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

July 25, 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:876342**
AT&T Site ID: CTL05098
111 School House Road, Milford, CT 06460
Latitude: 41° 12' 46.06"/ Longitude: -73° 5' 7.1"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 121-foot level of the existing 140-foot monopole tower at 111 School House Road in Milford, CT. The tower is owned by Crown Castle. The property is owned by the Milford Enterprises LLC. AT&T now intends to replace six (3) antennas with three (3) new 700 MHz antennas. These antennas would be installed at the 123-foot level of the tower. AT&T also intends to install three (3) RRHs and three (3) Bias-Tees.

This facility was approved by the by the City of Milford on May 15, 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 The Honorable Benjamin Blake, Mayor, City of Milford, 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: The Honorable Benjamin Blake, Mayor
City of Milford
110 River Street
Milford, CT 06460

Milford Enterprises LLC
111 Schoolhouse Road
Milford, CT 06460

DATE FILED 5/15/97
RECEIPT # 10391
FEE (INCLUDES CZC) $ # 2200

City of Milford, Connecticut

APPLICATION FOR ZONING PERMIT

INSTRUCTIONS: Fill out this application in ball point pen. A scaled plot plan in duplicate, based on a certified surveyor's plot plan must be submitted with this application showing the proposed or existing lot and building dimensions and the location of all buildings in relation to the street lines, side lot lines and rear lot lines.

ADDRESS OF PROPERTY 111 Schoolhouse Rd. **ZONE** G.I.

MAP 33 **BLOCK** 335 **PARCEL** 5 **LOT NO.** _____ **ADDRESS MAP NO.** _____ **LOT SIZE** _____

WIDTH OF STREET RIGHT OF WAY LESS THAN 50 FT.? YES ___ NO ✓ **CORNER LOT?** YES ___ NO ✓

IS ANY PORTION OF THE LOT BELOW REGULATORY FLOOD ELEVATION? YES ___ NO ___ **CAM** YES ___ NO ✓

CITY WATER ✓ **PRIVATE WELL*** ___ **SEWER**** ✓ **SEPTIC***** ___ **ENGINEERING OFF STREET PERMIT #** _____

OWNER Telach Prop. L.P. **PHONE** ( ) 877-8000

ADDRESS OF OWNER 111 School House Rd. Milford CT
STREET CITY STATE ZIP CODE

PRESENT USE OF PROPERTY Motel

PROPOSED CONSTRUCTION NEW X ADDITION ___ ALTERATION ___ REPAIR ___

SIZE/USE OF PROPOSED CONSTRUCTION 140' Telecommunications monopole
- Wetlands Permit Req.-

NO. OF STORIES ___ **HEIGHT** 140' **REQUIRED PARKING SPACES** ___ **LOT COVERAGE** ___%

DATE OF APPROVALS: ZBA 2/11/97 CASPR ✓ SITE PLAN May 6 1997 SPECIAL PERMIT May 6 1997

EXEMPTION ISSUED ✓ **SUBDIV. NAME** ✓ **HISTORIC DIST. CERT.OF APPROPRIATENESS** ✓

CERTIFICATION: *(WARNING)* I hereby certify that I am making this application on behalf of and with full authority of the owner of the property and that I am aware of the Zoning Regulations pertinent in this case and that the statements made herein are true and correct. *APPROVAL SHALL BE VALID FOR PLANS AS SUBMITTED.*

THE OCCUPANCY AND USE OF LAND AND BUILDINGS OR STRUCTURES PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY IS PROHIBITED

APPROVED BY:
Richard Vance
Zoning Official

DATE ISSUED 5/15/97

APPLICANT:
NAME Mike Evancick Agent for Sprint PCS (Please Print)
SIGNATURE Mike Evancick
ADDRESS 9 Barnes Industrial Road
Street
CITY Wallingford STATE CT ZIP 06492
TELEPHONE NO. (203) 294-5609

* Permit required from State Health Dept. for apartments, subdivisions, trailer parks, shopping centers and public buildings.

** Permits for sewer connections are granted by Sewer Commission

*** Septic system approvals are granted by Health Department

P&Z OFFICE - WHITE BUILDING DEPT. - YELLOW APPLICANT'S COPY - PINK

ZONPER7/96

CAM REQUIRED YES__ NO__

MILFORD PLANNING & ZONING BOARD
PETITION FOR SPECIAL PERMIT

I (WE) Sprint PCS

HEREBY PETITION FOR A:

SPECIAL PERMIT ___ AMENDMENT TO A SPECIAL PERMIT xx

TO ESTABLISH ____ OR CONSTRUCT Telecommunications Monopole
(DESCRIPTION)

ON THE FOLLOWING PROPERTY:

ADDRESS OF PROPERTY 111 School House Road SEWER ___ SEPTIC ___

ASSESSOR'S MAP 33 BLOCK 335 PARCEL 5 ZONE GI ACRES 2.216

APPLICANT'S NAME Sprint PCS PHONE # (203) 294-5634

APPLICANT'S MAILING ADDRESS 9 Barnes Industrial Road, Wallingford, CT

PROPERTY OWNER'S NAME TELAHC Prop., L.P. PHONE # c/o (203) 877-8000

PROPERTY OWNER'S SIGNATURE

PROPERTY OWNER'S MAILING ADDRESS 111 School House Road, Milford, CT

IF APPEARING BY ATTORNEY OR AGENT:

NAME Harris Beach & Wilcox, LLP

SIGNATURE PHONE # (203) 877-8000

MAILING ADDRESS 147 North Broad Street, Milford, CT

HAS ANY PREVIOUS PETITION FOR A SPECIAL PERMIT BEEN FILED FOR THIS PROPERTY?

