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

January 20, 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: 845455**
AT&T Site ID: CT2256
85 Quaker Farms Road, Oxford, CT 06478
Latitude: 41° 23' 2.36"/ Longitude: -73° 8' 14.54"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 106-foot level of the existing 149-foot monopole tower at 85 Quaker Farms Road in Oxford, CT. The tower is owned by Crown Castle. The property is owned by the James Schiavi and Elaine Wolf. AT&T now intends to replace three (3) RRU11s with three (3) RRU12s and install twelve (12) tower mounted switches.

This facility was approved by the by the Planning & Zoning Commission of the Town of Oxford on April 28, 2005. This approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. George Temple, First-Selectman, Town of Oxford, 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.

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: Mr. George Temple, First-Selectman
Town of Oxford
486 Oxford Road
Oxford, CT 06478

James Schiavi and Elaine Wolf
85 Quaker Farms Road
Oxford, CT 06478

PLANNING & ZONING COMMISSION
TOWN OF OXFORD
486 Oxford Road
Oxford, CT 06478
(203) 888-2543

Z#:	Z-05-116
Date Rec'd:	4-28-05
Date on Agenda:	
65-Day Expiration:	

ZONING PERMIT APPLICATION

(This permit is hereby applied for in accordance with the requirements of the Oxford Zoning Regulations)

Property Identification

Street Address: 85 QUAKER FARMS RD
Subdivision Name: _____ Date Approved: _____
Map: 23 Block: 7 Lot: 8 Zoning district: R-A

Owner/Applicant

Owner Name: SCHIAVI
Owner Address: 85 QUAKER FARMS RD
Owner Telephone: _____

Applicant Name: NEW CINGULAR WIRELESS PCS, LLC
Applicant Address: 500 ENTERPRISE DR., ROCKY HILL CT 06067
Applicant Telephone: 860-513-7636

Miscellaneous Information

* CT SITING COUNCIL CERTIFICATE

Special Exception: Article _____ Section _____ Yes (No) *
Site Plan Approval: Article _____ Section _____ Yes (No)
Estimated Cost of Construction: $150,000—
Variance Granted: _____ Date Granted: _____

Signatures/Authorization

Application for Zoning Permit approval as described herein is hereby made. The Oxford Planning & Zoning Commission and its technical staff are authorized to enter the property for the purpose of evaluating this application.

Permit Void If: a) Work or activity not commenced within 1 year of the date of issuance or b) Authorized construction not completed within 2 years of the date of issuance.

This permit, if issued, is based upon the plot plan submitted. Falsification, by misrepresentation or omission, or failure to comply with the conditions of approval of this permit constitute a violation of the Oxford Zoning Regulations.

[signature] for Cingular Wireless 4-28-05
Property Owner or Agent (Date)

Purpose
___ New Home
___ Addition
___ Garage
___ Cottage Business
___ Swimming Pool IG AG
___ Sign
___ Shed
___ Barn
___ Change of Use
___ Excavating/Filling
___ Trailer
✓ Other CELL SITE

Use
___ Single-Family Residence
___ Multi-Family Residence
✓ Commercial
___ Industrial
___ Residential/POD
✓ Other CELL SITE

Required Approvals and Dates
✓ Inland Wetlands _____
___ P.D.D.H. _____
___ Fire Marshal _____
___ Z.B.A. _____
___ W.P.C.A. _____
___ Floodplain _____
___ Copy of Deed _____
✓ Driveway Existing
___ Erosion Control Plan
✓ Plot Plan * 4-26-05
___ Other _____

100.00 Town Fee
30.00 State Fee
130.00 Total Fee

*Draw plot plan of proposed construction and attach. Plan must show property boundaries and dimensions; location of proposed buildings on property with respect to boundaries; location of existing buildings on property; outside dimensions of all buildings proposed or now existing; location of water supply; location of sewage system. All copies must have a complete sketch. Construction and use must be exactly as described in this application. If later changes from this plan are desired prior approval of an amended application is necessary.

Denied (Approved) By: Doug Volk Date: 4-26-05
Title: ZEO
Reason for Denial _____

ZPA-1
(Adopted 5/15/97)

White - P&Z Files / Yellow - Building Department / Pink - Applicant

Town of Oxford
Property Listing Report

Parcel ID 23/57/8/CELL

Account 23578CELL

Property Information

Owner	AT&T
Address	85 QUAKER FARMS RD
Mailing Address	575 MOROSGO DR ATLANTA , GA 30324
Land Use	- Cell Tower
Land Class	I

Census Tract	
Neighborhood	090
Zoning	
Acreage	0
Utilities	
Lot Setting/ Desc	/

Photo

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	0	0
Outbuildings	655600	458900
Improvements	655600	458900
Extras	0	0
Land	0	0
Total	655600	458900
Previous		

Construction Details

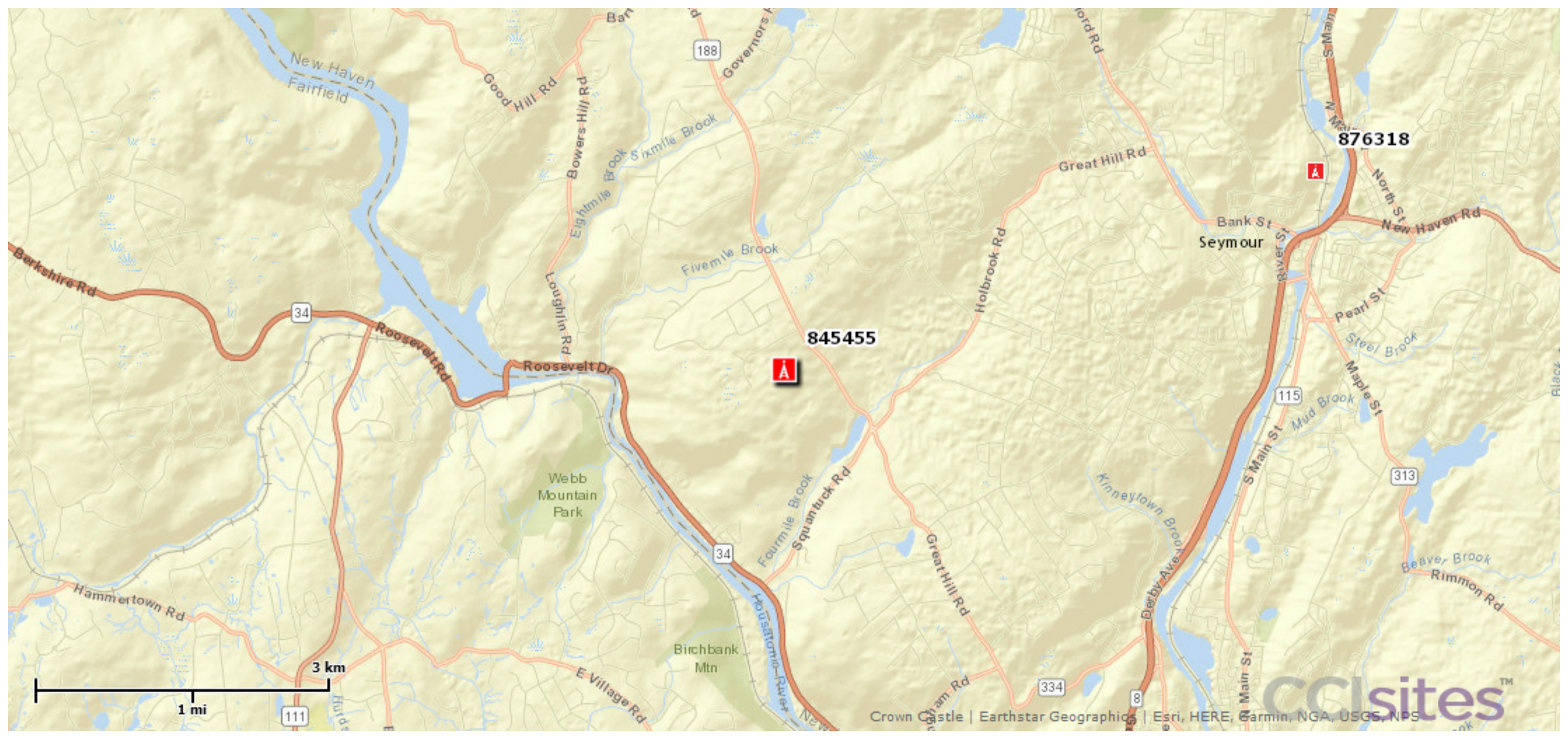
Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Total Rooms	
Bedrooms	
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

EXTERIOR WALLS:	
Primary	
Secondary	
INTERIOR WALLS:	
Primary	
Secondary	
FLOORS:	
Primary	
Secondary	
HEATING/AC:	
Heating Type	
Heating Fuel	
AC Type	

BUILDING AREA:	
Effective Building Area	
Gross Building Area	
Total Living Area	

SALES HISTORY:	
Sale Date	10/1/2010
Sale Price	0
Book/ Page	000/ 000

Report Created On 1/20/2017


876318
845455
Seymour
New Haven
Fairfield
Good Hill Rd
Bowers Hill Rd
Eightmile Brook
Sixmile Brook
Governors
188
Great Hill Rd
Holbrook Rd
Bank St
River St
North St
New Haven Rd
Pearl St
Steel Brook
Maple St
Mud Brook
S Main St
115
313
Berkshire Rd
34
Roosevelt Rd
Roosevelt Dr
Loughlin Rd
Fivemile Brook
Webb
Mountain
Park
Fourmile Brook
Squantuck Rd
Great Hill Rd
Housatonic River
Kinneytown Brook
Derby Ave
Beaver Brook
Rimmon Rd
Hammertown Rd
E Village Rd
Birchbank
Mtn
334
8
111
3 km
1 mi
Crown Castle | Earthstar Geographics | Esri, HERE, Garmin, NGA, USGS, NPS
CCIsites™

WIRELESS COMMUNICATIONS FACILITY
CT2256 - LTE BWE
OXFORD CT
CROWN CASTLE SITE ID NO.: 845455
85 QUAKER FARMS ROAD
OXFORD, CT 06478

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

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 BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.

10. 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.

11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. 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.

21. 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

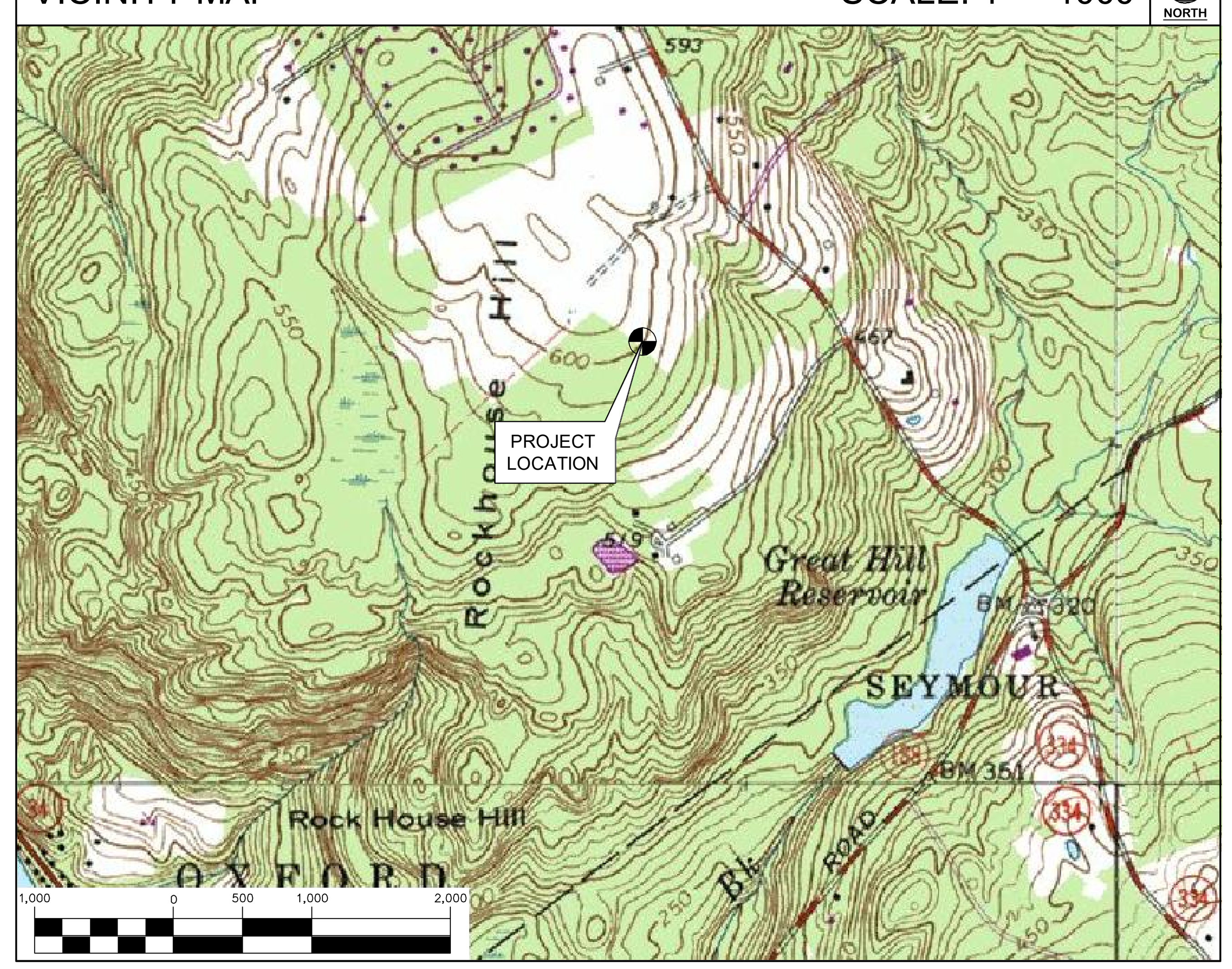
TO: 85 QUAKER FARMS ROAD
OXFORD, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.30 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.06 MI
5.	MERGE ONTO I-691 W, EXIT 18 TOWARD MERIDEN/WATERBURY	7.98 MI
6.	MERGE ONTO I-84 W, EXIT 1 ON THE LEFT TOWARD WATERBURY/DANBURY	15.97 MI
7.	TAKE THE CT-188, EXIT 16 TOWARD SOUTHFORD	0.21 MI
8.	TURN LEFT ONTO CT-188/STRONGTOWN ROAD	2.27 MI
9.	TURN SLIGHT LEFT ONTO SOUTHFORD ROAD/CT-67/CT-188	0.14 MI
10.	TAKE THE FIRST RIGHT ONTO QUAKER FARMS ROAD/CT-188 85 QUAKER FARMS ROAD IS ON THE RIGHT	5.88 MI

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

   A. INSTALL (3) NEW RRUS-12 TO REPLACE (3) RRUS-11 ON EXISTING TOWER MOUNT.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2256
AT&T SITE NAME:	OXFORD
SITE ADDRESS:	CROWN CASTLE SITE NO.: 845455 85 QUAKER FARMS ROAD OXFORD, CT 06478
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: 41°-23'-05.60"N LONGITUDE: 73°-08'-17.15"W GROUND ELEVATION: ±609' AMSL COORDINATES REFERENCED FROM RFDS DOCUMENT AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH PRO

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	12/14/16	HMR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
OXFORD
CT2256- LTE BWE
85 QUAKER FARMS ROAD
OXFORD, CT 06478

DATE: 11/08/16
SCALE: AS NOTED
JOB NO. 16071.76

TITLE SHEET

T-1

Sheet No. 1 of 5

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 95–115 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (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.

GENERAL NOTES:

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

STRUCTURAL STEEL

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

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

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, 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.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   A. SHERWIN WILLIAMS POLANE–B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   A. ONE COAT OF DTM BONDING PRIMER (2–5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5–5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI–SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH–PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON–PETROLEUM–BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

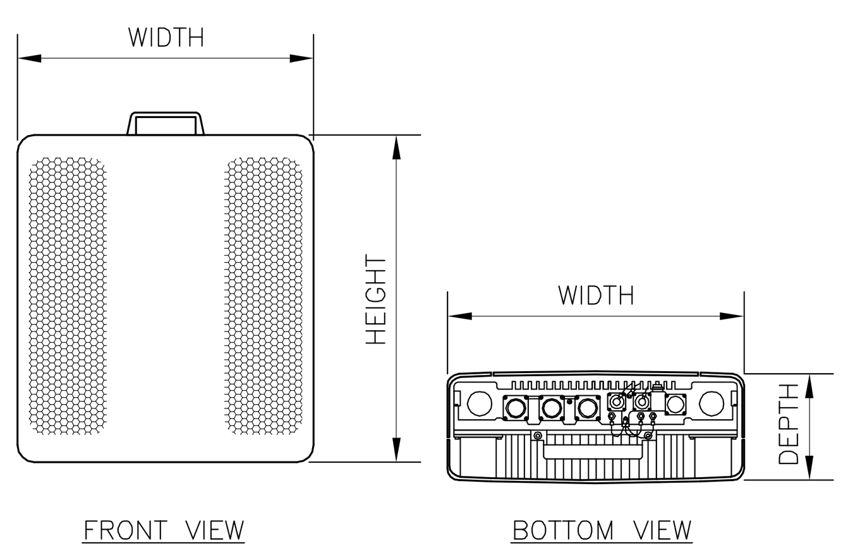
1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

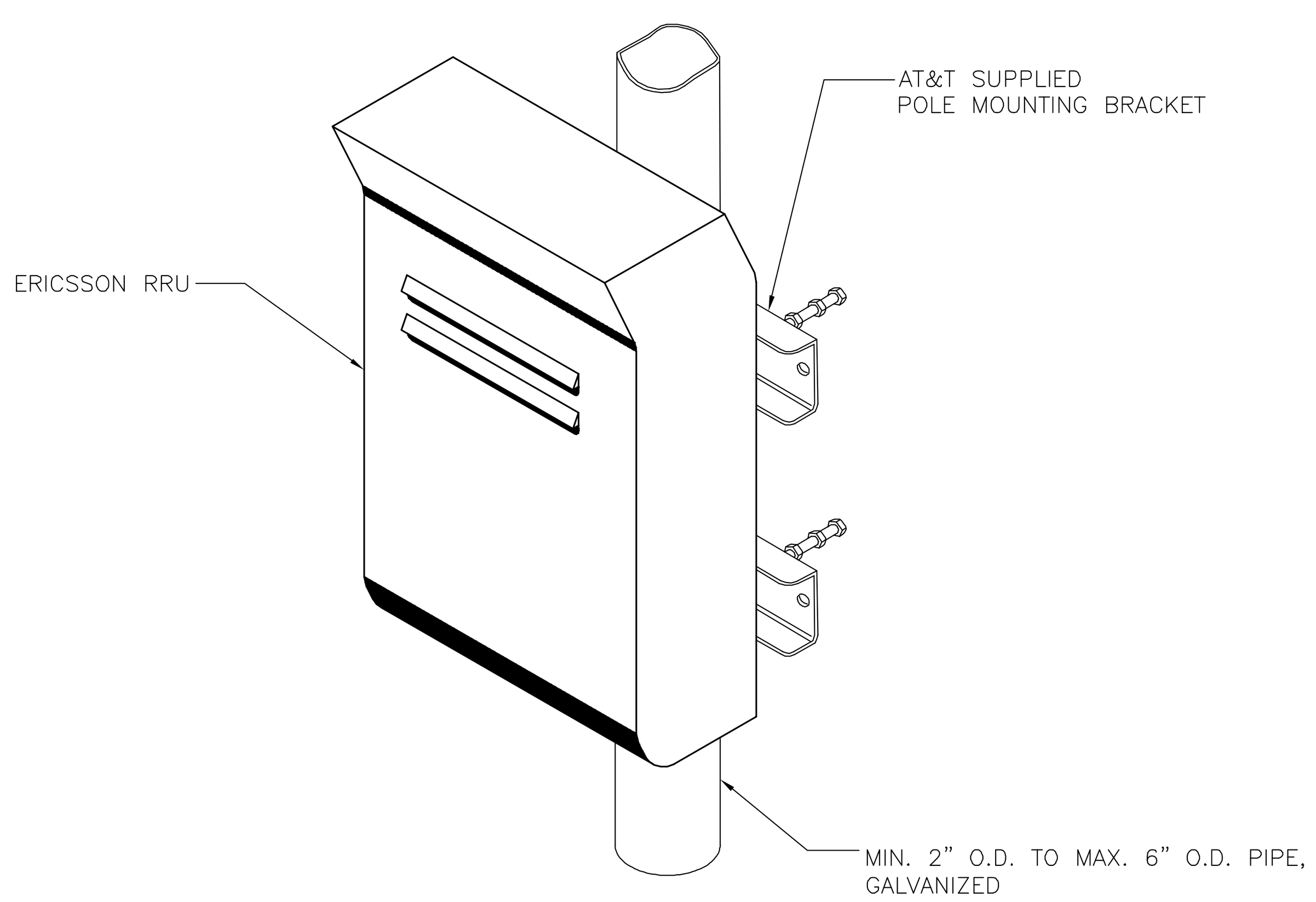
1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

1 / N–1 **ERICSSON RRUS 12 DETAIL**
SCALE: 1" = 1'–0"



ISOMETRIC VIEW

NOTES:
1. AT&T SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

2 / N–1 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: 1 1/2" = 1'–0"

