



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

January 31, 2017

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: 800515
AT&T Site ID: CT2179
49 Wig Hill Road, Chester, CT 06412
Latitude: 41° 24' 13.93" Longitude: -72° 28' 20.82"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 132-foot level of the existing 150-foot monopole tower at 49 Wig Hill Road in Chester, CT. The tower is owned by Crown Castle. The property is owned by the Toni Myers. AT&T now intends to replace three (3) RRHs with three (3) new RRHs.

The Town of Chester could not confirm the original date and conditions of zoning.

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 Ms. Lauren Gister, First-Selectman, Town of Chester, 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.
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.

Melanie A. Bachman

January 31, 2017

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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

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: Ms. Lauren Gister, First-Selectman
Town of Chester
203 Middlesex Ave
Chester, CT 06412

Planning and Zoning Commission
Town of Chester
203 Middlesex Ave
Chester, CT 06412

Toni Myers
56 North Moodus Rd
Moodus, CT 06469



CONNECTICUT SITING COUNCIL

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Acting Executive Director**NOTICE TO USERS**

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DOCKET NO. 181 - Cellco Partnership d/b/a Bell Atlantic Mobile application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications tower and associated equipment located at 8 Inspiration Lane, or 49 Wig Hill Road in the Town of Chester, Connecticut

Connecticut Siting Council

May 13, 1998

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed alternate site in Chester, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Bell Atlantic Mobile (BAM) for the construction, operation, and maintenance of a telecommunications tower, associated equipment, and buildings at the proposed alternate site, on an approximately 18 acre site at 49 Wig Hill Road in the Town of Chester, Connecticut. We deny certification of the proposed prime site, without prejudice, due to the potential effects to the environment associated with the construction of additional future towers that would be required to provide adequate coverage for all carriers along Route 9, with a tower configuration using the proposed prime site.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of BAM, Springwiche Cellular Limited Partnership (Springwiche), Sprint Spectrum L. P. (Sprint), Nextel Communications of the Mid-Atlantic, Inc. (Nextel); and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level (AGL).
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower foundation, antennas, equipment buildings, emergency generator and fuel tank, security fence, access road, and utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; provisions for the tower finish that may include painting; and provisions for the prevention and containment of spills and/or other discharge into surface water and groundwater bodies.
3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.
8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction

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authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

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

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

The parties and intervenors to this proceeding are:

APPLICANT ITS REPRESENTATIVE

Bell Atlantic Mobile

Kenneth C. Baldwin, Esq.

Brian C. S. Freeman, Esq.

Robinson & Cole

One Commercial Plaza

Hartford, CT 06103-3597

Mr. David S. Malko, P.E.

Jennifer Young Gaudet

Bell Atlantic Mobile

20 Alexander Drive

Wallingford, CT 06492

INTERVENORS ITS REPRESENTATIVE

Springwich Cellular Limited Partnership

Peter J. Tyrrell, Esq.

General Counsel

500 Enterprise Drive

Rocky Hill, CT 06067-3900

Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications

Christopher B. Fisher, Esq.

Cuddy, Feder & Worby, Esq.

90 Maple Avenue

White Plains, NY 10601

Sprint Spectrum, L.P. d/b/a Sprint PCS

Elias A. Alexiades

Julie M. Cashin

Hurwitz and Sagarin, P.C.

147 North Broad Street

Milford, CT 06460

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Property Details

Number of records found: **1**

One record is displayed for each address found at the selected property. Multiple addresses may occur in the case of condominiums.

49 WIG HILL RD

ID: **8-127** Book: Page:

Property ID: **8-127**

Block:

Location Address: **49**

Location: **49 WIG HILL RD**

Legal Reference: **163/ 704**

Page:

Owner: **MYERS TONI L**

Mailing Address Line 1: **56 NORTH MOODUS RD**

Mailing Address Line 3:

Mailing Address City: **MOODUS**

Mailing Address Zip: **06469**

Parcel Parcel ID:

Sale Date: **5/18/2015**

Property Class:

Neighborhood:

Land Use Description:

State Code Description:

Year Built:

Total Value: **284430**

Land Value:

Land Area (SQ FT):

Stories:

Bedrooms:

Living Area:

Building Area Effective:

Fireplace:

Half Baths:

Heat Fuel:

Basement Type:

Basement Finished Area:

Roof Type:

Sewer:

Physical Depreciation:

Economic Depreciation:

Assessor's ID: **8/127**

Account:

State ID:

Map: **8**

Lot: **127**

Location Street: **WIG HILL RD**

Unit:

Book:

Land Area: **11.32**

Co-Owner:

Mailing Address Line 2:

Mailing Address Line 4:

Mailing Address State: **CT**

Mailing Address Country:

Location Address:

Sale Price: **345000**

Zoning (Verify on GIS Map):

Land Use Code:

State Code:

Building Style:

Appraised Value: **406323**

Building Value:

Other Value:

Land Area (AC):

Rooms:

Kitchens:

Building Area Grosss:

Exterior:

Baths:

Heat Type:

Air Conditioning:

Basement Area:

Attic:

Roof Material:

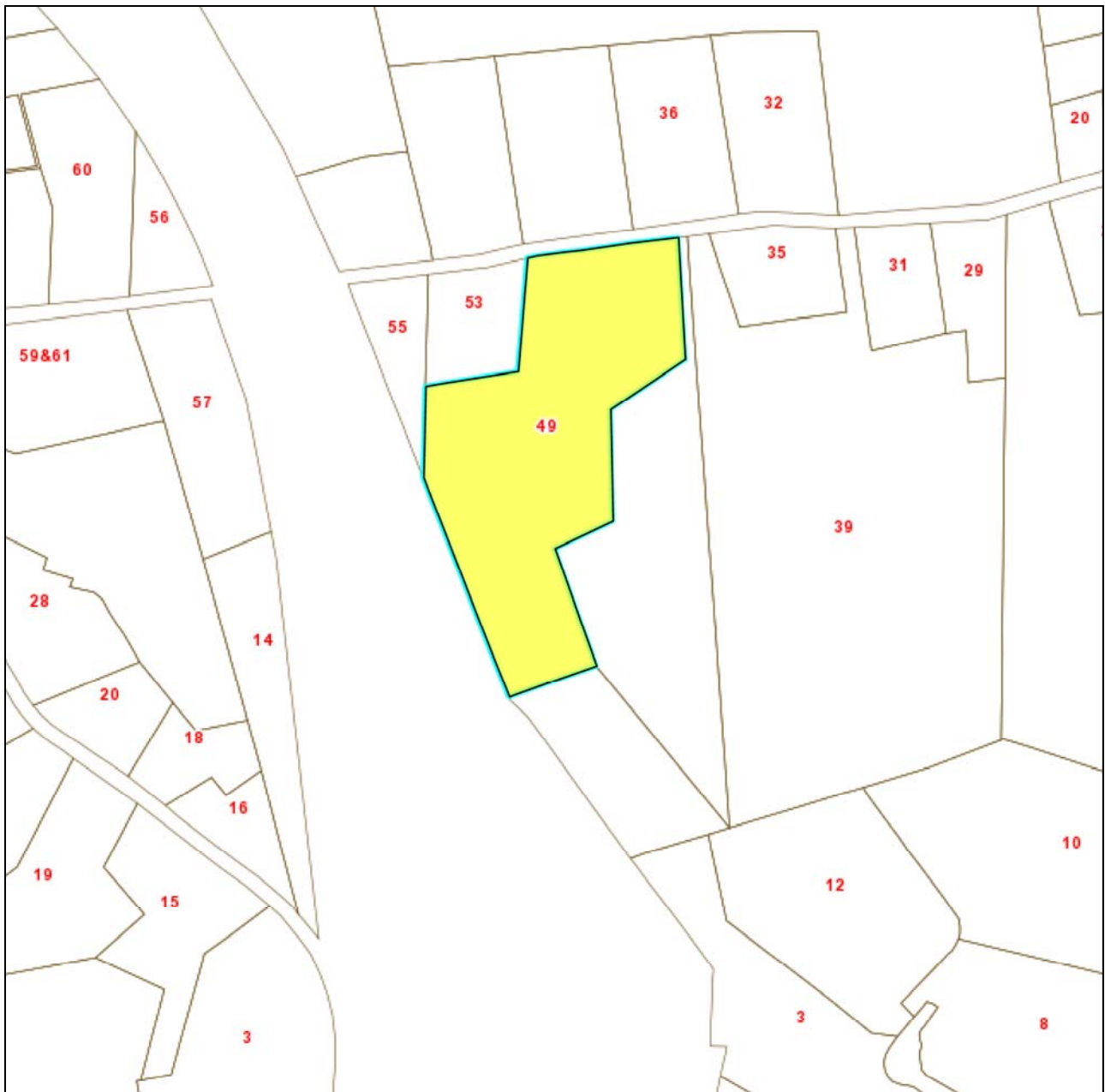
Utility:

Functional Depreciation:

Easement:

Permit ID:

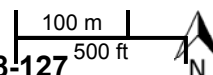
Grantor:



Town of Chester, Connecticut

Selected Parcel: 49 WIG HILL RD ID: 8-127

Printed 1/31/2017 from <http://www.mainstreetmaps.com/ct/chester/public.asp>





WIRELESS COMMUNICATIONS FACILITY
CT2179 - LTE BWE
CHESTER WIG HILL ROAD
CROWN CASTLE SITE NO.: 800515
49 WIG HILL ROAD
CHESTER, CT 06412

GENERAL NOTES

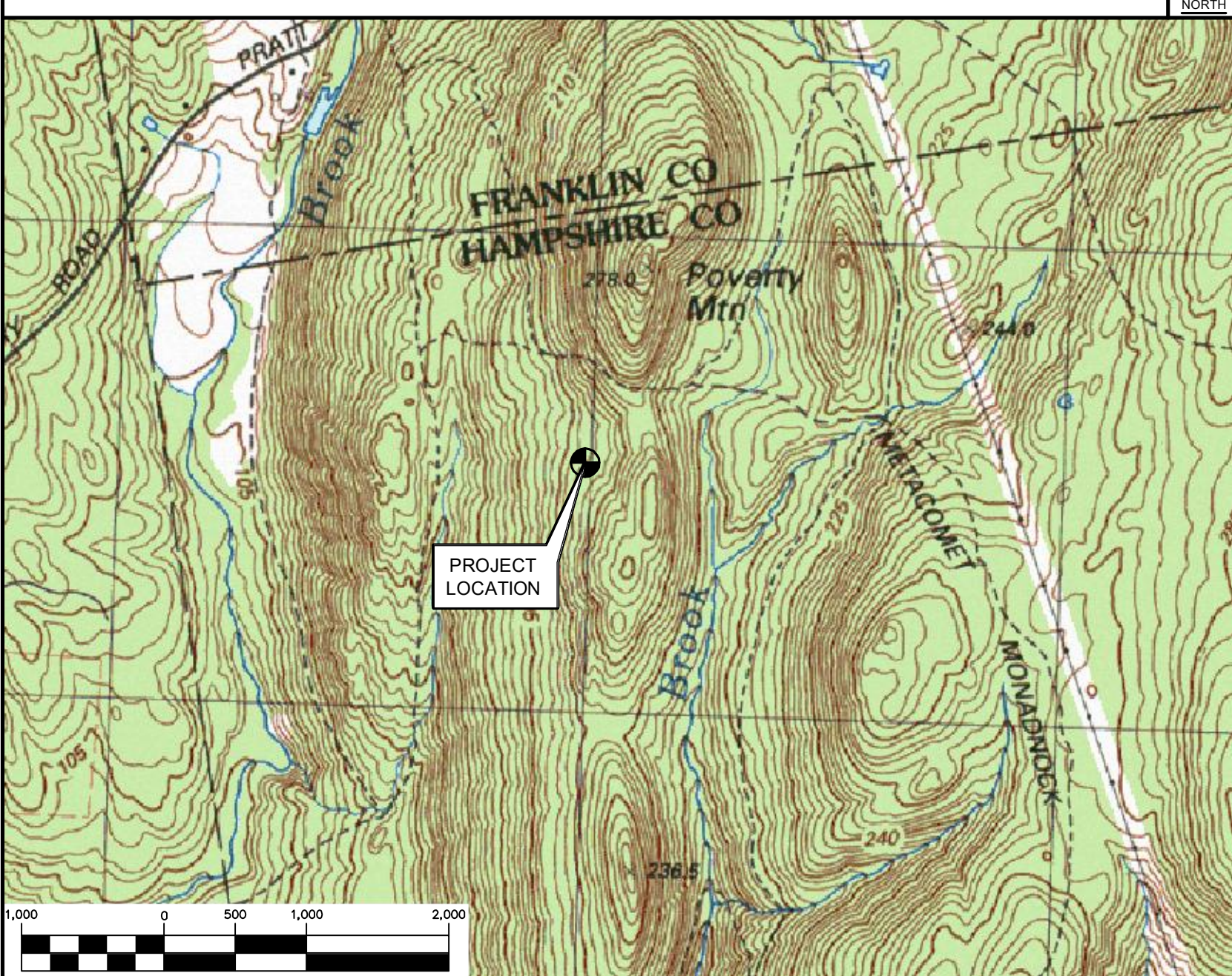
- ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION 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: 49 WIG HILL ROAD
CHESTER, CONNECTICUT
- HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD 0.31 MI
 - TURN LEFT ONTO CAPITAL BLVD 0.30 MI
 - TURN LEFT ONTO WEST ST 0.30 MI
 - TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN 1.41 MI
 - MERGE ONTO CT-9 S EXIT 22S ON LEFT TOWARD MIDDLETOWN/OLD SAYBROOK 20.50 MI
 - TAKE CT-148 EXIT 6 TOWARD CHESTER/HADLYME 0.40 MI
 - TURN RIGHT ONTO WEST MAIN ST/CT-148 0.10 MI
 - TAKE FIRST RIGHT ONTO SOUTH WIG HILL ROAD 0.60 MI
 - TURN RIGHT ONTO WIG HILL ROAD 0.40 MI

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

- THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
 - REMOVE AND REPLACE (3) EXISTING RRUS-11'S FOR PROPOSED RRUS-12'S, TYP. OF (3) TOTAL LOCATED ON EXISTING RRU RING MOUNT.

PROJECT INFORMATION

AT&T SITE NUMBER: CT2179

AT&T SITE NAME: CHESTER WIG HILL ROAD

SITE ADDRESS: CROWN CASTLE SITE NO.: 800515
49 WIG HILL ROAD
CHESTER, CT 06412

LESSEE/APPLICANT: AT&T MOBILITY
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

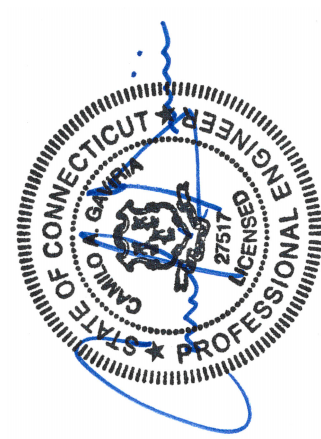
ENGINEER: CENTEK ENGINEERING, INC.
63-2 NORTH BRANFORD RD.
BRANFORD, CT 06405

PROJECT COORDINATES: LATITUDE: 42°-24'-13.87"N
LONGITUDE: 72°-28'-20.48"W
GROUND ELEVATION: ±381' AMSL
COORDINATES AND GROUND ELEVATION
REFERENCED FROM GOOGLE EARTH PRO

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS AND ELEVATION	0
C-2	LTE BWE EQUIPMENT DETAILS	0
E-1	TYPICAL ELECTRICAL DETAILS AND NOTES	0

PROFESSIONAL ENGINEER SEAL



CENTEK engineering
Centered on Solutions
(203) 488-0380
(203) 488-3387 Fax
632 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
CHESTER WIG HILL ROAD
CT2179 - LTE BWE
CROWN CASTLE SITE NO.: 800515
49 WIG HILL ROAD
CHESTER, CT 06412

DATE: 11/15/16

SCALE: AS NOTED

JOB NO. 16071.74

TITLE SHEET

T-1

Sheet No. 1 of 5

DESIGN BASIS:

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 100–120 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 101 MPH (V_{asd}) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

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
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.