YES X NO ___

IF YES, GIVE DECISION: APPROVED X DENIED ____ DATE 11/6/85

APPLICANT

NOTE: COPIES OF THIS APPLICATION WILL NOT BE ACCEPTED

FEE - SEE SCHEDULE OF ZONING FEES.
RECEIVED OF ____ DATE ____
RECEIVED BY ____ AMOUNT ____ RECEIPT NO. ____
DATE APPLICATION FILED DATE APPLICATION CERTIFIED ____
PLANNING & ZONING BOARD ACTION: DATE ____ APPROVED ____ DENIED ____

REVISED 6/93

PROCEDURE FOLLOWING APPROVAL
BY
PLANNING & ZONING BOARD

SITE PLAN REVIEW

Following approval by the Planning & Zoning Board, it is necessary to obtain a zoning permit at the Planning & Zoning Office. Plans for this permit will be the Board approved plans on file in our office unless the Board has stipulated revisions to be made. Please call the reviewing officer for this application at 783-3245 to make arrangements for the issuance of a zoning permit. The fee for a zoning permit following Board approval is $22.00. The zoning permit, associated plans and other exhibits must then be taken to the Building Inspector for the issuance of a building permit.

SPECIAL PERMIT/SPECIAL EXCEPTION

Following approval by the Planning & Zoning Board, it is necessary to obtain a zoning permit at the Planning & Zoning Office. Plans for this permit will be the Board approved plans on file in our office unless the Board has stipulated revisions to be made. Please call the reviewing officer for this application at 783-3245 to make arrangements for the issuance of a zoning permit. The fee for a zoning permit following Board approval is $22.00. The zoning permit, associated plans and other exhibits must then be taken to the Building Inspector for the issuance of a building permit.

Prior to the issuance of a zoning permit, a certificate, which is being held at the office must be filed on the land records in the City Clerk's Office for which a fee of $10.00 is required. You must present your receipt from the City Clerk's Office at the Planning & Zoning Office to be recorded in your file.

111 SCHOOLHOUSE RD

Location	111 SCHOOLHOUSE RD	**Mblu**	33/ 335/ 5/A /
Acct#	023043	**Owner**	MILFORD ENTERPRISES LLC
Assessment	$315,000	**Appraisal**	$450,000
PID	100242	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$450,000	$0	$450,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$315,000	$0	$315,000

Owner of Record

Owner MILFORD ENTERPRISES LLC
Other C/O JAYESH PATEL
Address 7871 BELLE POINT DR
GREENBELT, MD 20770

Sale Price $3,675,000
Certificate
Book & Page 03622/0230
Sale Date 03/27/2015
Instrument 18

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
MILFORD ENTERPRISES LLC	$3,675,000		03622/0230	18	03/27/2015
CSMC 2007 C5 FFI HOTEL PORTFOLIO LLC	$6,930,207		03602/0294	22	10/06/2014
MILFORD FFI LLC	$4,800,000		03168/0407	00	05/10/2007
OLY REALTY ONE LLC	$3,800,000		02396/0375		02/28/2000
TELAHC PROPERTIES L P	$0		02040/0184		03/11/1994

Building Information

Building 1 : Section 1

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

Building Photo

Building Attributes	
Field	**Description**
Style	Outbuildings
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 Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Description:	
Kitchen Descrip:	
Int Condition:	
Solar Panels	
House Generator	

(http://images.vgsi.com/photos/MilfordCTPhotos//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

Use Code	434V
Description	CELL TOWER MDL-00
Zone	
Neighborhood	C
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	
Depth	
Assessed Value	$0
Appraised Value	$0

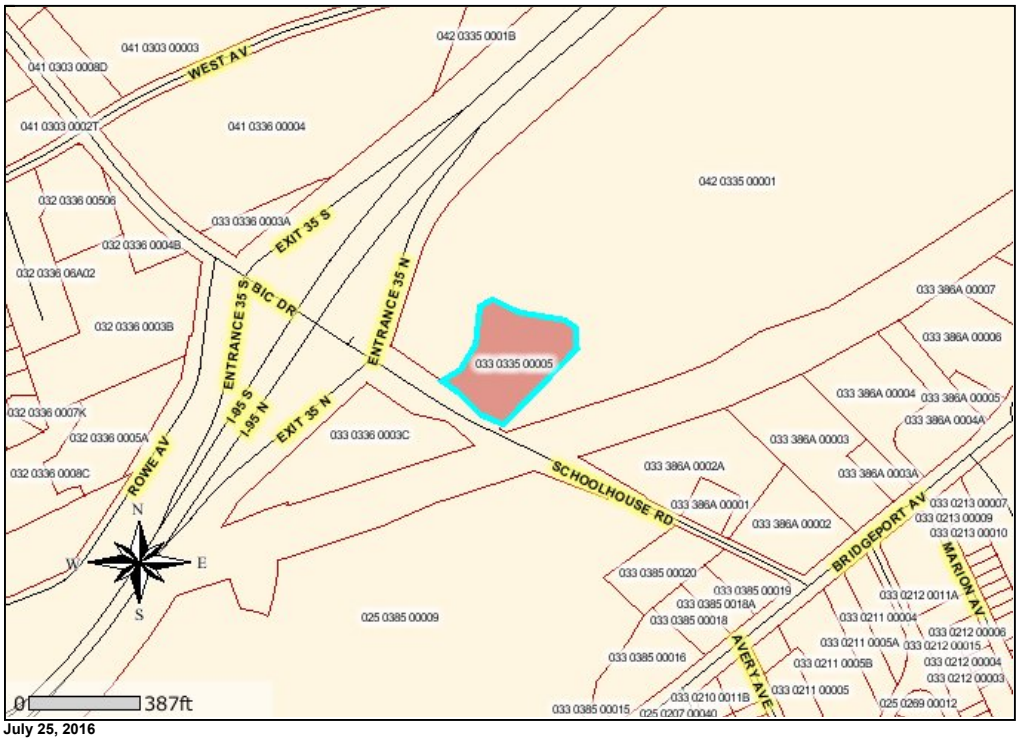
Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CEL1	CEL TWR SITE			1 UNITS	$450,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$450,000	$0	$450,000
2013	$450,000	$0	$450,000
2012	$450,000	$0	$450,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$315,000	$0	$315,000
2013	$315,000	$0	$315,000
2012	$315,000	$0	$315,000



