|                |           |
|----------------|-----------|
| Size (Acres)   | 3         |
| Frontage       |           |
| Depth          |           |
| Assessed Value | \$278,250 |

**Alt Land Appr** No  
**Category**

**Appraised Value** \$397,500

### Outbuildings

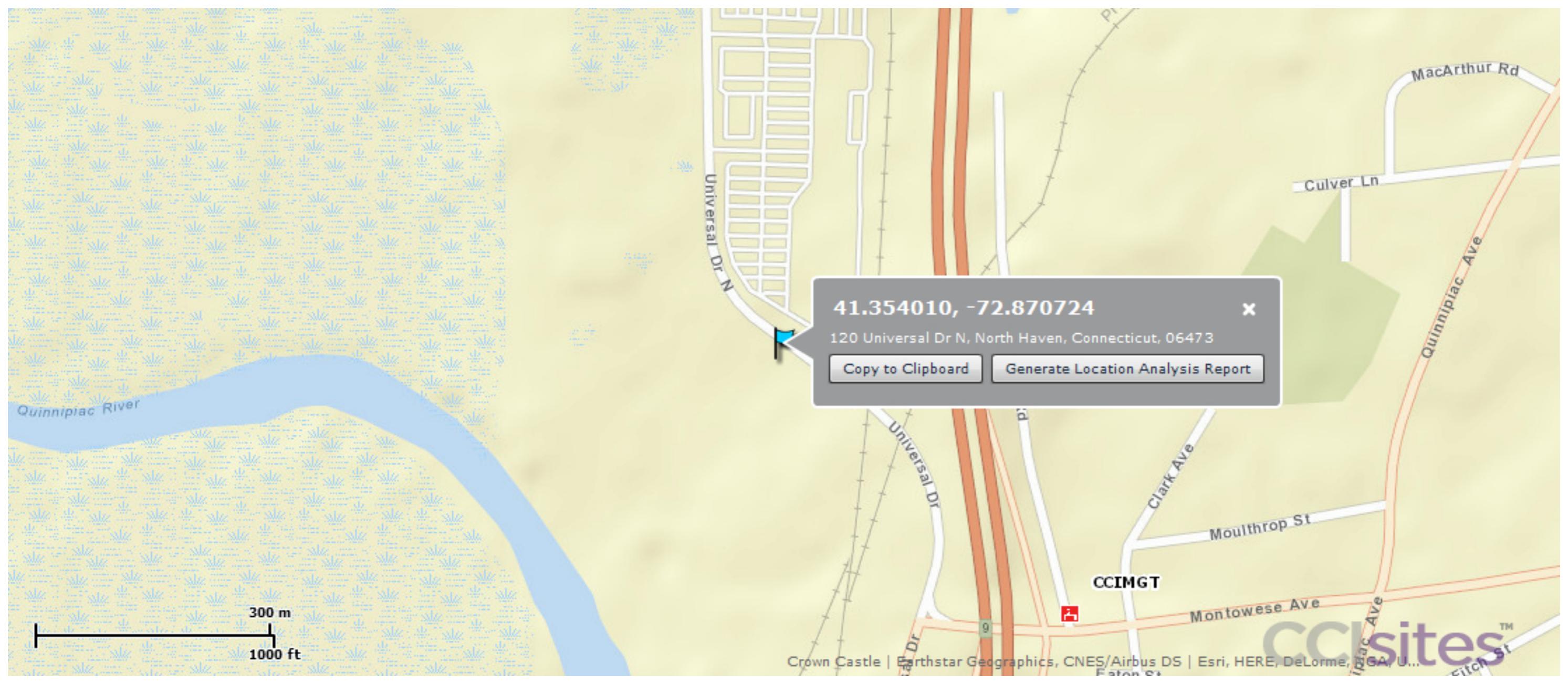
| <b>Outbuildings</b> |                    |                 |                        |             |              | <u>Legend</u> |
|---------------------|--------------------|-----------------|------------------------|-------------|--------------|---------------|
| <b>Code</b>         | <b>Description</b> | <b>Sub Code</b> | <b>Sub Description</b> | <b>Size</b> | <b>Value</b> | <b>Bldg #</b> |
| FN3                 | FENCE-6' CHAIN     |                 |                        | 640 L.F.    | \$2,900      | 1             |
| PAV1                | PAVING-ASPHALT     |                 |                        | 52000 S.F.  | \$35,100     | 1             |
| SHD7                | COMM GOOD          |                 |                        | 240 S.F.    | \$9,900      | 1             |
| TWR1                | COMMU-TOWER        |                 |                        | 1 UNITS     | \$112,500    | 1             |
| SHD7                | COMM GOOD          |                 |                        | 240 S.F.    | \$9,900      | 1             |

### Valuation History

| <b>Appraisal</b>      |                     |             |              |
|-----------------------|---------------------|-------------|--------------|
| <b>Valuation Year</b> | <b>Improvements</b> | <b>Land</b> | <b>Total</b> |
| 2013                  | \$1,238,100         | \$450,000   | \$1,688,100  |
| 2008                  | \$733,900           | \$450,000   | \$1,183,900  |
| 2007                  |                     | \$315,000   | \$828,730    |

| <b>Assessment</b>     |                     |             |              |
|-----------------------|---------------------|-------------|--------------|
| <b>Valuation Year</b> | <b>Improvements</b> | <b>Land</b> | <b>Total</b> |
| 2013                  | \$866,670           | \$315,000   | \$1,181,670  |
| 2008                  | \$513,730           | \$315,000   | \$828,730    |
| 2007                  |                     | \$315,000   | \$828,730    |

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at&t

WIRELESS COMMUNICATIONS FACILITY  
CT5107 - LTE PCS 1900 RETROFIT  
CROWN CASTLE SITE NO.: 881536  
NORTH HAVEN SOUTH  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

GENERAL NOTES

- ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "R" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES," 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATON POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY Affected WORK.
- CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
- CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING/S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.

- DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- THE 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.
- COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
- CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

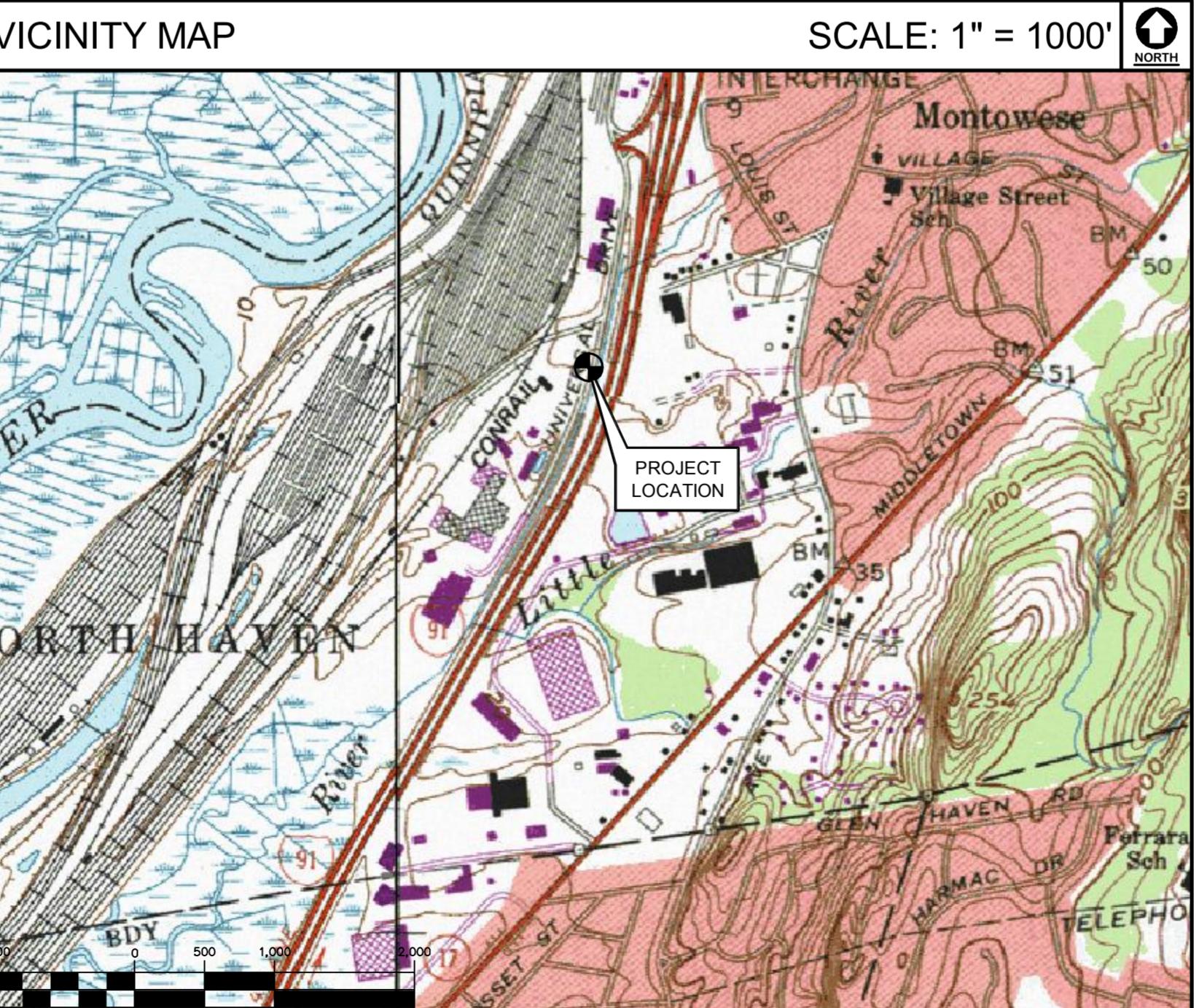
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE  
ROCKY HILL, CONNECTICUT

TO: 120 UNIVERSAL DR  
NORTH HAVEN, CT 06473

- HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD 0.3 mi
- TURN LEFT ONTO CAPITAL BLVD 0.2 mi
- USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411 0.3 mi
- TURN LEFT TO MERGE ONTO I-91 S 24.6 mi
- TAKE EXIT 9 TOWARD MONTOWESE AVENUE 0.1 mi
- SLIGHT LEFT ONTO UNIVERSAL DR 0.4 mi
- DESTINATION WILL BE ON THE RIGHT

VICINITY MAP



SCALE: 1" = 1000'

PROJECT SUMMARY

- THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANDED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
  - REMOVE AND REPLACE EXISTING POSITION 3 ANTENNA FOR PROPOSED (12) PORT ANTENNA, (1) PER SECTOR AND SWAP TO POSITION 4.
  - REMOVE & REPLACE (3) EXISTING RRUS-12 (1900MHz WITH (3) NEW RRUS-32 B2 MOUNTED BY ANTENNA ON EXISTING TOWER.

PROJECT INFORMATION

|                      |  |
|----------------------|--|
| AT&T SITE NUMBER:    | CT5107   |
| AT&T SITE NAME:      | NORTH HAVEN SOUTH  |
| SITE ADDRESS:        | CROWN CASTLE SITE NO.: 881536<br>120 UNIVERSAL DRIVE<br>NORTH HAVEN, CT 06473            |
| LESSEE/APPLICANT:    | AT&T MOBILITY<br>500 ENTERPRISE DRIVE, SUITE 3A<br>ROCKY HILL, CT 06067                  |
| CONTACT PERSON:      | LAUREN GROPP<br>EMPIRE TELECOM, LLC<br>(978) 430-2534                                    |
| ENGINEER:            | CENTEK ENGINEERING, INC.<br>63-2 NORTH BRANFORD RD.<br>BRANFORD, CT. 06405               |
| PROJECT COORDINATES: | LATITUDE: 41°-20'-38.76" N<br>LONGITUDE: 72°-52'-14.16" W<br>GROUND ELEVATION: ±21' AMSL |

CENTEK engineering  
Centek Solutions™

(203) 484-1580  
(203) 484-1587 fax  
632 North Branford Road  
Branford, CT 06405  
www.CentekEng.com

AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
NORTH HAVEN SOUTH  
SITE NUMBER: CT5107  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

SHEET INDEX

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| PROFESSIONAL ENGINEER SEAL                      |                    |
| DATE:   | 06/02/16           |
| SCALE:  | AS NOTED           |
| JOB NO.:  | 16002.15           |
| TITLE SHEET                                     |                    |
| CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION | DESCRIPTION        |
| REV.  | DATE DRAWN BY CHKD |
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## NOTES AND SPECIFICATIONS

### DESIGN BASIS

GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT STATE BUILDING CODE AND 2009 AMENDMENTS.

#### 1. DESIGN CRITERIA:

- WIND LOAD: PER EIA/TIA 222 F-96 (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST).
- BUILDING CLASSIFICATION: II (BASED ON IBC TABLE 1604.5)
- BASIC WIND SPEED (OTHER STRUCTURE): 110 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENT.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

### GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES, WHICH MIGHT BE NECESSARY.
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

### STRUCTURAL STEEL

#### 1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

- A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
- B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
- C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
- D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
- E. PIPE---ASTM A53 (FY = 35 KSI)
- F. CONNECTION BOLTS---ASTM A325-N
- G. U-BOLTS---ASTM A36
- H. ANCHOR RODS---ASTM F 1554
- I. WELDING ELECTRODE---ASTM E 70XX

#### 2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORING, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.

#### 3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

#### 4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

#### 5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

#### 6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

#### 7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

#### 8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.

#### 9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

#### 10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

#### 11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

#### 12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.

#### 13. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.

#### 14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

#### 15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

#### 16. FABRICATE BEAMS WITH MILL CAMBER UP.

#### 17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

#### 18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

#### 19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.

#### 20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

### PAINT NOTES

#### PAINTING SCHEDULE:

#### 1. ANTENNA PANELS:

- A. SHERWIN WILLIAMS POLANE-B
- B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.

#### 2. COAXIAL CABLES:

- A. ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
- B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
- C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

#### EXAMINATION AND PREPARATION:

#### 1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.

#### 2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.

#### 3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.

#### 4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.

#### 5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.

#### 6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.

#### 7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH-PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.

#### 8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.

#### 9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON-PETROLEUM-BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.

#### 10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPE WITH METHYL ETHYL KETONE (MEK).

#### 11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

#### CLEANING:

#### 1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

#### APPLICATION:

#### 1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

#### 2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.

#### 3. APPLY EACH COAT TO UNIFORM FINISH.

#### 4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.

#### 5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.

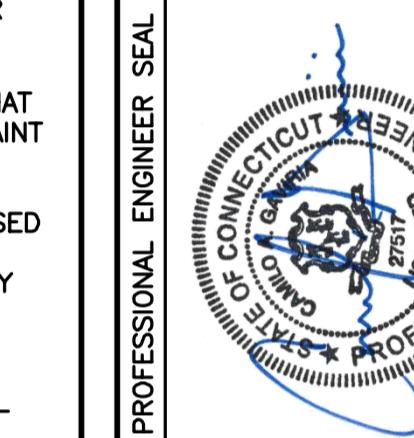
#### 6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.

#### 7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

#### COMPLETED WORK:

#### 1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.

#### 2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR PAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.



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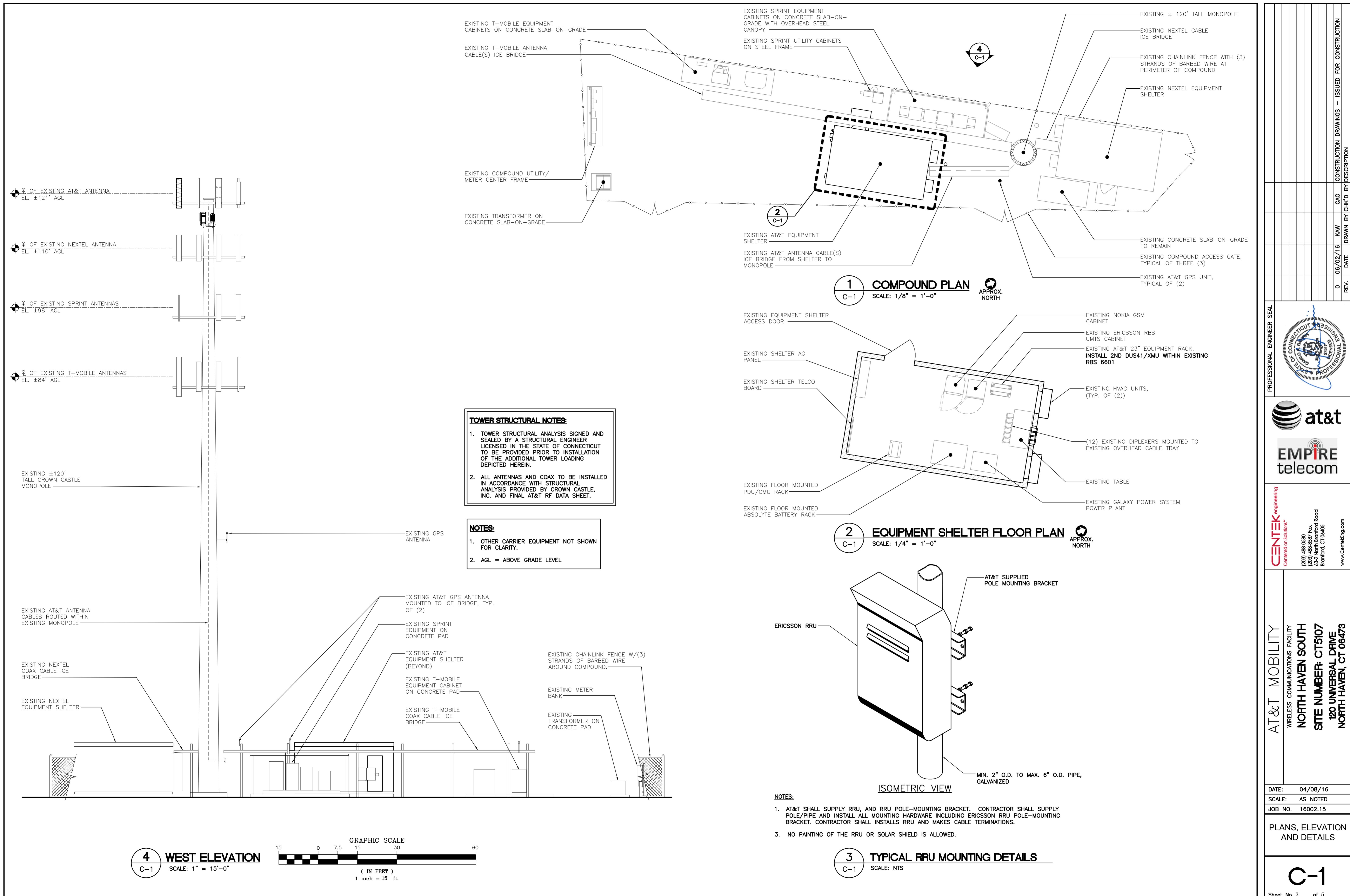
AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
NORTH HAVEN SOUTH  
SITE NUMBER: CT5107  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

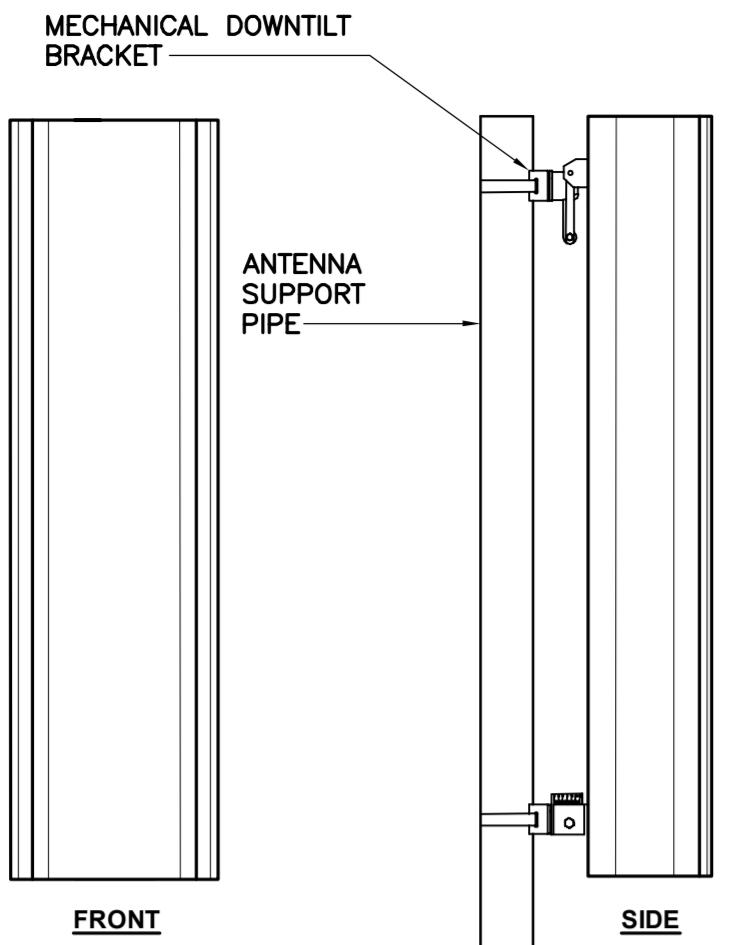
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NOTES AND  
SPECIFICATIONS

