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

July 21, 2016

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

RE: **Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU:876314**
AT&T Site ID: CT5183
214 Russian Village Road, Southbury, CT 06488
Latitude: 41° 27' 7.97"/ Longitude: -73° 15' 1.25"

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 130-foot level of the existing 132-foot monopole tower at 214 Russian Village Road in Southbury, CT. The tower is owned by Crown Castle. The property is owned by the Thomas and Mieke Crider. AT&T now intends to install three (3) RR11s.

This facility was approved by the by the Town of Southbury Zoning Board of Appeals on March 4, 1997. 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. Jeff Manville, First-Selectman, Town of Southbury, 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. Jeff Manville, First-Selectman
Town of Southbury
501 Main Street
Southbury, CT 06488

Thomas and Mieke Crider
100 Russian Village Road
Southbury, CT 06488

TOWN OF SOUTHBURY

ZONING BOARD OF APPEALS

501 Main Street South
Southbury, Connecticut 06488
(203) 264-0606 - ext. 257
FAX: (203) 264-9762

February 14, 1997

Thomas and Meike Crider
100 Russian Village Road
Southbury, CT 06488

Dear Crider Family:

On **TUESDAY, March 4, 1997,** at 7:30 p.m. in Room 205A of the Southbury Town Hall, the Southbury Zoning Board of Appeals will conduct the continuation of your public hearing to consider your appeal. **It is important that you, or someone representing you, be present to state your case.**

An On-Site Inspection of the property under appeal will be conducted by the Board members during the week before the public hearing. There may be more than one group of members inspecting the property. If at all possible, please stake out where the proposed construction will be located on the property.

The Public Notice will appear in Voices on Wednesday, February 19, and Wednesday, February 26, 1997.

The Zoning Board of Appeals has 65 days after the close of the hearing in which to make a decision. You will be notified within 15 days after such decision has been rendered.

Sincerely,

Barbara Browne
Clerk

cc: Christopher Cody
Sprint PCS

HURWITZ & SAGARIN PC

LEWIS A. HURWITZ
JACOB DANIEL SAGARIN
CHRISTINE M. GONILLO
ELIAS A. ALEXIADES
DAVID A. SLOSSBERG
ANDREW C. KRUGER
JULIE M. CASHIN
JOHN W. KNUFF

MEMORANDUM

TO: Julie Reach, Sprint PCS

FROM: Lisa Dalfonso

DATE: February 6, 1997

RE: Site 017 - Southbury

* *

Attached please find a copy of the referral from the Southbury Planning Commission to the Zoning Board of Appeals on site 017. According to the letter, the Planning Commission voted to recommend approval of the Special Exception application for the PCS facility. As you know, Chris Cody of our office was present at the ZBA hearing on February 4, 1997 and a memo to Larry from Chris will follow, advising of the outcome and additional considerations for the continuation hearing. Overall, the hearing went well most of the unaddressed issues involved structural considerations. Therefore, can we please have a structural engineer available for the next hearing. I will let you know the date as soon as possible.

LAW OFFICES
147 North Broad Street, P.O. Box 112, Milford, Connecticut 06460-0112 Tel. 203-877-8000 • Fax 203-878-9800

TOWN OF SOUTHBURY
PLANNING COMMISSION
501 Main Street South
Southbury, Connecticut 06488-2295
(203) 262-0634
FAX: (203) 264-3719

January 30, 1997

TO: Zoning Board of Appeals
FROM: Planning Commission

RE: Referral - Proposed Sprint Tower on Land of Crider

The Planning Commission was presented with the proposal to erect a PCS Sprint Tower off Russian Village Road by the applicants and the land owner at their meeting on January 21, 1997. The Special Exception Application was reviewed for consistency with the Comprehensive Plan of Development and compliance with Section 7 of the Zoning Regulations. The Commission recognizes that an application also exists for the height of the tower at 128 feet but is not responding to that variance application.

During the discussion the applicant satisfied questions with regard to strength of the tower in high winds, adequate fall area, setbacks to nearest existing and potential home sites (600 feet), lighting on the tower (none is proposed), other areas of town investigated for the placement of the tower, the maximum number of additional units that could be placed on the tower (3), the maintenance of the structure and need for inspections and the utility lines needed to address this site.

The Commission recognizes the changes in the state and federal laws regarding telecommunications and the necessity of the towers. They felt that this site, in particular, is technically a good site due to the density of population and that the horizon line as outlined in the Plan was not affected. Further, the possibility of the need for additional antennae, by others, could be addressed by acknowledging that three units are possible on this type of tower.

Therefore, the Commission voted to recommend approval of the Special Exception Application of Sprint PCS for the installation of a utility tower on Russian Village Road.

H. William Davis

H. William Davis, Chairman

214 RUSSIAN VILLAGE ROAD

Location	214 RUSSIAN VILLAGE ROAD	**Mblu**	19/ 92/ 45/ /
Acct#	00070700	**Owner**	CRIDER MIEKE & THOMAS S
Assessment	$133,170	**Appraisal**	$567,373
PID	859	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$0	$567,373	$567,373
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$0	$133,170	$133,170

Owner of Record

Owner	CRIDER MIEKE & THOMAS S	**Sale Price**	$0
Co-Owner	AKA MAAS MIEKE	**Certificate**	
Address	100 RUSSIAN VILLAGE ROAD SOUTHBURY, CT 06488	**Book & Page**	311/1220
		Sale Date	09/11/1996
		Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CRIDER MIEKE & THOMAS S	$0		311/1220	25	09/11/1996
AKA MAAS MIEKE			0/ 0	25	

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Vacant Land

Building Photo

Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Pln FPL:	
Det FPL:	
Gas Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
Fin Bsmt Qual	
Bsmt Access	

(http://images.vgsi.com/photos/SouthburyCTPhotos//default.jpg)

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use	Land Line Valuation

Use Code	100W	**Size (Acres)**	87.68
Description	Res Vacant	**Frontage**	0
Zone	R-60	**Depth**	0
Neighborhood	14W	**Assessed Value**	$133,170
Alt Land Appr	No	**Appraised Value**	$567,373
Category			

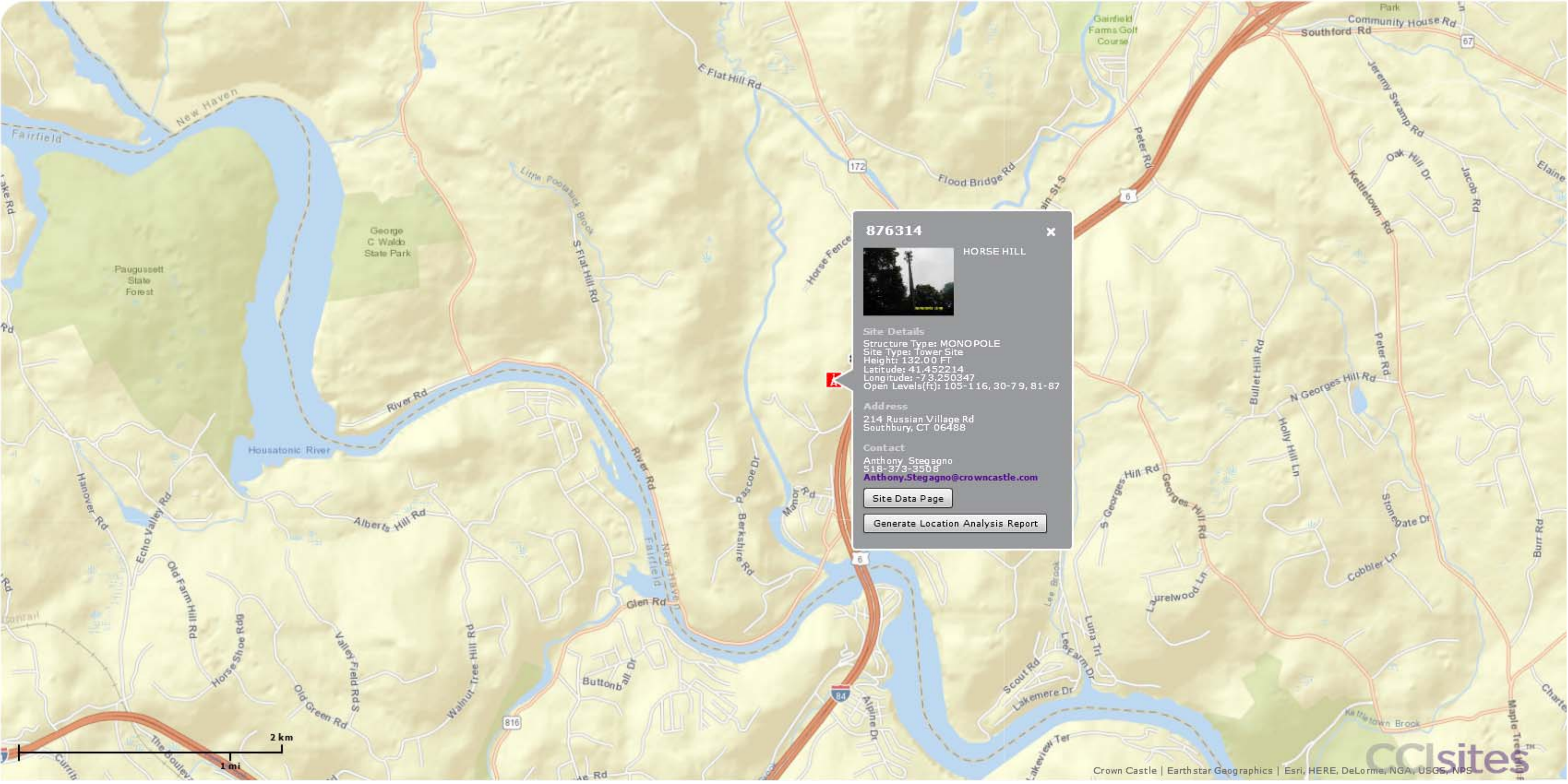
Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$80,000	$90,510	$170,510

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$56,000	$63,360	$119,360


876314
HORSE HILL
Site Details
Structure Type: MONOPOLE
Site Type: Tower Site
Height: 132.00 FT
Latitude: 41.452214
Longitude: -73.250347
Open Levels(ft): 105-116, 30-79, 81-87
Address
214 Russian Village Rd
Southbury, CT 06488
Contact
Anthony Stegagno
518-373-3508
Anthony.Stegagno@crowncastle.com
Site Data Page
Generate Location Analysis Report
Paugussett State Forest
George C Waldo State Park
Housatonic River
River Rd
Flood Bridge Rd
E Flat Hill Rd
S Flat Hill Rd
Alberts Hill Rd
Glen Rd
Berkshire Rd
N Georges Hill Rd
S Georges Hill Rd
Georges Hill Rd
Kettletown Rd
Peter Rd
Bullet Hill Rd
Southford Rd
Community House Rd
Garnfield Farms Golf Course
2 km
1 mi
Crown Castle | Earthstar Geographics | Esri, HERE, DeLorme, NGA, USGS, NPS
CCIsites


Legend
Crown Internal Sites Layer
Tower
DAS NODE
DAS HUB
DAS SYSTEM
Land Under
Alternative Crown Sites
Alternative Crown Sites

WIRELESS COMMUNICATIONS FACILITY
CT5183 - LTE 2C
CROWN CASTLE, INC. SITE NO.: 876314
HORSE HILL
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, 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

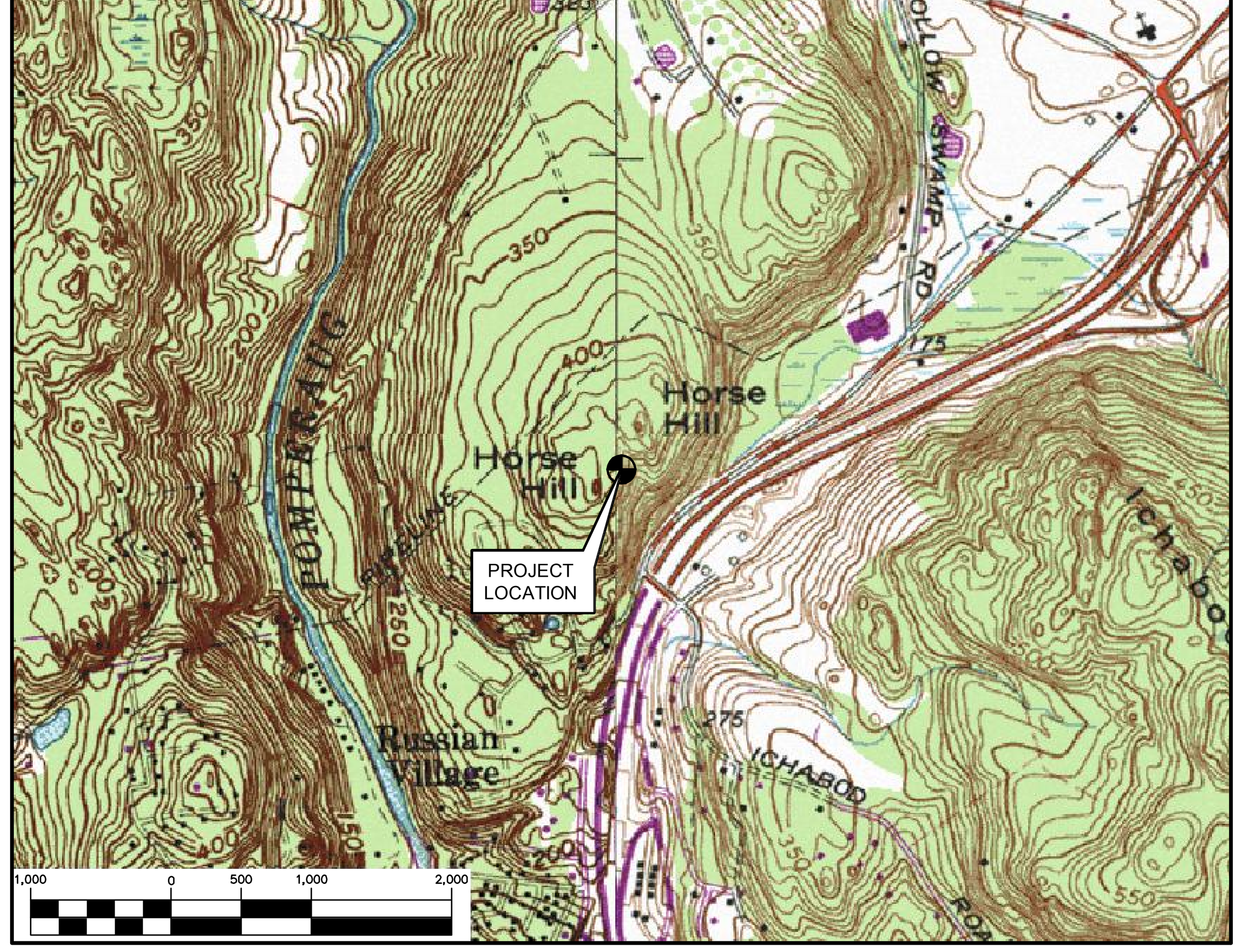
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 214 RUSSIAN VILLAGE ROAD, SOUTHBURY, CONNECTICUT

1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.3 MI
2. TURN LEFT ONTO CAPITAL BLVD	0.2 MI
3. USE THE LEFT 2 LANES TO TURN LEFT ONTO CT-411	0.3 MI
4. TURN LEFT TO MERGE ONTO I-91 S	0.3 MI
5. MERGE ONTO I-91 S	8.8 MI
6. TAKE EXIT 18 FOR I-691 W TOWARD MERIDEN/WATERBURY	0.2 MI
7. CONTINUE ONTO I-691 W	7.7 MI
8. USE THE LEFT 2 LANES TO TAKE EXIT 1 FOR I-84 W TOWARD WATERBURY/DANBURY	1.0 MI
9. MERGE ONTO I-84	19.5 MI
10. TAKE EXIT 14 FOR CT-172 TOWARD S BRITAIN	0.3 MI
11. TURN RIGHT ONTO CT-172 N/S BRITAIN RD	180 FT
12. TURN LEFT ONTO MAIN ST S	0.9 MI
13. TURN RIGHT ONTO RUSSIAN VILLAGE RD	0.2 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-11 BEHIND EXISTING POSITION 4 ANTENNA.

PROJECT INFORMATION

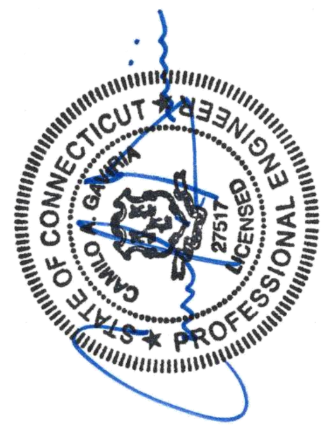
AT&T SITE NUMBER:	CT5183
AT&T SITE NAME:	HORSE HILL
SITE ADDRESS:	CROWN CASTLE, INC. SITE NO.: 876314 214 RUSSIAN VILLAGE ROAD SOUTHBURY, CT 06488
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-26'-56.010" N LONGITUDE: 73°-15'-06.116" W GROUND ELEVATION: ±443' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS, ELEVATION AND DETAILS	0
C-2	LTE 2C EQUIPMENT DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAW/JR	CAG	CONSTRUCTION DOCUMENTS – 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
HORSE HILL
CT5183 - LTE 2C
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

DATE: 06/20/16
SCALE: AS NOTED
JOB NO. 16071.17

TITLE SHEET

T-1

Sheet No. 1 of 7

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- WIND LOAD: PER EIA/TIA 222 F–96 (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 100 MPH (3 SECOND GUST)
- BUILDING CLASSIFICATION: II (BASED ON IBC TABLE 1604.5)
- BASIC WIND SPEED (OTHER STRUCTURE): 95 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMMENDMENT.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–02 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:

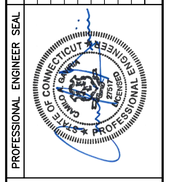
1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED 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.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAM/JR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



at&t

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

HORSE HILL

CT5183 - LTE 2C

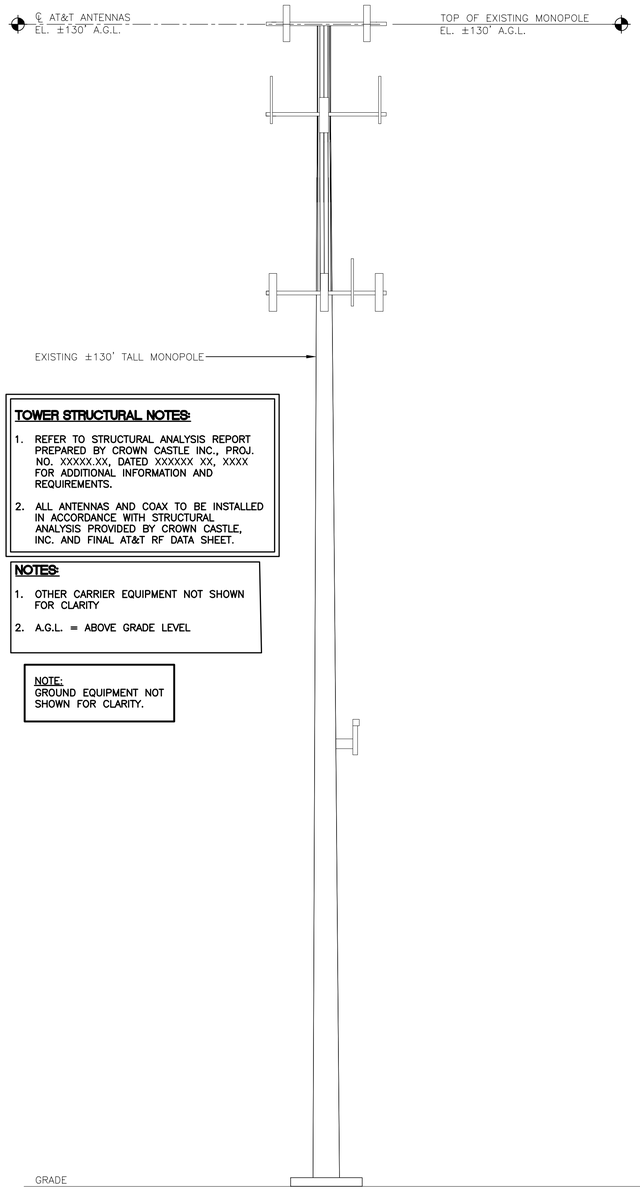
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

DATE: 06/20/16
SCALE: AS NOTED
JOB NO. 16071.17

NOTES AND SPECIFICATIONS

N–1

Sheet No. 2 of 7



TOWER STRUCTURAL NOTES:

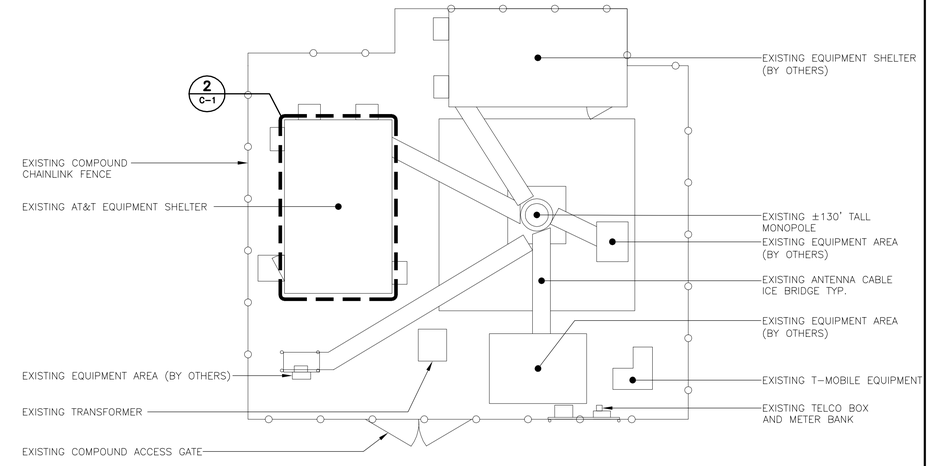
1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CROWN CASTLE INC., PROJ. NO. XXXXX.XX, DATED XXXXXX XX, XXXX FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

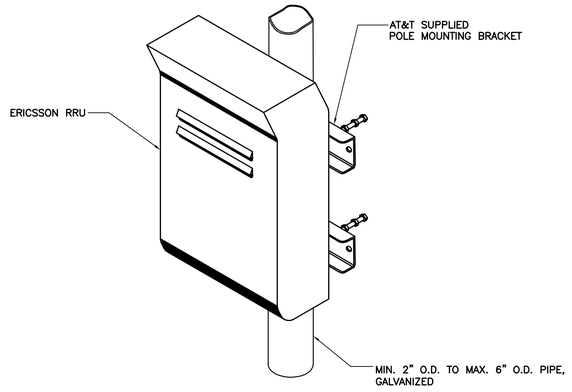
NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

4 / C-1 **TOWER ELEVATION**
SCALE: 1/8" = 1'-0"



1 / C-1 **COMPOUND PLAN**
SCALE: 1/8" = 1'-0"
NORTH

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 inch = 8 ft.