Legend

- Streets
- Tax Parcels
- Town Boundary

July 25, 2016

Disclaimer: **This map was produced from the City of Milford Geographic Information System. The map was compiled using the most current GIS data available. It is deemed accurate, but is not guaranteed. The City expressly disclaims any liability that may result from the use of this map. This map is not a survey and is subject to any changes an actual land survey discloses.**

WIRELESS COMMUNICATIONS FACILITY
CT5098 - LTE 2C
MILFORD
CROWN CASTLE SITE NO.: 876342
111 SCHOOLHOUSE RD.
MILFORD, CT 06460

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

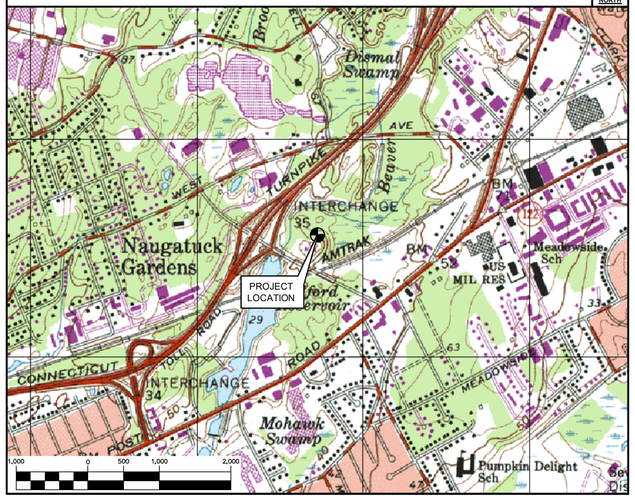
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 111 SCHOOLHOUSE RD., MILFORD, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.59 MI
5.	MERGE ONTO CT-15 S/WILBUR CROSS PKWY EXIT 17 TOWARD E MAIN ST.	26.44 MI
6.	TAKE EXIT 54 TOWARD I-95/US-1/MILFORD.	1.09 MI
7.	MERGE ONTO MILFORD PKWY S	0.95 MI
8.	MERGE ONTO I-95 EXIT 2B TOWARD BRIDGEPORT	1.60 MI
9.	TAKE EXIT 35 TOWARD SUB WAY/SCHOOL HOUSE RD.	0.19 MI
10.	TURN LEFT ONTO BIC DR.	0.06 MI
11.	BIC DR. BECOMES SCHOOLHOUSE RD. DESTINATION IS ON THE LEFT	0.1 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. REMOVE AND REPLACE EXISTING POSITION 4 LTE ANTENNAS FOR PROPOSED HEXPORT ANTENNAS (1) PER SECTOR.
   B. INSTALL (3) NEW RRUS-12+A2 BEHIND POSITION 4 ANTENNA.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5098
AT&T SITE NAME:	MILFORD
SITE ADDRESS:	CROWN CASTLE SITE NO.: 876342 111 SCHOOLHOUSE RD. MILFORD, CT 06460
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°-12'-46.39" N LONGITUDE: 73°-05'-05.69" W GROUND ELEVATION: ±42' AMSL COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 1-A PREPARED FOR AT&T MOBILITY BY EBI CONSULTING DATED AUGUST 22, 2012.

SHEET INDEX

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/27/16	KAWJR	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

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

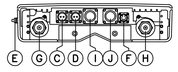
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MILFORD
CT5098 - LTE 2C
111 SCHOOLHOUSE RD.
MILFORD, CT 06460

DATE: 06/21/16
SCALE: AS NOTED
JOB NO. 16071.14

TITLE SHEET

T-1

SIDE PANEL

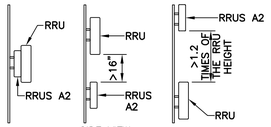


BOTTOM VIEW

CONNECTION INTERFACE

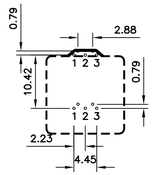
POSITION (ID)	DESCRIPTION	MARKING
A	OPTICAL INDICATORS	I, ↓, ↓, O-1, O-2
B	MAINTENANCE	
C	−48V DC POWER SUPPLY	POW IN
D	−48V DC POWER SUPPLY TO RRU	POW OUT
E	GROUNDING	⏚
F	RET	RET
G	ANTENNA B	B
H	ANTENNA A	A
I	OPTICAL CABLE 1	O-1
J	OPTICAL CABLE 2	O-2

NOTES:
1. STACKING OF RRU's IS NOT PERMITTED.
2. NO PAINTING OF RRU OR THE SOLAR SHIELD IS ALLOWED.
3. A SINGLE RRUS A2 CAN BE INSTALLED AS A STAND ALONE UNIT OR MOUNTED TO THE BACK OF ITS ASSOCIATED RRU.



SIDE VIEW

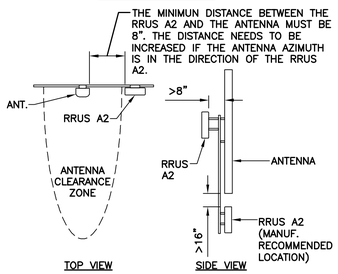
RRUS A2 MANUFACTURER INSTALLATION REQUIREMENTS



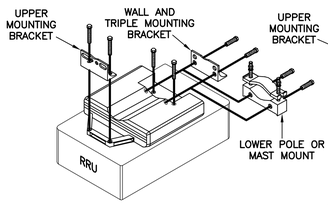
THE NUMBER OF BOLT HOLES DEPENDS ON THE WALL MATERIAL, AS SPECIFIED BY THE SITE ENGINEER. A MINIMUM OF TWO BOLT HOLES ARE RECOMMENDED FOR EACH BRACKET.