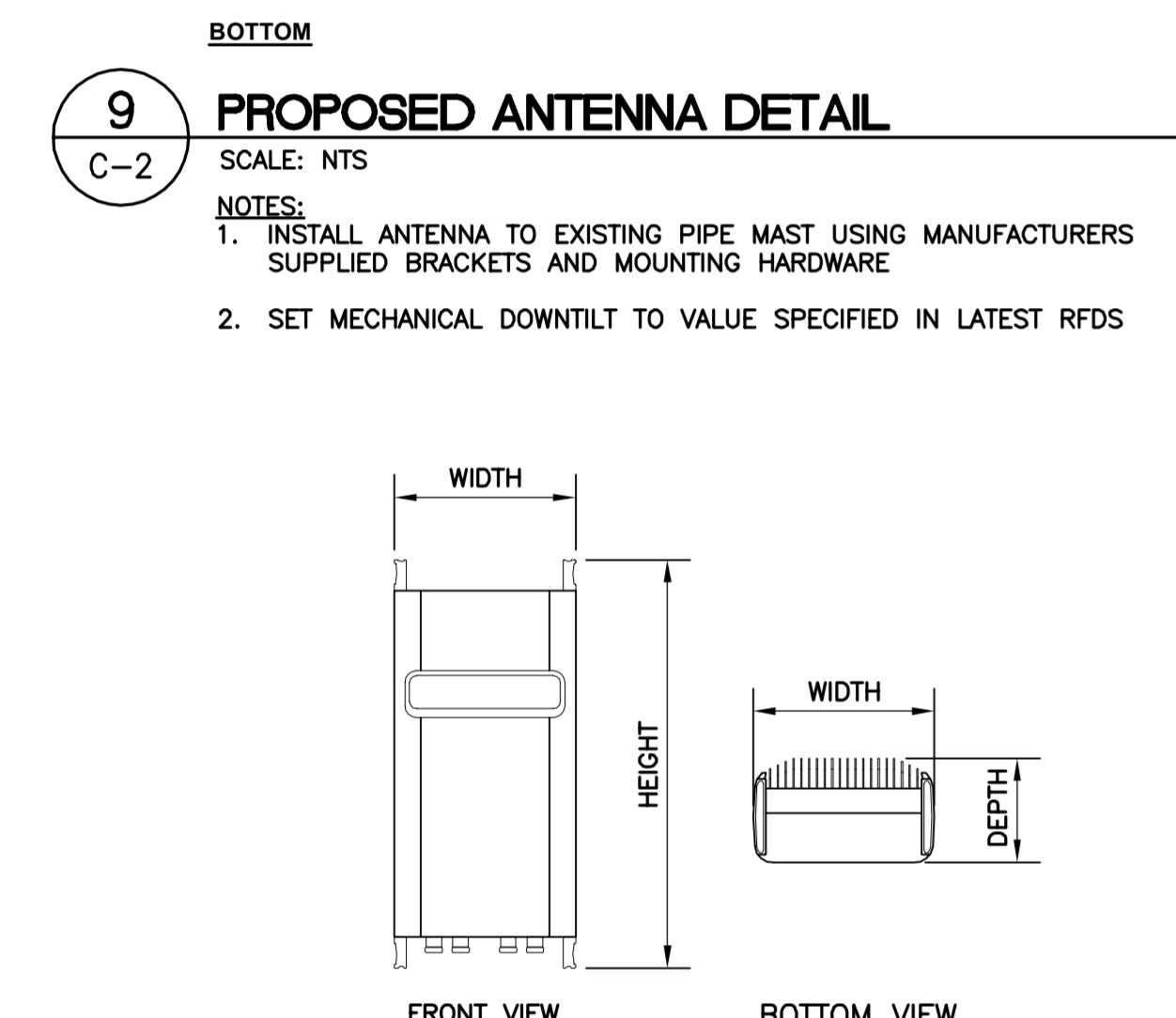
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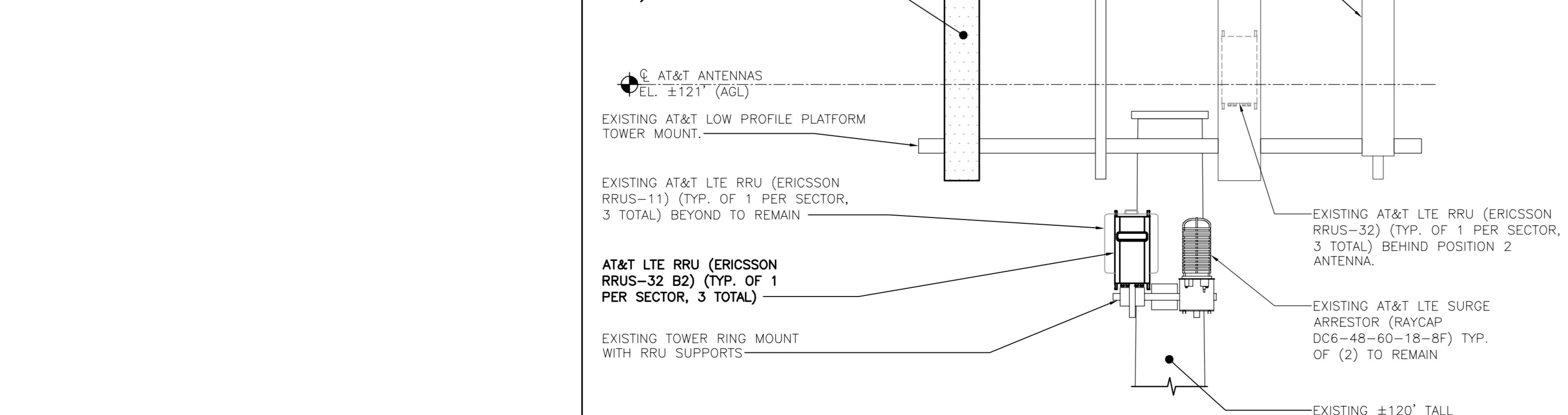
| ALPHA/BETA/GAMMA ANTENNA          |                            |           |
|-----------------------------------|----------------------------|-----------|
| EQUIPMENT                         | DIMENSIONS                 | WEIGHT    |
| MAKE: QUINTEL<br>MODEL: QS66512-2 | 72.0" H x 12.0" W x 9.6" D | 111.0-LBS |



| RRU (REMOTE RADIO UNIT)          |                               |            |   |
|----------------------------------|-------------------------------|------------|---|
| EQUIPMENT                        | DIMENSIONS                    | WEIGHT     | CLEARANCES  |
| MAKE: ERICSSON<br>MODEL: RRUS 32 | 27.17" H x 12.05" W x 7.01" D | 52.91 LBS. | ABOVE: 16" MIN.<br>BELOW: 12" MIN.<br>FRONT: 36" MIN. |

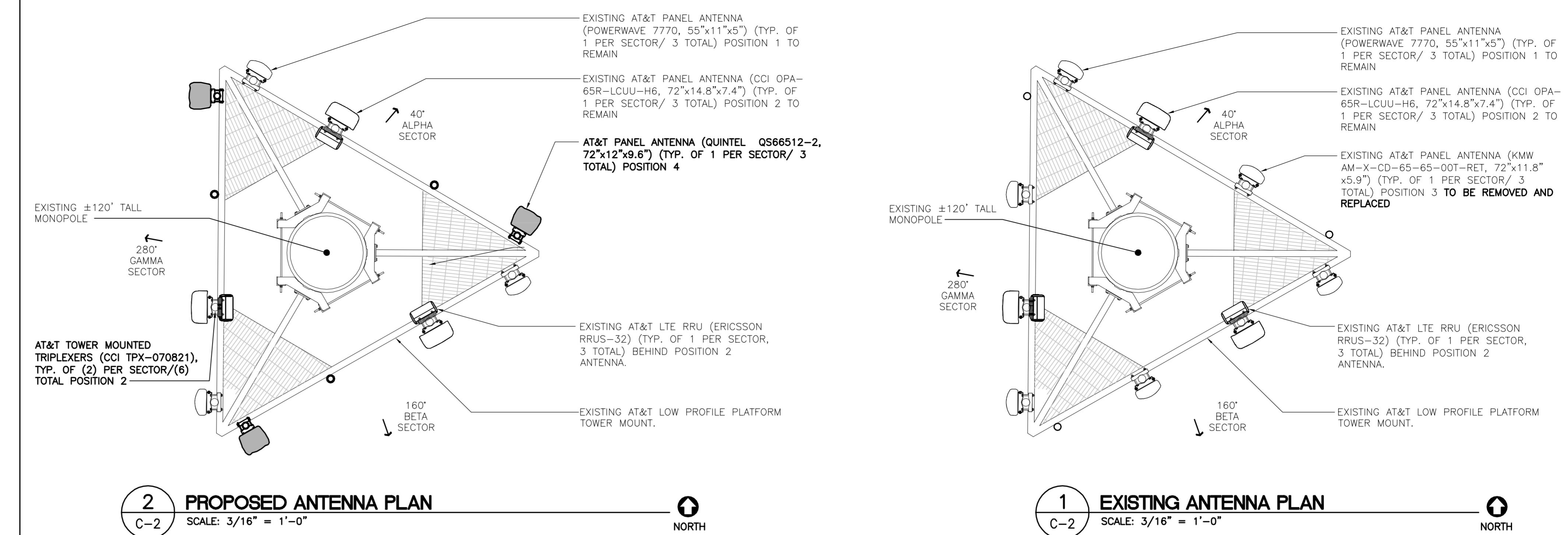
NOTES:  
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

8 ERICSSON RRUS 32 B2 DETAIL  
C-2  
SCALE: 1" = 1'-0"



6 C-2  
PROPOSED ANTENNA PLAN  
SCALE: 3/8" = 1'-0"

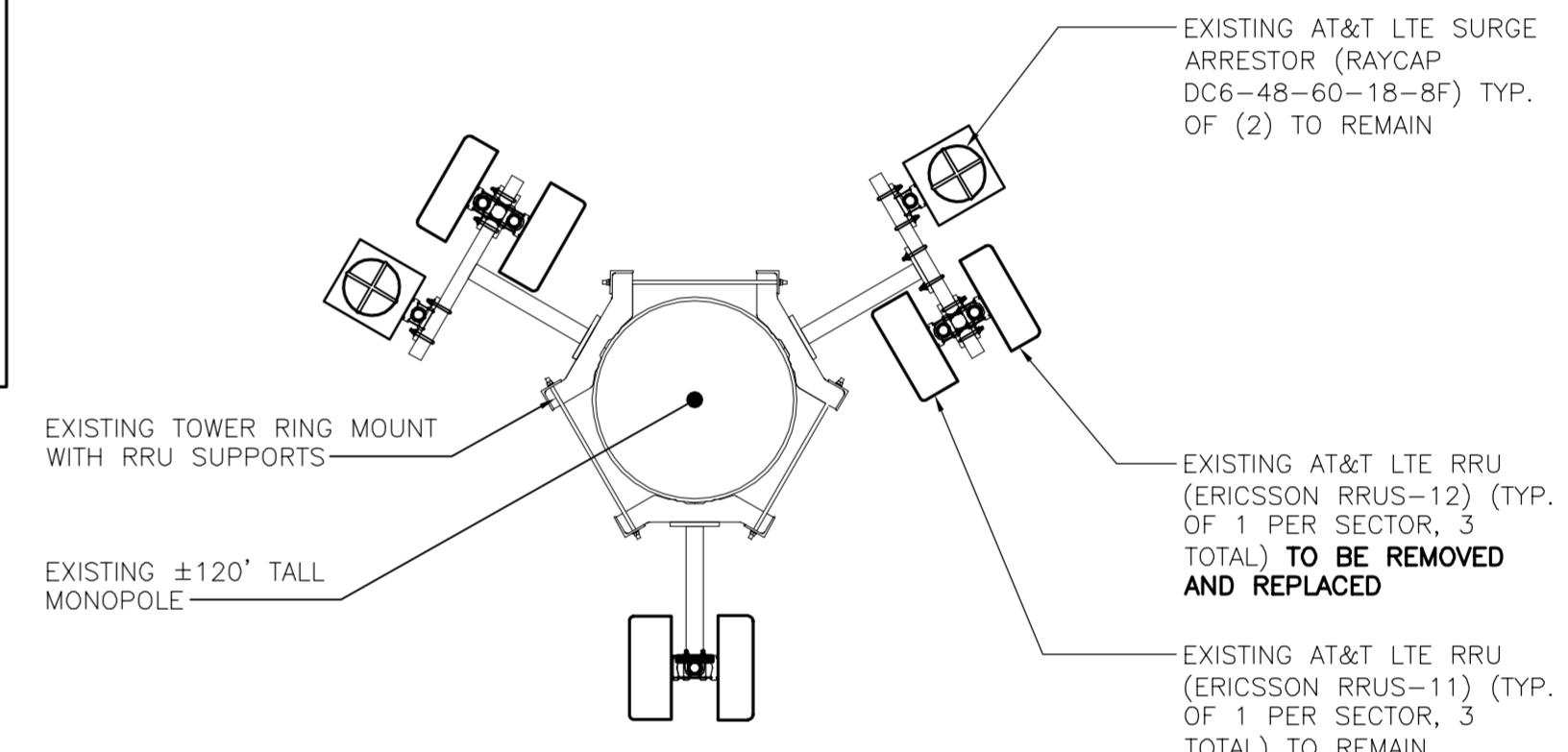
NOTE:  
1. TOWER MOUNTED AMPLIFIERS (TMA), NOT SHOWN FOR CLARITY.



2 C-2  
PROPOSED ANTENNA PLAN  
SCALE: 3/16" = 1'-0"

NOTES:  
1. PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE.  
2. REFER TO CROWN CASTLE, INC. STRUCTURAL REPORT AND FINAL AT&T RF DATA SHEET PRIOR TO INSTALLATION OF TOWER MOUNTED LTE RELATED ANTENNAS, CABLES AND RELATED EQUIPMENT  
3. COORDINATE ANTENNA CENTERLINE ELEVATION, RRU/SURGE ARRESTOR MOUNTING ELEVATION, ATTACHMENT HARDWARE WITH AMERICAN TOWER, CO.

4 C-2  
PROPOSED RRU PLAN  
SCALE: 3/8" = 1'-0"



1 C-2  
EXISTING ANTENNA PLAN  
SCALE: 3/16" = 1'-0"

EXISTING AT&T PANEL ANTENNA (POWERWAVE 7770, 55"x11"x5") (TYP. OF 1 PER SECTOR/ 3 TOTAL) POSITION 1 TO REMAIN

EXISTING AT&T PANEL ANTENNA (CCI OPA-65R-LCUU-H6, 72"x14.8"x7.4") (TYP. OF 1 PER SECTOR/ 3 TOTAL) POSITION 2 TO REMAIN

EXISTING AT&T PANEL ANTENNA (KMW AM-X-CD-65-65-00T-RET, 72"x11.8" x5.9") (TYP. OF 1 PER SECTOR/ 3 TOTAL) POSITION 3 TO BE REMOVED AND REPLACED

EXISTING AT&T SURGE ARRESTOR (RAYCAP DC6-48-60-18-8F) TYP. OF (2) TO REMAIN

EXISTING AT&T LOW PROFILE PLATFORM TOWER MOUNT.

EXISTING AT&T LTE RRU (ERICSSON RRUS-11) (TYP. OF 1 PER SECTOR, 3 TOTAL) TO BE REMOVED AND REPLACED

EXISTING AT&T LOW PROFILE PLATFORM TOWER MOUNT.

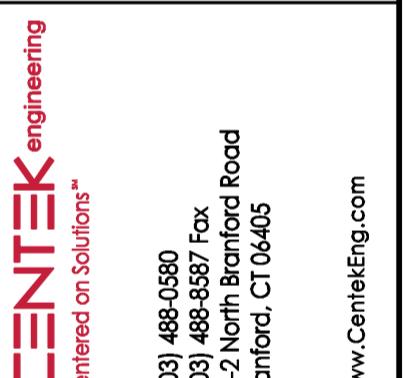
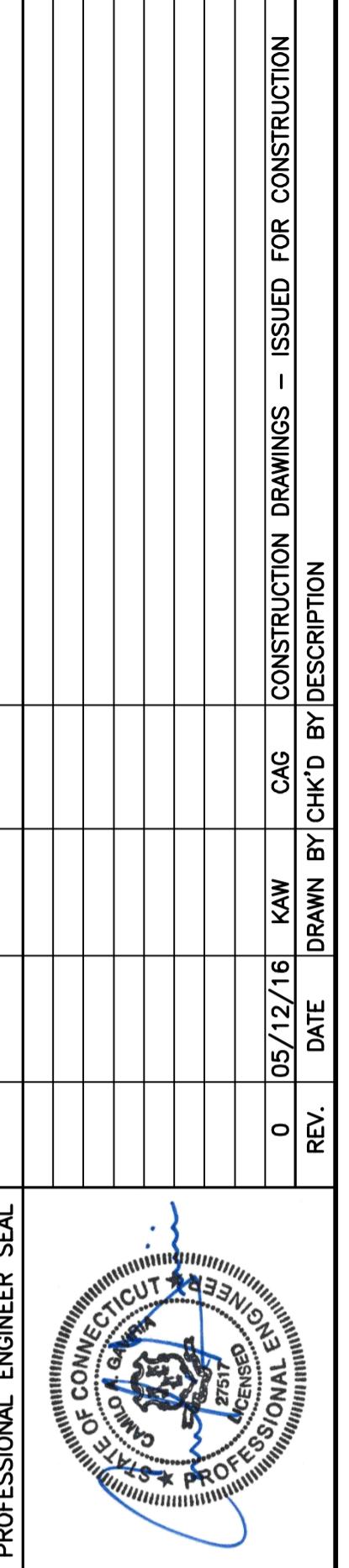
EXISTING AT&T LTE RRU (ERICSSON RRUS-32) (TYP. OF 1 PER SECTOR, 3 TOTAL) BEHIND POSITION 2 ANTENNA.

EXISTING AT&T SURGE ARRESTOR (RAYCAP DC6-48-60-18-8F) TYP. OF (2) TO REMAIN

EXISTING ±120' TALL MONOPOLE

5 C-2  
EXISTING ANTENNA PLAN  
SCALE: 3/8" = 1'-0"

NOTE:  
1. TOWER MOUNTED AMPLIFIERS (TMA), NOT SHOWN FOR CLARITY.



AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
NORTH HAVEN SOUTH  
SITE NUMBER: CT5107  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

DATE: 04/08/16  
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JOB NO. 16002.15  
LTE BWE EQUIPMENT DETAILS AND ELEVATIONS

C-2  
Sheet No. 4 of 5

## ELECTRICAL NOTES

- PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
- CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
- ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
- PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EVERY EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

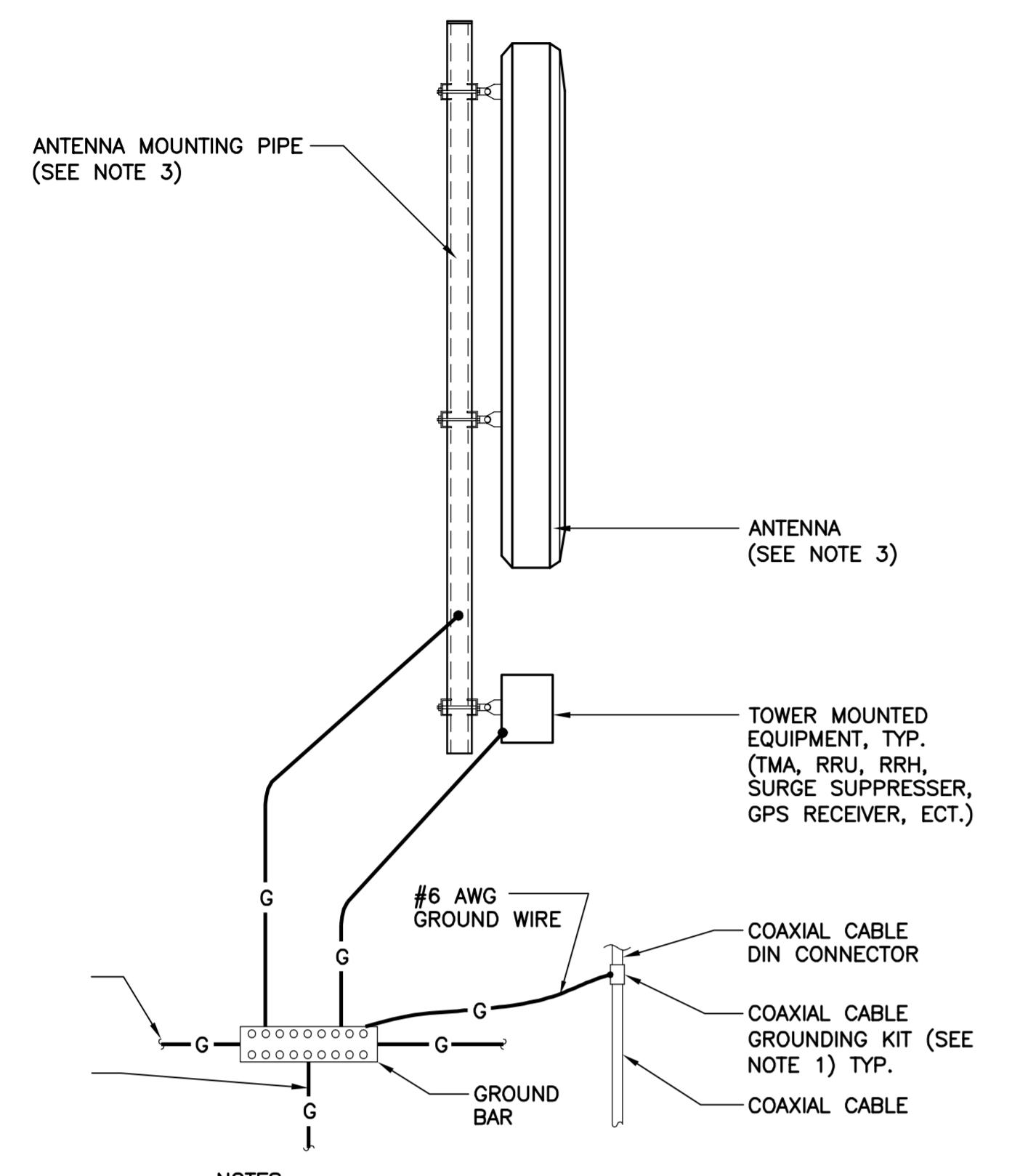
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| PROFESSIONAL ENGINEER SEAL                      |          |
| CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION |          |
| REV. DATE                                       | 05/12/16 |
| DRAWN BY  | KAW      |
| CAG   |          |
| CHKD BY   |          |
| DESCRIPTION                                     |          |