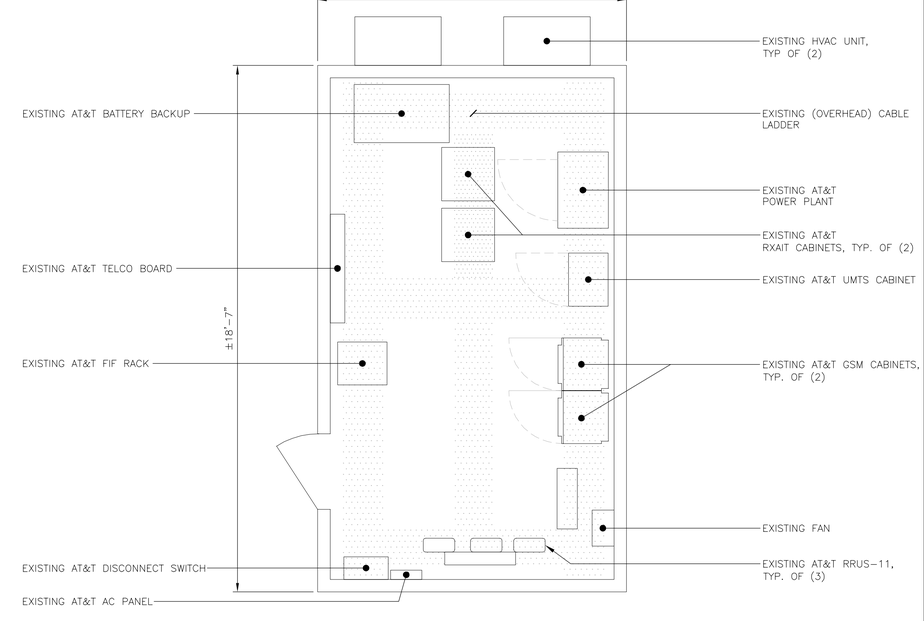


ISOMETRIC VIEW

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.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

3 / C-1 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: NTS



2 / C-1 **EQUIPMENT ROOM PLAN**
SCALE: 1/8" = 1'-0"
NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAW/JR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

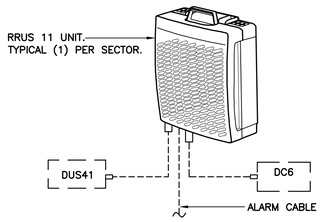
at&t
EMPIRE telecom
CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
HORSE HILL
CT5183 - LTE 2C
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

DATE: 06/20/16
SCALE: AS NOTED
JOB NO. 16071.17

PLANS, ELEVATION AND DETAILS

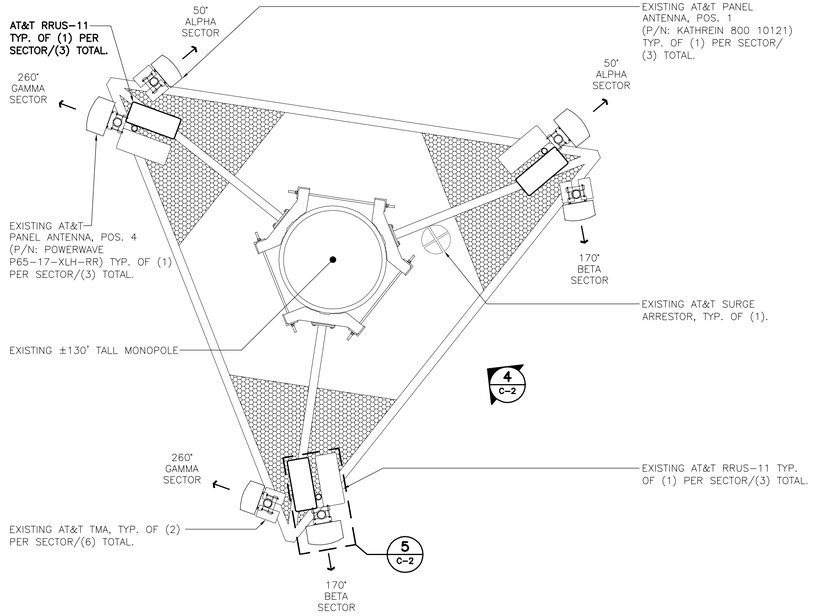
C-1
Sheet No. 3 of 7



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-11	17.8"L x 17.3"W x 7.2"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

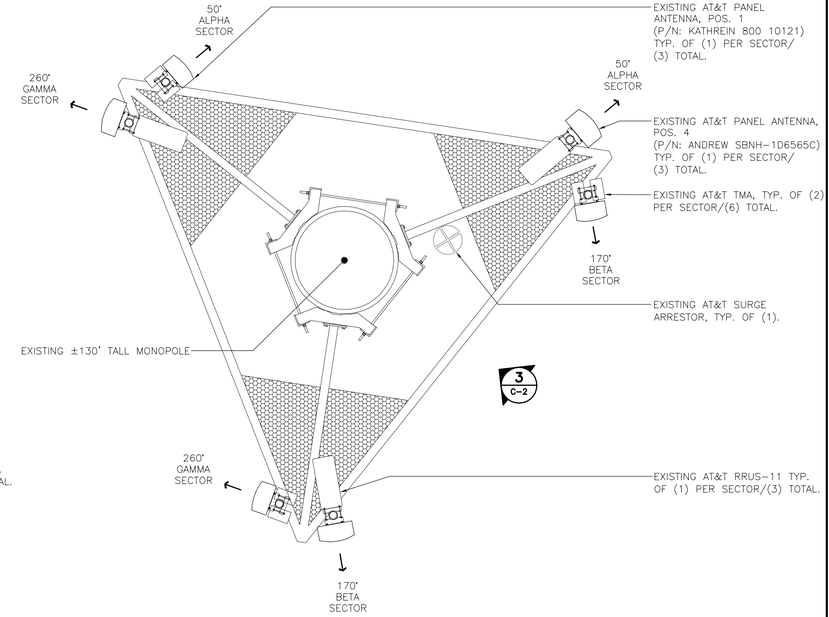
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 C-2 ERICSSON RRUS 11 DETAIL
SCALE: 1" = 1'-0"



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

NORTH



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

NORTH

4 C-2 PROPOSED ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"

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

5 C-2 PROPOSED RRU MOUNTING DETAIL
SCALE: 1/2" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAW/JR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

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

HORSE HILL

CT5183 - LTE 2C

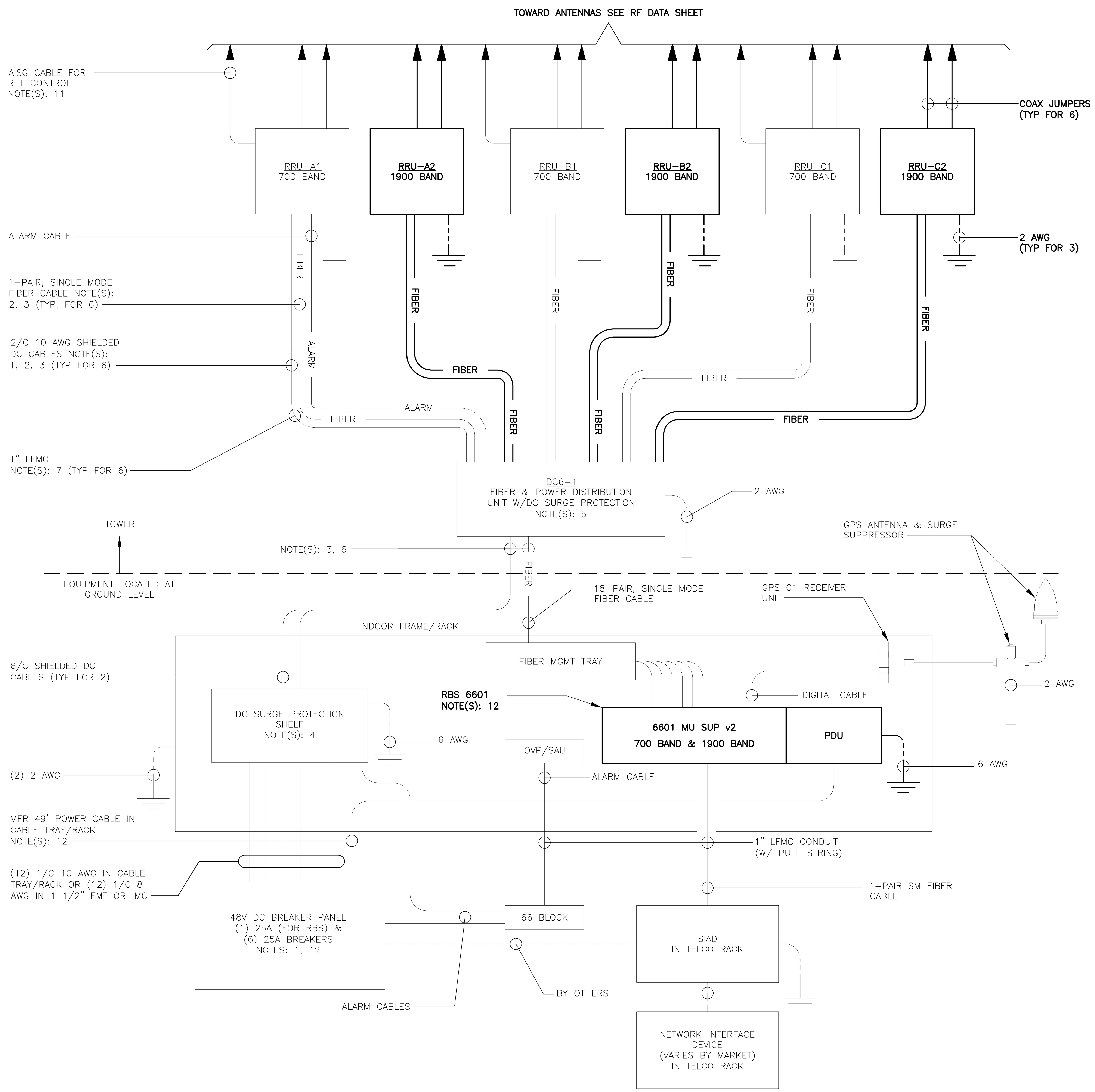
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

DATE: 06/20/16
SCALE: AS NOTED
JOB NO. 16071.17

LTE 2C EQUIPMENT DETAILS

C-2

Sheet No. 4 of 7



1 / E-1 LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

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.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAW/JR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

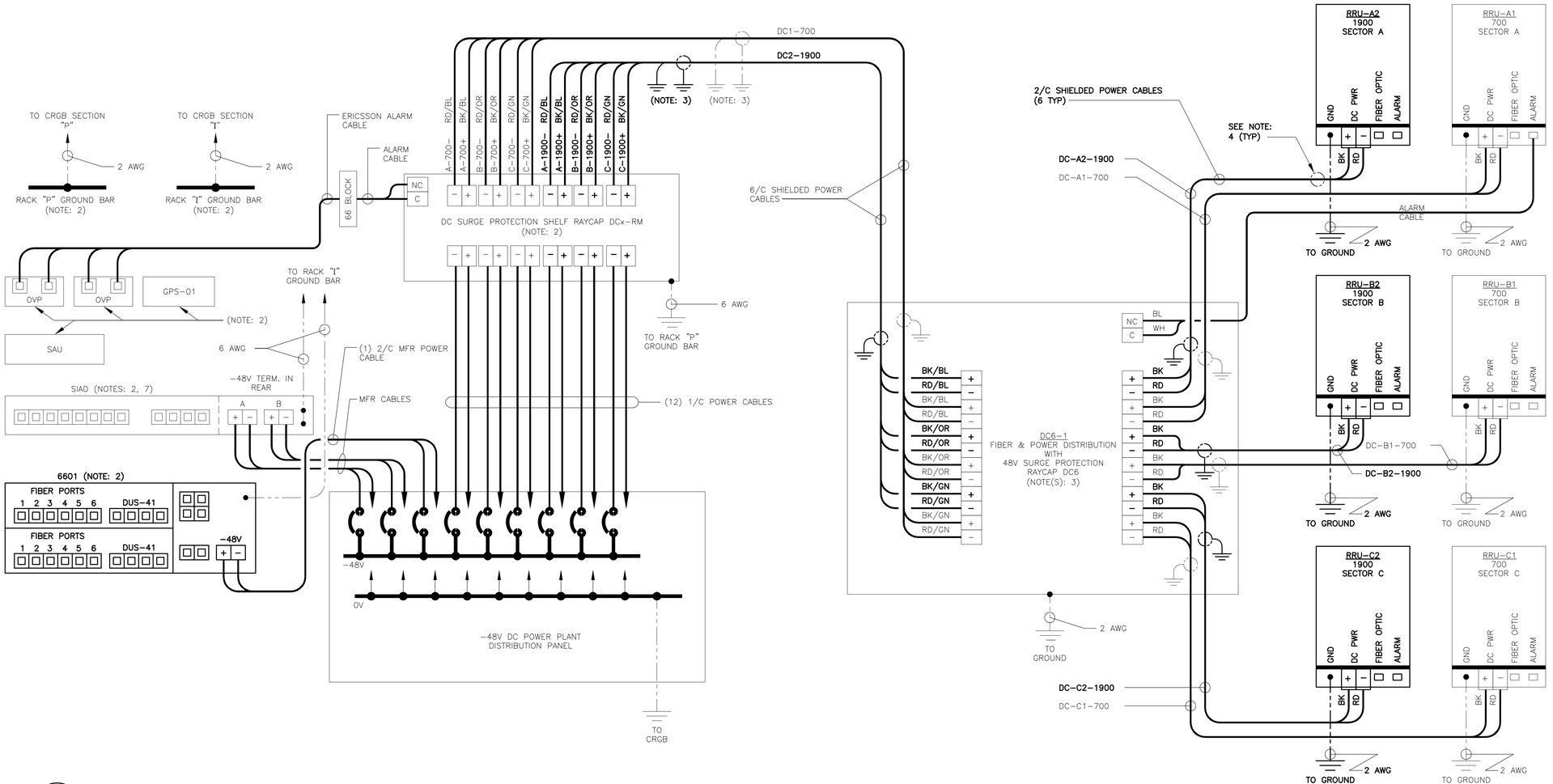
CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
HORSE HILL
CT5183 - LTE 2C
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

DATE: 06/20/16
SCALE: AS NOTED
JOB NO. 16071.17

LTE SCHEMATIC DIAGRAM AND NOTES

E-1



1 / E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAWJR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

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

HORSE HILL

CT5183 - LTE 2C

214 RUSSIAN VILLAGE ROAD

SOUTHBURY, CT 06488

DATE: 06/20/16

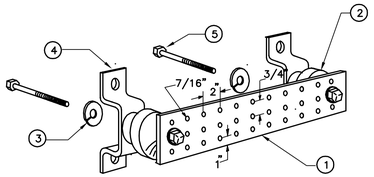
SCALE: AS NOTED

JOB NO. 16071.17

LTE WIRING DIAGRAM

E-2

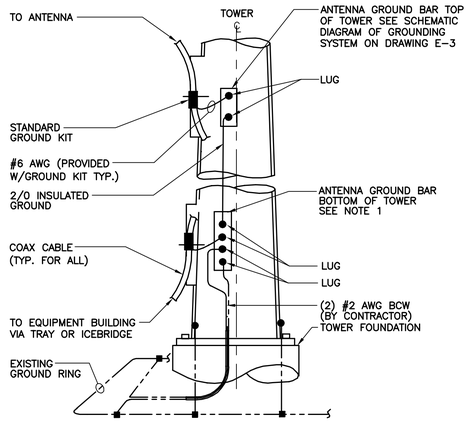
Sheet No. 6 of 7



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.

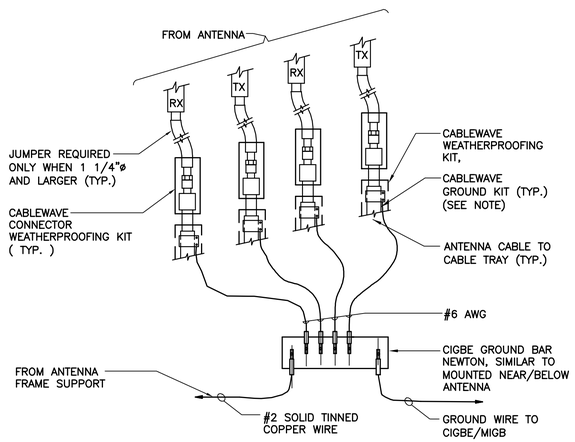
3 E-3 **GROUND BAR DETAIL**
NOT TO SCALE



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.

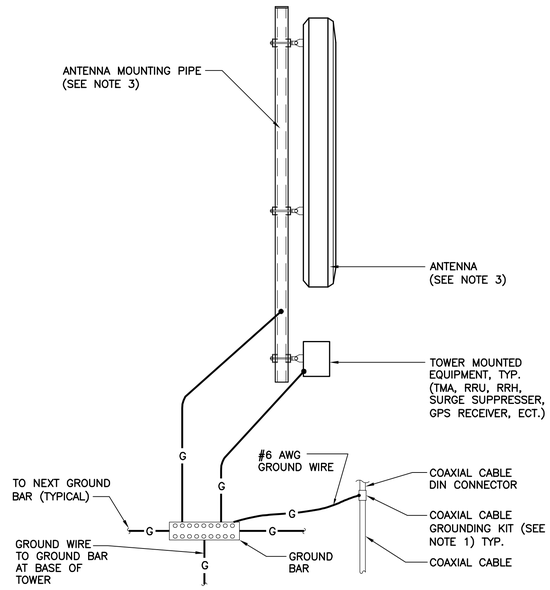
2 E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



NOTE:

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

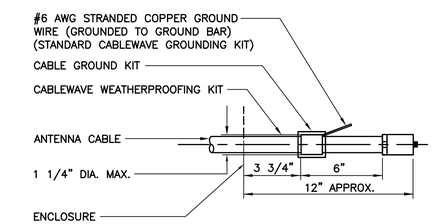
5 E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



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-3 **TYPICAL ANTENNA GROUNDING DETAIL**
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-3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/22/16	KAW,JR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

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
HORSE HILL
CT5183 - LTE 2C
214 RUSSIAN VILLAGE ROAD
SOUTHBURY, CT 06488

DATE:	06/20/16
SCALE:	AS NOTED
JOB NO.	16071.17

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 7 of 7

Date: **June 20, 2016**

Charles Trask
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(980) 209-8228

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
crown@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL05183
	Carrier Site Name:	Horse Hill
Crown Castle Designation:	**Crown Castle BU Number:**	876314
	Crown Castle Site Name:	Horse Hill
	Crown Castle JDE Job Number:	382810
	Crown Castle Work Order Number:	1251812
	Crown Castle Application Number:	347001 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	25675.50846
Site Data:	**214 Russian Village Rd, Southbury, New Haven County, CT 06488** **Latitude *41° 27' 7.97"*, Longitude *-73° 15' 1.25"*** **130 Foot - Monopole Tower**	

Dear Charles Trask,

Tower Engineering Professionals 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 914748, in accordance with application 347001, revision 0.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code with 2009 Amendment based upon a wind speed of 85 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Steven C. Williams, E.I. / JDB

Respectfully submitted by:

Graham M. Andres, P.E.

STATE OF CONNECTICUT GRAHAM M. ANDRES 29538 LICENSED PROFESSIONAL ENGINEER

6/20/16

Electronic Copy

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a monopole tower that was originally 120-ft and was extended to 130-ft, designed by Summit Manufacturing Inc. in January of 1998. The tower was originally designed for a wind speed of 90 mph per EIA/TIA-222-F for the appurtenances listed in Table 3. The tower has been modified per reinforcement drawings prepared by GPD Group in August of 2012. TEP visited the site in April of 2013 to perform a post-modification inspection. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and ASCE 7-05 Minimum Design Loads for Buildings and Other Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch escalating ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	130.0	3	Ericsson	RRUS 11	-	-	-

Table 2 - Existing 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
130.0	130.0	3	Kathrein	800 10121 w/ Mount Pipe	6 2 1	1-5/8 3/4 3/8	1
		1	KMW Communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		1	Andrew	SBNH-1D6565C w/ Mount Pipe			
		1	Powerwave Technologies	P65-17-XLH-RR w/ Mount Pipe			
		6	Powerwave Technologies	LGP21401			
		3	Ericsson	RRUS-11 BAND 12			
		3	Powerwave Technologies	TMA DD 1900 with 850 BYPASS			
		1	Raycap	DC6-48-60-18-8F			
		1	Tower Mounts	Platform Mount [LP 303-1]			
120.0	120.0	3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe	3	1-1/4	1
		9	RFS Celwave	ACU-A20-N			
		3	Alcatel Lucent	800 External Notch Filter			
		1	Tower Mounts	Platform Mount [LP 1201-1]			
118.0	119.0	3	Alcatel Lucent	TME-1900MHz RRH (65MHz)	-	-	1
	118.0	1	Tower Mounts	Side Arm Mount [SO 102-3]			
	117.0	3	Alcatel Lucent	TME-800MHZ RRH w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
100.0	100.0	3	Commscope	ATBT-BOTTOM-24V	8 6 4	1-5/8 7/8 1-1/4	1
		3	Commscope	LNX-6515DS-VTM w/ Mount Pipe			
		6	Ems Wireless	RR90-17-02DP w/ Mount Pipe			
		6	RFS Celwave	ATMAP1412D-1A20			
		1	Tower Mounts	Platform Mount [LP 1201-1]			
90.0	90.0	-	-	-	6	1-5/8	2
80.0	80.0	1	GPS	GPS_A	1	1/2	1
		1	Tower Mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing equipment
2) Abandoned equipment; considered 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)
120.0	120.0	12	Swedcom	ALPS 9212-N	-	-
110.0	110.0	12	Swedcom	ALPS 9212-N	-	-
100.0	100.0	12	Swedcom	ALPS 9212-N	-	-
80.0	80.0	1	Generic	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	Clarence Welti Assoc. Inc.	1529735	CCISites
Tower Foundation Drawing	Paul J. Ford and Company	1611741	CCISites
Tower Manufacturer Drawing	Summit Manufacturing, Inc.	1529812	CCISites
Tower Reinforcement Drawings	GPD Group	3797841	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3797830	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.

For analysis of monopole shaft reinforcements, the plates are modeled as linear appurtenances along the exterior of the pole. The loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each reinforcing element along each critical axis and presents percent capacities for each element and the pole shaft along each critical axis. The actual percent capacity of the tower structure including the reinforcing elements is reported in Table 5 - Section Capacity (Summary).

3.2) Assumptions

1) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation 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 "Appendix B – Base Level Drawing".
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by the standard.
5) All tower components are in sufficient condition to carry their full design capacity.
6) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
7) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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 (lb)	SF*P_{allow} (lb)	% Capacity	Pass / Fail
L1	130.00-120.00	Pole	TP16.00×16.00×0.3750	1	Note 1	Note 1	19.3	Pass
L2	120.00-91.50	Pole	TP22.98×16.00×0.1875	2	Note 1	Note 1	52.9	Pass
L3	94.50-64.50	Pole	TP29.22×21.87×0.2500	3	Note 1	Note 1	90.2	Pass
L4	68.25-42.50	Pole	TP34.11×27.80×0.3125	4	Note 1	Note 1	64.8	Pass
L5	46.75-20.25	Pole	TP38.94×32.44×0.3438	5	Note 1	Note 1	96.0	Pass
L6	25.25-0.00	Pole	TP43.21×37.03×0.3750	6	Note 1	Note 1	76.9	Pass
M1	15.50-0.50	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	81.5	Pass
M2	42.67-12.67	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	79.6	Pass
M3	70.33-40.33	Mod (Ex)	(Aero) MP304	3	Note 1	Note 1	75.2	Pass
M4	88.17-68.17	Mod (Ex)	(Aero) MP303	4	Note 1	Note 1	88.7	Pass
M5	73.08-68.17	Mod (Ex)	(Aero) MP303	5	Note 1	Note 1	53.5	Pass
M6	89.50-79.50	Mod (Ex)	(Aero) MP303	6	Note 1	Note 1	70.2	Pass
M7	116.17-86.17	Mod (Ex)	(Aero) MP303	7	Note 1	Note 1	69.5	Pass
M8	97.67-87.67	Mod (Ex)	(Aero) MP303	8	Note 1	Note 1	59.3	Pass
M9	103.92-95.17	Mod (Ex)	(Aero) MP303	9	Note 1	Note 1	45.2	Pass
M10	109.42-103.92	Mod (Ex)	(Aero) MP303	10	Note 1	Note 1	41.0	Pass
M11	116.17-109.42	Mod (Ex)	(Aero) MP303	11	Note 1	Note 1	26.8	Pass
							Summary	
						Pole (L5)	96.0	Pass
						Mod (M4)	88.7	Pass
						Rating =	**96.0**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	120.0	65.9	Pass
1	Anchor Rods	-	62.9	Pass
1	Base Plate	-	83.7	Pass
1	Base Foundation - Soil Interaction	-	81.0	Pass
1	Base Foundation - Structural	-	34.4	Pass

Structure Rating (max from all components) =	96.0%

Note:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

4.1) Recommendations

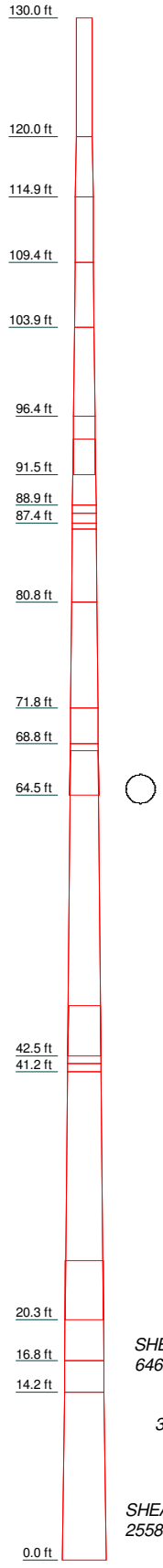
1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

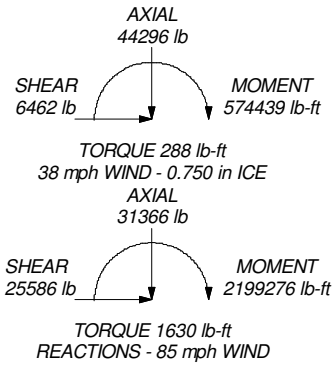
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	11	12	13	14	15	16	18	19	20	21
Length (ft)	10.00	5.08	5.50	5.50	7.50	4.92	5.58	6.17	8.92	3.00	4.33	25.75	4.92	20.92	8.42	2.66	14.17
Number of Sides	1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.375	0.188	0.490	0.412	0.434	0.382	0.438	0.420	0.320	0.619	0.462	0.490	0.619	0.497	0.523	0.668	0.507
Socket Length (ft)						3.00					3.75	4.25		5.00			
Top Dia (in)	16.000	16.000	17.244	18.591	19.938	21.775	22.870	23.727	25.239	27.424	28.159	27.801	33.594	33.812	37.027	39.089	39.740
Bot Dia (in)	16.000	17.244	18.591	19.938	21.775	22.980	24.237	25.239	27.424	28.159	29.220	34.110	33.680	38.940	39.089	39.740	43.210
Grade	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=65ksi, Density=100%	MPRF-Fy=60ksi, Density=100%	MPRF-Fy=60ksi, Density=100%
Weight (lb)	626.4	171.5	200.2	215.5	318.3	224.3	340.8	409.5	637.2	226.3	337.4	2700.8	1310.0	2839.1	1303.6	426.7	2392.6

14186.4





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
RRUS 11	130	(2) 2.4" Dia x 6-ft Pipe	120
RRUS 11	130	(2) 2.4" Dia x 6-ft Pipe	120
RRUS 11	130	(2) 2.4" Dia x 6-ft Pipe	120
800 10121 w/ Mount Pipe	130	Platform Mount [LP 1201-1]	120
800 10121 w/ Mount Pipe	130	TME-800MHZ RRH w/ Mount Pipe	118
800 10121 w/ Mount Pipe	130	TME-800MHZ RRH w/ Mount Pipe	118
P65-17-XLH-RR w/ Mount Pipe	130	TME-800MHZ RRH w/ Mount Pipe	118
SBNH-1D6565C w/ Mount Pipe	130	TME-1900MHz RRH (65MHz)	118
AM-X-CD-16-65-00T-RET w/ Mount Pipe	130	TME-1900MHz RRH (65MHz)	118
		TME-1900MHz RRH (65MHz)	118
(2) LGP21401	130	Side Arm Mount [SO 102-3]	118
(2) LGP21401	130	(2) RR90-17-02DP w/ Mount Pipe	100
(2) LGP21401	130	(2) RR90-17-02DP w/ Mount Pipe	100
RRUS-11 BAND 12	130	(2) RR90-17-02DP w/ Mount Pipe	100
RRUS-11 BAND 12	130	LNX-6515DS-VTM w/ Mount Pipe	100
RRUS-11 BAND 12	130	LNX-6515DS-VTM w/ Mount Pipe	100
TMA DD 1900 with 850 BYPASS	130	LNX-6515DS-VTM w/ Mount Pipe	100
TMA DD 1900 with 850 BYPASS	130	(2) ATMAP1412D-1A20	100
TMA DD 1900 with 850 BYPASS	130	(2) ATMAP1412D-1A20	100
DC6-48-60-18-8F	130	(2) ATMAP1412D-1A20	100
Platform Mount [LP 303-1]	130	ATBT-BOTTOM-24V	100
APXVSPP18-C-A20 w/ Mount Pipe	120	ATBT-BOTTOM-24V	100
APXVSPP18-C-A20 w/ Mount Pipe	120	ATBT-BOTTOM-24V	100
APXVSPP18-C-A20 w/ Mount Pipe	120	2.4" Dia x 6-ft Pipe	100
(3) ACU-A20-N	120	2.4" Dia x 6-ft Pipe	100
(3) ACU-A20-N	120	2.4" Dia x 6-ft Pipe	100
(3) ACU-A20-N	120	Platform Mount [LP 1201-1]	100
800 EXTERNAL NOTCH FILTER	120	GPS_A	80
800 EXTERNAL NOTCH FILTER	120	Side Arm Mount [SO 701-1]	80
800 EXTERNAL NOTCH FILTER	120		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
MPRF-Fy=42ks Density=100%	42 ksi	63 ksi	MPRF-Fy=65ks Density=100%	65 ksi	80 ksi
MPRF-Fy=60ks Density=100%	60 ksi	75 ksi	MPRF-Fy=65ks Density=50%	65 ksi	80 ksi
MPRF-Fy=60ks Density=50%	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. Equivalent Thickness Model