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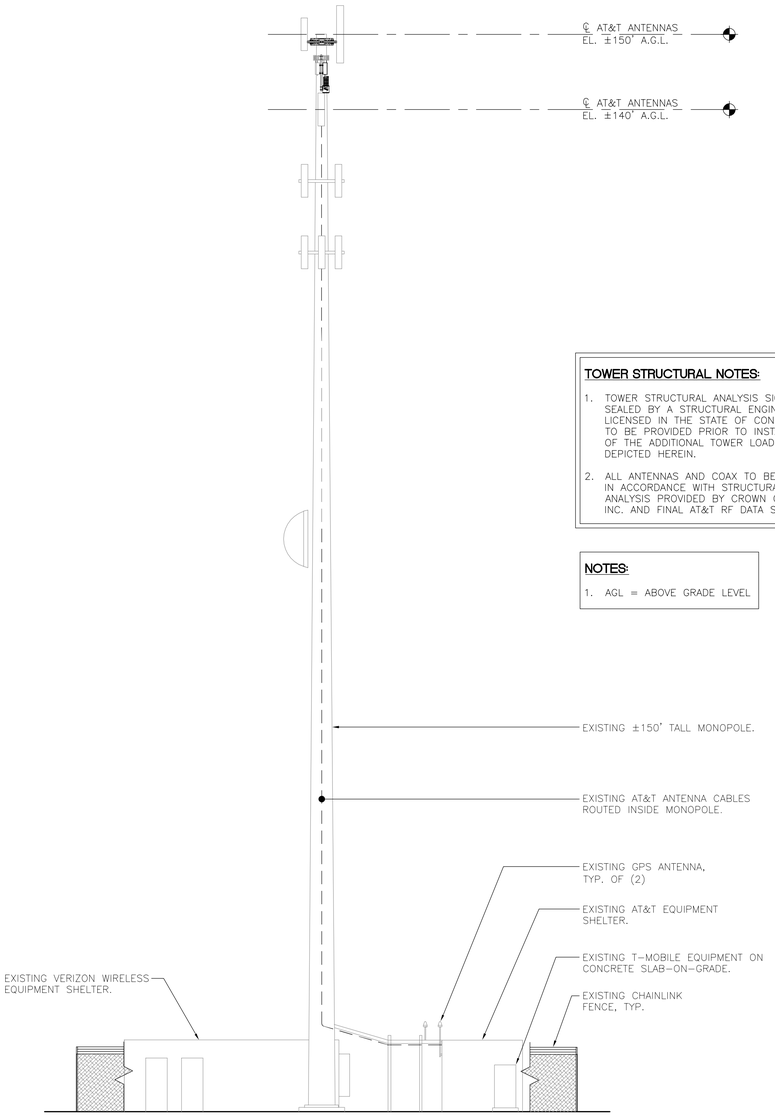
DATE: 11/08/16
SCALE: AS NOTED
JOB NO. 16071.76

NOTES, SPECIFICATIONS AND DETAILS

N–1

Sheet No. 2 of 5



3 / C-1 **NORTHEAST ELEVATION**
SCALE: 1" = 10'

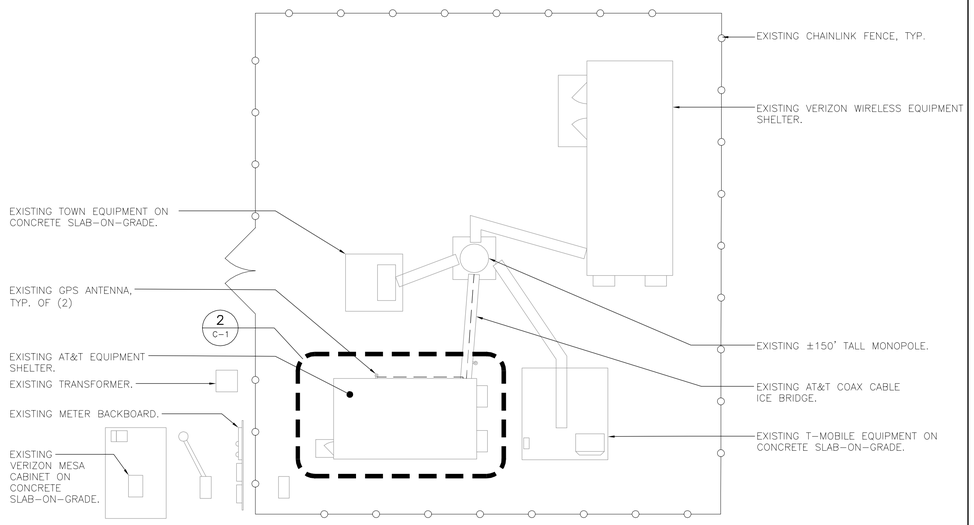
GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

TOWER STRUCTURAL NOTES:

1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

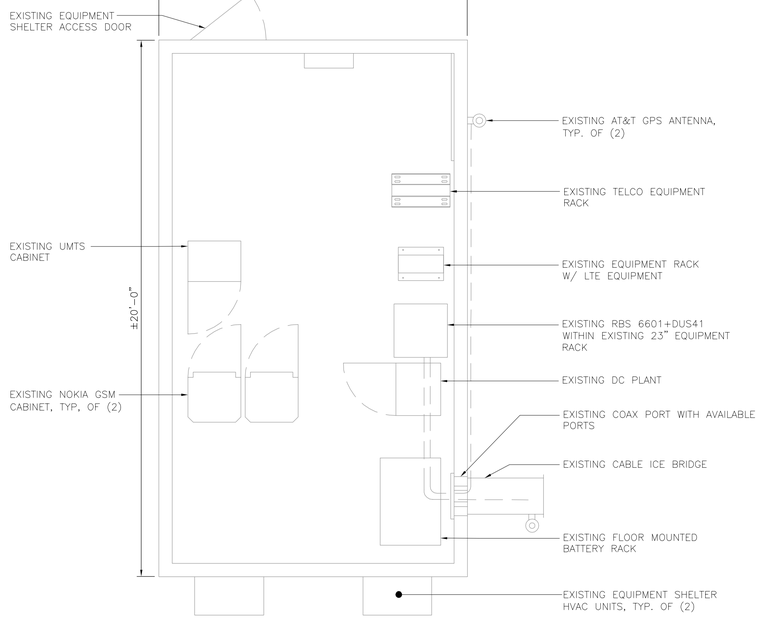
1. AGL = ABOVE GRADE LEVEL



1 / C-1 **COMPOUND PLAN**
SCALE: 1" = 10'

APPROXIMATE NORTH

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.



2 / C-1 **EQUIPMENT BUILDING FLOOR PLAN**
SCALE: 3/8" = 1'-0"

APPROXIMATE NORTH

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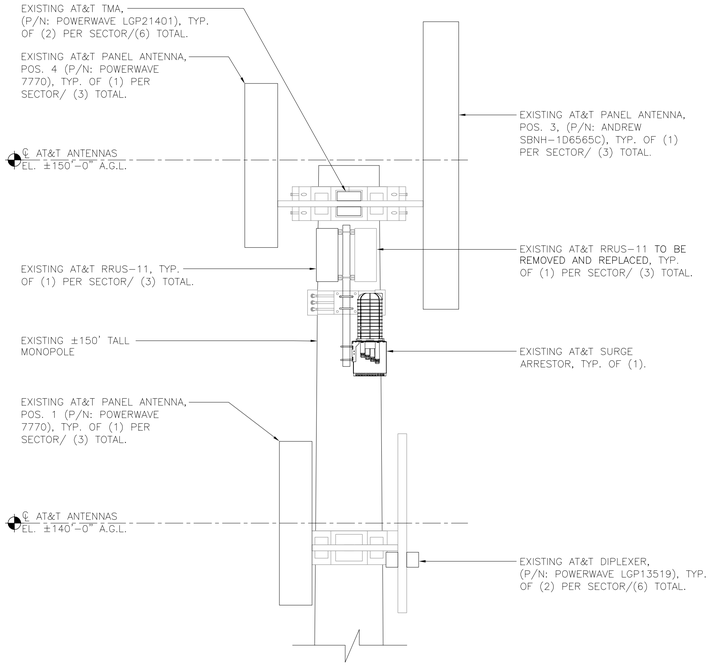
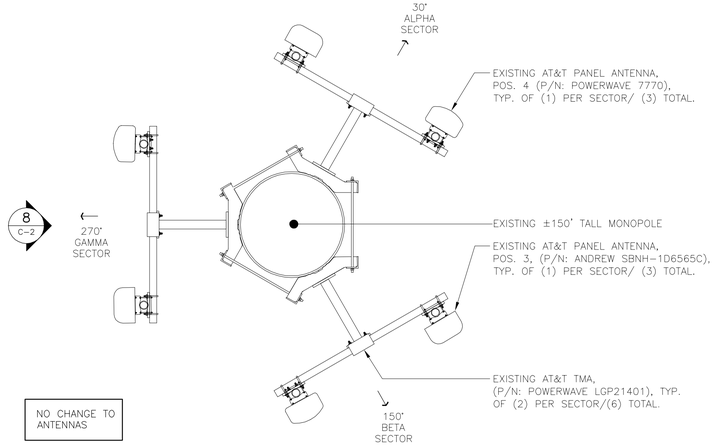
PLANS AND ELEVATION

C-1

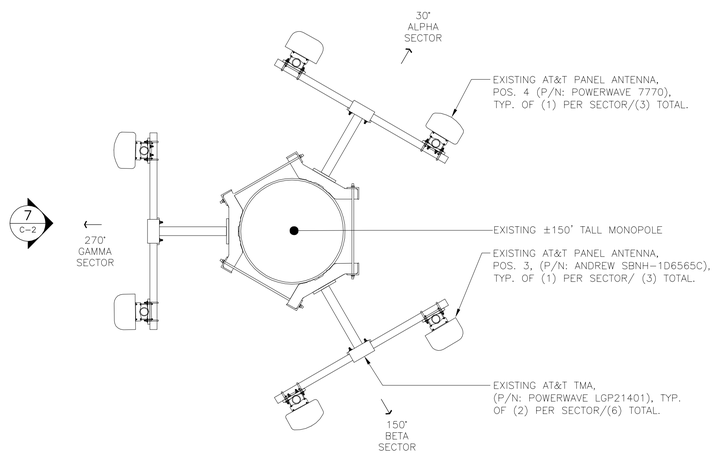
Sheet No. 3 of 5



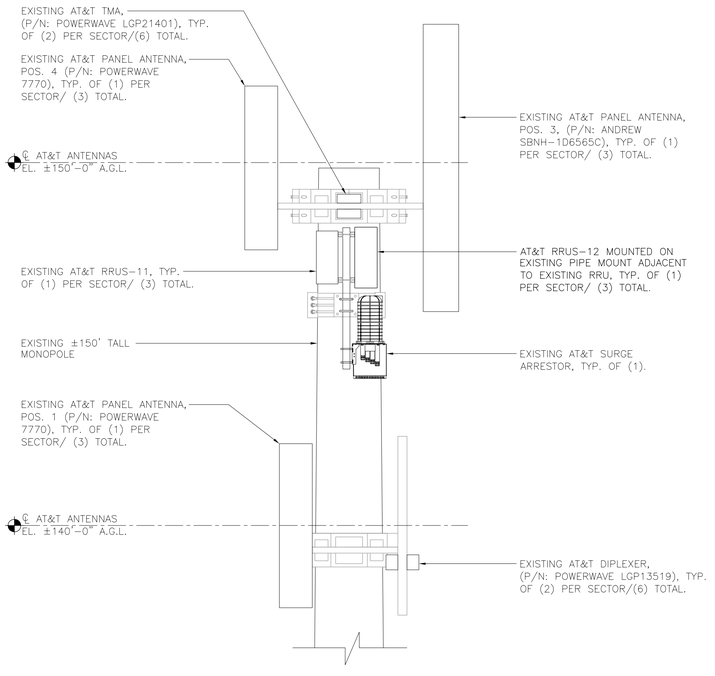
7 C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/2" = 1'-0"



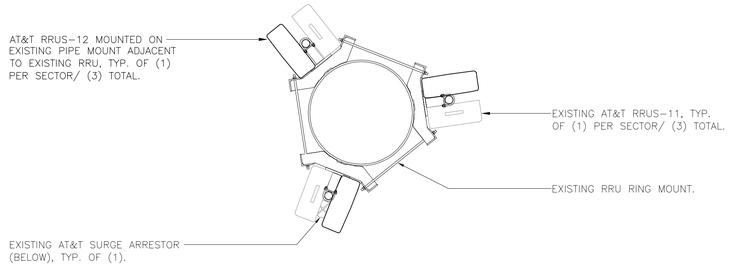
2 C-2 **PROPOSED ANTENNA PLAN** (150' ELEVATION)
SCALE: 1/2" = 1' NORTH



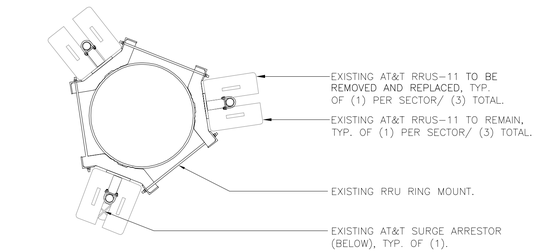
1 C-2 **EXISTING ANTENNA PLAN** (150' ELEVATION)
SCALE: 1/2" = 1' NORTH



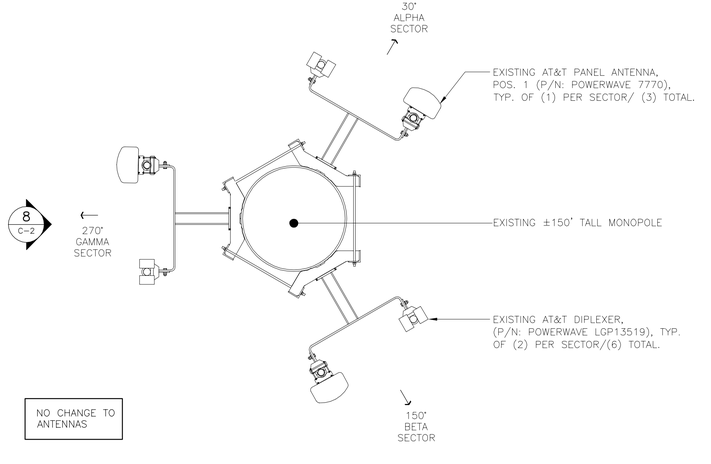
8 C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"



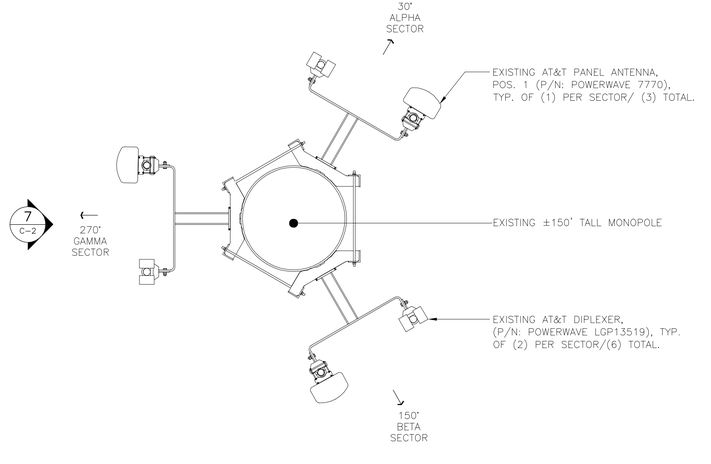
4 C-2 **PROPOSED MOUNTING DETAIL**
SCALE: 1/2" = 1'-0" NORTH



3 C-2 **EXISTING MOUNTING DETAIL**
SCALE: 1/2" = 1'-0" NORTH



6 C-2 **PROPOSED ANTENNA PLAN** (140' ELEVATION)
SCALE: 1/2" = 1' NORTH



5 C-2 **EXISTING ANTENNA PLAN** (140' ELEVATION)
SCALE: 1/2" = 1' NORTH

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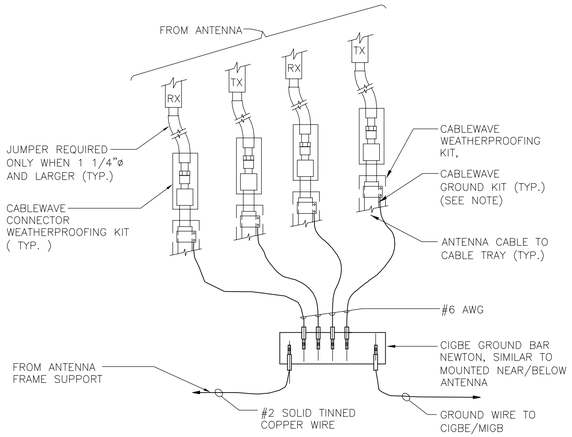
LTE BWE EQUIPMENT DETAILS AND ELEVATIONS

C-2

Sheet No. 4 of 5

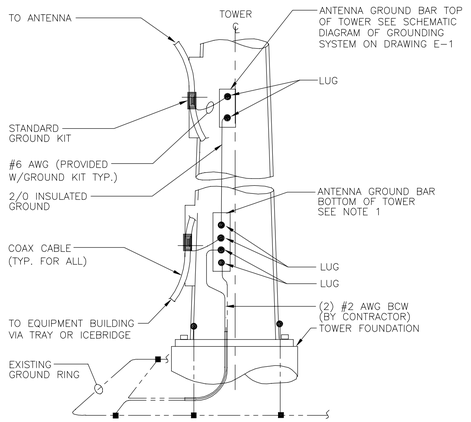


NOTE:

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

5 E-1 CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE

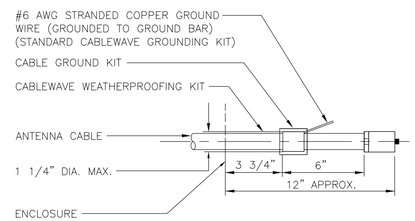


NOTES:

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

2 E-1 ANTENNA CABLE GROUNDING - TOWER

NOT TO SCALE

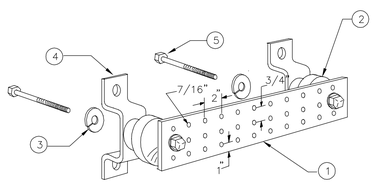


NOTE:

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

4 E-1 ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE

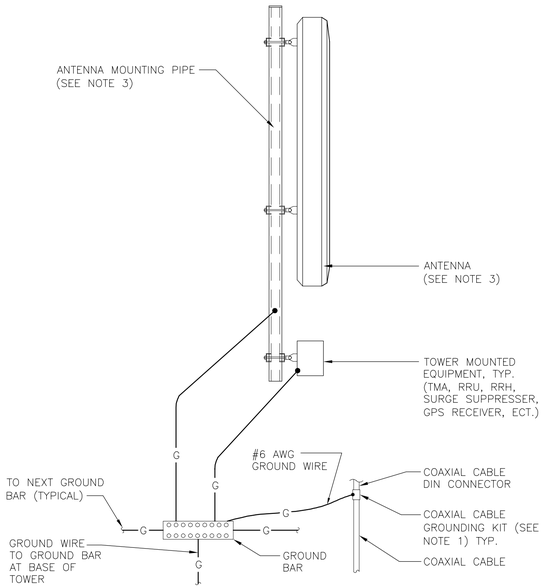


LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20". NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

3 E-1 GROUND BAR DETAIL

NOT TO SCALE



NOTES:

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

1 E-1 TYPICAL ANTENNA GROUNDING DETAIL

NOT TO SCALE

ELECTRICAL NOTES

1. 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.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. 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.
6. 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.
7. 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.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. 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:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. 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.
12. 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.
13. 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.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. 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.
16. 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.
17. 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.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. 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

A. 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:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. 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.

C. 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.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

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DATE: 11/08/16
SCALE: AS NOTED
JOB NO. 16071.76

ELECTRICAL DETAILS AND NOTES

E-1

Sheet No. 5 of 5

Date: **October 13, 2016**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Velocitel, Inc., d.b.a. FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
9197551012

Subject: Structural Analysis Report

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL02256
	Carrier Site Name:	Oxford Ct
Crown Castle Designation:	**Crown Castle BU Number:**	845455
	Crown Castle Site Name:	OXFORD-QUAKER FARMS
	Crown Castle JDE Job Number:	381528
	Crown Castle Work Order Number:	1312743
	Crown Castle Application Number:	350059 Rev. 9
Engineering Firm Designation:	**FDH Velocitel Project Number:**	16PUUF1400
Site Data:	**85 QUAKER FARMS ROAD, OXFORD, New Haven County, CT** **Latitude *41° 23' 2.36"*, Longitude *-73° 8' 14.54"*** **149 Foot - Monopole Tower**	

Dear Timothy Howell,

FDH Velocitel 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 957482, in accordance with application 350059, revision 9.