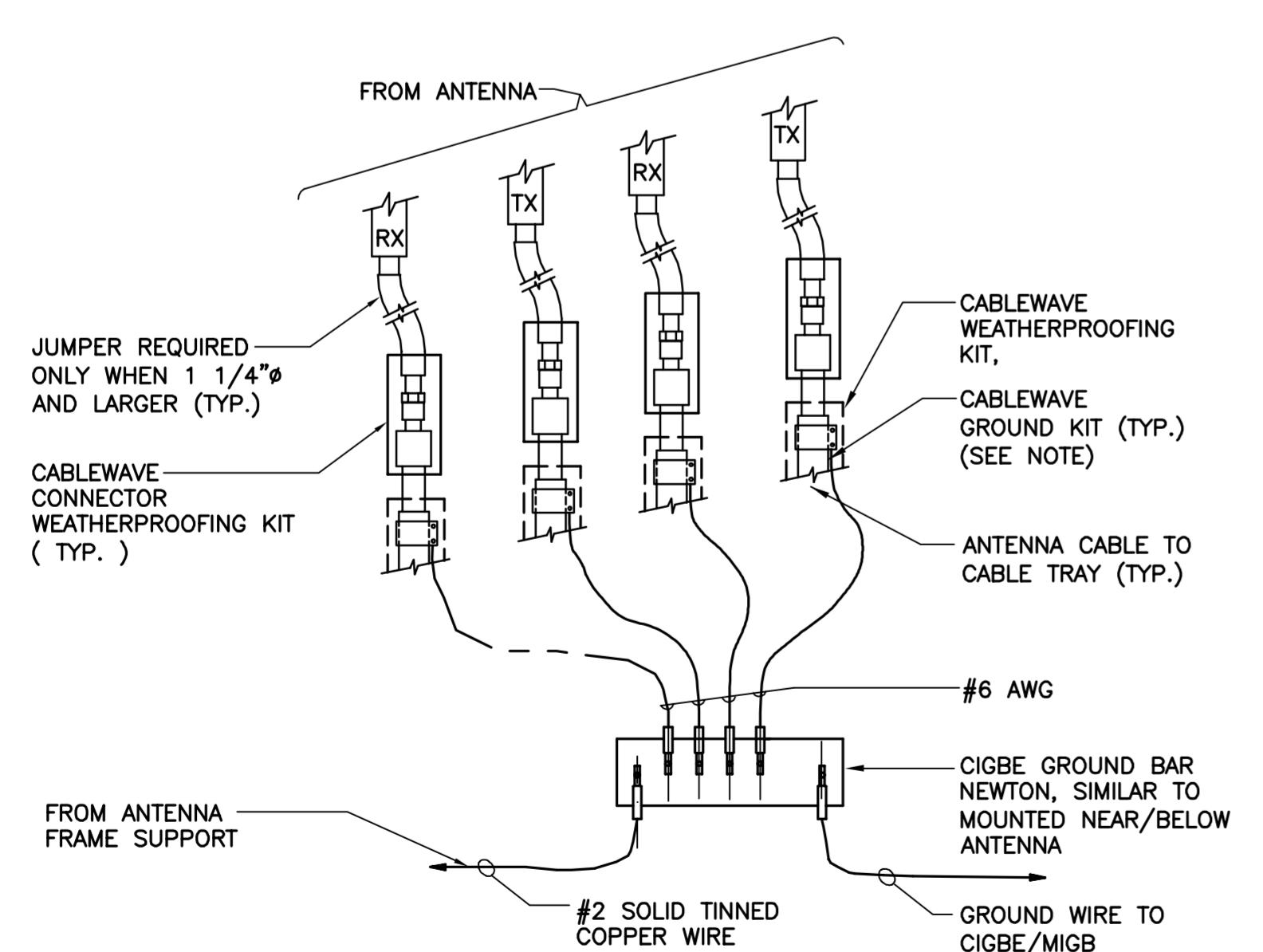
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SITE NUMBER: CT5107  
120 UNIVERSAL DRIVE  
NORTH HAVEN, CT 06473

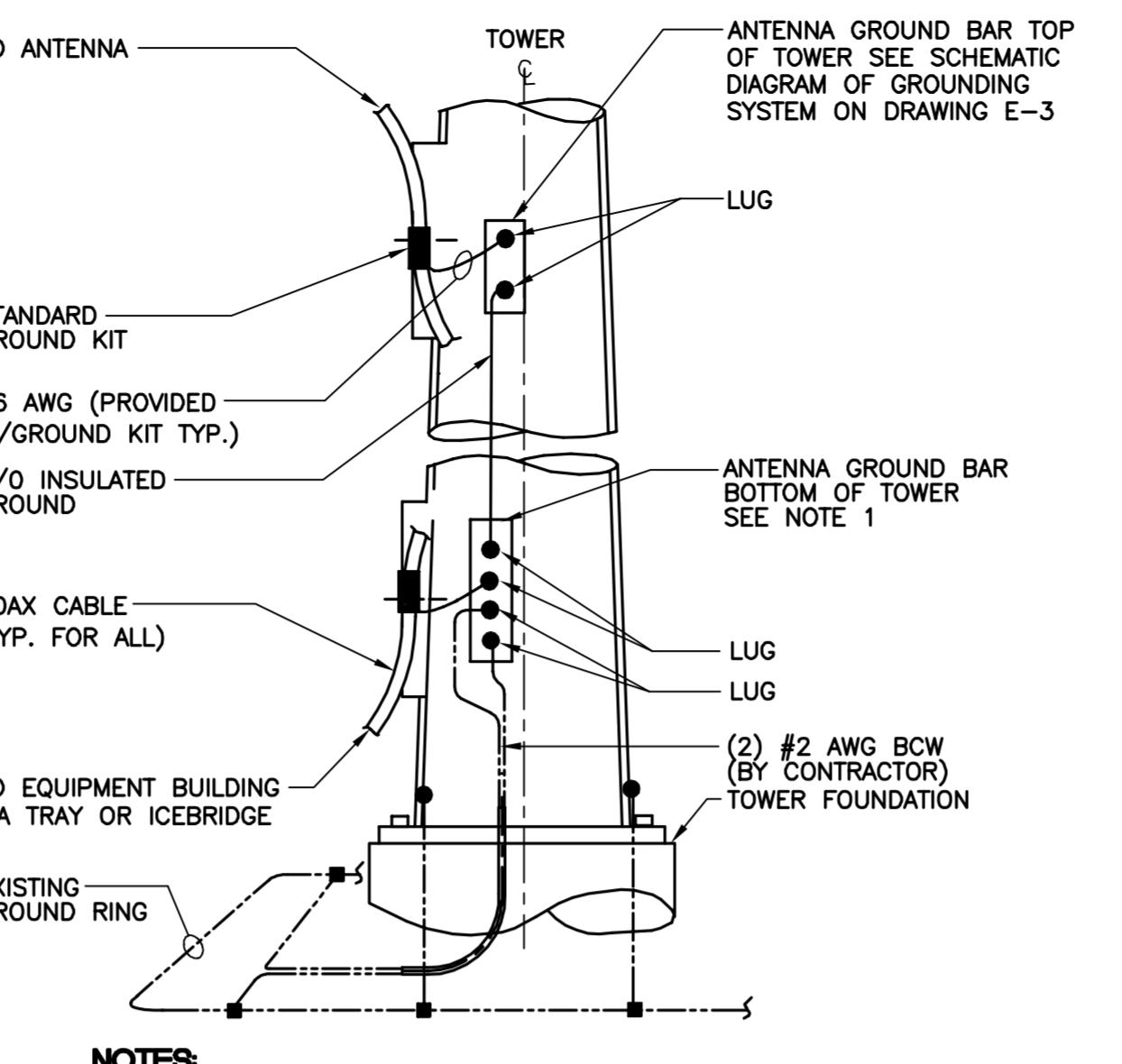
DATE: 04/08/16  
SCALE: AS NOTED  
JOB NO. 16002.15  
TYPICAL  
ELECTRICAL  
DETAILS & NOTES  
**E-1**  
Sheet No. 5 of 5



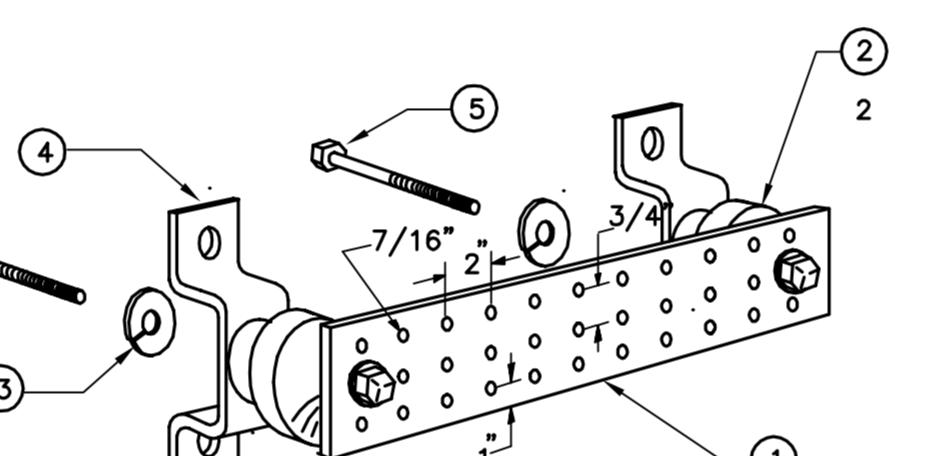
**2 TYPICAL ANTENNA GROUNDING DETAIL**  
E-1 NOT TO SCALE



**5 CONNECTION OF GROUND WIRES TO GROUND BAR**  
E-1 NOT TO SCALE



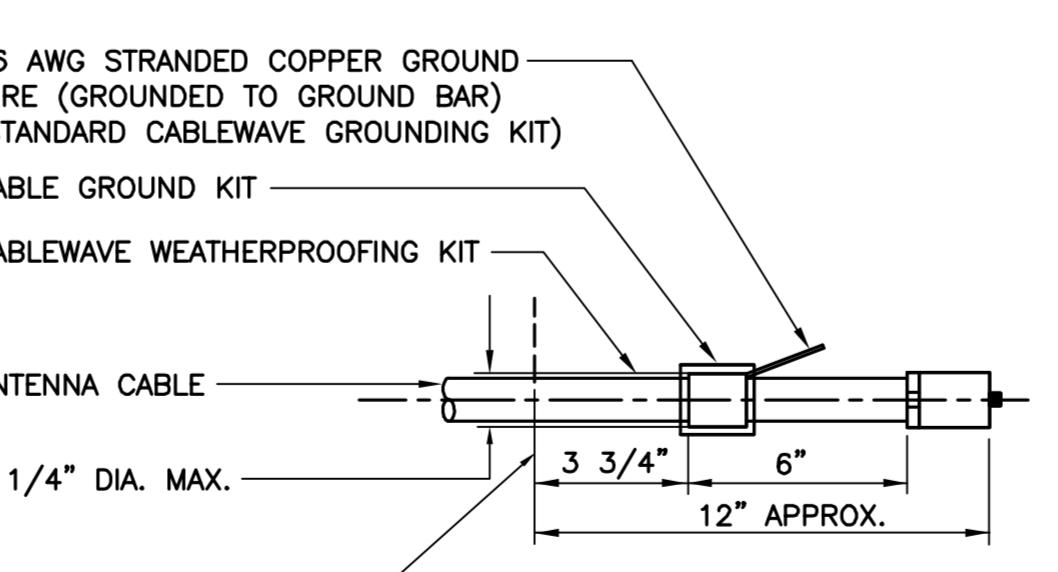
**1 ANTENNA CABLE GROUNDING - MONPOLE**  
E-1 NOT TO SCALE



**LEGEND**

- TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
- INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 1015-8.
- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.
- STAINLESS STEEL SECURITY SCREWS.

**3 GROUND BAR DETAIL**  
E-1 NOT TO SCALE



**4 ANTENNA CABLE GROUNDING DETAIL**  
E-1 NOT TO SCALE

Date: May 20, 2016

Rebecca Klein  
Crown Castle  
525 Alderman Lane  
Fort Mill, SC 29715



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

Subject: Structural Analysis Report

**Carrier Designation:**

AT&T Mobility Co-Locate

Carrier Site Number:

CTL05107

Carrier Site Name:

North Haven South

**Crown Castle Designation:**

Crown Castle BU Number:

881536

Crown Castle Site Name:

NORTH HAVEN TOWER

Crown Castle JDE Job Number:

378291

Crown Castle Work Order Number:

1239285

Crown Castle Application Number:

345011 Rev. 1

**Engineering Firm Designation:**

Crown Castle Project Number:

1239285

**Site Data:**

120 Universal Drive, North Haven, New Haven County, CT

Latitude 41° 20' 40.01", Longitude -72° 52' 14.92"

120 Foot - Monopole Tower

Dear Rebecca Klein,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1239285, in accordance with application 345011, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment

**Sufficient Capacity**

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 90 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

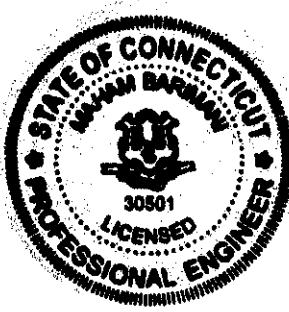
We at Crown Castle appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Brittany Mihalko, EIT / MAA

Respectfully submitted by:

Maham Barimani, P.E.  
Sr. Project Engineer

*Maham Barimani*



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## 1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in February of 2001. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 90 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

**Table 1 - Proposed Antenna and Cable Information**

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer   | Antenna Model                 | Number of Feed Lines | Feed Line Size (in) | Note |
|---------------------|----------------------------|--------------------|------------------------|-------------------------------|----------------------|---------------------|------|
| 118.0               | 121.0                      | 3                  | cci antennas           | OPA-65R-LCUU-H6 w/ Mount Pipe | 1                    | 3/8                 | -    |
|                     |                            | 6                  | cci antennas           | TPX-070821                    |                      |                     |      |
|                     |                            | 6                  | ericsson               | RRUS 32                       |                      |                     |      |
|                     |                            | 6                  | powerwave technologies | LGP21401                      |                      |                     |      |
|                     |                            | 3                  | quintel technology     | QS66512-2 w/ Mount Pipe       |                      |                     |      |
|                     |                            | 2                  | raycap                 | DC6-48-60-18-8F               |                      |                     |      |
| 116.0               | 117.0                      | 3                  | ericsson               | TME-RRUS-12                   | -                    | -                   | -    |

**Table 2 - Existing and Reserved Antenna and Cable Information**

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer   | Antenna Model                       | Number of Feed Lines | Feed Line Size (in) | Note |
|---------------------|----------------------------|--------------------|------------------------|-------------------------------------|----------------------|---------------------|------|
| 118.0               | 121.0                      | 3                  | powerwave technologies | 7770.00 w/ Mount Pipe               | 12<br>2<br>1         | 1-5/8<br>3/4<br>3/8 | 1    |
|                     |                            | 3                  | kmw communications     | AM-X-CD-16-65-00T-RET w/ Mount Pipe | 3                    |                     |      |
|                     | 120.0                      | 3                  | powerwave technologies | 7770.00 w/ Mount Pipe               |                      |                     |      |
|                     |                            | 12                 | powerwave technologies | LGP2140X                            |                      |                     |      |
| 116.0               | 117.0                      | 1                  | tower mounts           | Platform Mount [LP 712-1]           | -                    | -                   | 1    |
|                     |                            | 3                  | ericsson               | TME-RRUS-11                         | -                    | -                   | 3    |
|                     |                            | 3                  | ericsson               | TME-RRUS-11                         | -                    | -                   | 1    |
|                     | 116.0                      | 1                  | raycap                 | DC6-48-60-18-8F                     |                      |                     |      |
| 108.0               | 110.0                      | 12                 | decibel                | 844G65VTZASX w/ Mount Pipe          | 12                   | 1-1/4               | 4    |
|                     | 108.0                      | 1                  | tower mounts           | Platform Mount [LP 303-1]           |                      |                     |      |

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer   | Antenna Model                         | Number of Feed Lines | Feed Line Size (in) | Note |
|---------------------|----------------------------|--------------------|------------------------|---------------------------------------|----------------------|---------------------|------|
| 100.0               | 100.0                      | 3                  | alcatel lucent         | TME-1900MHz RRH (65MHz) w/ Mount pipe | -                    | -                   | 1    |
|                     |                            | 1                  | tower mounts           | Side Arm Mount [SO 102-3]             |                      |                     |      |
|                     | 99.0                       | 3                  | alcatel lucent         | TME-800MHz RRH                        |                      |                     |      |
| 97.0                | 98.0                       | 3                  | alcatel lucent         | TD-RRH8x20-25                         | 1<br>3               | 1-5/8<br>1-1/4      | 1    |
|                     |                            | 2                  | powerwave technologies | P40-16-XLPP-RR-A w/ Mount Pipe        |                      |                     |      |
|                     |                            | 1                  | rfs celwave            | APXVSPP18-C-A20 w/ Mount Pipe         |                      |                     |      |
|                     |                            | 3                  | rfs celwave            | APXVTM14-C-120 w/ Mount Pipe          |                      |                     |      |
|                     | 97.0                       | 3                  | alcatel lucent         | 800 EXTERNAL NOTCH FILTER             |                      |                     |      |
|                     |                            | 9                  | rfs celwave            | ACU-A20-N                             |                      |                     |      |
|                     |                            | 1                  | tower mounts           | Platform Mount [LP 601-1]             |                      |                     |      |
| 83.0                | 84.0                       | 3                  | ericsson               | AIR -32 B2A/B66AA w/ Mount Pipe       | 1                    | 1-1/4               | 2    |
|                     |                            | 3                  | commscope              | LNX-6515DS-A1M w/ Mount Pipe          | 11<br>1              | 1-5/8<br>1-1/4      | 1    |
|                     |                            | 3                  | ericsson               | ERICSSON AIR 21 B2A B4P w/ Mount Pipe |                      |                     |      |
|                     |                            | 3                  | ericsson               | RRUS 11 B12                           |                      |                     |      |
|                     |                            | 3                  | rfs celwave            | ATMAA1412D-1A20                       |                      |                     |      |
|                     | 83.0                       | 1                  | tower mounts           | Platform Mount [LP 303-1]             |                      |                     |      |
| 51.0                | 51.0                       | 1                  | lucent                 | KS24019-L112A                         | 1                    | 1/2                 | 1    |
|                     |                            | 1                  | tower mounts           | Side Arm Mount [SO 701-1]             |                      |                     |      |

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment to be Removed; Not Considered in Analysis
- 4) Abandoned Equipment; Considered in Analysis

**Table 3 - Design Antenna and Cable Information**

| Mounting Level (ft) | Center Line Elevation (ft) | Number of Antennas | Antenna Manufacturer | Antenna Model | Number of Feed Lines | Feed Line Size (in) |
|---------------------|----------------------------|--------------------|----------------------|---------------|----------------------|---------------------|
| 118.0               | 118.0                      | 12                 | allgon               | 7120.16       | -                    | -                   |

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

| Document                                 | Remarks                        | Reference | Source  |
|--|--------------------------------|-----------|---------|
| 4-GEOTECHNICAL REPORTS                   | Dr. Clarence Welti, P.E., P.C. | 1405753   | CCSITES |
| 4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS | Engineering Endeavors, Inc.    | 1405795   | CCSITES |
| 4-TOWER MANUFACTURER DRAWINGS            | Engineering Endeavors, Inc.    | 1405788   | CCSITES |

### 3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) The existing base plate grout was not considered in this analysis.