ONE OF THE FOLLOWING SOLUTIONS FOR HOLE POSITIONS MUST BE USED:
- 1, 3
- 1, 2, 3

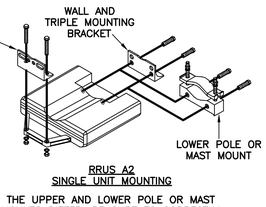
WALL MOUNTING BRACKET INSTALLATION



TOP VIEW SIDE VIEW



RRUS A2 W/ASSOCIATED RRU MOUNTING



RRUS A2 SINGLE UNIT MOUNTING

THE UPPER AND LOWER POLE OR MAST MOUNTS DIFFER, BE SURE TO CORRECTLY POSITION THE MOUNTS BEFORE INSTALLUATION.

1 / N−1 **ERICSSON RRU A2 DETAILS**

NOT TO SCALE

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 105 MPH (3 SECOND GUST)
   - BUILDING CLASSIFICATION: II (BASED ON IBC TABLE 1604.5)
   - BASIC WIND SPEED (OTHER STRUCTURE): 110 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7−02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 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.

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NOTES AND SPECIFICATIONS

N−1

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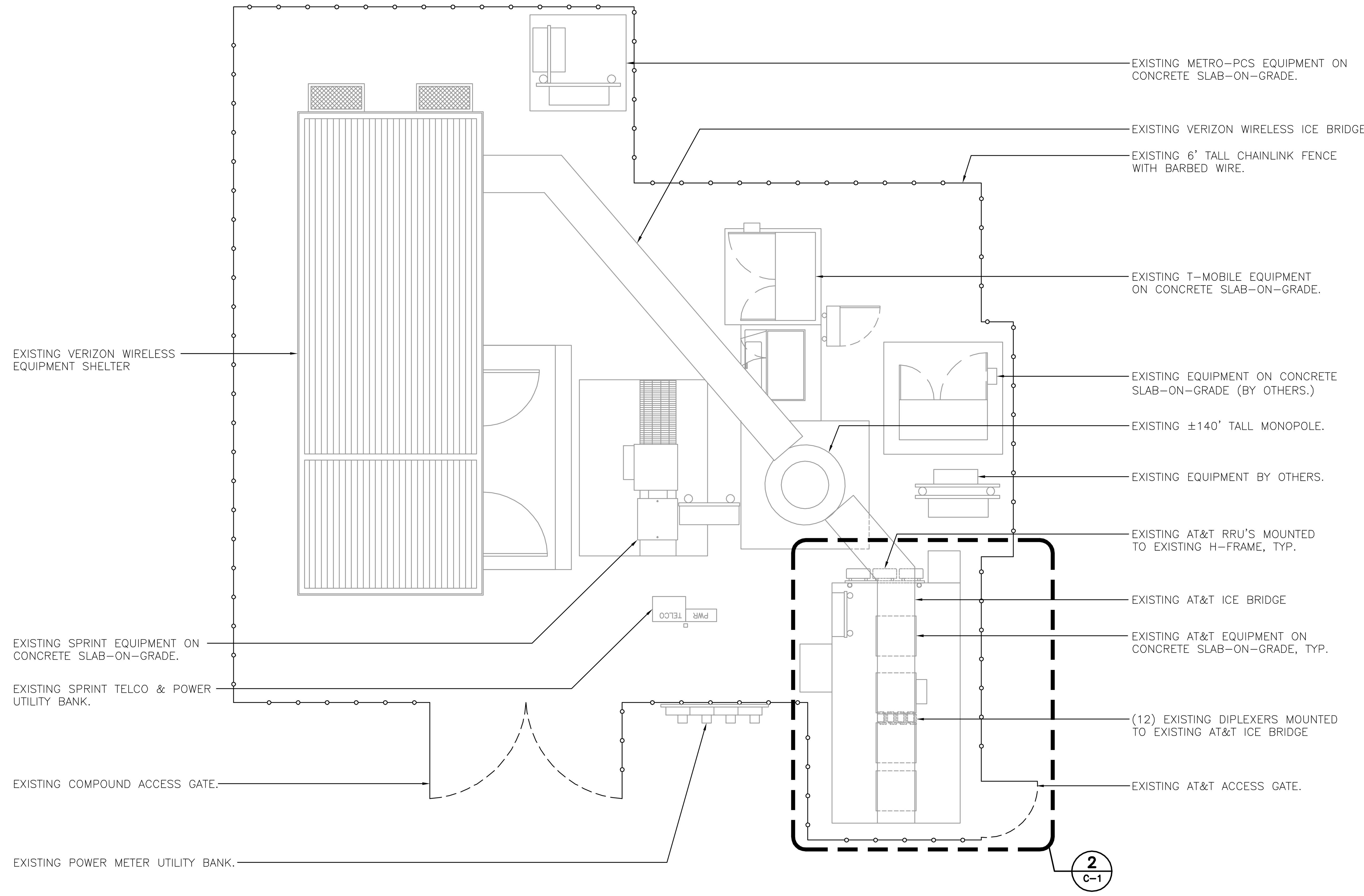
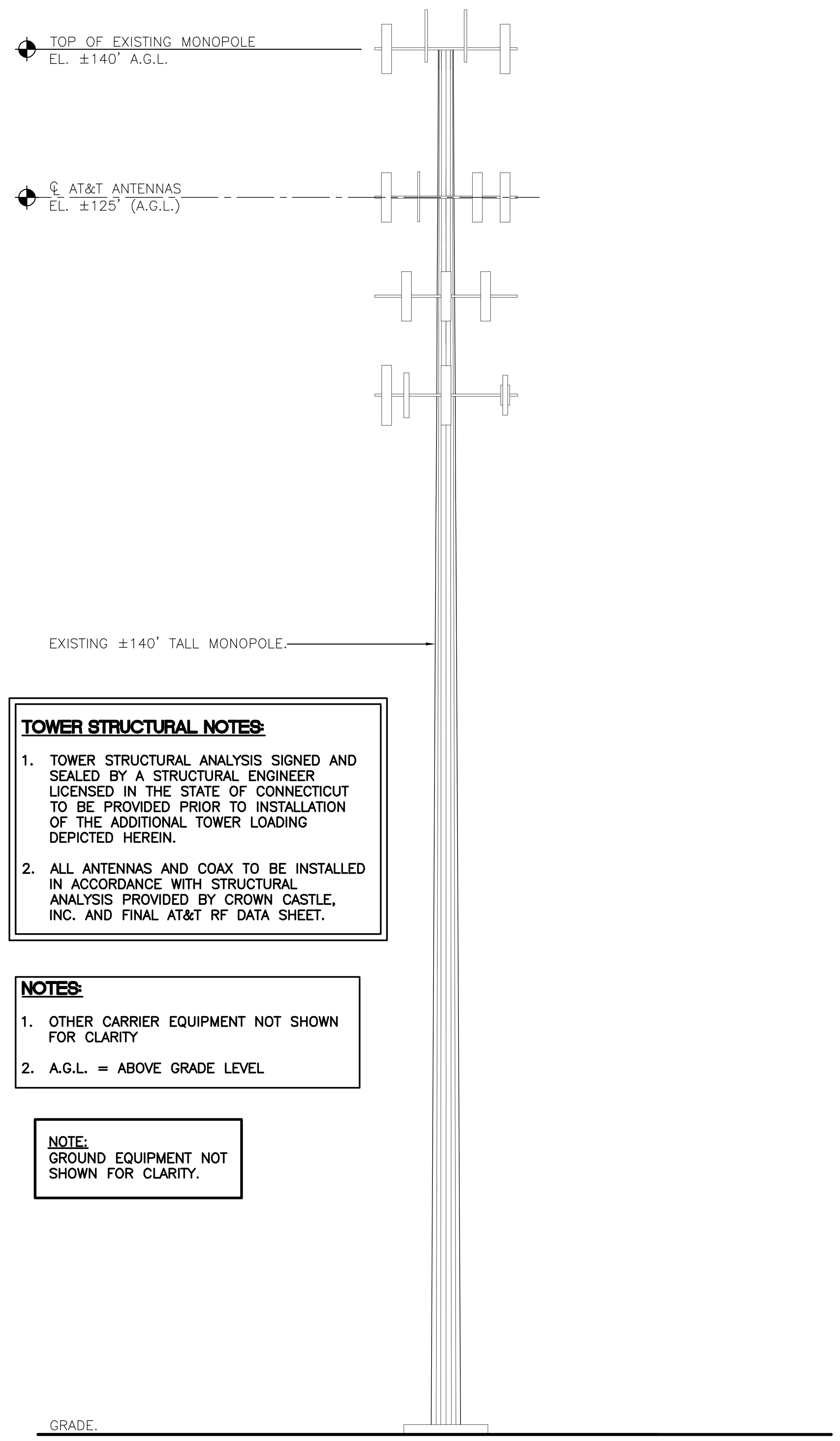