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 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

We at *FDH Velocitel* 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:

Erin Beaton
Project Engineer I

Reviewed by:

Dennis Abel, PE
Director of Structural Engineering
CT PE License No. 23247

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 149 ft Monopole tower designed by Paul J. Ford in April of 2005. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The modification drawings designed by CCI on October 31, 2014 were not considered in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

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
149.0	150.0	3	ericsson	RRUS 11	-	-	-
		3	powerwave tech	1001983			
		6	powerwave tech	LGP13519			

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
149.0	150.0	1	antenna systems and solutions inc	FO150-3	1 3 2 6	3/8 1/2 3/4 1-5/8	1
		2	andrew	SBNH-1D6565C w/ Mount Pipe			
		3	powerwave tech	7770.00 w/ Mount Pipe			
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	ericsson	RRUS 11			
		1	raycap	DC6-48-60-18-8F			
		6	powerwave tech	LGP21401			
	149.0	1	crown mounts	Side Arm Mount [SO 103-3]			
139.0	140.0	3	powerwave tech	7770.00 w/ Mount Pipe	6	1-5/8	1
		6	powerwave tech	TMA DD 1900 with 850 BYPASS			
	139.0	1	crown mounts	Side Arm Mount [SO 104-3]			
129.0	132.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	12	1-5/8	1
		3	rfs celwave	APXV18-209014-C w/ Mount Pipe			
		3	kathrein	782 11066			
		3	powerwave tech	LGP 13901			
	129.0	1	crown mounts	Side Arm Mount [SO 104-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	120.0	3	andrew	HBXX-6517DS-A2M w/ Mount Pipe	20	1-5/8	1
		3	andrew	SBNHH-1D65B w/ Mount Pipe			
		3	antel	BXA-80080/6CF w/ Mount Pipe			
		3	alcatel lucent	RRH2X60-AWS			
		3	alcatel lucent	RRH2X60-PCS			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	crown mounts	Side Arm Mount [SO 104-3]			
80.0	80.0	1	antenna systems and solutions inc	FO150-3	-	-	3
		1	pctel	MPRD2449	-	-	2
		1	antenna systems and solutions inc	FO150-3	3	1/2	1
		1	crown mounts	Pipe Mount [PM 601-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed, Not Included in this Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.5	148.5	6	allgon	7920 Panel	-	-
139	139	9	generic	48" x 12" x 3" Panel Antenna	-	-
129	129	9	generic	48" x 12" x 3" Panel Antenna	-	-
119	119	9	generic	48" x 12" x 3" Panel Antenna	-	-
109	109	6	generic	48" x 12" x 3" Panel Antenna	-	-
99	99	6	generic	48" x 12" x 3" Panel Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	WEI Geotechnical Engineers	4911888	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Paul J. Ford and Company	5113082	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	WEI Geotechnical Engineers	5113091	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.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	149 - 111.5	Pole	TP29.487x23x0.1875	1	-6.31	1099.25	45.5	Pass
L2	111.5 - 75.25	Pole	TP35.383x28.4633x0.2188	2	-11.67	1519.65	83.2	Pass
L3	75.25 - 39.75	Pole	TP41.086x34.167x0.2813	3	-18.91	2368.73	82.6	Pass
L4	39.75 - 0	Pole	TP47.4x39.6154x0.375	4	-31.98	3894.19	71.3	Pass
							Summary	
						Pole (L2)	83.2	Pass
						Rating =	83.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	78.2	Pass
1	Base Plate	0	59.8	Pass
1	Base Foundation Soil Interaction	0	63.7	Pass

Structure Rating (max from all components) =	83.2%

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

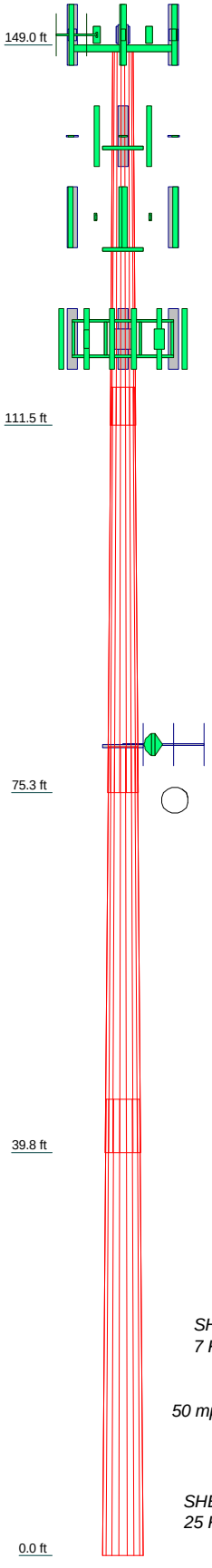
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	37.50	18	0.1875	3.75	23.0000	29.4870	A607-65	2.0
2	40.00	18	0.2188	4.50	28.4633	35.3830		3.0
3	40.00	18	0.2813	5.25	34.1670	41.0860		4.5
4	45.00	18	0.3750		39.6154	47.4000		7.9
								17.4



ALL REACTIONS ARE FACTORED

AXIAL 63 K

SHEAR 7 K

MOMENT 801 kip-ft

TORQUE 0 kip-ft

50 mph WIND - 0.7500 in ICE

AXIAL 32 K

SHEAR 25 K

MOMENT 2653 kip-ft

TORQUE 1 kip-ft

REACTIONS - 97 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
FO150-3	149	APXV18-209014-C w/ Mount Pipe	129
SBNH-1D6565C w/ Mount Pipe	149	APXV18-209014-C w/ Mount Pipe	129
SBNH-1D6565C w/ Mount Pipe	149	LGP 13901	129
AM-X-CD-16-65-00T-RET w/ Mount Pipe	149	LGP 13901	129
		LGP 13901	129
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	129
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	129
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	129
(2) LGP21401	149	782 11066	129
(2) LGP21401	149	782 11066	129
(2) LGP21401	149	782 11066	129
RRUS 11	149	Side Arm Mount [SO 104-3]	129
RRUS 11	149	BXA-80080/6CF w/ Mount Pipe	120
RRUS 11	149	BXA-80080/6CF w/ Mount Pipe	120
RRUS 11	149	BXA-80080/6CF w/ Mount Pipe	120
RRUS 11	149	HBXX-6517DS-A2M w/ Mount Pipe	120
RRUS 11	149	HBXX-6517DS-A2M w/ Mount Pipe	120
(2) LGP13519	149	HBXX-6517DS-A2M w/ Mount Pipe	120
(2) LGP13519	149	SBNHH-1D65B w/ Mount Pipe	120
(2) LGP13519	149	SBNHH-1D65B w/ Mount Pipe	120
1001983	149	SBNHH-1D65B w/ Mount Pipe	120
1001983	149	RRH2X60-AWS	120
1001983	149	RRH2X60-AWS	120
DC6-48-60-18-8F	149	RRH2X60-AWS	120
Side Arm Mount [SO 103-3]	149	RRH2X60-PCS	120
4' x 2" Pipe Mount	147	RRH2X60-PCS	120
4' x 2" Pipe Mount	147	RRH2X60-PCS	120
4' x 2" Pipe Mount	147	DB-T1-6Z-8AB-0Z	120
Side Arm Mount [SO 102-3]	147	DB-T1-6Z-8AB-0Z	120
7770.00 w/ Mount Pipe	139	(2) 4' x 2" Pipe Mount	120
7770.00 w/ Mount Pipe	139	(2) 4' x 2" Pipe Mount	120
7770.00 w/ Mount Pipe	139	(2) 4' x 2" Pipe Mount	120
(2) TMA DD 1900 with 850 BYPASS	139	(2) 6' x 2" Horizontal Mount Pipe	120
(2) TMA DD 1900 with 850 BYPASS	139	(2) 6' x 2" Horizontal Mount Pipe	120
(2) TMA DD 1900 with 850 BYPASS	139	(2) 6' x 2" Horizontal Mount Pipe	120
4' x 2" Pipe Mount	139	Side Arm Mount [SO 104-3]	120
4' x 2" Pipe Mount	139	FO150-3	80
4' x 2" Pipe Mount	139	6' x 2" Mount Pipe	80
Side Arm Mount [SO 104-3]	139	Pipe Mount [PM 601-1]	80
APXV18-209014-C w/ Mount Pipe	129	MPRD2449	80

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 83.2%

FDH Velocitel
ENGINEERING INNOVATION

Tower Analysis

FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

Job: ***OXFORD-QUAKER FARMS, BU# 845455***			
Project: ***16PUUF1400***			
Client: Crown Castle	Drawn by: Erin Beaton	App'd:	
Code: TIA-222-G	Date: 10/12/16	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	149.00-111.50	37.50	3.75	18	23.0000	29.4870	0.1875	0.7500	A607-65 (65 ksi)
L2	111.50-75.25	40.00	4.50	18	28.4633	35.3830	0.2188	0.8750	A607-65

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
L3	75.25-39.75	40.00	5.25	18	34.1670	41.0860	0.2813	1.1250	(65 ksi) A607-65
L4	39.75-0.00	45.00		18	39.6154	47.4000	0.3750	1.5000	(65 ksi) A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	23.3548	13.5763	892.6152	8.0984	11.6840	76.3964	1786.4050	6.7894	3.7180	19.829
	29.9419	17.4369	1891.1513	10.4013	14.9794	126.2502	3784.7910	8.7201	4.8597	25.918
L2	29.5611	19.6105	1976.4982	10.0268	14.4594	136.6934	3955.5970	9.8071	4.6245	21.141
	35.9288	24.4150	3814.1390	12.4833	17.9746	212.1965	7633.2967	12.2098	5.8424	26.708
L3	35.4845	30.2494	4388.2314	12.0295	17.3569	252.8241	8782.2369	15.1276	5.5184	19.621
	41.7198	36.4259	7662.4750	14.4857	20.8717	367.1229	15335.0324	18.2164	6.7361	23.951
L4	41.1487	46.7059	9086.0569	13.9303	20.1246	451.4897	18184.0695	23.3574	6.3123	16.833
	48.1312	55.9715	15637.3103	16.6939	24.0792	649.4115	31295.1965	27.9911	7.6824	20.486

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 149.00-111.50				1	1	1			
L2 111.50-75.25				1	1	1			
L3 75.25-39.75				1	1	1			
L4 39.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
****									
Safety Line 3/8	C	Surface Ar (CaAa)	149.00 - 0.00	1	1	0.000 0.000	0.3750		0.22
LDF7-50A(1-5/8")	B	Surface Ar (CaAa)	129.00 - 0.00	6	6	0.167 0.333	1.9800		0.82
LDF7-50A(1-5/8")	C	Surface Ar (CaAa)	120.00 - 0.00	8	8	-0.180 0.500	1.9800		0.82
***									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
149								
LDF4-50A(1/2")	C	No	Inside Pole	149.00 - 0.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF7-50A(1-5/8")	C	No	Inside Pole	149.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98B-034-XXX(3/8")	C	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	149.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
139								
LDF7-50A(1-5/8")	C	No	Inside Pole	139.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
129								
LDF7-50A(1-5/8")	B	No	Inside Pole	129.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
120*								
LDF7-50A(1-5/8")	C	No	Inside Pole	120.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
80								
LDF4-50A(1/2")	A	No	Inside Pole	80.00 - 0.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	149.00-111.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	20.790	0.000	0.17
		C	0.000	0.000	14.870	0.000	0.53
L2	111.50-75.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	43.065	0.000	0.36
		C	0.000	0.000	58.779	0.000	1.02
L3	75.25-39.75	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	42.174	0.000	0.35
		C	0.000	0.000	57.563	0.000	1.00
L4	39.75-0.00	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	47.223	0.000	0.39
		C	0.000	0.000	64.455	0.000	1.12

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	149.00-111.50	A	1.720	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_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	33.512	0.000	0.57
		C		0.000	0.000	34.790	0.000	0.94
L2	111.50-75.25	A	1.664	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	69.418	0.000	1.18
		C		0.000	0.000	101.190	0.000	2.22
L3	75.25-39.75	A	1.585	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	67.483	0.000	1.13
		C		0.000	0.000	98.199	0.000	2.13
L4	39.75-0.00	A	1.427	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	74.781	0.000	1.22
		C		0.000	0.000	108.550	0.000	2.31

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.00-111.50	0.5115	0.4500	0.5535	0.6775
L2	111.50-75.25	0.5153	1.1832	0.5291	1.2442
L3	75.25-39.75	0.5534	1.2709	0.5865	1.3795
L4	39.75-0.00	0.5867	1.3475	0.6390	1.5027

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 3/8	111.50 - 149.00	1.0000	1.0000
L1	12	LDF7-50A(1-5/8")	111.50 - 129.00	1.0000	1.0000
L1	15	LDF7-50A(1-5/8")	111.50 - 120.00	1.0000	1.0000
L2	2	Safety Line 3/8	75.25 - 111.50	1.0000	1.0000
L2	12	LDF7-50A(1-5/8")	75.25 - 111.50	1.0000	1.0000
L2	15	LDF7-50A(1-5/8")	75.25 - 111.50	1.0000	1.0000
L3	2	Safety Line 3/8	39.75 - 75.25	1.0000	1.0000
L3	12	LDF7-50A(1-5/8")	39.75 - 75.25	1.0000	1.0000
L3	15	LDF7-50A(1-5/8")	39.75 - 75.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
149*									
FO150-3	C	From Leg	2.00	0.0000	149.00	No Ice	1.09	1.09	0.00
			0.00			1/2" Ice	1.35	1.35	0.01
			1.00			1" Ice	1.62	1.62	0.02
SBNH-1D6565C w/ Mount Pipe	A	From Leg	2.00	0.0000	149.00	No Ice	11.68	9.84	0.10
			0.00			1/2" Ice	12.40	11.37	0.19
			1.00			1" Ice	13.14	12.91	0.29
SBNH-1D6565C w/ Mount Pipe	B	From Leg	2.00	0.0000	149.00	No Ice	11.68	9.84	0.10
			0.00			1/2" Ice	12.40	11.37	0.19
			1.00			1" Ice	13.14	12.91	0.29
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	2.00	0.0000	149.00	No Ice	8.26	6.30	0.07
			0.00			1/2" Ice	8.82	7.48	0.14
			1.00			1" Ice	9.35	8.37	0.21
7770.00 w/ Mount Pipe	A	From Leg	2.00	0.0000	149.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			1.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	B	From Leg	2.00	0.0000	149.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			1.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	C	From Leg	2.00	0.0000	149.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			1.00			1" Ice	6.61	5.71	0.16
(2) LGP21401	A	From Leg	2.00	0.0000	149.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			1.00			1" Ice	1.38	0.54	0.03
(2) LGP21401	B	From Leg	2.00	0.0000	149.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			1.00			1" Ice	1.38	0.54	0.03
(2) LGP21401	C	From Leg	2.00	0.0000	149.00	No Ice	1.10	0.35	0.01
			0.00			1/2" Ice	1.24	0.44	0.02
			1.00			1" Ice	1.38	0.54	0.03
RRUS 11	A	From Leg	2.00	0.0000	149.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.10
RRUS 11	B	From Leg	2.00	0.0000	149.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.10
RRUS 11	C	From Leg	2.00	0.0000	149.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.10
RRUS 11	A	From Leg	2.00	0.0000	149.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.10
RRUS 11	B	From Leg	2.00	0.0000	149.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.10
RRUS 11	C	From Leg	2.00	0.0000	149.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.10
(2) LGP13519	A	From Leg	2.00	0.0000	149.00	No Ice	0.29	0.18	0.01
			0.00			1/2" Ice	0.36	0.24	0.01
			1.00			1" Ice	0.44	0.31	0.01
(2) LGP13519	B	From Leg	2.00	0.0000	149.00	No Ice	0.29	0.18	0.01
			0.00			1/2" Ice	0.36	0.24	0.01
			1.00			1" Ice	0.44	0.31	0.01
(2) LGP13519	C	From Leg	2.00	0.0000	149.00	No Ice	0.29	0.18	0.01
			0.00			1/2" Ice	0.36	0.24	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.00			1" Ice	0.44	0.31	0.01
1001983	A	From Leg	2.00	0.0000	149.00	No Ice	0.18	0.08	0.00
			0.00			1/2" Ice	0.23	0.13	0.00
			1.00			1" Ice	0.30	0.18	0.01
1001983	B	From Leg	2.00	0.0000	149.00	No Ice	0.18	0.08	0.00
			0.00			1/2" Ice	0.23	0.13	0.00
			1.00			1" Ice	0.30	0.18	0.01
1001983	C	From Leg	2.00	0.0000	149.00	No Ice	0.18	0.08	0.00
			0.00			1/2" Ice	0.23	0.13	0.00
			1.00			1" Ice	0.30	0.18	0.01
DC6-48-60-18-8F	A	From Leg	2.00	0.0000	149.00	No Ice	2.20	3.70	0.02
			0.00			1/2" Ice	2.40	3.94	0.05
			1.00			1" Ice	2.60	4.19	0.09
Side Arm Mount [SO 103-3]	C	None		0.0000	149.00	No Ice	9.50	9.50	0.22
						1/2" Ice	11.80	11.80	0.32
						1" Ice	14.10	14.10	0.41
****									
4' x 2" Pipe Mount	A	From Leg	1.00	0.0000	147.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
4' x 2" Pipe Mount	B	From Leg	1.00	0.0000	147.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
4' x 2" Pipe Mount	C	From Leg	1.00	0.0000	147.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
Side Arm Mount [SO 102-3]	C	None		0.0000	147.00	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
139									
7770.00 w/ Mount Pipe	A	From Leg	2.00	0.0000	139.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			1.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	B	From Leg	2.00	0.0000	139.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			1.00			1" Ice	6.61	5.71	0.16
7770.00 w/ Mount Pipe	C	From Leg	2.00	0.0000	139.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			1.00			1" Ice	6.61	5.71	0.16
(2) TMA DD 1900 with 850 BYPASS	A	From Leg	2.00	0.0000	139.00	No Ice	0.31	0.15	0.02
			0.00			1/2" Ice	0.41	0.21	0.02
			1.00			1" Ice	0.51	0.27	0.03
(2) TMA DD 1900 with 850 BYPASS	B	From Leg	2.00	0.0000	139.00	No Ice	0.31	0.15	0.02
			0.00			1/2" Ice	0.41	0.21	0.02
			1.00			1" Ice	0.51	0.27	0.03
(2) TMA DD 1900 with 850 BYPASS	C	From Leg	2.00	0.0000	139.00	No Ice	0.31	0.15	0.02
			0.00			1/2" Ice	0.41	0.21	0.02
			1.00			1" Ice	0.51	0.27	0.03
4' x 2" Pipe Mount	A	From Leg	2.00	0.0000	139.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
4' x 2" Pipe Mount	B	From Leg	2.00	0.0000	139.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
4' x 2" Pipe Mount	C	From Leg	2.00	0.0000	139.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 104-3]	C	None		0.0000	139.00	No Ice	3.30	3.30	0.29
						1/2" Ice	4.13	4.13	0.32
						1" Ice	4.96	4.96	0.35
129*									
APXV18-209014-C w/ Mount Pipe	A	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	3.72 4.13 4.54	3.31 4.02 4.68	0.04 0.07 0.11
APXV18-209014-C w/ Mount Pipe	B	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	3.72 4.13 4.54	3.31 4.02 4.68	0.04 0.07 0.11
APXV18-209014-C w/ Mount Pipe	C	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	3.72 4.13 4.54	3.31 4.02 4.68	0.04 0.07 0.11
LGP 13901	A	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.50 0.59 0.69	0.24 0.31 0.39	0.01 0.01 0.02
LGP 13901	B	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.50 0.59 0.69	0.24 0.31 0.39	0.01 0.01 0.02
LGP 13901	C	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.50 0.59 0.69	0.24 0.31 0.39	0.01 0.01 0.02
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" 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	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" 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	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
782 11066	A	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.15 0.20 0.26	0.08 0.13 0.18	0.00 0.00 0.01
782 11066	B	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.15 0.20 0.26	0.08 0.13 0.18	0.00 0.00 0.01
782 11066	C	From Leg	2.00 0.00 3.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.15 0.20 0.26	0.08 0.13 0.18	0.00 0.00 0.01
Side Arm Mount [SO 104-3]	C	None		0.0000	129.00	No Ice	3.30	3.30	0.29
						1/2" Ice	4.13	4.13	0.32
						1" Ice	4.96	4.96	0.35
120									
BXA-80080/6CF w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	7.94 8.49 9.01	5.49 6.65 7.54	0.05 0.11 0.17
BXA-80080/6CF w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	7.94 8.49 9.01	5.49 6.65 7.54	0.05 0.11 0.17
BXA-80080/6CF w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	7.94 8.49 9.01	5.49 6.65 7.54	0.05 0.11 0.17
HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.77 9.34 9.89	6.96 8.18 9.14	0.07 0.14 0.21
HBXX-6517DS-A2M w/	B	From Leg	3.00	0.0000	120.00	No Ice	8.77	6.96	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	9.34	8.18	0.14
			0.00			1" Ice	9.89	9.14	0.21
HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	3.00	0.0000	120.00	No Ice	8.77	6.96	0.07
			0.00			1/2" Ice	9.34	8.18	0.14
			0.00			1" Ice	9.89	9.14	0.21
SBNHH-1D65B w/ Mount Pipe	A	From Leg	3.00	0.0000	120.00	No Ice	8.62	7.30	0.07
			0.00			1/2" Ice	9.28	8.58	0.14
			0.00			1" Ice	9.91	9.72	0.22
SBNHH-1D65B w/ Mount Pipe	B	From Leg	3.00	0.0000	120.00	No Ice	8.62	7.30	0.07
			0.00			1/2" Ice	9.28	8.58	0.14
			0.00			1" Ice	9.91	9.72	0.22
SBNHH-1D65B w/ Mount Pipe	C	From Leg	3.00	0.0000	120.00	No Ice	8.62	7.30	0.07
			0.00			1/2" Ice	9.28	8.58	0.14
			0.00			1" Ice	9.91	9.72	0.22
RRH2X60-AWS	A	From Leg	3.00	0.0000	120.00	No Ice	1.88	1.24	0.04
			0.00			1/2" Ice	2.06	1.39	0.06
			0.00			1" Ice	2.24	1.54	0.08
RRH2X60-AWS	B	From Leg	3.00	0.0000	120.00	No Ice	1.88	1.24	0.04
			0.00			1/2" Ice	2.06	1.39	0.06
			0.00			1" Ice	2.24	1.54	0.08
RRH2X60-AWS	C	From Leg	3.00	0.0000	120.00	No Ice	1.88	1.24	0.04
			0.00			1/2" Ice	2.06	1.39	0.06
			0.00			1" Ice	2.24	1.54	0.08
RRH2X60-PCS	A	From Leg	3.00	0.0000	120.00	No Ice	2.20	1.65	0.05
			0.00			1/2" Ice	2.39	1.83	0.07
			0.00			1" Ice	2.59	2.01	0.09
RRH2X60-PCS	B	From Leg	3.00	0.0000	120.00	No Ice	2.20	1.65	0.05
			0.00			1/2" Ice	2.39	1.83	0.07
			0.00			1" Ice	2.59	2.01	0.09
RRH2X60-PCS	C	From Leg	3.00	0.0000	120.00	No Ice	2.20	1.65	0.05
			0.00			1/2" Ice	2.39	1.83	0.07
			0.00			1" Ice	2.59	2.01	0.09
DB-T1-6Z-8AB-0Z	A	From Leg	3.00	0.0000	120.00	No Ice	4.80	2.00	0.04
			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
DB-T1-6Z-8AB-0Z	B	From Leg	3.00	0.0000	120.00	No Ice	4.80	2.00	0.04
			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
(2) 4' x 2" Pipe Mount	A	From Leg	3.00	0.0000	120.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
(2) 4' x 2" Pipe Mount	B	From Leg	3.00	0.0000	120.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
(2) 4' x 2" Pipe Mount	C	From Leg	3.00	0.0000	120.00	No Ice	0.79	0.79	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00			1" Ice	1.28	1.28	0.04
(2) 6' x 2" Horizontal Mount Pipe	A	From Leg	3.00	0.0000	120.00	No Ice	0.80	0.80	0.03
			0.00			1/2" Ice	1.22	1.22	0.17
			0.00			1" Ice	1.64	1.64	0.32
(2) 6' x 2" Horizontal Mount Pipe	B	From Leg	3.00	0.0000	120.00	No Ice	0.80	0.80	0.03
			0.00			1/2" Ice	1.22	1.22	0.17
			0.00			1" Ice	1.64	1.64	0.32
(2) 6' x 2" Horizontal Mount Pipe	C	From Leg	3.00	0.0000	120.00	No Ice	0.80	0.80	0.03
			0.00			1/2" Ice	1.22	1.22	0.17
			0.00			1" Ice	1.64	1.64	0.32
Side Arm Mount [SO 104-3]	C	None		0.0000	120.00	No Ice	3.30	3.30	0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1/2" Ice	4.13	4.13	0.32
						1" Ice	4.96	4.96	0.35
***									
FO150-3	A	From Leg	1.00	0.0000	80.00	No Ice	1.09	1.09	0.00
			0.00			1/2" Ice	1.35	1.35	0.01
			0.00			1" Ice	1.62	1.62	0.02
6' x 2" Mount Pipe	A	From Leg	0.50	0.0000	80.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	80.00	No Ice	3.00	0.90	0.07
			0.00			1/2" Ice	3.74	1.12	0.08
			0.00			1" Ice	4.48	1.34	0.09
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
MPRD2449	B	Paraboloid w/Radome	From Leg	1.00	0.0000		80.00	2.17	No Ice	3.69	0.04
				0.00					1/2" Ice	3.98	0.06
				0.00					1" Ice	4.27	0.08