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

## 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

| Section No. | Elevation (ft)    | Component Type | Size                     | Critical Element | P (K)  | SF*P_allow (K) | % Capacity | Pass / Fail |
|-------------|-------------------|----------------|--------------------------|------------------|--------|----------------|------------|-------------|
| L1          | 120 - 84.7161     | Pole           | TP32.5458x24.09x0.375    | 1                | -10.64 | 1922.92        | 33.6       | Pass        |
| L2          | 84.7161 - 41.6224 | Pole           | TP42.0347x30.7011x0.4375 | 2                | -22.57 | 2904.13        | 62.8       | Pass        |
| L3          | 41.6224 - 0       | Pole           | TP51x39.7912x0.5         | 3                | -37.73 | 4166.42        | 68.2       | Pass        |
|             |                   |                |                          |                  |        | Summary        |            |             |
|             |                   |                |                          |                  |        | Pole (L3)      | 68.2       | Pass        |
|             |                   |                |                          |                  |        | Rating =       | 68.2       | Pass        |

**Table 6 - Tower Component Stresses vs. Capacity – LC7**

| Notes | Component                        | Elevation (ft) | % Capacity | Pass / Fail |
|-------|----------------------------------|----------------|------------|-------------|
| 1     | Anchor Rods                      | 0              | 46.7       | Pass        |
| 1     | Base Plate                       | 0              | 56.6       | Pass        |
| 1     | Base Foundation Structure        | 0              | 60.7       | Pass        |
| 1     | Base Foundation Soil Interaction | 0              | 22.0       | Pass        |

|  |       |
|--|-------|
| Structure Rating (max from all components) = | 68.2% |
|--|-------|

Notes:

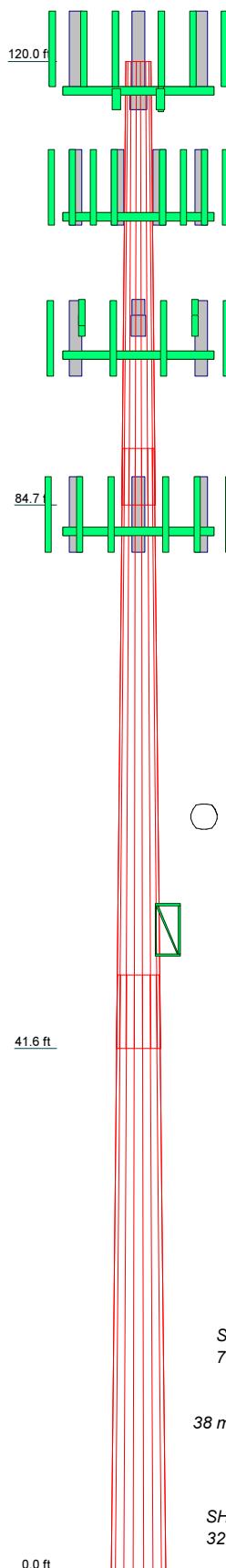
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

### 4.1) Recommendations

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

**APPENDIX A**  
**TNXTOWER OUTPUT**

|                    |         |         |         |
|--------------------|---------|---------|---------|
| Section            | 3       | 2       | 1       |
| Length (ft)        | 47.38   | 47.66   | 35.28   |
| Number of Sides    | 18      | 18      | 18      |
| Thickness (in)     | 0.5000  | 0.4375  | 0.3750  |
| Socket Length (ft) |         | 5.76    | 4.57    |
| Top Dia (in)       | 39.7912 | 30.7011 | 24.0900 |
| Bot Dia (in)       | 51.0000 | 42.0347 | 32.5458 |
| Grade              |         | A572-65 |         |
| Weight (K)         | 23.6    | 11.5    | 8.1     |
|                    |         |         | 4.0     |



## DESIGNED APPURTE NANCE LOADING

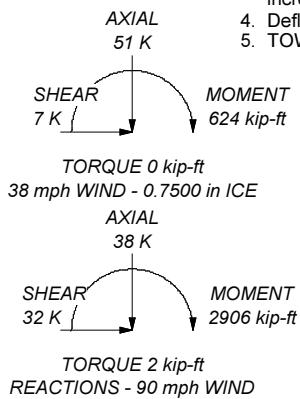
| TYPE                              | ELEVATION | TYPE                                  | ELEVATION |
|-----------------------------------|-----------|---------------------------------------|-----------|
| 7770.00 w/ Mount Pipe             | 118       | Side Arm Mount [SO 102-3]             | 100       |
| 7770.00 w/ Mount Pipe             | 118       | P40-16-XLPP-RR-A w/ Mount Pipe        | 97        |
| 7770.00 w/ Mount Pipe             | 118       | P40-16-XLPP-RR-A w/ Mount Pipe        | 97        |
| OPA-65R-LCUU-H6 w/ Mount Pipe     | 118       | APXVSP18-C-A20 w/ Mount Pipe          | 97        |
| OPA-65R-LCUU-H6 w/ Mount Pipe     | 118       | APXVTM14-C-120 w/ Mount Pipe          | 97        |
| OPA-65R-LCUU-H6 w/ Mount Pipe     | 118       | APXVTM14-C-120 w/ Mount Pipe          | 97        |
| QS66512-2 w/ Mount Pipe           | 118       | APXVTM14-C-120 w/ Mount Pipe          | 97        |
| QS66512-2 w/ Mount Pipe           | 118       | 800 EXTERNAL NOTCH FILTER             | 97        |
| QS66512-2 w/ Mount Pipe           | 118       | 800 EXTERNAL NOTCH FILTER             | 97        |
| (2) TPX-070821                    | 118       | 800 EXTERNAL NOTCH FILTER             | 97        |
| (2) TPX-070821                    | 118       | TD-RRH8x20-25                         | 97        |
| (2) TPX-070821                    | 118       | TD-RRH8x20-25                         | 97        |
| (2) RRUS 32                       | 118       | TD-RRH8x20-25                         | 97        |
| (2) RRUS 32                       | 118       | (3) ACU-A20-N                         | 97        |
| (2) RRUS 32                       | 118       | (3) ACU-A20-N                         | 97        |
| (2) LGP21401                      | 118       | (3) ACU-A20-N                         | 97        |
| (2) LGP21401                      | 118       | Platform Mount [LP 601-1]             | 97        |
| (2) LGP21401                      | 118       | 6' x 2" Mount Pipe                    | 97        |
| (2) DC6-48-60-18-8F               | 118       | 6' x 2" Mount Pipe                    | 97        |
| Platform Mount [LP 712-1]         | 118       | 6' x 2" Mount Pipe                    | 97        |
| 8'x2" Antenna Mount Pipe          | 118       | Transition Ladder                     | 97        |
| 8'x2" Antenna Mount Pipe          | 118       | LNX-6515DS-A1M w/ Mount Pipe          | 83        |
| 8'x2" Antenna Mount Pipe          | 118       | LNX-6515DS-A1M w/ Mount Pipe          | 83        |
| Transition Ladder                 | 118       | LNX-6515DS-A1M w/ Mount Pipe          | 83        |
| TME-RRUS-11                       | 116       | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 83        |
| TME-RRUS-11                       | 116       | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 83        |
| TME-RRUS-11                       | 116       | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 83        |
| DC6-48-60-18-8F                   | 116       | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 83        |
| TME-RRUS-12                       | 116       | ERICSSON AIR 21 B2A B4P w/ Mount Pipe | 83        |
| TME-RRUS-12                       | 116       | RRUS 11 B12                           | 83        |
| TME-RRUS-12                       | 116       | RRUS 11 B12                           | 83        |
| Side Arm Mount [SO 102-3]         | 116       | RRUS 11 B12                           | 83        |
| 4' x 2" Pipe Mount                | 116       | ATMAA1412D-1A20                       | 83        |
| 4' x 2" Pipe Mount                | 116       | ATMAA1412D-1A20                       | 83        |
| 4' x 2" Pipe Mount                | 116       | ATMAA1412D-1A20                       | 83        |
| (4) 844G65VTZASX w/ Mount Pipe    | 108       | AIR -32 B2A/B66AA w/ Mount Pipe       | 83        |
| (4) 844G65VTZASX w/ Mount Pipe    | 108       | AIR -32 B2A/B66AA w/ Mount Pipe       | 83        |
| (4) 844G65VTZASX w/ Mount Pipe    | 108       | AIR -32 B2A/B66AA w/ Mount Pipe       | 83        |
| Platform Mount [LP 303-1]         | 108       | Platform Mount [LP 303-1]             | 83        |
| TME-800MHZ RRH                    | 100       | 8'x2" Antenna Mount Pipe              | 83        |
| TME-800MHZ RRH                    | 100       | 8'x2" Antenna Mount Pipe              | 83        |
| TME-800MHZ RRH                    | 100       | 8'x2" Antenna Mount Pipe              | 83        |
| 1900MHz RRH (65MHz) w/ Mount pipe | 100       | KS24019-L112A                         | 51        |
| 1900MHz RRH (65MHz) w/ Mount pipe | 100       | Side Arm Mount [SO 701-1]             | 51        |
| 1900MHz RRH (65MHz) w/ Mount pipe | 100       |                                       |           |

## MATERIAL STRENGTH

| GRADE   | Fy     | Fu     | GRADE | Fy | Fu |
|---------|--------|--------|-------|----|----|
| A572-65 | 65 ksi | 80 ksi |       |    |    |

## TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. **TOWER RATING: 68.2%**



## Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- 5) Tower is located in New Haven County, Connecticut.
- 6) Basic wind speed of 90 mph.
- 7) Nominal ice thickness of 0.7500 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56 pcf.
- 10) A wind speed of 38 mph is used in combination with ice.
- 11) Temperature drop of 50 °F.
- 12) Deflections calculated using a wind speed of 50 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.333.
- 16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

|                                     |                                      |                                     |
|-------------------------------------|--------------------------------------|-------------------------------------|
| Consider Moments - Legs             | Distribute Leg Loads As Uniform      | Use ASCE 10 X-Brace Ly Rules        |
| Consider Moments - Horizontals      | Assume Legs Pinned                   | Calculate Redundant Bracing Forces  |
| Consider Moments - Diagonals        | ✓ Assume Rigid Index Plate           | Ignore Redundant Members in FEA     |
| Use Moment Magnification            | ✓ Use Clear Spans For Wind Area      | SR Leg Bolts Resist Compression     |
| ✓ Use Code Stress Ratios            | Use Clear Spans For KL/r             | All Leg Panels Have Same Allowable  |
| ✓ Use Code Safety Factors - Guys    | Retension Guys To Initial Tension    | Offset Girt At Foundation           |
| ✓ Escalate Ice                      | ✓ Bypass Mast Stability Checks       | ✓ Consider Feed Line Torque         |
| Always Use Max Kz                   | ✓ Use Azimuth Dish Coefficients      | Include Angle Block Shear Check     |
| Use Special Wind Profile            | ✓ Project Wind Area of Appurt.       | Use TIA-222-G Bracing Resist.       |
| Include Bolts In Member Capacity    | Autocalc Torque Arm Areas            | Exemption                           |
| Leg Bolts Are At Top Of Section     | Add IBC .6D+W Combination            | Use TIA-222-G Tension Splice        |
| Secondary Horizontal Braces Leg     | ✓ Sort Capacity Reports By Component | Exemption                           |
| Use Diamond Inner Bracing (4 Sided) | Triangulate Diamond Inner Bracing    | Poles                               |
| SR Members Have Cut Ends            | Treat Feed Line Bundles As Cylinder  | ✓ Include Shear-Torsion Interaction |
| SR Members Are Concentric           |                                      | Always Use Sub-Critical Flow        |
|                                     |                                      | Use Top Mounted Sockets             |

## Tapered Pole Section Geometry

| Section | Elevation<br>ft | Section<br>Length<br>ft | Splice<br>Length<br>ft | Number<br>of<br>Sides | Top<br>Diameter<br>in | Bottom<br>Diameter<br>in | Wall<br>Thickness<br>in | Bend<br>Radius<br>in | Pole Grade          |
|---------|-----------------|-------------------------|------------------------|-----------------------|-----------------------|--------------------------|-------------------------|----------------------|---------------------|
| L1      | 120.00-84.72    | 35.28                   | 4.57                   | 18                    | 24.0900               | 32.5458                  | 0.3750                  | 1.5000               | A572-65<br>(65 ksi) |
| L2      | 84.72-41.62     | 47.66                   | 5.76                   | 18                    | 30.7011               | 42.0347                  | 0.4375                  | 1.7500               | A572-65<br>(65 ksi) |
| L3      | 41.62-0.00      | 47.38                   |                        | 18                    | 39.7912               | 51.0000                  | 0.5000                  | 2.0000               | A572-65<br>(65 ksi) |

## Tapered Pole Properties

| Section | Tip Dia.<br>in | Area<br>in <sup>2</sup> | $I$<br>in <sup>4</sup> | $r$<br>in | $C$<br>in | $I/C$<br>in <sup>3</sup> | $J$<br>in <sup>4</sup> | $It/Q$<br>in <sup>2</sup> | $w$<br>in | w/t |
|---------|----------------|-------------------------|------------------------|-----------|-----------|--------------------------|------------------------|---------------------------|-----------|-----|
|---------|----------------|-------------------------|------------------------|-----------|-----------|--------------------------|------------------------|---------------------------|-----------|-----|

| Section | Tip Dia.<br>in | Area<br>in <sup>2</sup> | I<br>in <sup>4</sup> | r<br>in | C<br>in | I/C<br>in <sup>3</sup> | J<br>in <sup>4</sup> | It/Q<br>in <sup>2</sup> | w<br>in | w/t    |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|--------|
| L1      | 24.4616        | 28.2268                 | 2005.6033            | 8.4188  | 12.2377 | 163.8870               | 4013.8455            | 14.1161                 | 3.5798  | 9.546  |
|         | 33.0479        | 38.2913                 | 5006.8113            | 11.4206 | 16.5333 | 302.8326               | 10020.210            | 19.1493                 | 5.0681  | 13.515 |
| L2      | 32.2777        | 42.0249                 | 4862.7972            | 10.7436 | 15.5962 | 311.7941               | 9731.9930            | 21.0164                 | 4.6334  | 10.591 |
|         | 42.6832        | 57.7629                 | 12627.422            | 14.7670 | 21.3536 | 591.3479               | 25271.461            | 28.8869                 | 6.6281  | 15.15  |
| L3      | 41.7876        | 62.3551                 | 12161.823            | 13.9484 | 20.2139 | 601.6563               | 24339.649            | 31.1835                 | 6.1232  | 12.246 |
|         | 51.7868        | 80.1435                 | 25821.918            | 17.9275 | 25.9080 | 996.6774               | 51677.814            | 40.0794                 | 8.0960  | 16.192 |
|         |                |                         |                      |         |         |                        |                      |                         |         |        |

| Tower Elevation | Gusset Area (per face) | Gusset Thickness | Gusset Grade | Adjust. Factor A <sub>f</sub> | Adjust. Factor A <sub>r</sub> | Weight Mult. | Double Angle Stitch Bolt Spacing Diagonals in | Double Angle Stitch Bolt Spacing Horizontals in | Double Angle Stitch Bolt Spacing Redundants in |
|-----------------|------------------------|------------------|--------------|-------------------------------|-------------------------------|--------------|---|---|--|
| ft              | ft <sup>2</sup>        | in               |              |                               |                               |              |   |   |  |
| L1 120.00-84.72 |                        |                  |              | 1                             | 1                             | 1            |   |   |  |
| L2 84.72-41.62  |                        |                  |              | 1                             | 1                             | 1            |   |   |  |
| L3 41.62-0.00   |                        |                  |              | 1                             | 1                             | 1            |   |   |  |

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | Number Per Row | Clear Spacing in | Width or Diamete r in | Perimete r in | Weight plf |
|-------------|-------------|--------------|----------------|--------------|--------------|----------------|------------------|-----------------------|---------------|------------|
| ***         |             |              |                |              |              |                |                  |                       |               |            |

### Feed Line/Linear Appurtenances - Entered As Area

| Description             | Face or Leg | Allow Shield | Component Type | Placement ft  | Total Number | C <sub>AA</sub>   | Weight |
|-------------------------|-------------|--------------|----------------|---------------|--------------|---|--------|
|                         |             |              |                |               |              | ft <sup>2</sup> /ft   | plf    |
| LDF7-50A(1-5/8")        | C           | No           | Inside Pole    | 118.00 - 0.00 | 12           | No Ice 0.00<br>1/2" Ice 0.00<br>1" Ice 0.00<br>2" Ice 0.00<br>4" Ice 0.00 | 0.82   |
| FB-L98B-002-75000(3/8") | C           | No           | Inside Pole    | 118.00 - 0.00 | 1            | No Ice 0.00<br>1/2" Ice 0.00<br>1" Ice 0.00<br>2" Ice 0.00<br>4" Ice 0.00 | 0.06   |
| WR-VG86ST-BRD(3/4")     | C           | No           | Inside Pole    | 118.00 - 0.00 | 2            | No Ice 0.00<br>1/2" Ice 0.00<br>1" Ice 0.00<br>2" Ice 0.00<br>4" Ice 0.00 | 0.58   |
| FB-L98B-002-75000(3/8") | C           | No           | Inside Pole    | 118.00 - 0.00 | 1            | No Ice 0.00<br>1/2" Ice 0.00<br>1" Ice 0.00<br>2" Ice 0.00<br>4" Ice 0.00 | 0.06   |
| WR-VG86ST-BRD(3/4")     | C           | No           | Inside Pole    | 118.00 - 0.00 | 2            | No Ice 0.00<br>1/2" Ice 0.00<br>1" Ice 0.00<br>2" Ice 0.00<br>4" Ice 0.00 | 0.58   |
| 2" Rigid Conduit        | C           | No           | Inside Pole    | 118.00 - 0.00 | 1            | No Ice 0.00<br>1/2" Ice 0.00<br>1" Ice 0.00                               | 2.80   |

| Description                                 | Face or Leg | Allow Shield | Component Type     | Placement ft  | Total Number | $C_{AA}$   | Weight                                |
|---|-------------|--------------|--------------------|---------------|--------------|--|---------------------------------------|
|   |             |              |                    |               |              | $ft^2/ft$  | plf                                   |
|   |             |              |                    |               | 2" Ice       | 0.00   | 2.80                                  |
|   |             |              |                    |               | 4" Ice       | 0.00   | 2.80                                  |
| ***   |             |              |                    |               |              |  |                                       |
| LDF6-50A(1-1/4")                            | B           | No           | Inside Pole        | 108.00 - 0.00 | 12           | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.66<br>0.66<br>0.66<br>0.66<br>0.66  |
| ***   |             |              |                    |               |              |  |                                       |
| HB114-1-0813U4-M5F(1-1/4")                  | A           | No           | Inside Pole        | 97.00 - 0.00  | 3            | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 1.20<br>1.20<br>1.20<br>1.20<br>1.20  |
| HB158-1-08U8-S8F18(1-5/8")                  | A           | No           | Inside Pole        | 97.00 - 0.00  | 1            | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 1.70<br>1.70<br>1.70<br>1.70<br>1.70  |
| ***   |             |              |                    |               |              |  |                                       |
| MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4") | A           | No           | Inside Pole        | 83.00 - 0.00  | 1            | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.46<br>0.46<br>0.46<br>0.46<br>0.46  |
| HCC 158-50J(1-5/8")                         | A           | No           | Inside Pole        | 83.00 - 0.00  | 11           | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.86<br>0.86<br>0.86<br>0.86<br>0.86  |
| MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4") | A           | No           | Inside Pole        | 83.00 - 0.00  | 1            | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.46<br>0.46<br>0.46<br>0.46<br>0.46  |
| ***   |             |              |                    |               |              |  |                                       |
| LDF4-50A(1/2")                              | A           | No           | CaAa (Out Of Face) | 51.00 - 0.00  | 1            | No Ice<br>1/2" Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.15<br>0.84<br>2.14<br>6.58<br>22.78 |
| ***   |             |              |                    |               |              |  |                                       |

### Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | $A_R$<br>ft <sup>2</sup> | $A_F$<br>ft <sup>2</sup> | $C_{AA}$<br>In Face ft <sup>2</sup> | $C_{AA}$<br>Out Face ft <sup>2</sup> | Weight |
|---------------|--------------------|------|--------------------------|--------------------------|-------------------------------------|--------------------------------------|--------|
|               |                    |      |                          |                          |                                     |                                      | K      |
| L1            | 120.00-84.72       | A    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.07   |
|               |                    | B    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.18   |
|               |                    | C    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.50   |
| L2            | 84.72-41.62        | A    | 0.000                    | 0.000                    | 0.000                               | 0.591                                | 0.66   |
|               |                    | B    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.34   |
|               |                    | C    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.65   |
| L3            | 41.62-0.00         | A    | 0.000                    | 0.000                    | 0.000                               | 2.622                                | 0.66   |
|               |                    | B    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.33   |
|               |                    | C    | 0.000                    | 0.000                    | 0.000                               | 0.000                                | 0.63   |

### Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | $A_R$<br>ft <sup>2</sup> | $A_F$<br>ft <sup>2</sup> | $C_{AA}$<br>In Face ft <sup>2</sup> | $C_{AA}$<br>Out Face ft <sup>2</sup> | Weight |
|---------------|--------------------|-------------|------------------|--------------------------|--------------------------|-------------------------------------|--------------------------------------|--------|
|               |                    |             |                  |                          |                          |                                     |                                      | K      |

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | $A_R$ ft <sup>2</sup> | $A_F$ ft <sup>2</sup> | $C_{AA}$ In Face ft <sup>2</sup> | $C_{AA}$ Out Face ft <sup>2</sup> | Weight K |
|---------------|--------------------|-------------|------------------|-----------------------|-----------------------|----------------------------------|-----------------------------------|----------|
| L1            | 120.00-84.72       | A           | 0.858            | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.07     |
|               |                    | B           |                  | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.18     |
|               |                    | C           |                  | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.50     |
| L2            | 84.72-41.62        | A           | 0.810            | 0.000                 | 0.000                 | 0.000                            | 2.201                             | 0.67     |
|               |                    | B           |                  | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.34     |
|               |                    | C           |                  | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.65     |
| L3            | 41.62-0.00         | A           | 0.750            | 0.000                 | 0.000                 | 0.000                            | 9.366                             | 0.72     |
|               |                    | B           |                  | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.33     |
|               |                    | C           |                  | 0.000                 | 0.000                 | 0.000                            | 0.000                             | 0.63     |

### Feed Line Center of Pressure

| Section | Elevation    | $CP_x$ | $CP_z$  | $CP_x$<br>Ice | $CP_z$<br>Ice |
|---------|--------------|--------|---------|---------------|---------------|
|         | ft           | in     | in      | in            | in            |
| L1      | 120.00-84.72 | 0.0000 | 0.0000  | 0.0000        | 0.0000        |
| L2      | 84.72-41.62  | 0.0000 | -0.0227 | 0.0000        | -0.0799       |
| L3      | 41.62-0.00   | 0.0000 | -0.0930 | 0.0000        | -0.3086       |