- 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 = 42 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, ANCHORAGE, 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 WASHER 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.

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.

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 WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

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.

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

CHESTER WIG HILL ROAD

CT2179 - LTE BWE

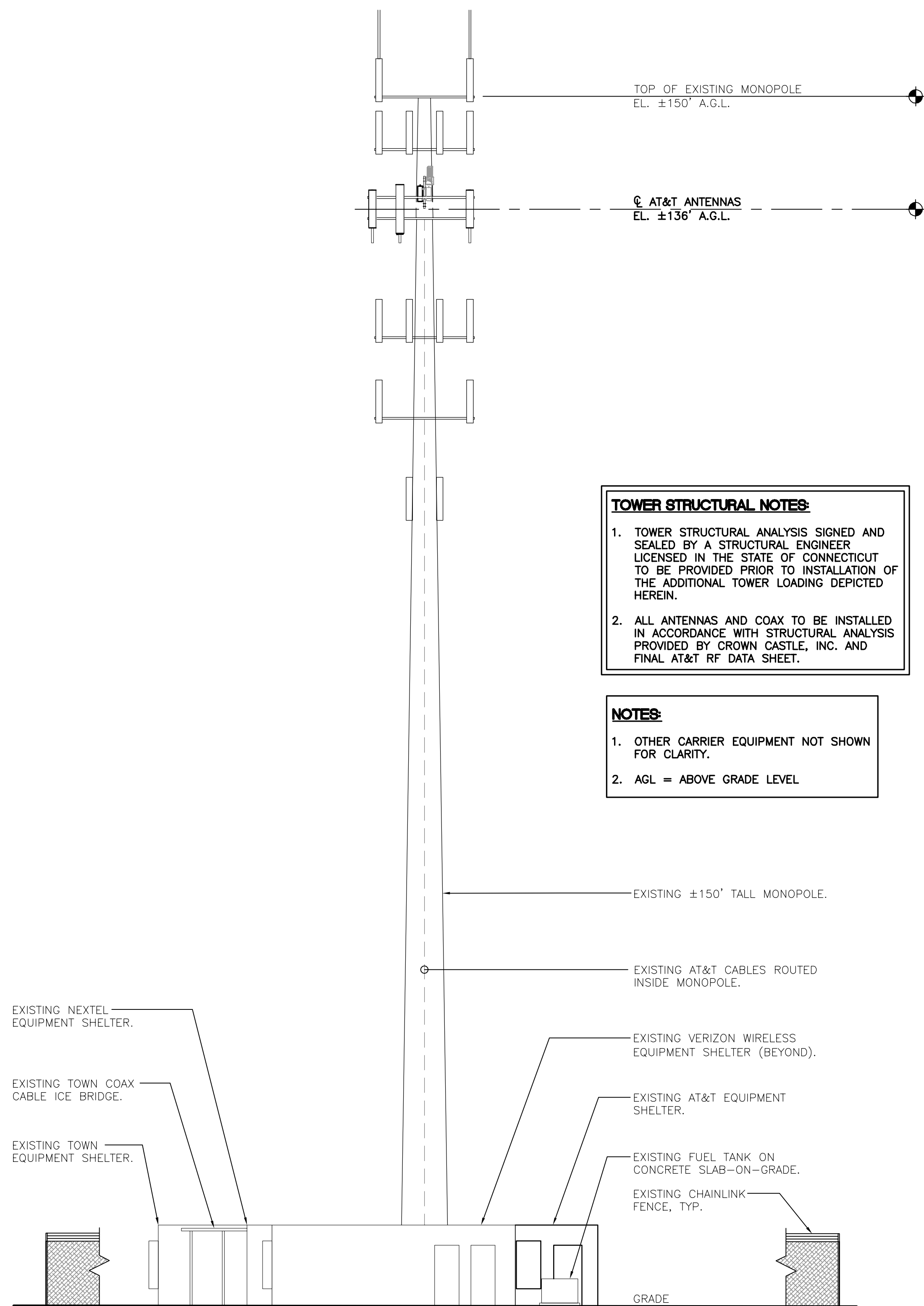
CROWN CASTLE SITE NO.: 800515

49 WIG HILL ROAD

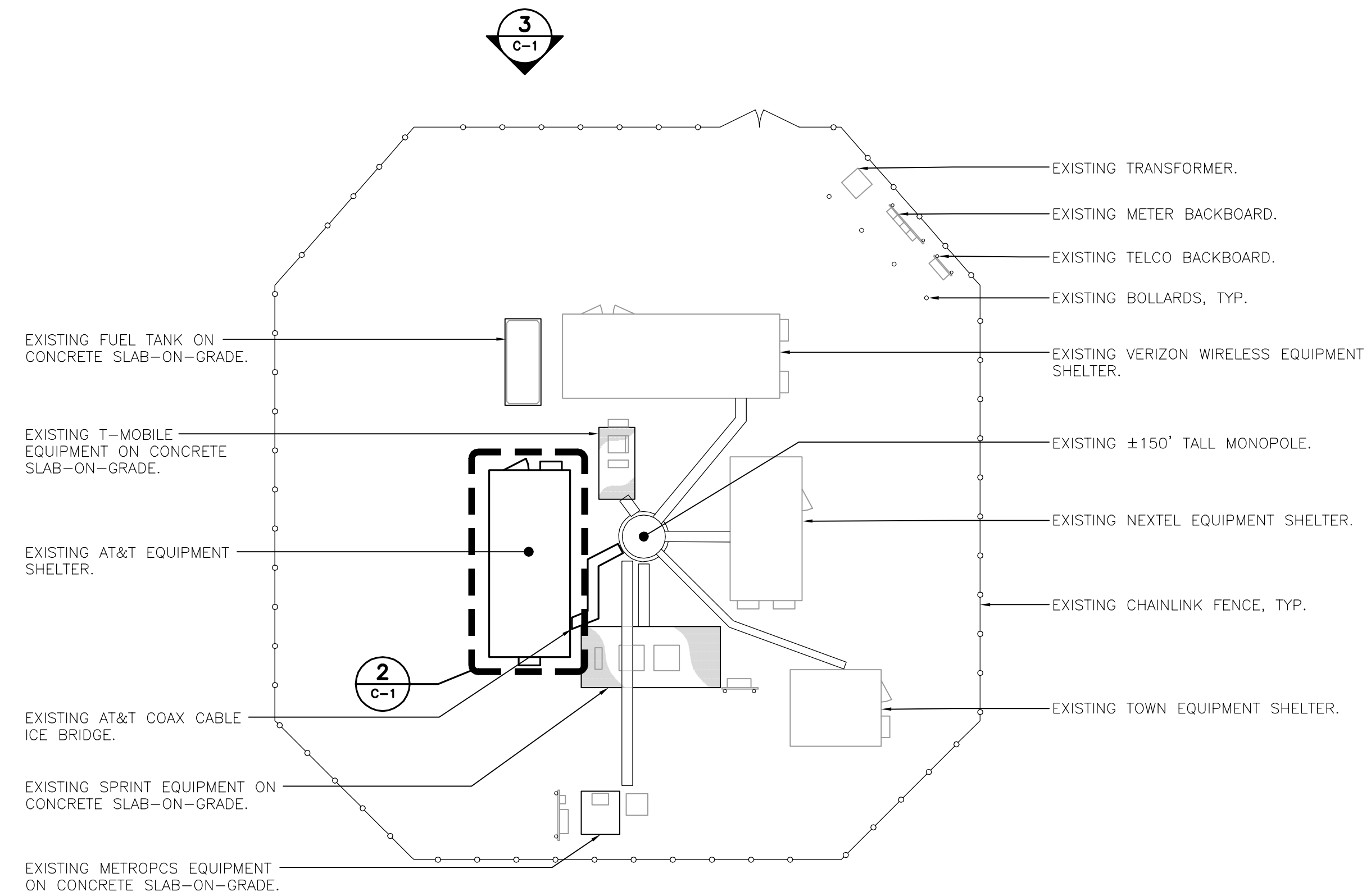
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N-1

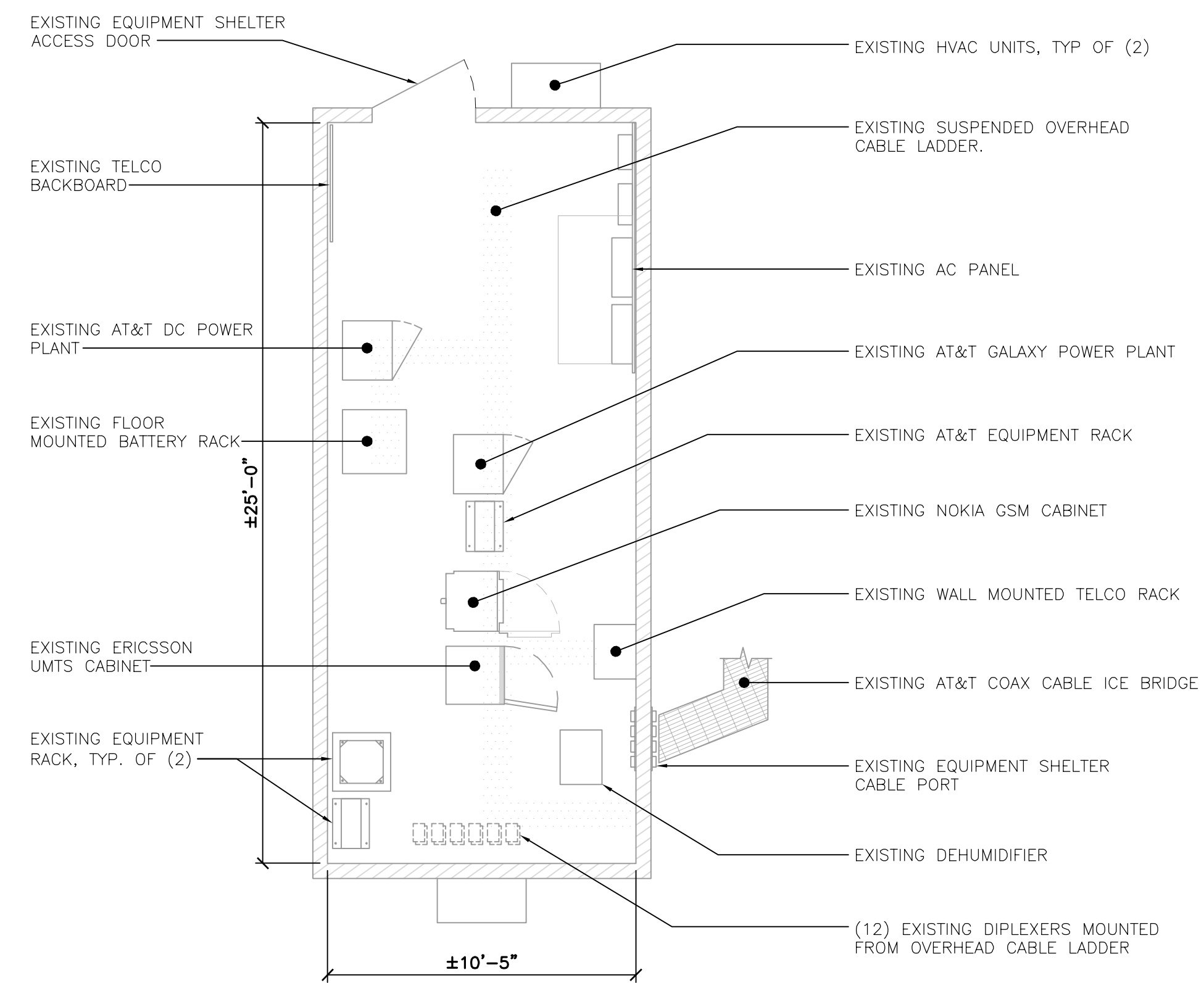
Sheet No. 2 of 5



3 TOWER ELEVATION
C-1 SCALE: 1" = 10'

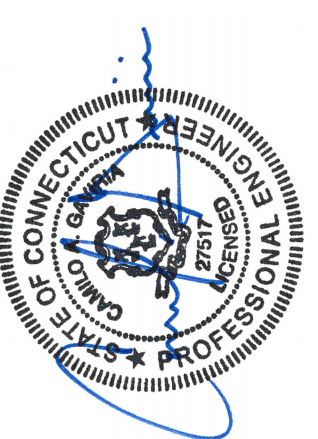


1 COMPOUND PLAN
C-1 SCALE: 1" = 5'



2 EQUIPMENT BUILDING FLOOR PLAN
C-1 SCALE: 1/4" = 1'-0"

PROFESSIONAL ENGINEER SEAL



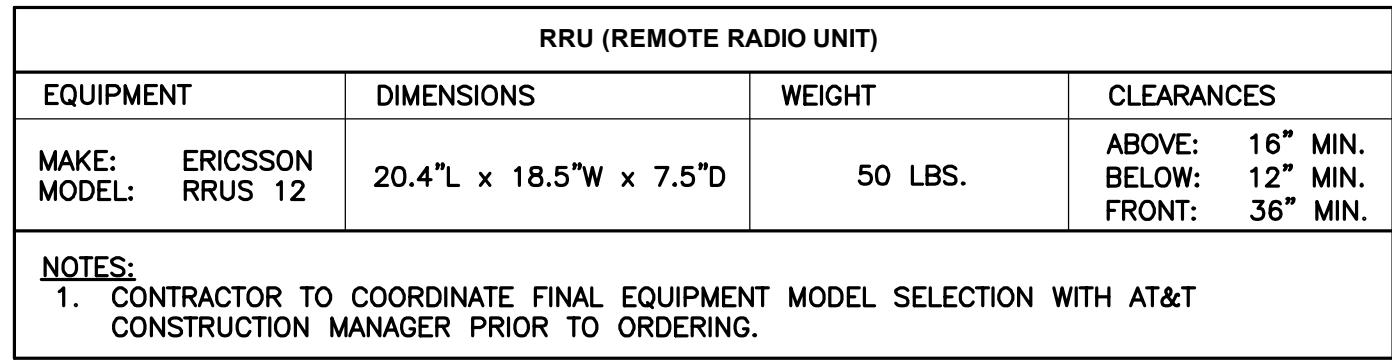
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Branford, CT 06405
www.CenterkEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
CHESTER WIG HILL ROAD
CT2179 - LTE BWE
CROWN CASTLE SITE NO: 800515
49 WIG HILL ROAD
CHESTER, CT 06412