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	129.62	1.337	31	83.276	A	0.000	83.276	83.276	100.00	0.000	0.000
149.00-111.50					B	0.000	83.276		100.00	20.790	0.000
					C	0.000	83.276		100.00	14.870	0.000
L2	92.97	1.246	28	98.917	A	0.000	98.917	98.917	100.00	0.000	0.000
111.50-75.25					B	0.000	98.917		100.00	43.065	0.000
					C	0.000	98.917		100.00	58.779	0.000
L3 75.25-39.75	57.31	1.126	26	114.198	A	0.000	114.198	114.198	100.00	0.000	0.000
					B	0.000	114.198		100.00	42.174	0.000
					C	0.000	114.198		100.00	57.563	0.000
L4 39.75-0.00	20.06	0.902	21	147.870	A	0.000	147.870	147.870	100.00	0.000	0.000
					B	0.000	147.870		100.00	47.223	0.000
					C	0.000	147.870		100.00	64.455	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	129.62	1.337	8	1.7199	94.026	A	0.000	94.026	94.026	100.00	0.000	0.000
149.00-111.50						B	0.000	94.026		100.00	33.512	0.000
						C	0.000	94.026		100.00	34.790	0.000
L2 111.50-75.25	92.97	1.246	8	1.6637	109.308	A	0.000	109.308	109.308	100.00	0.000	0.000
						B	0.000	109.308		100.00	69.418	0.000
						C	0.000	109.308		100.00	101.190	0.000
L3 75.25-39.75	57.31	1.126	7	1.5851	124.042	A	0.000	124.042	124.042	100.00	0.000	0.000
						B	0.000	124.042		100.00	67.483	0.000
						C	0.000	124.042		100.00	98.199	0.000
L4 39.75-0.00	20.06	0.902	6	1.4272	158.371	A	0.000	158.371	158.371	100.00	0.000	0.000
						B	0.000	158.371		100.00	74.781	0.000
						C	0.000	158.371		100.00	108.550	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	129.62	1.337	10	83.276	A	0.000	83.276	83.276	100.00	0.000	0.000
149.00-111.50					B	0.000	83.276		100.00	20.790	0.000
					C	0.000	83.276		100.00	14.870	0.000
L2	92.97	1.246	10	98.917	A	0.000	98.917	98.917	100.00	0.000	0.000
111.50-75.25					B	0.000	98.917		100.00	43.065	0.000
					C	0.000	98.917		100.00	58.779	0.000
L3 75.25-39.75	57.31	1.126	9	114.198	A	0.000	114.198	114.198	100.00	0.000	0.000
					B	0.000	114.198		100.00	42.174	0.000
					C	0.000	114.198		100.00	57.563	0.000
L4 39.75-0.00	20.06	0.902	7	147.870	A	0.000	147.870	147.870	100.00	0.000	0.000
					B	0.000	147.870		100.00	47.223	0.000
					C	0.000	147.870		100.00	64.455	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.70	1.98	A	1	0.65	31	1	1	83.276	1.82	48.53	C
149.00-111.50			B	1	0.65		1	1	83.276			
			C	1	0.65		1	1	83.276			
L2	1.38	3.00	A	1	0.65	28	1	1	98.917	2.01	55.58	C
111.50-75.25			B	1	0.65		1	1	98.917			
			C	1	0.65		1	1	98.917			
L3	1.36	4.54	A	1	0.65	26	1	1	114.198	2.10	59.06	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
75.25-39.75			B	1	0.65		1	1	114.198			
			C	1	0.65		1	1	114.198			
L4 39.75-0.00	1.53	7.86	A	1	0.65	21	1	1	147.870	2.21	55.54	C
			B	1	0.65		1	1	147.870			
			C	1	0.65		1	1	147.870			
Sum Weight:	4.97	17.37						OTM	587.67 kip-ft	8.14		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.70	1.98	A	1	0.65	31	1	1	83.276	1.82	48.53	C
149.00-111.50			B	1	0.65		1	1	83.276			
			C	1	0.65		1	1	83.276			
L2	1.38	3.00	A	1	0.65	28	1	1	98.917	2.01	55.58	C
111.50-75.25			B	1	0.65		1	1	98.917			
			C	1	0.65		1	1	98.917			
L3	1.36	4.54	A	1	0.65	26	1	1	114.198	2.10	59.06	C
75.25-39.75			B	1	0.65		1	1	114.198			
			C	1	0.65		1	1	114.198			
L4 39.75-0.00	1.53	7.86	A	1	0.65	21	1	1	147.870	2.21	55.54	C
			B	1	0.65		1	1	147.870			
			C	1	0.65		1	1	147.870			
Sum Weight:	4.97	17.37						OTM	587.67 kip-ft	8.14		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.70	1.98	A	1	0.65	31	1	1	83.276	1.82	48.53	C
149.00-111.50			B	1	0.65		1	1	83.276			
			C	1	0.65		1	1	83.276			
L2	1.38	3.00	A	1	0.65	28	1	1	98.917	2.01	55.58	C
111.50-75.25			B	1	0.65		1	1	98.917			
			C	1	0.65		1	1	98.917			
L3	1.36	4.54	A	1	0.65	26	1	1	114.198	2.10	59.06	C
75.25-39.75			B	1	0.65		1	1	114.198			
			C	1	0.65		1	1	114.198			
L4 39.75-0.00	1.53	7.86	A	1	0.65	21	1	1	147.870	2.21	55.54	C
			B	1	0.65		1	1	147.870			
			C	1	0.65		1	1	147.870			
Sum Weight:	4.97	17.37						OTM	587.67 kip-ft	8.14		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	1.51	4.20	A	1	1.2	8	1	1	94.026	1.01	26.88	C
149.00-111.50			B	1	1.2		1	1	94.026			
			C	1	1.2		1	1	94.026			
L2	3.40	5.52	A	1	1.2	8	1	1	109.308	1.09	30.13	C
111.50-75.25			B	1	1.2		1	1	109.308			
			C	1	1.2		1	1	109.308			
L3	3.27	7.29	A	1	1.2	7	1	1	124.042	1.12	31.47	C
75.25-39.75			B	1	1.2		1	1	124.042			
			C	1	1.2		1	1	124.042			
L4 39.75-0.00	3.55	11.04	A	1	1.2	6	1	1	158.371	1.16	29.18	C
			B	1	1.2		1	1	158.371			
			C	1	1.2		1	1	158.371			
Sum Weight:	11.72	28.05						OTM	319.48 kip-ft	4.38		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	1.51	4.20	A	1	1.2	8	1	1	94.026	1.01	26.88	C
149.00-111.50			B	1	1.2		1	1	94.026			
			C	1	1.2		1	1	94.026			
L2	3.40	5.52	A	1	1.2	8	1	1	109.308	1.09	30.13	C
111.50-75.25			B	1	1.2		1	1	109.308			
			C	1	1.2		1	1	109.308			
L3	3.27	7.29	A	1	1.2	7	1	1	124.042	1.12	31.47	C
75.25-39.75			B	1	1.2		1	1	124.042			
			C	1	1.2		1	1	124.042			
L4 39.75-0.00	3.55	11.04	A	1	1.2	6	1	1	158.371	1.16	29.18	C
			B	1	1.2		1	1	158.371			
			C	1	1.2		1	1	158.371			
Sum Weight:	11.72	28.05						OTM	319.48 kip-ft	4.38		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	1.51	4.20	A	1	1.2	8	1	1	94.026	1.01	26.88	C
149.00-111.50			B	1	1.2		1	1	94.026			
			C	1	1.2		1	1	94.026			
L2	3.40	5.52	A	1	1.2	8	1	1	109.308	1.09	30.13	C
111.50-75.25			B	1	1.2		1	1	109.308			
			C	1	1.2		1	1	109.308			
L3	3.27	7.29	A	1	1.2	7	1	1	124.042	1.12	31.47	C
75.25-39.75			B	1	1.2		1	1	124.042			
			C	1	1.2		1	1	124.042			
L4 39.75-0.00	3.55	11.04	A	1	1.2	6	1	1	158.371	1.16	29.18	C
			B	1	1.2		1	1	158.371			
			C	1	1.2		1	1	158.371			
Sum Weight:	11.72	28.05						OTM	319.48 kip-ft	4.38		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.70	1.98	A	1	0.65	10	1	1	83.276	0.62	16.61	C
149.00-111.50			B	1	0.65		1	1	83.276			
			C	1	0.65		1	1	83.276			
L2	1.38	3.00	A	1	0.65	10	1	1	98.917	0.69	19.03	C
111.50-75.25			B	1	0.65		1	1	98.917			
			C	1	0.65		1	1	98.917			
L3	1.36	4.54	A	1	0.65	9	1	1	114.198	0.72	20.22	C
75.25-39.75			B	1	0.65		1	1	114.198			
			C	1	0.65		1	1	114.198			
L4 39.75-0.00	1.53	7.86	A	1	0.65	7	1	1	147.870	0.76	19.01	C
			B	1	0.65		1	1	147.870			
			C	1	0.65		1	1	147.870			
Sum Weight:	4.97	17.37						OTM	201.18 kip-ft	2.79		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.70	1.98	A	1	0.65	10	1	1	83.276	0.62	16.61	C
149.00-111.50			B	1	0.65		1	1	83.276			
			C	1	0.65		1	1	83.276			
L2	1.38	3.00	A	1	0.65	10	1	1	98.917	0.69	19.03	C
111.50-75.25			B	1	0.65		1	1	98.917			
			C	1	0.65		1	1	98.917			
L3	1.36	4.54	A	1	0.65	9	1	1	114.198	0.72	20.22	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
75.25-39.75			B	1	0.65		1	1	114.198			
			C	1	0.65		1	1	114.198			
L4 39.75-0.00	1.53	7.86	A	1	0.65	7	1	1	147.870	0.76	19.01	C
			B	1	0.65		1	1	147.870			
			C	1	0.65		1	1	147.870			
Sum Weight:	4.97	17.37						OTM	201.18 kip-ft	2.79		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.70	1.98	A	1	0.65	10	1	1	83.276	0.62	16.61	C
149.00-111.50			B	1	0.65		1	1	83.276			
			C	1	0.65		1	1	83.276			
L2	1.38	3.00	A	1	0.65	10	1	1	98.917	0.69	19.03	C
111.50-75.25			B	1	0.65		1	1	98.917			
			C	1	0.65		1	1	98.917			
L3	1.36	4.54	A	1	0.65	9	1	1	114.198	0.72	20.22	C
75.25-39.75			B	1	0.65		1	1	114.198			
			C	1	0.65		1	1	114.198			
L4 39.75-0.00	1.53	7.86	A	1	0.65	7	1	1	147.870	0.76	19.01	C
			B	1	0.65		1	1	147.870			
			C	1	0.65		1	1	147.870			
Sum Weight:	4.97	17.37						OTM	201.18 kip-ft	2.79		

Discrete Appurtenance Pressures - No Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
FO150-3	240.0000	0.00	-2.56	1.48	150.00	1.378	32	1.09	1.09
SBNH-1D6565C w/ Mount Pipe	0.0000	0.10	0.00	-2.96	150.00	1.378	32	11.68	9.84
SBNH-1D6565C w/ Mount Pipe	120.0000	0.10	2.56	1.48	150.00	1.378	32	11.68	9.84
AM-X-CD-16-65-00T-RET w/ Mount Pipe	240.0000	0.07	-2.56	1.48	150.00	1.378	32	8.26	6.30
7770.00 w/ Mount Pipe	0.0000	0.06	0.00	-2.96	150.00	1.378	32	5.75	4.25
7770.00 w/ Mount Pipe	120.0000	0.06	2.56	1.48	150.00	1.378	32	5.75	4.25
7770.00 w/ Mount Pipe	240.0000	0.06	-2.56	1.48	150.00	1.378	32	5.75	4.25
LGP21401	0.0000	0.02	0.00	-2.96	150.00	1.378	32	2.21	0.69
LGP21401	120.0000	0.02	2.56	1.48	150.00	1.378	32	2.21	0.69
LGP21401	240.0000	0.02	-2.56	1.48	150.00	1.378	32	2.21	0.69
RRUS 11	0.0000	0.05	0.00	-2.96	150.00	1.378	32	2.78	1.19
RRUS 11	120.0000	0.05	2.56	1.48	150.00	1.378	32	2.78	1.19

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
RRUS 11	240.0000	0.05	-2.56	1.48	150.00	1.378	32	2.78	1.19
RRUS 11	0.0000	0.05	0.00	-2.96	150.00	1.378	32	2.78	1.19
RRUS 11	120.0000	0.05	2.56	1.48	150.00	1.378	32	2.78	1.19
RRUS 11	240.0000	0.05	-2.56	1.48	150.00	1.378	32	2.78	1.19
LGP13519	0.0000	0.01	0.00	-2.96	150.00	1.378	32	0.58	0.36
LGP13519	120.0000	0.01	2.56	1.48	150.00	1.378	32	0.58	0.36
LGP13519	240.0000	0.01	-2.56	1.48	150.00	1.378	32	0.58	0.36
1001983	0.0000	0.00	0.00	-2.96	150.00	1.378	32	0.18	0.08
1001983	120.0000	0.00	2.56	1.48	150.00	1.378	32	0.18	0.08
1001983	240.0000	0.00	-2.56	1.48	150.00	1.378	32	0.18	0.08
DC6-48-60-18-8F	0.0000	0.02	0.00	-2.96	150.00	1.378	32	2.20	3.70
Side Arm Mount [SO 103-3]	0.0000	0.22	0.00	0.00	149.00	1.376	31	9.50	9.50
4' x 2" Pipe Mount	0.0000	0.03	0.00	-1.97	147.00	1.373	31	0.79	0.79
4' x 2" Pipe Mount	120.0000	0.03	1.71	0.99	147.00	1.373	31	0.79	0.79
4' x 2" Pipe Mount	240.0000	0.03	-1.71	0.99	147.00	1.373	31	0.79	0.79
Side Arm Mount [SO 102-3]	0.0000	0.08	0.00	0.00	147.00	1.373	31	3.00	3.00
7770.00 w/ Mount Pipe	0.0000	0.06	0.00	-3.03	140.00	1.359	31	5.75	4.25
7770.00 w/ Mount Pipe	120.0000	0.06	2.62	1.52	140.00	1.359	31	5.75	4.25
7770.00 w/ Mount Pipe	240.0000	0.06	-2.62	1.52	140.00	1.359	31	5.75	4.25
TMA DD 1900 with 850 BYPASS	0.0000	0.04	0.00	-3.03	140.00	1.359	31	0.62	0.30
TMA DD 1900 with 850 BYPASS	120.0000	0.04	2.62	1.52	140.00	1.359	31	0.62	0.30
TMA DD 1900 with 850 BYPASS	240.0000	0.04	-2.62	1.52	140.00	1.359	31	0.62	0.30
4' x 2" Pipe Mount	0.0000	0.03	0.00	-3.03	139.00	1.356	31	0.79	0.79
4' x 2" Pipe Mount	120.0000	0.03	2.62	1.52	139.00	1.356	31	0.79	0.79
4' x 2" Pipe Mount	240.0000	0.03	-2.62	1.52	139.00	1.356	31	0.79	0.79
Side Arm Mount [SO 104-3]	0.0000	0.29	0.00	0.00	139.00	1.356	31	3.30	3.30
APXV18-209014-C w/ Mount Pipe	0.0000	0.04	0.00	-3.10	132.00	1.342	31	3.72	3.31
APXV18-209014-C w/ Mount Pipe	120.0000	0.04	2.69	1.55	132.00	1.342	31	3.72	3.31
APXV18-209014-C w/ Mount Pipe	240.0000	0.04	-2.69	1.55	132.00	1.342	31	3.72	3.31
LGP 13901	0.0000	0.01	0.00	-3.10	132.00	1.342	31	0.50	0.24
LGP 13901	120.0000	0.01	2.69	1.55	132.00	1.342	31	0.50	0.24
LGP 13901	240.0000	0.01	-2.69	1.55	132.00	1.342	31	0.50	0.24
LNX-6515DS-VTM w/ Mount Pipe	0.0000	0.08	0.00	-3.10	132.00	1.342	31	11.68	9.84
LNX-6515DS-VTM w/ Mount Pipe	120.0000	0.08	2.69	1.55	132.00	1.342	31	11.68	9.84
LNX-6515DS-VTM w/ Mount Pipe	240.0000	0.08	-2.69	1.55	132.00	1.342	31	11.68	9.84
782 11066	0.0000	0.00	0.00	-3.10	132.00	1.342	31	0.15	0.08
782 11066	120.0000	0.00	2.69	1.55	132.00	1.342	31	0.15	0.08
782 11066	240.0000	0.00	-2.69	1.55	132.00	1.342	31	0.15	0.08
Side Arm Mount [SO 104-3]	0.0000	0.29	0.00	0.00	129.00	1.335	31	3.30	3.30
BXA-80080/6CF w/ Mount Pipe	0.0000	0.05	0.00	-4.17	120.00	1.315	30	7.94	5.49
BXA-80080/6CF w/ Mount Pipe	120.0000	0.05	3.61	2.08	120.00	1.315	30	7.94	5.49
BXA-80080/6CF w/ Mount Pipe	240.0000	0.05	-3.61	2.08	120.00	1.315	30	7.94	5.49
HBXX-6517DS-A2M w/ Mount Pipe	0.0000	0.07	0.00	-4.17	120.00	1.315	30	8.77	6.96
HBXX-6517DS-A2M w/	120.0000	0.07	3.61	2.08	120.00	1.315	30	8.77	6.96

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Mount Pipe									
HBXX-6517DS-A2M w/ Mount Pipe	240.0000	0.07	-3.61	2.08	120.00	1.315	30	8.77	6.96
SBNHH-1D65B w/ Mount Pipe	0.0000	0.07	0.00	-4.17	120.00	1.315	30	8.62	7.30
SBNHH-1D65B w/ Mount Pipe	120.0000	0.07	3.61	2.08	120.00	1.315	30	8.62	7.30
SBNHH-1D65B w/ Mount Pipe	240.0000	0.07	-3.61	2.08	120.00	1.315	30	8.62	7.30
RRH2X60-AWS	0.0000	0.04	0.00	-4.17	120.00	1.315	30	1.88	1.24
RRH2X60-AWS	120.0000	0.04	3.61	2.08	120.00	1.315	30	1.88	1.24
RRH2X60-AWS	240.0000	0.04	-3.61	2.08	120.00	1.315	30	1.88	1.24
RRH2X60-PCS	0.0000	0.05	0.00	-4.17	120.00	1.315	30	2.20	1.65
RRH2X60-PCS	120.0000	0.05	3.61	2.08	120.00	1.315	30	2.20	1.65
RRH2X60-PCS	240.0000	0.05	-3.61	2.08	120.00	1.315	30	2.20	1.65
DB-T1-6Z-8AB-0Z	0.0000	0.04	0.00	-4.17	120.00	1.315	30	4.80	2.00
DB-T1-6Z-8AB-0Z	120.0000	0.04	3.61	2.08	120.00	1.315	30	4.80	2.00
4' x 2" Pipe Mount	0.0000	0.06	0.00	-4.17	120.00	1.315	30	1.57	1.57
4' x 2" Pipe Mount	120.0000	0.06	3.61	2.08	120.00	1.315	30	1.57	1.57
4' x 2" Pipe Mount	240.0000	0.06	-3.61	2.08	120.00	1.315	30	1.57	1.57
6' x 2" Horizontal Mount Pipe	0.0000	0.06	0.00	-4.17	120.00	1.315	30	1.60	1.60
6' x 2" Horizontal Mount Pipe	120.0000	0.06	3.61	2.08	120.00	1.315	30	1.60	1.60
6' x 2" Horizontal Mount Pipe	240.0000	0.06	-3.61	2.08	120.00	1.315	30	1.60	1.60
Side Arm Mount [SO 104-3]	0.0000	0.29	0.00	0.00	120.00	1.315	30	3.30	3.30
FO150-3	0.0000	0.00	0.00	-2.44	80.00	1.208	28	1.09	1.09
6' x 2" Mount Pipe	0.0000	0.02	0.00	-1.94	80.00	1.208	28	1.43	1.43
Pipe Mount [PM 601-1]	0.0000	0.07	0.00	-1.94	80.00	1.208	28	3.00	0.90
	Sum Weight:	4.28							