1 C-1 **COMPOUND PLAN**

SCALE: 1" = 5'

APPROX. NORTH

GRAPHIC SCALE (IN FEET) 1 inch = 5 ft.



TOWER STRUCTURAL NOTES:

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

NOTES:

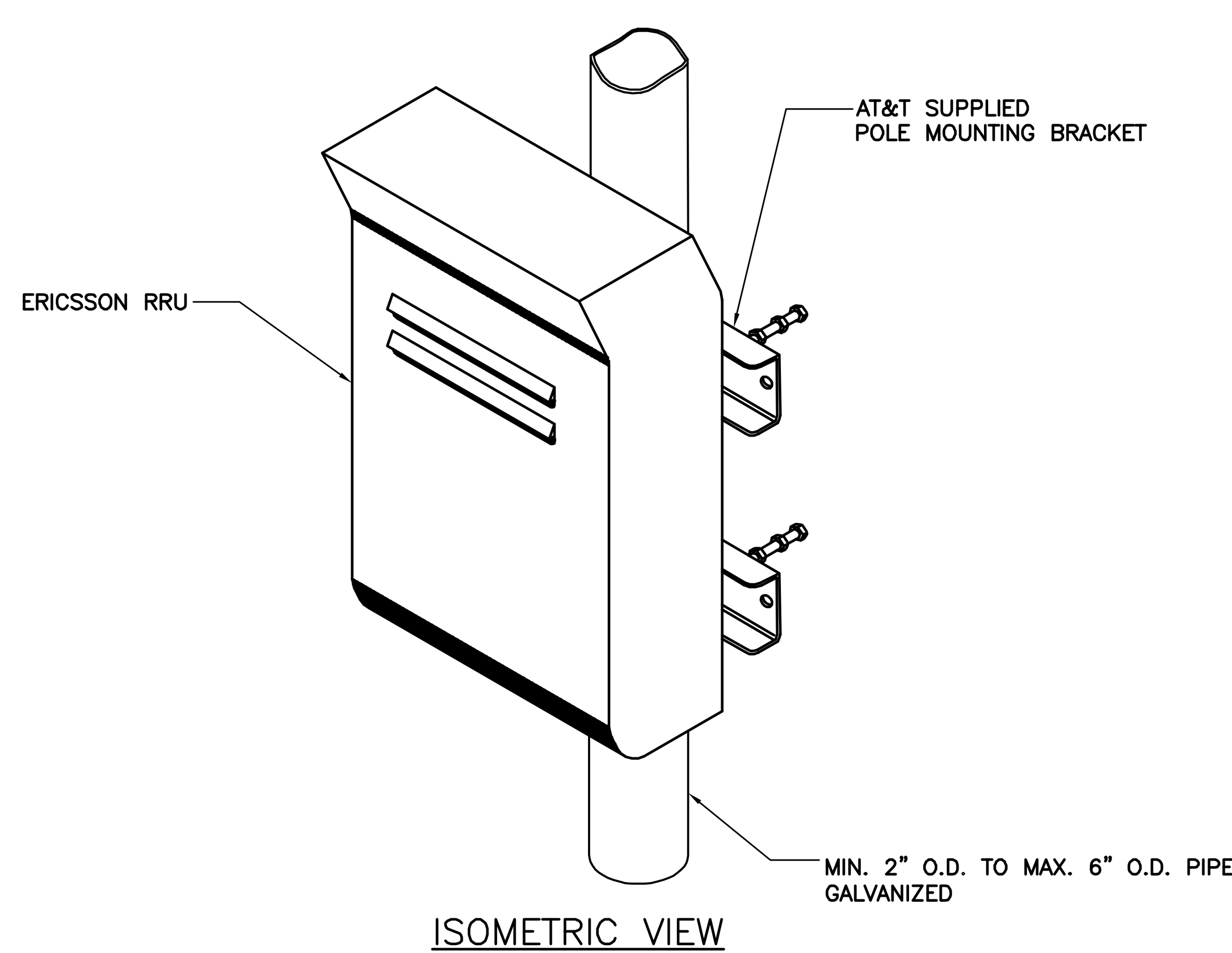
1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