DATE: 11/15/16
SCALE: AS NOTED
JOB NO. 16071.74

PLANS AND
ELEVATION

C-1
Sheet No. 3 of 5



ISOMETRIC VIEW

ERICSSON RRU

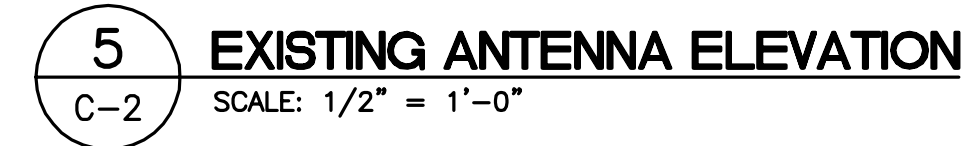
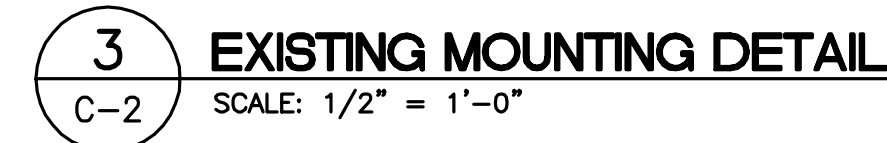
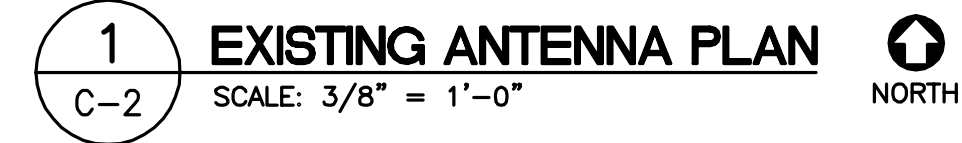
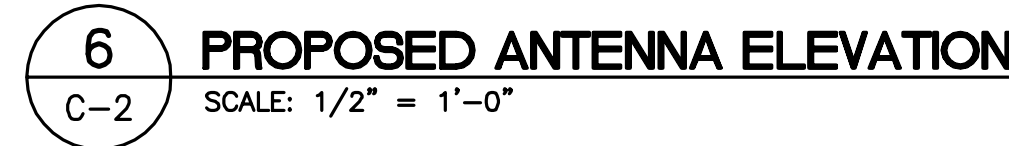
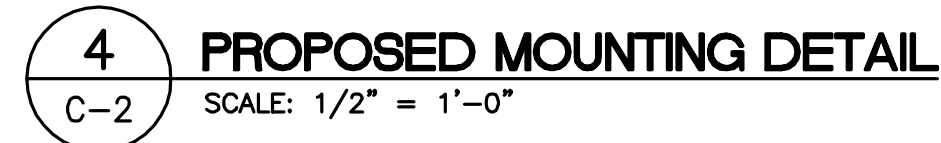
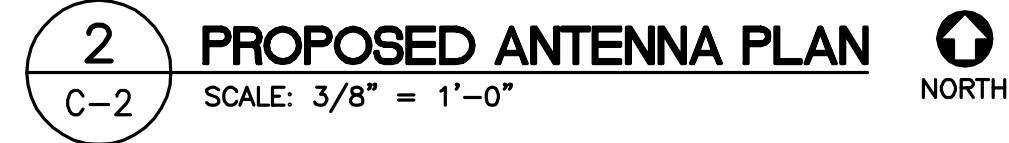
AT&T SUPPLIED
POLE MOUNTING BRACKET

MIN. 2" O.D. TO MAX. 6" O.D. PIPE,
GALVANIZED

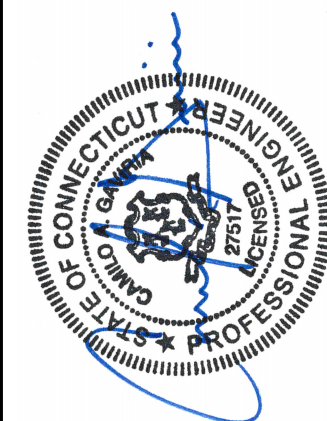
This isometric diagram illustrates the AT&T supplied pole mounting bracket assembly. It features a vertical, cylindrical pole with a minimum outer diameter of 2 inches and a maximum of 6 inches, which is galvanized. An Ericsson RRU (Radio Remote Unit) is mounted on the pole. The RRU is a rectangular unit with a slanted top and a front panel featuring two horizontal slots. The AT&T supplied pole mounting bracket is shown attached to the side of the RRU, securing it to the pole. The bracket is a U-shaped component that fits around the pole and the RRU. Two sets of mounting hardware, including bolts and washers, are shown securing the bracket to the RRU. The entire assembly is shown in a three-dimensional perspective view.

8 TYPICAL RRUS MOUNTING DETAILS

C-2 SCALE: 1 1/2" = 1'-0"



PROFESSIONAL ENGINEER SEAL



AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY
CHESTER WIG HILL ROAD

CT2179 - LTE BWE

CASTLE SITE NO: 8
49 WIG HILL ROAD
CLIFTON CT 06030

DATE: 11/15/16

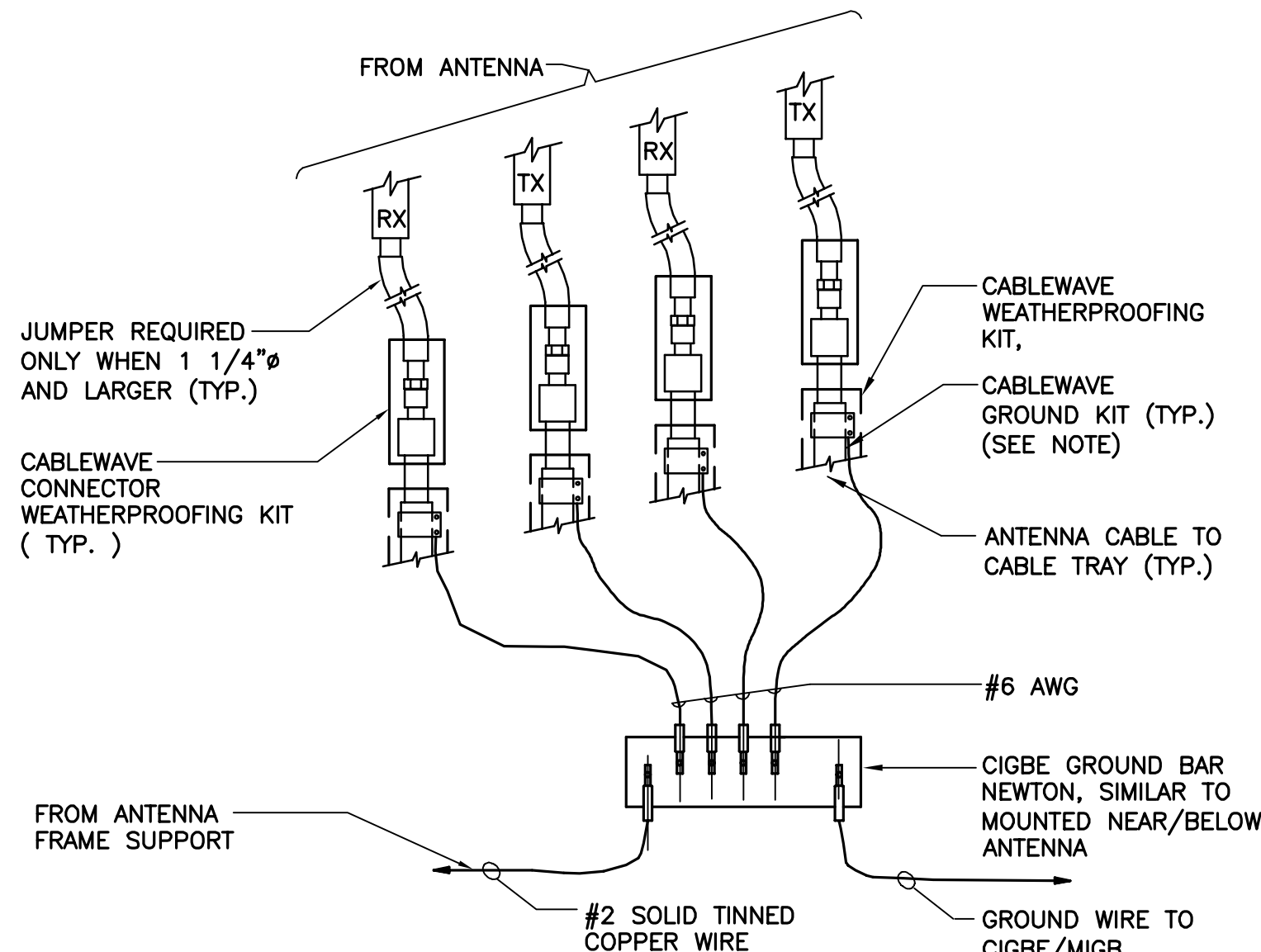
SCALE: AS NOTED

JOB NO. 16071.74

LTE BWE EQUIPMENT DETAILS

C-2

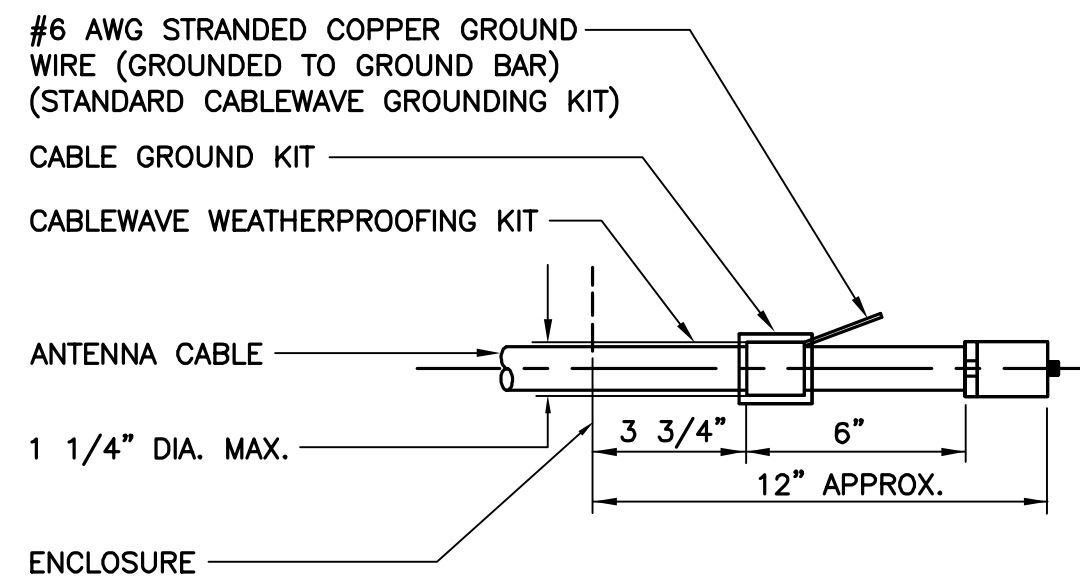
Sheet No. 4 of 5



NOTE:

- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

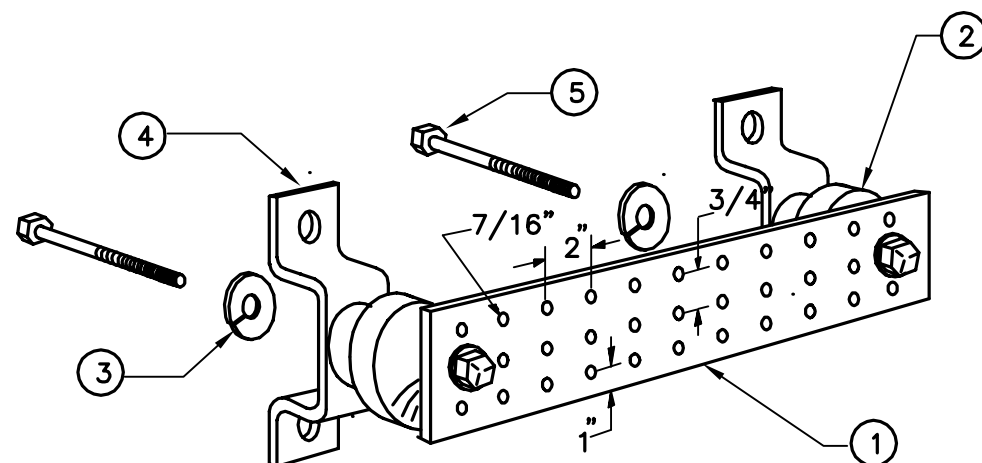
5 CONNECTION OF GROUND WIRES TO GROUND BAR
E-1 NOT TO SCALE



NOTE:

- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

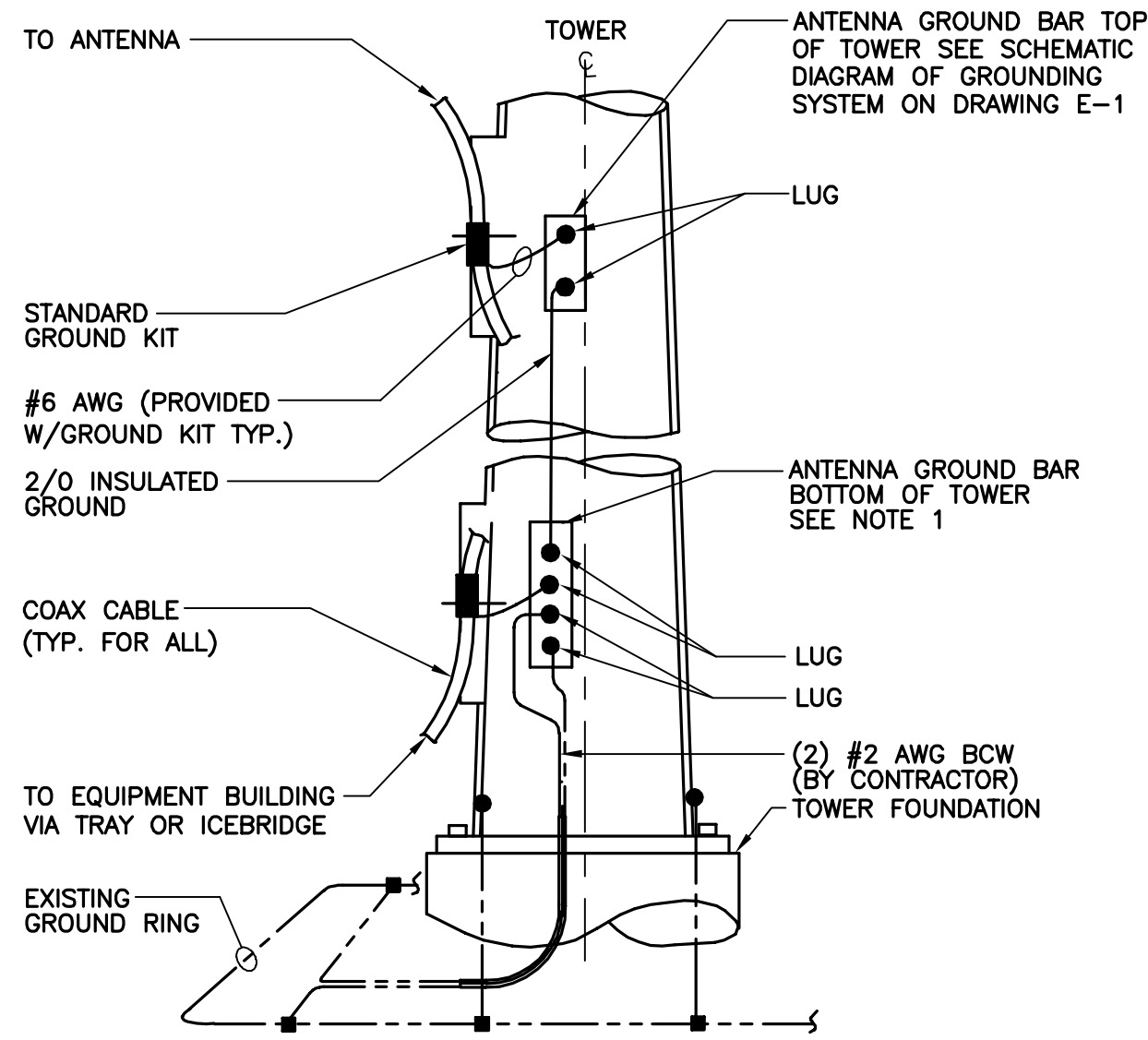
4 ANTENNA CABLE GROUNDING DETAIL
E-1 NOT TO SCALE



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.
- 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.
- STAINLESS STEEL SECURITY SCREWS.