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: **Horse Hill (BU 876314)**			
Project: ***TEP No. 25675.50846***			
Client: Crown Castle	Drawn by: JDB	App'd:	
Code: TIA/EIA-222-F	Date: 06/20/16	Scale: NTS	
Path: C:\Users\jbushwty\Desktop\Work in Progress (SA)\SA\FR-SCW_876314_Horse Hill\876314_LC5.eri		Dwg No. E-1	

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Equivalent Thickness Model.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	130.00-120.00	10.00	0.000	Round	16.000	16.000	0.375		MPRF-Fy=42ksi, Density=100% (42 ksi)
L2	120.00-114.92	5.08	0.000	12	16.000	17.244	0.188	0.750	MPRF-Fy=60ksi, Density=100% (60 ksi)

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	114.92-109.42	5.50	0.000	12	17.244	18.591	0.490	1.960	MPRF-Fy=60ksi, Density=50% (60 ksi)
L4	109.42-103.92	5.50	0.000	12	18.591	19.938	0.412	1.646	MPRF-Fy=60ksi, Density=50% (60 ksi)
L5	103.92-96.42	7.50	0.000	12	19.938	21.775	0.434	1.735	MPRF-Fy=60ksi, Density=50% (60 ksi)
L6	96.42-91.50	4.92	3.000	12	21.775	22.980	0.382	1.530	MPRF-Fy=60ksi, Density=50% (60 ksi)
L7	91.50-88.92	5.58	0.000	12	21.870	23.237	0.438	1.752	MPRF-Fy=65ksi, Density=100% (65 ksi)
L8	88.92-88.25	0.67	0.000	12	23.237	23.401	0.334	1.334	MPRF-Fy=65ksi, Density=100% (65 ksi)
L9	88.25-87.42	0.83	0.000	12	23.401	23.605	0.387	1.550	MPRF-Fy=65ksi, Density=100% (65 ksi)
L10	87.42-86.92	0.50	0.000	12	23.605	23.727	0.251	1.005	MPRF-Fy=65ksi, Density=100% (65 ksi)
L11	86.92-80.75	6.17	0.000	12	23.727	25.239	0.420	1.679	MPRF-Fy=65ksi, Density=100% (65 ksi)
L12	80.75-71.83	8.92	0.000	12	25.239	27.424	0.320	1.279	MPRF-Fy=65ksi, Density=100% (65 ksi)
L13	71.83-68.83	3.00	0.000	12	27.424	28.159	0.619	2.475	MPRF-Fy=65ksi, Density=50% (65 ksi)
L14	68.83-64.50	4.33	3.750	12	28.159	29.220	0.462	1.846	MPRF-Fy=65ksi, Density=100% (65 ksi)
L15	64.50-42.50	25.75	4.250	12	27.801	34.110	0.490	1.961	MPRF-Fy=65ksi, Density=100% (65 ksi)
L16	42.50-41.83	4.92	0.000	12	32.444	33.650	0.519	2.076	MPRF-Fy=65ksi, Density=100% (65 ksi)
L17	41.83-41.17	0.66	0.000	12	33.650	33.812	0.344	1.375	MPRF-Fy=65ksi, Density=100% (65 ksi)
L18	41.17-20.25	20.92	5.000	12	33.812	38.940	0.497	1.988	MPRF-Fy=65ksi, Density=100% (65 ksi)
L19	20.25-16.83	8.42	0.000	12	37.027	39.089	0.523	2.091	MPRF-Fy=60ksi,

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
L20	16.83-14.17	2.66	0.000	12	39.089	39.740	0.668	2.673	Density=100% (60 ksi) MPRF-Fy=60ksi, Density=100% (60 ksi)
L21	14.17-0.00	14.17		12	39.740	43.210	0.507	2.027	MPRF-Fy=60ksi, Density=100% (60 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	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L2	16.564	9.547	304.681	5.661	8.288	36.762	617.365	4.699	3.785	20.189
	17.852	10.298	382.406	6.106	8.932	42.811	774.858	5.068	4.119	21.968
L3	17.852	26.435	947.140	5.998	8.932	106.033	1919.163	13.011	3.308	6.751
	19.247	28.561	1194.447	6.480	9.630	124.031	2420.274	14.057	3.669	7.488
L4	19.247	24.091	1016.268	6.508	9.630	105.529	2059.234	11.857	3.880	9.427
	20.642	25.876	1259.320	6.991	10.328	121.933	2551.723	12.735	4.241	10.304
L5	20.642	27.248	1323.092	6.983	10.328	128.108	2680.943	13.411	4.181	9.636
	22.543	29.815	1733.213	7.640	11.279	153.661	3511.959	14.674	4.673	10.77
L6	22.543	26.346	1538.938	7.659	11.279	136.437	3118.306	12.967	4.811	12.578
	23.791	27.830	1813.910	8.090	11.904	152.383	3675.473	13.697	5.134	13.423
L7	23.403	30.221	1771.878	7.673	11.329	156.405	3590.305	14.874	4.688	10.705
	24.057	32.148	2133.016	8.162	12.037	177.206	4322.070	15.822	5.054	11.541
L8	24.057	24.601	1647.242	8.200	12.037	136.849	3337.759	12.108	5.334	15.989
	24.227	24.778	1682.912	8.258	12.122	138.832	3410.037	12.195	5.378	16.121
L9	24.227	28.715	1941.237	8.239	12.122	160.142	3933.472	14.133	5.233	13.505
	24.438	28.969	1993.148	8.312	12.227	163.008	4038.659	14.258	5.288	13.646
L10	24.438	18.896	1315.381	8.361	12.227	107.577	2665.319	9.300	5.653	22.496
	24.564	18.995	1336.189	8.404	12.291	108.715	2707.481	9.349	5.686	22.627
L11	24.564	31.494	2183.782	8.344	12.291	177.677	4424.934	15.500	5.234	12.474
	26.129	33.536	2636.811	8.885	13.074	201.687	5342.894	16.506	5.639	13.439
L12	26.129	25.648	2032.892	8.921	13.074	155.494	4119.190	12.623	5.907	18.481
	28.392	27.897	2615.992	9.703	14.206	184.150	5300.709	13.730	6.493	20.313
L13	28.392	53.414	4898.724	9.596	14.206	344.841	9926.143	26.289	5.691	9.197
	29.153	54.878	5312.824	9.859	14.586	364.230	10765.222	27.009	5.888	9.515
L14	29.153	41.165	4030.829	9.916	14.586	276.340	8167.552	20.260	6.310	13.67
	30.251	42.741	4511.930	10.296	15.136	298.093	9142.394	21.036	6.594	14.286
L15	29.733	43.116	4104.881	9.777	14.401	285.040	8317.602	21.220	6.137	12.517
	35.313	53.076	7657.185	12.036	17.669	433.369	15515.532	26.122	7.828	15.965
L16	34.667	53.350	6940.293	11.429	16.806	412.968	14062.916	26.257	7.304	14.074
	34.837	55.366	7756.976	11.861	17.431	445.020	15717.735	27.249	7.627	14.697
L17	34.837	36.871	5220.577	11.924	17.431	299.506	10578.305	18.147	8.097	23.551
	35.004	37.050	5297.028	11.982	17.514	302.438	10733.215	18.235	8.140	23.677
L18	35.004	53.316	7552.939	11.927	17.514	431.240	15304.302	26.241	7.730	15.552
	40.314	61.523	11605.422	13.763	20.171	575.354	23515.732	30.280	9.104	18.317
L19	39.601	61.443	10450.607	13.068	19.180	544.873	21175.763	30.240	8.522	16.303
	40.468	64.914	12323.380	13.807	20.248	608.624	24970.510	31.949	9.075	17.361
L20	40.468	82.670	15576.041	13.755	20.248	769.266	31561.282	40.688	8.685	12.997
	41.142	84.071	16381.775	13.988	20.585	795.798	33193.918	41.377	8.859	13.258
L21	41.142	64.005	12575.054	14.046	20.585	610.874	25480.469	31.501	9.293	18.342

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
	44.734	69.665	16215.392	15.288	22.383	724.458	32856.779	34.287	10.222	20.177

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 130.00-120.00				1	1	1			
L2 120.00-114.92				1	1	1			
L3 114.92-109.42				1	1	0.778078			
L4 109.42-103.92				1	1	0.921669			
L5 103.92-96.42				1	1	0.874299			
L6 96.42-91.50				1	1	0.989229			
L7 91.50-88.92				1	1	0.575605			
L8 88.92-88.25				1	1	0.752169			
L9 88.25-87.42				1	1	0.648999			
L10 87.42-86.92				1	1	0.994975			
L11 86.92-80.75				1	1	0.59983			
L12 80.75-71.83				1	1	0.784131			
L13 71.83-68.83				1	1	0.818791			
L14 68.83-64.50				1	1	0.545762			
L15 64.50-42.50				1	1	0.640868			
L16 42.50-41.83				1	1	0.665957			
L17 41.83-41.17				1	1	1			
L18 41.17-20.25				1	1	0.694581			
L19 20.25-16.83				1	1	0.720138			
L20 16.83-14.17				1	1	0.565393			
L21 14.17-0.00				1	1	0.742452			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
*****										

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
** Safety **								
Step Pegs (5/8" SR) 7-in. w/30" step	C	No	CaAa (Out Of Face)	130.00 - 0.00	1	No Ice	0.03	0.487
						1/2" Ice	0.14	1.006
						1" Ice	0.23	2.065
						2" Ice	0.43	6.087
						4" Ice	0.83	21.462
Safety Line 3/8	C	No	CaAa (Out Of Face)	130.00 - 0.00	1	No Ice	0.04	0.220
						1/2" Ice	0.14	0.750
						1" Ice	0.24	1.280
						2" Ice	0.44	2.340
						4" Ice	0.84	4.460
** 130 **								
CR 50 1873(1-5/8")	A	No	Inside Pole	130.00 - 0.00	6	No Ice	0.00	0.830
						1/2" Ice	0.00	0.830
						1" Ice	0.00	0.830
						2" Ice	0.00	0.830
						4" Ice	0.00	0.830
FB-L98B-002-75000(3/8")	A	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.059
						1/2" Ice	0.00	0.059
						1" Ice	0.00	0.059
						2" Ice	0.00	0.059
						4" Ice	0.00	0.059
2" Flexible Conduit	A	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.340
						1/2" Ice	0.00	0.340
						1" Ice	0.00	0.340
						2" Ice	0.00	0.340
						4" Ice	0.00	0.340
WR-VG86ST-BRD(3/4")	A	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	0.584
						1/2" Ice	0.00	0.584
						1" Ice	0.00	0.584
						2" Ice	0.00	0.584
						4" Ice	0.00	0.584
** 120 **								
HB114-21U3M12-XXX F(1-1/4")	C	No	CaAa (Out Of Face)	120.00 - 0.00	1	No Ice	0.15	1.220
						1/2" Ice	0.25	2.466
						1" Ice	0.35	4.323
						2" Ice	0.55	9.870
						4" Ice	0.95	28.294
HB114-21U3M12-XXX F(1-1/4")	C	No	CaAa (Out Of Face)	120.00 - 0.00	2	No Ice	0.00	1.220
						1/2" Ice	0.00	2.466
						1" Ice	0.00	4.323
						2" Ice	0.00	9.870
						4" Ice	0.00	28.294
** 100 **								
LDF7-50A(1-5/8")	B	No	Inside Pole	100.00 - 0.00	8	No Ice	0.00	0.820
						1/2" Ice	0.00	0.820
						1" Ice	0.00	0.820
						2" Ice	0.00	0.820
						4" Ice	0.00	0.820
LDF5-50A(7/8")	B	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.330
						1/2" Ice	0.00	0.330
						1" Ice	0.00	0.330
						2" Ice	0.00	0.330
						4" Ice	0.00	0.330
AVA6-50(1-1/4")	B	No	Inside Pole	100.00 - 0.00	4	No Ice	0.00	0.450
						1/2" Ice	0.00	0.450
						1" Ice	0.00	0.450
						2" Ice	0.00	0.450
						4" Ice	0.00	0.450
** 90 **								
LDF7-50A(1-5/8")	C	No	CaAa (Out Of	90.00 - 0.00	6	No Ice	0.00	0.820

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
			Face)			1/2" Ice	0.00	2.335
						1" Ice	0.00	4.461
						2" Ice	0.00	10.545
						4" Ice	0.00	30.044
** 80 **								
LDF4-50A(1/2")	C	No	Inside Pole	80.00 - 0.00	1	No Ice	0.00	0.150
						1/2" Ice	0.00	0.150
						1" Ice	0.00	0.150
						2" Ice	0.00	0.150
						4" Ice	0.00	0.150
****								
Aero MP3-04	A	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.27	14.100
						1/2" Ice	0.38	15.303
						1" Ice	0.49	16.852
						2" Ice	0.71	20.986
						4" Ice	1.16	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.27	14.100
						1/2" Ice	0.38	15.303
						1" Ice	0.49	16.852
						2" Ice	0.71	20.986
						4" Ice	1.16	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	C	No	CaAa (Out Of Face)	15.50 - 0.50	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
***								
Aero MP3-04	A	No	CaAa (Out Of Face)	42.67 - 15.50	1	No Ice	0.27	14.100
						1/2" Ice	0.38	15.303
						1" Ice	0.49	16.852
						2" Ice	0.71	20.986
						4" Ice	1.16	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	42.67 - 15.50	1	No Ice	0.27	14.100
						1/2" Ice	0.38	15.303
						1" Ice	0.49	16.852
						2" Ice	0.71	20.986
						4" Ice	1.16	33.403
Aero MP3-04	A	No	CaAa (Out Of Face)	15.50 - 12.67	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	15.50 - 12.67	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	C	No	CaAa (Out Of Face)	42.67 - 12.67	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	C	No	CaAa (Out Of Face)	42.67 - 12.67	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						4" Ice	0.00	33.403
***								
Aero MP3-04	A	No	CaAa (Out Of Face)	70.33 - 42.67	1	No Ice	0.27	14.100
						1/2" Ice	0.38	15.303
						1" Ice	0.49	16.852
						2" Ice	0.71	20.986
						4" Ice	1.16	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	70.33 - 42.67	1	No Ice	0.27	14.100
						1/2" Ice	0.38	15.303
						1" Ice	0.49	16.852
						2" Ice	0.71	20.986
						4" Ice	1.16	33.403
Aero MP3-04	A	No	CaAa (Out Of Face)	42.67 - 40.33	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	42.67 - 40.33	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	B	No	CaAa (Out Of Face)	70.33 - 40.33	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
Aero MP3-04	C	No	CaAa (Out Of Face)	70.33 - 40.33	1	No Ice	0.00	14.100
						1/2" Ice	0.00	15.303
						1" Ice	0.00	16.852
						2" Ice	0.00	20.986
						4" Ice	0.00	33.403
***								
Aero MP3-03	A	No	CaAa (Out Of Face)	88.17 - 70.33	1	No Ice	0.26	9.900
						1/2" Ice	0.37	11.063
						1" Ice	0.48	12.572
						2" Ice	0.71	16.627
						4" Ice	1.15	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	88.17 - 70.33	1	No Ice	0.26	9.900
						1/2" Ice	0.37	11.063
						1" Ice	0.48	12.572
						2" Ice	0.71	16.627
						4" Ice	1.15	28.884
Aero MP3-03	A	No	CaAa (Out Of Face)	70.33 - 68.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	70.33 - 68.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	73.17 - 68.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	89.50 - 79.50	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	C	No	CaAa (Out Of Face)	88.17 - 68.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
***								
Aero MP3-03	A	No	CaAa (Out Of Face)	116.17 - 88.17	1	No Ice	0.26	9.900
						1/2" Ice	0.37	11.063
						1" Ice	0.48	12.572
						2" Ice	0.71	16.627
						4" Ice	1.15	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	116.17 - 88.17	1	No Ice	0.26	9.900
						1/2" Ice	0.37	11.063
						1" Ice	0.48	12.572
						2" Ice	0.71	16.627
						4" Ice	1.15	28.884
Aero MP3-03	A	No	CaAa (Out Of Face)	88.17 - 86.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	88.17 - 86.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	C	No	CaAa (Out Of Face)	116.17 - 86.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
**								
Aero MP3-03	B	No	CaAa (Out Of Face)	97.67 - 87.67	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	105.17 - 95.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	105.17 - 95.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	110.83 - 102.83	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	116.17 - 108.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
Aero MP3-03	B	No	CaAa (Out Of Face)	116.17 - 108.17	1	No Ice	0.00	9.900
						1/2" Ice	0.00	11.063

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	12.572
						2" Ice	0.00	16.627
						4" Ice	0.00	28.884
*****								

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 lb
L1	130.00-120.00	A	0.000	0.000	0.000	0.000	65.47
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.725	7.07
L2	120.00-114.92	A	0.000	0.000	0.000	0.327	45.63
		B	0.000	0.000	0.000	0.327	37.13
		C	0.000	0.000	0.000	1.151	34.56
L3	114.92-109.42	A	0.000	0.000	0.000	1.439	90.46
		B	0.000	0.000	0.000	1.439	177.31
		C	0.000	0.000	0.000	1.246	78.47
L4	109.42-103.92	A	0.000	0.000	0.000	1.439	90.46
		B	0.000	0.000	0.000	1.439	158.40
		C	0.000	0.000	0.000	1.246	78.47
L5	103.92-96.42	A	0.000	0.000	0.000	1.963	123.35
		B	0.000	0.000	0.000	1.963	282.93
		C	0.000	0.000	0.000	1.699	107.00
L6	96.42-91.50	A	0.000	0.000	0.000	1.287	80.92
		B	0.000	0.000	0.000	1.287	173.04
		C	0.000	0.000	0.000	1.114	70.19
L7	91.50-88.92	A	0.000	0.000	0.000	0.675	42.43
		B	0.000	0.000	0.000	0.675	83.50
		C	0.000	0.000	0.000	0.584	42.12
L8	88.92-88.25	A	0.000	0.000	0.000	0.175	11.02
		B	0.000	0.000	0.000	0.175	26.83
		C	0.000	0.000	0.000	0.152	12.86
L9	88.25-87.42	A	0.000	0.000	0.000	0.217	21.08
		B	0.000	0.000	0.000	0.217	38.18
		C	0.000	0.000	0.000	0.188	23.35
L10	87.42-86.92	A	0.000	0.000	0.000	0.131	13.17
		B	0.000	0.000	0.000	0.131	20.02
		C	0.000	0.000	0.000	0.113	14.54
L11	86.92-80.75	A	0.000	0.000	0.000	1.615	108.90
		B	0.000	0.000	0.000	1.615	193.39
		C	0.000	0.000	0.000	1.397	125.81
L12	80.75-71.83	A	0.000	0.000	0.000	2.334	146.70
		B	0.000	0.000	0.000	2.334	206.18
		C	0.000	0.000	0.000	2.020	172.37
L13	71.83-68.83	A	0.000	0.000	0.000	0.795	70.49
		B	0.000	0.000	0.000	0.795	132.72
		C	0.000	0.000	0.000	0.679	79.16
L14	68.83-64.50	A	0.000	0.000	0.000	1.162	95.93
		B	0.000	0.000	0.000	1.162	179.95
		C	0.000	0.000	0.000	0.981	108.45
L15	64.50-42.50	A	0.000	0.000	0.000	5.903	456.62
		B	0.000	0.000	0.000	5.903	850.28
		C	0.000	0.000	0.000	4.983	522.61
L16	42.50-41.83	A	0.000	0.000	0.000	0.180	23.28
		B	0.000	0.000	0.000	0.180	35.27
		C	0.000	0.000	0.000	0.152	34.66

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 lb
L17	41.83-41.17	A	0.000	0.000	0.000	0.177	22.93
		B	0.000	0.000	0.000	0.177	34.74
		C	0.000	0.000	0.000	0.149	34.15
L18	41.17-20.25	A	0.000	0.000	0.000	5.614	443.77
		B	0.000	0.000	0.000	5.614	534.97
		C	0.000	0.000	0.000	4.738	799.21
L19	20.25-16.83	A	0.000	0.000	0.000	0.918	70.61
		B	0.000	0.000	0.000	0.918	83.58
		C	0.000	0.000	0.000	0.775	128.72
L20	16.83-14.17	A	0.000	0.000	0.000	0.714	73.67
		B	0.000	0.000	0.000	0.714	102.52
		C	0.000	0.000	0.000	0.602	118.87
L21	14.17-0.00	A	0.000	0.000	0.000	3.668	306.66
		B	0.000	0.000	0.000	3.668	553.16
		C	0.000	0.000	0.000	3.209	368.77

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 lb
L1	130.00-120.00	A	0.880	0.000	0.000	0.000	0.000	65.47
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.245	29.64
L2	120.00-114.92	A	0.873	0.000	0.000	0.000	0.570	48.49
		B		0.000	0.000	0.000	0.570	45.71
		C		0.000	0.000	0.000	3.813	88.91
L3	114.92-109.42	A	0.869	0.000	0.000	0.000	2.501	102.97
		B		0.000	0.000	0.000	2.501	218.06
		C		0.000	0.000	0.000	4.112	146.35
L4	109.42-103.92	A	0.863	0.000	0.000	0.000	2.494	102.88
		B		0.000	0.000	0.000	2.494	194.55
		C		0.000	0.000	0.000	4.095	145.85
L5	103.92-96.42	A	0.857	0.000	0.000	0.000	3.391	140.15
		B		0.000	0.000	0.000	3.391	338.57
		C		0.000	0.000	0.000	5.555	198.04
L6	96.42-91.50	A	0.850	0.000	0.000	0.000	2.217	91.84
		B		0.000	0.000	0.000	2.217	200.44
		C		0.000	0.000	0.000	3.625	129.36
L7	91.50-88.92	A	0.846	0.000	0.000	0.000	1.163	48.16
		B		0.000	0.000	0.000	1.163	96.25
		C		0.000	0.000	0.000	1.901	92.61
L8	88.92-88.25	A	0.844	0.000	0.000	0.000	0.301	12.49
		B		0.000	0.000	0.000	0.301	31.25
		C		0.000	0.000	0.000	0.491	32.82
L9	88.25-87.42	A	0.843	0.000	0.000	0.000	0.373	24.55
		B		0.000	0.000	0.000	0.373	44.76
		C		0.000	0.000	0.000	0.608	49.70
L10	87.42-86.92	A	0.843	0.000	0.000	0.000	0.224	15.37
		B		0.000	0.000	0.000	0.224	23.32
		C		0.000	0.000	0.000	0.366	30.50
L11	86.92-80.75	A	0.839	0.000	0.000	0.000	2.764	124.02
		B		0.000	0.000	0.000	2.764	222.00
		C		0.000	0.000	0.000	4.503	309.80
L12	80.75-71.83	A	0.829	0.000	0.000	0.000	3.978	165.94
		B		0.000	0.000	0.000	3.978	231.01
		C		0.000	0.000	0.000	6.459	432.38
L13	71.83-68.83	A	0.821	0.000	0.000	0.000	1.343	80.18

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 lb
		B		0.000	0.000	0.000	1.343	152.11
		C		0.000	0.000	0.000	2.158	168.88
L14	68.83-64.50	A	0.816	0.000	0.000	0.000	1.947	106.78
		B		0.000	0.000	0.000	1.947	201.63
		C		0.000	0.000	0.000	3.101	233.88
L15	64.50-42.50	A	0.794	0.000	0.000	0.000	9.893	504.99
		B		0.000	0.000	0.000	9.893	946.65
		C		0.000	0.000	0.000	15.754	1153.56
L16	42.50-41.83	A	0.772	0.000	0.000	0.000	0.298	26.11
		B		0.000	0.000	0.000	0.298	39.52
		C		0.000	0.000	0.000	0.471	56.06
L17	41.83-41.17	A	0.771	0.000	0.000	0.000	0.290	25.63
		B		0.000	0.000	0.000	0.290	38.79
		C		0.000	0.000	0.000	0.455	54.47
L18	41.17-20.25	A	0.750	0.000	0.000	0.000	9.100	486.80
		B		0.000	0.000	0.000	9.100	579.66
		C		0.000	0.000	0.000	14.152	1382.23
L19	20.25-16.83	A	0.750	0.000	0.000	0.000	1.488	77.37
		B		0.000	0.000	0.000	1.488	90.35
		C		0.000	0.000	0.000	2.314	223.76
L20	16.83-14.17	A	0.750	0.000	0.000	0.000	1.157	81.56
		B		0.000	0.000	0.000	1.157	113.04
		C		0.000	0.000	0.000	1.799	195.42
L21	14.17-0.00	A	0.750	0.000	0.000	0.000	5.946	336.66
		B		0.000	0.000	0.000	5.946	610.19
		C		0.000	0.000	0.000	9.586	739.47

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	130.00-120.00	-0.089	0.052	-0.386	0.223
L2	120.00-114.92	-0.166	0.096	-0.456	0.263
L3	114.92-109.42	0.030	-0.018	-0.172	0.100
L4	109.42-103.92	0.031	-0.018	-0.178	0.103
L5	103.92-96.42	0.032	-0.018	-0.185	0.107
L6	96.42-91.50	0.033	-0.019	-0.190	0.110
L7	91.50-88.92	0.033	-0.019	-0.192	0.111
L8	88.92-88.25	0.033	-0.019	-0.193	0.111
L9	88.25-87.42	0.033	-0.019	-0.193	0.112
L10	87.42-86.92	0.033	-0.019	-0.194	0.112
L11	86.92-80.75	0.033	-0.019	-0.196	0.113
L12	80.75-71.83	0.034	-0.020	-0.201	0.116
L13	71.83-68.83	0.038	-0.022	-0.201	0.116
L14	68.83-64.50	0.041	-0.024	-0.200	0.115
L15	64.50-42.50	0.042	-0.024	-0.207	0.120
L16	42.50-41.83	0.043	-0.025	-0.207	0.120
L17	41.83-41.17	0.043	-0.025	-0.202	0.117
L18	41.17-20.25	0.043	-0.025	-0.202	0.117
L19	20.25-16.83	0.044	-0.025	-0.207	0.119
L20	16.83-14.17	0.044	-0.025	-0.208	0.120
L21	14.17-0.00	0.034	-0.020	-0.227	0.131