### Discrete Tower Loads

| Description                   | Face or Leg | Offset Type | Offsets: Horz Lateral Vert | Azimuth Adjustment | Placement | $C_{AA}$ Front                                      | $C_{AA}$ Side                                      | Weight   |
|-------------------------------|-------------|-------------|----------------------------|--------------------|-----------|---|--|--|
|                               |             |             | ft ft ft                   | °                  | ft        | ft <sup>2</sup>                                     | ft <sup>2</sup>                                    | K  |
| 7770.00 w/ Mount Pipe         | A           | From Leg    | 4.00<br>0.00<br>3.00       | 0.0000             | 118.00    | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 6.12<br>6.63<br>7.13<br>8.16<br>10.36<br>10.41     | 4.25<br>5.01<br>5.71<br>7.16<br>10.41<br>0.06  |
| 7770.00 w/ Mount Pipe         | B           | From Leg    | 4.00<br>0.00<br>3.00       | 0.0000             | 118.00    | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 6.12<br>6.63<br>7.13<br>8.16<br>10.36<br>10.41     | 4.25<br>5.01<br>5.71<br>7.16<br>10.41<br>0.06  |
| 7770.00 w/ Mount Pipe         | C           | From Leg    | 4.00<br>0.00<br>3.00       | 0.0000             | 118.00    | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 6.12<br>6.63<br>7.13<br>8.16<br>10.36<br>10.41     | 4.25<br>5.01<br>5.71<br>7.16<br>10.41<br>0.06  |
| OPA-65R-LCUU-H6 w/ Mount Pipe | A           | From Leg    | 4.00<br>0.00<br>3.00       | 0.0000             | 118.00    | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 10.60<br>11.27<br>11.91<br>13.21<br>15.93<br>15.15 | 7.18<br>8.36<br>9.26<br>11.09<br>15.15<br>0.10 |
| OPA-65R-LCUU-H6 w/ Mount Pipe | B           | From Leg    | 4.00<br>0.00<br>3.00       | 0.0000             | 118.00    | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 10.60<br>11.27<br>11.91<br>13.21<br>15.93<br>15.15 | 7.18<br>8.36<br>9.26<br>11.09<br>15.15<br>0.10 |
| OPA-65R-LCUU-H6 w/ Mount Pipe | C           | From Leg    | 4.00<br>0.00<br>3.00       | 0.0000             | 118.00    | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 10.60<br>11.27<br>11.91<br>13.21<br>15.93<br>15.15 | 7.18<br>8.36<br>9.26<br>11.09<br>15.15<br>0.10 |

| Description             | Face or Leg | Offset Type | Offsets: Horz Lateral<br>Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C <sub>AA</sub> Front ft <sup>2</sup> | C <sub>AA</sub> Side ft <sup>2</sup> | Weight K |      |
|-------------------------|-------------|-------------|--|----------------------|--------------|---------------------------------------|--------------------------------------|----------|------|
|                         |             |             |  |                      |              |                                       |                                      |          |      |
| QS66512-2 w/ Mount Pipe | A           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 13.21                                | 11.09    | 0.46 |
|                         |             |             |  |                      |              | 2" Ice                                | 15.93                                | 15.15    | 1.00 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 8.64                                 | 8.46     | 0.14 |
|                         |             |             |  |                      |              | 1/2"                                  | 9.29                                 | 9.66     | 0.21 |
|                         |             |             |  |                      |              | Ice                                   | 9.91                                 | 10.62    | 0.30 |
| QS66512-2 w/ Mount Pipe | B           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 11.18                                | 12.61    | 0.49 |
|                         |             |             |  |                      |              | 2" Ice                                | 13.83                                | 16.81    | 1.03 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 8.64                                 | 8.46     | 0.14 |
|                         |             |             |  |                      |              | 1/2"                                  | 9.29                                 | 9.66     | 0.21 |
|                         |             |             |  |                      |              | Ice                                   | 9.91                                 | 10.62    | 0.30 |
| QS66512-2 w/ Mount Pipe | C           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 11.18                                | 12.61    | 0.49 |
|                         |             |             |  |                      |              | 2" Ice                                | 13.83                                | 16.81    | 1.03 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 8.64                                 | 8.46     | 0.14 |
|                         |             |             |  |                      |              | 1/2"                                  | 9.29                                 | 9.66     | 0.21 |
|                         |             |             |  |                      |              | Ice                                   | 9.91                                 | 10.62    | 0.30 |
| (2) TPX-070821          | A           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 1.02                                 | 0.39     | 0.03 |
|                         |             |             |  |                      |              | 2" Ice                                | 1.63                                 | 0.80     | 0.08 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 0.55                                 | 0.12     | 0.01 |
|                         |             |             |  |                      |              | 1/2"                                  | 0.65                                 | 0.17     | 0.01 |
|                         |             |             |  |                      |              | Ice                                   | 0.76                                 | 0.24     | 0.02 |
| (2) TPX-070821          | B           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 1.02                                 | 0.39     | 0.03 |
|                         |             |             |  |                      |              | 2" Ice                                | 1.63                                 | 0.80     | 0.08 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 0.55                                 | 0.12     | 0.01 |
|                         |             |             |  |                      |              | 1/2"                                  | 0.65                                 | 0.17     | 0.01 |
|                         |             |             |  |                      |              | Ice                                   | 0.76                                 | 0.24     | 0.02 |
| (2) TPX-070821          | C           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 1.02                                 | 0.39     | 0.03 |
|                         |             |             |  |                      |              | 2" Ice                                | 1.63                                 | 0.80     | 0.08 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 0.55                                 | 0.12     | 0.01 |
|                         |             |             |  |                      |              | 1/2"                                  | 0.65                                 | 0.17     | 0.01 |
|                         |             |             |  |                      |              | Ice                                   | 0.76                                 | 0.24     | 0.02 |
| (2) RRUS 32             | A           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 4.44                                 | 2.96     | 0.16 |
|                         |             |             |  |                      |              | 2" Ice                                | 5.68                                 | 4.07     | 0.34 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 3.33                                 | 1.98     | 0.06 |
|                         |             |             |  |                      |              | 1/2"                                  | 3.60                                 | 2.21     | 0.08 |
|                         |             |             |  |                      |              | Ice                                   | 3.87                                 | 2.45     | 0.10 |
| (2) RRUS 32             | B           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 4.44                                 | 2.96     | 0.16 |
|                         |             |             |  |                      |              | 2" Ice                                | 5.68                                 | 4.07     | 0.34 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 3.33                                 | 1.98     | 0.06 |
|                         |             |             |  |                      |              | 1/2"                                  | 3.60                                 | 2.21     | 0.08 |
|                         |             |             |  |                      |              | Ice                                   | 3.87                                 | 2.45     | 0.10 |
| (2) RRUS 32             | C           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 4.44                                 | 2.96     | 0.16 |
|                         |             |             |  |                      |              | 2" Ice                                | 5.68                                 | 4.07     | 0.34 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 3.33                                 | 1.98     | 0.06 |
|                         |             |             |  |                      |              | 1/2"                                  | 3.60                                 | 2.21     | 0.08 |
|                         |             |             |  |                      |              | Ice                                   | 3.87                                 | 2.45     | 0.10 |
| (2) LGP21401            | A           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | 1" Ice                                | 1.97                                 | 0.61     | 0.05 |
|                         |             |             |  |                      |              | 2" Ice                                | 2.79                                 | 1.12     | 0.14 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 1.29                                 | 0.23     | 0.01 |
|                         |             |             |  |                      |              | 1/2"                                  | 1.45                                 | 0.31     | 0.02 |
|                         |             |             |  |                      |              | Ice                                   | 1.61                                 | 0.40     | 0.03 |
| (2) LGP21401            | B           | From Leg    | 4.00<br>0.00                           | 0.0000               | 118.00       | 1" Ice                                | 1.97                                 | 0.61     | 0.05 |
|                         |             |             |  |                      |              | 2" Ice                                | 2.79                                 | 1.12     | 0.14 |
|                         |             |             |  |                      |              | 4" Ice                                |                                      |          |      |
|                         |             |             |  |                      |              | No Ice                                | 1.29                                 | 0.23     | 0.01 |
|                         |             |             |  |                      |              | 1/2"                                  | 1.45                                 | 0.31     | 0.02 |

| Description               | Face or Leg | Offset Type | Offsets: Horz Lateral<br>Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C <sub>AA</sub> Front ft <sup>2</sup>   | C <sub>AA</sub> Side ft <sup>2</sup>      | Weight K                             |
|---------------------------|-------------|-------------|--|----------------------|--------------|---|---|--------------------------------------|
|                           |             |             | 3.00                                   |                      |              | Ice 1.61<br>1" Ice 1.97<br>2" Ice 2.79<br>4" Ice                                  | 0.40<br>0.61<br>1.12                      | 0.03<br>0.05<br>0.14                 |
| (2) LGP21401              | C           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | No Ice 1.29<br>1/2" 1.45<br>Ice 1.61<br>1" Ice 1.97<br>2" Ice 2.79<br>4" Ice      | 0.23<br>0.31<br>0.40<br>0.61<br>1.12      | 0.01<br>0.02<br>0.03<br>0.05<br>0.14 |
| (2) DC6-48-60-18-8F       | A           | From Leg    | 4.00<br>0.00<br>3.00                   | 0.0000               | 118.00       | No Ice 1.27<br>1/2" 1.46<br>Ice 1.66<br>1" Ice 2.09<br>2" Ice 3.10<br>4" Ice      | 1.27<br>1.46<br>1.66<br>2.09<br>3.10      | 0.02<br>0.04<br>0.05<br>0.10<br>0.21 |
| Platform Mount [LP 712-1] | C           | None        |  | 0.0000               | 118.00       | No Ice 24.53<br>1/2" 29.94<br>Ice 35.35<br>1" Ice 46.17<br>2" Ice 67.81<br>4" Ice | 24.53<br>29.94<br>35.35<br>46.17<br>67.81 | 1.34<br>1.65<br>1.96<br>2.58<br>3.82 |
| 8'x2" Antenna Mount Pipe  | A           | From Leg    | 4.00<br>0.00<br>0.00                   | 0.0000               | 118.00       | No Ice 1.90<br>1/2" 2.73<br>Ice 3.40<br>1" Ice 4.40<br>2" Ice 6.50<br>4" Ice      | 1.90<br>2.73<br>3.40<br>4.40<br>6.50      | 0.03<br>0.04<br>0.06<br>0.12<br>0.30 |
| 8'x2" Antenna Mount Pipe  | B           | From Leg    | 4.00<br>0.00<br>0.00                   | 0.0000               | 118.00       | No Ice 1.90<br>1/2" 2.73<br>Ice 3.40<br>1" Ice 4.40<br>2" Ice 6.50<br>4" Ice      | 1.90<br>2.73<br>3.40<br>4.40<br>6.50      | 0.03<br>0.04<br>0.06<br>0.12<br>0.30 |
| 8'x2" Antenna Mount Pipe  | C           | From Leg    | 4.00<br>0.00<br>0.00                   | 0.0000               | 118.00       | No Ice 1.90<br>1/2" 2.73<br>Ice 3.40<br>1" Ice 4.40<br>2" Ice 6.50<br>4" Ice      | 1.90<br>2.73<br>3.40<br>4.40<br>6.50      | 0.03<br>0.04<br>0.06<br>0.12<br>0.30 |
| Transition Ladder         | B           | From Leg    | 2.00<br>0.00<br>-6.00                  | 0.0000               | 118.00       | No Ice 6.00<br>1/2" 8.00<br>Ice 10.00<br>1" Ice 14.00<br>2" Ice 22.00<br>4" Ice   | 6.00<br>8.00<br>10.00<br>14.00<br>22.00   | 0.16<br>0.24<br>0.32<br>0.48<br>0.80 |
| ***                       |             |             |  |                      |              |   |   |                                      |
| TME-RRUS-11               | A           | From Leg    | 1.00<br>0.00<br>1.00                   | 0.0000               | 116.00       | No Ice 3.42<br>1/2" 3.72<br>Ice 4.04<br>1" Ice 4.72<br>2" Ice 6.25<br>4" Ice      | 1.85<br>2.19<br>2.55<br>3.38<br>5.29      | 0.06<br>0.08<br>0.12<br>0.19<br>0.43 |
| TME-RRUS-11               | B           | From Leg    | 1.00<br>0.00<br>1.00                   | 0.0000               | 116.00       | No Ice 3.42<br>1/2" 3.72<br>Ice 4.04<br>1" Ice 4.72<br>2" Ice 6.25<br>4" Ice      | 1.85<br>2.19<br>2.55<br>3.38<br>5.29      | 0.06<br>0.08<br>0.12<br>0.19<br>0.43 |
| TME-RRUS-11               | C           | From Leg    | 1.00<br>0.00<br>1.00                   | 0.0000               | 116.00       | No Ice 3.42<br>1/2" 3.72<br>Ice 4.04<br>1" Ice 4.72<br>2" Ice 6.25<br>4" Ice      | 1.85<br>2.19<br>2.55<br>3.38<br>5.29      | 0.06<br>0.08<br>0.12<br>0.19<br>0.43 |

| Description                    | Face or Leg | Offset Type | Offsets: Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustmen<br>t<br>° | Placement<br>ft | C <sub>AA</sub> |       | Weight<br>K |      |
|--------------------------------|-------------|-------------|--|--------------------------------|-----------------|-----------------|-------|-------------|------|
|                                |             |             |  |                                |                 | Front           | Side  |             |      |
| DC6-48-60-18-8F                | B           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 1.27  | 1.27        | 0.02 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 1.46  | 1.46        | 0.04 |
|                                |             |             | 1.00   |                                |                 | Ice             | 1.66  | 1.66        | 0.05 |
|                                |             |             |  |                                |                 | 1" Ice          | 2.09  | 2.09        | 0.10 |
|                                |             |             |  |                                |                 | 2" Ice          | 3.10  | 3.10        | 0.21 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| TME-RRUS-12                    | A           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 3.67  | 1.49        | 0.05 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 3.93  | 1.67        | 0.07 |
|                                |             |             | 1.00   |                                |                 | Ice             | 4.19  | 1.87        | 0.10 |
|                                |             |             |  |                                |                 | 1" Ice          | 4.75  | 2.28        | 0.16 |
|                                |             |             |  |                                |                 | 2" Ice          | 5.96  | 3.21        | 0.34 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| TME-RRUS-12                    | B           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 3.67  | 1.49        | 0.05 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 3.93  | 1.67        | 0.07 |
|                                |             |             | 1.00   |                                |                 | Ice             | 4.19  | 1.87        | 0.10 |
|                                |             |             |  |                                |                 | 1" Ice          | 4.75  | 2.28        | 0.16 |
|                                |             |             |  |                                |                 | 2" Ice          | 5.96  | 3.21        | 0.34 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| TME-RRUS-12                    | C           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 3.67  | 1.49        | 0.05 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 3.93  | 1.67        | 0.07 |
|                                |             |             | 1.00   |                                |                 | Ice             | 4.19  | 1.87        | 0.10 |
|                                |             |             |  |                                |                 | 1" Ice          | 4.75  | 2.28        | 0.16 |
|                                |             |             |  |                                |                 | 2" Ice          | 5.96  | 3.21        | 0.34 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| Side Arm Mount [SO 102-3]      | C           | None        |  | 0.0000                         | 116.00          | No Ice          | 3.00  | 3.00        | 0.08 |
|                                |             |             |  |                                |                 | 1/2"            | 3.48  | 3.48        | 0.11 |
|                                |             |             |  |                                |                 | Ice             | 3.96  | 3.96        | 0.14 |
|                                |             |             |  |                                |                 | 1" Ice          | 4.92  | 4.92        | 0.20 |
|                                |             |             |  |                                |                 | 2" Ice          | 6.84  | 6.84        | 0.32 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| 4' x 2" Pipe Mount             | A           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 0.79  | 0.79        | 0.03 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 1.03  | 1.03        | 0.04 |
|                                |             |             | 0.00   |                                |                 | Ice             | 1.28  | 1.28        | 0.04 |
|                                |             |             |  |                                |                 | 1" Ice          | 1.81  | 1.81        | 0.07 |
|                                |             |             |  |                                |                 | 2" Ice          | 3.11  | 3.11        | 0.17 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| 4' x 2" Pipe Mount             | B           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 0.79  | 0.79        | 0.03 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 1.03  | 1.03        | 0.04 |
|                                |             |             | 0.00   |                                |                 | Ice             | 1.28  | 1.28        | 0.04 |
|                                |             |             |  |                                |                 | 1" Ice          | 1.81  | 1.81        | 0.07 |
|                                |             |             |  |                                |                 | 2" Ice          | 3.11  | 3.11        | 0.17 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| 4' x 2" Pipe Mount             | C           | From Leg    | 1.00   | 0.0000                         | 116.00          | No Ice          | 0.79  | 0.79        | 0.03 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 1.03  | 1.03        | 0.04 |
|                                |             |             | 0.00   |                                |                 | Ice             | 1.28  | 1.28        | 0.04 |
|                                |             |             |  |                                |                 | 1" Ice          | 1.81  | 1.81        | 0.07 |
|                                |             |             |  |                                |                 | 2" Ice          | 3.11  | 3.11        | 0.17 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| ***                            |             |             |  |                                |                 |                 |       |             |      |
| (4) 844G65VTZASX w/ Mount Pipe | A           | From Leg    | 4.00   | 0.0000                         | 108.00          | No Ice          | 6.13  | 5.21        | 0.03 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 6.59  | 5.89        | 0.09 |
|                                |             |             | 2.00   |                                |                 | Ice             | 7.06  | 6.59        | 0.14 |
|                                |             |             |  |                                |                 | 1" Ice          | 8.04  | 8.04        | 0.28 |
|                                |             |             |  |                                |                 | 2" Ice          | 10.12 | 11.19       | 0.67 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| (4) 844G65VTZASX w/ Mount Pipe | B           | From Leg    | 4.00   | 0.0000                         | 108.00          | No Ice          | 6.13  | 5.21        | 0.03 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 6.59  | 5.89        | 0.09 |
|                                |             |             | 2.00   |                                |                 | Ice             | 7.06  | 6.59        | 0.14 |
|                                |             |             |  |                                |                 | 1" Ice          | 8.04  | 8.04        | 0.28 |
|                                |             |             |  |                                |                 | 2" Ice          | 10.12 | 11.19       | 0.67 |
|                                |             |             |  |                                |                 | 4" Ice          |       |             |      |
| (4) 844G65VTZASX w/ Mount Pipe | C           | From Leg    | 4.00   | 0.0000                         | 108.00          | No Ice          | 6.13  | 5.21        | 0.03 |
|                                |             |             | 0.00   |                                |                 | 1/2"            | 6.59  | 5.89        | 0.09 |
|                                |             |             | 2.00   |                                |                 | Ice             | 7.06  | 6.59        | 0.14 |
|                                |             |             |  |                                |                 | 1" Ice          | 8.04  | 8.04        | 0.28 |
|                                |             |             |  |                                |                 |                 |       |             |      |

| Description                      | Face or Leg | Offset Type | Offsets: Horz Lateral ft | Azimuth Adjustment ° | Placement ft | C <sub>AA</sub> Front ft <sup>2</sup>                                   | C <sub>AA</sub> Side ft <sup>2</sup>               | Weight K   |  |
|----------------------------------|-------------|-------------|--------------------------|----------------------|--------------|---|--|--|--|
|                                  |             |             |                          |                      |              |   |  |  |  |
|                                  |             |             | Vert ft                  |                      |              |   |  |  |  |
| Platform Mount [LP 303-1]        | C           | None        |                          | 0.0000               | 108.00       | 2" Ice<br>4" Ice<br>No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 10.12<br>14.66<br>18.87<br>23.08<br>31.50<br>48.34 | 11.19<br>14.66<br>18.87<br>23.08<br>31.50<br>48.34 | 0.67<br>1.25<br>1.48<br>1.71<br>2.18<br>3.10 |
| TME-800MHZ RRH                   | A           | From Leg    | 4.00<br>0.00<br>-1.00    | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 2.49<br>2.71<br>2.93<br>3.41<br>4.46               | 2.07<br>2.27<br>2.48<br>2.93<br>3.93               | 0.05<br>0.07<br>0.10<br>0.16<br>0.32         |
| TME-800MHZ RRH                   | B           | From Leg    | 4.00<br>0.00<br>-1.00    | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 2.49<br>2.71<br>2.93<br>3.41<br>4.46               | 2.07<br>2.27<br>2.48<br>2.93<br>3.93               | 0.05<br>0.07<br>0.10<br>0.16<br>0.32         |
| TME-800MHZ RRH                   | C           | From Leg    | 4.00<br>0.00<br>-1.00    | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 2.49<br>2.71<br>2.93<br>3.41<br>4.46               | 2.07<br>2.27<br>2.48<br>2.93<br>3.93               | 0.05<br>0.07<br>0.10<br>0.16<br>0.32         |
| 1900MHz RRH (65MHz) w/Mount pipe | A           | From Leg    | 4.00<br>0.00<br>0.00     | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 2.70<br>2.94<br>3.18<br>3.70<br>4.85               | 2.93<br>3.25<br>3.60<br>4.35<br>6.09               | 0.06<br>0.09<br>0.12<br>0.20<br>0.41         |
| 1900MHz RRH (65MHz) w/Mount pipe | B           | From Leg    | 4.00<br>0.00<br>0.00     | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 2.70<br>2.94<br>3.18<br>3.70<br>4.85               | 2.93<br>3.25<br>3.60<br>4.35<br>6.09               | 0.06<br>0.09<br>0.12<br>0.20<br>0.41         |
| 1900MHz RRH (65MHz) w/Mount pipe | C           | From Leg    | 4.00<br>0.00<br>0.00     | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 2.70<br>2.94<br>3.18<br>3.70<br>4.85               | 2.93<br>3.25<br>3.60<br>4.35<br>6.09               | 0.06<br>0.09<br>0.12<br>0.20<br>0.41         |
| Side Arm Mount [SO 102-3]        | C           | None        |                          | 0.0000               | 100.00       | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 3.00<br>3.48<br>3.96<br>4.92<br>6.84               | 3.00<br>3.48<br>3.96<br>4.92<br>6.84               | 0.08<br>0.11<br>0.14<br>0.20<br>0.32         |
| P40-16-XLPP-RR-A w/ Mount Pipe   | A           | From Leg    | 4.00<br>0.00<br>1.00     | 0.0000               | 97.00        | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 10.74<br>11.29<br>11.85<br>12.99<br>15.39          | 4.83<br>5.57<br>6.27<br>7.80<br>11.11              | 0.07<br>0.14<br>0.22<br>0.39<br>0.86         |
| P40-16-XLPP-RR-A w/ Mount Pipe   | C           | From Leg    | 4.00<br>0.00<br>1.00     | 0.0000               | 97.00        | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice                     | 10.74<br>11.29<br>11.85<br>12.99<br>15.39          | 4.83<br>5.57<br>6.27<br>7.80<br>11.11              | 0.07<br>0.14<br>0.22<br>0.39<br>0.86         |
| APXVSPP18-C-A20 w/               | B           | From Leg    | 4.00                     | 0.0000               | 97.00        | No Ice  | 8.50   | 6.95   | 0.08   |