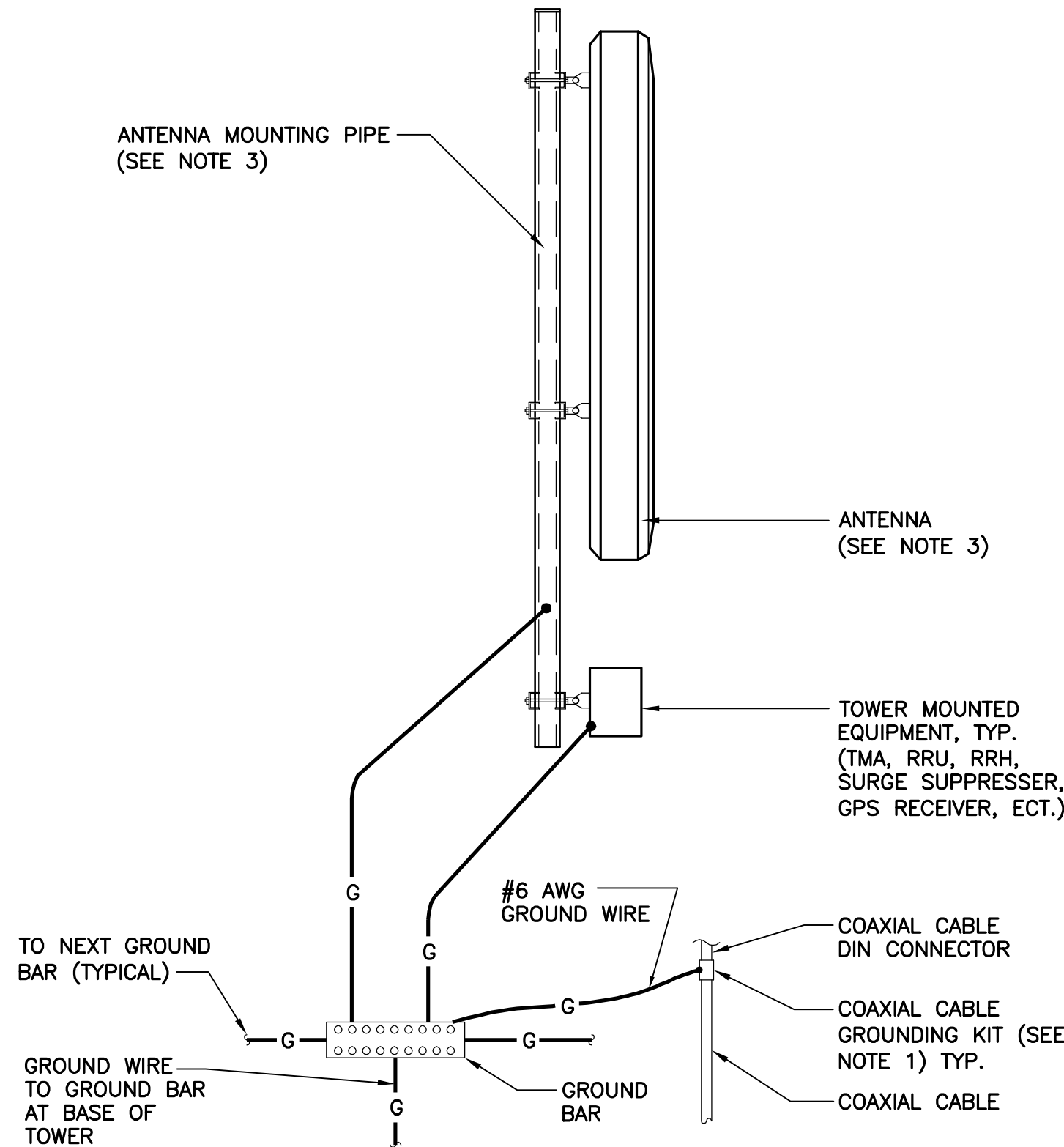
3 GROUND BAR DETAIL
E-1 NOT TO SCALE



NOTES:

- NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
- A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

2 ANTENNA CABLE GROUNDING - TOWER
E-1 NOT TO SCALE



NOTES:

- BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
- BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
- DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 TYPICAL ANTENNA GROUNDING DETAIL
E-1 NOT TO SCALE

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.
- EACH 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).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

- CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:
TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.
THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:
 - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
 - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
 - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
- THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
- CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

PROFESSIONAL ENGINEER SEAL	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
	 CENTEK engineering 203 488-0380 203 488-3387 Fax 652 North Branford Road Branford, CT 06405 www.CentekEng.com
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY CHESTER WIG HILL ROAD CT2179 - LTE BWE CROWN CASTLE SITE NO: 800515 49 WIG HILL ROAD CHESTER, CT 06412	DATE: 11/15/16 SCALE: AS NOTED JOB NO. 16071.74 TYPICAL ELECTRICAL DETAILS AND NOTES E-1 Sheet No. 5 of 5

Date: **January 27, 2017**

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6565

Paul J. Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
jmeinerding@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT2179
Carrier Site Name: CHESTER WIG HILL RD

Crown Castle Designation: **Crown Castle BU Number:** 800515
Crown Castle Site Name: CT CHESTER CAC 800515
Crown Castle JDE Job Number: 410063
Crown Castle Work Order Number: 1333598
Crown Castle Application Number: 369644 Rev. 6

Engineering Firm Designation: **Paul J. Ford and Company Project Number:** 37517-0421.001.7805

Site Data: **49 Wig Hill Road, Chester, Middlesex County, CT**
Latitude 41° 24' 13.93", Longitude -72° 28' 20.82"
150 Foot - Monopole Tower

Dear Sean Dempsey,

Paul J. Ford and Company 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 994065, in accordance with application 369644, revision 6.

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 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II and Exposure Category B were used in this analysis.

We at Paul J. Ford and Company 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.

Respectfully submitted by:



Joey Meinerding, E.I.
Structural Designer



JAN 27 2017

Date: **January 27, 2017**

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6565

Paul J. Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
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jmeinerding@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation:	AT&T Mobility Co-Locate	
	Carrier Site Number:	CT2179
	Carrier Site Name:	CHESTER WIG HILL RD
Crown Castle Designation:	Crown Castle BU Number:	800515
	Crown Castle Site Name:	CT CHESTER CAC 800515
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	Crown Castle Work Order Number:	1333598
	Crown Castle Application Number:	369644 Rev. 6
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Joey Meinerding, E.I.
Structural Designer

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Additional Calculations

1) INTRODUCTION

This tower is a 150 ft. monopole tower designed by Engineered Endeavors, Inc. in August of 1998. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II and Exposure Category B were used in this analysis.

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
132.0	132.0	3	ericsson	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
150.0	152.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
	150.0	1	tower mounts	Platform Mount [LP 602-1]			
148.0	163.0	1	rfs celwave	PD1142-1	--	--	1
	162.0	1	dbspectra	DS4C06F36D-N	1	7/8	2
	159.0	1	decibel	DB636-A	4	7/8	1
		1	rfs celwave	PD1142-1			
	148.0	4	tower mounts	Side Arm Mount [SO 701-1]			
139.0	142.0	3	alcatel lucent	B13 RRH 4X30	2	1-1/4	2
		3	alcatel lucent	B66A RRH4X45			
		6	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		2	rfs celwave	DB-B1-6C-12AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
	139.0	1	tower mounts	Platform Mount [LP 602-1]	3 12	13/64 1-5/8	1
134.0	134.0	3	ericsson	TME-RRUS-11	--	--	3
		3	ericsson	TME-RRUS-11	--	--	1
		1	tower mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
132.0	142.0	1	decibel	DB810KE-YP	1 2 1 12	3/8 7/16 7/8 1-1/4	1
	132.0	1	andrew	DBXNH-6565B-R2M w/ Mount Pipe			
		3	kathrein	782 10253			
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7020.00			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP21401			
		8	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 602-1]			
116.0	120.0	2	gps	GPS_A	2 12	1/2 1-1/4	1
	118.0	12	allgon	7120.16 w/ Mount Pipe			
	116.0	1	tower mounts	Platform Mount [LP 602-1]			
106.0	108.0	3	commscope	ATBT-BOTTOM-24V	6	1-5/8	1
		3	commscope	LNx-6515DS-VTM w/ Mount Pipe			
		3	ems wireless	RR65-18-02DP w/ Mount Pipe			
	106.0	1	tower mounts	Platform Mount [LP 602-1]			
96.0	96.0	3	rfs celwave	APXV18-206517LS w/ Mount Pipe	6	1-1/4	1
		1	tower mounts	Side Arm Mount [SO 104-3]			
75.0	75.0	1	gps	GPS_RESERVED	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			
70.0	70.0	1	kathrein	PR-950	1	WEP65	1
		1	tower mounts	Side Arm Mount [SO 104-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti, 10/27/1998	2301672	CCISITES
4-POST-MODIFICATION INSPECTION	GPD, 2006185.04, 10/05/2006	1285403	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 4123 Rev. 1, 04/25/1999 & TEP, 081974, 07/31/2008 (Mapping)	671930	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 4123, 08/07/1998	671925	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2005078.33, 02/24/2005	1037702	CCISITES

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) For existing modifications: monopole was modified in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 122.92	Pole	TP28.83x21x0.1875	1	-9.72	1072.37	39.1	Pass
L2	122.92 - 84.26	Pole	TP39.51x27.2493x0.375	2	-22.30	3320.64	43.5	Pass
L3	84.26 - 41.55	Pole	TP50.99x37.1855x0.4375	3	-36.47	4873.49	49.3	Pass
L4	41.55 - 0	Pole	TP62x48.1364x0.5	4	-59.08	6834.14	47.9	Pass
							Summary	
						Pole (L3)	49.3	Pass
						Rating =	49.3	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	46.2	Pass
1	Base Plate	0	33.5	Pass
1	Base Foundation Structural Steel	0	61.8	Pass
1	Base Foundation Soil Interaction	0	5.9	Pass

Structure Rating (max from all components) =	61.8%
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Notes:

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 1) Tower is located in Middlesex County, Connecticut.
- 2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- 3) Basic wind speed of 101.00 mph.
- 4) Structure Class II.
- 5) Exposure Category B.
- 6) Topographic Category 1.
- 7) Crest Height 0.00 ft.
- 8) Nominal ice thickness of 0.7500 in.
- 9) Ice thickness is considered to increase with height.
- 10) Ice density of 56.00 pcf.
- 11) A wind speed of 50.00 mph is used in combination with ice.
- 12) Temperature drop of 50.00 °F.
- 13) Deflections calculated using a wind speed of 60.00 mph.
- 14) A non-linear (P-delta) analysis was used.
- 15) Pressures are calculated at each section.
- 16) Stress ratio used in pole design is 1.
- 17) 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	Retention 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.
		Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice
		Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	✓ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-122.92	27.08	4.17	18	21.0000	28.8300	0.1875	0.7500	A572-65 (65 ksi)
L2	122.92-84.26	42.83	5.50	18	27.2493	39.5100	0.3750	1.5000	A572-65 (65 ksi)
L3	84.26-41.55	48.21	6.91	18	37.1855	50.9900	0.4375	1.7500	A572-65 (65 ksi)
L4	41.55-0.00	48.46		18	48.1364	62.0000	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ³	w in	w/t
L1	21.3240	12.3860	677.8263	7.3884	10.6680	63.5383	1356.5444	6.1942	3.3660	17.952
	29.2747	17.0459	1766.7635	10.1681	14.6456	120.6341	3535.8517	8.5246	4.7441	25.302
L2	28.8818	31.9871	2918.6755	9.5404	13.8426	210.8469	5841.1915	15.9966	4.1359	11.029
	40.1195	46.5804	9013.0474	13.8929	20.0711	449.0564	18037.954	23.2946	6.2938	16.783
L3	39.3584	51.0293	8706.1286	13.0456	18.8903	460.8793	17423.712	25.5195	5.7747	13.199
	51.7766	70.1985	22664.719	17.9461	25.9029	874.9870	45359.261	35.1059	8.2042	18.753
L4	50.8863	75.5990	21673.592	16.9109	24.4533	886.3264	43375.703	37.8067	7.5920	15.184
	62.9564	97.6005	46637.979	21.8325	31.4960	1480.7588	93337.325	48.8095	10.0320	20.064

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 150.00- 122.92				1	1	1			
L2 122.92- 84.26				1	1	1			
L3 84.26- 41.55				1	1	1			
L4 41.55-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8")	C	No	Inside Pole	150.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82

HJ5-50(7/8")	C	No	Inside Pole	148.00 - 0.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.54 0.54 0.54
HJ5-50(7/8")	C	No	Inside Pole	148.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.54 0.54 0.54

HJ7-50A(1-5/8")	C	No	Inside Pole	139.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.04 1.04 1.04
CATEGORY 5e(13/64)	C	No	Inside Pole	139.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.02 0.02 0.02
HB114-U6S12-xxx- LI(1-1/4")	C	No	Inside Pole	139.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.70 1.70 1.70

LCF114-50J(1-1/4")	C	No	Inside Pole	132.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.70 0.70 0.70
LCF78-50A(7/8")	C	No	CaAa (Out Of Face)	132.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.11 0.21 0.31	0.34 1.31 2.89
FB-L98B-002-75000(	C	No	Inside Pole	132.00 - 0.00	1	No Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
3/8")						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG122ST- BRDA(7/16")	C	No	Inside Pole	132.00 - 0.00	2	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14

LDF4-50A(1/2")	C	No	Inside Pole	116.00 - 0.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
CR 1480 PE(1-1/4)	C	No	Inside Pole	116.00 - 0.00	12	No Ice	0.00	0.55
						1/2" Ice	0.00	0.55
						1" Ice	0.00	0.55

AVA7-50(1-5/8")	C	No	Inside Pole	106.00 - 0.00	6	No Ice	0.00	0.72
						1/2" Ice	0.00	0.72
						1" Ice	0.00	0.72

LDF6-50A(1-1/4")	C	No	Inside Pole	96.00 - 0.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66