Discrete Appurtenance Pressures - With Ice $G_H = 1.100$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
FO150-3	240.0000	0.05	-2.56	1.48	150.00	1.378	8	2.05	2.05	1.7440
SBNH-1D6565C w/ Mount Pipe	0.0000	0.46	0.00	-2.96	150.00	1.378	8	14.16	14.66	1.7440
SBNH-1D6565C w/ Mount Pipe	120.0000	0.46	2.56	1.48	150.00	1.378	8	14.16	14.66	1.7440
AM-X-CD-16-65-00T-RET w/ Mount Pipe	240.0000	0.34	-2.56	1.48	150.00	1.378	8	10.14	9.72	1.7440
7770.00 w/ Mount Pipe	0.0000	0.25	0.00	-2.96	150.00	1.378	8	7.26	6.79	1.7440
7770.00 w/ Mount Pipe	120.0000	0.25	2.56	1.48	150.00	1.378	8	7.26	6.79	1.7440
7770.00 w/ Mount Pipe	240.0000	0.25	-2.56	1.48	150.00	1.378	8	7.26	6.79	1.7440
LGP21401	0.0000	0.10	0.00	-2.96	150.00	1.378	8	3.22	1.42	1.7440
LGP21401	120.0000	0.10	2.56	1.48	150.00	1.378	8	3.22	1.42	1.7440
LGP21401	240.0000	0.10	-2.56	1.48	150.00	1.378	8	3.22	1.42	1.7440
RRUS 11	0.0000	0.14	0.00	-2.96	150.00	1.378	8	3.54	1.74	1.7440
RRUS 11	120.0000	0.14	2.56	1.48	150.00	1.378	8	3.54	1.74	1.7440
RRUS 11	240.0000	0.14	-2.56	1.48	150.00	1.378	8	3.54	1.74	1.7440
RRUS 11	0.0000	0.14	0.00	-2.96	150.00	1.378	8	3.54	1.74	1.7440
RRUS 11	120.0000	0.14	2.56	1.48	150.00	1.378	8	3.54	1.74	1.7440
RRUS 11	240.0000	0.14	-2.56	1.48	150.00	1.378	8	3.54	1.74	1.7440

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
LGP13519	0.0000	0.04	0.00	-2.96	150.00	1.378	8	1.15	0.86	1.7440
LGP13519	120.0000	0.04	2.56	1.48	150.00	1.378	8	1.15	0.86	1.7440
LGP13519	240.0000	0.04	-2.56	1.48	150.00	1.378	8	1.15	0.86	1.7440
1001983	0.0000	0.01	0.00	-2.96	150.00	1.378	8	0.41	0.27	1.7440
1001983	120.0000	0.01	2.56	1.48	150.00	1.378	8	0.41	0.27	1.7440
1001983	240.0000	0.01	-2.56	1.48	150.00	1.378	8	0.41	0.27	1.7440
DC6-48-60-18-8F	0.0000	0.15	0.00	-2.96	150.00	1.378	8	2.93	4.57	1.7440
Side Arm Mount [SO 103-3]	0.0000	0.55	0.00	0.00	149.00	1.376	8	17.52	17.52	1.7440
4' x 2" Pipe Mount	0.0000	0.06	0.00	-1.97	147.00	1.373	8	1.68	1.68	1.7417
4' x 2" Pipe Mount	120.0000	0.06	1.71	0.99	147.00	1.373	8	1.68	1.68	1.7417
4' x 2" Pipe Mount	240.0000	0.06	-1.71	0.99	147.00	1.373	8	1.68	1.68	1.7417
Side Arm Mount [SO 102-3]	0.0000	0.19	0.00	0.00	147.00	1.373	8	4.67	4.67	1.7417
7770.00 w/ Mount Pipe	0.0000	0.25	0.00	-3.03	140.00	1.359	8	7.25	6.77	1.7320
7770.00 w/ Mount Pipe	120.0000	0.25	2.62	1.52	140.00	1.359	8	7.25	6.77	1.7320
7770.00 w/ Mount Pipe	240.0000	0.25	-2.62	1.52	140.00	1.359	8	7.25	6.77	1.7320
TMA DD 1900 with 850 BYPASS	0.0000	0.09	0.00	-3.03	140.00	1.359	8	1.37	0.76	1.7320
TMA DD 1900 with 850 BYPASS	120.0000	0.09	2.62	1.52	140.00	1.359	8	1.37	0.76	1.7320
TMA DD 1900 with 850 BYPASS	240.0000	0.09	-2.62	1.52	140.00	1.359	8	1.37	0.76	1.7320
4' x 2" Pipe Mount	0.0000	0.06	0.00	-3.03	139.00	1.356	8	1.67	1.67	1.7320
4' x 2" Pipe Mount	120.0000	0.06	2.62	1.52	139.00	1.356	8	1.67	1.67	1.7320
4' x 2" Pipe Mount	240.0000	0.06	-2.62	1.52	139.00	1.356	8	1.67	1.67	1.7320
Side Arm Mount [SO 104-3]	0.0000	0.39	0.00	0.00	139.00	1.356	8	6.18	6.18	1.7320
APXV18-209014-C w/ Mount Pipe	0.0000	0.18	0.00	-3.10	132.00	1.342	8	5.13	5.68	1.7191
APXV18-209014-C w/ Mount Pipe	120.0000	0.18	2.69	1.55	132.00	1.342	8	5.13	5.68	1.7191
APXV18-209014-C w/ Mount Pipe	240.0000	0.18	-2.69	1.55	132.00	1.342	8	5.13	5.68	1.7191
LGP 13901	0.0000	0.03	0.00	-3.10	132.00	1.342	8	0.85	0.52	1.7191
LGP 13901	120.0000	0.03	2.69	1.55	132.00	1.342	8	0.85	0.52	1.7191
LGP 13901	240.0000	0.03	-2.69	1.55	132.00	1.342	8	0.85	0.52	1.7191
LNX-6515DS-VTM w/ Mount Pipe	0.0000	0.44	0.00	-3.10	132.00	1.342	8	14.13	14.61	1.7191
LNX-6515DS-VTM w/ Mount Pipe	120.0000	0.44	2.69	1.55	132.00	1.342	8	14.13	14.61	1.7191
LNX-6515DS-VTM w/ Mount Pipe	240.0000	0.44	-2.69	1.55	132.00	1.342	8	14.13	14.61	1.7191
782 11066	0.0000	0.01	0.00	-3.10	132.00	1.342	8	0.36	0.27	1.7191
782 11066	120.0000	0.01	2.69	1.55	132.00	1.342	8	0.36	0.27	1.7191
782 11066	240.0000	0.01	-2.69	1.55	132.00	1.342	8	0.36	0.27	1.7191
Side Arm Mount [SO 104-3]	0.0000	0.39	0.00	0.00	129.00	1.335	8	6.15	6.15	1.7191
BXA-80080/6CF w/ Mount Pipe	0.0000	0.29	0.00	-4.17	120.00	1.315	8	9.77	8.80	1.7067
BXA-80080/6CF w/ Mount Pipe	120.0000	0.29	3.61	2.08	120.00	1.315	8	9.77	8.80	1.7067
BXA-80080/6CF w/ Mount Pipe	240.0000	0.29	-3.61	2.08	120.00	1.315	8	9.77	8.80	1.7067
HBXX-6517DS-A2M w/ Mount Pipe	0.0000	0.34	0.00	-4.17	120.00	1.315	8	10.67	10.47	1.7067
HBXX-6517DS-A2M w/ Mount Pipe	120.0000	0.34	3.61	2.08	120.00	1.315	8	10.67	10.47	1.7067
HBXX-6517DS-A2M w/ Mount Pipe	240.0000	0.34	-3.61	2.08	120.00	1.315	8	10.67	10.47	1.7067
SBNHH-1D65B w/	0.0000	0.35	0.00	-4.17	120.00	1.315	8	10.76	11.09	1.7067

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Mount Pipe										
SBNHH-1D65B w/ Mount Pipe	120.0000	0.35	3.61	2.08	120.00	1.315	8	10.76	11.09	1.7067
SBNHH-1D65B w/ Mount Pipe	240.0000	0.35	-3.61	2.08	120.00	1.315	8	10.76	11.09	1.7067
RRH2X60-AWS	0.0000	0.11	0.00	-4.17	120.00	1.315	8	2.52	1.79	1.7067
RRH2X60-AWS	120.0000	0.11	3.61	2.08	120.00	1.315	8	2.52	1.79	1.7067
RRH2X60-AWS	240.0000	0.11	-3.61	2.08	120.00	1.315	8	2.52	1.79	1.7067
RRH2X60-PCS	0.0000	0.13	0.00	-4.17	120.00	1.315	8	2.89	2.28	1.7067
RRH2X60-PCS	120.0000	0.13	3.61	2.08	120.00	1.315	8	2.89	2.28	1.7067
RRH2X60-PCS	240.0000	0.13	-3.61	2.08	120.00	1.315	8	2.89	2.28	1.7067
DB-T1-6Z-8AB-0Z	0.0000	0.19	0.00	-4.17	120.00	1.315	8	5.76	2.69	1.7067
DB-T1-6Z-8AB-0Z	120.0000	0.19	3.61	2.08	120.00	1.315	8	5.76	2.69	1.7067
4' x 2" Pipe Mount	0.0000	0.13	0.00	-4.17	120.00	1.315	8	3.31	3.31	1.7067
4' x 2" Pipe Mount	120.0000	0.13	3.61	2.08	120.00	1.315	8	3.31	3.31	1.7067
4' x 2" Pipe Mount	240.0000	0.13	-3.61	2.08	120.00	1.315	8	3.31	3.31	1.7067
6' x 2" Horizontal Mount Pipe	0.0000	1.10	0.00	-4.17	120.00	1.315	8	4.55	4.55	1.7067
6' x 2" Horizontal Mount Pipe	120.0000	1.10	3.61	2.08	120.00	1.315	8	4.55	4.55	1.7067
6' x 2" Horizontal Mount Pipe	240.0000	1.10	-3.61	2.08	120.00	1.315	8	4.55	4.55	1.7067
Side Arm Mount [SO 104-3]	0.0000	0.39	0.00	0.00	120.00	1.315	8	6.13	6.13	1.7067
FO150-3	0.0000	0.05	0.00	-2.44	80.00	1.208	7	1.99	1.99	1.6389
6' x 2" Mount Pipe	0.0000	0.07	0.00	-1.94	80.00	1.208	7	2.78	2.78	1.6389
Pipe Mount [PM 601-1]	0.0000	0.11	0.00	-1.94	80.00	1.208	7	5.43	1.62	1.6389
	Sum Weight:	16.81								

Discrete Appurtenance Pressures - Service $G_H = 1.100$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
FO150-3	240.0000	0.00	-2.56	1.48	150.00	1.378	11	1.09	1.09
SBNH-1D6565C w/ Mount Pipe	0.0000	0.10	0.00	-2.96	150.00	1.378	11	11.68	9.84
SBNH-1D6565C w/ Mount Pipe	120.0000	0.10	2.56	1.48	150.00	1.378	11	11.68	9.84
AM-X-CD-16-65-00T-RET w/ Mount Pipe	240.0000	0.07	-2.56	1.48	150.00	1.378	11	8.26	6.30
7770.00 w/ Mount Pipe	0.0000	0.06	0.00	-2.96	150.00	1.378	11	5.75	4.25
7770.00 w/ Mount Pipe	120.0000	0.06	2.56	1.48	150.00	1.378	11	5.75	4.25
7770.00 w/ Mount Pipe	240.0000	0.06	-2.56	1.48	150.00	1.378	11	5.75	4.25
LGP21401	0.0000	0.02	0.00	-2.96	150.00	1.378	11	2.21	0.69
LGP21401	120.0000	0.02	2.56	1.48	150.00	1.378	11	2.21	0.69
LGP21401	240.0000	0.02	-2.56	1.48	150.00	1.378	11	2.21	0.69
RRUS 11	0.0000	0.05	0.00	-2.96	150.00	1.378	11	2.78	1.19
RRUS 11	120.0000	0.05	2.56	1.48	150.00	1.378	11	2.78	1.19
RRUS 11	240.0000	0.05	-2.56	1.48	150.00	1.378	11	2.78	1.19
RRUS 11	0.0000	0.05	0.00	-2.96	150.00	1.378	11	2.78	1.19
RRUS 11	120.0000	0.05	2.56	1.48	150.00	1.378	11	2.78	1.19
RRUS 11	240.0000	0.05	-2.56	1.48	150.00	1.378	11	2.78	1.19
LGP13519	0.0000	0.01	0.00	-2.96	150.00	1.378	11	0.58	0.36
LGP13519	120.0000	0.01	2.56	1.48	150.00	1.378	11	0.58	0.36
LGP13519	240.0000	0.01	-2.56	1.48	150.00	1.378	11	0.58	0.36
1001983	0.0000	0.00	0.00	-2.96	150.00	1.378	11	0.18	0.08

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
1001983	120.0000	0.00	2.56	1.48	150.00	1.378	11	0.18	0.08
1001983	240.0000	0.00	-2.56	1.48	150.00	1.378	11	0.18	0.08
DC6-48-60-18-8F	0.0000	0.02	0.00	-2.96	150.00	1.378	11	2.20	3.70
Side Arm Mount [SO 103-3]	0.0000	0.22	0.00	0.00	149.00	1.376	11	9.50	9.50
4' x 2" Pipe Mount	0.0000	0.03	0.00	-1.97	147.00	1.373	11	0.79	0.79
4' x 2" Pipe Mount	120.0000	0.03	1.71	0.99	147.00	1.373	11	0.79	0.79
4' x 2" Pipe Mount	240.0000	0.03	-1.71	0.99	147.00	1.373	11	0.79	0.79
Side Arm Mount [SO 102-3]	0.0000	0.08	0.00	0.00	147.00	1.373	11	3.00	3.00
7770.00 w/ Mount Pipe	0.0000	0.06	0.00	-3.03	140.00	1.359	11	5.75	4.25
7770.00 w/ Mount Pipe	120.0000	0.06	2.62	1.52	140.00	1.359	11	5.75	4.25
7770.00 w/ Mount Pipe	240.0000	0.06	-2.62	1.52	140.00	1.359	11	5.75	4.25
TMA DD 1900 with 850 BYPASS	0.0000	0.04	0.00	-3.03	140.00	1.359	11	0.62	0.30
TMA DD 1900 with 850 BYPASS	120.0000	0.04	2.62	1.52	140.00	1.359	11	0.62	0.30
TMA DD 1900 with 850 BYPASS	240.0000	0.04	-2.62	1.52	140.00	1.359	11	0.62	0.30
4' x 2" Pipe Mount	0.0000	0.03	0.00	-3.03	139.00	1.356	11	0.79	0.79
4' x 2" Pipe Mount	120.0000	0.03	2.62	1.52	139.00	1.356	11	0.79	0.79
4' x 2" Pipe Mount	240.0000	0.03	-2.62	1.52	139.00	1.356	11	0.79	0.79
Side Arm Mount [SO 104-3]	0.0000	0.29	0.00	0.00	139.00	1.356	11	3.30	3.30
APXV18-209014-C w/ Mount Pipe	0.0000	0.04	0.00	-3.10	132.00	1.342	11	3.72	3.31
APXV18-209014-C w/ Mount Pipe	120.0000	0.04	2.69	1.55	132.00	1.342	11	3.72	3.31
APXV18-209014-C w/ Mount Pipe	240.0000	0.04	-2.69	1.55	132.00	1.342	11	3.72	3.31
LGP 13901	0.0000	0.01	0.00	-3.10	132.00	1.342	11	0.50	0.24
LGP 13901	120.0000	0.01	2.69	1.55	132.00	1.342	11	0.50	0.24
LGP 13901	240.0000	0.01	-2.69	1.55	132.00	1.342	11	0.50	0.24
LNX-6515DS-VTM w/ Mount Pipe	0.0000	0.08	0.00	-3.10	132.00	1.342	11	11.68	9.84
LNX-6515DS-VTM w/ Mount Pipe	120.0000	0.08	2.69	1.55	132.00	1.342	11	11.68	9.84
LNX-6515DS-VTM w/ Mount Pipe	240.0000	0.08	-2.69	1.55	132.00	1.342	11	11.68	9.84
782 11066	0.0000	0.00	0.00	-3.10	132.00	1.342	11	0.15	0.08
782 11066	120.0000	0.00	2.69	1.55	132.00	1.342	11	0.15	0.08
782 11066	240.0000	0.00	-2.69	1.55	132.00	1.342	11	0.15	0.08
Side Arm Mount [SO 104-3]	0.0000	0.29	0.00	0.00	129.00	1.335	10	3.30	3.30
BXA-80080/6CF w/ Mount Pipe	0.0000	0.05	0.00	-4.17	120.00	1.315	10	7.94	5.49
BXA-80080/6CF w/ Mount Pipe	120.0000	0.05	3.61	2.08	120.00	1.315	10	7.94	5.49
BXA-80080/6CF w/ Mount Pipe	240.0000	0.05	-3.61	2.08	120.00	1.315	10	7.94	5.49
HBXX-6517DS-A2M w/ Mount Pipe	0.0000	0.07	0.00	-4.17	120.00	1.315	10	8.77	6.96
HBXX-6517DS-A2M w/ Mount Pipe	120.0000	0.07	3.61	2.08	120.00	1.315	10	8.77	6.96
HBXX-6517DS-A2M w/ Mount Pipe	240.0000	0.07	-3.61	2.08	120.00	1.315	10	8.77	6.96
SBNHH-1D65B w/ Mount Pipe	0.0000	0.07	0.00	-4.17	120.00	1.315	10	8.62	7.30
SBNHH-1D65B w/ Mount Pipe	120.0000	0.07	3.61	2.08	120.00	1.315	10	8.62	7.30
SBNHH-1D65B w/	240.0000	0.07	-3.61	2.08	120.00	1.315	10	8.62	7.30

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Mount Pipe									
RRH2X60-AWS	0.0000	0.04	0.00	-4.17	120.00	1.315	10	1.88	1.24
RRH2X60-AWS	120.0000	0.04	3.61	2.08	120.00	1.315	10	1.88	1.24
RRH2X60-AWS	240.0000	0.04	-3.61	2.08	120.00	1.315	10	1.88	1.24
RRH2X60-PCS	0.0000	0.05	0.00	-4.17	120.00	1.315	10	2.20	1.65
RRH2X60-PCS	120.0000	0.05	3.61	2.08	120.00	1.315	10	2.20	1.65
RRH2X60-PCS	240.0000	0.05	-3.61	2.08	120.00	1.315	10	2.20	1.65
DB-T1-6Z-8AB-0Z	0.0000	0.04	0.00	-4.17	120.00	1.315	10	4.80	2.00
DB-T1-6Z-8AB-0Z	120.0000	0.04	3.61	2.08	120.00	1.315	10	4.80	2.00
4' x 2" Pipe Mount	0.0000	0.06	0.00	-4.17	120.00	1.315	10	1.57	1.57
4' x 2" Pipe Mount	120.0000	0.06	3.61	2.08	120.00	1.315	10	1.57	1.57
4' x 2" Pipe Mount	240.0000	0.06	-3.61	2.08	120.00	1.315	10	1.57	1.57
6' x 2" Horizontal Mount Pipe	0.0000	0.06	0.00	-4.17	120.00	1.315	10	1.60	1.60
6' x 2" Horizontal Mount Pipe	120.0000	0.06	3.61	2.08	120.00	1.315	10	1.60	1.60
6' x 2" Horizontal Mount Pipe	240.0000	0.06	-3.61	2.08	120.00	1.315	10	1.60	1.60
Side Arm Mount [SO 104-3]	0.0000	0.29	0.00	0.00	120.00	1.315	10	3.30	3.30
FO150-3	0.0000	0.00	0.00	-2.44	80.00	1.208	9	1.09	1.09
6' x 2" Mount Pipe	0.0000	0.02	0.00	-1.94	80.00	1.208	9	1.43	1.43
Pipe Mount [PM 601-1]	0.0000	0.07	0.00	-1.94	80.00	1.208	9	3.00	0.90
	Sum Weight:	4.28							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
80.00	MPRD2449	120.0000	0.04	2.11	1.22	1.208	3.69	28
		Sum Weight:	0.04					

Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf	t_z in
80.00	MPRD2449	120.0000	0.11	2.11	1.22	1.208	4.63	7	1.6389
		Sum Weight:	0.11						

Dish Pressures - Service

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
80.00	MPRD2449	120.0000	0.04	2.11	1.22	1.208	3.69	9
		Sum Weight:	0.04					