| Description                     | Face or Leg | Offset Type | Offsets: Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustmen<br>t<br>° | Placement<br>ft | C <sub>AA</sub><br>Front                            | C <sub>AA</sub><br>Side                 | Weight  |
|---------------------------------|-------------|-------------|--|--------------------------------|-----------------|---|---|---|
| Mount Pipe                      |             |             | 0.00   |                                | 97.00           | 1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice           | 9.15<br>9.77<br>11.03<br>13.68<br>14.85 | 8.13<br>9.02<br>10.84<br>14.85<br>0.15<br>0.23<br>0.41<br>0.91                |
| APXVTM14-C-120 w/<br>Mount Pipe | A           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 7.13<br>7.66<br>8.18<br>9.26<br>11.53   | 4.96<br>5.75<br>6.47<br>8.01<br>11.41<br>0.07<br>0.13<br>0.19<br>0.34<br>0.75 |
| APXVTM14-C-120 w/<br>Mount Pipe | B           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 7.13<br>7.66<br>8.18<br>9.26<br>11.53   | 4.96<br>5.75<br>6.47<br>8.01<br>11.41<br>0.07<br>0.13<br>0.19<br>0.34<br>0.75 |
| APXVTM14-C-120 w/<br>Mount Pipe | C           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 7.13<br>7.66<br>8.18<br>9.26<br>11.53   | 4.96<br>5.75<br>6.47<br>8.01<br>11.41<br>0.07<br>0.13<br>0.19<br>0.34<br>0.75 |
| 800 EXTERNAL NOTCH<br>FILTER    | A           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.77<br>0.89<br>1.02<br>1.30<br>1.97    | 0.37<br>0.46<br>0.56<br>0.79<br>1.34<br>0.01<br>0.02<br>0.02<br>0.04<br>0.11  |
| 800 EXTERNAL NOTCH<br>FILTER    | B           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.77<br>0.89<br>1.02<br>1.30<br>1.97    | 0.37<br>0.46<br>0.56<br>0.79<br>1.34<br>0.01<br>0.02<br>0.02<br>0.04<br>0.11  |
| 800 EXTERNAL NOTCH<br>FILTER    | C           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.77<br>0.89<br>1.02<br>1.30<br>1.97    | 0.37<br>0.46<br>0.56<br>0.79<br>1.34<br>0.01<br>0.02<br>0.02<br>0.04<br>0.11  |
| TD-RRH8x20-25                   | A           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 4.72<br>5.01<br>5.32<br>5.95<br>7.31    | 1.70<br>1.92<br>2.15<br>2.62<br>3.68<br>0.07<br>0.10<br>0.13<br>0.20<br>0.40  |
| TD-RRH8x20-25                   | B           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 4.72<br>5.01<br>5.32<br>5.95<br>7.31    | 1.70<br>1.92<br>2.15<br>2.62<br>3.68<br>0.07<br>0.10<br>0.13<br>0.20<br>0.40  |
| TD-RRH8x20-25                   | C           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 4.72<br>5.01<br>5.32<br>5.95<br>7.31    | 1.70<br>1.92<br>2.15<br>2.62<br>3.68<br>0.07<br>0.10<br>0.13<br>0.20<br>0.40  |
| (3) ACU-A20-N                   | A           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.08<br>0.12<br>0.17<br>0.30<br>0.67    | 0.14<br>0.19<br>0.25<br>0.40<br>0.80<br>0.00<br>0.00<br>0.01<br>0.04          |

| Description                              | Face or Leg | Offset Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustmen<br>t<br>° | Placement<br>ft | C <sub>AA</sub>                                     |  | Weight<br>K                                  |
|--|-------------|-------------|---|--------------------------------|-----------------|---|--|--|
|  |             |             |   |                                |                 | Front   | Side   |  |
| (3) ACU-A20-N                            | B           | From Leg    | 4.00<br>0.00<br>0.00                                  | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.08<br>0.12<br>0.17<br>0.30<br>0.67<br>0.80 | 0.14<br>0.19<br>0.25<br>0.40<br>0.80<br>0.04 |
| (3) ACU-A20-N                            | C           | From Leg    | 4.00<br>0.00<br>0.00                                  | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 0.08<br>0.12<br>0.17<br>0.30<br>0.67<br>0.80 | 0.14<br>0.19<br>0.25<br>0.40<br>0.80<br>0.04 |
| Platform Mount [LP 601-1]                | C           | None        |   | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 28.47<br>33.59<br>38.71<br>48.95<br>69.43    | 28.47<br>33.59<br>38.71<br>48.95<br>69.43    |
| 6' x 2" Mount Pipe                       | A           | From Leg    | 4.00<br>0.00<br>0.00                                  | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 1.43<br>1.92<br>2.29<br>3.06<br>4.70         | 1.43<br>1.92<br>2.29<br>3.06<br>4.70         |
| 6' x 2" Mount Pipe                       | B           | From Leg    | 4.00<br>0.00<br>0.00                                  | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 1.43<br>1.92<br>2.29<br>3.06<br>4.70         | 1.43<br>1.92<br>2.29<br>3.06<br>4.70         |
| 6' x 2" Mount Pipe                       | C           | From Leg    | 4.00<br>0.00<br>0.00                                  | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 1.43<br>1.92<br>2.29<br>3.06<br>4.70         | 1.43<br>1.92<br>2.29<br>3.06<br>4.70         |
| Transition Ladder                        | A           | From Leg    | 2.00<br>0.00<br>-6.00                                 | 0.0000                         | 97.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 6.00<br>8.00<br>10.00<br>14.00<br>22.00      | 6.00<br>8.00<br>10.00<br>14.00<br>22.00      |
| ***                                      |             |             |   |                                |                 |   |  |  |
| LNX-6515DS-A1M w/<br>Mount Pipe          | A           | From Leg    | 4.00<br>0.00<br>1.00                                  | 0.0000                         | 83.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 11.68<br>12.40<br>13.14<br>14.60<br>17.87    | 9.84<br>11.37<br>12.91<br>15.27<br>20.14     |
| LNX-6515DS-A1M w/<br>Mount Pipe          | B           | From Leg    | 4.00<br>0.00<br>1.00                                  | 0.0000                         | 83.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 11.68<br>12.40<br>13.14<br>14.60<br>17.87    | 9.84<br>11.37<br>12.91<br>15.27<br>20.14     |
| LNX-6515DS-A1M w/<br>Mount Pipe          | C           | From Leg    | 4.00<br>0.00<br>1.00                                  | 0.0000                         | 83.00           | No Ice<br>1/2"<br>Ice<br>1" Ice<br>2" Ice<br>4" Ice | 11.68<br>12.40<br>13.14<br>14.60<br>17.87    | 9.84<br>11.37<br>12.91<br>15.27<br>20.14     |
| ERICSSON AIR 21 B2A<br>B4P w/ Mount Pipe | A           | From Leg    | 4.00<br>0.00<br>1.00                                  | 0.0000                         | 83.00           | No Ice<br>1/2"<br>Ice<br>1" Ice                     | 6.83<br>7.35<br>7.86<br>8.93                 | 5.64<br>6.48<br>7.26<br>8.86                 |
|  |             |             |   |                                |                 |   |  | 0.11<br>0.17<br>0.23<br>0.38                 |

| Description                              | Face or Leg | Offset Type | Offsets: Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustmen<br>t<br>° | Placement<br>ft | C <sub>AA</sub><br>Front | C <sub>AA</sub><br>Side | Weight<br>K |      |
|--|-------------|-------------|--|--------------------------------|-----------------|--------------------------|-------------------------|-------------|------|
|  |             |             |  |                                |                 | ft <sup>2</sup>          | ft <sup>2</sup>         |             |      |
| ERICSSON AIR 21 B2A<br>B4P w/ Mount Pipe | B           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 11.18                   | 12.29       | 0.81 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 6.83                    | 5.64        | 0.11 |
|  |             |             |  |                                |                 | 1/2"                     | 7.35                    | 6.48        | 0.17 |
|  |             |             |  |                                |                 | Ice                      | 7.86                    | 7.26        | 0.23 |
|  |             |             |  |                                |                 | 1" Ice                   | 8.93                    | 8.86        | 0.38 |
| ERICSSON AIR 21 B2A<br>B4P w/ Mount Pipe | C           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 11.18                   | 12.29       | 0.81 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 6.83                    | 5.64        | 0.11 |
|  |             |             |  |                                |                 | 1/2"                     | 7.35                    | 6.48        | 0.17 |
|  |             |             |  |                                |                 | Ice                      | 7.86                    | 7.26        | 0.23 |
|  |             |             |  |                                |                 | 1" Ice                   | 8.93                    | 8.86        | 0.38 |
| RRUS 11 B12                              | A           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 11.18                   | 12.29       | 0.81 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 3.31                    | 1.36        | 0.05 |
|  |             |             |  |                                |                 | 1/2"                     | 3.55                    | 1.54        | 0.07 |
|  |             |             |  |                                |                 | Ice                      | 3.80                    | 1.73        | 0.10 |
|  |             |             |  |                                |                 | 1" Ice                   | 4.33                    | 2.13        | 0.15 |
| RRUS 11 B12                              | B           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 5.50                    | 3.04        | 0.31 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 3.31                    | 1.36        | 0.05 |
|  |             |             |  |                                |                 | 1/2"                     | 3.55                    | 1.54        | 0.07 |
|  |             |             |  |                                |                 | Ice                      | 3.80                    | 1.73        | 0.10 |
|  |             |             |  |                                |                 | 1" Ice                   | 4.33                    | 2.13        | 0.15 |
| RRUS 11 B12                              | C           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 5.50                    | 3.04        | 0.31 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 3.31                    | 1.36        | 0.05 |
|  |             |             |  |                                |                 | 1/2"                     | 3.55                    | 1.54        | 0.07 |
|  |             |             |  |                                |                 | Ice                      | 3.80                    | 1.73        | 0.10 |
|  |             |             |  |                                |                 | 1" Ice                   | 4.33                    | 2.13        | 0.15 |
| ATMAA1412D-1A20                          | A           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 83.00           | 2" Ice                   | 5.50                    | 3.04        | 0.31 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 0.47                    | 1.17        | 0.01 |
|  |             |             |  |                                |                 | 1/2"                     | 0.57                    | 1.31        | 0.02 |
|  |             |             |  |                                |                 | Ice                      | 0.69                    | 1.47        | 0.03 |
|  |             |             |  |                                |                 | 1" Ice                   | 0.95                    | 1.81        | 0.06 |
| ATMAA1412D-1A20                          | B           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 83.00           | 2" Ice                   | 1.57                    | 2.58        | 0.14 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 0.47                    | 1.17        | 0.01 |
|  |             |             |  |                                |                 | 1/2"                     | 0.57                    | 1.31        | 0.02 |
|  |             |             |  |                                |                 | Ice                      | 0.69                    | 1.47        | 0.03 |
|  |             |             |  |                                |                 | 1" Ice                   | 0.95                    | 1.81        | 0.06 |
| ATMAA1412D-1A20                          | C           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 83.00           | 2" Ice                   | 1.57                    | 2.58        | 0.14 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 0.47                    | 1.17        | 0.01 |
|  |             |             |  |                                |                 | 1/2"                     | 0.57                    | 1.31        | 0.02 |
|  |             |             |  |                                |                 | Ice                      | 0.69                    | 1.47        | 0.03 |
|  |             |             |  |                                |                 | 1" Ice                   | 0.95                    | 1.81        | 0.06 |
| AIR -32 B2A/B66AA w/<br>Mount Pipe       | A           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 1.57                    | 2.58        | 0.14 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 7.34                    | 6.15        | 0.15 |
|  |             |             |  |                                |                 | 1/2"                     | 7.87                    | 7.01        | 0.21 |
|  |             |             |  |                                |                 | Ice                      | 8.39                    | 7.80        | 0.28 |
|  |             |             |  |                                |                 | 1" Ice                   | 9.47                    | 9.43        | 0.44 |
| AIR -32 B2A/B66AA w/<br>Mount Pipe       | B           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 11.76                   | 12.91       | 0.89 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 7.34                    | 6.15        | 0.15 |
|  |             |             |  |                                |                 | 1/2"                     | 7.87                    | 7.01        | 0.21 |
|  |             |             |  |                                |                 | Ice                      | 8.39                    | 7.80        | 0.28 |
|  |             |             |  |                                |                 | 1" Ice                   | 9.47                    | 9.43        | 0.44 |
| AIR -32 B2A/B66AA w/<br>Mount Pipe       | C           | From Leg    | 4.00<br>0.00<br>1.00                               | 0.0000                         | 83.00           | 2" Ice                   | 11.76                   | 12.91       | 0.89 |
|  |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
|  |             |             |  |                                |                 | No Ice                   | 7.34                    | 6.15        | 0.15 |
|  |             |             |  |                                |                 | 1/2"                     | 7.87                    | 7.01        | 0.21 |
|  |             |             |  |                                |                 | Ice                      | 8.39                    | 7.80        | 0.28 |
|  |             |             |  |                                |                 | 1" Ice                   |                         |             |      |

| Description               | Face or Leg | Offset Type | Offsets: Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustmen<br>t<br>° | Placement<br>ft | C <sub>AA</sub><br>Front | C <sub>AA</sub><br>Side | Weight<br>K |      |
|---------------------------|-------------|-------------|--|--------------------------------|-----------------|--------------------------|-------------------------|-------------|------|
|                           |             |             |  |                                |                 | 1" Ice                   | 9.47                    | 9.43        | 0.44 |
|                           |             |             |  |                                |                 | 2" Ice                   | 11.76                   | 12.91       | 0.89 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| Platform Mount [LP 303-1] | C           | None        |  | 0.0000                         | 83.00           | No Ice                   | 14.66                   | 14.66       | 1.25 |
|                           |             |             |  |                                |                 | 1/2"                     | 18.87                   | 18.87       | 1.48 |
|                           |             |             |  |                                |                 | Ice                      | 23.08                   | 23.08       | 1.71 |
|                           |             |             |  |                                |                 | 1" Ice                   | 31.50                   | 31.50       | 2.18 |
|                           |             |             |  |                                |                 | 2" Ice                   | 48.34                   | 48.34       | 3.10 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| 8'x2" Antenna Mount Pipe  | A           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 83.00           | No Ice                   | 1.90                    | 1.90        | 0.03 |
|                           |             |             |  |                                |                 | 1/2"                     | 2.73                    | 2.73        | 0.04 |
|                           |             |             |  |                                |                 | Ice                      | 3.40                    | 3.40        | 0.06 |
|                           |             |             |  |                                |                 | 1" Ice                   | 4.40                    | 4.40        | 0.12 |
|                           |             |             |  |                                |                 | 2" Ice                   | 6.50                    | 6.50        | 0.30 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| 8'x2" Antenna Mount Pipe  | B           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 83.00           | No Ice                   | 1.90                    | 1.90        | 0.03 |
|                           |             |             |  |                                |                 | 1/2"                     | 2.73                    | 2.73        | 0.04 |
|                           |             |             |  |                                |                 | Ice                      | 3.40                    | 3.40        | 0.06 |
|                           |             |             |  |                                |                 | 1" Ice                   | 4.40                    | 4.40        | 0.12 |
|                           |             |             |  |                                |                 | 2" Ice                   | 6.50                    | 6.50        | 0.30 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| 8'x2" Antenna Mount Pipe  | C           | From Leg    | 4.00<br>0.00<br>0.00                               | 0.0000                         | 83.00           | No Ice                   | 1.90                    | 1.90        | 0.03 |
|                           |             |             |  |                                |                 | 1/2"                     | 2.73                    | 2.73        | 0.04 |
|                           |             |             |  |                                |                 | Ice                      | 3.40                    | 3.40        | 0.06 |
|                           |             |             |  |                                |                 | 1" Ice                   | 4.40                    | 4.40        | 0.12 |
|                           |             |             |  |                                |                 | 2" Ice                   | 6.50                    | 6.50        | 0.30 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| KS24019-L112A             | B           | From Leg    | 2.00<br>0.00<br>0.00                               | 0.0000                         | 51.00           | No Ice                   | 0.10                    | 0.10        | 0.01 |
|                           |             |             |  |                                |                 | 1/2"                     | 0.18                    | 0.18        | 0.01 |
|                           |             |             |  |                                |                 | Ice                      | 0.26                    | 0.26        | 0.01 |
|                           |             |             |  |                                |                 | 1" Ice                   | 0.42                    | 0.42        | 0.01 |
|                           |             |             |  |                                |                 | 2" Ice                   | 0.74                    | 0.74        | 0.02 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| Side Arm Mount [SO 701-1] | B           | From Leg    | 1.00<br>0.00<br>0.00                               | 0.0000                         | 51.00           | No Ice                   | 0.85                    | 1.67        | 0.07 |
|                           |             |             |  |                                |                 | 1/2"                     | 1.14                    | 2.34        | 0.08 |
|                           |             |             |  |                                |                 | Ice                      | 1.43                    | 3.01        | 0.09 |
|                           |             |             |  |                                |                 | 1" Ice                   | 2.01                    | 4.35        | 0.12 |
|                           |             |             |  |                                |                 | 2" Ice                   | 3.17                    | 7.03        | 0.18 |
|                           |             |             |  |                                |                 | 4" Ice                   |                         |             |      |
| ***                       |             |             |  |                                |                 |                          |                         |             |      |

## Load Combinations

| Comb. No. | Description                |
|-----------|----------------------------|
| 1         | Dead Only                  |
| 2         | Dead+Wind 0 deg - No Ice   |
| 3         | Dead+Wind 30 deg - No Ice  |
| 4         | Dead+Wind 60 deg - No Ice  |
| 5         | Dead+Wind 90 deg - No Ice  |
| 6         | Dead+Wind 120 deg - No Ice |
| 7         | Dead+Wind 150 deg - No Ice |
| 8         | Dead+Wind 180 deg - No Ice |
| 9         | Dead+Wind 210 deg - No Ice |
| 10        | Dead+Wind 240 deg - No Ice |
| 11        | Dead+Wind 270 deg - No Ice |
| 12        | Dead+Wind 300 deg - No Ice |
| 13        | Dead+Wind 330 deg - No Ice |

| Comb.<br>No. | Description                 |
|--------------|-----------------------------|
| 14           | Dead+Ice+Temp               |
| 15           | Dead+Wind 0 deg+Ice+Temp    |
| 16           | Dead+Wind 30 deg+Ice+Temp   |
| 17           | Dead+Wind 60 deg+Ice+Temp   |
| 18           | Dead+Wind 90 deg+Ice+Temp   |
| 19           | Dead+Wind 120 deg+Ice+Temp  |
| 20           | Dead+Wind 150 deg+Ice+Temp  |
| 21           | Dead+Wind 180 deg+Ice+Temp  |
| 22           | Dead+Wind 210 deg+Ice+Temp  |
| 23           | Dead+Wind 240 deg+Ice+Temp  |
| 24           | Dead+Wind 270 deg+Ice+Temp  |
| 25           | Dead+Wind 300 deg+Ice+Temp  |
| 26           | Dead+Wind 330 deg+Ice+Temp  |
| 27           | Dead+Wind 0 deg - Service   |
| 28           | Dead+Wind 30 deg - Service  |
| 29           | Dead+Wind 60 deg - Service  |
| 30           | Dead+Wind 90 deg - Service  |
| 31           | Dead+Wind 120 deg - Service |
| 32           | Dead+Wind 150 deg - Service |
| 33           | Dead+Wind 180 deg - Service |
| 34           | Dead+Wind 210 deg - Service |
| 35           | Dead+Wind 240 deg - Service |
| 36           | Dead+Wind 270 deg - Service |
| 37           | Dead+Wind 300 deg - Service |
| 38           | Dead+Wind 330 deg - Service |

### Maximum Member Forces

| Section<br>No. | Elevation<br>ft      | Component<br>Type | Condition        | Gov.<br>Load<br>Comb. | Force<br>K | Major Axis<br>Moment<br>kip-ft | Minor Axis<br>Moment<br>kip-ft |
|----------------|----------------------|-------------------|------------------|-----------------------|------------|--------------------------------|--------------------------------|
| L1             | 120 -<br>84.7161     | Pole              | Max Tension      | 15                    | 0.00       | 0.00                           | -0.00                          |
|                |                      |                   | Max. Compression | 14                    | -18.90     | -0.92                          | 0.91                           |
|                |                      |                   | Max. Mx          | 5                     | -10.66     | -401.83                        | 1.23                           |
|                |                      |                   | Max. My          | 2                     | -10.65     | -1.29                          | 402.70                         |
|                |                      |                   | Max. Vy          | 5                     | 19.77      | -401.83                        | 1.23                           |
|                |                      |                   | Max. Vx          | 2                     | -19.88     | -1.29                          | 402.70                         |
| L2             | 84.7161 -<br>41.6224 | Pole              | Max. Torque      | 13                    |            |                                | -1.55                          |
|                |                      |                   | Max Tension      | 1                     | 0.00       | 0.00                           | 0.00                           |
|                |                      |                   | Max. Compression | 14                    | -34.12     | -1.14                          | 0.81                           |
|                |                      |                   | Max. Mx          | 5                     | -22.58     | -1475.96                       | 5.09                           |
|                |                      |                   | Max. My          | 2                     | -22.57     | -5.42                          | 1481.10                        |
|                |                      |                   | Max. Vy          | 5                     | 28.00      | -1475.96                       | 5.09                           |
| L3             | 41.6224 - 0          | Pole              | Max. Vx          | 2                     | -28.12     | -5.42                          | 1481.10                        |
|                |                      |                   | Max. Torque      | 7                     |            |                                | 1.65                           |
|                |                      |                   | Max Tension      | 1                     | 0.00       | 0.00                           | 0.00                           |
|                |                      |                   | Max. Compression | 14                    | -50.89     | -1.14                          | 0.94                           |
|                |                      |                   | Max. Mx          | 5                     | -37.74     | -2889.14                       | 10.11                          |
|                |                      |                   | Max. My          | 2                     | -37.74     | -10.44                         | 2900.06                        |