FLC 12-50J(1/2")	C	No	CaAa (Out Of Face)	75.00 - 0.00	1	No Ice	0.06	0.17
						1/2" Ice	0.16	0.87
						1" Ice	0.26	2.17

WEP65(ELLIPTICAL)	C	No	CaAa (Out Of Face)	70.00 - 0.00	1	No Ice	0.20	0.53
						1/2" Ice	0.30	2.08
						1" Ice	0.40	4.23

Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	150.00-122.92	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.990	0.54
L2	122.92-84.26	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.214	1.62
L3	84.26-41.55	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	12.572	2.06
L4	41.55-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	15.623	2.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	150.00-122.92	A	1.728	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.128	0.60
L2	122.92-84.26	A	1.680	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.574	1.86
L3	84.26-41.55	A	1.599	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	47.731	2.71
L4	41.55-0.00	A	1.427	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		C		0.000	0.000	0.000	55.481	2.75

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	150.00-122.92	-0.0508	0.0293	-0.1781	0.1029
L2	122.92-84.26	-0.1344	0.0776	-0.4622	0.2668
L3	84.26-41.55	-0.3585	0.2070	-1.0690	0.6172
L4	41.55-0.00	-0.4457	0.2573	-1.2770	0.7373

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00	0.00	150.00	No Ice	4.04	0.03
			0.00			1/2"	4.50	0.07
			2.00			Ice	4.95	0.11
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00	0.00	150.00	1" Ice		
			0.00			No Ice	4.04	0.03
			2.00			1/2"	4.50	0.07
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00	0.00	150.00	Ice	4.95	0.11
			0.00			1" Ice		
			2.00			No Ice	4.04	0.03
(2) 2.375" OD x 6' Mount Pipe	A	From Leg	4.00	0.00	150.00	1/2"	4.50	0.07
			0.00			Ice	4.95	0.11
			0.00			1" Ice		
(2) 2.375" OD x 6' Mount Pipe	B	From Leg	4.00	0.00	150.00	No Ice	1.43	0.03
			0.00			1/2"	1.92	0.04
			0.00			Ice	2.29	0.05
(2) 2.375" OD x 6' Mount Pipe	C	From Leg	4.00	0.00	150.00	1" Ice		
			0.00			No Ice	1.43	0.03
			0.00			1/2"	1.92	0.04
8-ft Ladder	C	From Leg	2.00	0.00	150.00	Ice	2.29	0.05
			0.00			1" Ice		
			-2.00			No Ice	7.07	0.04
Platform Mount [LP 602-1]	C	None		0.00	150.00	1/2"	9.73	0.07
						Ice	11.19	0.08
						1" Ice		
						No Ice	32.03	1.34
						1/2"	38.71	1.80
						Ice	45.39	2.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
							1" Ice		

PD1142-1	A	From Leg	4.00 0.00 15.00	30.00	148.00	No Ice 1/2" Ice	1.32 3.21 5.12	1.32 3.21 5.12	0.01 0.02 0.05
PD1142-1	C	From Leg	4.00 0.00 11.00	-30.00	148.00	1" Ice No Ice 1/2" Ice	1.32 3.21 5.12	1.32 3.21 5.12	0.01 0.02 0.05
DB636-A	C	From Leg	4.00 0.00 11.00	60.00	148.00	1" Ice No Ice 1/2" Ice	2.78 3.96 5.16	2.78 3.96 5.16	0.03 0.05 0.08
DS4C06F36D-N	B	From Leg	4.00 0.00 14.00	10.00	148.00	1" Ice No Ice 1/2" Ice	5.50 7.37 9.25	5.50 7.37 9.25	0.07 0.11 0.16
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	30.00	148.00	1" Ice No Ice 1/2" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
Side Arm Mount [SO 701-1]	B	From Leg	1.50 0.00 0.00	10.00	148.00	1" Ice No Ice 1/2" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	-30.00	148.00	1" Ice No Ice 1/2" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	60.00	148.00	1" Ice No Ice 1/2" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
							1" Ice		
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 3.00	0.00	139.00	No Ice 1/2" Ice	0.31 0.39 0.47	0.08 0.12 0.17	0.00 0.01 0.01
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 3.00	0.00	139.00	1" Ice No Ice 1/2" Ice	0.31 0.39 0.47	0.08 0.12 0.17	0.00 0.01 0.01
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 3.00	0.00	139.00	1" Ice No Ice 1/2" Ice	0.31 0.39 0.47	0.08 0.12 0.17	0.00 0.01 0.01
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.00	139.00	1" Ice No Ice 1/2" Ice	2.86 3.22 3.59	6.57 7.19 7.84	0.03 0.08 0.13
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.00	139.00	1" Ice No Ice 1/2" Ice	2.86 3.22 3.59	6.57 7.19 7.84	0.03 0.08 0.13
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.00	139.00	1" Ice No Ice 1/2" Ice	2.86 3.22 3.59	6.57 7.19 7.84	0.03 0.08 0.13
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.00	139.00	1" Ice No Ice 1/2" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00	0.00	139.00	1" Ice No Ice 1/2"	8.40 8.96	7.07 8.26	0.07 0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			3.00			Ice	9.49	9.18	0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	0.00	139.00	1" Ice			
			0.00			No Ice	8.40	7.07	0.07
			3.00			1/2"	8.96	8.26	0.14
B13 RRH 4X30	A	From Leg	4.00	0.00	139.00	Ice	9.49	9.18	0.21
			0.00			1" Ice			
			3.00			No Ice	2.06	1.32	0.06
B13 RRH 4X30	B	From Leg	4.00	0.00	139.00	1/2"	2.24	1.48	0.07
			0.00			Ice	2.43	1.64	0.09
			3.00			1" Ice			
B13 RRH 4X30	C	From Leg	4.00	0.00	139.00	No Ice	2.06	1.32	0.06
			0.00			1/2"	2.24	1.48	0.07
			3.00			Ice	2.43	1.64	0.09
B66A RRH4X45	A	From Leg	4.00	0.00	139.00	1" Ice			
			0.00			No Ice	2.58	1.63	0.07
			3.00			1/2"	2.79	1.81	0.09
B66A RRH4X45	B	From Leg	4.00	0.00	139.00	Ice	3.01	2.00	0.11
			0.00			1" Ice			
			3.00			No Ice	2.58	1.63	0.07
B66A RRH4X45	C	From Leg	4.00	0.00	139.00	1/2"	2.79	1.81	0.09
			0.00			Ice	3.01	2.00	0.11
			3.00			1" Ice			
(2) DB-B1-6C-12AB-0Z	A	From Leg	4.00	0.00	139.00	No Ice	3.36	2.19	0.03
			0.00			1/2"	3.60	2.39	0.06
			3.00			Ice	3.84	2.61	0.09
8-ft Ladder	C	From Leg	2.00	0.00	139.00	1" Ice			
			0.00			No Ice	7.07	7.07	0.04
			-2.00			1/2"	9.73	9.73	0.07
Platform Mount [LP 602-1]	C	None		0.00	139.00	Ice	11.19	11.19	0.08
						1" Ice			
						No Ice	32.03	32.03	1.34
*** TME-RRUS-11	A	From Leg	2.00	0.00	134.00	1/2"	38.71	38.71	1.80
			0.00			Ice	45.39	45.39	2.26
			0.00			1" Ice			
TME-RRUS-11	B	From Leg	2.00	0.00	134.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			0.00			Ice	3.21	1.49	0.09
TME-RRUS-11	C	From Leg	2.00	0.00	134.00	1" Ice			
			0.00			No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
Side Arm Mount [SO 102-3]	C	None		0.00	134.00	Ice	3.21	1.49	0.09
						1" Ice			
						No Ice	3.00	3.00	0.08
*** (2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.00	132.00	1/2"	3.48	3.48	0.11
			0.00			Ice	3.96	3.96	0.14
			0.00			1" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.00	132.00	No Ice	5.83	4.70	0.09
						1/2"	6.27	5.51	0.14
						Ice	6.70	6.21	0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1/2"	6.27	5.51	0.14
			0.00			Ice	6.70	6.21	0.21
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.00	132.00	1" Ice	5.83	4.70	0.09
			0.00			No Ice	6.27	5.51	0.14
			0.00			1/2"	6.70	6.21	0.21
			0.00			Ice			
DBXNH-6565B-R2M w/ Mount Pipe	A	From Leg	4.00	0.00	132.00	1" Ice	8.51	7.16	0.08
			0.00			No Ice	9.07	8.36	0.15
			0.00			1/2"	9.61	9.29	0.23
			0.00			Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	0.00	132.00	1" Ice	8.26	6.30	0.07
			0.00			No Ice	8.82	7.48	0.14
			0.00			1/2"	9.35	8.37	0.21
			0.00			Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00	0.00	132.00	1" Ice	8.26	6.30	0.07
			0.00			No Ice	8.82	7.48	0.14
			0.00			1/2"	9.35	8.37	0.21
			0.00			Ice			
DB810KE-YP	A	From Leg	4.00	0.00	132.00	1" Ice	4.37	4.37	0.04
			0.00			No Ice	5.86	5.86	0.07
			10.00			1/2"	7.37	7.37	0.11
			0.00			Ice			
(4) LGP21901	A	From Leg	4.00	0.00	132.00	1" Ice	0.23	0.16	0.01
			0.00			No Ice	0.29	0.21	0.01
			0.00			1/2"	0.36	0.28	0.01
			0.00			Ice			
(2) LGP21901	B	From Leg	4.00	0.00	132.00	1" Ice	0.23	0.16	0.01
			0.00			No Ice	0.29	0.21	0.01
			0.00			1/2"	0.36	0.28	0.01
			0.00			Ice			
(2) LGP21901	C	From Leg	4.00	0.00	132.00	1" Ice	0.23	0.16	0.01
			0.00			No Ice	0.29	0.21	0.01
			0.00			1/2"	0.36	0.28	0.01
			0.00			Ice			
(4) LGP21401	A	From Leg	4.00	0.00	132.00	1" Ice	1.10	0.35	0.01
			0.00			No Ice	1.24	0.44	0.02
			0.00			1/2"	1.38	0.54	0.03
			0.00			Ice			
(4) LGP21401	B	From Leg	4.00	0.00	132.00	1" Ice	1.10	0.35	0.01
			0.00			No Ice	1.24	0.44	0.02
			0.00			1/2"	1.38	0.54	0.03
			0.00			Ice			
(4) LGP21401	C	From Leg	4.00	0.00	132.00	1" Ice	1.10	0.35	0.01
			0.00			No Ice	1.24	0.44	0.02
			0.00			1/2"	1.38	0.54	0.03
			0.00			Ice			
782 10253	A	From Leg	4.00	0.00	132.00	1" Ice	0.11	0.06	0.00
			0.00			No Ice	0.15	0.10	0.00
			0.00			1/2"	0.20	0.14	0.01
			0.00			Ice			
782 10253	B	From Leg	4.00	0.00	132.00	1" Ice	0.11	0.06	0.00
			0.00			No Ice	0.15	0.10	0.00
			0.00			1/2"	0.20	0.14	0.01
			0.00			Ice			
782 10253	C	From Leg	4.00	0.00	132.00	1" Ice	0.11	0.06	0.00
			0.00			No Ice	0.15	0.10	0.00
			0.00			1/2"	0.20	0.14	0.01
			0.00			Ice			
(2) 7020.00	A	From Leg	4.00	0.00	132.00	1" Ice	0.10	0.17	0.00
			0.00			No Ice	0.15	0.24	0.01
			0.00			1/2"	0.20	0.31	0.01
			0.00			Ice			
(2) 7020.00	B	From Leg	4.00	0.00	132.00	1" Ice	0.10	0.17	0.00
			0.00			No Ice	0.15	0.24	0.01
			0.00			1/2"			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			Ice	0.20	0.31	0.01
						1" Ice			
(2) 7020.00	C	From Leg	4.00	0.00	132.00	No Ice	0.10	0.17	0.00
			0.00			1/2"	0.15	0.24	0.01
			0.00			Ice	0.20	0.31	0.01
						1" Ice			
DC6-48-60-18-8F	B	From Leg	4.00	0.00	132.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
						1" Ice			
RRUS 12	A	From Leg	4.00	0.00	132.00	No Ice	3.15	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
						1" Ice			
RRUS 12	B	From Leg	4.00	0.00	132.00	No Ice	3.15	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
						1" Ice			
RRUS 12	C	From Leg	4.00	0.00	132.00	No Ice	3.15	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
						1" Ice			
2.375" OD x 6' Mount Pipe	A	From Leg	4.00	0.00	132.00	No Ice	1.43	1.43	0.03
			0.00			1/2"	1.92	1.92	0.04
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
2.375" OD x 6' Mount Pipe	B	From Leg	4.00	0.00	132.00	No Ice	1.43	1.43	0.03
			0.00			1/2"	1.92	1.92	0.04
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
2.375" OD x 6' Mount Pipe	C	From Leg	4.00	0.00	132.00	No Ice	1.43	1.43	0.03
			0.00			1/2"	1.92	1.92	0.04
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
8-ft Ladder	C	From Leg	2.00	0.00	132.00	No Ice	7.07	7.07	0.04
			0.00			1/2"	9.73	9.73	0.07
			-2.00			Ice	11.19	11.19	0.08
						1" Ice			
Platform Mount [LP 602-1]	C	None		0.00	132.00	No Ice	32.03	32.03	1.34
						1/2"	38.71	38.71	1.80
						Ice	45.39	45.39	2.26
						1" Ice			

(4) 7120.16 w/ Mount Pipe	A	From Leg	4.00	0.00	116.00	No Ice	3.52	5.95	0.03
			0.00			1/2"	3.92	6.66	0.08
			2.00			Ice	4.32	7.33	0.13
						1" Ice			
(4) 7120.16 w/ Mount Pipe	B	From Leg	4.00	0.00	116.00	No Ice	3.52	5.95	0.03
			0.00			1/2"	3.92	6.66	0.08
			2.00			Ice	4.32	7.33	0.13
						1" Ice			
(4) 7120.16 w/ Mount Pipe	C	From Leg	4.00	0.00	116.00	No Ice	3.52	5.95	0.03
			0.00			1/2"	3.92	6.66	0.08
			2.00			Ice	4.32	7.33	0.13
						1" Ice			
(2) GPS_A	A	From Leg	4.00	0.00	116.00	No Ice	0.26	0.26	0.00
			0.00			1/2"	0.32	0.32	0.00
			4.00			Ice	0.39	0.39	0.01
						1" Ice			
Platform Mount [LP 602-1]	C	None		0.00	116.00	No Ice	32.03	32.03	1.34
						1/2"	38.71	38.71	1.80
						Ice	45.39	45.39	2.26
						1" Ice			