4 C-1 **TOWER ELEVATION**

SCALE: 1" = 20'

GRAPHIC SCALE (IN FEET) 1 inch = 20 ft.

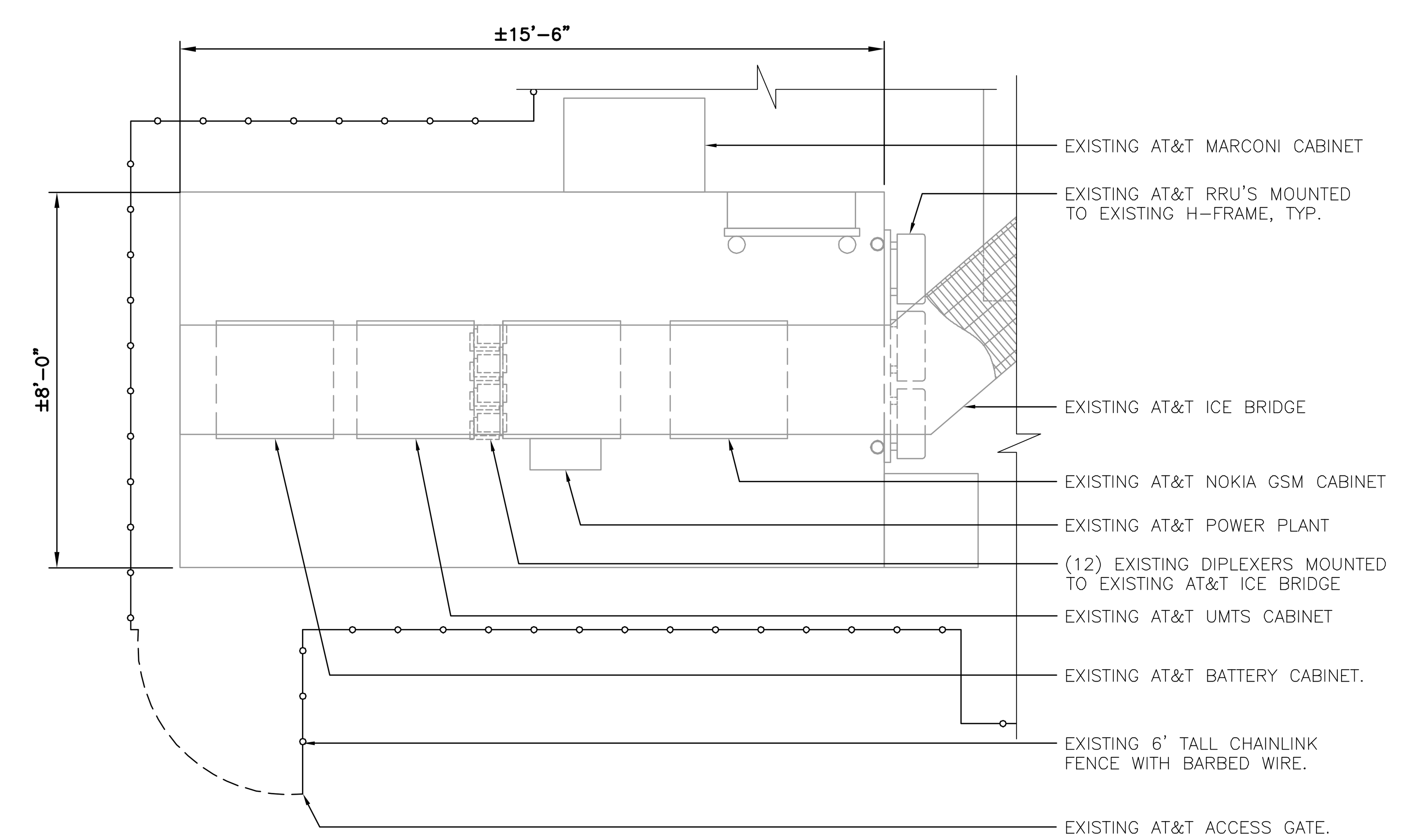


NOTES:

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



2 C-1 **EQUIPMENT LAYOUT PLAN**

SCALE: 3/8"=1'