### Maximum Reactions

| Location | Condition           | Gov.<br>Load<br>Comb. | Vertical<br>K | Horizontal, X<br>K | Horizontal, Z<br>K |
|----------|---------------------|-----------------------|---------------|--------------------|--------------------|
| Pole     | Max. Vert           | 16                    | 50.89         | -3.32              | 5.75               |
|          | Max. H <sub>x</sub> | 11                    | 37.75         | 31.63              | -0.10              |
|          | Max. H <sub>z</sub> | 2                     | 37.75         | -0.10              | 31.75              |

| Location     | Condition           | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|--------------|---------------------|-----------------|------------|-----------------|-----------------|
| Max. Torsion | Max. M <sub>x</sub> | 2               | 2900.06    | -0.10           | 31.75           |
|              | Max. M <sub>z</sub> | 5               | 2889.14    | -31.63          | 0.10            |
|              | Min. Vert           | 1               | 37.75      | 0.00            | 0.00            |
|              | Min. H <sub>x</sub> | 5               | 37.75      | -31.63          | 0.10            |
|              | Min. H <sub>z</sub> | 8               | 37.75      | 0.10            | -31.75          |
|              | Min. M <sub>x</sub> | 8               | -2899.34   | 0.10            | -31.75          |
|              | Min. M <sub>z</sub> | 11              | -2887.77   | 31.63           | -0.10           |
|              | Min. Torsion        | 13              | -1.66      | 15.72           | 27.44           |

### Tower Mast Reaction Summary

| Load Combination            | Vertical K | Shear <sub>x</sub> K | Shear <sub>z</sub> K | Overspinning Moment, M <sub>x</sub> kip-ft | Overspinning Moment, M <sub>z</sub> kip-ft | Torque kip-ft |
|-----------------------------|------------|----------------------|----------------------|--|--|---------------|
| Dead Only                   | 37.75      | 0.00                 | 0.00                 | -0.35                                      | -0.67                                      | 0.00          |
| Dead+Wind 0 deg - No Ice    | 37.75      | 0.10                 | -31.75               | -2900.06                                   | -10.44                                     | 1.51          |
| Dead+Wind 30 deg - No Ice   | 37.75      | 15.90                | -27.55               | -2516.45                                   | -1453.35                                   | 0.95          |
| Dead+Wind 60 deg - No Ice   | 37.75      | 27.44                | -15.96               | -1458.66                                   | -2507.02                                   | 0.14          |
| Dead+Wind 90 deg - No Ice   | 37.75      | 31.63                | -0.10                | -10.11                                     | -2889.14                                   | -0.71         |
| Dead+Wind 120 deg - No Ice  | 37.75      | 27.34                | 15.78                | 1441.05                                    | -2497.28                                   | -1.37         |
| Dead+Wind 150 deg - No Ice  | 37.75      | 15.72                | 27.44                | 2505.99                                    | -1436.46                                   | -1.66         |
| Dead+Wind 180 deg - No Ice  | 37.75      | -0.10                | 31.75                | 2899.34                                    | 9.07                                       | -1.51         |
| Dead+Wind 210 deg - No Ice  | 37.75      | -15.90               | 27.55                | 2515.73                                    | 1451.98                                    | -0.95         |
| Dead+Wind 240 deg - No Ice  | 37.75      | -27.44               | 15.96                | 1457.94                                    | 2505.65                                    | -0.14         |
| Dead+Wind 270 deg - No Ice  | 37.75      | -31.63               | 0.10                 | 9.39                                       | 2887.77                                    | 0.71          |
| Dead+Wind 300 deg - No Ice  | 37.75      | -27.34               | -15.78               | -1441.77                                   | 2495.92                                    | 1.37          |
| Dead+Wind 330 deg - No Ice  | 37.75      | -15.72               | -27.44               | -2506.71                                   | 1435.09                                    | 1.66          |
| Dead+Ice+Temp               | 50.89      | 0.00                 | 0.00                 | -0.94                                      | -1.14                                      | 0.00          |
| Dead+Wind 0 deg+Ice+Temp    | 50.89      | 0.02                 | -6.63                | -622.39                                    | -3.18                                      | 0.39          |
| Dead+Wind 30 deg+Ice+Temp   | 50.89      | 3.32                 | -5.75                | -540.12                                    | -312.47                                    | 0.24          |
| Dead+Wind 60 deg+Ice+Temp   | 50.89      | 5.73                 | -3.33                | -313.40                                    | -538.36                                    | 0.03          |
| Dead+Wind 90 deg+Ice+Temp   | 50.89      | 6.60                 | -0.02                | -2.97                                      | -620.32                                    | -0.19         |
| Dead+Wind 120 deg+Ice+Temp  | 50.89      | 5.71                 | 3.30                 | 307.99                                     | -536.39                                    | -0.36         |
| Dead+Wind 150 deg+Ice+Temp  | 50.89      | 3.28                 | 5.73                 | 536.16                                     | -309.05                                    | -0.43         |
| Dead+Wind 180 deg+Ice+Temp  | 50.89      | -0.02                | 6.63                 | 620.40                                     | 0.77                                       | -0.39         |
| Dead+Wind 210 deg+Ice+Temp  | 50.89      | -3.32                | 5.75                 | 538.14                                     | 310.06                                     | -0.24         |
| Dead+Wind 240 deg+Ice+Temp  | 50.89      | -5.73                | 3.33                 | 311.41                                     | 535.95                                     | -0.03         |
| Dead+Wind 270 deg+Ice+Temp  | 50.89      | -6.60                | 0.02                 | 0.98                                       | 617.91                                     | 0.19          |
| Dead+Wind 300 deg+Ice+Temp  | 50.89      | -5.71                | -3.30                | -309.98                                    | 533.98                                     | 0.36          |
| Dead+Wind 330 deg+Ice+Temp  | 50.89      | -3.28                | -5.73                | -538.15                                    | 306.64                                     | 0.43          |
| Dead+Wind 0 deg - Service   | 37.75      | 0.03                 | -9.80                | -895.77                                    | -3.70                                      | 0.47          |
| Dead+Wind 30 deg - Service  | 37.75      | 4.91                 | -8.50                | -777.32                                    | -449.26                                    | 0.29          |
| Dead+Wind 60 deg - Service  | 37.75      | 8.47                 | -4.93                | -450.68                                    | -774.63                                    | 0.04          |
| Dead+Wind 90 deg - Service  | 37.75      | 9.76                 | -0.03                | -3.37                                      | -892.62                                    | -0.22         |
| Dead+Wind 120 deg - Service | 37.75      | 8.44                 | 4.87                 | 444.74                                     | -771.62                                    | -0.42         |
| Dead+Wind 150 deg - Service | 37.75      | 4.85                 | 8.47                 | 773.58                                     | -444.05                                    | -0.51         |
| Dead+Wind 180 deg - Service | 37.75      | -0.03                | 9.80                 | 895.05                                     | 2.32                                       | -0.47         |
| Dead+Wind 210 deg - Service | 37.75      | -4.91                | 8.50                 | 776.59                                     | 447.89                                     | -0.29         |

| Load Combination            | Vertical | Shear <sub>x</sub> | Shear <sub>z</sub> | Overshooting Moment, M <sub>x</sub> | Overshooting Moment, M <sub>z</sub> | Torque |
|-----------------------------|----------|--------------------|--------------------|-------------------------------------|-------------------------------------|--------|
|                             | K        | K                  | K                  | kip-ft                              | kip-ft                              | kip-ft |
| Dead+Wind 240 deg - Service | 37.75    | -8.47              | 4.93               | 449.95                              | 773.26                              | -0.04  |
| Dead+Wind 270 deg - Service | 37.75    | -9.76              | 0.03               | 2.65                                | 891.25                              | 0.22   |
| Dead+Wind 300 deg - Service | 37.75    | -8.44              | -4.87              | -445.46                             | 770.24                              | 0.42   |
| Dead+Wind 330 deg - Service | 37.75    | -4.85              | -8.47              | -774.31                             | 442.67                              | 0.51   |

## Solution Summary

| Load Comb. | Sum of Applied Forces |         |         | Sum of Reactions |         |         | % Error |
|------------|-----------------------|---------|---------|------------------|---------|---------|---------|
|            | PX<br>K               | PY<br>K | PZ<br>K | PX<br>K          | PY<br>K | PZ<br>K |         |
| 1          | 0.00                  | -37.75  | 0.00    | 0.00             | 37.75   | 0.00    | 0.000%  |
| 2          | 0.10                  | -37.75  | -31.75  | -0.10            | 37.75   | 31.75   | 0.000%  |
| 3          | 15.90                 | -37.75  | -27.55  | -15.90           | 37.75   | 27.55   | 0.000%  |
| 4          | 27.44                 | -37.75  | -15.96  | -27.44           | 37.75   | 15.96   | 0.000%  |
| 5          | 31.63                 | -37.75  | -0.10   | -31.63           | 37.75   | 0.10    | 0.000%  |
| 6          | 27.34                 | -37.75  | 15.78   | -27.34           | 37.75   | -15.78  | 0.000%  |
| 7          | 15.72                 | -37.75  | 27.44   | -15.72           | 37.75   | -27.44  | 0.000%  |
| 8          | -0.10                 | -37.75  | 31.75   | 0.10             | 37.75   | -31.75  | 0.000%  |
| 9          | -15.90                | -37.75  | 27.55   | 15.90            | 37.75   | -27.55  | 0.000%  |
| 10         | -27.44                | -37.75  | 15.96   | 27.44            | 37.75   | -15.96  | 0.000%  |
| 11         | -31.63                | -37.75  | 0.10    | 31.63            | 37.75   | -0.10   | 0.000%  |
| 12         | -27.34                | -37.75  | -15.78  | 27.34            | 37.75   | 15.78   | 0.000%  |
| 13         | -15.72                | -37.75  | -27.44  | 15.72            | 37.75   | 27.44   | 0.000%  |
| 14         | 0.00                  | -50.89  | 0.00    | 0.00             | 50.89   | 0.00    | 0.000%  |
| 15         | 0.02                  | -50.89  | -6.63   | -0.02            | 50.89   | 6.63    | 0.000%  |
| 16         | 3.32                  | -50.89  | -5.75   | -3.32            | 50.89   | 5.75    | 0.000%  |
| 17         | 5.73                  | -50.89  | -3.33   | -5.73            | 50.89   | 3.33    | 0.000%  |
| 18         | 6.60                  | -50.89  | -0.02   | -6.60            | 50.89   | 0.02    | 0.000%  |
| 19         | 5.71                  | -50.89  | 3.30    | -5.71            | 50.89   | -3.30   | 0.000%  |
| 20         | 3.28                  | -50.89  | 5.73    | -3.28            | 50.89   | -5.73   | 0.000%  |
| 21         | -0.02                 | -50.89  | 6.63    | 0.02             | 50.89   | -6.63   | 0.000%  |
| 22         | -3.32                 | -50.89  | 5.75    | 3.32             | 50.89   | -5.75   | 0.000%  |
| 23         | -5.73                 | -50.89  | 3.33    | 5.73             | 50.89   | -3.33   | 0.000%  |
| 24         | -6.60                 | -50.89  | 0.02    | 6.60             | 50.89   | -0.02   | 0.000%  |
| 25         | -5.71                 | -50.89  | -3.30   | 5.71             | 50.89   | 3.30    | 0.000%  |
| 26         | -3.28                 | -50.89  | -5.73   | 3.28             | 50.89   | 5.73    | 0.000%  |
| 27         | 0.03                  | -37.75  | -9.80   | -0.03            | 37.75   | 9.80    | 0.000%  |
| 28         | 4.91                  | -37.75  | -8.50   | -4.91            | 37.75   | 8.50    | 0.000%  |
| 29         | 8.47                  | -37.75  | -4.93   | -8.47            | 37.75   | 4.93    | 0.000%  |
| 30         | 9.76                  | -37.75  | -0.03   | -9.76            | 37.75   | 0.03    | 0.000%  |
| 31         | 8.44                  | -37.75  | 4.87    | -8.44            | 37.75   | -4.87   | 0.000%  |
| 32         | 4.85                  | -37.75  | 8.47    | -4.85            | 37.75   | -8.47   | 0.000%  |
| 33         | -0.03                 | -37.75  | 9.80    | 0.03             | 37.75   | -9.80   | 0.000%  |
| 34         | -4.91                 | -37.75  | 8.50    | 4.91             | 37.75   | -8.50   | 0.000%  |
| 35         | -8.47                 | -37.75  | 4.93    | 8.47             | 37.75   | -4.93   | 0.000%  |
| 36         | -9.76                 | -37.75  | 0.03    | 9.76             | 37.75   | -0.03   | 0.000%  |
| 37         | -8.44                 | -37.75  | -4.87   | 8.44             | 37.75   | 4.87    | 0.000%  |
| 38         | -4.85                 | -37.75  | -8.47   | 4.85             | 37.75   | 8.47    | 0.000%  |

## Non-Linear Convergence Results

| Load Combination | Converged? | Number of Cycles | Displacement Tolerance | Force Tolerance |
|------------------|------------|------------------|------------------------|-----------------|
| 1                | Yes        | 4                | 0.00000001             | 0.00000001      |
| 2                | Yes        | 4                | 0.00000001             | 0.00018964      |
| 3                | Yes        | 5                | 0.00000001             | 0.00005085      |
| 4                | Yes        | 5                | 0.00000001             | 0.00004931      |
| 5                | Yes        | 4                | 0.00000001             | 0.00010315      |

|    |     |   |            |            |
|----|-----|---|------------|------------|
| 6  | Yes | 5 | 0.00000001 | 0.00004689 |
| 7  | Yes | 5 | 0.00000001 | 0.00005131 |
| 8  | Yes | 4 | 0.00000001 | 0.00015619 |
| 9  | Yes | 5 | 0.00000001 | 0.00004807 |
| 10 | Yes | 5 | 0.00000001 | 0.00004948 |
| 11 | Yes | 4 | 0.00000001 | 0.00007045 |
| 12 | Yes | 5 | 0.00000001 | 0.00005080 |
| 13 | Yes | 5 | 0.00000001 | 0.00004650 |
| 14 | Yes | 4 | 0.00000001 | 0.00000001 |
| 15 | Yes | 4 | 0.00000001 | 0.00047158 |
| 16 | Yes | 4 | 0.00000001 | 0.00052066 |
| 17 | Yes | 4 | 0.00000001 | 0.00051878 |
| 18 | Yes | 4 | 0.00000001 | 0.00046982 |
| 19 | Yes | 4 | 0.00000001 | 0.00051248 |
| 20 | Yes | 4 | 0.00000001 | 0.00051561 |
| 21 | Yes | 4 | 0.00000001 | 0.00046879 |
| 22 | Yes | 4 | 0.00000001 | 0.00051319 |
| 23 | Yes | 4 | 0.00000001 | 0.00051319 |
| 24 | Yes | 4 | 0.00000001 | 0.00046644 |
| 25 | Yes | 4 | 0.00000001 | 0.00051379 |
| 26 | Yes | 4 | 0.00000001 | 0.00051253 |
| 27 | Yes | 4 | 0.00000001 | 0.00002730 |
| 28 | Yes | 4 | 0.00000001 | 0.00011449 |
| 29 | Yes | 4 | 0.00000001 | 0.00010556 |
| 30 | Yes | 4 | 0.00000001 | 0.00001606 |
| 31 | Yes | 4 | 0.00000001 | 0.00009543 |
| 32 | Yes | 4 | 0.00000001 | 0.00011942 |
| 33 | Yes | 4 | 0.00000001 | 0.00002585 |
| 34 | Yes | 4 | 0.00000001 | 0.00009914 |
| 35 | Yes | 4 | 0.00000001 | 0.00010612 |
| 36 | Yes | 4 | 0.00000001 | 0.00001484 |
| 37 | Yes | 4 | 0.00000001 | 0.00011604 |
| 38 | Yes | 4 | 0.00000001 | 0.00009398 |

### Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft      | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-------------------|---------------------|-----------------|--------|---------|
| L1          | 120 - 84.7161     | 14.590              | 28              | 0.9935 | 0.0024  |
| L2          | 89.2839 - 41.6224 | 8.463               | 28              | 0.8705 | 0.0014  |
| L3          | 47.3776 - 0       | 2.407               | 28              | 0.4658 | 0.0005  |

### Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance                   | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|--------------|--------------------------------|-----------------|---------------|--------|---------|------------------------|
| 118.00       | 7770.00 w/ Mount Pipe          | 28              | 14.176        | 0.9881 | 0.0023  | 50446                  |
| 116.00       | TME-RRUS-11                    | 28              | 13.763        | 0.9825 | 0.0023  | 50446                  |
| 108.00       | (4) 844G65VTZASX w/ Mount Pipe | 28              | 12.120        | 0.9584 | 0.0020  | 21019                  |
| 100.00       | TME-800MHZ RRH                 | 28              | 10.514        | 0.9281 | 0.0017  | 12611                  |
| 97.00        | P40-16-XLPP-RR-A w/ Mount Pipe | 28              | 9.926         | 0.9142 | 0.0016  | 10966                  |
| 83.00        | LNX-6515DS-A1M w/ Mount Pipe   | 28              | 7.333         | 0.8247 | 0.0012  | 7217                   |
| 51.00        | KS24019-L112A                  | 28              | 2.769         | 0.5047 | 0.0005  | 4465                   |

### Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft      | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-------------------|---------------------|-----------------|--------|---------|
| L1          | 120 - 84.7161     | 47.162              | 3               | 3.2114 | 0.0079  |
| L2          | 89.2839 - 41.6224 | 27.367              | 3               | 2.8148 | 0.0045  |
| L3          | 47.3776 - 0       | 7.787               | 3               | 1.5070 | 0.0015  |

### Critical Deflections and Radius of Curvature - Design Wind

| Elevation ft | Appurtenance                   | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|--------------|--------------------------------|-----------------|---------------|--------|---------|------------------------|
| 118.00       | 7770.00 w/ Mount Pipe          | 3               | 45.825        | 3.1938 | 0.0076  | 15750                  |
| 116.00       | TME-RRUS-11                    | 3               | 44.490        | 3.1759 | 0.0074  | 15750                  |
| 108.00       | (4) 844G65VTZASX w/ Mount Pipe | 3               | 39.184        | 3.0983 | 0.0065  | 6562                   |
| 100.00       | TME-800MHZ RRH                 | 3               | 33.996        | 3.0006 | 0.0056  | 3936                   |
| 97.00        | P40-16-XLPP-RR-A w/ Mount Pipe | 3               | 32.097        | 2.9560 | 0.0053  | 3422                   |
| 83.00        | LNX-6515DS-A1M w/ Mount Pipe   | 3               | 23.717        | 2.6670 | 0.0039  | 2247                   |
| 51.00        | KS24019-L112A                  | 3               | 8.960         | 1.6328 | 0.0017  | 1382                   |

### Compression Checks

### Pole Design Data

| Section No. | Elevation ft          | Size                      | L ft  | L <sub>u</sub> ft | KI/r | F <sub>a</sub> ksi | A in <sup>2</sup> | Actual P K | Allow. P <sub>a</sub> K | Ratio P / P <sub>a</sub> |
|-------------|-----------------------|---------------------------|-------|-------------------|------|--------------------|-------------------|------------|-------------------------|--------------------------|
| L1          | 120 - 84.7161 (1)     | TP32.5458x24.09x0.375     | 35.28 | 0.00              | 0.0  | 39.000             | 36.9884           | -10.64     | 1442.55                 | 0.007                    |
| L2          | 84.7161 - 41.6224 (2) | TP42.0347x30.7011x0.437 5 | 47.66 | 0.00              | 0.0  | 39.000             | 55.8625           | -22.57     | 2178.64                 | 0.010                    |
| L3          | 41.6224 - 0 (3)       | TP51x39.7912x0.5          | 47.38 | 0.00              | 0.0  | 39.000             | 80.1435           | -37.73     | 3125.60                 | 0.012                    |

### Pole Bending Design Data

| Section No. | Elevation ft          | Size                        | Actual M <sub>x</sub> kip-ft | Actual f <sub>bx</sub> ksi | Allow. F <sub>bx</sub> ksi | Ratio f <sub>bx</sub> / F <sub>bx</sub> | Actual M <sub>y</sub> kip-ft | Actual f <sub>by</sub> ksi | Allow. F <sub>by</sub> ksi | Ratio f <sub>by</sub> / F <sub>by</sub> |
|-------------|-----------------------|-----------------------------|------------------------------|----------------------------|----------------------------|---|------------------------------|----------------------------|----------------------------|---|
| L1          | 120 - 84.7161 (1)     | TP32.5458x24.09x0.375       | 403.37                       | 17.137                     | 39.000                     | 0.439                                   | 0.00                         | 0.000                      | 39.000                     | 0.000                                   |
| L2          | 84.7161 - 41.6224 (2) | TP42.0347x30.7011x0.43 75 3 | 1484.1                       | 32.212                     | 39.000                     | 0.826                                   | 0.00                         | 0.000                      | 39.000                     | 0.000                                   |
| L3          | 41.6224 - 0 (3)       | TP51x39.7912x0.5 8          | 2905.9                       | 34.988                     | 39.000                     | 0.897                                   | 0.00                         | 0.000                      | 39.000                     | 0.000                                   |