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
130									
RRUS 11	A	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.26 3.50 3.75 4.28 5.44	1.38 1.56 1.74 2.15 3.05	50.70 71.57 95.48 153.20 313.68
RRUS 11	B	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.26 3.50 3.75 4.28 5.44	1.38 1.56 1.74 2.15 3.05	50.70 71.57 95.48 153.20 313.68
RRUS 11	C	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.26 3.50 3.75 4.28 5.44	1.38 1.56 1.74 2.15 3.05	50.70 71.57 95.48 153.20 313.68
800 10121 w/ Mount Pipe	A	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.69 6.18 6.68 7.70 9.86	4.60 5.35 6.05 7.53 10.83	66.50 114.02 167.89 297.81 675.28
800 10121 w/ Mount Pipe	B	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.69 6.18 6.68 7.70 9.86	4.60 5.35 6.05 7.53 10.83	66.50 114.02 167.89 297.81 675.28
800 10121 w/ Mount Pipe	C	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.69 6.18 6.68 7.70 9.86	4.60 5.35 6.05 7.53 10.83	66.50 114.02 167.89 297.81 675.28
P65-17-XLH-RR w/ Mount Pipe	A	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.70 12.42 13.15 14.64 17.91	8.94 10.45 11.99 14.31 19.14	91.85 177.61 273.25 498.46 1125.60
SBNH-1D6565C w/ Mount Pipe	B	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.69 12.42 13.16 14.63 17.92	9.85 11.38 12.94 15.31 20.19	99.25 189.04 288.81 522.64 1168.71
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	74.05 139.04 211.91 384.96 874.27
(2) LGP21401	A	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	14.10 21.26 30.32 54.89 135.29
(2) LGP21401	B	From	4.00	-10.000	130.00	No Ice	1.29	0.23	14.10

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 lb
		Centroid-Face	-6.000 0.000			1/2" Ice 1" Ice 2" Ice 4" Ice	1.45 1.61 1.97 2.79	0.31 0.40 0.61 1.12	21.26 30.32 54.89 135.29
(2) LGP21401	C	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	14.10 21.26 30.32 54.89 135.29
RRUS-11 BAND 12	A	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.99 3.23 3.47 3.97 5.09	1.25 1.41 1.59 1.96 2.82	50.00 69.57 92.08 146.69 299.68
RRUS-11 BAND 12	B	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.99 3.23 3.47 3.97 5.09	1.25 1.41 1.59 1.96 2.82	50.00 69.57 92.08 146.69 299.68
RRUS-11 BAND 12	C	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.99 3.23 3.47 3.97 5.09	1.25 1.41 1.59 1.96 2.82	50.00 69.57 92.08 146.69 299.68
TMA DD 1900 with 850 BYPASS	A	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.36 0.48 0.60 0.87 1.52	0.17 0.24 0.32 0.49 0.95	17.63 23.45 31.02 52.16 123.90
TMA DD 1900 with 850 BYPASS	B	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.36 0.48 0.60 0.87 1.52	0.17 0.24 0.32 0.49 0.95	17.63 23.45 31.02 52.16 123.90
TMA DD 1900 with 850 BYPASS	C	From Centroid-Face	4.00 -6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.36 0.48 0.60 0.87 1.52	0.17 0.24 0.32 0.49 0.95	17.63 23.45 31.02 52.16 123.90
DC6-48-60-18-8F	B	From Centroid-Face	4.00 6.000 0.000	-10.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	18.90 36.62 56.82 105.34 239.02
Platform Mount [LP 303-1]	A	None		0.000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	14.66 18.87 23.08 31.50 48.34	14.66 18.87 23.08 31.50 48.34	1250.00 1481.33 1712.66 2175.32 3100.64
120									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	30.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Le	4.00 0.000	40.000	120.00	No Ice 1/2" Ice	8.50 9.15	6.95 8.13	82.55 150.56

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 lb
		g	0.000			1" Ice	9.77	9.02	226.53
						2" Ice	11.03	10.84	405.98
						4" Ice	13.68	14.85	908.95
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Le g	4.00 0.000 0.000	30.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
(3) ACU-A20-N	A	From Centroid-Le g	4.00 0.000 0.000	30.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	1.04 2.32 4.41 11.80 44.85
(3) ACU-A20-N	B	From Centroid-Le g	4.00 0.000 0.000	40.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	1.04 2.32 4.41 11.80 44.85
(3) ACU-A20-N	C	From Centroid-Le g	4.00 0.000 0.000	30.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.08 0.12 0.17 0.30 0.67	0.14 0.19 0.25 0.40 0.80	1.04 2.32 4.41 11.80 44.85
800 EXTERNAL NOTCH FILTER	A	From Centroid-Le g	4.00 0.000 0.000	30.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	11.00 16.81 24.26 44.81 114.01
800 EXTERNAL NOTCH FILTER	B	From Centroid-Le g	4.00 0.000 0.000	40.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	11.00 16.81 24.26 44.81 114.01
800 EXTERNAL NOTCH FILTER	C	From Centroid-Le g	4.00 0.000 0.000	30.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 0.89 1.02 1.30 1.97	0.37 0.46 0.56 0.79 1.34	11.00 16.81 24.26 44.81 114.01
(2) 2.4" Dia x 6-ft Pipe	A	From Centroid-Le g	4.00 0.000 0.000	0.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.93 2.30 3.06 4.70	1.43 1.93 2.30 3.06 4.70	21.96 32.81 47.71 90.32 230.97
(2) 2.4" Dia x 6-ft Pipe	B	From Centroid-Le g	4.00 0.000 0.000	0.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.93 2.30 3.06 4.70	1.43 1.93 2.30 3.06 4.70	21.96 32.81 47.71 90.32 230.97
(2) 2.4" Dia x 6-ft Pipe	C	From Centroid-Le g	4.00 0.000 0.000	0.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.93 2.30 3.06 4.70	1.43 1.93 2.30 3.06 4.70	21.96 32.81 47.71 90.32 230.97
Platform Mount [LP 1201-1]	A	None		0.000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.10 26.80 30.50 37.90	23.10 26.80 30.50 37.90	2100.00 2500.00 2900.00 3700.00

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 lb
						4" Ice	52.70	52.70	5300.00
118									
TME-800MHZ RRH w/ Mount Pipe	A	From Leg	1.00 0.000 -1.000	30.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.55 2.79 3.04 3.58 4.79	2.41 2.74 3.11 3.92 5.77	60.30 86.95 117.49 192.04 411.91
TME-800MHZ RRH w/ Mount Pipe	B	From Leg	1.00 0.000 -1.000	40.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.55 2.79 3.04 3.58 4.79	2.41 2.74 3.11 3.92 5.77	60.30 86.95 117.49 192.04 411.91
TME-800MHZ RRH w/ Mount Pipe	C	From Leg	1.00 0.000 -1.000	30.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.55 2.79 3.04 3.58 4.79	2.41 2.74 3.11 3.92 5.77	60.30 86.95 117.49 192.04 411.91
TME-1900MHz RRH (65MHz)	A	From Leg	1.00 0.000 1.000	30.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	60.00 83.90 111.08 176.02 353.75
TME-1900MHz RRH (65MHz)	B	From Leg	1.00 0.000 1.000	40.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	60.00 83.90 111.08 176.02 353.75
TME-1900MHz RRH (65MHz)	C	From Leg	1.00 0.000 1.000	30.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	60.00 83.90 111.08 176.02 353.75
Side Arm Mount [SO 102-3]	A	None		0.000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.48 3.96 4.92 6.84	3.00 3.48 3.96 4.92 6.84	81.00 111.00 141.00 201.00 321.00
100									
(2) RR90-17-02DP w/ Mount Pipe	A	From Centroid-Face	4.00 0.000 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	34.18 71.62 115.19 223.87 556.85
(2) RR90-17-02DP w/ Mount Pipe	B	From Centroid-Face	4.00 0.000 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	34.18 71.62 115.19 223.87 556.85
(2) RR90-17-02DP w/ Mount Pipe	C	From Centroid-Face	4.00 0.000 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	34.18 71.62 115.19 223.87 556.85
LNX-6515DS-VTM w/ Mount Pipe	A	From Centroid-Face	4.00 0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.68 12.40 13.14 14.60	9.84 11.37 12.91 15.27	83.27 172.93 272.55 506.06

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 lb
						4" Ice	17.87	20.14	1151.11
LNX-6515DS-VTM w/ Mount Pipe	B	From Centroid-Face	4.00 0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	83.27 172.93 272.55 506.06 1151.11
LNX-6515DS-VTM w/ Mount Pipe	C	From Centroid-Face	4.00 0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.68 12.40 13.14 14.60 17.87	9.84 11.37 12.91 15.27 20.14	83.27 172.93 272.55 506.06 1151.11
(2) ATMAP1412D-1A20	A	From Centroid-Face	4.00 0.000 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.47 0.57 0.69 0.95 1.57	1.17 1.31 1.47 1.81 2.58	13.00 20.62 30.11 55.52 137.44
(2) ATMAP1412D-1A20	B	From Centroid-Face	4.00 0.000 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.47 0.57 0.69 0.95 1.57	1.17 1.31 1.47 1.81 2.58	13.00 20.62 30.11 55.52 137.44
(2) ATMAP1412D-1A20	C	From Centroid-Face	4.00 0.000 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.47 0.57 0.69 0.95 1.57	1.17 1.31 1.47 1.81 2.58	13.00 20.62 30.11 55.52 137.44
ATBT-BOTTOM-24V	A	From Centroid-Face	4.00 0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.77	0.08 0.12 0.17 0.30 0.67	2.87 4.02 5.94 12.91 44.72
ATBT-BOTTOM-24V	B	From Centroid-Face	4.00 0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.77	0.08 0.12 0.17 0.30 0.67	2.87 4.02 5.94 12.91 44.72
ATBT-BOTTOM-24V	C	From Centroid-Face	4.00 0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.12 0.17 0.23 0.38 0.77	0.08 0.12 0.17 0.30 0.67	2.87 4.02 5.94 12.91 44.72
2.4" Dia x 6-ft Pipe	A	From Centroid-Face	4.00 -0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.93 2.30 3.06 4.70	1.43 1.93 2.30 3.06 4.70	21.96 32.81 47.71 90.32 230.97
2.4" Dia x 6-ft Pipe	B	From Centroid-Face	4.00 -0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.93 2.30 3.06 4.70	1.43 1.93 2.30 3.06 4.70	21.96 32.81 47.71 90.32 230.97
2.4" Dia x 6-ft Pipe	C	From Centroid-Face	4.00 -0.500 0.000	0.000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.93 2.30 3.06 4.70	1.43 1.93 2.30 3.06 4.70	21.96 32.81 47.71 90.32 230.97
Platform Mount [LP 1201-1]	A	None		0.000	100.00	No Ice	23.10	23.10	2100.00

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 lb
						1/2" Ice	26.80	26.80	2500.00
						1" Ice	30.50	30.50	2900.00
						2" Ice	37.90	37.90	3700.00
						4" Ice	52.70	52.70	5300.00
80									
GPS_A	A	From Leg	3.00 0.000 0.000	0.000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.30 0.37 0.46 0.65 1.15	0.30 0.37 0.46 0.65 1.15	0.87 4.66 9.76 24.67 78.80
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.000 0.000	0.000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	65.00 79.00 93.00 121.00 177.00
*****									

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service

Comb. No.	Description
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	130 - 120	Pole	Max Tension	14	0.00	0.00	0.01
			Max. Compression	14	-4579.70	-757.81	-3.61
			Max. Mx	5	-2492.69	-40890.16	-213.04
			Max. My	8	-2494.74	-329.48	-40456.07
			Max. Vy	5	4287.11	-40890.16	-213.04
			Max. Vx	8	4269.38	-329.48	-40456.07
			Max. Torque	8			1452.91
L2	120 - 114.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-9596.74	-737.51	-45.11
			Max. Mx	5	-5417.12	-80688.81	-267.56
			Max. My	8	-5417.34	-382.79	-80286.21
			Max. Vy	5	8379.43	-80688.81	-267.56
			Max. Vx	8	8383.51	-382.79	-80286.21
			Max. Torque	8			1503.55
L3	114.92 - 109.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-10376.71	-788.29	-137.35
			Max. Mx	5	-5938.94	-128421.23	-362.81
			Max. My	8	-5939.13	-503.62	-128032.69
			Max. Vy	5	8965.53	-128421.23	-362.81
			Max. Vx	8	8969.64	-503.62	-128032.69
			Max. Torque	8			1500.60
L4	109.42 - 103.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-11155.15	-825.42	-226.57
			Max. Mx	5	-6465.70	-179403.40	-455.37
			Max. My	8	-6465.85	-614.13	-179034.01
			Max. Vy	5	9563.63	-179403.40	-455.37
			Max. Vx	8	9567.74	-614.13	-179034.01
			Max. Torque	8			1501.62
L5	103.92 - 96.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16769.40	-906.91	-374.95
			Max. Mx	5	-9698.77	-268645.97	-600.81
			Max. My	8	-9699.07	-794.87	-268292.48
			Max. Vy	5	14401.17	-268645.97	-600.81
			Max. Vx	8	14405.10	-794.87	-268292.48
			Max. Torque	8			1503.02
L6	96.42 - 91.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-17067.50	-913.08	-403.88
			Max. Mx	5	-9912.97	-296506.49	-632.89
			Max. My	8	-9913.27	-831.09	-296162.04
			Max. Vy	5	14616.60	-296506.49	-632.89
			Max. Vx	8	14620.70	-831.09	-296162.04
			Max. Torque	8			1503.41
L7	91.5 - 88.92	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	14	-18255.40	-903.57	-496.81
			Max. Mx	5	-10767.75	-379914.29	-725.00
			Max. My	8	-10768.04	-925.89	-379605.33
			Max. Vy	5	15269.18	-379914.29	-725.00
			Max. Vx	8	15273.17	-925.89	-379605.33
			Max. Torque	8			1504.57
L8	88.92 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18391.43	-896.43	-516.69
			Max. Mx	5	-10869.81	-390171.33	-739.39
			Max. My	8	-10870.09	-938.42	-389868.59
			Max. Vy	5	15342.14	-390171.33	-739.39
			Max. Vx	8	15345.59	-938.42	-389868.59
			Max. Torque	8			1504.64
L9	88.25 - 87.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18584.65	-884.95	-540.02
			Max. Mx	5	-11010.61	-402945.87	-756.42
			Max. My	8	-11010.89	-951.96	-402651.95
			Max. Vy	5	15437.28	-402945.87	-756.42
			Max. Vx	8	15440.98	-951.96	-402651.95
			Max. Torque	8			1504.78
L10	87.42 - 86.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18698.84	-874.40	-552.08
			Max. Mx	5	-11098.54	-410675.96	-764.97
			Max. My	8	-11098.81	-957.05	-410388.45
			Max. Vy	5	15492.11	-410675.96	-764.97
			Max. Vx	8	15494.96	-957.05	-410388.45
			Max. Torque	8			1504.82
L11	86.92 - 80.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-19928.24	-740.46	-705.47
			Max. Mx	5	-11978.77	-508380.52	-872.92
			Max. My	8	-11979.05	-1020.17	-508175.97
			Max. Vy	5	16195.26	-508380.52	-872.92
			Max. Vx	8	16199.11	-1020.17	-508175.97
			Max. Torque	8			1505.96
L12	80.75 - 71.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21742.78	-462.68	-641.27
			Max. Mx	5	-13323.53	-657769.79	-845.64
			Max. My	8	-13325.47	-1046.66	-657277.75
			Max. Vy	5	17269.59	-657769.79	-845.64
			Max. Vx	8	17240.55	-1046.66	-657277.75
			Max. Torque	7			1599.11
L13	71.83 - 68.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22458.52	-415.37	-738.89
			Max. Mx	5	-13854.61	-710115.63	-914.36
			Max. My	8	-13856.46	-1096.50	-709559.81
			Max. Vy	5	17628.12	-710115.63	-914.36
			Max. Vx	8	17599.01	-1096.50	-709559.81
			Max. Torque	7			1600.12
L14	68.83 - 64.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-22593.10	-404.77	-757.56
			Max. Mx	5	-13957.40	-720360.62	-927.36
			Max. My	8	-13959.23	-1105.37	-719792.82
			Max. Vy	5	17695.64	-720360.62	-927.36
			Max. Vx	8	17665.78	-1105.37	-719792.82
			Max. Torque	7			1600.33
L15	64.5 - 42.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28475.82	58.32	-1484.27
			Max. Mx	5	-18476.66	-1128146.26	-1425.37
			Max. My	8	-18477.84	-1407.22	-1127171.27

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	5	20227.42	-1128146.26	-1425.37
			Max. Vx	8	20198.41	-1407.22	-1127171.27
			Max. Torque	7			1608.97
L16	42.5 - 41.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30490.69	181.08	-1660.93
			Max. Mx	5	-20042.17	-1229260.61	-1546.68
			Max. My	8	-20043.25	-1462.71	-1228212.48
			Max. Vy	5	20873.76	-1229260.61	-1546.68
			Max. Vx	8	20844.20	-1462.71	-1228212.48
			Max. Torque	7			1611.35
L17	41.83 - 41.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30714.56	208.36	-1691.64
			Max. Mx	5	-20228.11	-1243048.86	-1569.39
			Max. My	8	-20229.16	-1460.48	-1242006.67
			Max. Vy	5	20946.39	-1243048.86	-1569.39
			Max. Vx	8	20916.81	-1460.48	-1242006.67
			Max. Torque	7			1611.61
L18	41.17 - 20.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35256.72	1223.88	-2292.47
			Max. Mx	5	-23932.74	-1589248.37	-1982.42
			Max. My	8	-23933.30	-1106.01	-1588517.92
			Max. Vy	5	22649.12	-1589248.37	-1982.42
			Max. Vx	8	22620.34	-1106.01	-1588517.92
			Max. Torque	7			1618.58
L19	20.25 - 16.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38738.53	1777.62	-2616.73
			Max. Mx	11	-26744.33	1784034.78	-280.29
			Max. My	8	-26744.77	-907.91	-1783384.79
			Max. Vy	5	23653.83	-1783938.37	-2202.18
			Max. Vx	8	23625.15	-907.91	-1783384.79
			Max. Torque	7			1622.87
L20	16.83 - 14.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-39655.54	1933.21	-2741.82
			Max. Mx	11	-27498.81	1847399.69	-327.65
			Max. My	8	-27499.19	-865.91	-1846678.73
			Max. Vy	5	23964.76	-1847179.76	-2289.05
			Max. Vx	8	23936.16	-865.91	-1846678.73
			Max. Torque	7			1624.27
L21	14.17 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-44296.43	2341.93	-3357.04
			Max. Mx	11	-31356.76	2198206.65	-523.65

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	8	-31356.77	-1027.89	-2197440.80
			Max. Vy	5	25597.21	-2198107.64	-2693.30
			Max. Vx	8	25568.80	-1027.89	-2197440.80
			Max. Torque	7			1630.33

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	14	44296.43	-0.00	-0.00
	Max. H_x	11	31365.52	25586.46	7.28
	Max. H_z	2	31365.52	7.28	25558.06
	Max. M_x	2	2194238.31	7.28	25558.06
	Max. M_z	5	2198107.64	-25586.47	-7.28
	Max. Torsion	7	1630.33	-12799.53	-22137.57
	Min. Vert	1	31365.52	-0.00	-0.00
	Min. H_x	5	31365.52	-25586.47	-7.28
	Min. H_z	8	31365.52	-7.28	-25558.06
	Min. M_x	8	-2197440.80	-7.28	-25558.06
	Min. M_z	11	-2198206.65	25586.46	7.28
	Min. Torsion	13	-1630.01	12799.53	22137.57

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	31365.52	0.00	0.00	1562.19	69.38	-0.00
Dead+Wind 0 deg - No Ice	31365.52	-7.28	-25558.06	-2194238.31	1141.91	1534.05
Dead+Wind 30 deg - No Ice	31365.52	12786.93	-22130.30	-1899513.69	-1098091.77	1027.07
Dead+Wind 60 deg - No Ice	31365.52	22154.89	-12772.73	-1095378.16	-1903076.67	244.82
Dead+Wind 90 deg - No Ice	31365.52	25586.47	7.28	2693.35	-2198107.64	-603.14
Dead+Wind 120 deg - No Ice	31365.52	22162.16	12785.33	1100467.57	-1904149.90	-1289.50
Dead+Wind 150 deg - No Ice	31365.52	12799.53	22137.57	1903799.43	-1099961.37	-1630.33
Dead+Wind 180 deg - No Ice	31365.52	7.28	25558.06	2197440.80	-1027.74	-1534.23
Dead+Wind 210 deg - No Ice	31365.52	-12786.93	22130.30	1902711.20	1098194.63	-1026.94
Dead+Wind 240 deg - No Ice	31365.52	-22154.89	12772.73	1098582.98	1903169.58	-244.51
Dead+Wind 270 deg - No Ice	31365.52	-25586.46	-7.28	523.71	2198206.65	603.30
Dead+Wind 300 deg - No Ice	31365.52	-22162.16	-12785.33	-1097245.50	1904255.51	1289.37
Dead+Wind 330 deg - No Ice	31365.52	-12799.53	-22137.57	-1900584.66	1100076.93	1630.01
Dead+Ice+Temp	44296.43	0.00	0.00	3357.04	2341.93	-0.01
Dead+Wind 0 deg+Ice+Temp	44296.43	-3.46	-6454.19	-567103.98	2869.19	265.01
Dead+Wind 30 deg+Ice+Temp	44296.43	3227.54	-5587.77	-490416.78	-282657.60	171.37
Dead+Wind 60 deg+Ice+Temp	44296.43	5593.73	-3224.10	-281391.22	-491808.79	31.78
Dead+Wind 90 deg+Ice+Temp	44296.43	6461.08	3.46	3964.10	-568542.05	-116.36
Dead+Wind 120 deg+Ice+Temp	44296.43	5597.19	3230.09	289187.87	-492296.92	-233.33
Dead+Wind 150 deg+Ice+Temp	44296.43	3233.54	5591.23	497854.54	-283503.77	-287.81
Dead+Wind 180 deg+Ice+Temp	44296.43	3.46	6454.19	574052.46	1891.17	-265.19
Dead+Wind 210 deg+Ice+Temp	44296.43	-3227.54	5587.77	497364.83	287416.74	-171.53

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 240 deg+Ice+Temp	44296.43	-5593.73	3224.10	288340.11	496566.96	-31.95
Dead+Wind 270 deg+Ice+Temp	44296.43	-6461.08	-3.46	2986.06	573300.46	116.17
Dead+Wind 300 deg+Ice+Temp	44296.43	-5597.19	-3230.09	-282237.29	497056.55	233.14
Dead+Wind 330 deg+Ice+Temp	44296.43	-3233.54	-5591.23	-490904.80	288264.38	287.61
Dead+Wind 0 deg - Service	31365.52	-2.52	-8843.62	-758913.30	421.02	535.70
Dead+Wind 30 deg - Service	31365.52	4424.54	-7657.54	-656837.32	-380292.49	358.78
Dead+Wind 60 deg - Service	31365.52	7666.05	-4419.63	-378329.41	-659094.91	85.71
Dead+Wind 90 deg - Service	31365.52	8853.45	2.52	1981.90	-761278.78	-210.35
Dead+Wind 120 deg - Service	31365.52	7668.57	4423.99	382191.91	-659469.90	-450.04
Dead+Wind 150 deg - Service	31365.52	4428.90	7660.06	660423.62	-380942.81	-569.14
Dead+Wind 180 deg - Service	31365.52	2.52	8843.62	762123.39	-330.93	-535.74
Dead+Wind 210 deg - Service	31365.52	-4424.54	7657.54	660046.82	380381.23	-358.77
Dead+Wind 240 deg - Service	31365.52	-7666.05	4419.63	381539.79	659182.44	-85.69
Dead+Wind 270 deg - Service	31365.52	-8853.45	-2.52	1229.94	761366.49	210.34
Dead+Wind 300 deg - Service	31365.52	-7668.57	-4423.99	-378979.46	659558.96	449.99
Dead+Wind 330 deg - Service	31365.52	-4428.90	-7660.06	-657212.04	381033.07	569.08