APPROX. NORTH

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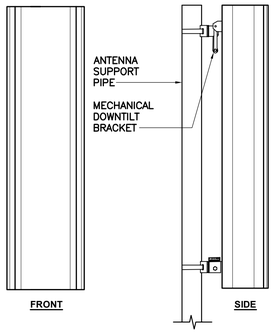
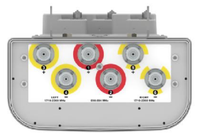
PLANS, ELEVATION AND DETAILS

C-1

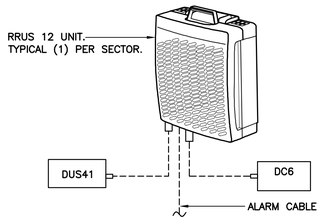
Sheet No. 3 of 7




BOTTOM

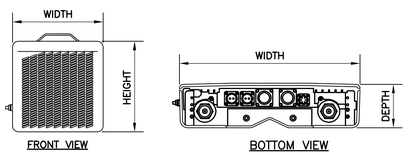
ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: HPA-65R-BUU-H6	72"L x 14.8"W x 9"D	50.7 LBS.

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



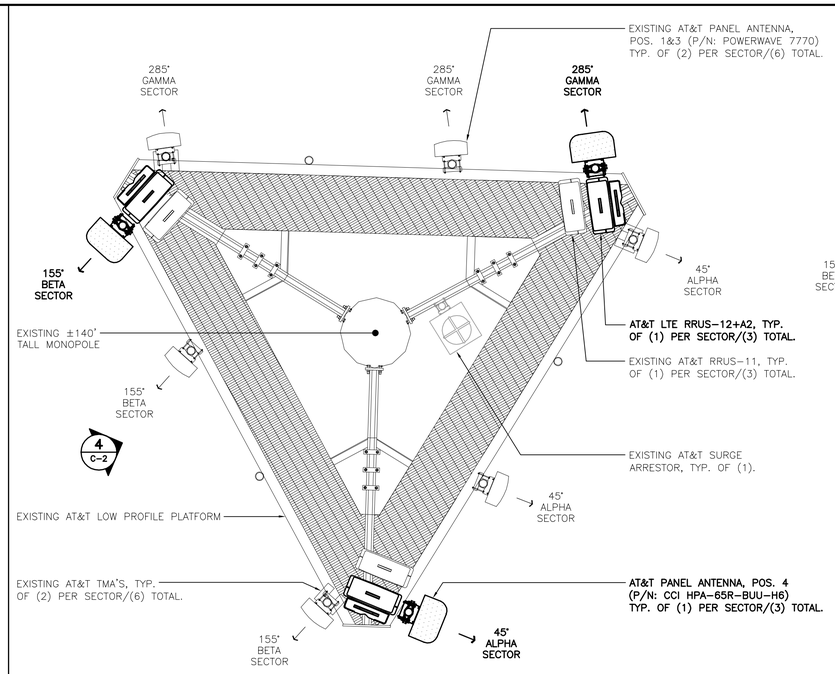
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

6 C-2 ERICSSON RRUS 12 DETAIL
SCALE: 1" = 1'-0"

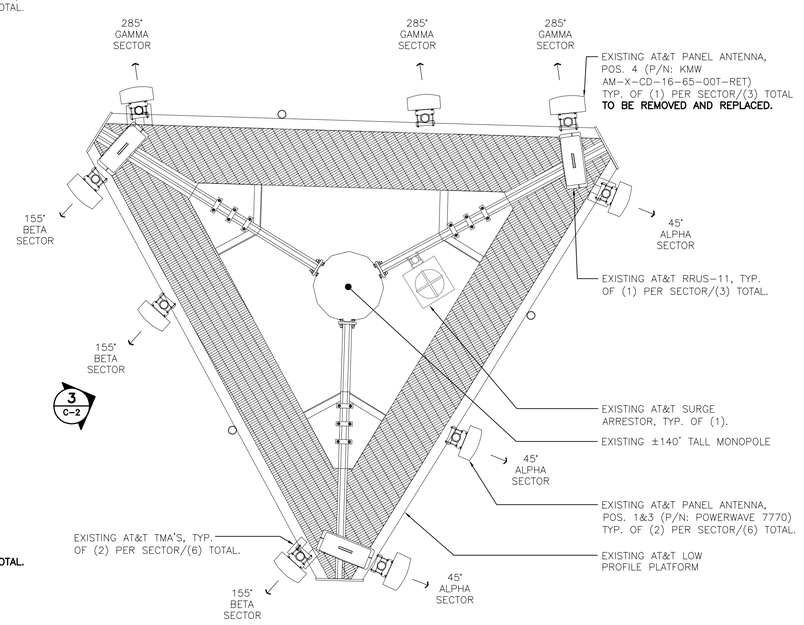


RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS A2	16.42"L x 15.19"W x 3.35"D	22.05 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

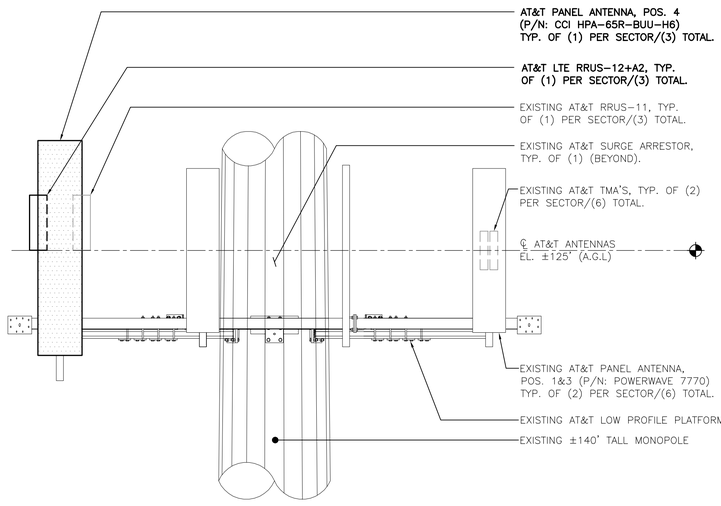
7 C-2 ERICSSON RRUS A2 DETAIL
SCALE: 1" = 1'-0"