### Pole Shear Design Data

| Section No. | Elevation ft             | Size                   | Actual V K | Actual $f_v$ ksi | Allow. $F_v$ ksi | Ratio $\frac{f_v}{F_v}$ | Actual T kip-ft | Actual $f_{vt}$ ksi | Allow. $F_{vt}$ ksi | Ratio $\frac{f_{vt}}{F_{vt}}$ |
|-------------|--------------------------|------------------------|------------|------------------|------------------|-------------------------|-----------------|---------------------|---------------------|-------------------------------|
| L1          | 120 - 84.7161 (1)        | TP32.5458x24.09x0.375  | 19.93      | 0.539            | 26.000           | 0.041                   | 0.78            | 0.016               | 26.000              | 0.001                         |
| L2          | 84.7161 - 41.6224 (2) 75 | TP42.0347x30.7011x0.43 | 28.18      | 0.504            | 26.000           | 0.039                   | 0.97            | 0.010               | 26.000              | 0.000                         |
| L3          | 41.6224 - 0 (3)          | TP51x39.7912x0.5       | 31.83      | 0.397            | 26.000           | 0.031                   | 0.95            | 0.006               | 26.000              | 0.000                         |

### Pole Interaction Design Data

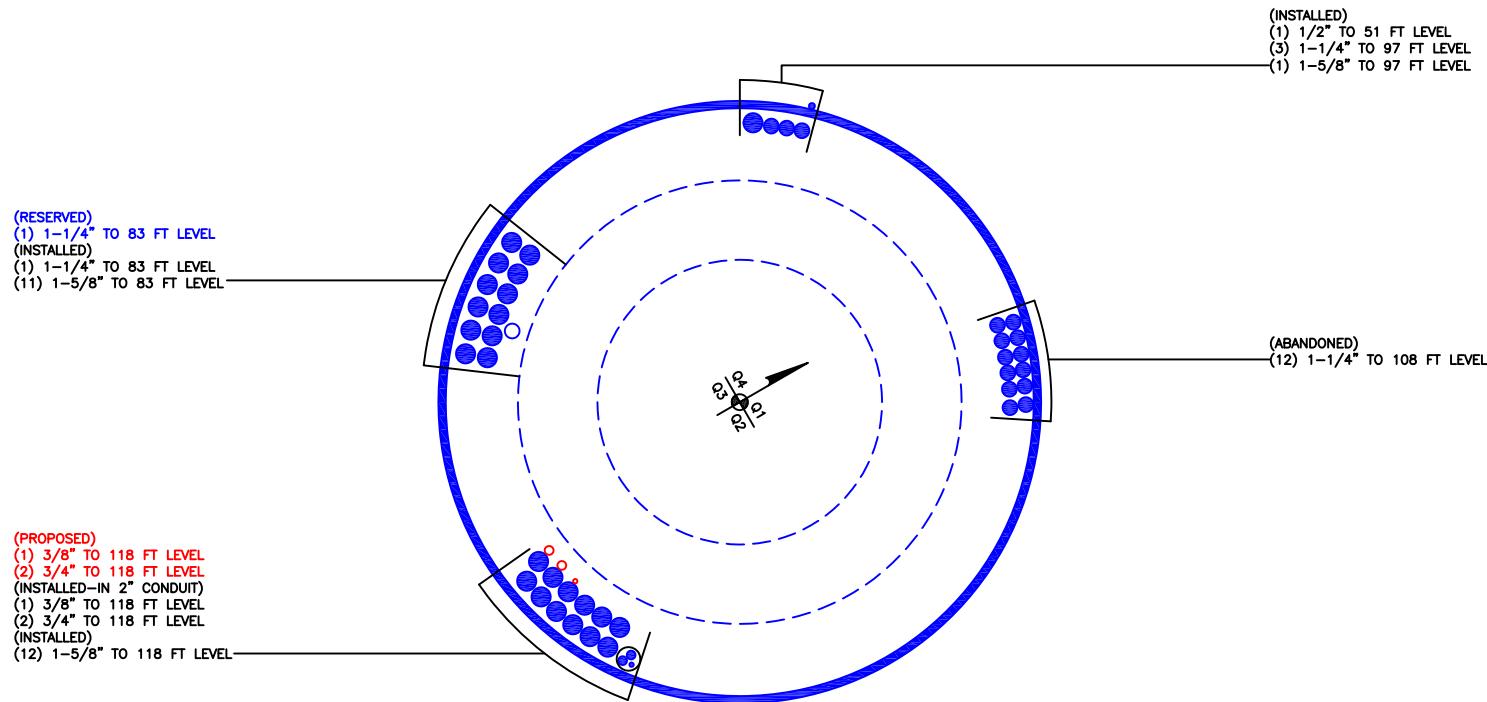
| Section No. | Elevation ft          | Ratio $\frac{P}{P_a}$ | Ratio $\frac{f_{bx}}{F_{bx}}$ | Ratio $\frac{f_{by}}{F_{by}}$ | Ratio $\frac{f_v}{F_v}$ | Ratio $\frac{f_{vt}}{F_{vt}}$ | Comb. Stress Ratio | Allow. Stress Ratio | Criteria  |
|-------------|-----------------------|-----------------------|-------------------------------|-------------------------------|-------------------------|-------------------------------|--------------------|---------------------|-----------|
| L1          | 120 - 84.7161 (1)     | 0.007                 | 0.439                         | 0.000                         | 0.041                   | 0.001                         | 0.447              | 1.333               | H1-3+VT ✓ |
| L2          | 84.7161 - 41.6224 (2) | 0.010                 | 0.826                         | 0.000                         | 0.039                   | 0.000                         | 0.837              | 1.333               | H1-3+VT ✓ |
| L3          | 41.6224 - 0 (3)       | 0.012                 | 0.897                         | 0.000                         | 0.031                   | 0.000                         | 0.909              | 1.333               | H1-3+VT ✓ |

### Section Capacity Table

| Section No. | Elevation ft      | Component Type | Size                     | Critical Element | P K    | SF*P <sub>allow</sub> K | % Capacity | Pass Fail |
|-------------|-------------------|----------------|--------------------------|------------------|--------|-------------------------|------------|-----------|
| L1          | 120 - 84.7161     | Pole           | TP32.5458x24.09x0.375    | 1                | -10.64 | 1922.92                 | 33.6       | Pass      |
| L2          | 84.7161 - 41.6224 | Pole           | TP42.0347x30.7011x0.4375 | 2                | -22.57 | 2904.13                 | 62.8       | Pass      |
| L3          | 41.6224 - 0       | Pole           | TP51x39.7912x0.5         | 3                | -37.73 | 4166.42                 | 68.2       | Pass      |
|             |                   |                |                          |                  |        | Pole (L3) Summary       | 68.2       | Pass      |
|             |                   |                |                          |                  |        | RATING =                | 68.2       | Pass      |

## APPENDIX B

### BASE LEVEL DRAWING



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

## Stiffened or Unstiffened, UngROUTED, Circular Base Plate - Any Rod Material

### TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)\*(Rod Diameter)

#### Site Data

BU#: 881536

Site Name: NORTH HAVEN TOWER

App #: 345011 Rev. 1

Pole Manufacturer: Other

| Reactions          |      |                  |
|--------------------|------|------------------|
| Mu:                | 2906 | ft-kips          |
| Axial, Pu:         | 38   | kips             |
| Shear, Vu:         | 32   | kips             |
| Eta Factor, $\eta$ | 0.5  | TIA G (Fig. 4-4) |

If No stiffeners, Criteria: AISC LRFD <-Only Applicable to Unstiffened Cases

#### Anchor Rod Data

|                |        |     |
|----------------|--------|-----|
| Qty:           | 20     |     |
| Diam:          | 2.25   | in  |
| Rod Material:  | A615-J |     |
| Strength (Fu): | 100    | ksi |
| Yield (Fy):    | 75     | ksi |
| Bolt Circle:   | 60     | in  |

#### Plate Data

|                   |      |     |
|-------------------|------|-----|
| Diam:             | 66   | in  |
| Thick:            | 2.25 | in  |
| Grade:            | 60   | ksi |
| Single-Rod B-eff: | 8.09 | in  |

#### Stiffener Data (Welding at both sides)

|                 |   |               |
|-----------------|---|---------------|
| Config:         | 0 | *             |
| Weld Type:      |   |               |
| Groove Depth:   |   | <-- Disregard |
| Groove Angle:   |   | <-- Disregard |
| Fillet H. Weld: |   | in            |
| Fillet V. Weld: |   | in            |
| Width:          |   | in            |
| Height:         |   | in            |
| Thick:          |   | in            |
| Notch:          |   | in            |
| Grade:          |   | ksi           |
| Weld str.:      |   | ksi           |

| Pole Data          |     |              |
|--------------------|-----|--------------|
| Diam:              | 51  | in           |
| Thick:             | 0.5 | in           |
| Grade:             | 65  | ksi          |
| # of Sides:        | 18  | "0" IF Round |
| Fu                 | 80  | ksi          |
| Reinf. Fillet Weld | 0   | "0" if None  |

#### Anchor Rod Results

Max Rod (Cu+ Vu/f): 121.3 Kips  
 Allowable Axial,  $\Phi^*Fu^*Anet$ : 260.0 Kips  
 Anchor Rod Stress Ratio: 46.7% **Pass**

|                |
|----------------|
| Rigid          |
| AISC LRFD      |
| $\varphi^*T_n$ |

#### Base Plate Results

Flexural Check: 30.6 ksi  
 Base Plate Stress: 54.0 ksi  
 Allowable Plate Stress: 56.6% **Pass**  
 Y.L. Length: 31.61

|                |
|----------------|
| Rigid          |
| AISC LRFD      |
| $\varphi^*F_y$ |
| Y.L. Length:   |

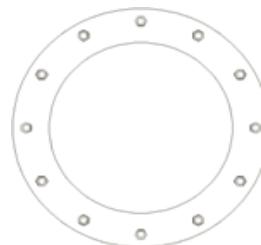
**n/a**

#### Stiffener Results

Horizontal Weld : n/a  
 Vertical Weld: n/a  
 Plate Flex+Shear,  $fb/Fb+(fv/Fv)^2$ : n/a  
 Plate Tension+Shear,  $ft/Ft+(fv/Fv)^2$ : n/a  
 Plate Comp. (AISC Bracket): n/a

#### Pole Results

Pole Punching Shear Check: n/a



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

BU: 881536  
 Site Name: NORTH HAVEN TOWER  
 App Number: 345011 Rev. 1  
 Work Order: 1239285



## Monopole Drilled Pier

## Input

## Criteria

TIA Revision: F  
 ACI 318 Revision: 2002  
 Seismic Category: B

## Forces

Compression 38 kips  
 Shear 32 kips  
 Moment 2906 k-ft  
 Swelling Force 0 kips

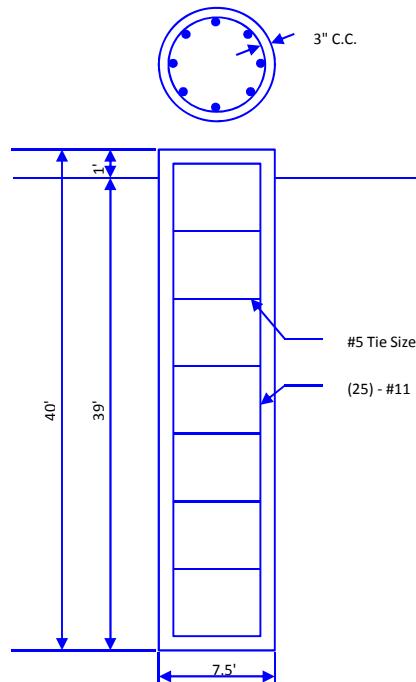
## Foundation Dimensions

Pier Diameter: 7.5 ft  
 Ext. above grade: 1 ft  
 Depth below grade: 39 ft

## Material Properties

Number of Rebar: 25  
 Rebar Size: 11  
 Tie Size: 5  
 Rebar tensile strength: 60 ksi  
 Concrete Strength: 4000 psi  
 Ultimate Concrete Strain: 0.003 in/in  
 Clear Cover to Ties: 3 in

## Soil Profile: 1



| Layer | Thickness (ft) | From (ft) | To (ft) | Unit Weight (pcf) | Cohesion (psf) | Friction Angle (deg) | Ultimate Uplift Skin Friction (ksf) | Ultimate Comp. Skin Friction (ksf) | Ultimate Bearing Capacity (ksf) | SPT 'N' Counts |
|-------|----------------|-----------|---------|-------------------|----------------|----------------------|-------------------------------------|------------------------------------|---------------------------------|----------------|
| 1     | 3.75           | 0         | 3.75    | 120               | 0              | 0                    | 0                                   | 0                                  | 0                               |                |
| 2     | 1.25           | 3.75      | 5       | 120               | 0              | 32                   | 0                                   | 0                                  | 0                               |                |
| 3     | 2              | 5         | 7       | 120               | 0              | 32                   | 1.4                                 | 1.4                                | 0                               |                |
| 4     | 32             | 7         | 39      | 60                | 0              | 32                   | 1.4                                 | 1.4                                | 16                              |                |

## Analysis Results

## Soil Lateral Capacity

Depth to Zero Shear: 9.07 ft  
 Max Moment, Mu: 3178.00 k-ft  
 Soil Safety Factor: 9.07  
 Safety Factor Req'd: 2  
 RATING: 22.0%

## Soil Axial Capacity

Skin Friction (k): 560.77 kips  
 End Bearing (k): 353.43 kips  
 Comp. Capacity (k),  $\phi C_n$ : 914.20 kips  
 Comp. (k), Cu: 49.40 kips  
 RATING: 5.4%

## Concrete/Steel Check

$M_u$  (from soil analysis) 4131.39 k-ft  
 $\phi M_n$  6811.42 k-ft  
 RATING: 60.7%

$\rho_{ho}$  provided 0.61  
 $\rho_{ho}$  required 0.33 OK

Rebar Spacing 8.81  
 Spacing required 22.56 OK

Dev. Length required 29.68  
 Dev. Length provided 53.51 OK

Overall Foundation Rating: 60.7%



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

AT&T Existing Facility

Site ID: CT5107

North Haven South  
120 Universal Drive  
North Haven, CT 06473

**July 6, 2016**

**EBI Project Number: 6216003127**

| Site Compliance Summary                                      |                  |
|--|------------------|
| Compliance Status:   | <b>COMPLIANT</b> |
| Site total MPE% of<br>FCC general public<br>allowable limit: | <b>18.23 %</b>   |



July 6, 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: **CT5107 – North Haven South**

EBI Consulting was directed to analyze the proposed AT&T facility located at **120 Universal Drive, North Haven, 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 **120 Universal Drive, North Haven, 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 manufacturer's 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 (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 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.
- 4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 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.
- 6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) 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.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturers 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.
- 9) The antennas used in this modeling are the **Powerwave 7770, CCI OPA-65R-LCUU-H6 and the Quintel QS66512-2** 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 manufacturers 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.
- 10) The antenna mounting height centerlines of the proposed antennas are **121 feet** above ground level (AGL) for **Sector A**, **121 feet** above ground level (AGL) for **Sector B** and **121 feet** above ground level (AGL) for Sector C.
- 11) 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 by Antenna

| Sector:            | A                        | Sector:            | B                        | Sector:            | C                        |
|--------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------------|
| Antenna #:         | <b>1</b>                 | Antenna #:         | <b>1</b>                 | Antenna #:         | <b>1</b>                 |
| Make / Model:      | Powerwave 7770           | Make / Model:      | Powerwave 7770           | Make / Model:      | Powerwave 7770           |
| Gain:              | 11.4 / 13.4 dBd          | Gain:              | 11.4 / 13.4 dBd          | Gain:              | 11.4 / 13.4 dBd          |
| Height (AGL):      | <b>121 feet</b>          | Height (AGL):      | <b>121 feet</b>          | Height (AGL):      | <b>121 feet</b>          |
| 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 Watts                | Total TX Power(W): | 120 Watts                | Total TX Power(W): | 120 Watts                |
| ERP (W):           | 2,140.89                 | ERP (W):           | 2,140.89                 | ERP (W):           | 2,140.89                 |
| Antenna A1 MPE%    | <b>0.75 %</b>            | Antenna B1 MPE%    | <b>0.75 %</b>            | Antenna C1 MPE%    | <b>0.75 %</b>            |
| Antenna #:         | <b>2</b>                 | Antenna #:         | <b>2</b>                 | Antenna #:         | <b>2</b>                 |
| Make / Model:      | CCI OPA-65R-LCUU-H6      | Make / Model:      | CCI OPA-65R-LCUU-H6      | Make / Model:      | CCI OPA-65R-LCUU-H6      |
| Gain:              | 12.45 / 15.45 dBd        | Gain:              | 12.45 / 15.45 dBd        | Gain:              | 12.45 / 15.45 dBd        |
| Height (AGL):      | <b>121 feet</b>          | Height (AGL):      | <b>121 feet</b>          | Height (AGL):      | <b>121 feet</b>          |
| Frequency Bands    | 850 MHz / 2300 MHz (WCS) | Frequency Bands    | 850 MHz / 2300 MHz (WCS) | Frequency Bands    | 850 MHz / 2300 MHz (WCS) |
| Channel Count      | 4                        | Channel Count      | 4                        | Channel Count      | 4                        |
| Total TX Power(W): | 180 Watts                | Total TX Power(W): | 180 Watts                | Total TX Power(W): | 180 Watts                |
| ERP (W):           | 5,263.78                 | ERP (W):           | 5,263.78                 | ERP (W):           | 5,263.78                 |
| Antenna A2 MPE%    | <b>1.65 %</b>            | Antenna B2 MPE%    | <b>1.65 %</b>            | Antenna C2 MPE%    | <b>1.65 %</b>            |
| Antenna #:         | <b>3</b>                 | Antenna #:         | <b>3</b>                 | Antenna #:         | <b>3</b>                 |
| Make / Model:      | Quintel QS66512-2        | Make / Model:      | Quintel QS66512-2        | Make / Model:      | Quintel QS66512-2        |
| Gain:              | 10.85 / 13.85 dBd        | Gain:              | 10.85 / 13.85 dBd        | Gain:              | 10.85 / 13.85 dBd        |
| Height (AGL):      | <b>121 feet</b>          | Height (AGL):      | <b>121 feet</b>          | Height (AGL):      | <b>121 feet</b>          |
| 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 Watts                | Total TX Power(W): | 240 Watts                | Total TX Power(W): | 240 Watts                |
| ERP (W):           | 4,371.36                 | ERP (W):           | 4,371.36                 | ERP (W):           | 4,371.36                 |
| Antenna A3 MPE%    | <b>1.64 %</b>            | Antenna B3 MPE%    | <b>1.64 %</b>            | Antenna C3 MPE%    | <b>1.64 %</b>            |

| Site Composite MPE%               |                |
|-----------------------------------|----------------|
| Carrier                           | MPE%           |
| AT&T – Max per sector             | <b>4.04 %</b>  |
| Sprint                            | 0.90 %         |
| Nextel                            | 0.70 %         |
| T-Mobile                          | 6.60 %         |
| Verizon Wireless (Adjacent Tower) | 5.99 %         |
| <b>Site Total MPE %:</b>          | <b>18.23 %</b> |

|                      |         |
|----------------------|---------|
| AT&T Sector A Total: | 4.04 %  |
| AT&T Sector B Total: | 4.04 %  |
| AT&T Sector C Total: | 4.04 %  |
| Site Total:          | 18.23 % |

| AT&T – Max Values Per Sector | # Channels | Watts ERP (Per Channel) | Height (feet) | Total Power Density (μW/cm <sup>2</sup> ) | Frequency (MHz) | Allowable MPE (μW/cm <sup>2</sup> ) | Calculated % MPE |
|------------------------------|------------|-------------------------|---------------|---|-----------------|-------------------------------------|------------------|
| AT&T 850 MHz UMTS            | 2          | 414.12                  | 121           | 2.25                                      | 850 MHz         | 567                                 | 0.40 %           |
| AT&T 1900 MHz (PCS) UMTS     | 2          | 656.33                  | 121           | 3.57                                      | 1900 MHz (PCS)  | 1000                                | 0.36 %           |
| AT&T 850 MHz GSM             | 2          | 527.38                  | 121           | 2.87                                      | 850 MHz         | 567                                 | 0.51 %           |
| AT&T 2300 MHz (WCS) LTE      | 2          | 2,104.51                | 121           | 11.44                                     | 2300 MHz (WCS)  | 1000                                | 1.14 %           |
| AT&T 700 MHz LTE             | 2          | 729.71                  | 121           | 3.97                                      | 700 MHz         | 467                                 | 0.85 %           |
| AT&T 1900 MHz (PCS) LTE      | 2          | 1,455.97                | 121           | 7.92                                      | 1900 MHz (PCS)  | 1000                                | 0.79 %           |
|                              |            |                         |               |   |                 | <b>Total:</b>                       | <b>4.04 %</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 A:                        | 4.04 %                  |
| Sector B:                        | 4.04 %                  |
| Sector C:                        | 4.04 %                  |
| AT&T Maximum Total (per sector): | 4.04 %                  |
|                                  |                         |
| Site Total:                      | 18.23 %                 |
|                                  |                         |
| Site Compliance Status:          | <b>COMPLIANT</b>        |

The anticipated composite MPE value for this site assuming all carriers present is **18.23 %** 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.