RR65-18-02DP w/ Mount	A	From Leg	4.00	0.00	106.00	No Ice	4.59	3.32	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
Pipe			0.00 2.00			1/2" Ice	5.02 5.44	4.09 4.78	0.07 0.12
RR65-18-02DP w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	4.59 5.02 5.44	3.32 4.09 4.78	0.03 0.07 0.12
RR65-18-02DP w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	4.59 5.02 5.44	3.32 4.09 4.78	0.03 0.07 0.12
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
ATBT-BOTTOM-24V	A	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
ATBT-BOTTOM-24V	B	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
ATBT-BOTTOM-24V	C	From Leg	4.00 0.00 2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
(2) 2.375" OD x 6' Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	106.00	1" Ice No Ice 1/2" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.03 0.04 0.05
(2) 2.375" OD x 6' Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	106.00	1" Ice No Ice 1/2" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.03 0.04 0.05
(2) 2.375" OD x 6' Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	106.00	1" Ice No Ice 1/2" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.03 0.04 0.05
8-ft Ladder	C	From Leg	2.00 0.00 -2.00	0.00	106.00	1" Ice No Ice 1/2" Ice	7.07 9.73 11.19	7.07 9.73 11.19	0.04 0.07 0.08
Platform Mount [LP 602-1]	C	None		0.00	106.00	1" Ice No Ice 1/2" Ice	32.03 38.71 45.39	32.03 38.71 45.39	1.34 1.80 2.26
*** APXV18-206517LS w/ Mount Pipe	A	From Leg	2.00 0.00 0.00	0.00	96.00	1" Ice No Ice 1/2" Ice	5.29 5.84 6.36	4.67 5.82 6.69	0.05 0.10 0.15
APXV18-206517LS w/ Mount Pipe	B	From Leg	2.00 0.00 0.00	0.00	96.00	1" Ice No Ice 1/2" Ice	5.29 5.84 6.36	4.67 5.82 6.69	0.05 0.10 0.15
APXV18-206517LS w/ Mount Pipe	C	From Leg	2.00	0.00	96.00	1" Ice No Ice	5.29	4.67	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Mount Pipe			0.00 0.00			1/2" Ice	5.84 6.36	5.82 6.69	0.10 0.15
Side Arm Mount [SO 104-3]	C	None		0.00	96.00	1" Ice No Ice 1/2" Ice 1" Ice	3.30 4.13 4.96	3.30 4.13 4.96	0.29 0.32 0.35
*** GPS_RESERVED	B	From Leg	2.00 0.00 0.00	0.00	75.00	No Ice 1/2" Ice 1" Ice	0.26 0.32 0.39	0.26 0.32 0.39	0.00 0.00 0.01
Side Arm Mount [SO 701-1]	B	From Leg	1.00 0.00 0.00	0.00	75.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
*** Side Arm Mount [SO 104-1]	B	From Leg	0.50 0.00 0.00	0.00	70.00	No Ice 1/2" Ice 1" Ice	1.51 1.82 2.13	0.67 0.93 1.19	0.10 0.14 0.18

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
PR-950	B	Grid	From Leg	1.00 0.00 0.00	0.00		70.00	5.67	No Ice 1/2" Ice 1" Ice	25.22 25.97 26.71
										0.04 0.17 0.31

Tower Pressures - No Ice

$$G_H = 1.100$$

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 150.00-122.92	135.75	1.078	26.75	57.092	A B C	0.000 0.000 0.000	57.092 57.092 57.092	57.092	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.990
L2 122.92-84.26	102.80	0.996	24.67	111.150	A B C	0.000 0.000 0.000	111.150 111.150 111.150	111.150	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 4.214
L3 84.26-41.55	62.46	0.864	21.32	162.182	A B C	0.000 0.000 0.000	162.182 162.182 162.182	162.182	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 12.572
L4 41.55-0.00	20.09	0.7	17.45	197.090	A B C	0.000 0.000 0.000	197.090 197.090 197.090	197.090	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 15.623

Tower Pressure - With Ice

$$G_H = 1.100$$

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 150.00- 122.92	135.75	1.078	6.56	1.7279	64.891	A	0.000	64.891	64.891	100.00	0.000	0.000
						B	0.000	64.891		100.00	0.000	0.000
						C	0.000	64.891		100.00	0.000	4.128
L2 122.92- 84.26	102.80	0.996	6.05	1.6805	122.283	A	0.000	122.283	122.283	100.00	0.000	0.000
						B	0.000	122.283		100.00	0.000	0.000
						C	0.000	122.283		100.00	0.000	17.574
L3 84.26-41.55	62.46	0.864	5.22	1.5988	174.145	A	0.000	174.145	174.145	100.00	0.000	0.000
						B	0.000	174.145		100.00	0.000	0.000
						C	0.000	174.145		100.00	0.000	47.731
L4 41.55-0.00	20.09	0.7	4.28	1.4274	208.162	A	0.000	208.162	208.162	100.00	0.000	0.000
						B	0.000	208.162		100.00	0.000	0.000
						C	0.000	208.162		100.00	0.000	55.481

Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 150.00- 122.92	135.75	1.078	8.45	57.092	A	0.000	57.092	57.092	100.00	0.000	0.000
					B	0.000	57.092		100.00	0.000	0.000
					C	0.000	57.092		100.00	0.000	0.990
L2 122.92- 84.26	102.80	0.996	7.79	111.150	A	0.000	111.150	111.150	100.00	0.000	0.000
					B	0.000	111.150		100.00	0.000	0.000
					C	0.000	111.150		100.00	0.000	4.214
L3 84.26- 41.55	62.46	0.864	6.73	162.182	A	0.000	162.182	162.182	100.00	0.000	0.000
					B	0.000	162.182		100.00	0.000	0.000
					C	0.000	162.182		100.00	0.000	12.572
L4 41.55-0.00	20.09	0.7	5.51	197.090	A	0.000	197.090	197.090	100.00	0.000	0.000
					B	0.000	197.090		100.00	0.000	0.000
					C	0.000	197.090		100.00	0.000	15.623

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice

Comb. No.	Description
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 122.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.54	0.68	1.21
			Max. Mx	20	-9.73	229.83	0.08
			Max. My	2	-9.72	0.10	230.69
			Max. Vy	20	-17.02	229.83	0.08
			Max. Vx	14	17.08	0.20	-230.46
			Max. Torque	13			-2.25
L2	122.92 - 84.26	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.49	1.28	1.08
			Max. Mx	20	-22.30	1092.09	-0.10
			Max. My	2	-22.30	0.21	1095.04
			Max. Vy	20	-28.32	1092.09	-0.10
			Max. Vx	14	28.38	0.45	-1094.96
			Max. Torque	13			-3.47
L3	84.26 - 41.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.49	0.29	-0.65
			Max. Mx	8	-36.47	-2357.09	-1.36
			Max. My	14	-36.47	-1.76	-2360.29
			Max. Vy	20	-32.89	2356.97	0.06
			Max. Vx	14	32.81	-1.76	-2360.29
			Max. Torque	12			-3.68
L4	41.55 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.77	2.05	-1.67
			Max. Mx	20	-59.08	4057.95	1.36
			Max. My	14	-59.08	-5.92	-4057.44
			Max. Vy	20	-37.26	4057.95	1.36

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	37.18	-5.92	-4057.44
			Max. Torque	13			-4.62

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	97.77	-0.00	-0.00
	Max. H _x	21	44.32	37.23	0.03
	Max. H _z	3	44.32	0.06	37.14
	Max. M _x	2	4055.83	0.06	37.14
	Max. M _z	8	4057.84	-37.23	-0.06
	Max. Torsion	25	4.54	18.64	32.28
	Min. Vert	21	44.32	37.23	0.03
	Min. H _x	9	44.32	-37.23	-0.06
	Min. H _z	15	44.32	-0.09	-37.16
	Min. M _x	14	-4057.44	-0.09	-37.16
	Min. M _z	20	-4057.95	37.23	0.03
	Min. Torsion	13	-4.62	-18.67	-32.27

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	49.25	-0.00	0.00	0.31	0.04	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	59.09	-0.06	-37.14	-4055.83	3.97	-3.82
0.9 Dead+1.6 Wind 0 deg - No Ice	44.32	-0.06	-37.14	-4027.38	3.94	-3.82
1.2 Dead+1.6 Wind 30 deg - No Ice	59.09	18.53	-32.04	-3503.74	-2022.99	-2.18
0.9 Dead+1.6 Wind 30 deg - No Ice	44.32	18.53	-32.04	-3479.11	-2008.74	-2.17
1.2 Dead+1.6 Wind 60 deg - No Ice	59.09	32.17	-18.50	-2023.04	-3509.31	0.60
0.9 Dead+1.6 Wind 60 deg - No Ice	44.32	32.17	-18.50	-2008.86	-3484.61	0.60
1.2 Dead+1.6 Wind 90 deg - No Ice	59.09	37.23	0.06	4.30	-4057.84	3.07
0.9 Dead+1.6 Wind 90 deg - No Ice	44.32	37.23	0.06	4.19	-4029.40	3.07
1.2 Dead+1.6 Wind 120 deg - No Ice	59.09	32.31	18.68	2036.29	-3519.05	4.44
0.9 Dead+1.6 Wind 120 deg - No Ice	44.32	32.31	18.68	2021.88	-3494.32	4.45
1.2 Dead+1.6 Wind 150 deg - No Ice	59.09	18.67	32.27	3520.13	-2032.46	4.62
0.9 Dead+1.6 Wind 150 deg - No Ice	44.32	18.67	32.27	3495.25	-2018.18	4.62
1.2 Dead+1.6 Wind 180 deg - No Ice	59.09	0.09	37.16	4057.44	-5.92	3.84
0.9 Dead+1.6 Wind 180 deg - No Ice	44.32	0.09	37.16	4028.79	-5.91	3.84
1.2 Dead+1.6 Wind 210 deg - No Ice	59.09	-18.44	32.09	3508.06	2016.93	2.17
0.9 Dead+1.6 Wind 210 deg - No Ice	44.32	-18.44	32.09	3483.23	2002.69	2.16
1.2 Dead+1.6 Wind 240 deg - No Ice	59.09	-32.15	18.52	2025.13	3507.66	-0.62

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.6 Wind 240 deg - No Ice	44.32	-32.15	18.52	2010.75	3482.93	-0.63
1.2 Dead+1.6 Wind 270 deg - No Ice	59.09	-37.23	-0.03	-1.36	4057.95	-3.15
0.9 Dead+1.6 Wind 270 deg - No Ice	44.32	-37.23	-0.03	-1.45	4029.49	-3.16
1.2 Dead+1.6 Wind 300 deg - No Ice	59.09	-32.26	-18.66	-2033.51	3515.60	-4.44
0.9 Dead+1.6 Wind 300 deg - No Ice	44.32	-32.26	-18.66	-2019.29	3490.84	-4.44
1.2 Dead+1.6 Wind 330 deg - No Ice	59.09	-18.64	-32.28	-3520.49	2030.64	-4.54
0.9 Dead+1.6 Wind 330 deg - No Ice	44.32	-18.64	-32.28	-3495.81	2016.35	-4.54
1.2 Dead+1.0 Ice+1.0 Temp	97.77	0.00	0.00	1.67	2.05	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	97.77	-0.21	-11.04	-1212.87	17.38	-2.08
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	97.77	5.46	-9.46	-1043.14	-600.53	-1.12
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	97.77	9.51	-5.47	-601.76	-1045.05	0.03
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	97.77	11.00	0.00	1.87	-1208.55	1.14
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	97.77	9.55	5.52	608.73	-1048.12	1.81
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	97.77	5.50	9.53	1051.27	-603.36	1.98
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	97.77	0.02	10.97	1211.33	0.55	1.77
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	97.77	-5.46	9.47	1046.63	604.63	1.12
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	97.77	-9.66	5.34	595.77	1060.42	0.28
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	97.77	-11.08	-0.13	-7.55	1218.45	-0.81
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	97.77	-9.62	-5.56	-608.35	1057.58	-1.80
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	97.77	-5.65	-9.54	-1048.23	618.29	-2.32
Dead+Wind 0 deg - Service	49.25	-0.01	-7.33	-796.80	0.82	-0.36
Dead+Wind 30 deg - Service	49.25	3.66	-6.32	-688.28	-397.51	-0.20
Dead+Wind 60 deg - Service	49.25	6.35	-3.65	-397.31	-689.59	0.12
Dead+Wind 90 deg - Service	49.25	7.35	0.01	1.09	-797.45	0.38
Dead+Wind 120 deg - Service	49.25	6.38	3.69	400.40	-691.51	0.48
Dead+Wind 150 deg - Service	49.25	3.68	6.37	691.99	-399.37	0.45
Dead+Wind 180 deg - Service	49.25	0.02	7.33	797.60	-1.13	0.36
Dead+Wind 210 deg - Service	49.25	-3.64	6.33	689.61	396.38	0.20
Dead+Wind 240 deg - Service	49.25	-6.34	3.65	398.20	689.33	-0.12
Dead+Wind 270 deg - Service	49.25	-7.35	-0.01	-0.03	797.53	-0.39
Dead+Wind 300 deg - Service	49.25	-6.37	-3.68	-399.37	690.89	-0.48
Dead+Wind 330 deg - Service	49.25	-3.68	-6.37	-691.58	399.08	-0.44

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-49.25	0.00	0.00	49.25	-0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
2	-0.06	-59.09	-37.14	0.06	59.09	37.14	0.001%
3	-0.06	-44.32	-37.14	0.06	44.32	37.14	0.001%
4	18.53	-59.09	-32.04	-18.53	59.09	32.04	0.000%
5	18.53	-44.32	-32.04	-18.53	44.32	32.04	0.000%
6	32.17	-59.09	-18.50	-32.17	59.09	18.50	0.000%
7	32.17	-44.32	-18.50	-32.17	44.32	18.50	0.000%
8	37.24	-59.09	0.06	-37.23	59.09	-0.06	0.003%
9	37.24	-44.32	0.06	-37.23	44.32	-0.06	0.003%
10	32.31	-59.09	18.68	-32.31	59.09	-18.68	0.000%
11	32.31	-44.32	18.68	-32.31	44.32	-18.68	0.000%
12	18.67	-59.09	32.27	-18.67	59.09	-32.27	0.000%
13	18.67	-44.32	32.27	-18.67	44.32	-32.27	0.000%
14	0.09	-59.09	37.16	-0.09	59.09	-37.16	0.001%
15	0.09	-44.32	37.16	-0.09	44.32	-37.16	0.001%
16	-18.44	-59.09	32.09	18.44	59.09	-32.09	0.000%
17	-18.44	-44.32	32.09	18.44	44.32	-32.09	0.000%
18	-32.15	-59.09	18.52	32.15	59.09	-18.52	0.000%
19	-32.15	-44.32	18.52	32.15	44.32	-18.52	0.000%
20	-37.24	-59.09	-0.03	37.23	59.09	0.03	0.003%
21	-37.24	-44.32	-0.03	37.23	44.32	0.03	0.003%
22	-32.26	-59.09	-18.66	32.26	59.09	18.66	0.000%
23	-32.26	-44.32	-18.66	32.26	44.32	18.66	0.000%
24	-18.64	-59.09	-32.28	18.64	59.09	32.28	0.000%
25	-18.64	-44.32	-32.28	18.64	44.32	32.28	0.000%
26	0.00	-97.77	0.00	-0.00	97.77	-0.00	0.000%
27	-0.21	-97.77	-11.04	0.21	97.77	11.04	0.001%
28	5.46	-97.77	-9.46	-5.46	97.77	9.46	0.001%
29	9.51	-97.77	-5.47	-9.51	97.77	5.47	0.001%
30	11.00	-97.77	0.00	-11.00	97.77	-0.00	0.001%
31	9.55	-97.77	5.52	-9.55	97.77	-5.52	0.001%
32	5.50	-97.77	9.53	-5.50	97.77	-9.53	0.001%
33	0.02	-97.77	10.97	-0.02	97.77	-10.97	0.001%
34	-5.46	-97.77	9.47	5.46	97.77	-9.47	0.001%
35	-9.66	-97.77	5.34	9.66	97.77	-5.34	0.001%
36	-11.08	-97.77	-0.13	11.08	97.77	0.13	0.001%
37	-9.62	-97.77	-5.56	9.62	97.77	5.56	0.001%
38	-5.65	-97.77	-9.54	5.65	97.77	9.54	0.001%
39	-0.01	-49.25	-7.33	0.01	49.25	7.33	0.002%
40	3.66	-49.25	-6.32	-3.66	49.25	6.32	0.002%
41	6.35	-49.25	-3.65	-6.35	49.25	3.65	0.002%
42	7.35	-49.25	0.01	-7.35	49.25	-0.01	0.002%
43	6.38	-49.25	3.69	-6.38	49.25	-3.69	0.002%
44	3.68	-49.25	6.37	-3.68	49.25	-6.37	0.002%
45	0.02	-49.25	7.33	-0.02	49.25	-7.33	0.002%
46	-3.64	-49.25	6.33	3.64	49.25	-6.33	0.002%
47	-6.34	-49.25	3.66	6.34	49.25	-3.65	0.002%
48	-7.35	-49.25	-0.01	7.35	49.25	0.01	0.002%
49	-6.37	-49.25	-3.68	6.37	49.25	3.68	0.002%
50	-3.68	-49.25	-6.37	3.68	49.25	6.37	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00000001	0.00006885
3	Yes	13	0.00000001	0.00005648
4	Yes	15	0.00000001	0.00005952
5	Yes	14	0.00000001	0.00013899
6	Yes	15	0.00000001	0.00006196
7	Yes	14	0.00000001	0.00014480
8	Yes	12	0.00005571	0.00012095
9	Yes	12	0.00003843	0.00010233
10	Yes	15	0.00000001	0.00006593
11	Yes	15	0.00000001	0.00005059