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	17.37					
Bracing Weight	0.00					
Total Member Self-Weight	17.37			0.97	-0.90	
Total Weight	26.66			0.97	-0.90	
Wind 0 deg - No Ice		-0.04	-15.69	-1593.44	3.69	0.55
Wind 30 deg - No Ice		7.77	-13.56	-1376.80	-792.44	0.10
Wind 60 deg - No Ice		13.51	-7.81	-792.21	-1376.94	-0.37
Wind 90 deg - No Ice		15.64	0.03	4.76	-1593.88	-0.72
Wind 120 deg - No Ice		13.57	7.87	801.50	-1383.07	-0.91
Wind 150 deg - No Ice		7.85	13.59	1383.03	-800.68	-0.85
Wind 180 deg - No Ice		0.03	15.66	1593.05	-4.21	-0.54
Wind 210 deg - No Ice		-7.80	13.54	1377.54	792.70	-0.10
Wind 240 deg - No Ice		-13.54	7.81	794.19	1377.80	0.36
Wind 270 deg - No Ice		-15.67	-0.03	-2.85	1594.57	0.73
Wind 300 deg - No Ice		-13.59	-7.88	-800.34	1382.60	0.91
Wind 330 deg - No Ice		-7.86	-13.62	-1383.24	800.14	0.85
Member Ice	10.68					
Total Weight Ice	56.68			6.04	-4.43	
Wind 0 deg - Ice		-0.01	-7.37	-711.95	-3.53	0.18
Wind 30 deg - Ice		3.66	-6.37	-615.06	-361.95	0.02
Wind 60 deg - Ice		6.35	-3.68	-352.16	-624.72	-0.15
Wind 90 deg - Ice		7.35	0.01	6.67	-721.67	-0.27
Wind 120 deg - Ice		6.37	3.69	365.60	-626.13	-0.33
Wind 150 deg - Ice		3.68	6.38	627.94	-363.60	-0.30
Wind 180 deg - Ice		0.00	7.36	723.26	-4.90	-0.18
Wind 210 deg - Ice		-3.67	6.37	626.75	353.78	-0.02
Wind 240 deg - Ice		-6.36	3.68	364.26	616.75	0.15
Wind 270 deg - Ice		-7.36	-0.01	5.40	713.64	0.27
Wind 300 deg - Ice		-6.38	-3.69	-353.77	617.72	0.33
Wind 330 deg - Ice		-3.68	-6.39	-616.58	355.16	0.30
Total Weight	26.66			0.97	-0.90	
Wind 0 deg - Service		-0.01	-5.37	-546.13	1.27	0.19
Wind 30 deg - Service		2.66	-4.64	-471.97	-271.27	0.03
Wind 60 deg - Service		4.62	-2.67	-271.84	-471.37	-0.13
Wind 90 deg - Service		5.35	0.01	0.99	-545.64	-0.25
Wind 120 deg - Service		4.65	2.70	273.75	-473.47	-0.31
Wind 150 deg - Service		2.69	4.65	472.83	-274.09	-0.29
Wind 180 deg - Service		0.01	5.36	544.73	-1.43	-0.19
Wind 210 deg - Service		-2.67	4.64	470.95	271.38	-0.03
Wind 240 deg - Service		-4.64	2.67	271.25	471.68	0.12
Wind 270 deg - Service		-5.37	-0.01	-1.61	545.89	0.25
Wind 300 deg - Service		-4.65	-2.70	-274.62	473.32	0.31
Wind 330 deg - Service		-2.69	-4.66	-474.17	273.93	0.29

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice

Comb. No.	Description
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
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	149 - 111.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.01	-1.46	0.38
			Max. Mx	8	-6.31	-290.72	-0.11
			Max. My	2	-6.32	-0.14	287.76
			Max. Vy	8	15.11	-290.72	-0.11

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-15.08	-0.14	287.76
			Max. Torque	10			1.19
L2	111.5 - 75.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.86	-2.73	-1.24
			Max. Mx	8	-11.68	-885.30	-2.09
			Max. My	14	-11.68	-2.58	-880.98
			Max. Vy	20	-18.66	884.08	1.86
			Max. Vx	2	-18.69	1.37	880.85
			Max. Torque	10			1.46
L3	75.25 - 39.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.46	-3.81	-3.56
			Max. Mx	20	-18.91	1587.61	3.35
			Max. My	2	-18.91	3.63	1584.95
			Max. Vy	20	-21.76	1587.61	3.35
			Max. Vx	2	-21.79	3.63	1584.95
			Max. Torque	10			1.45
L4	39.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.05	-5.16	-6.68
			Max. Mx	20	-31.98	2646.83	5.13
			Max. My	2	-31.98	6.48	2644.89
			Max. Vy	20	-25.10	2646.83	5.13
			Max. Vx	2	-25.13	6.48	2644.89
			Max. Torque	10			1.45

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	63.05	-0.00	-7.36
	Max. H_x	21	24.00	25.08	0.05
	Max. H_z	2	32.00	0.07	25.10
	Max. M_x	2	2644.89	0.07	25.10
	Max. M_z	8	2644.99	-25.03	-0.05
	Max. Torsion	10	1.45	-21.71	-12.60
	Min. Vert	7	24.00	-21.61	12.49
	Min. H_x	9	24.00	-25.03	-0.05
	Min. H_z	15	24.00	-0.04	-25.05
	Min. M_x	14	-2643.47	-0.04	-25.05
	Min. M_z	20	-2646.83	25.08	0.05
	Min. Torsion	22	-1.44	21.74	12.61

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	26.66	0.00	0.00	0.97	-0.90	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	32.00	-0.07	-25.10	-2644.89	6.48	0.87
0.9 Dead+1.6 Wind 0 deg - No Ice	24.00	-0.07	-25.10	-2619.30	6.71	0.87
1.2 Dead+1.6 Wind 30 deg - No	32.00	12.43	-21.69	-2285.40	-1314.90	0.16

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
Ice						
0.9 Dead+1.6 Wind 30 deg - No Ice	24.00	12.43	-21.69	-2263.32	-1301.72	0.16
1.2 Dead+1.6 Wind 60 deg - No Ice	32.00	21.61	-12.49	-1315.19	-2285.01	-0.58
0.9 Dead+1.6 Wind 60 deg - No Ice	24.00	21.61	-12.49	-1302.61	-2262.31	-0.58
1.2 Dead+1.6 Wind 90 deg - No Ice	32.00	25.03	0.05	7.50	-2644.99	-1.15
0.9 Dead+1.6 Wind 90 deg - No Ice	24.00	25.03	0.05	7.13	-2618.78	-1.15
1.2 Dead+1.6 Wind 120 deg - No Ice	32.00	21.71	12.60	1329.75	-2295.07	-1.45
0.9 Dead+1.6 Wind 120 deg - No Ice	24.00	21.71	12.60	1316.44	-2272.30	-1.44
1.2 Dead+1.6 Wind 150 deg - No Ice	32.00	12.56	21.75	2294.86	-1328.50	-1.35
0.9 Dead+1.6 Wind 150 deg - No Ice	24.00	12.56	21.75	2272.10	-1315.20	-1.35
1.2 Dead+1.6 Wind 180 deg - No Ice	32.00	0.04	25.05	2643.47	-6.61	-0.86
0.9 Dead+1.6 Wind 180 deg - No Ice	24.00	0.04	25.05	2617.30	-6.27	-0.86
1.2 Dead+1.6 Wind 210 deg - No Ice	32.00	-12.48	21.66	2285.83	1316.03	-0.15
0.9 Dead+1.6 Wind 210 deg - No Ice	24.00	-12.48	21.66	2263.15	1303.41	-0.15
1.2 Dead+1.6 Wind 240 deg - No Ice	32.00	-21.67	12.49	1317.66	2287.10	0.58
0.9 Dead+1.6 Wind 240 deg - No Ice	24.00	-21.67	12.49	1304.46	2264.96	0.58
1.2 Dead+1.6 Wind 270 deg - No Ice	32.00	-25.08	-0.05	-5.13	2646.83	1.15
0.9 Dead+1.6 Wind 270 deg - No Ice	24.00	-25.08	-0.05	-5.38	2621.17	1.15
1.2 Dead+1.6 Wind 300 deg - No Ice	32.00	-21.74	-12.61	-1328.61	2295.02	1.44
0.9 Dead+1.6 Wind 300 deg - No Ice	24.00	-21.74	-12.61	-1315.91	2272.81	1.43
1.2 Dead+1.6 Wind 330 deg - No Ice	32.00	-12.58	-21.79	-2295.99	1328.35	1.34
0.9 Dead+1.6 Wind 330 deg - No Ice	24.00	-12.58	-21.79	-2273.82	1315.61	1.34
1.2 Dead+1.0 Ice+1.0 Temp	63.05	0.00	0.00	6.68	-5.16	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	63.05	-0.01	-7.37	-785.61	-4.25	0.18
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	63.05	3.66	-6.37	-678.72	-399.88	0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	63.05	6.35	-3.68	-388.58	-689.93	-0.16
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	63.05	7.35	0.01	7.44	-796.90	-0.29
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	63.05	6.37	3.69	403.56	-691.44	-0.35
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	63.05	3.68	6.38	693.09	-401.66	-0.31
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	63.05	0.00	7.36	798.29	-5.72	-0.18
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	63.05	-3.67	6.37	691.81	390.18	-0.01
1.2 Dead+1.0 Wind 240	63.05	-6.36	3.68	402.11	680.44	0.16

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	63.05	-7.36	-0.01	6.07	787.36	0.29
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	63.05	-6.38	-3.69	-390.31	681.49	0.34
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	63.05	-3.68	-6.39	-680.35	391.68	0.31
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	26.66	-0.01	-5.37	-562.61	0.68	0.19
Dead+Wind 30 deg - Service	26.66	2.66	-4.64	-486.04	-280.76	0.03
Dead+Wind 60 deg - Service	26.66	4.62	-2.67	-279.39	-487.39	-0.13
Dead+Wind 90 deg - Service	26.66	5.35	0.01	2.33	-564.07	-0.25
Dead+Wind 120 deg - Service	26.66	4.65	2.70	283.97	-489.55	-0.31
Dead+Wind 150 deg - Service	26.66	2.69	4.65	489.54	-283.67	-0.29
Dead+Wind 180 deg - Service	26.66	0.01	5.36	563.78	-2.11	-0.19
Dead+Wind 210 deg - Service	26.66	-2.67	4.64	487.60	279.61	-0.03
Dead+Wind 240 deg - Service	26.66	-4.64	2.67	281.39	486.44	0.13
Dead+Wind 270 deg - Service	26.66	-5.37	-0.01	-0.36	563.07	0.25
Dead+Wind 300 deg - Service	26.66	-4.65	-2.70	-282.26	488.14	0.31
Dead+Wind 330 deg - Service	26.66	-2.69	-4.66	-488.30	282.24	0.29

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-26.66	0.00	0.00	26.66	0.00	0.000%
2	-0.07	-32.00	-25.10	0.07	32.00	25.10	0.000%
3	-0.07	-24.00	-25.10	0.07	24.00	25.10	0.000%
4	12.43	-32.00	-21.69	-12.43	32.00	21.69	0.000%
5	12.43	-24.00	-21.69	-12.43	24.00	21.69	0.000%
6	21.61	-32.00	-12.49	-21.61	32.00	12.49	0.000%
7	21.61	-24.00	-12.49	-21.61	24.00	12.49	0.000%
8	25.03	-32.00	0.05	-25.03	32.00	-0.05	0.000%
9	25.03	-24.00	0.05	-25.03	24.00	-0.05	0.000%
10	21.71	-32.00	12.60	-21.71	32.00	-12.60	0.000%
11	21.71	-24.00	12.60	-21.71	24.00	-12.60	0.000%
12	12.56	-32.00	21.75	-12.56	32.00	-21.75	0.000%
13	12.56	-24.00	21.75	-12.56	24.00	-21.75	0.000%
14	0.04	-32.00	25.05	-0.04	32.00	-25.05	0.000%
15	0.04	-24.00	25.05	-0.04	24.00	-25.05	0.000%
16	-12.48	-32.00	21.66	12.48	32.00	-21.66	0.000%
17	-12.48	-24.00	21.66	12.48	24.00	-21.66	0.000%
18	-21.67	-32.00	12.49	21.67	32.00	-12.49	0.000%
19	-21.67	-24.00	12.49	21.67	24.00	-12.49	0.000%
20	-25.08	-32.00	-0.05	25.08	32.00	0.05	0.000%
21	-25.08	-24.00	-0.05	25.08	24.00	0.05	0.000%
22	-21.74	-32.00	-12.61	21.74	32.00	12.61	0.000%
23	-21.74	-24.00	-12.61	21.74	24.00	12.61	0.000%
24	-12.58	-32.00	-21.79	12.58	32.00	21.79	0.000%
25	-12.58	-24.00	-21.79	12.58	24.00	21.79	0.000%
26	0.00	-63.05	0.00	-0.00	63.05	-0.00	0.000%
27	-0.01	-63.05	-7.37	0.01	63.05	7.37	0.000%
28	3.66	-63.05	-6.37	-3.66	63.05	6.37	0.000%
29	6.35	-63.05	-3.68	-6.35	63.05	3.68	0.000%
30	7.35	-63.05	0.01	-7.35	63.05	-0.01	0.000%
31	6.37	-63.05	3.69	-6.37	63.05	-3.69	0.000%
32	3.68	-63.05	6.38	-3.68	63.05	-6.38	0.000%
33	0.00	-63.05	7.36	-0.00	63.05	-7.36	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
34	-3.67	-63.05	6.37	3.67	63.05	-6.37	0.000%
35	-6.36	-63.05	3.68	6.36	63.05	-3.68	0.000%
36	-7.36	-63.05	-0.01	7.36	63.05	0.01	0.000%
37	-6.38	-63.05	-3.69	6.38	63.05	3.69	0.000%
38	-3.68	-63.05	-6.39	3.68	63.05	6.39	0.000%
39	-0.01	-26.66	-5.37	0.01	26.66	5.37	0.000%
40	2.66	-26.66	-4.64	-2.66	26.66	4.64	0.000%
41	4.62	-26.66	-2.67	-4.62	26.66	2.67	0.000%
42	5.35	-26.66	0.01	-5.35	26.66	-0.01	0.000%
43	4.65	-26.66	2.70	-4.65	26.66	-2.70	0.000%
44	2.69	-26.66	4.65	-2.69	26.66	-4.65	0.000%
45	0.01	-26.66	5.36	-0.01	26.66	-5.36	0.000%
46	-2.67	-26.66	4.64	2.67	26.66	-4.64	0.000%
47	-4.64	-26.66	2.67	4.64	26.66	-2.67	0.000%
48	-5.37	-26.66	-0.01	5.37	26.66	0.01	0.000%
49	-4.65	-26.66	-2.70	4.65	26.66	2.70	0.000%
50	-2.69	-26.66	-4.66	2.69	26.66	4.66	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00074244
3	Yes	4	0.00000001	0.00041186
4	Yes	6	0.00000001	0.00005447
5	Yes	5	0.00000001	0.00053874
6	Yes	6	0.00000001	0.00005525
7	Yes	5	0.00000001	0.00054675
8	Yes	5	0.00000001	0.00004362
9	Yes	4	0.00000001	0.00063300
10	Yes	6	0.00000001	0.00005315
11	Yes	5	0.00000001	0.00052474
12	Yes	6	0.00000001	0.00005633
13	Yes	5	0.00000001	0.00055735
14	Yes	5	0.00000001	0.00004653
15	Yes	4	0.00000001	0.00065570
16	Yes	6	0.00000001	0.00005424
17	Yes	5	0.00000001	0.00053641
18	Yes	6	0.00000001	0.00005371
19	Yes	5	0.00000001	0.00053099
20	Yes	5	0.00000001	0.00006084
21	Yes	4	0.00000001	0.00087331
22	Yes	6	0.00000001	0.00005655
23	Yes	5	0.00000001	0.00055983
24	Yes	6	0.00000001	0.00005314
25	Yes	5	0.00000001	0.00052479
26	Yes	4	0.00000001	0.00006776
27	Yes	5	0.00000001	0.00074172
28	Yes	6	0.00000001	0.00015496
29	Yes	6	0.00000001	0.00015523
30	Yes	5	0.00000001	0.00075388
31	Yes	6	0.00000001	0.00015639
32	Yes	6	0.00000001	0.00015948
33	Yes	5	0.00000001	0.00075103
34	Yes	6	0.00000001	0.00015332

35	Yes	6	0.00000001	0.00015352
36	Yes	5	0.00000001	0.00074186
37	Yes	6	0.00000001	0.00015361
38	Yes	6	0.00000001	0.00015026
39	Yes	4	0.00000001	0.00006908
40	Yes	4	0.00000001	0.00054004
41	Yes	4	0.00000001	0.00055948
42	Yes	4	0.00000001	0.00008833
43	Yes	4	0.00000001	0.00050869
44	Yes	4	0.00000001	0.00059496
45	Yes	4	0.00000001	0.00007372
46	Yes	4	0.00000001	0.00053026
47	Yes	4	0.00000001	0.00051697
48	Yes	4	0.00000001	0.00009304
49	Yes	4	0.00000001	0.00059533
50	Yes	4	0.00000001	0.00050406

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 111.5	25.489	43	1.4757	0.0042
L2	115.25 - 75.25	15.460	43	1.3092	0.0023
L3	79.75 - 39.75	7.143	43	0.8776	0.0011
L4	45 - 0	2.209	43	0.4495	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	FO150-3	43	25.489	1.4757	0.0042	39792
147.00	4' x 2" Pipe Mount	43	24.872	1.4695	0.0041	39792
139.00	7770.00 w/ Mount Pipe	43	22.414	1.4432	0.0036	19896
129.00	APXV18-209014-C w/ Mount Pipe	43	19.398	1.4009	0.0030	9947
120.00	BXA-80080/6CF w/ Mount Pipe	43	16.785	1.3466	0.0025	6860
80.00	MPRD2449	43	7.191	0.8810	0.0011	4453

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 111.5	119.204	10	6.9153	0.0202
L2	115.25 - 75.25	72.373	10	6.1373	0.0107
L3	79.75 - 39.75	33.473	10	4.1158	0.0050
L4	45 - 0	10.356	10	2.1080	0.0019

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	FO150-3	10	119.204	6.9153	0.0202	8742
147.00	4' x 2" Pipe Mount	10	116.324	6.8864	0.0196	8742
139.00	7770.00 w/ Mount Pipe	10	104.846	6.7636	0.0171	4370
129.00	APXV18-209014-C w/ Mount Pipe	10	90.767	6.5664	0.0142	2182
120.00	BXA-80080/6CF w/ Mount Pipe	10	78.563	6.3124	0.0118	1502
80.00	MPRD2449	10	33.696	4.1315	0.0050	961

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	149 - 147.224	TP29.487x23x0.1875	37.50	0.00	0.0	13.7592	-0.92	962.65	0.001
	147.224 - 145.447					13.9420	-1.21	971.19	0.001
	145.447 - 143.671					14.1249	-1.34	979.62	0.001
	143.671 - 141.895					14.3078	-1.47	987.93	0.001
	141.895 - 140.118					14.4906	-1.60	996.14	0.002
	140.118 - 138.342					14.6735	-2.41	1004.23	0.002
	138.342 - 136.566					14.8564	-2.55	1012.21	0.003
	136.566 - 134.789					15.0392	-2.68	1020.07	0.003
	134.789 - 133.013					15.2221	-2.82	1027.83	0.003
	133.013 - 131.237					15.4050	-2.96	1035.47	0.003
	131.237 - 129.461					15.5879	-3.10	1043.01	0.003
	129.461 - 127.684					15.7707	-3.81	1050.43	0.004
	127.684 - 125.908					15.9536	-3.96	1057.74	0.004
	125.908 - 124.132					16.1365	-4.11	1064.94	0.004
	124.132 - 122.355					16.3193	-4.26	1072.02	0.004
	122.355 - 120.579					16.5022	-4.41	1079.00	0.004
	120.579 - 118.803					16.6851	-5.98	1085.86	0.006
	118.803 - 117.026					16.8679	-6.14	1092.61	0.006
	117.026 - 115.25					17.0508	-6.31	1099.25	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	115.25 - 111.5					17.4369	-3.24	1112.90	0.003
L2	115.25 - 111.5	TP35.383x28.4633x0.2188	40.00	0.00	0.0	20.0610	-3.70	1370.75	0.003
	111.5 - 109.736					20.2728	-7.18	1379.96	0.005
	109.736 - 107.972					20.4847	-7.42	1389.06	0.005
	107.972 - 106.208					20.6965	-7.65	1398.05	0.005
	106.208 - 104.444					20.9084	-7.89	1406.92	0.006
	104.444 - 102.681					21.1203	-8.14	1415.69	0.006
	102.681 - 100.917					21.3321	-8.38	1424.35	0.006
	100.917 - 99.1528					21.5440	-8.63	1432.90	0.006
	99.1528 - 97.3889					21.7559	-8.88	1441.33	0.006
	97.3889 - 95.625					21.9677	-9.13	1449.66	0.006
	95.625 - 93.8611					22.1796	-9.39	1457.88	0.006
	93.8611 - 92.0972					22.3914	-9.65	1465.98	0.007
	92.0972 - 90.3333					22.6033	-9.91	1473.98	0.007
	90.3333 - 88.5694					22.8152	-10.17	1481.87	0.007
	88.5694 - 86.8056					23.0270	-10.44	1489.64	0.007
	86.8056 - 85.0417					23.2389	-10.71	1497.31	0.007
	85.0417 - 83.2778					23.4508	-10.98	1504.87	0.007
	83.2778 - 81.5139					23.6626	-11.26	1512.31	0.007
	81.5139 - 79.75					23.8745	-11.67	1519.65	0.008
	79.75 - 75.25					24.4150	-5.74	1537.86	0.004
L3	79.75 - 75.25	TP41.086x34.167x0.2813	40.00	0.00	0.0	30.9443	-7.16	2165.32	0.003
	75.25 - 73.5694					31.2038	-13.21	2177.47	0.006
	73.5694 - 71.8889					31.4633	-13.53	2189.52	0.006
	71.8889 - 70.2083					31.7228	-13.84	2201.47	0.006
	70.2083 - 68.5278					31.9823	-14.16	2213.32	0.006
	68.5278 - 66.8472					32.2418	-14.49	2225.07	0.007
	66.8472 - 65.1667					32.5013	-14.81	2236.72	0.007
	65.1667 - 63.4861					32.7608	-15.14	2248.27	0.007
	63.4861 - 61.8056					33.0203	-15.47	2259.72	0.007
	61.8056 - 60.125					33.2797	-15.80	2271.07	0.007
	60.125 - 58.4444					33.5392	-16.14	2282.33	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	58.4444 - 56.7639					33.7987	-16.48	2293.48	0.007
	56.7639 - 55.0833					34.0582	-16.82	2304.53	0.007
	55.0833 - 53.4028					34.3177	-17.16	2315.48	0.007
	53.4028 - 51.7222					34.5772	-17.50	2326.33	0.008
	51.7222 - 50.0417					34.8367	-17.85	2337.08	0.008
	50.0417 - 48.3611					35.0962	-18.20	2347.73	0.008
	48.3611 - 46.6806					35.3557	-18.55	2358.28	0.008
	46.6806 - 45					35.6152	-18.91	2368.73	0.008
	45 - 39.75					36.4259	-9.13	2400.74	0.004
L4	45 - 39.75	TP47.4x39.6154x0.375	45.00	0.00	0.0	47.7869	-11.83	3488.00	0.003
	39.75 - 37.6579					48.2176	-21.51	3510.77	0.006
	37.6579 - 35.5658					48.6484	-22.06	3533.39	0.006
	35.5658 - 33.4737					49.0792	-22.61	3555.85	0.006
	33.4737 - 31.3816					49.5099	-23.16	3578.16	0.006
	31.3816 - 29.2895					49.9407	-23.72	3600.31	0.007
	29.2895 - 27.1974					50.3715	-24.28	3622.31	0.007
	27.1974 - 25.1053					50.8023	-24.85	3644.15	0.007
	25.1053 - 23.0132					51.2330	-25.42	3665.84	0.007
	23.0132 - 20.9211					51.6638	-25.99	3687.37	0.007
	20.9211 - 18.8289					52.0946	-26.57	3708.75	0.007
	18.8289 - 16.7368					52.5253	-27.16	3729.98	0.007
	16.7368 - 14.6447					52.9561	-27.74	3751.05	0.007
	14.6447 - 12.5526					53.3869	-28.34	3771.96	0.008
	12.5526 - 10.4605					53.8177	-28.93	3792.72	0.008
	10.4605 - 8.36842					54.2484	-29.53	3813.32	0.008
	8.36842 - 6.27632					54.6792	-30.14	3833.77	0.008
	6.27632 - 4.18421					55.1100	-30.75	3854.06	0.008
	4.18421 - 2.09211					55.5407	-31.36	3874.20	0.008
	2.09211 - 0					55.9715	-31.98	3894.19	0.008