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-31365.52	0.00	-0.00	31365.52	-0.00	0.000%
2	-7.28	-31365.52	-25558.06	7.28	31365.52	25558.06	0.000%
3	12786.93	-31365.52	-22130.30	-12786.93	31365.52	22130.30	0.000%
4	22154.89	-31365.52	-12772.73	-22154.89	31365.52	12772.73	0.000%
5	25586.46	-31365.52	7.28	-25586.47	31365.52	-7.28	0.000%
6	22162.16	-31365.52	12785.33	-22162.16	31365.52	-12785.33	0.000%
7	12799.53	-31365.52	22137.57	-12799.53	31365.52	-22137.57	0.000%
8	7.28	-31365.52	25558.06	-7.28	31365.52	-25558.06	0.000%
9	-12786.93	-31365.52	22130.30	12786.93	31365.52	-22130.30	0.000%
10	-22154.89	-31365.52	12772.73	22154.89	31365.52	-12772.73	0.000%
11	-25586.46	-31365.52	-7.28	25586.46	31365.52	7.28	0.000%
12	-22162.16	-31365.52	-12785.33	22162.16	31365.52	12785.33	0.000%
13	-12799.53	-31365.52	-22137.57	12799.53	31365.52	22137.57	0.000%
14	0.00	-44296.43	0.00	-0.00	44296.43	-0.00	0.000%
15	-3.46	-44296.43	-6454.18	3.46	44296.43	6454.19	0.000%
16	3227.53	-44296.43	-5587.75	-3227.54	44296.43	5587.77	0.000%
17	5593.71	-44296.43	-3224.09	-5593.73	44296.43	3224.10	0.000%
18	6461.06	-44296.43	3.46	-6461.08	44296.43	-3.46	0.000%
19	5597.17	-44296.43	3230.08	-5597.19	44296.43	-3230.09	0.000%
20	3233.53	-44296.43	5591.21	-3233.54	44296.43	-5591.23	0.000%
21	3.46	-44296.43	6454.18	-3.46	44296.43	-6454.19	0.000%
22	-3227.53	-44296.43	5587.75	3227.54	44296.43	-5587.77	0.000%
23	-5593.71	-44296.43	3224.09	5593.73	44296.43	-3224.10	0.000%
24	-6461.06	-44296.43	-3.46	6461.08	44296.43	3.46	0.000%
25	-5597.17	-44296.43	-3230.08	5597.19	44296.43	3230.09	0.000%
26	-3233.53	-44296.43	-5591.21	3233.54	44296.43	5591.23	0.000%
27	-2.52	-31365.52	-8843.62	2.52	31365.52	8843.62	0.000%
28	4424.54	-31365.52	-7657.54	-4424.54	31365.52	7657.54	0.000%
29	7666.05	-31365.52	-4419.63	-7666.05	31365.52	4419.63	0.000%
30	8853.45	-31365.52	2.52	-8853.45	31365.52	-2.52	0.000%
31	7668.57	-31365.52	4423.99	-7668.57	31365.52	-4423.99	0.000%
32	4428.90	-31365.52	7660.06	-4428.90	31365.52	-7660.06	0.000%
33	2.52	-31365.52	8843.62	-2.52	31365.52	-8843.62	0.000%
34	-4424.54	-31365.52	7657.54	4424.54	31365.52	-7657.54	0.000%
35	-7666.05	-31365.52	4419.63	7666.05	31365.52	-4419.63	0.000%
36	-8853.45	-31365.52	-2.52	8853.45	31365.52	2.52	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
37	-7668.57	-31365.52	-4423.99	7668.57	31365.52	4423.99	0.000%
38	-4428.90	-31365.52	-7660.06	4428.90	31365.52	7660.06	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	5	0.00000001	0.00012393
3	Yes	6	0.00000001	0.00005363
4	Yes	6	0.00000001	0.00005089
5	Yes	4	0.00000001	0.00093660
6	Yes	6	0.00000001	0.00004962
7	Yes	6	0.00000001	0.00005497
8	Yes	5	0.00000001	0.00012792
9	Yes	6	0.00000001	0.00004961
10	Yes	6	0.00000001	0.00005212
11	Yes	5	0.00000001	0.00004236
12	Yes	6	0.00000001	0.00005395
13	Yes	6	0.00000001	0.00004884
14	Yes	4	0.00000001	0.00001866
15	Yes	5	0.00000001	0.00034810
16	Yes	5	0.00000001	0.00041958
17	Yes	5	0.00000001	0.00041702
18	Yes	5	0.00000001	0.00034934
19	Yes	5	0.00000001	0.00042139
20	Yes	5	0.00000001	0.00042677
21	Yes	5	0.00000001	0.00035174
22	Yes	5	0.00000001	0.00041969
23	Yes	5	0.00000001	0.00042157
24	Yes	5	0.00000001	0.00034868
25	Yes	5	0.00000001	0.00042072
26	Yes	5	0.00000001	0.00041619
27	Yes	4	0.00000001	0.00053351
28	Yes	5	0.00000001	0.00010116
29	Yes	5	0.00000001	0.00009034
30	Yes	4	0.00000001	0.00021864
31	Yes	5	0.00000001	0.00008677
32	Yes	5	0.00000001	0.00010702
33	Yes	4	0.00000001	0.00054081
34	Yes	5	0.00000001	0.00008619
35	Yes	5	0.00000001	0.00009500
36	Yes	4	0.00000001	0.00022188
37	Yes	5	0.00000001	0.00010207
38	Yes	5	0.00000001	0.00008395

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 120	25.892	31	1.847	0.013

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	120 - 114.92	22.050	31	1.811	0.009
L3	114.92 - 109.42	20.167	31	1.723	0.007
L4	109.42 - 103.92	18.213	31	1.670	0.006
L5	103.92 - 96.42	16.332	31	1.596	0.005
L6	96.42 - 91.5	13.908	31	1.488	0.004
L7	94.5 - 88.92	13.316	31	1.455	0.004
L8	88.92 - 88.25	11.651	31	1.383	0.003
L9	88.25 - 87.42	11.458	31	1.368	0.003
L10	87.42 - 86.92	11.222	31	1.352	0.003
L11	86.92 - 80.75	11.081	31	1.337	0.003
L12	80.75 - 71.83	9.429	31	1.220	0.002
L13	71.83 - 68.83	7.358	32	0.998	0.002
L14	68.83 - 64.5	6.743	32	0.958	0.002
L15	68.25 - 42.5	6.627	32	0.948	0.002
L16	46.75 - 41.83	3.047	32	0.621	0.001
L17	41.83 - 41.17	2.427	32	0.576	0.001
L18	41.17 - 20.25	2.349	32	0.561	0.001
L19	25.25 - 16.83	0.897	32	0.313	0.000
L20	16.83 - 14.17	0.407	32	0.227	0.000
L21	14.17 - 0	0.289	32	0.197	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	RRUS 11	31	25.892	1.847	0.013	11152
120.00	APXVSPP18-C-A20 w/ Mount Pipe	31	22.050	1.811	0.009	5570
118.00	TME-800MHZ RRH w/ Mount Pipe	31	21.301	1.777	0.008	4672
100.00	(2) RR90-17-02DP w/ Mount Pipe	31	15.043	1.544	0.004	3807
80.00	GPS_A	31	9.240	1.204	0.002	2520

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 120	74.480	6	5.312	0.036
L2	120 - 114.92	63.452	6	5.210	0.027
L3	114.92 - 109.42	58.046	6	4.958	0.019
L4	109.42 - 103.92	52.431	6	4.805	0.016
L5	103.92 - 96.42	47.026	6	4.594	0.013
L6	96.42 - 91.5	40.058	6	4.286	0.011
L7	94.5 - 88.92	38.356	6	4.189	0.010
L8	88.92 - 88.25	33.567	6	3.984	0.009
L9	88.25 - 87.42	33.011	6	3.940	0.009
L10	87.42 - 86.92	32.332	6	3.893	0.009
L11	86.92 - 80.75	31.927	6	3.850	0.008
L12	80.75 - 71.83	27.173	6	3.515	0.007
L13	71.83 - 68.83	21.208	6	2.876	0.005
L14	68.83 - 64.5	19.438	6	2.762	0.004
L15	68.25 - 42.5	19.104	6	2.733	0.004

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L16	46.75 - 41.83	8.785	6	1.790	0.002
L17	41.83 - 41.17	7.000	6	1.662	0.002
L18	41.17 - 20.25	6.773	6	1.618	0.002
L19	25.25 - 16.83	2.586	6	0.904	0.001
L20	16.83 - 14.17	1.175	6	0.655	0.001
L21	14.17 - 0	0.833	6	0.569	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	RRUS 11	6	74.480	5.312	0.036	3990
120.00	APXVSPP18-C-A20 w/ Mount Pipe	6	63.452	5.210	0.027	1988
118.00	TME-800MHZ RRH w/ Mount Pipe	6	61.301	5.112	0.023	1663
100.00	(2) RR90-17-02DP w/ Mount Pipe	6	43.320	4.445	0.012	1342
80.00	GPS_A	6	26.629	3.469	0.007	882

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	130 - 120 (1)	TP16x16x0.375	10.00	0.00	0.0	25.200	18.408	-2491.44	463876.00	0.005
L2	120 - 114.92 (2)	TP17.244x16x0.188	5.08	0.00	0.0	36.000	10.298	-5415.83	370726.00	0.015
L3	114.92 - 109.42 (3)	TP18.591x17.244x0.49	5.50	0.00	0.0	36.000	28.561	-5937.68	1028180.00	0.006
L4	109.42 - 103.92 (4)	TP19.938x18.591x0.412	5.50	0.00	0.0	36.000	25.876	-6464.47	931531.00	0.007
L5	103.92 - 96.42 (5)	TP21.775x19.938x0.434	7.50	0.00	0.0	36.000	29.815	-9697.36	1073330.00	0.009
L6	96.42 - 91.5 (6)	TP22.98x21.775x0.382	4.92	0.00	0.0	36.000	26.925	-9911.59	969292.00	0.010
L7	91.5 - 88.92 (7)	TP23.237x21.87x0.438	5.58	0.00	0.0	39.000	32.148	-10766.40	1253790.00	0.009
L8	88.92 - 88.25 (8)	TP23.401x23.237x0.334	0.67	0.00	0.0	39.000	24.778	-10868.50	966326.00	0.011
L9	88.25 - 87.42 (9)	TP23.605x23.401x0.387	0.83	0.00	0.0	39.000	28.969	-11009.30	1129780.00	0.010
L10	87.42 - 86.92 (10)	TP23.727x23.605x0.251	0.50	0.00	0.0	39.000	18.995	-11097.30	740792.00	0.015
L11	86.92 - 80.75 (11)	TP25.239x23.727x0.42	6.17	0.00	0.0	39.000	33.536	-11977.60	1307910.00	0.009
L12	80.75 - 71.83 (12)	TP27.424x25.239x0.32	8.92	0.00	0.0	39.000	27.897	-13323.00	1088000.00	0.012
L13	71.83 - 68.83 (13)	TP28.159x27.424x0.619	3.00	0.00	0.0	39.000	54.878	-13854.10	2140250.00	0.006
L14	68.83 - 64.5 (14)	TP29.22x28.159x0.462	4.33	0.00	0.0	39.000	41.376	-13956.90	1613650.00	0.009
L15	64.5 - 42.5 (15)	TP34.11x27.801x0.49	25.75	0.00	0.0	39.000	51.432	-18476.30	2005840.00	0.009
L16	42.5 - 41.83 (16)	TP33.65x32.444x0.519	4.92	0.00	0.0	39.000	55.366	-20041.80	2159260.00	0.009
L17	41.83 - 41.17 (17)	TP33.812x33.65x0.344	0.66	0.00	0.0	39.000	37.050	-20227.80	1444960.00	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L18	41.17 - 20.25 (18)	TP38.94x33.812x0.497	20.92	0.00	0.0	39.000	59.562	-23932.50	2322910.00	0.010
L19	20.25 - 16.83 (19)	TP39.089x37.027x0.523	8.42	0.00	0.0	36.000	64.914	-26744.20	2336890.00	0.011
L20	16.83 - 14.17 (20)	TP39.74x39.089x0.668	2.66	0.00	0.0	36.000	84.071	-27498.70	3026570.00	0.009
L21	14.17 - 0 (21)	TP43.21x39.74x0.507	14.17	0.00	0.0	36.000	69.665	-31356.80	2507960.00	0.013

Pole Bending Design Data

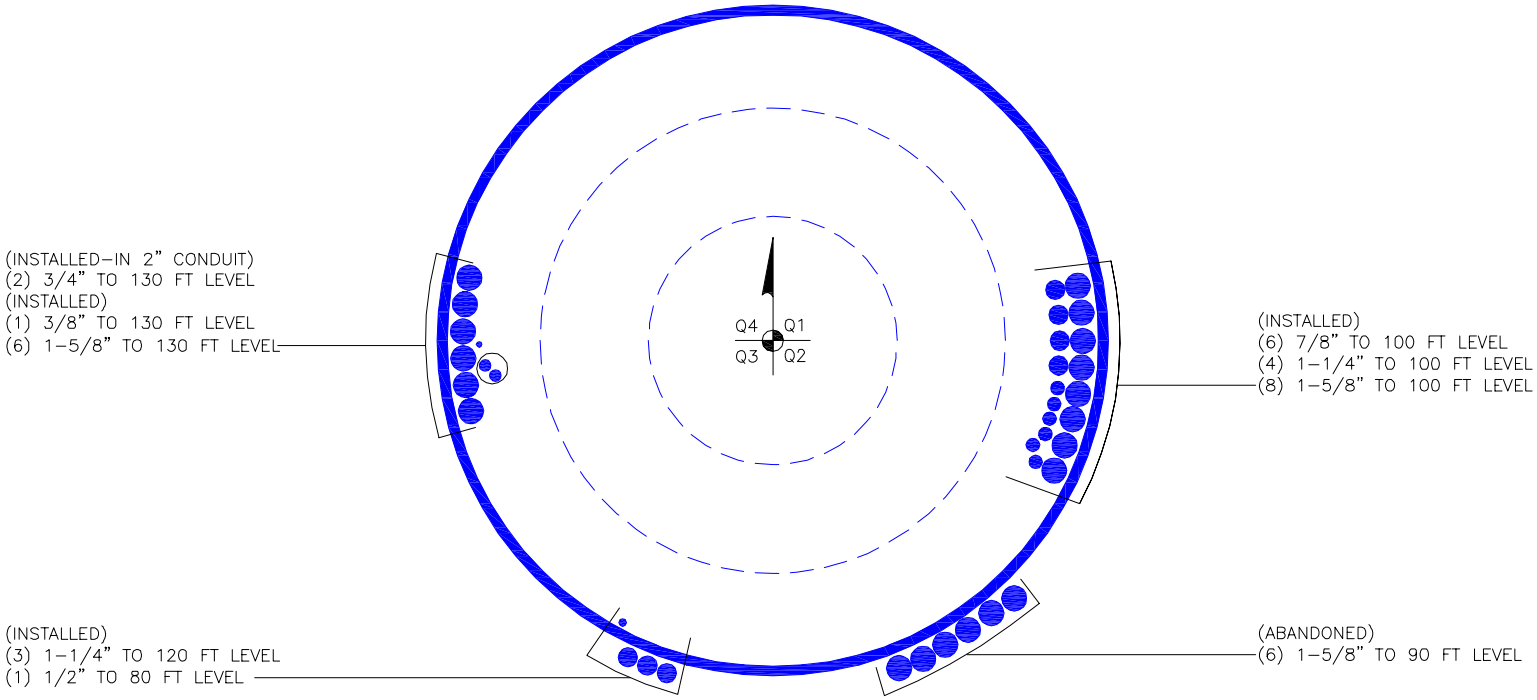
Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	130 - 120 (1)	TP16x16x0.375	40962.25	6.996	27.720	0.252	0.00	0.000	27.720	0.000
L2	120 - 114.92 (2)	TP17.244x16x0.188	80809.08	22.651	36.000	0.629	0.00	0.000	36.000	0.000
L3	114.92 - 109.42 (3)	TP18.591x17.244x0.49	128603.33	12.442	36.000	0.346	0.00	0.000	36.000	0.000
L4	109.42 - 103.92 (4)	TP19.938x18.591x0.412	179647.50	17.680	36.000	0.491	0.00	0.000	36.000	0.000
L5	103.92 - 96.42 (5)	TP21.775x19.938x0.434	268979.17	21.006	36.000	0.583	0.00	0.000	36.000	0.000
L6	96.42 - 91.5 (6)	TP22.98x21.775x0.382	296861.67	24.989	36.000	0.694	0.00	0.000	36.000	0.000
L7	91.5 - 88.92 (7)	TP23.237x21.87x0.438	380334.17	25.755	39.000	0.660	0.00	0.000	39.000	0.000
L8	88.92 - 88.25 (8)	TP23.401x23.237x0.334	390600.00	33.762	39.000	0.866	0.00	0.000	39.000	0.000
L9	88.25 - 87.42 (9)	TP23.605x23.401x0.387	403385.83	29.696	39.000	0.761	0.00	0.000	39.000	0.000
L10	87.42 - 86.92 (10)	TP23.727x23.605x0.251	411122.50	45.380	39.000	1.164	0.00	0.000	39.000	0.000
L11	86.92 - 80.75 (11)	TP25.239x23.727x0.42	508905.83	30.279	39.000	0.776	0.00	0.000	39.000	0.000
L12	80.75 - 71.83 (12)	TP27.424x25.239x0.32	658250.83	42.894	39.000	1.100	0.00	0.000	39.000	0.000
L13	71.83 - 68.83 (13)	TP28.159x27.424x0.619	710615.00	23.412	39.000	0.600	0.00	0.000	39.000	0.000
L14	68.83 - 64.5 (14)	TP29.22x28.159x0.462	720863.33	30.982	39.000	0.794	0.00	0.000	39.000	0.000
L15	64.5 - 42.5 (15)	TP34.11x27.801x0.49	1128791.67	33.301	39.000	0.854	0.00	0.000	39.000	0.000
L16	42.5 - 41.83 (16)	TP33.65x32.444x0.519	1229941.67	33.166	39.000	0.850	0.00	0.000	39.000	0.000
L17	41.83 - 41.17 (17)	TP33.812x33.65x0.344	1243741.67	49.349	39.000	1.265	0.00	0.000	39.000	0.000
L18	41.17 - 20.25 (18)	TP38.94x33.812x0.497	1590141.67	35.400	39.000	0.908	0.00	0.000	39.000	0.000
L19	20.25 - 16.83 (19)	TP39.089x37.027x0.523	1784933.33	35.193	36.000	0.978	0.00	0.000	36.000	0.000
L20	16.83 - 14.17 (20)	TP39.74x39.089x0.668	1848216.67	27.870	36.000	0.774	0.00	0.000	36.000	0.000
L21	14.17 - 0 (21)	TP43.21x39.74x0.507	2199275.00	36.429	36.000	1.012	0.00	0.000	36.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	130 - 120 (1)	TP16x16x0.375	4297.22	0.233	16.800	0.028	1052.16	0.088	16.800	0.005
L2	120 - 114.92 (2)	TP17.244x16x0.188	8387.17	0.814	24.000	0.069	1066.37	0.141	24.000	0.006
L3	114.92 - 109.42 (3)	TP18.591x17.244x0.49	8973.32	0.314	24.000	0.027	1066.36	0.048	24.000	0.002
L4	109.42 - 103.92 (4)	TP19.938x18.591x0.412	9571.40	0.370	24.000	0.031	1067.49	0.049	24.000	0.002
L5	103.92 - 96.42 (5)	TP21.775x19.938x0.434	14409.00	0.483	24.000	0.041	1069.11	0.039	24.000	0.002
L6	96.42 - 91.5 (6)	TP22.98x21.775x0.382	14624.50	0.543	24.000	0.046	1069.55	0.042	24.000	0.002
L7	91.5 - 88.92 (7)	TP23.237x21.87x0.438	15277.00	0.475	26.000	0.037	1070.83	0.034	26.000	0.001
L8	88.92 - 88.25 (8)	TP23.401x23.237x0.334	15349.50	0.619	26.000	0.048	1070.92	0.043	26.000	0.002
L9	88.25 - 87.42 (9)	TP23.605x23.401x0.387	15444.90	0.533	26.000	0.042	1071.09	0.037	26.000	0.001
L10	87.42 - 86.92 (10)	TP23.727x23.605x0.251	15498.90	0.816	26.000	0.064	1071.16	0.056	26.000	0.002
L11	86.92 - 80.75 (11)	TP25.239x23.727x0.42	16202.90	0.483	26.000	0.038	1072.48	0.030	26.000	0.001
L12	80.75 - 71.83 (12)	TP27.424x25.239x0.32	17269.00	0.619	26.000	0.048	1262.17	0.039	26.000	0.001
L13	71.83 - 68.83 (13)	TP28.159x27.424x0.619	17627.40	0.321	26.000	0.025	1263.07	0.019	26.000	0.001
L14	68.83 - 64.5 (14)	TP29.22x28.159x0.462	17694.20	0.428	26.000	0.033	1263.24	0.025	26.000	0.001
L15	64.5 - 42.5 (15)	TP34.11x27.801x0.49	20226.60	0.393	26.000	0.031	1270.87	0.018	26.000	0.001
L16	42.5 - 41.83 (16)	TP33.65x32.444x0.519	20872.40	0.377	26.000	0.029	1272.94	0.016	26.000	0.001
L17	41.83 - 41.17 (17)	TP33.812x33.65x0.344	20945.00	0.565	26.000	0.044	1273.18	0.024	26.000	0.001
L18	41.17 - 20.25 (18)	TP38.94x33.812x0.497	22648.30	0.380	26.000	0.030	1279.29	0.013	26.000	0.001
L19	20.25 - 16.83 (19)	TP39.089x37.027x0.523	23653.00	0.364	24.000	0.031	1283.02	0.012	24.000	0.000
L20	16.83 - 14.17 (20)	TP39.74x39.089x0.668	23964.00	0.285	24.000	0.024	1284.23	0.009	24.000	0.000
L21	14.17 - 0 (21)	TP43.21x39.74x0.507	25596.40	0.367	24.000	0.031	1289.50	0.010	24.000	0.000

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876314 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Pole (L5)	96.0%	Pass
Mod (M4)	88.7%	Pass

Horse Hill (BU 876314)

TEP #: 25675.50846

Analysis: SCW 6/20/2016

Check: JDB 6/20/2016

Monopole Reinforcement_v1.5.10 - TIA-222-F

Mod #	Modification Type	Termination Length (ft)	Bot. Elevation (ft)	Top Elevation (ft)	Termination Length (ft)	Modification Location (° or Flat/Point #)	Location (F/P)	Lateral Offset (in)
1	(Aero) MP304	-0.50	0.50	15.50	-1.33	3 6 9 12	Flats	0.00
2	(Aero) MP304		12.67	42.67		1 4 7 10	Flats	0.00
3	(Aero) MP304		40.33	70.33	-1.50	3 6 9 12	Flats	0.00
4	(Aero) MP303	0.66	68.17	88.17		1 4 10	Flats	0.00
5	(Aero) MP303	0.66	68.17	73.08		7	Flats	0.00
6	(Aero) MP303		79.50	89.50		7	Flats	0.00
7	(Aero) MP303		86.17	116.17		3 9 12	Flats	0.00
8	(Aero) MP303		87.67	97.67		6	Flats	0.00
9	(Aero) MP303		95.17	103.92	0.00	5 7	Flats	0.00
10	(Aero) MP303	0.00	103.92	109.42	0.00	6	Flats	0.00
11	(Aero) MP303	0.00	109.42	116.17		5 7	Flats	0.00

MODIFICATION PROPERTIES

#	Modification	Default Termination (ft)	Stitch (in)	k	Drill Hole (in)	Bolt/Weld Capacity (k)	A_G (in^2)	F_Y (ksi)	F_U (ksi)
1	(Aero) MP304	1.50	18.00	0.80	1.2188	30.0	4.13	65.0	80.0
4	(Aero) MP303	1.25	18.00	0.80	1.2188	30.0	2.92	65.0	80.0

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Pole (L5)	96.0%	Pass
Mod (M4)	88.7%	Pass

Horse Hill (BU 876314)

TEP #: 25675.50846

Analysis: SCW 6/20/2016

Check: JDB 6/20/2016

Monopole Reinforcement_v1.5.10 - TIA-222-F - Capacities

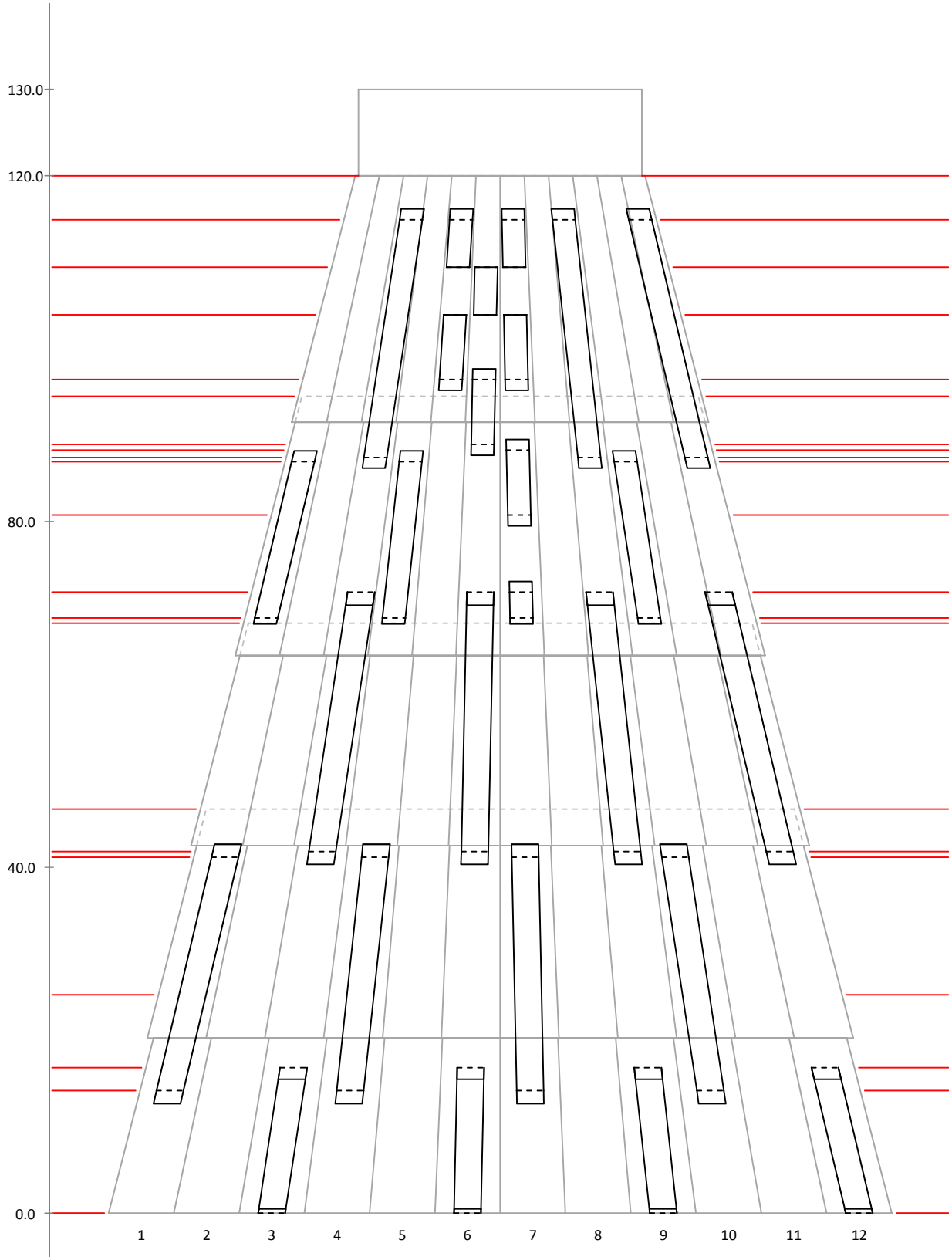
Section No.	*Elevation (ft)*	*Type*	*Size*	*Critical Element*	*P (lb)*	*Pa (lb)*	*% Capacity*	*Pass/Fail*
L1	130.00-120.00	Pole	TP16.00×16.00×0.3750	1	Note 1	Note 1	19.3	Pass
L2	120.00-91.50	Pole	TP22.98×16.00×0.1875	2	Note 1	Note 1	52.9	Pass
L3	94.50-64.50	Pole	TP29.22×21.87×0.2500	3	Note 1	Note 1	90.2	Pass
L4	68.25-42.50	Pole	TP34.11×27.80×0.3125	4	Note 1	Note 1	64.8	Pass
L5	46.75-20.25	Pole	TP38.94×32.44×0.3438	5	Note 1	Note 1	96.0	Pass
L6	25.25-0.00	Pole	TP43.21×37.03×0.3750	6	Note 1	Note 1	76.9	Pass
M1	15.50-0.50	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	81.5	Pass
M2	42.67-12.67	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	79.6	Pass
M3	70.33-40.33	Mod (Ex)	(Aero) MP304	3	Note 1	Note 1	75.2	Pass
M4	88.17-68.17	Mod (Ex)	(Aero) MP303	4	Note 1	Note 1	88.7	Pass
M5	73.08-68.17	Mod (Ex)	(Aero) MP303	5	Note 1	Note 1	53.5	Pass
M6	89.50-79.50	Mod (Ex)	(Aero) MP303	6	Note 1	Note 1	70.2	Pass
M7	116.17-86.17	Mod (Ex)	(Aero) MP303	7	Note 1	Note 1	69.5	Pass
M8	97.67-87.67	Mod (Ex)	(Aero) MP303	8	Note 1	Note 1	59.3	Pass
M9	103.92-95.17	Mod (Ex)	(Aero) MP303	9	Note 1	Note 1	45.2	Pass
M10	109.42-103.92	Mod (Ex)	(Aero) MP303	10	Note 1	Note 1	41.0	Pass
M11	116.17-109.42	Mod (Ex)	(Aero) MP303	11	Note 1	Note 1	26.8	Pass

	Summary	
Pole (L5)	96.0	Pass
Mod (M4)	88.7	Pass
RATING =	**96.0**	**Pass**

*Note 1: See additional documentation in following sheets for details.