12	Yes	15	0.00000001	0.00005825
13	Yes	14	0.00000001	0.00013583
14	Yes	13	0.00000001	0.00006756
15	Yes	13	0.00000001	0.00005545
16	Yes	15	0.00000001	0.00006441
17	Yes	15	0.00000001	0.00004941
18	Yes	15	0.00000001	0.00006166
19	Yes	14	0.00000001	0.00014407
20	Yes	12	0.00005571	0.00012046
21	Yes	12	0.00003843	0.00010194
22	Yes	15	0.00000001	0.00005869
23	Yes	14	0.00000001	0.00013689
24	Yes	15	0.00000001	0.00006668
25	Yes	15	0.00000001	0.00005118
26	Yes	6	0.00000001	0.00000001
27	Yes	13	0.00000001	0.00009009
28	Yes	13	0.00000001	0.00010914
29	Yes	13	0.00000001	0.00011054
30	Yes	13	0.00000001	0.00008831
31	Yes	13	0.00000001	0.00011232
32	Yes	13	0.00000001	0.00010923
33	Yes	13	0.00000001	0.00008952
34	Yes	13	0.00000001	0.00011220
35	Yes	13	0.00000001	0.00011002
36	Yes	13	0.00000001	0.00008877
37	Yes	13	0.00000001	0.00011032
38	Yes	13	0.00000001	0.00011456
39	Yes	11	0.00000001	0.00006017
40	Yes	11	0.00000001	0.00004668
41	Yes	11	0.00000001	0.00004923
42	Yes	11	0.00000001	0.00005849
43	Yes	11	0.00000001	0.00005573
44	Yes	11	0.00000001	0.00004655
45	Yes	11	0.00000001	0.00006020
46	Yes	11	0.00000001	0.00005334
47	Yes	11	0.00000001	0.00004871
48	Yes	11	0.00000001	0.00005856
49	Yes	11	0.00000001	0.00004645
50	Yes	11	0.00000001	0.00005727

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 122.92	13.51	45	0.84	0.00
L2	127.09 - 84.26	9.63	44	0.75	0.00
L3	89.76 - 41.55	4.61	44	0.51	0.00
L4	48.46 - 0	1.28	44	0.25	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	(2) DB980H90E-M w/ Mount Pipe	45	13.51	0.84	0.00	41967
148.00	PD1142-1	44	13.16	0.83	0.00	41967
139.00	(2) FD9R6004/2C-3L	44	11.61	0.80	0.00	19076
134.00	TME-RRUS-11	44	10.76	0.78	0.00	13114
132.00	(2) 7770.00 w/ Mount Pipe	44	10.43	0.77	0.00	11657
116.00	(4) 7120.16 w/ Mount Pipe	44	7.95	0.69	0.00	9074
106.00	RR65-18-02DP w/ Mount Pipe	44	6.57	0.62	0.00	8999
96.00	APXV18-206517LS w/ Mount Pipe	44	5.32	0.56	0.00	8920

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
75.00	GPS_RESERVED	44	3.15	0.41	0.00	8539
70.00	PR-950	44	2.72	0.38	0.00	8434

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 122.92	68.74	14	4.27	0.03
L2	127.09 - 84.26	49.03	12	3.80	0.01
L3	89.76 - 41.55	23.48	12	2.61	0.01
L4	48.46 - 0	6.52	10	1.25	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	(2) DB980H90E-M w/ Mount Pipe	14	68.74	4.27	0.03	8354
148.00	PD1142-1	14	66.97	4.24	0.02	8354
139.00	(2) FD9R6004/2C-3L	12	59.06	4.06	0.02	3796
134.00	TME-RRUS-11	12	54.77	3.96	0.02	2609
132.00	(2) 7770.00 w/ Mount Pipe	12	53.08	3.92	0.01	2319
116.00	(4) 7120.16 w/ Mount Pipe	12	40.46	3.49	0.01	1799
106.00	RR65-18-02DP w/ Mount Pipe	12	33.44	3.17	0.01	1779
96.00	APXV18-206517LS w/ Mount Pipe	12	27.09	2.83	0.01	1760
75.00	GPS_RESERVED	12	16.01	2.10	0.00	1681
70.00	PR-950	12	13.82	1.93	0.00	1659

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 122.92 (1)	TP28.83x21x0.1875	27.08	0.00	0.0	16.328 3	-9.72	1072.37	0.009
L2	122.92 - 84.26 (2)	TP39.51x27.2493x0.375	42.83	0.00	0.0	44.706 4	-22.30	3320.64	0.007
L3	84.26 - 41.55 (3)	TP50.99x37.1855x0.4375	48.21	0.00	0.0	67.450 9	-36.47	4873.49	0.007
L4	41.55 - 0 (4)	TP62x48.1364x0.5	48.46	0.00	0.0	97.600 5	-59.08	6834.14	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 122.92 (1)	TP28.83x21x0.1875	230.69	605.63	0.381	0.00	605.63	0.000
L2	122.92 - 84.26 (2)	TP39.51x27.2493x0.375	1095.03	2559.36	0.428	0.00	2559.36	0.000
L3	84.26 - 41.55 (3)	TP50.99x37.1855x0.4375	2361.68	4862.29	0.486	0.00	4862.29	0.000
L4	41.55 - 0 (4)	TP62x48.1364x0.5	4065.73	8640.42	0.471	0.00	8640.42	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 122.92 (1)	TP28.83x21x0.1875	17.08	536.18	0.032	2.25	1212.75	0.002
L2	122.92 - 84.26 (2)	TP39.51x27.2493x0.375	28.38	1660.32	0.017	3.34	5124.98	0.001
L3	84.26 - 41.55 (3)	TP50.99x37.1855x0.4375	32.94	2436.74	0.014	3.35	9736.50	0.000
L4	41.55 - 0 (4)	TP62x48.1364x0.5	37.36	3417.07	0.011	4.44	17302.00	0.000

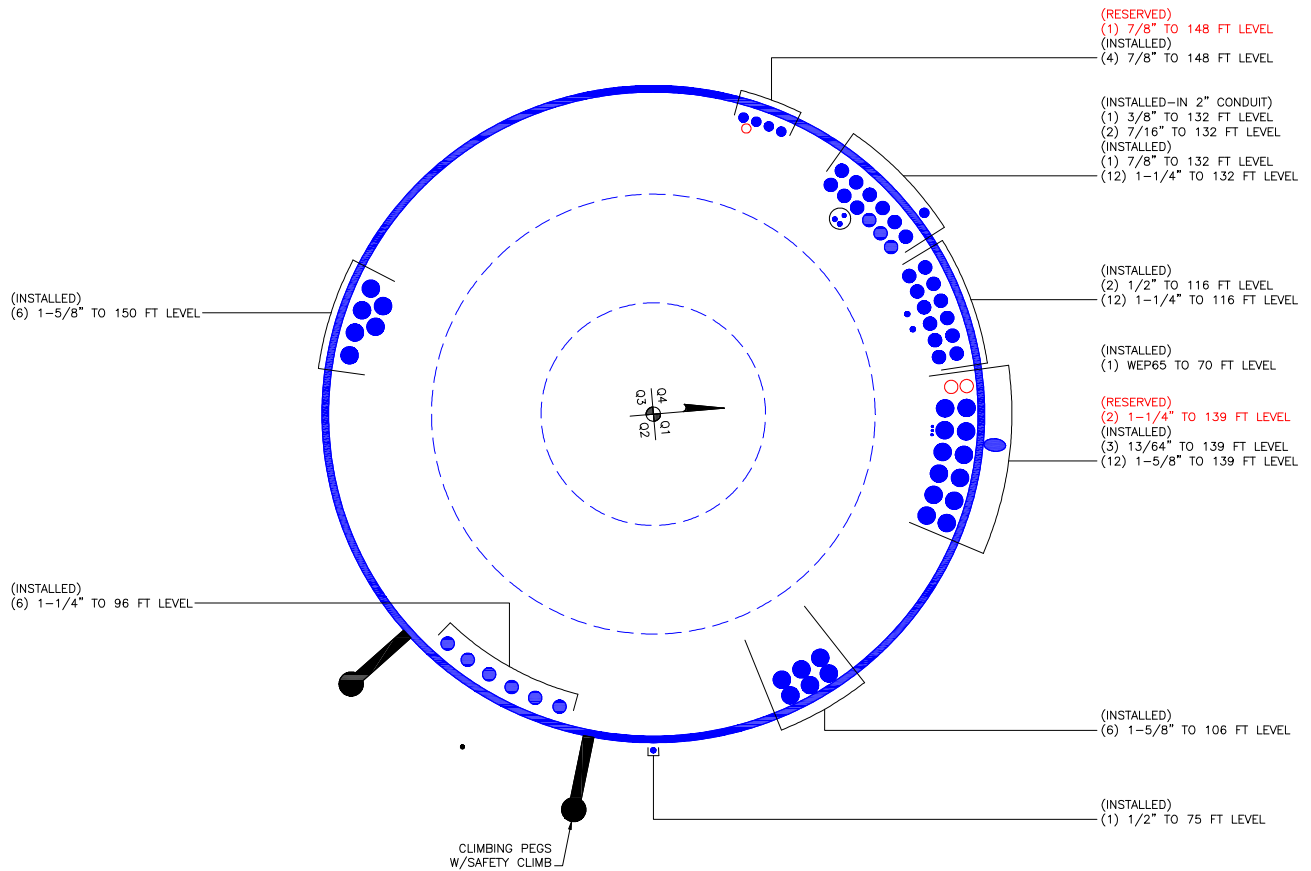
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 122.92 (1)	0.009	0.381	0.000	0.032	0.002	0.391	1.000	4.8.2 ✓
L2	122.92 - 84.26 (2)	0.007	0.428	0.000	0.017	0.001	0.435	1.000	4.8.2 ✓
L3	84.26 - 41.55 (3)	0.007	0.486	0.000	0.014	0.000	0.493	1.000	4.8.2 ✓
L4	41.55 - 0 (4)	0.009	0.471	0.000	0.011	0.000	0.479	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 122.92	Pole	TP28.83x21x0.1875	1	-9.72	1072.37	39.1	Pass
L2	122.92 - 84.26	Pole	TP39.51x27.2493x0.375	2	-22.30	3320.64	43.5	Pass
L3	84.26 - 41.55	Pole	TP50.99x37.1855x0.4375	3	-36.47	4873.49	49.3	Pass
L4	41.55 - 0	Pole	TP62x48.1364x0.5	4	-59.08	6834.14	47.9	Pass
							Summary	
							Pole (L3)	49.3
							RATING =	49.3 Pass

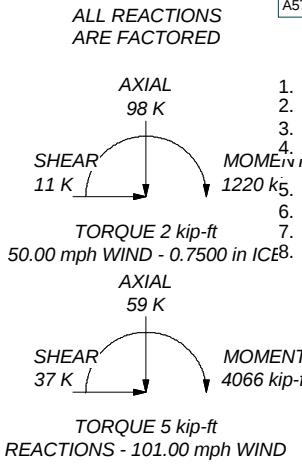
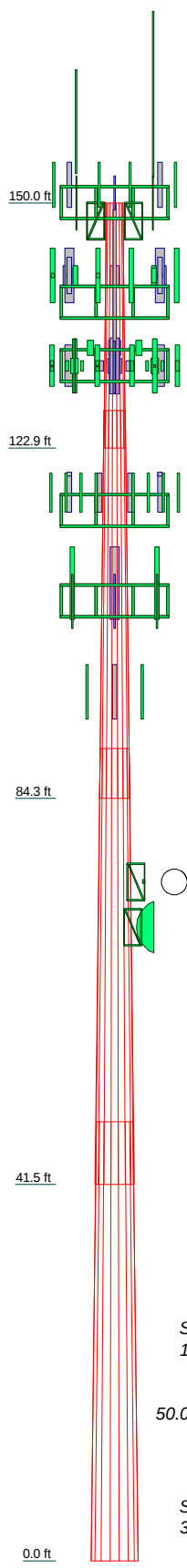
APPENDIX B
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	
Length (ft)	27.08	42.83	48.21	48.46	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.3750	0.4375	0.5000	
Socket Length (ft)	4.17	5.50	6.91		
Top Dia (in)	21.0000	27.2493	37.1855	48.1364	
Bot Dia (in)	28.8300	39.5100	50.9900	62.0000	
Grade	A572-65				
Weight (K)	1.4	5.7	9.9	14.3	31.3