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	149 - 147.224	TP29.487x23x0.1875	11.65	457.55	0.025	0.00	457.55	0.000
	147.224 - 145.447		20.25	467.79	0.043	0.00	467.79	0.000
	145.447 - 143.671		29.16	478.09	0.061	0.00	478.09	0.000
	143.671 - 141.895		38.33	488.44	0.078	0.00	488.44	0.000
	141.895 - 140.118		47.76	498.84	0.096	0.00	498.84	0.000
	140.118 - 138.342		58.87	509.28	0.116	0.00	509.28	0.000
	138.342 - 136.566		70.76	519.78	0.136	0.00	519.78	0.000
	136.566 - 134.789		82.91	530.31	0.156	0.00	530.31	0.000
	134.789 - 133.013		95.32	540.89	0.176	0.00	540.89	0.000
	133.013 - 131.237		108.00	551.51	0.196	0.00	551.51	0.000
	131.237 - 129.461		120.95	562.16	0.215	0.00	562.16	0.000
	129.461 - 127.684		142.73	572.85	0.249	0.00	572.85	0.000
	127.684 - 125.908		160.09	583.57	0.274	0.00	583.57	0.000
	125.908 - 124.132		177.72	594.32	0.299	0.00	594.32	0.000
	124.132 - 122.355		195.62	605.11	0.323	0.00	605.11	0.000
	122.355 - 120.579		213.80	615.91	0.347	0.00	615.91	0.000
	120.579 - 118.803		237.61	626.75	0.379	0.00	626.75	0.000
	118.803 - 117.026		264.02	637.60	0.414	0.00	637.60	0.000
	117.026 - 115.25		290.72	648.47	0.448	0.00	648.47	0.000
	115.25 - 111.5		164.37	671.49	0.245	0.00	671.49	0.000
L2	115.25 - 111.5	TP35.383x28.4633x0.2188	183.70	814.65	0.225	0.00	814.65	0.000
	111.5 - 109.736		375.52	828.85	0.453	0.00	828.85	0.000
	109.736 - 107.972		403.26	843.10	0.478	0.00	843.10	0.000
	107.972 - 106.208		431.27	857.39	0.503	0.00	857.39	0.000
	106.208 - 104.444		459.57	871.73	0.527	0.00	871.73	0.000
	104.444 - 102.681		488.14	886.13	0.551	0.00	886.13	0.000
	102.681 - 100.917		517.00	900.55	0.574	0.00	900.55	0.000
	100.917 - 99.1528		546.14	915.02	0.597	0.00	915.02	0.000
	99.1528 - 97.3889		575.62	929.52	0.619	0.00	929.52	0.000
	97.3889 - 95.625		605.40	944.05	0.641	0.00	944.05	0.000
	95.625 - 93.8611		635.45	958.63	0.663	0.00	958.63	0.000
	93.8611 -		665.78	973.23	0.684	0.00	973.23	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
	92.0972							
	92.0972 - 90.3333		696.39	987.85	0.705	0.00	987.85	0.000
	90.3333 - 88.5694		727.29	1002.51	0.725	0.00	1002.51	0.000
	88.5694 - 86.8056		758.46	1017.19	0.746	0.00	1017.19	0.000
	86.8056 - 85.0417		789.91	1031.89	0.765	0.00	1031.89	0.000
	85.0417 - 83.2778		821.64	1046.62	0.785	0.00	1046.62	0.000
	83.2778 - 81.5139		853.65	1061.36	0.804	0.00	1061.36	0.000
	81.5139 - 79.75		886.02	1076.12	0.823	0.00	1076.12	0.000
	79.75 - 75.25		435.40	1113.83	0.391	0.00	1113.83	0.000
L3	79.75 - 75.25	TP41.086x34.167x0.2813	535.80	1543.08	0.347	0.00	1543.08	0.000
	75.25 - 73.5694		1003.54	1564.85	0.641	0.00	1564.85	0.000
	73.5694 - 71.8889		1036.13	1586.70	0.653	0.00	1586.70	0.000
	71.8889 - 70.2083		1068.97	1608.63	0.665	0.00	1608.63	0.000
	70.2083 - 68.5278		1102.07	1630.62	0.676	0.00	1630.62	0.000
	68.5278 - 66.8472		1135.42	1652.68	0.687	0.00	1652.68	0.000
	66.8472 - 65.1667		1169.01	1674.80	0.698	0.00	1674.80	0.000
	65.1667 - 63.4861		1202.85	1696.99	0.709	0.00	1696.99	0.000
	63.4861 - 61.8056		1236.94	1719.25	0.719	0.00	1719.25	0.000
	61.8056 - 60.125		1271.28	1741.57	0.730	0.00	1741.57	0.000
	60.125 - 58.4444		1305.85	1763.94	0.740	0.00	1763.94	0.000
	58.4444 - 56.7639		1340.68	1786.38	0.750	0.00	1786.38	0.000
	56.7639 - 55.0833		1375.73	1808.87	0.761	0.00	1808.87	0.000
	55.0833 - 53.4028		1411.04	1831.42	0.770	0.00	1831.42	0.000
	53.4028 - 51.7222		1446.58	1854.01	0.780	0.00	1854.01	0.000
	51.7222 - 50.0417		1482.37	1876.66	0.790	0.00	1876.66	0.000
	50.0417 - 48.3611		1518.38	1899.35	0.799	0.00	1899.35	0.000
	48.3611 - 46.6806		1554.64	1922.10	0.809	0.00	1922.10	0.000
	46.6806 - 45		1591.13	1944.88	0.818	0.00	1944.88	0.000
	45 - 39.75		752.27	2016.34	0.373	0.00	2016.34	0.000
L4	45 - 39.75	TP47.4x39.6154x0.375	954.62	2875.42	0.332	0.00	2875.42	0.000
	39.75 - 37.6579		1753.76	2920.53	0.600	0.00	2920.53	0.000
	37.6579 - 35.5658		1800.97	2965.84	0.607	0.00	2965.84	0.000
	35.5658 - 33.4737		1848.53	3011.37	0.614	0.00	3011.37	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
	33.4737 - 31.3816		1896.43	3057.09	0.620	0.00	3057.09	0.000
	31.3816 - 29.2895		1944.67	3103.03	0.627	0.00	3103.03	0.000
	29.2895 - 27.1974		1993.23	3149.15	0.633	0.00	3149.15	0.000
	27.1974 - 25.1053		2042.13	3195.47	0.639	0.00	3195.47	0.000
	25.1053 - 23.0132		2091.35	3241.98	0.645	0.00	3241.98	0.000
	23.0132 - 20.9211		2140.88	3288.68	0.651	0.00	3288.68	0.000
	20.9211 - 18.8289		2190.72	3335.57	0.657	0.00	3335.57	0.000
	18.8289 - 16.7368		2240.87	3382.63	0.662	0.00	3382.63	0.000
	16.7368 - 14.6447		2291.32	3429.87	0.668	0.00	3429.87	0.000
	14.6447 - 12.5526		2342.07	3477.28	0.674	0.00	3477.28	0.000
	12.5526 - 10.4605		2393.10	3524.87	0.679	0.00	3524.87	0.000
	10.4605 - 8.36842		2444.43	3572.62	0.684	0.00	3572.62	0.000
	8.36842 - 6.27632		2496.03	3620.53	0.689	0.00	3620.53	0.000
	6.27632 - 4.18421		2547.91	3668.60	0.695	0.00	3668.60	0.000
	4.18421 - 2.09211		2600.07	3716.82	0.700	0.00	3716.82	0.000
	2.09211 - 0		2652.56	3765.21	0.704	0.00	3765.21	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	149 - 147.224	TP29.487x23x0.1875	4.50	481.33	0.009	0.82	916.22	0.001
	147.224 - 145.447		4.94	485.60	0.010	0.82	936.73	0.001
	145.447 - 143.671		5.09	489.81	0.010	0.82	957.35	0.001
	143.671 - 141.895		5.23	493.97	0.011	0.82	978.08	0.001
	141.895 - 140.118		5.38	498.07	0.011	0.82	998.89	0.001
	140.118 - 138.342		6.61	502.11	0.013	0.82	1019.82	0.001
	138.342 - 136.566		6.76	506.10	0.013	0.82	1040.83	0.001
	136.566 - 134.789		6.91	510.04	0.014	0.82	1061.93	0.001
	134.789 - 133.013		7.06	513.91	0.014	0.82	1083.10	0.001
	133.013 - 131.237		7.21	517.74	0.014	0.82	1104.36	0.001

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 $\frac{T_u}{\phi T_n}$
	131.237 - 129.461		7.37	521.50	0.014	0.82	1125.69	0.001
	129.461 - 127.684		9.69	525.21	0.018	0.82	1147.10	0.001
	127.684 - 125.908		9.85	528.87	0.019	0.82	1168.57	0.001
	125.908 - 124.132		10.00	532.47	0.019	0.82	1190.10	0.001
	124.132 - 122.355		10.16	536.01	0.019	0.82	1211.69	0.001
	122.355 - 120.579		10.31	539.50	0.019	0.82	1233.33	0.001
	120.579 - 118.803		14.80	542.93	0.027	0.99	1255.03	0.001
	118.803 - 117.026		14.95	546.30	0.027	0.99	1276.76	0.001
	117.026 - 115.25		15.11	549.62	0.027	0.99	1298.53	0.001
	115.25 - 111.5		7.39	556.45	0.013	0.47	1344.62	0.000
L2	115.25 - 111.5	TP35.383x28.4633x0.2188	8.09	685.38	0.012	0.52	1631.30	0.000
	111.5 - 109.736		15.64	689.98	0.023	0.99	1659.73	0.001
	109.736 - 107.972		15.80	694.53	0.023	0.99	1688.26	0.001
	107.972 - 106.208		15.96	699.02	0.023	0.99	1716.89	0.001
	106.208 - 104.444		16.12	703.46	0.023	0.99	1745.61	0.001
	104.444 - 102.681		16.28	707.85	0.023	0.99	1774.41	0.001
	102.681 - 100.917		16.44	712.17	0.023	0.99	1803.30	0.001
	100.917 - 99.1528		16.60	716.45	0.023	0.99	1832.27	0.001
	99.1528 - 97.3889		16.80	720.67	0.023	1.19	1861.30	0.001
	97.3889 - 95.625		16.96	724.83	0.023	1.18	1890.42	0.001
	95.625 - 93.8611		17.12	728.94	0.023	1.18	1919.59	0.001
	93.8611 - 92.0972		17.28	732.99	0.024	1.18	1948.83	0.001
	92.0972 - 90.3333		17.44	736.99	0.024	1.18	1978.13	0.001
	90.3333 - 88.5694		17.59	740.93	0.024	1.18	2007.47	0.001
	88.5694 - 86.8056		17.75	744.82	0.024	1.18	2036.87	0.001
	86.8056 - 85.0417		17.91	748.65	0.024	1.18	2066.32	0.001
	85.0417 - 83.2778		18.07	752.43	0.024	1.18	2095.80	0.001
	83.2778 - 81.5139		18.23	756.16	0.024	1.18	2125.32	0.001
	81.5139 - 79.75		18.69	759.82	0.025	1.46	2154.87	0.001
	79.75 - 75.25		8.71	768.93	0.011	0.65	2230.38	0.000
L3	79.75 - 75.25	TP41.086x34.167x0.2813	10.46	1082.66	0.010	0.80	3089.93	0.000
	75.25 - 73.5694		19.32	1088.74	0.018	1.45	3133.53	0.000

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 $\frac{T_u}{\phi T_n}$
	73.5694 - 71.8889		19.47	1094.76	0.018	1.45	3177.28	0.000
	71.8889 - 70.2083		19.62	1100.74	0.018	1.45	3221.18	0.000
	70.2083 - 68.5278		19.77	1106.66	0.018	1.45	3265.22	0.000
	68.5278 - 66.8472		19.92	1112.54	0.018	1.45	3309.39	0.000
	66.8472 - 65.1667		20.07	1118.36	0.018	1.45	3353.70	0.000
	65.1667 - 63.4861		20.21	1124.14	0.018	1.45	3398.14	0.000
	63.4861 - 61.8056		20.36	1129.86	0.018	1.45	3442.71	0.000
	61.8056 - 60.125		20.51	1135.54	0.018	1.45	3487.39	0.000
	60.125 - 58.4444		20.65	1141.16	0.018	1.45	3532.20	0.000
	58.4444 - 56.7639		20.80	1146.74	0.018	1.45	3577.13	0.000
	56.7639 - 55.0833		20.94	1152.26	0.018	1.45	3622.17	0.000
	55.0833 - 53.4028		21.08	1157.74	0.018	1.45	3667.31	0.000
	53.4028 - 51.7222		21.23	1163.16	0.018	1.45	3712.56	0.000
	51.7222 - 50.0417		21.37	1168.54	0.018	1.45	3757.91	0.000
	50.0417 - 48.3611		21.51	1173.86	0.018	1.45	3803.35	0.000
	48.3611 - 46.6806		21.65	1179.14	0.018	1.45	3848.89	0.000
	46.6806 - 45		21.79	1184.37	0.018	1.45	3894.53	0.000
	45 - 39.75		9.98	1200.37	0.008	0.64	4037.62	0.000
L4	45 - 39.75	TP47.4x39.6154x0.375	12.35	1744.00	0.007	0.81	5757.87	0.000
	39.75 - 37.6579		22.49	1755.38	0.013	1.45	5848.19	0.000
	37.6579 - 35.5658		22.66	1766.69	0.013	1.45	5938.93	0.000
	35.5658 - 33.4737		22.82	1777.93	0.013	1.45	6030.09	0.000
	33.4737 - 31.3816		22.98	1789.08	0.013	1.45	6121.66	0.000
	31.3816 - 29.2895		23.14	1800.16	0.013	1.45	6213.63	0.000
	29.2895 - 27.1974		23.30	1811.15	0.013	1.45	6306.00	0.000
	27.1974 - 25.1053		23.46	1822.08	0.013	1.45	6398.76	0.000
	25.1053 - 23.0132		23.61	1832.92	0.013	1.45	6491.89	0.000
	23.0132 - 20.9211		23.76	1843.69	0.013	1.45	6585.41	0.000
	20.9211 - 18.8289		23.91	1854.38	0.013	1.45	6679.29	0.000
	18.8289 - 16.7368		24.05	1864.99	0.013	1.45	6773.53	0.000
	16.7368 - 14.6447		24.20	1875.52	0.013	1.45	6868.12	0.000
	14.6447 -		24.34	1885.98	0.013	1.45	6963.07	0.000

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 $\frac{T_u}{\phi T_n}$
	12.5526							
	12.5526 - 10.4605		24.48	1896.36	0.013	1.45	7058.35	0.000
	10.4605 - 8.36842		24.61	1906.66	0.013	1.45	7153.97	0.000
	8.36842 - 6.27632		24.75	1916.89	0.013	1.45	7249.91	0.000
	6.27632 - 4.18421		24.88	1927.03	0.013	1.45	7346.17	0.000
	4.18421 - 2.09211		25.07	1937.10	0.013	1.34	7442.74	0.000
	2.09211 - 0		25.19	1947.09	0.013	1.34	7539.62	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 147.224	0.001	0.025	0.000	0.009	0.001	0.027	1.000	4.8.2
	147.224 - 145.447	0.001	0.043	0.000	0.010	0.001	0.045	1.000	4.8.2
	145.447 - 143.671	0.001	0.061	0.000	0.010	0.001	0.062	1.000	4.8.2
	143.671 - 141.895	0.001	0.078	0.000	0.011	0.001	0.080	1.000	4.8.2
	141.895 - 140.118	0.002	0.096	0.000	0.011	0.001	0.097	1.000	4.8.2
	140.118 - 138.342	0.002	0.116	0.000	0.013	0.001	0.118	1.000	4.8.2
	138.342 - 136.566	0.003	0.136	0.000	0.013	0.001	0.139	1.000	4.8.2
	136.566 - 134.789	0.003	0.156	0.000	0.014	0.001	0.159	1.000	4.8.2
	134.789 - 133.013	0.003	0.176	0.000	0.014	0.001	0.179	1.000	4.8.2
	133.013 - 131.237	0.003	0.196	0.000	0.014	0.001	0.199	1.000	4.8.2
	131.237 - 129.461	0.003	0.215	0.000	0.014	0.001	0.218	1.000	4.8.2
	129.461 - 127.684	0.004	0.249	0.000	0.018	0.001	0.253	1.000	4.8.2
	127.684 - 125.908	0.004	0.274	0.000	0.019	0.001	0.278	1.000	4.8.2
	125.908 - 124.132	0.004	0.299	0.000	0.019	0.001	0.303	1.000	4.8.2
	124.132 - 122.355	0.004	0.323	0.000	0.019	0.001	0.328	1.000	4.8.2
	122.355 - 120.579	0.004	0.347	0.000	0.019	0.001	0.352	1.000	4.8.2
	120.579 - 118.803	0.006	0.379	0.000	0.027	0.001	0.385	1.000	4.8.2
	118.803 - 117.026	0.006	0.414	0.000	0.027	0.001	0.421	1.000	4.8.2
	117.026 - 115.25	0.006	0.448	0.000	0.027	0.001	0.455	1.000	4.8.2

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
	115.25 - 111.5	0.003	0.245	0.000	0.013	0.000	0.248	1.000	4.8.2
L2	115.25 - 111.5	0.003	0.225	0.000	0.012	0.000	0.228	1.000	4.8.2
	111.5 - 109.736	0.005	0.453	0.000	0.023	0.001	0.459	1.000	4.8.2
	109.736 - 107.972	0.005	0.478	0.000	0.023	0.001	0.484	1.000	4.8.2
	107.972 - 106.208	0.005	0.503	0.000	0.023	0.001	0.509	1.000	4.8.2
	106.208 - 104.444	0.006	0.527	0.000	0.023	0.001	0.533	1.000	4.8.2
	104.444 - 102.681	0.006	0.551	0.000	0.023	0.001	0.557	1.000	4.8.2
	102.681 - 100.917	0.006	0.574	0.000	0.023	0.001	0.581	1.000	4.8.2
	100.917 - 99.1528	0.006	0.597	0.000	0.023	0.001	0.603	1.000	4.8.2
	99.1528 - 97.3889	0.006	0.619	0.000	0.023	0.001	0.626	1.000	4.8.2
	97.3889 - 95.625	0.006	0.641	0.000	0.023	0.001	0.648	1.000	4.8.2
	95.625 - 93.8611	0.006	0.663	0.000	0.023	0.001	0.670	1.000	4.8.2
	93.8611 - 92.0972	0.007	0.684	0.000	0.024	0.001	0.691	1.000	4.8.2
	92.0972 - 90.3333	0.007	0.705	0.000	0.024	0.001	0.712	1.000	4.8.2
	90.3333 - 88.5694	0.007	0.725	0.000	0.024	0.001	0.733	1.000	4.8.2
	88.5694 - 86.8056	0.007	0.746	0.000	0.024	0.001	0.753	1.000	4.8.2
	86.8056 - 85.0417	0.007	0.765	0.000	0.024	0.001	0.773	1.000	4.8.2
	85.0417 - 83.2778	0.007	0.785	0.000	0.024	0.001	0.793	1.000	4.8.2
	83.2778 - 81.5139	0.007	0.804	0.000	0.024	0.001	0.812	1.000	4.8.2
	81.5139 - 79.75	0.008	0.823	0.000	0.025	0.001	0.832	1.000	4.8.2
	79.75 - 75.25	0.004	0.391	0.000	0.011	0.000	0.395	1.000	4.8.2
L3	79.75 - 75.25	0.003	0.347	0.000	0.010	0.000	0.351	1.000	4.8.2
	75.25 - 73.5694	0.006	0.641	0.000	0.018	0.000	0.648	1.000	4.8.2
	73.5694 - 71.8889	0.006	0.653	0.000	0.018	0.000	0.660	1.000	4.8.2
	71.8889 - 70.2083	0.006	0.665	0.000	0.018	0.000	0.671	1.000	4.8.2
	70.2083 - 68.5278	0.006	0.676	0.000	0.018	0.000	0.683	1.000	4.8.2
	68.5278 - 66.8472	0.007	0.687	0.000	0.018	0.000	0.694	1.000	4.8.2
	66.8472 - 65.1667	0.007	0.698	0.000	0.018	0.000	0.705	1.000	4.8.2
	65.1667 - 63.4861	0.007	0.709	0.000	0.018	0.000	0.716	1.000	4.8.2
	63.4861 - 61.8056	0.007	0.719	0.000	0.018	0.000	0.727	1.000	4.8.2
	61.8056 - 60.125	0.007	0.730	0.000	0.018	0.000	0.737	1.000	4.8.2
	60.125 - 58.4444	0.007	0.740	0.000	0.018	0.000	0.748	1.000	4.8.2