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Reinforcement Layout



Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 0.00-ft

Loads	
Axial:	31.4 k
Moment:	2,199.3 k·ft
Shear:	25.6 k
Torsion:	1.3 k·ft

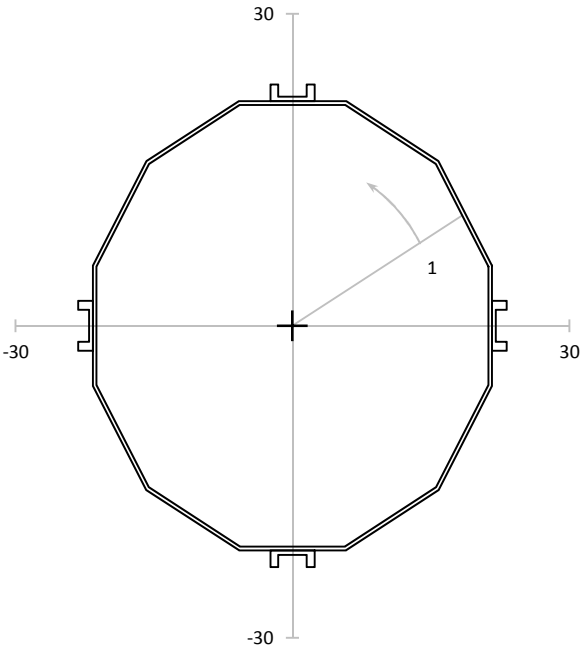
Equivalent Loads to Pole	
Axial:	23.8 k
Moment:	1,642.9 k·ft
Shear:	19.4 k
Torsion:	1.3 k·ft

Shear Flow	
Controlling Mod:	1
q:	0.145 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	207.14 in
Stitch:	18.00 in
Capacity:	8.7%

Pole Info	
OD:	43.21 in
t:	0.3750 in
Pole A_G:	51.72 in²
Pole I_G:	12,113.5 in⁴

Controlling	
Angle:	**60.00°**
I_{CONT}:	16,215.4 in⁴
A_G:	68.24 in²

Minimum	
Angle:	**13.90°**
I_{MIN}:	16,215.4 in⁴
t_{EFF}:	0.5066 in



Pole Segment: L6, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
15.00	22.38	16215.4	0.459	36.429	48.000	48.000	**76.9%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
1	1	**60.00**	22.22	16215.4	0.459	36.156	45.961	44.339	**81.5%**
1	2	**150.00**	22.22	16215.4	0.459	36.156	45.961	44.339	**81.5%**
1	3	**240.00**	22.22	16215.4	0.459	36.156	45.961	44.339	**81.5%**
1	4	**330.00**	22.22	16215.4	0.459	36.156	45.961	44.339	**81.5%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 14.17-ft

Loads	
Axial:	27.5 k
Moment:	1,848.2 k·ft
Shear:	24.0 k
Torsion:	1.3 k·ft

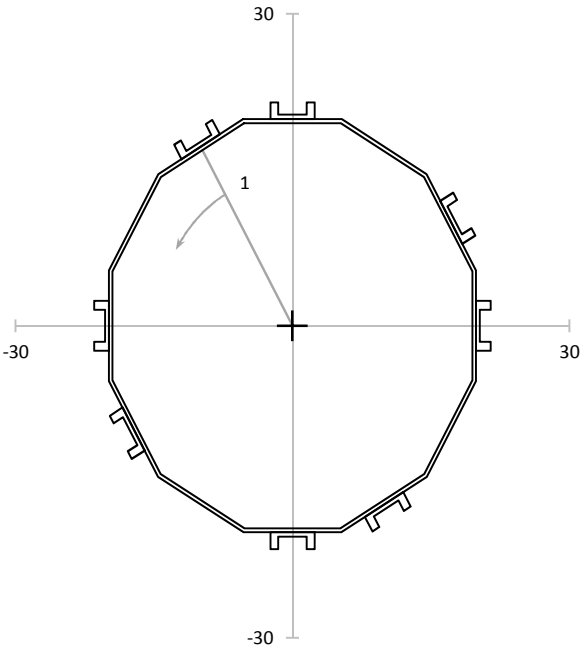
Equivalent Loads to Pole	
Axial:	16.2 k
Moment:	1,060.7 k·ft
Shear:	14.1 k
Torsion:	1.3 k·ft

Shear Flow	
Controlling Mod:	2
q:	0.124 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	242.46 in
Stitch:	18.00 in
Capacity:	7.4%

Pole Info	
OD:	39.74 in
t:	0.3750 in
Pole A_G:	47.53 in^2
Pole I_G:	9,401.7 in^4

Controlling	
Angle:	**330.00°**
I_G:	16,381.8 in^4
A_G:	80.57 in^2

Minimum	
Angle:	**7.50°**
I_{MIN}:	16,381.8 in^4
t_{EFF}:	0.6682 in



Pole Segment: L6, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
165.00	20.59	16381.8	0.341	27.870	48.000	48.000	**58.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
1	1	**60.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
1	2	**150.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
1	3	**240.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
1	4	**330.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
2	1	**360.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
2	2	**90.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
2	3	**180.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**
2	4	**270.00**	20.48	16381.8	0.341	27.727	45.961	44.339	**62.5%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 16.83-ft

Loads	
Axial:	26.7 k
Moment:	1,784.9 k·ft
Shear:	23.7 k
Torsion:	1.3 k·ft

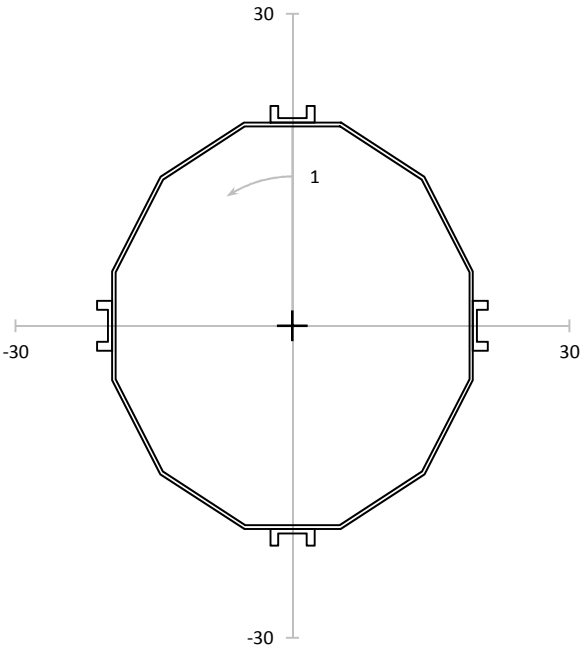
Equivalent Loads to Pole	
Axial:	19.8 k
Moment:	1,295.3 k·ft
Shear:	17.5 k
Torsion:	1.3 k·ft

Shear Flow	
Controlling Mod:	2
q:	0.160 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	187.78 in
Stitch:	18.00 in
Capacity:	9.6%

Pole Info	
OD:	39.09 in
t:	0.3750 in
Pole A_G:	46.75 in^2
Pole I_G:	8,942.7 in^4

Controlling	
Angle:	**0.00°**
I_G:	12,323.4 in^4
A_G:	63.27 in^2

Minimum	
Angle:	**112.50°**
I_{MIN}:	12,323.4 in^4
t_{EFF}:	0.5227 in



Pole Segment: L6, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_A (ksi)	F_B (ksi)		Capacity
135.00	20.25	12323.4	0.423	35.193		48.000	48.000		**74.2%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_T (ksi)	F_C (ksi)		Capacity
2	1	**0.00**	20.15	12323.4	0.423	35.030		45.961	44.339		**79.0%**
2	2	**90.00**	20.15	12323.4	0.423	35.030		45.961	44.339		**79.0%**
2	3	**180.00**	20.15	12323.4	0.423	35.030		45.961	44.339		**79.0%**
2	4	**270.00**	20.15	12323.4	0.423	35.030		45.961	44.339		**79.0%**

Elevation: 25.25-ft

Loads	
Axial:	23.9 k
Moment:	1,590.1 k·ft
Shear:	22.6 k
Torsion:	1.3 k·ft

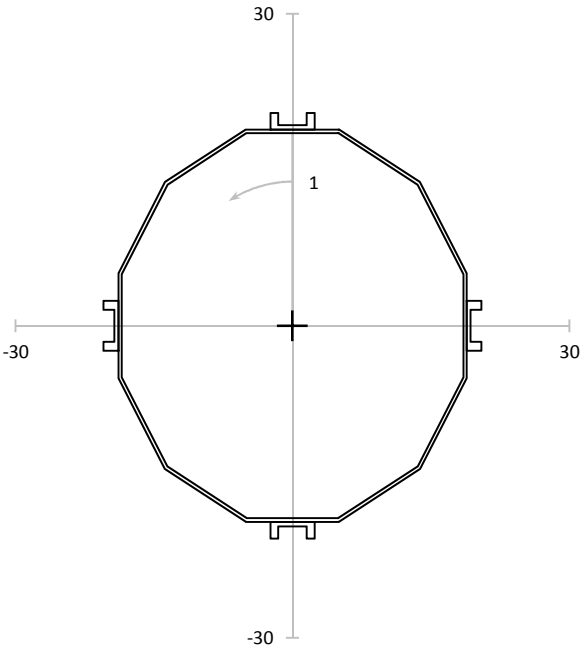
Equivalent Loads to Pole	
Axial:	17.1 k
Moment:	1,113.6 k·ft
Shear:	16.2 k
Torsion:	1.3 k·ft

Shear Flow	
Controlling Mod:	2
q:	0.173 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	173.49 in
Stitch:	18.00 in
Capacity:	**10.4%**

Pole Info	
OD:	37.71 in
t:	0.3438 in
Pole A_G:	41.37 in^2
Pole I_G:	7,374.5 in^4

Controlling	
Angle:	**360.00°**
I_G:	10,530.4 in^4
A_G:	57.89 in^2

Minimum	
Angle:	**113.90°**
I_{MIN}:	10,530.4 in^4
t_{EFF}:	0.4970 in



Pole Segment: L5, F_Y = 65 ksi

POLE CAPACITY								
Angle (°)	**y_{CONT} (in)**	**I (in^4)**	**σ_A (ksi)**	**σ_B (ksi)**		**F_A (ksi)**	**F_B (ksi)**	**Capacity**
135.00	19.54	10530.4	0.413	35.400		52.000	52.000	**68.9%**

MODIFICATION CAPACITIES										
Mod Number	**#**	**Angle (°)**	**$\bar{y}_{CONT}$ (in)**	**I (in^4)**	**σ_A (ksi)**	**σ_B (ksi)**		**F_T (ksi)**	**F_C (ksi)**	**Capacity**
2	1	**360.00**	19.47	10530.4	0.413	35.276		45.961	44.339	**79.6%**
2	2	**90.00**	19.47	10530.4	0.413	35.276		45.961	44.339	**79.6%**
2	3	**180.00**	19.47	10530.4	0.413	35.276		45.961	44.339	**79.6%**
2	4	**270.00**	19.47	10530.4	0.413	35.276		45.961	44.339	**79.6%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 41.17-ft

Loads	
Axial:	20.2 k
Moment:	1,243.7 k·ft
Shear:	20.9 k
Torsion:	1.3 k·ft

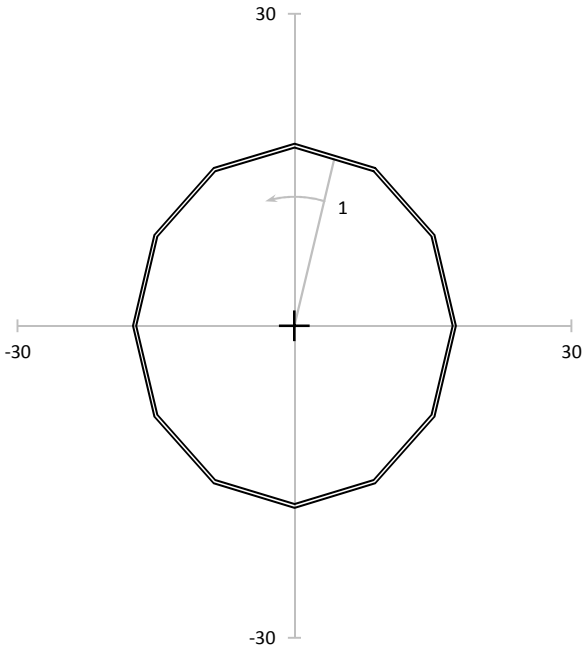
Equivalent Loads to Pole	
Axial:	20.2 k
Moment:	1,243.7 k·ft
Shear:	20.9 k
Torsion:	1.3 k·ft

Shear Flow N/A

Pole Info	
OD:	33.81 in
t:	0.3438 in
Pole A_G:	37.05 in^2
Pole I_G:	5,297.0 in^4

Controlling	
Angle:	**15.00°**
I_G:	5,297.0 in^4
A_G:	37.05 in^2

Minimum	
Angle:	**0.00°**
I_{MIN}:	5,297.0 in^4
t_{EFF}:	0.3438 in



Pole Segment: L5, F_Y = 65 ksi

POLE CAPACITY								
Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_A (ksi)	F_B (ksi)	Capacity
15.00	17.51	5297.0	0.546	49.349		52.000	52.000	**96.0%**

MODIFICATION CAPACITIES										
Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_T (ksi)	F_C (ksi)	Capacity

Elevation: 41.83-ft

Loads	
Axial:	20.0 k
Moment:	1,229.9 k·ft
Shear:	20.9 k
Torsion:	1.3 k·ft

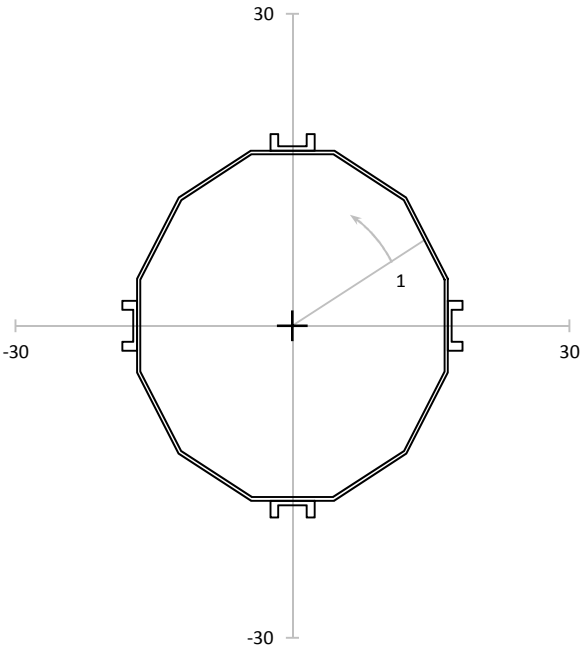
Pole Info	
OD:	33.65 in
t:	0.3438 in
Pole A_G:	36.87 in²
Pole I_G:	5,220.6 in⁴

Equivalent Loads to Pole	
Axial:	13.8 k
Moment:	827.8 k·ft
Shear:	14.4 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**60.00°**
I_G:	7,757.0 in⁴
A_G:	53.39 in²

Shear Flow	
Controlling Mod:	3
q:	0.194 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	154.84 in
Stitch:	18.00 in
Capacity:	**11.6%**

Minimum	
Angle:	**2.00°**
I_{MIN}:	7,757.0 in⁴
t_{EFF}:	0.5190 in



Pole Segment: L5, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	17.43	7757.0	0.375	33.166	52.000	52.000	**64.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	17.43	7757.0	0.375	33.174	45.961	44.339	**74.8%**
3	2	**150.00**	17.43	7757.0	0.375	33.174	45.961	44.339	**74.8%**
3	3	**240.00**	17.43	7757.0	0.375	33.174	45.961	44.339	**74.8%**
3	4	**330.00**	17.43	7757.0	0.375	33.174	45.961	44.339	**74.8%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 46.75-ft

Loads	
Axial:	18.5 k
Moment:	1,128.8 k·ft
Shear:	20.2 k
Torsion:	1.3 k·ft

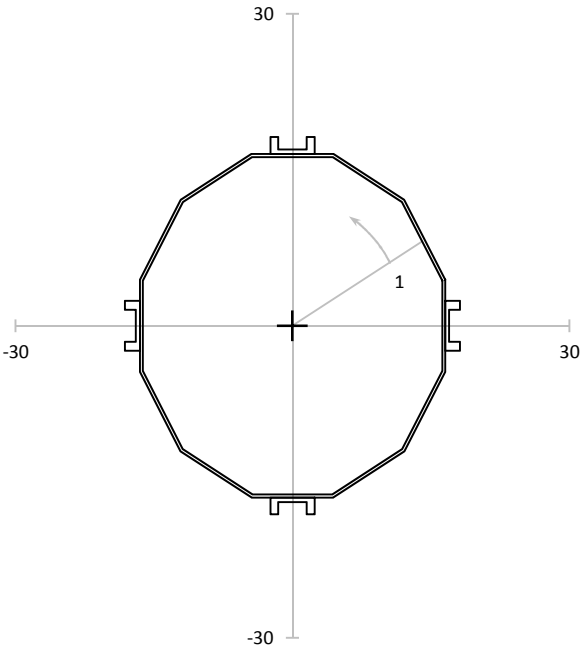
Pole Info	
OD:	33.07 in
t:	0.3125 in
Pole A_G:	32.96 in²
Pole I_G:	4,514.1 in⁴

Equivalent Loads to Pole	
Axial:	12.3 k
Moment:	731.3 k·ft
Shear:	13.5 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**60.00°**
I_G:	6,967.5 in⁴
A_G:	49.48 in²

Shear Flow	
Controlling Mod:	3
q:	0.206 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	145.95 in
Stitch:	18.00 in
Capacity:	**12.3%**

Minimum	
Angle:	**0.35°**
I_{MIN}:	6,967.5 in⁴
t_{EFF}:	0.4903 in



Pole Segment: L4, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	17.13	6967.5	0.373	33.301	52.000	52.000	**64.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	17.14	6967.5	0.373	33.330	45.961	44.339	**75.2%**
3	2	**150.00**	17.14	6967.5	0.373	33.330	45.961	44.339	**75.2%**
3	3	**240.00**	17.14	6967.5	0.373	33.330	45.961	44.339	**75.2%**
3	4	**330.00**	17.14	6967.5	0.373	33.330	45.961	44.339	**75.2%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 68.25-ft

Loads	
Axial:	14.0 k
Moment:	720.9 k·ft
Shear:	17.7 k
Torsion:	1.3 k·ft

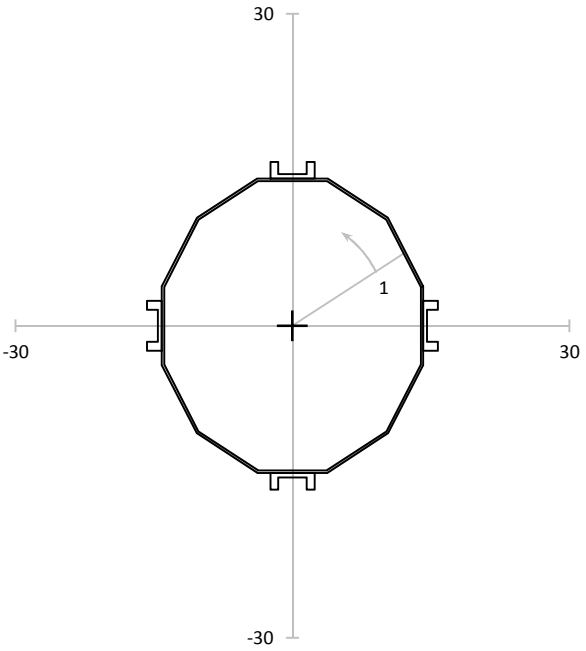
Pole Info	
OD:	28.30 in
t:	0.2500 in
Pole A_G:	22.58 in²
Pole I_G:	2,268.0 in⁴

Equivalent Loads to Pole	
Axial:	8.1 k
Moment:	399.4 k·ft
Shear:	10.2 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**60.00°**
I_G:	4,093.2 in⁴
A_G:	39.10 in²

Shear Flow	
Controlling Mod:	3
q:	0.264 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	113.84 in
Stitch:	18.00 in
Capacity:	**15.8%**

Minimum	
Angle:	**7.50°**
I_{MIN}:	4,093.2 in⁴
t_{EFF}:	0.4616 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY									
Angle (°)	**y_{CONT} (in)**	**I (in⁴)**	**σ_A (ksi)**	**σ_B (ksi)**		**F_A (ksi)**	**F_B (ksi)**		**Capacity**
195.00	14.66	4093.2	0.357	30.982		52.000	52.000		**60.3%**

MODIFICATION CAPACITIES										
Mod Number	**#**	**Angle (°)**	**$\bar{y}_{CONT}$ (in)**	**I (in⁴)**	**σ_A (ksi)**	**σ_B (ksi)**		**F_T (ksi)**	**F_C (ksi)**	**Capacity**
3	1	**60.00**	14.76	4093.2	0.357	31.195		45.961	44.339	**70.4%**
3	2	**150.00**	14.76	4093.2	0.357	31.195		45.961	44.339	**70.4%**
3	3	**240.00**	14.76	4093.2	0.357	31.195		45.961	44.339	**70.4%**
3	4	**330.00**	14.76	4093.2	0.357	31.195		45.961	44.339	**70.4%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 68.83-ft

Loads	
Axial:	13.9 k
Moment:	710.6 k·ft
Shear:	17.6 k
Torsion:	1.3 k·ft

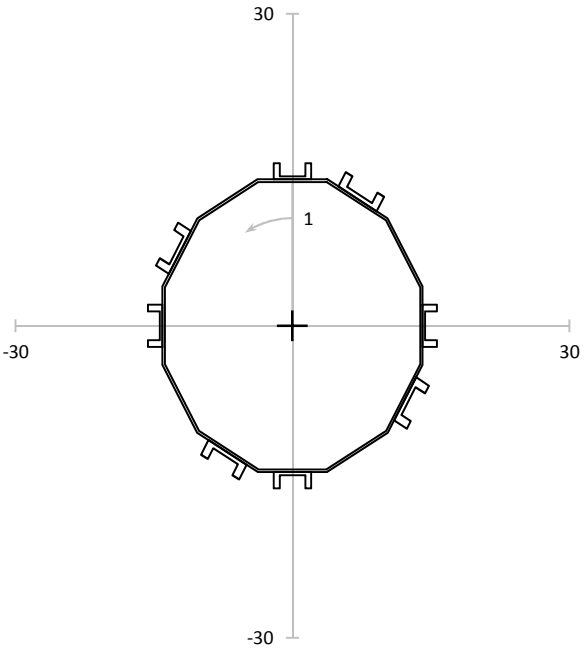
Pole Info	
OD:	28.16 in
t:	0.2500 in
Pole A_G:	22.47 in²
Pole I_G:	2,233.7 in⁴

Equivalent Loads to Pole	
Axial:	6.1 k
Moment:	298.8 k·ft
Shear:	7.8 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**0.00°**
I_G:	5,312.8 in⁴
A_G:	50.67 in²

Shear Flow	
Controlling Mod:	3
q:	0.201 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	149.04 in
Stitch:	18.00 in
Capacity:	**12.1%**

Minimum	
Angle:	**4.25°**
I_{MIN}:	5,312.8 in⁴
t_{EFF}:	0.6188 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
165.00	14.59	5312.8	0.273	23.412	52.000	52.000	**45.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
3	1	**60.00**	14.69	5312.8	0.273	23.578	45.961	44.339	**53.2%**
3	2	**150.00**	14.69	5312.8	0.273	23.578	45.961	44.339	**53.2%**
3	3	**240.00**	14.69	5312.8	0.273	23.578	45.961	44.339	**53.2%**
3	4	**330.00**	14.69	5312.8	0.273	23.578	45.961	44.339	**53.2%**
4	1	**0.00**	14.67	5312.8	0.273	23.546	46.063	44.036	**53.5%**
4	2	**90.00**	14.67	5312.8	0.273	23.546	46.063	44.036	**53.5%**
4	3	**270.00**	14.67	5312.8	0.273	23.546	46.063	44.036	**53.5%**
5	1	**180.00**	14.67	5312.8	0.273	23.546	46.063	44.036	**53.5%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 71.83-ft