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980H90E-M w/ Mount Pipe	150	DB810KE-YP	132
(2) DB980H90E-M w/ Mount Pipe	150	(4) LGP21901	132
(2) DB980H90E-M w/ Mount Pipe	150	(2) LGP21901	132
(2) 2.375" OD x 6" Mount Pipe	150	(2) LGP21901	132
(2) 2.375" OD x 6" Mount Pipe	150	(4) LGP21401	132
(2) 2.375" OD x 6" Mount Pipe	150	(4) LGP21401	132
8-ft Ladder	150	(4) LGP21401	132
Platform Mount [LP 602-1]	150	782 10253	132
PD1142-1	148	782 10253	132
PD1142-1	148	782 10253	132
DB636-A	148	(2) 7020.00	132
DS4C06F36D-N	148	(2) 7020.00	132
Side Arm Mount [SO 701-1]	148	(2) 7020.00	132
Side Arm Mount [SO 701-1]	148	DC6-48-60-18-8F	132
Side Arm Mount [SO 701-1]	148	RRUS 12	132
Side Arm Mount [SO 701-1]	148	RRUS 12	132
(2) FD9R6004/2C-3L	139	RRUS 12	132
(2) FD9R6004/2C-3L	139	2.375" OD x 6" Mount Pipe	132
(2) FD9R6004/2C-3L	139	2.375" OD x 6" Mount Pipe	132
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	139	2.375" OD x 6" Mount Pipe	132
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	139	8-ft Ladder	132
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	139	Platform Mount [LP 602-1]	132
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	139	(4) 7120.16 w/ Mount Pipe	116
(2) SBNHH-1D65B w/ Mount Pipe	139	(4) 7120.16 w/ Mount Pipe	116
(2) SBNHH-1D65B w/ Mount Pipe	139	(4) 7120.16 w/ Mount Pipe	116
(2) SBNHH-1D65B w/ Mount Pipe	139	(2) GPS_A	116
B13 RRH 4X30	139	Platform Mount [LP 602-1]	116
B13 RRH 4X30	139	RR65-18-02DP w/ Mount Pipe	106
B13 RRH 4X30	139	RR65-18-02DP w/ Mount Pipe	106
B66A RRH4X45	139	RR65-18-02DP w/ Mount Pipe	106
B66A RRH4X45	139	LNx-6515DS-VTM w/ Mount Pipe	106
B66A RRH4X45	139	LNx-6515DS-VTM w/ Mount Pipe	106
(2) DB-B1-6C-12AB-0Z	139	LNx-6515DS-VTM w/ Mount Pipe	106
8-ft Ladder	139	ATBT-BOTTOM-24V	106
Platform Mount [LP 602-1]	139	ATBT-BOTTOM-24V	106
TME-RRUS-11	134	ATBT-BOTTOM-24V	106
TME-RRUS-11	134	(2) 2.375" OD x 6" Mount Pipe	106
TME-RRUS-11	134	(2) 2.375" OD x 6" Mount Pipe	106
Side Arm Mount [SO 102-3]	134	(2) 2.375" OD x 6" Mount Pipe	106
(2) 7770.00 w/ Mount Pipe	132	8-ft Ladder	106
(2) 7770.00 w/ Mount Pipe	132	Platform Mount [LP 602-1]	106
(2) 7770.00 w/ Mount Pipe	132	APXV18-206517LS w/ Mount Pipe	96
DBXNH-6565B-R2M w/ Mount Pipe	132	APXV18-206517LS w/ Mount Pipe	96
AM-X-CD-16-65-00T-RET w/ Mount Pipe	132	APXV18-206517LS w/ Mount Pipe	96
AM-X-CD-16-65-00T-RET w/ Mount Pipe	132	Side Arm Mount [SO 104-3]	96
		GPS_RESERVED	75
		Side Arm Mount [SO 701-1]	75
		Side Arm Mount [SO 104-1]	70
		PR-950	70

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
 2. Tower designed for Exposure B to the TIA-222-G Standard.
 3. Tower designed for a 101.00 mph basic wind in accordance with the TIA-222-G Standard.
 4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
 5. Deflections are based upon a 60.00 mph wind.
 6. Tower Structure Class II.
 7. Topographic Category 1 with Crest Height of 0.00 ft
- TOWER RATING: 49.3%

Paul J. Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: 150 Ft. Monopole / CT Chester CAC
Project: PJF 37517-0421 / BU 800515

Client: Crown Castle	Drawn by: Joey Meinerting	App'd:
Code: TIA-222-G	Date: 01/27/17	Scale: NTS
Path:		Dwg No. E-1

C:\TOWER\37517-0421-800515-CT Chester CAC\80515\37517-0421-001-7895_SA_133399037517-0421-001-7895.dwg

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#:	800515
Site Name:	CT Chester CAC
App #:	
Pole Manufacturer:	Other

Anchor Rod Data

Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	71	in

Plate Data

Diam:	77	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.20	in

Stiffener Data (Welding at both sides)

Config:	1	*
Weld Type:	Groove	
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:	0.5	in
Width:	6	in
Height:	16	in
Thick:	1	in
Notch:	1	in
Grade:	65	ksi
Weld str.:	70	ksi

Pole Data

Diam:	62	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions

Mu:	4066	ft-kips
Axial, Pu:	59	kips
Shear, Vu:	37	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Results

Max Rod ($C_u + V_u/\eta$): 120.1 Kips
 Allowable Axial, $\phi^*F_u^*A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 46.2% **Pass**

Stiffened

AISC LRFD
ϕ^*T_n

Base Plate Results

Base Plate Stress: 18.1 ksi
 Allowable Plate Stress: 54.0 ksi
 Base Plate Stress Ratio: 33.5% **Pass**

Flexural Check

Stiffened

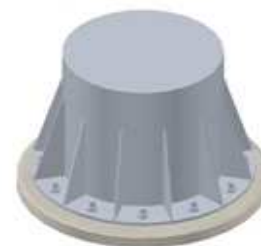
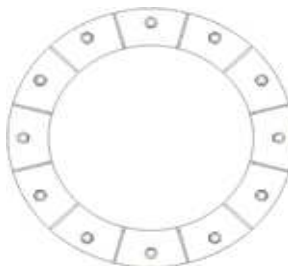
AISC LRFD
ϕ^*F_y
Y.L. Length:
N/A, Roark

Stiffener Results

Horizontal Weld : 27.1% **Pass**
 Vertical Weld: 25.5% **Pass**
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: 7.0% **Pass**
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: 26.6% **Pass**
 Plate Comp. (AISC Bracket): 28.3% **Pass**

Pole Results

Pole Punching Shear Check: 8.5% **Pass**



* 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

Factored Foundation Loads:

Factored Axial Load (+Comp, -Ten) =
 Factored Horiz. Load at Top of Pier =
 Factored OTM at Top of Pier =

LC1	LC2
59	44.25
37	37
4066	4066

LRFD Resistance and Load Factors:

Soil Bearing = **0.75**
 Soil Weight = **0.75**
 Concrete Weight = **0.75**

Dead Load Factors
1.2
0.9
1.2
0.9

Soil Properties:

Depth to Water Table =
 Uplift Cone from

99 ft
Top of footing

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
10.5	165	0	30	20	10.50

Dimensions:

Pier Shape =
 Pier Width =
 Pier Height above Grade =
 Depth to Bottom of Footing =
 Footing Thickness =
 Footing Width, B =
 Footing Length, L =

Round
7.5 ft Diameter
0.5 ft
5.17 ft
3 ft
28 ft
28 ft

Concrete:

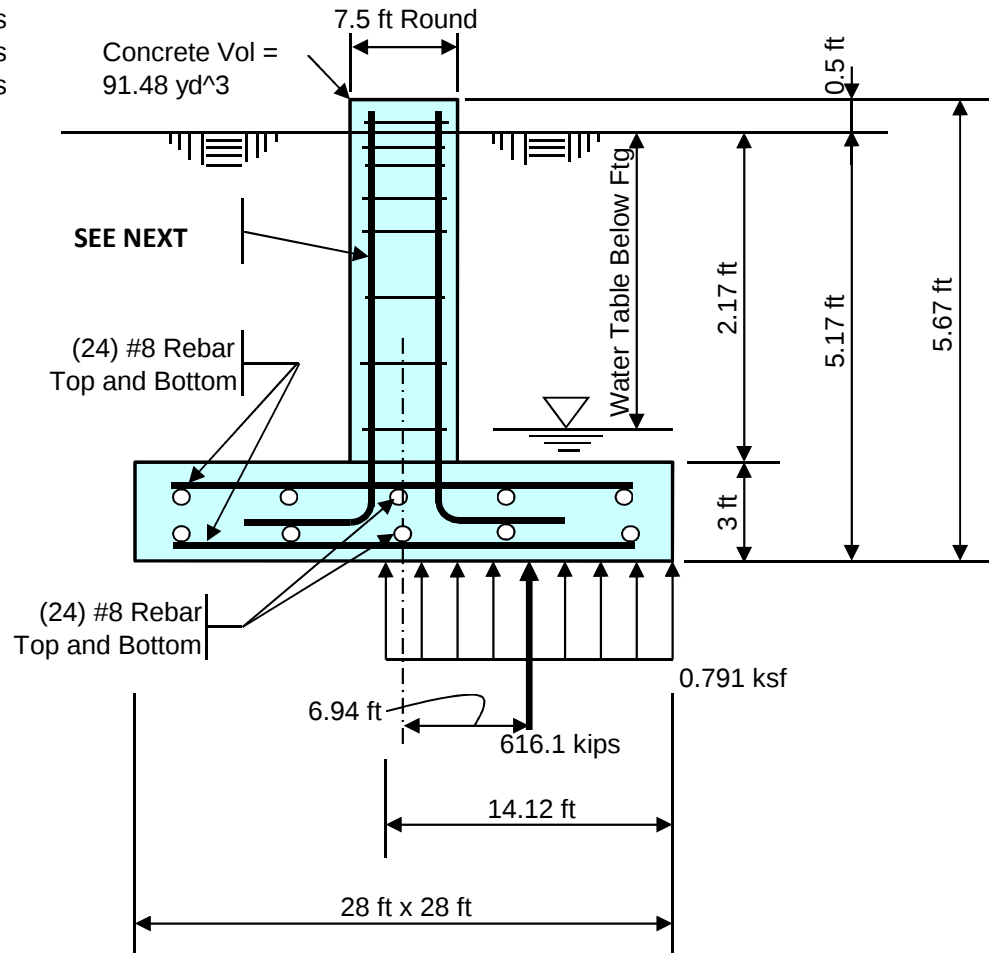
Concrete Strength =
 Rebar Strength =

3 ksi
60 ksi

Summary Results:

Maximum Net Soil Bearing = **0.888** ksf
 Uplift = **0.0** kips
 Punching Shear Stress = **0.048** ksi
 Bending Shear Stress = **211.9** kips
 Bending Moment = **1493.5** k-ft
 Conc Pier Reinforcing Steel = **4164.8** k-ft

Required Available
0.888 ksf **15.000** ksf
0.0 kips **495.9** kips
0.048 ksi **0.164** ksi
211.9 kips **800.6** kips
1493.5 k-ft **2417.6** k-ft
4164.8 k-ft **5571.6** k-ft



Total Pad Reinf Stl = **37.92** in² >= 21.77 in² = Min Stl, OK
 Total Pier Reinf Stl = **31.60** in² < **31.81** in² = **Min Stl**
 Footing Thickness = **3.00** ft >= 1.74 ft = Min Ftg Thk, OK

Stress Ratio = **5.9%** in Soil Bearing
 Stress Ratio = **0.0%** in Uplift
 Stress Ratio = **29.0%** in Punching Shear
 Stress Ratio = **26.5%** in Bending Shear
 Stress Ratio = **61.8%** in Bending Moment

```

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                        spColumn v5.00 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:

```

=====
File Name: G:\TOWER\375_Crown_Castle\2017\37517-0421_800515_CT Chester CA...\37517-0421.001.7805.col
Project: 37517-0421.001.7805
Column:
Code: ACI 318-05
Engineer: JWM
Units: English

Run Option: Investigation
Run Axis: X-axis
Slenderness: Not considered
Column Type: Structural

```

Material Properties:

```

=====
Concrete: Standard
f'c = 3 ksi
Ec = 3122.02 ksi
fc = 2.55 ksi
Eps_u = 0.003 in/in
Beta1 = 0.85

Steel: Standard
fy = 60 ksi
Es = 29000 ksi
Eps_yt = 0.00206897 in/in

```

Section:

```

=====
Circular: Diameter = 90 in

Gross section area, Ag = 6361.73 in^2
Ix = 3.22062e+006 in^4
rx = 22.5 in
Xo = 0 in

Iy = 3.22062e+006 in^4
ry = 22.5 in
Yo = 0 in

```

Reinforcement:

```

=====
Bar Set: ASTM A615
Size Diam (in) Area (in^2) Size Diam (in) Area (in^2) Size Diam (in) Area (in^2)
-----
# 3 0.38 0.11 # 4 0.50 0.20 # 5 0.63 0.31
# 6 0.75 0.44 # 7 0.88 0.60 # 8 1.00 0.79
# 9 1.13 1.00 # 10 1.27 1.27 # 11 1.41 1.56
# 14 1.69 2.25 # 18 2.26 4.00

```

Confinement: Tied; #3 ties with #8 bars, #3 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 40.29 in^2 at rho = 0.63% (Note: rho < 1.0%)
Minimum clear spacing = 3.94 in

51 #8 Cover = 4 in

Factored Loads and Moments with Corresponding Capacities:

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	59.00	4164.79	6827.27	1.639	15.23	85.05	0.01377	0.900

*** End of output ***



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

AT&T Existing Facility

Site ID: CT2179

Chester Wig Hill Road
49 Wig Hill Road
Chester, CT 06412

December 5, 2016

EBI Project Number: 6216005596

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.46 %



December 5, 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: **CT2179 – Chester Wig Hill Road**

EBI Consulting was directed to analyze the proposed AT&T facility located at **49 Wig Hill Road, Chester, 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 **49 Wig Hill Road, Chester, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (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 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 6) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 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 manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Powerwave 7770, Commscope DBXNHH-6565B-R2M and the KMW AM-X-CD-16-65-00T-RET** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerlines of the proposed antennas are **136 feet** above ground level (AGL) for **Sector A**, **136 feet** above ground level (AGL) for **Sector B** and **136 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 #:	1	Antenna #:	1	Antenna #:	1
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):	136 feet	Height (AGL):	136 feet	Height (AGL):	136 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 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%	0.59 %	Antenna B1 MPE%	0.59 %	Antenna C1 MPE%	0.59 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope DBXNHH-6565B-R2M	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.05 / 16.95 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	136 feet	Height (AGL):	136 feet	Height (AGL):	136 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	8,367.44	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A2 MPE%	2.37 %	Antenna B2 MPE%	2.04 %	Antenna C2 MPE%	2.04 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
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):	136 feet	Height (AGL):	136 feet	Height (AGL):	136 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 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 A3 MPE%	0.59 %	Antenna B3 MPE%	0.59 %	Antenna C3 MPE%	0.59 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	3.55 %
T-Mobile	4.18 %
Verizon	2.32 %
Sprint	No Values Listed Per CSC Active Database
VSECI	0.41 %
Site Total MPE %:	10.46 %

AT&T Sector A Total:	3.55 %
AT&T Sector B Total:	3.22 %
AT&T Sector C Total:	3.22 %
Site Total:	10.46 %

AT&T _ Frequency Band / Technology Max Sector (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	136	1.76	850 MHz	567	0.31%
AT&T 1900 MHz (PCS) UMTS	2	656.33	136	2.79	1900 MHz (PCS)	1000	0.28%
AT&T 700 MHz LTE	2	1,211.02	136	5.15	700 MHz	467	1.10%
AT&T 1900 MHz (PCS) LTE	2	2,972.70	136	12.65	1900 MHz (PCS)	1000	1.26%
AT&T 850 MHz GSM	2	414.12	136	1.76	850 MHz	567	0.31%
AT&T 1900 MHz (PCS) GSM	2	656.33	136	2.79	1900 MHz (PCS)	1000	0.28%
						Total:	3.55%



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:	3.55 %
Sector B:	3.22 %
Sector C:	3.22 %
AT&T Maximum Total (per sector):	3.55 %
Site Total:	10.46 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **10.46 %** 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.