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
	58.4444 - 56.7639	0.007	0.750	0.000	0.018	0.000	0.758	1.000	4.8.2
	56.7639 - 55.0833	0.007	0.761	0.000	0.018	0.000	0.768	1.000	4.8.2
	55.0833 - 53.4028	0.007	0.770	0.000	0.018	0.000	0.778	1.000	4.8.2
	53.4028 - 51.7222	0.008	0.780	0.000	0.018	0.000	0.788	1.000	4.8.2
	51.7222 - 50.0417	0.008	0.790	0.000	0.018	0.000	0.798	1.000	4.8.2
	50.0417 - 48.3611	0.008	0.799	0.000	0.018	0.000	0.808	1.000	4.8.2
	48.3611 - 46.6806	0.008	0.809	0.000	0.018	0.000	0.817	1.000	4.8.2
	46.6806 - 45	0.008	0.818	0.000	0.018	0.000	0.826	1.000	4.8.2
	45 - 39.75	0.004	0.373	0.000	0.008	0.000	0.377	1.000	4.8.2
L4	45 - 39.75	0.003	0.332	0.000	0.007	0.000	0.335	1.000	4.8.2
	39.75 - 37.6579	0.006	0.600	0.000	0.013	0.000	0.607	1.000	4.8.2
	37.6579 - 35.5658	0.006	0.607	0.000	0.013	0.000	0.614	1.000	4.8.2
	35.5658 - 33.4737	0.006	0.614	0.000	0.013	0.000	0.620	1.000	4.8.2
	33.4737 - 31.3816	0.006	0.620	0.000	0.013	0.000	0.627	1.000	4.8.2
	31.3816 - 29.2895	0.007	0.627	0.000	0.013	0.000	0.633	1.000	4.8.2
	29.2895 - 27.1974	0.007	0.633	0.000	0.013	0.000	0.640	1.000	4.8.2
	27.1974 - 25.1053	0.007	0.639	0.000	0.013	0.000	0.646	1.000	4.8.2
	25.1053 - 23.0132	0.007	0.645	0.000	0.013	0.000	0.652	1.000	4.8.2
	23.0132 - 20.9211	0.007	0.651	0.000	0.013	0.000	0.658	1.000	4.8.2
	20.9211 - 18.8289	0.007	0.657	0.000	0.013	0.000	0.664	1.000	4.8.2
	18.8289 - 16.7368	0.007	0.662	0.000	0.013	0.000	0.670	1.000	4.8.2
	16.7368 - 14.6447	0.007	0.668	0.000	0.013	0.000	0.676	1.000	4.8.2
	14.6447 - 12.5526	0.008	0.674	0.000	0.013	0.000	0.681	1.000	4.8.2
	12.5526 - 10.4605	0.008	0.679	0.000	0.013	0.000	0.687	1.000	4.8.2
	10.4605 - 8.36842	0.008	0.684	0.000	0.013	0.000	0.692	1.000	4.8.2
	8.36842 - 6.27632	0.008	0.689	0.000	0.013	0.000	0.697	1.000	4.8.2
	6.27632 - 4.18421	0.008	0.695	0.000	0.013	0.000	0.703	1.000	4.8.2
	4.18421 - 2.09211	0.008	0.700	0.000	0.013	0.000	0.708	1.000	4.8.2
	2.09211 - 0	0.008	0.704	0.000	0.013	0.000	0.713	1.000	4.8.2

Section Capacity Table

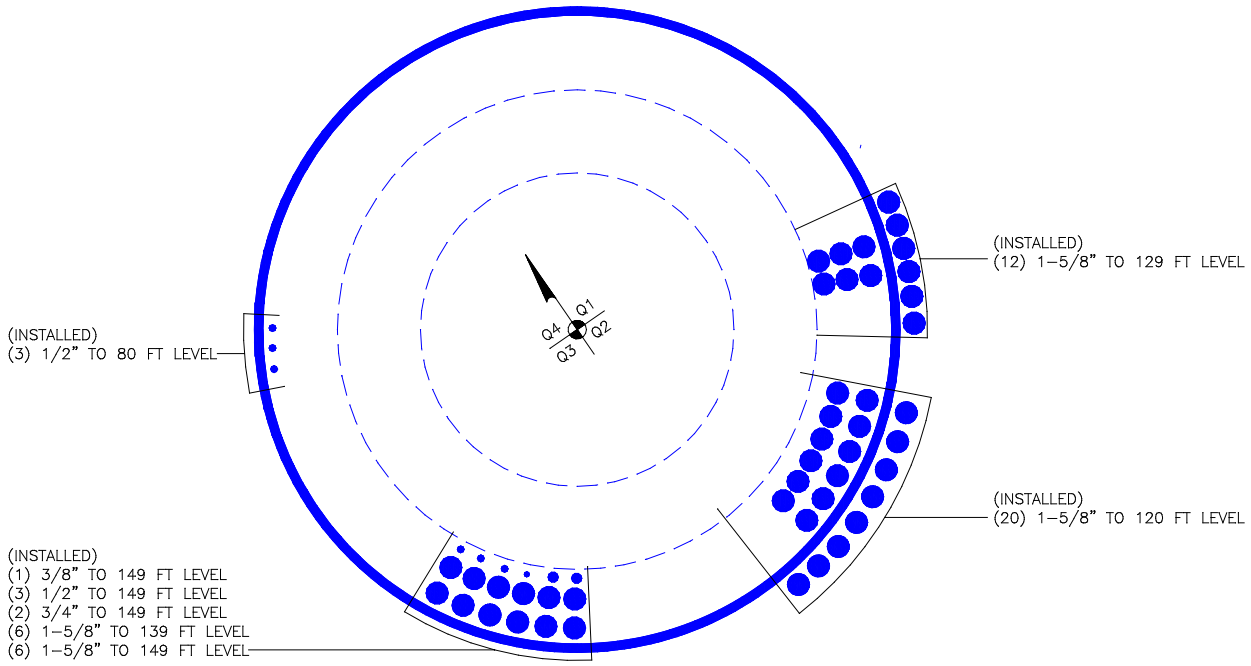
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$øP_{allow}$ K	% Capacity	Pass Fail
L1	149 - 111.5	Pole	TP29.487x23x0.1875	1	-6.31	1099.25	45.5	Pass
L2	111.5 - 75.25	Pole	TP35.383x28.4633x0.2188	2	-11.67	1519.65	83.2	Pass
L3	75.25 - 39.75	Pole	TP41.086x34.167x0.2813	3	-18.91	2368.73	82.6	Pass
L4	39.75 - 0	Pole	TP47.4x39.6154x0.375	4	-31.98	3894.19	71.3	Pass
							Summary	
						Pole (L2)	83.2	Pass
						RATING =	**83.2**	**Pass**

Element Map

Section No.	Section Elevation ft	Component Type	Element List
L1	149.00-111.50	Pole	1
L2	111.50-75.25	Pole	2
L3	75.25-39.75	Pole	3
L4	39.75-0.00	Pole	4
			Total number of elements: 4

APPENDIX B

BASE LEVEL DRAWING


(INSTALLED)
(12) 1–5/8" TO 129 FT LEVEL
(INSTALLED)
(3) 1/2" TO 80 FT LEVEL
(INSTALLED)
(20) 1–5/8" TO 120 FT LEVEL
(INSTALLED)
(1) 3/8" TO 149 FT LEVEL
(3) 1/2" TO 149 FT LEVEL
(2) 3/4" TO 149 FT LEVEL
(6) 1–5/8" TO 139 FT LEVEL
(6) 1–5/8" TO 149 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *845455*
Site Name: *OXFORD-QUAKER FARMS*
App #: *350059 Rev#9*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	54	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	53	in
Thick:	2.75	in
Grade:	60	ksi
Clip Distance:	9	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	47.4	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	2653	ft-kips
Factored Axial, Pu:	32	kips
Factored Shear, Vu:	25	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	203.4	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	78.2%	**Pass**

Base Plate Results	Flexural Check	
Base Plate Stress:	32.3	ksi
PL Design Bending Strength, Φ*Fy:	54.0	ksi
Base Plate Stress Ratio:	59.8%	**Pass**

PL Ref. Data	
Yield Line (in):	27.55
Max PL Length:	27.55

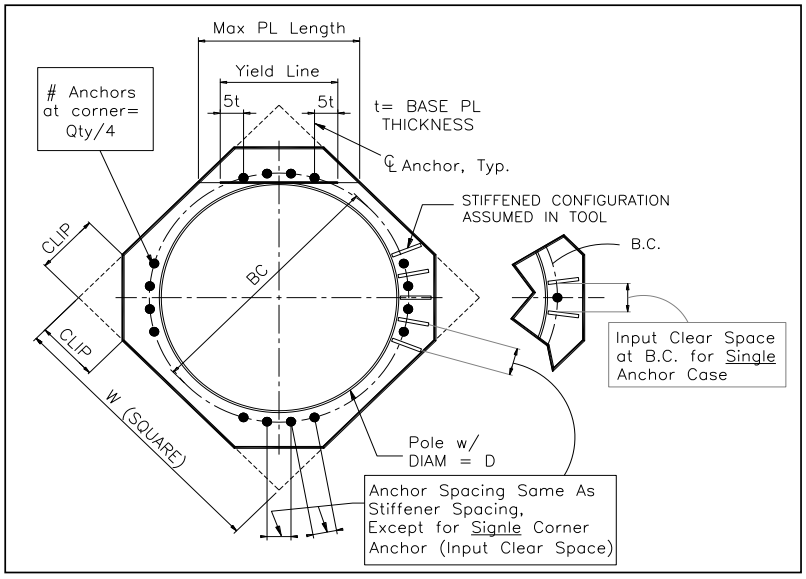
N/A - Unstiffened

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	N/A



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

FDH VELOCITEL
ENGINEERING INNOVATION

Version:	2.3
Version Date:	5/13/2016

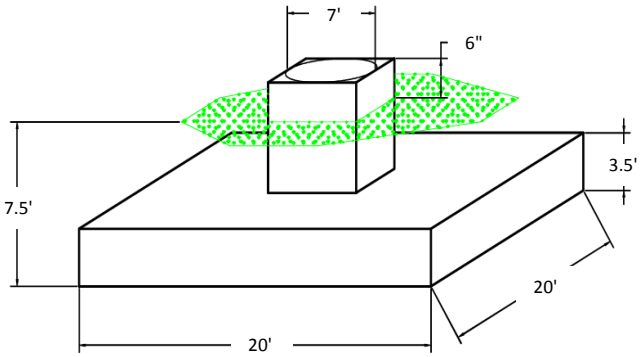
FDH Velocitel -- 6521 Meridien Drive, Raleigh, NC 27616 -- Ph. 919.755.1012 -- Fax 919.755.1031

MONOPOLE PAD AND PIER STEEL CHECKS

Project & Site Details			
Project No.	16BKFD1400	Rev.	0
Project Name	OXFORD-QUAKER FARMS		
Site ID	845455		
Date	Wednesday, October 12, 2016		
Code	ANSI/TIA-222-G		
Overstress Capacity	100%		

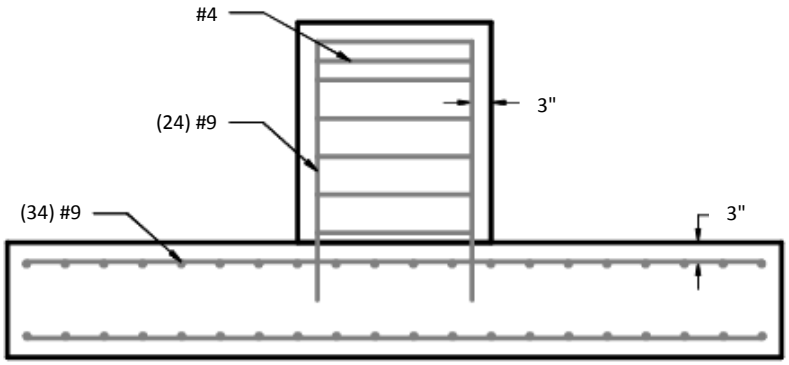
tnx Reactions		
Moment, M	2,653	kip-ft
Shear, V	32	k
Axial, P	25	k

Foundation Details		
Pier Above Grade, E	0.5	ft
Pad Depth Below Grade, D	7.5	ft
Pad Width, W	20.0	ft
Pad Thickness, T	3.5	ft
Pier Shape	Square	-
Pier Diameter, D_p	7.0	ft
Density of Soil, γ_s	0.150	kcf
Density of Concrete, γ_c	0.150	kcf



Pad Steel Details		
Horiz. Bar Size	#9	-
Pad Bar Diameter, d_b	1.128	in
Number of pad bars, n	34	-
Strength of Concrete, f_c'	3,000	psi
Clear Cover, cc	3.0	in
Yield Strength of Steel, F_y	60	ksi

Pier Steel Details		
Vertical Bar Size	#9	-
Pier Bar Diameter, d_v	1.128	in
Number of pier bars, n_v	24	-
Tie Size	#4	-
Tie Bar Diameter, d_t	0.5	in
Clear Cover, cc	3.0	in



Pad Steel Checks		
Pad Shear	18.3%	PASS
Two-Way Shear	13.3%	PASS
Pad Flexure	14.4%	PASS
Steel Yielding	OK	

Pier Steel Checks		
Pier Compression	0.2%	PASS
Applied Moment, Mu	2797.00	k-ft
LPILE Nominal Moment Capacity	76,176	k-in
Ø Mn	5713.17	k-ft
Pier Flexure	49.0%	PASS

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *845455*
Site Name: *OXFORD-QUAKER FARMS*
App #: *16PUUF1400*

Loads Already Factored		
For M (WL)	1.333	<----Disregard
For P (DL)	1.333	<----Disregard

Pier Properties

Concrete:

Pier Diameter =	7.0	ft
Concrete Area =	7056.0	in^2

Reinforcement:

Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =	6.28	ft
Vert. Cage Diameter =	75.34	in
Vertical Bar Size =	11	
Bar Diameter =	1.41	in
Bar Area =	1.56	in^2
Number of Bars =	24	
As Total=	36.6912	in^2
A s/ Aconc, Rho:	0.0052	0.52%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy): 0.0027
200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.52%	**OK**

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	10452.37	kips
at Mu=(ϕ=0.65)Mn=	761.32	ft-kips
Max Tu, (φ=0.9) Tn =	1981.325	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	G	
Max. Factored Shaft Mu:	2797	ft-kips **(* Note)**
Max. Factored Shaft Pu:	32	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	Shaft Factored Loads		
1.00	Mu:	2797	ft-kips
1.00	Pu:	32	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2008

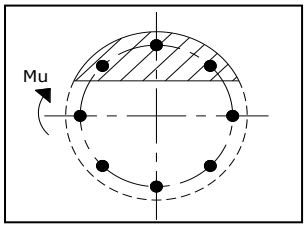
Seismic Properties

Seismic Design Category = D
Seismic Risk = **High**

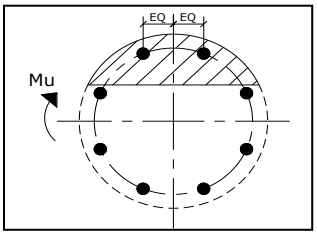
Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **2**



Case 1



Case 2

Dist. From Edge to Neutral Axis:	**14.57**	in
Extreme Steel Strain, ϵt:	**0.0134**	
	ϵt > 0.0050, Tension Controlled	
Reduction Factor,φ:	**0.900**	

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	32.00	kips
Drilled Shaft Moment Capacity, φMn:	**5713.17**	ft-kips
Drilled Shaft Superimposed Mu:	**2797.00**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**49.0%**

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

Site ID: *845455*
Site Name: *OXFORD-QUAKER FARMS*
Job No.: *16PUUF1400*

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	2.5	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	7.5	ft
Pad Thickness, T:	3.5	ft
Pad Width=Length, L:	20	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	7	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	49.00	ft^2
Pier Height:	4.50	ft
Soil (above pad) Height:	4.00	ft

Soil Parameters		
Unit Weight, γ:	121.7	pcf
Ultimate Bearing Capacity, qn:	30.92	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	36.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	23.19	ksf
Passive Pres. Coeff., Kp	3.85	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	25.0	kips
Pad Force Location Above D:	1.57	ft
ϕ(Passive Pressure Moment):	39.31	ft-kips
Factored O.T. M(WL), "1.6W":	2858.2	ft-kips
Factored OT (MW-Msoil), M1	2818.90	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	2.91	ft
Sum of Soil Wedges Wt:	34.05	kips
Soil Wedges ecc, K1:	7.43	ft
Ftg+Soil above Pad wt:	413.9	kips
Unfactored (Total ftg-soil Wt):	447.99	kips
1.2D. **No Soil Wedges**.	528.73	kips
0.9D. **With Soil Wedges**	427.19	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDu:	32	kips
Factored WL Shear, Vu:	25	kips
Factored WL Moment, Mu:	2653	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	32	kips
0.90	0.9D+1.6W, Pu:	24	kips
1.00	Vu:	25	kips
	Mu:	2653	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	528.73	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2818.90	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	5.33	ft
Orthogonal qu=	2.83	ksf
qu/ϕ*qn Ratio=	**12.21%**	**Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	3.77	ft
Diagonal qu=	3.40	ksf
qu/ϕ*qn Ratio=	**14.68%**	**Pass**

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	427.19	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	2591.11	ft-kips

Orthogonal ecc3 = M2/P2 =	6.07	ft
Ortho Non Bearing Length,NBL=	12.13	ft
Orthogonal qu=	2.71	ksf
Diagonal qu=	3.27	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	2653.00		
M Orthogonal:	4167.73	**63.66%**	**Pass**
M Diagonal:	4167.73	**63.66%**	**Pass**

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2256

Oxford CT
85 Quaker Farms Road
Oxford, CT 6478

January 16, 2017

Centerline Communications Project Number: 950006-020

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**7.64 %**

January 16, 2017

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

Emissions Analysis for Site: **CT2256 – Oxford CT**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **85 Quaker Farms Road, Oxford, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 population 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 population 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 performed for the proposed AT&T Wireless antenna facility located at **85 Quaker Farms Road, Oxford, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60
GSM	850 MHz	2	30

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	150
A	2	Commscope SBNH-1D6565C	150
A	3	Powerwave 7770	140
B	1	Powerwave 7770	150
B	2	Commscope SBNH-1D6565C	150
B	3	Powerwave 7770	140
C	1	Powerwave 7770	150
C	2	Commscope SBNH-1D6565C	150
C	3	Powerwave 7770	140

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
Antenna A2	Commscope SBNH-1D6565C	700 MHz / 1900 MHz (PCS)	13.65 / 15.85	4	240	7,395.97	1.83
Antenna A3	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.29
						Sector A Composite MPE%	**2.61**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
Antenna B2	Commscope SBNH-1D6565C	700 MHz / 1900 MHz (PCS)	13.65 / 15.85	4	240	7,395.97	1.83
Antenna B3	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.29
						Sector B Composite MPE%	**2.61**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
Antenna C2	Commscope SBNH-1D6565C	700 MHz / 1900 MHz (PCS)	13.65 / 15.85	4	240	7,395.97	1.83
Antenna C3	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.29
						Sector C Composite MPE%	**2.61**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**2.61 %**
T-Mobile	1.92 %
Verizon Wireless	3.11 %
Site Total MPE %:	**7.64 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	2.61 %
AT&T Sector B Total:	2.61 %
AT&T Sector C Total:	2.61 %
Site Total:	7.64 %

Table 5: Site MPE Summary

Per FCC OET 65, carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	150	1.44	850 MHz	567	0.25%
AT&T 1900 MHz (PCS) UMTS	2	656.33	150	2.28	1900 MHz (PCS)	1000	0.23%
AT&T 700 MHz LTE	2	1,390.44	150	4.82	700 MHz	467	1.03%
AT&T 1900 MHz (PCS) LTE	2	2,307.55	150	8.00	1900 MHz (PCS)	1000	0.80%
AT&T 850 MHz GSM	2	414.12	140	1.66	850 MHz	567	0.29%
						Total:	2.61%

Table 6: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	2.61 %
Sector B:	2.61 %
Sector C:	2.61 %
AT&T Maximum Total (per sector):	2.61 %
Site Total:	7.64 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.64 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767