Loads	
Axial:	13.3 k
Moment:	658.3 k·ft
Shear:	17.3 k
Torsion:	1.3 k·ft

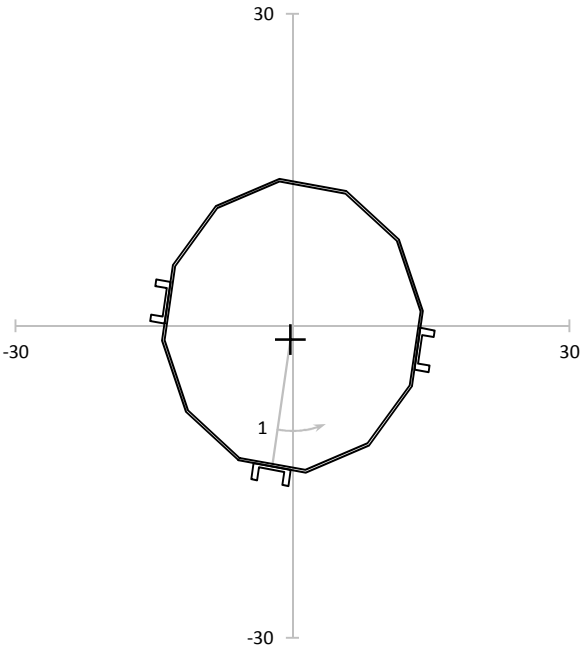
Pole Info	
OD:	27.42 in
t:	0.2500 in
Pole A_G:	21.88 in²
Pole I_G:	2,061.8 in⁴

Equivalent Loads to Pole	
Axial:	9.5 k
Moment:	525.7 k·ft
Shear:	12.3 k
Torsion:	1.3 k·ft

Controlling	
Angle:	**189.25°**
I_G:	2,632.7 in⁴
A_G:	30.64 in²

Shear Flow	
Controlling Mod:	4
q:	0.249 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	120.28 in
Stitch:	18.00 in
Capacity:	**15.0%**

Minimum	
Angle:	**0.00°**
I_{MIN}:	2,616.0 in⁴
t_{EFF}:	0.3196 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
189.25	15.48	2632.7	0.435	46.444	52.000	52.000	**90.2%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
4	1	**0.00**	12.94	2616.0	0.435	39.069	46.063	44.036	**88.7%**
4	2	**98.95**	14.34	3248.6	0.435	34.868	46.063	44.036	**79.2%**
4	3	**261.05**	14.34	3248.6	0.435	34.868	46.063	44.036	**79.2%**

Elevation: 80.75-ft

Loads	
Axial:	12.0 k
Moment:	508.9 k·ft
Shear:	16.2 k
Torsion:	1.1 k·ft

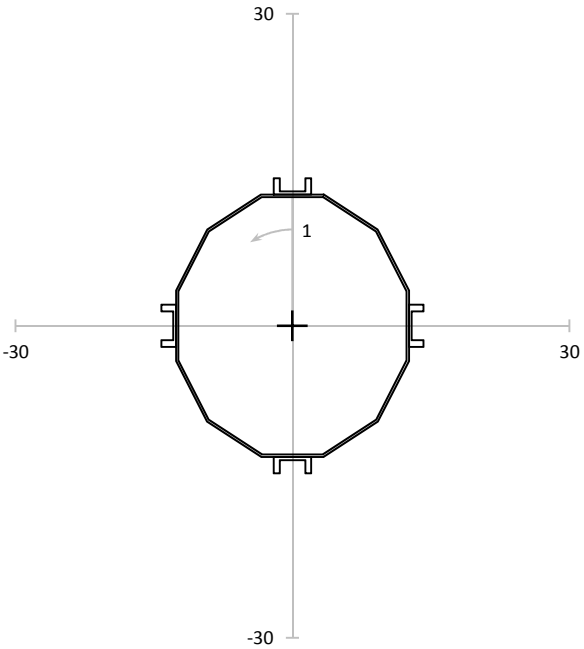
Pole Info	
OD:	25.24 in
t:	0.2500 in
Pole A_G:	20.12 in²
Pole I_G:	1,603.3 in⁴

Equivalent Loads to Pole	
Axial:	7.6 k
Moment:	309.4 k·ft
Shear:	10.3 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**0.00°**
I_G:	2,636.8 in⁴
A_G:	31.80 in²

Shear Flow	
Controlling Mod:	4
q:	0.237 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	126.57 in
Stitch:	18.00 in
Capacity:	**14.2%**

Minimum	
Angle:	**113.00°**
I_{MIN}:	2,636.8 in⁴
t_{EFF}:	0.4196 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
135.00	13.07	2636.8	0.377	30.279	52.000	52.000	**59.0%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
4	1	**0.00**	13.21	2636.8	0.377	30.593	46.063	44.036	**69.5%**
4	2	**90.00**	13.21	2636.8	0.377	30.593	46.063	44.036	**69.5%**
4	3	**270.00**	13.21	2636.8	0.377	30.593	46.063	44.036	**69.5%**
6	1	**180.00**	13.21	2636.8	0.377	30.593	46.063	44.036	**69.5%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 86.92-ft

Loads	
Axial:	11.1 k
Moment:	411.1 k·ft
Shear:	15.5 k
Torsion:	1.1 k·ft

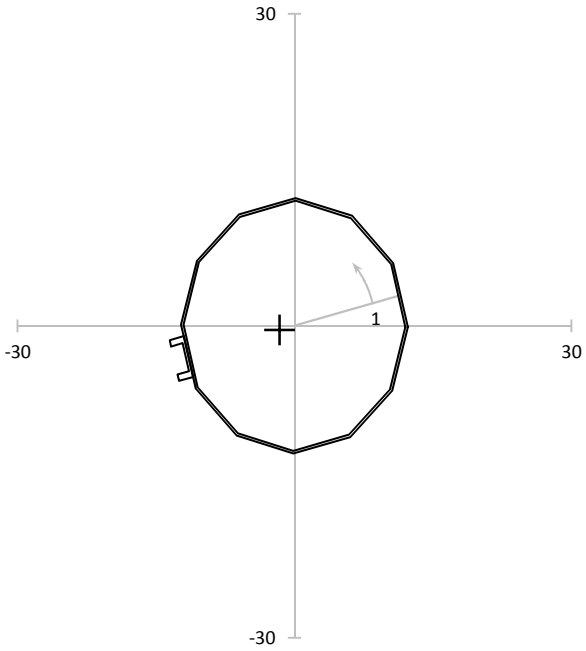
Pole Info	
OD:	23.73 in
t:	0.2500 in
Pole A_G:	18.90 in^2
Pole I_G:	1,329.6 in^4

Equivalent Loads to Pole	
Axial:	9.6 k
Moment:	417.8 k·ft
Shear:	13.4 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**75.60°**
I_G:	1,360.1 in^4
A_G:	21.82 in^2

Shear Flow	
Controlling Mod:	6
q:	0.283 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	105.85 in
Stitch:	18.00 in
Capacity:	**17.0%**

Minimum	
Angle:	**90.00°**
I_{MIN}:	1,336.2 in^4
t_{EFF}:	0.2513 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
75.60	12.70	1360.1	0.509	46.084	52.000	52.000	**89.6%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
6	1	**180.00**	10.79	1722.5	0.509	30.895	46.063	44.036	**70.2%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 87.42-ft

Loads	
Axial:	11.0 k
Moment:	403.4 k·ft
Shear:	15.4 k
Torsion:	1.1 k·ft

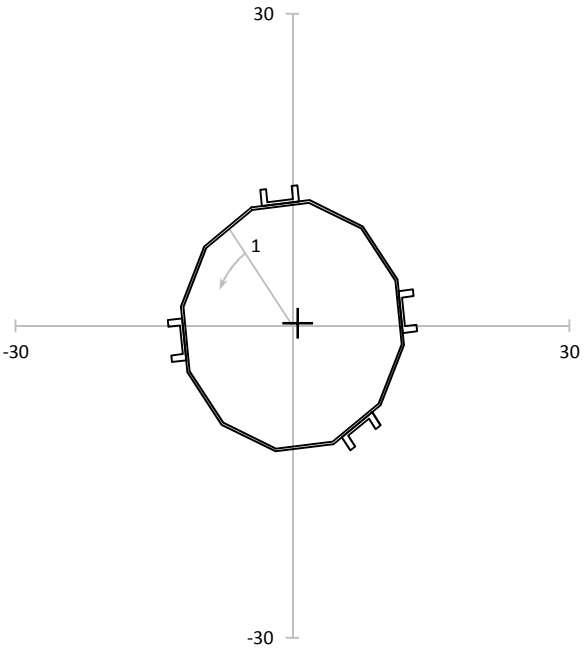
Pole Info	
OD:	23.60 in
t:	0.2500 in
Pole A_G:	18.80 in^2
Pole I_G:	1,308.9 in^4

Equivalent Loads to Pole	
Axial:	6.8 k
Moment:	262.9 k·ft
Shear:	9.5 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**323.65°**
I_G:	2,068.7 in^4
A_G:	30.48 in^2

Shear Flow	
Controlling Mod:	7
q:	0.264 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	113.79 in
Stitch:	18.00 in
Capacity:	**15.8%**

Minimum	
Angle:	**119.25°**
I_{MIN}:	1,993.1 in^4
t_{EFF}:	0.3875 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
108.30	12.72	2009.1	0.361	30.648	52.000	52.000	**59.6%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
6	1	**166.00**	12.01	2228.0	0.361	26.102	46.063	44.036	**59.3%**
7	1	**71.90**	12.74	2232.7	0.361	27.621	46.063	44.036	**62.7%**
7	2	**250.30**	11.58	2244.9	0.361	24.970	46.063	44.036	**56.7%**
7	3	**323.65**	12.09	2068.7	0.361	28.297	46.063	44.036	**64.3%**

Elevation: 88.25-ft

Loads	
Axial:	10.9 k
Moment:	390.6 k·ft
Shear:	15.3 k
Torsion:	1.1 k·ft

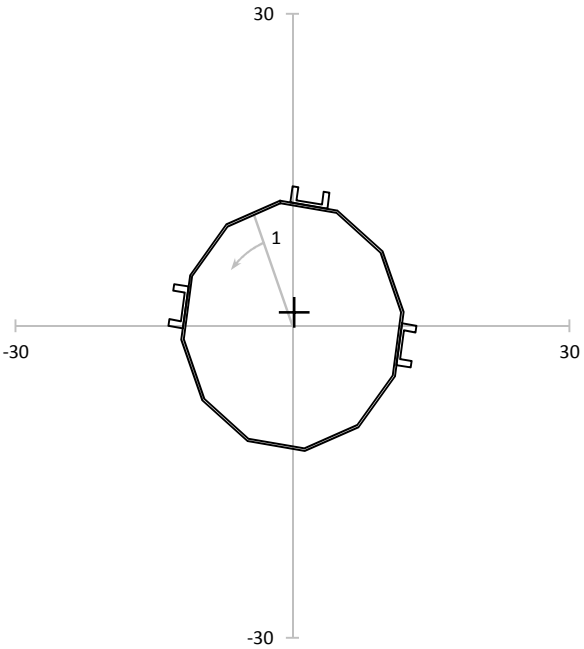
Pole Info	
OD:	23.40 in
t:	0.2500 in
Pole A_G:	18.64 in^2
Pole I_G:	1,275.0 in^4

Equivalent Loads to Pole	
Axial:	7.4 k
Moment:	299.5 k·ft
Shear:	10.4 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**338.70°**
I_G:	1,693.9 in^4
A_G:	27.40 in^2

Shear Flow	
Controlling Mod:	7
q:	0.292 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	102.58 in
Stitch:	18.00 in
Capacity:	**17.5%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	1,682.9 in^4
t_{EFF}:	0.3336 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_A (ksi)	F_B (ksi)		Capacity
338.70	13.34	1693.9	0.397	36.922		52.000	52.000		**71.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_T (ksi)	F_C (ksi)		Capacity
7	1	**70.80**	12.32	2148.2	0.397	26.878		46.063	44.036		**61.0%**
7	2	**229.20**	12.32	2148.2	0.397	26.878		46.063	44.036		**61.0%**
7	3	**330.00**	10.98	1682.9	0.397	30.583		46.063	44.036		**69.5%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 88.92-ft

Loads	
Axial:	10.8 k
Moment:	380.3 k·ft
Shear:	15.3 k
Torsion:	1.1 k·ft

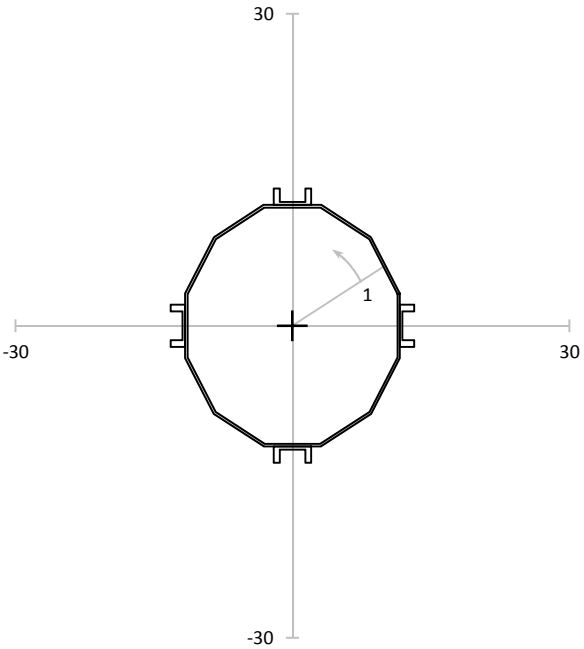
Pole Info	
OD:	23.24 in
t:	0.2500 in
Pole A_G:	18.50 in^2
Pole I_G:	1,248.1 in^4

Equivalent Loads to Pole	
Axial:	6.6 k
Moment:	222.5 k·ft
Shear:	9.4 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**60.00°**
I_G:	2,133.0 in^4
A_G:	30.18 in^2

Shear Flow	
Controlling Mod:	7
q:	0.255 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	117.50 in
Stitch:	18.00 in
Capacity:	**15.3%**

Minimum	
Angle:	**0.05°**
I_{MIN}:	2,133.0 in^4
t_{EFF}:	0.4379 in



Pole Segment: L3, F_Y = 65 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
195.00	12.04	2133.0	0.357	25.755	52.000	52.000	**50.2%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**60.00**	12.21	2133.0	0.357	26.123	46.063	44.036	**59.3%**
7	2	**240.00**	12.21	2133.0	0.357	26.123	46.063	44.036	**59.3%**
7	3	**330.00**	12.21	2133.0	0.357	26.123	46.063	44.036	**59.3%**
8	1	**150.00**	12.21	2133.0	0.357	26.123	46.063	44.036	**59.3%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 94.50-ft

Loads	
Axial:	9.9 k
Moment:	296.9 k·ft
Shear:	14.6 k
Torsion:	1.1 k·ft

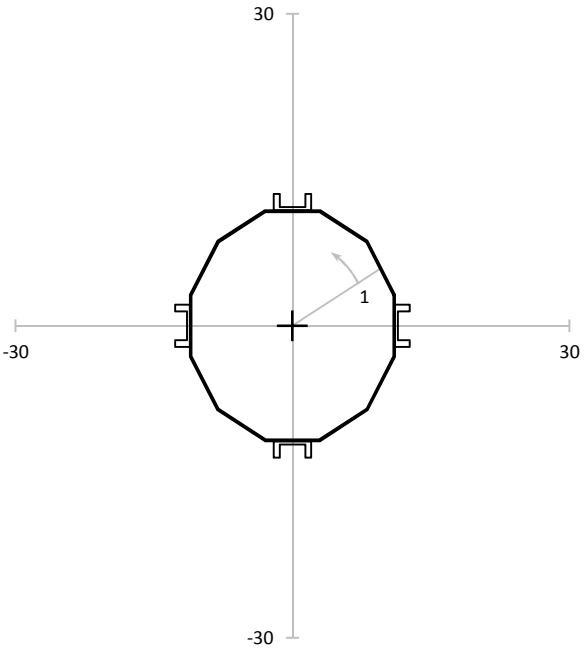
Pole Info	
OD:	22.25 in
t:	0.1875 in
Pole A_G:	13.32 in^2
Pole I_G:	827.0 in^4

Equivalent Loads to Pole	
Axial:	5.3 k
Moment:	149.5 k·ft
Shear:	7.8 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**60.00°**
I_G:	1,642.7 in^4
A_G:	25.00 in^2

Shear Flow	
Controlling Mod:	7
q:	0.304 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	98.53 in
Stitch:	18.00 in
Capacity:	**18.3%**

Minimum	
Angle:	**7.50°**
I_{MIN}:	1,642.7 in^4
t_{EFF}:	0.3825 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_A (ksi)	F_B (ksi)		Capacity
195.00	11.52	1642.7	0.397	24.989		48.000	48.000		**52.9%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_T (ksi)	F_C (ksi)		Capacity
7	1	**60.00**	11.71	1642.7	0.397	25.400		46.063	44.036		**57.7%**
7	2	**240.00**	11.71	1642.7	0.397	25.400		46.063	44.036		**57.7%**
7	3	**330.00**	11.71	1642.7	0.397	25.400		46.063	44.036		**57.7%**
8	1	**150.00**	11.71	1642.7	0.397	25.400		46.063	44.036		**57.7%**

Elevation: 96.42-ft

Loads	
Axial:	9.7 k
Moment:	269.0 k·ft
Shear:	14.4 k
Torsion:	1.1 k·ft

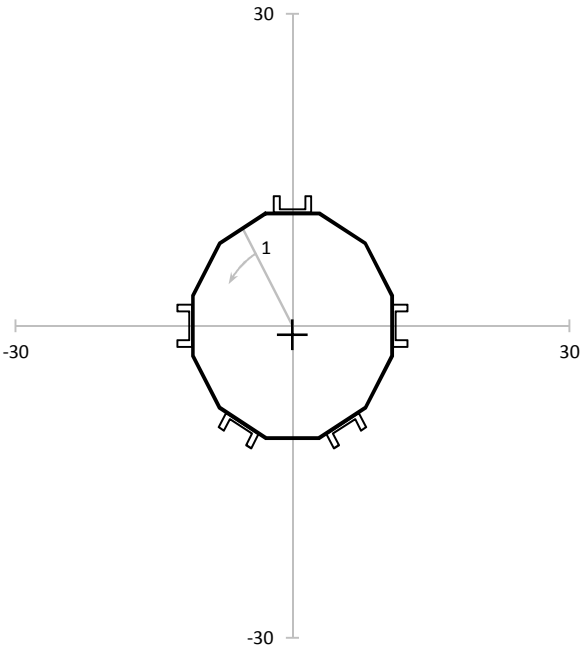
Pole Info	
OD:	21.78 in
t:	0.1875 in
Pole A_G:	13.03 in^2
Pole I_G:	775.3 in^4

Equivalent Loads to Pole	
Axial:	4.6 k
Moment:	121.4 k·ft
Shear:	6.8 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**330.00°**
I_G:	1,733.2 in^4
A_G:	27.63 in^2

Shear Flow	
Controlling Mod:	7
q:	0.300 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	99.94 in
Stitch:	18.00 in
Capacity:	**18.0%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	1,733.2 in^4
t_{EFF}:	0.4339 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
163.60	12.14	1734.4	0.351	22.591	48.000	48.000	**47.8%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**55.45**	11.51	1754.9	0.351	21.174	46.063	44.036	**48.1%**
7	2	**244.55**	11.51	1754.9	0.351	21.174	46.063	44.036	**48.1%**
7	3	**330.00**	12.37	1733.2	0.351	23.028	46.063	44.036	**52.3%**
9	1	**118.25**	10.72	1739.2	0.351	19.889	46.063	44.036	**45.2%**
9	2	**181.75**	10.72	1739.2	0.351	19.889	46.063	44.036	**45.2%**

Elevation: 103.92-ft

Loads	
Axial:	6.5 k
Moment:	179.6 k·ft
Shear:	9.6 k
Torsion:	1.1 k·ft

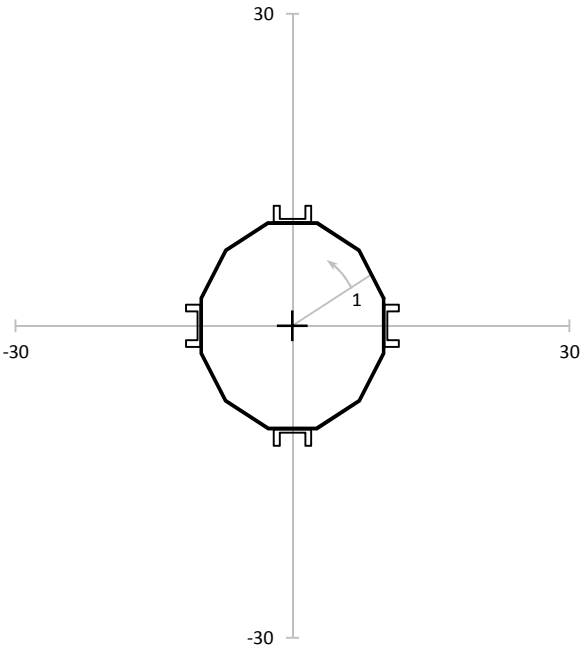
Pole Info	
OD:	19.94 in
t:	0.1875 in
Pole A_G:	11.92 in²
Pole I_G:	593.7 in⁴

Equivalent Loads to Pole	
Axial:	3.3 k
Moment:	84.7 k·ft
Shear:	4.8 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**60.00°**
I_G:	1,259.3 in⁴
A_G:	23.60 in²

Shear Flow	
Controlling Mod:	7
q:	0.234 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	128.02 in
Stitch:	18.00 in
Capacity:	**14.1%**

Minimum	
Angle:	**2.05°**
I_{MIN}:	1,259.3 in⁴
t_{EFF}:	0.4115 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY								
Angle (°)	**y_{CONT} (in)**	**I (in⁴)**	**σ_A (ksi)**	**σ_B (ksi)**	**F_A (ksi)**	**F_B (ksi)**		**Capacity**
195.00	10.33	1259.3	0.274	17.680	48.000	48.000		**37.4%**

MODIFICATION CAPACITIES										
Mod Number	**#**	**Angle (°)**	**$\bar{y}_{CONT}$ (in)**	**I (in⁴)**	**σ_A (ksi)**	**σ_B (ksi)**	**F_T (ksi)**	**F_C (ksi)**		**Capacity**
7	1	**60.00**	10.56	1259.3	0.274	18.076	46.063	44.036		**41.0%**
7	2	**240.00**	10.56	1259.3	0.274	18.076	46.063	44.036		**41.0%**
7	3	**330.00**	10.56	1259.3	0.274	18.076	46.063	44.036		**41.0%**
10	1	**150.00**	10.56	1259.3	0.274	18.076	46.063	44.036		**41.0%**

Elevation: 109.42-ft

Loads	
Axial:	5.9 k
Moment:	128.6 k·ft
Shear:	9.0 k
Torsion:	1.1 k·ft

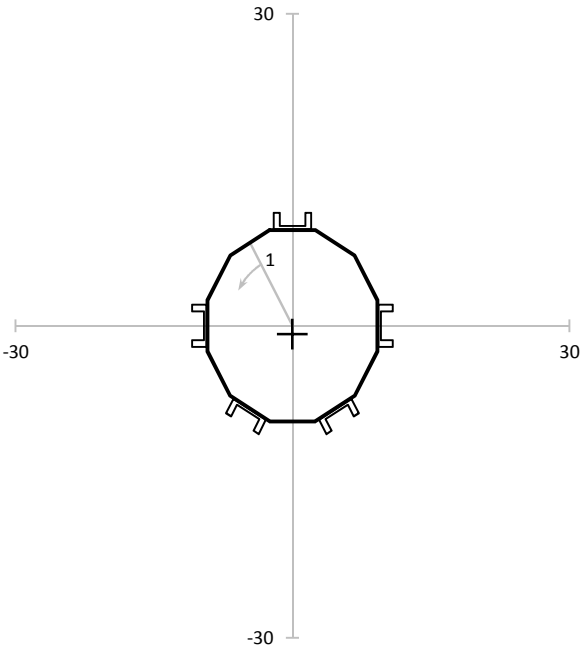
Pole Info	
OD:	18.59 in
t:	0.1875 in
Pole A_G:	11.11 in²
Pole I_G:	480.3 in⁴

Equivalent Loads to Pole	
Axial:	2.6 k
Moment:	52.3 k·ft
Shear:	3.9 k
Torsion:	1.1 k·ft

Controlling	
Angle:	**330.00°**
I_G:	1,194.4 in⁴
A_G:	25.71 in²

Shear Flow	
Controlling Mod:	7
q:	0.235 k/in
Bolt/Weld Cap:	30.0 k/bolt
Max Spacing:	127.72 in
Stitch:	18.00 in
Capacity:	**14.1%**

Minimum	
Angle:	**150.00°**
I_{MIN}:	1,194.4 in⁴
t_{EFF}:	0.4900 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
163.45	10.43	1195.4	0.231	13.460	48.000	48.000	**28.5%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity
7	1	**55.10**	9.92	1211.7	0.231	12.634	46.063	44.036	**28.7%**
7	2	**244.90**	9.92	1211.7	0.231	12.634	46.063	44.036	**28.7%**
7	3	**330.00**	10.71	1194.4	0.231	13.834	46.063	44.036	**31.4%**
11	1	**118.20**	9.18	1199.3	0.231	11.816	46.063	44.036	**26.8%**
11	2	**181.80**	9.18	1199.3	0.231	11.816	46.063	44.036	**26.8%**

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Elevation: 114.92-ft

Loads	
Axial:	5.4 k
Moment:	80.8 k·ft
Shear:	8.4 k
Torsion:	1.1 k·ft

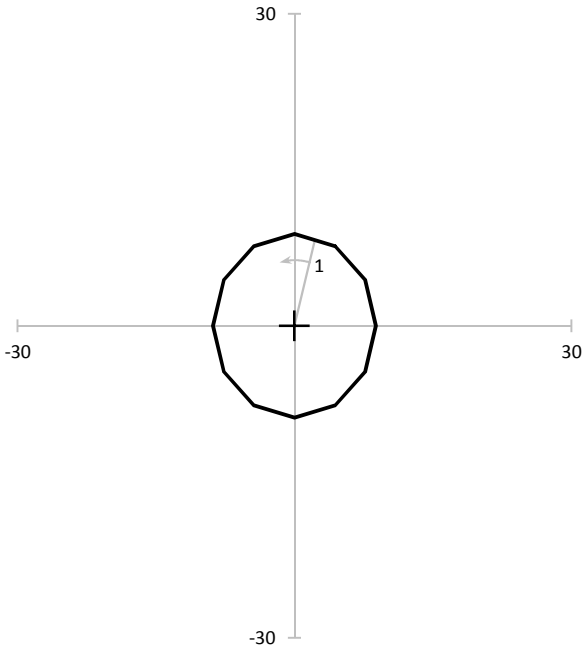
Equivalent Loads to Pole	
Axial:	5.4 k
Moment:	80.8 k·ft
Shear:	8.4 k
Torsion:	1.1 k·ft

Shear Flow N/A

Pole Info	
OD:	17.24 in
t:	0.1875 in
Pole A_G:	10.30 in^2
Pole I_G:	382.4 in^4

Controlling	
Angle:	**15.00°**
I_G:	382.4 in^4
A_G:	10.30 in^2

Minimum	
Angle:	**0.00°**
I_{MIN}:	382.4 in^4
t_{EFF}:	0.1875 in



Pole Segment: L2, F_Y = 60 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_A (ksi)	F_B (ksi)		Capacity
15.00	8.93	382.4	0.526	22.651		48.000	48.000		**48.3%**

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in^4)	σ_A (ksi)	σ_B (ksi)		F_T (ksi)	F_C (ksi)		Capacity

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Loads	
Axial:	2.5 k
Moment:	41.0 k·ft
Shear:	4.3 k
Torsion:	1.1 k·ft

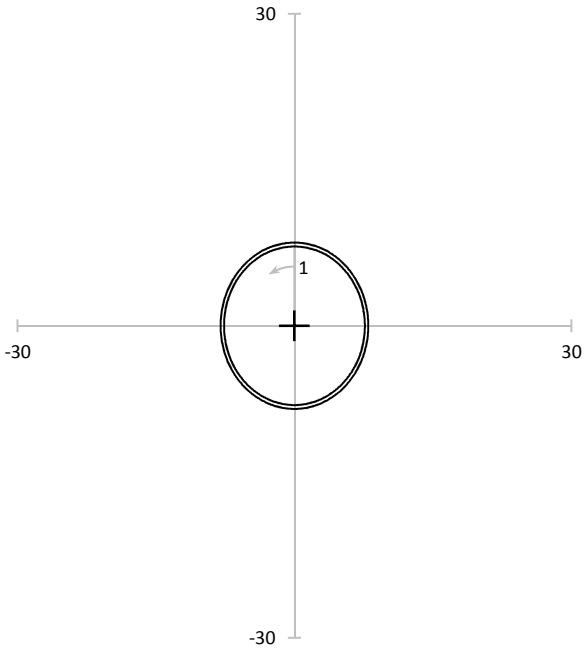
Pole Info	
OD:	16.00 in
t:	0.3750 in
Pole A_G:	18.41 in²
Pole I_G:	562.1 in⁴

Equivalent Loads to Pole	
Axial:	2.5 k
Moment:	41.0 k·ft
Shear:	4.3 k
Torsion:	1.1 k·ft

Controlling	
Angle:	0.00°
I_G:	562.1 in⁴
A_G:	18.41 in²

Shear Flow N/A

Minimum	
Angle:	0.00°
I_{MIN}:	562.1 in⁴
t_{EFF}:	0.3750 in



Pole Segment: L1, F_Y = 42 ksi

POLE CAPACITY

Angle (°)	y_{CONT} (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_A (ksi)	F_B (ksi)	Capacity
0.00	8.00	562.1	0.135	6.996	36.960	36.960	19.3%

MODIFICATION CAPACITIES

Mod Number	#	Angle (°)	$\bar{y}_{CONT}$ (in)	I (in⁴)	σ_A (ksi)	σ_B (ksi)	F_T (ksi)	F_C (ksi)	Capacity

Tower Engineering Professionals, Inc.
326 Tryon Road|Raleigh, NC 27603-3530|Office: (919) 661-6351|Fax: (919) 661-6350|www.tepgroup.net

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *347001 Rev. 0*

Pole Manufacturer:	Other

Reactions- Bolts		
Moment:	41.0	ft-kips
Axial:	2.5	kips
Shear:	4.3	kips
Elevation:	120	feet

If No stiffeners, Criteria: AISC ASD <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	15		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty: 44.00
N/A:	75	<-- Disregard	
Circle (in.):	19		

Plate Data		
Diam:	24	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.35	in

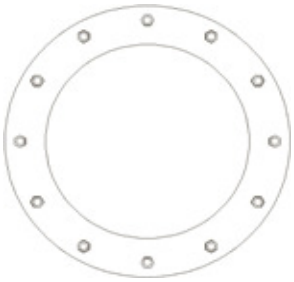
Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

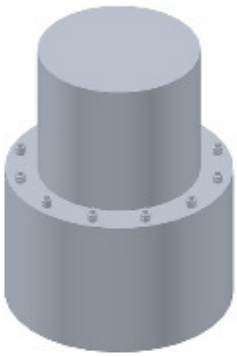
Pole Data		
Diam:	16	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	25.91	kips	Service, ASD
Max Bolt directly applied T:	6.74	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.204	in	
Min PL "treq" for actual **T w/ Pry**:	0.463	in	
Min PL "t1" for actual **T w/o Pry**:	0.614	in	
T allowable w/o Prying:	25.91	kips	α'<0 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	6.74	kips	
Non-Prying Bolt Stress Ratio, T/B:	26.0%	**Pass**	





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

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

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *347001 Rev. 0*

Pole Manufacturer:	Other

Reactions- Upper Plate		
Moment:	49.0	ft-kips
Axial:	2.5	kips
Shear:	4.3	kips
Elevation:	120	feet

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Flange Bolt Results

Bolt Data			
Qty:	18		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	19		

Plate Data		
Diam:	24	in
Thick, t:	1.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.79	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	16	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	58	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Total Bolt Tension=T+Q: 6.74 kips

Exterior Flange Plate Results Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length:
10.25

Compression Side Plate Stress: 5.9 ksi
Allowable Plate Stress: 36.0 ksi
Compression Plate Stress Ratio: 16.5% **Pass**
No Prying
Tension Side Stress Ratio, (treq/t)^2: 11.8% **Pass**

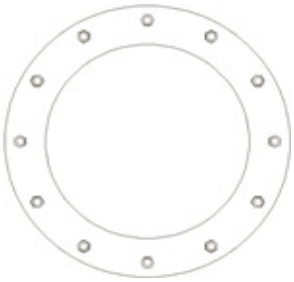
n/a

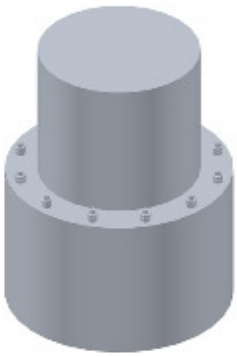
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *876314*
Site Name: *Horse Hill*
App #: *347001 Rev. 0*

Pole Manufacturer:	Other

Reactions- Lower Plate		
Moment:	49.0	ft-kips
Axial:	2.5	kips
Shear:	4.3	kips
Elevation:	120	feet

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Bolt Data

Qty:	18		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	19		

Plate Data

Diam:	24	in
Thick, t:	0.75	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.86	in

Stiffener Data (Welding at Both Sides)

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

Pole Data

Diam:	16	in
Thick:	0.1875	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round
Fu	75	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333	

Flange Bolt Results

Total Bolt Tension=T+Q: 6.74 kips

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	23.7 ksi	
Allowable Plate Stress:	36.0 ksi	
Compression Plate Stress Ratio:	65.9%	Pass
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	47.1%	Pass

Non-Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length: 10.25

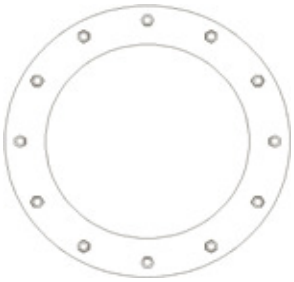
n/a

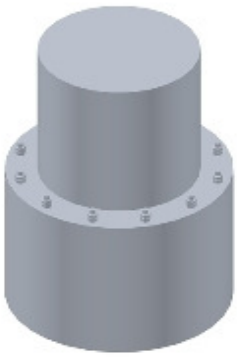
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

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#: *876314*
Site Name: *Horse Hill*
App #: *347001 Rev. 0*

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	53	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	53	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	7	in

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

Pole Data		
Diam:	43.21	in
Thick:	0.375	in
Grade:	60	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	2199.276	ft-kips
Unfactored Axial, P:	31.366	kips
Unfactored Shear, V:	25.586	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	122.5 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	62.9% **Pass**

Base Plate Results Flexural Check

Base Plate Stress:	41.8 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	83.7% **Pass**

PL Ref. Data
Yield Line (in):
31.74
Max PL Length:
31.74

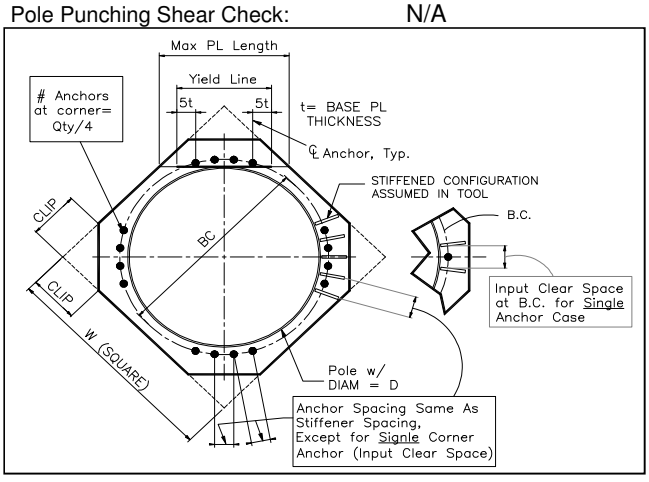
N/A - Unstiffened

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

Monopole on Mat Foundation with Rock Anchors - TIA-222-F

Site Data

Site Name:	Horse Hill
CCI Number:	BU 876314
TEP Job Number:	25675.50846

ASIF 1.333

Unfactored Reactions from TNX		
Axial	31.366	k
Shear	25.586	k
Moment	2199.276	k-ft

Soil Properties		
Allowable Bearing q_a	20	ksf
Mat Subgrade, ks	720	kcf
Wt Soil Above Mat	0	pcf

Mat and Pier Properties		
Mat Width	16.5	ft
Mat Length	16.5	ft
Mat Depth	4.0	ft
Pier Type	Round	
Pier Width/Diam.	6.0	ft
Pier Height	0.0	ft

Rock Anchor Properties		
Diameter	2	in
Net Area	2.43	in^2
Yield Stress	90.1	ksi

Rock Geotechnical Properties		
Wt of Rock	165	pcf
Angle of Rock Cone	30	deg
Steel/Grout Bond[1]	145	psi
Grout/Rock Bond[1]	75	psi
Total RA Length	20	ft
Bonded Length	15	ft
Drilled Shaft Diam.	3.50	in

[1]Allowable Bond Values

Spring Stiffness 366.5 k/in

Mat Foundation Results

Bearing Stress	16.2	ksf
Allowable Bearing	20.0	ksf
% Capacity	81.0%	**Pass**

Mat and Pier Structural Results

Bending Moment	1361.3	kft
Allowable Bending	5038.1	kft
% Capacity	27.0%	**Pass**

Grout-Steel Bond

Load Reaction	41.12	k
Allowable Design Load	218.7	k
% Capacity	18.8%	**Pass**

Grout-Rock Bond

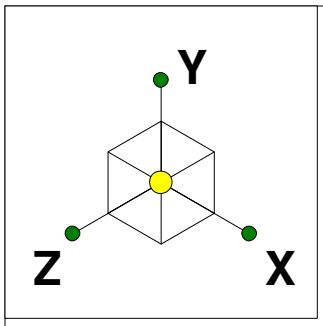
Load Reaction	41.12	k
Allowable Design Load	148.4	k
% Capacity	27.7%	**Pass**

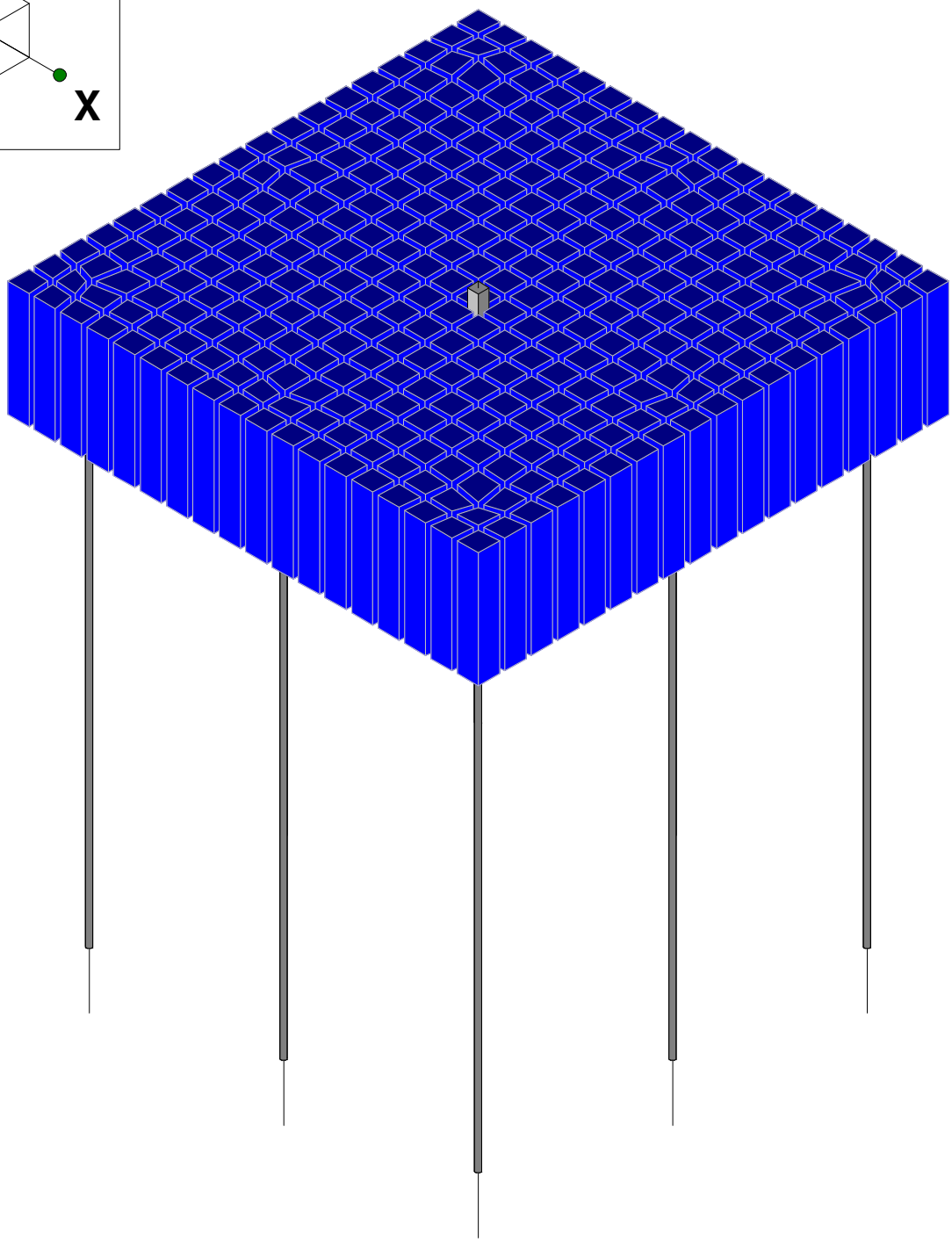
Weight of Rock

Load Reaction	113.91	k
Allowable Design Load	331.6	k
% Capacity	34.4%	**Pass**

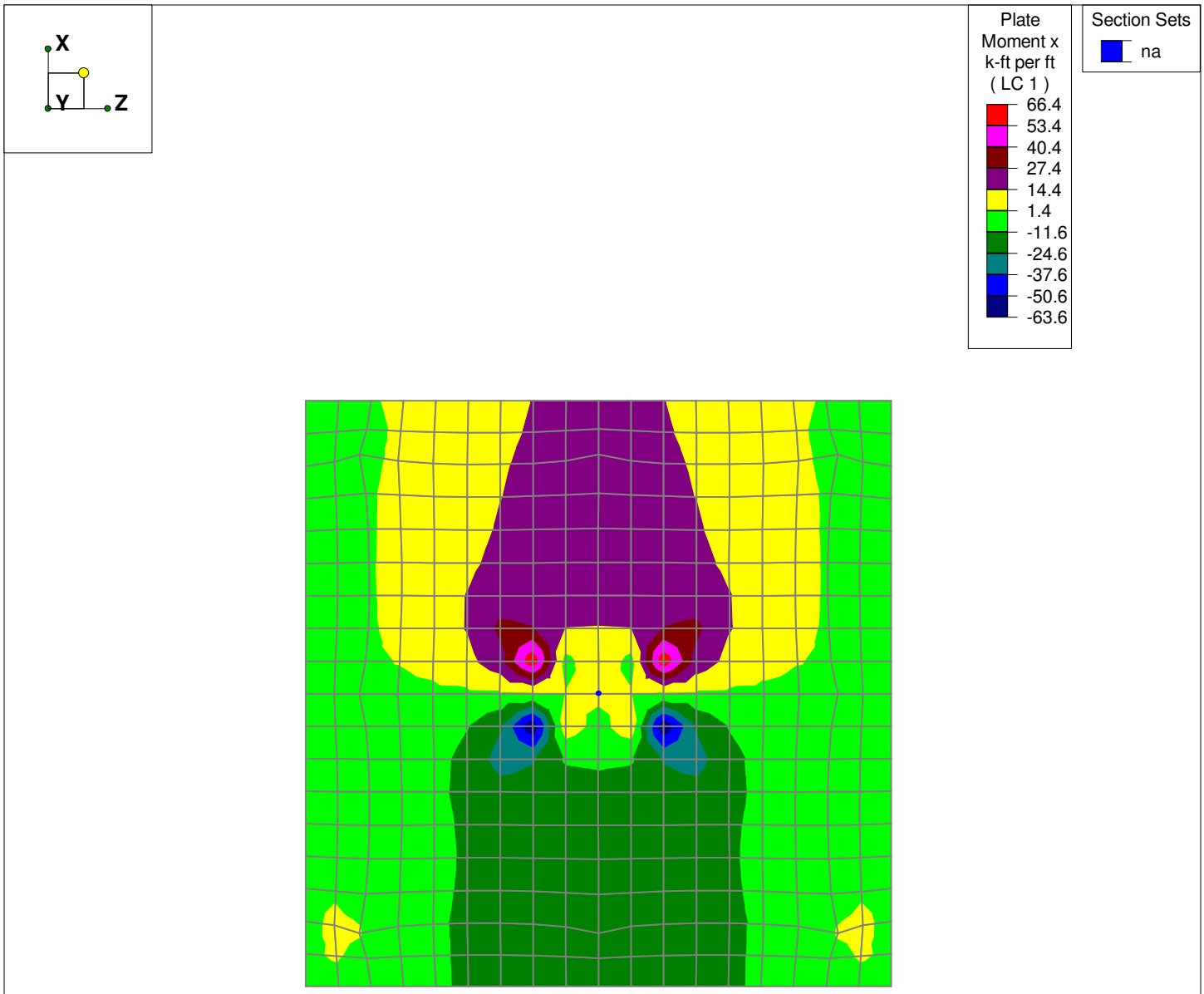
Rock Anchor Steel Results

Load Reaction	41.12	k
Allowable Design Load	175.2	k
% Capacity	23.5%	**Pass**



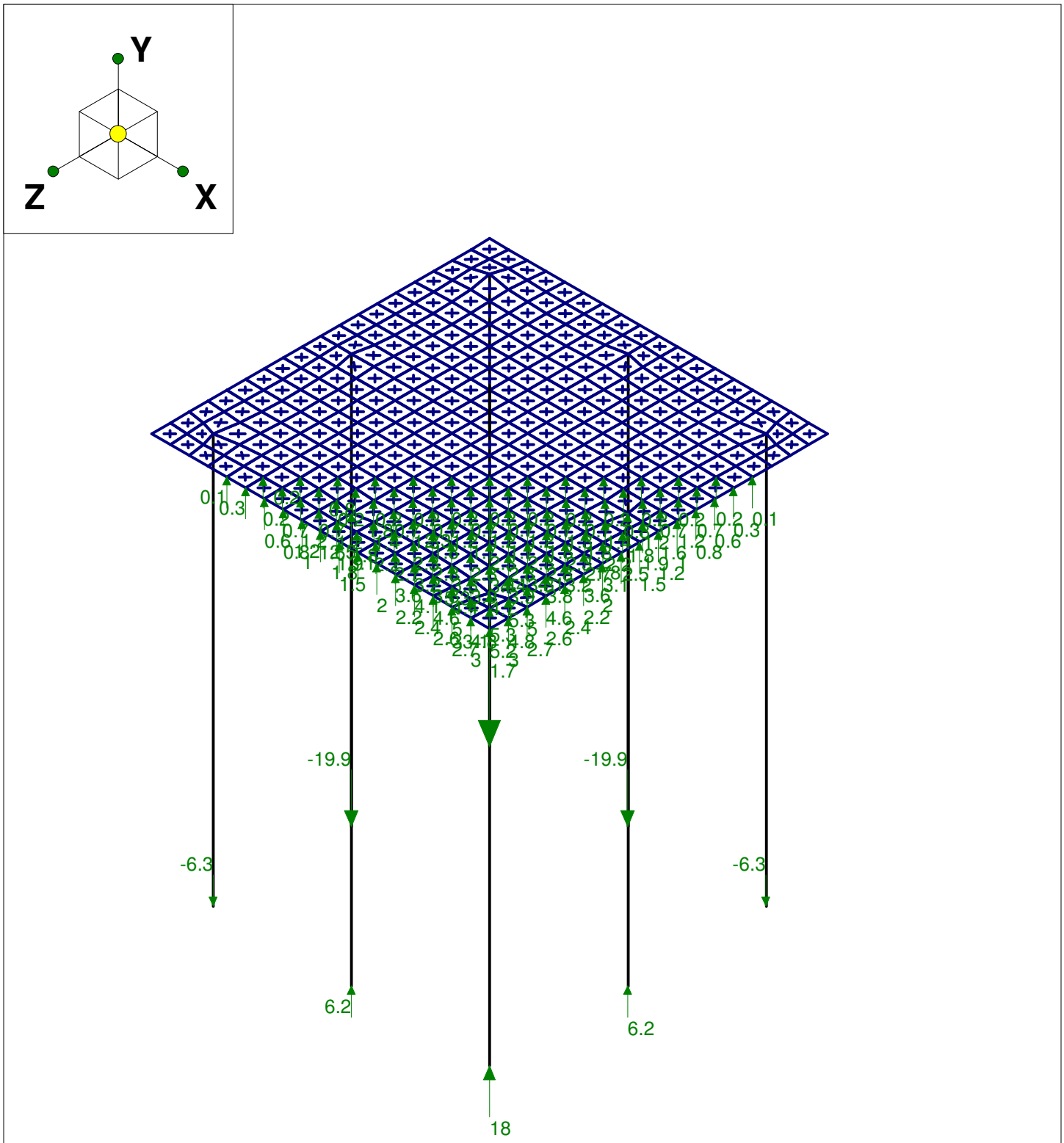


TEP No. 25675.50846	Horse Hill (BU 876314)	SK - 1
Analysis By: SCW		June 20, 2016 at 10:14 AM
Checked By: JDB		Foundation.r3d



Results for LC 1, D+Wind 0

TEP No. 25675.50846	Horse Hill (BU 876314)	SK - 2
Analysis By: SCW		June 20, 2016 at 10:31 AM
Checked By: JDB		Foundation.r3d



Y-direction Reaction Units are k and k-ft

TEP No. 25675.50846	Horse Hill (BU 876314)	SK - 3
Analysis By: SCW		June 20, 2016 at 10:26 AM
Checked By: JDB		Foundation.r3d

EBI Consulting
environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CT5183

Horse Hill
98 Russian Village Road
Southbury, CT 06488

July 9, 2016

EBI Project Number: 6216003140

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	9.15 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

July 9, 2016

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

Emissions Analysis for Site: **CT5183 – Horse Hill**

EBI Consulting was directed to analyze the proposed AT&T facility located at **98 Russian Village Road, Southbury, 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 public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). 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 done for the proposed AT&T Wireless antenna facility located at **98 Russian Village Road, Southbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Kathrein 800-10121, Commscope SBNH-1D6565C, KMW AM-X-CD-16-65-00T-RET and the Powerwave P65-17-XLH-RR** 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.

9) The antenna mounting height centerlines of the proposed antennas are **130 feet** above ground level (AGL) for **Sector A**, **130 feet** above ground level (AGL) for **Sector B** and **130 feet** above ground level (AGL) for Sector C.

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	**130 feet**	Height (AGL):	**130 feet**	Height (AGL):	**130 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	3,309.26	ERP (W):	3,309.26	ERP (W):	3,309.26
Antenna A1 MPE%	**1.07 %**	Antenna B1 MPE%	**1.07 %**	Antenna C1 MPE%	**1.07 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope SBNH-1D6565C	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	Powerwave P65-17-XLH-RR
Gain:	13.65 / 15.85 dBd	Gain:	13.65 / 15.85 dBd	Gain:	13.65 / 15.85 dBd
Height (AGL):	**130 feet**	Height (AGL):	**130 feet**	Height (AGL):	**130 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	7,395.97	ERP (W):	6,614.85	ERP (W):	7,112.97
Antenna A2 MPE%	**2.47 %**	Antenna B2 MPE%	**2.24 %**	Antenna C2 MPE%	**2.52 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**3.60 %**
MetroPCS	0.96 %
Sprint	1.15 %
T-Mobile	3.44 %
Site Total MPE %:	**9.15 %**

AT&T Sector A Total:	3.54 %
AT&T Sector B Total:	3.31 %
AT&T Sector C Total:	3.60 %
Site Total:	9.15 %

AT&T _ Max Values Per Sector (Sector C)	# 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	418.91	130	1.96	850 MHz	567	0.35 %
AT&T 1900 MHz (PCS) UMTS	2	816.81	130	3.82	1900 MHz (PCS)	1000	0.38 %
AT&T 850 MHz GSM	2	418.91	130	1.96	850 MHz	567	0.35 %
AT&T 700 MHz LTE	2	1,614.92	130	7.55	700 MHz	467	1.62 %
AT&T 1900 MHz (PCS) LTE	2	1,941.56	130	9.08	1900 MHz (PCS)	1000	0.91 %
						Total:	**3.60 %**

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	3.54 %
Sector B:	3.31 %
Sector C:	3.60 %
AT&T Maximum Total (per sector):	3.60 %
Site Total:	9.15 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.15 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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