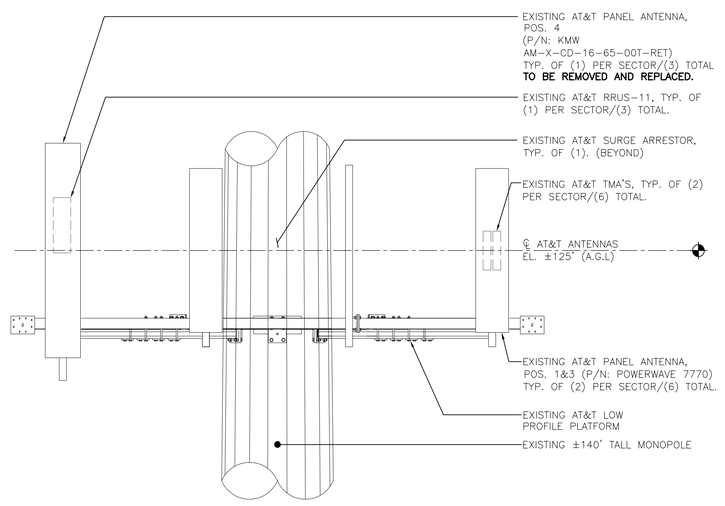
2 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



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



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



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

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LTE 2C EQUIPMENT DETAILS

C-2

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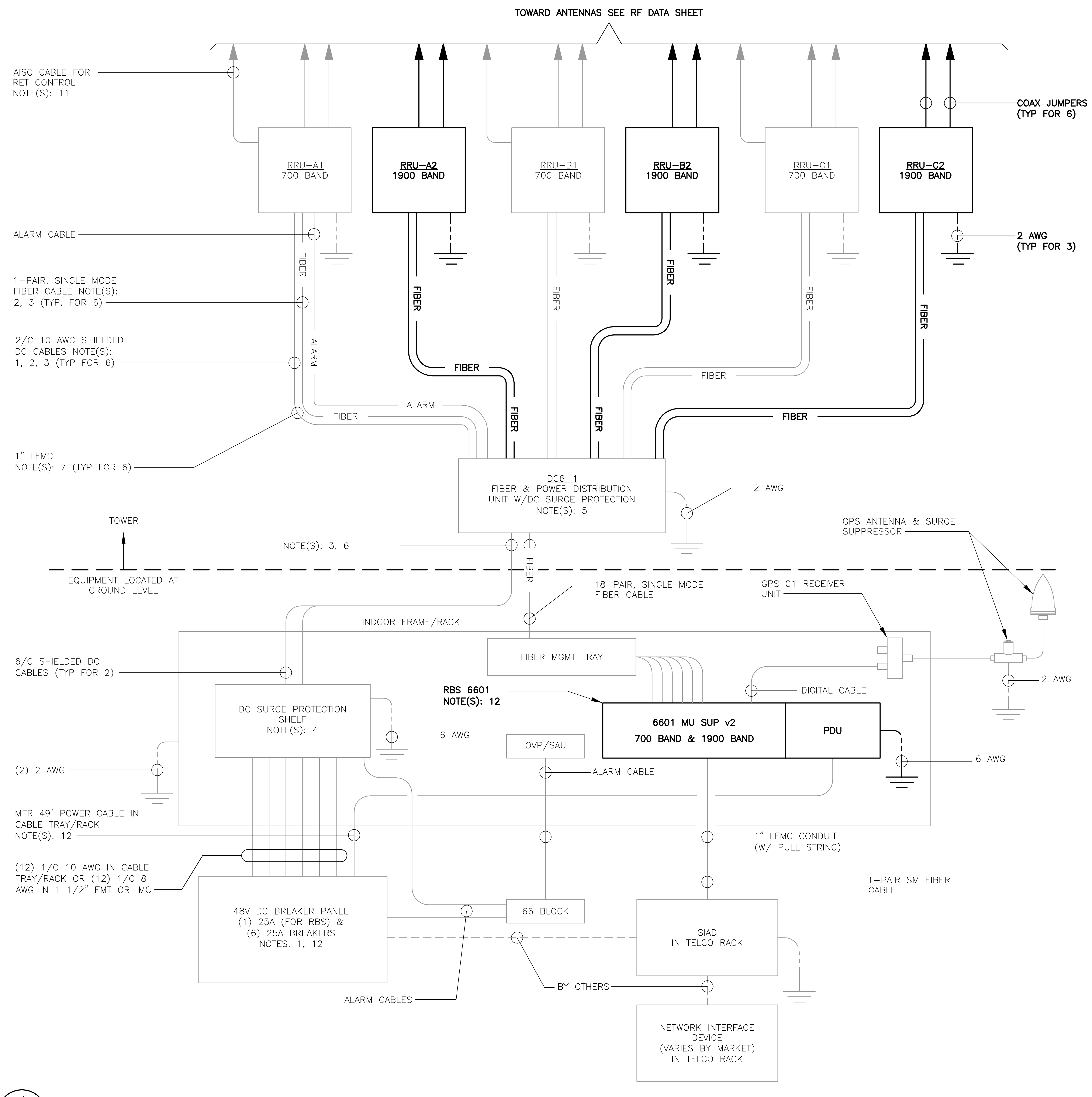

1 / E-1 **LTE SCHEMATIC DIAGRAM**

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	06/27/16	KAW/JR	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

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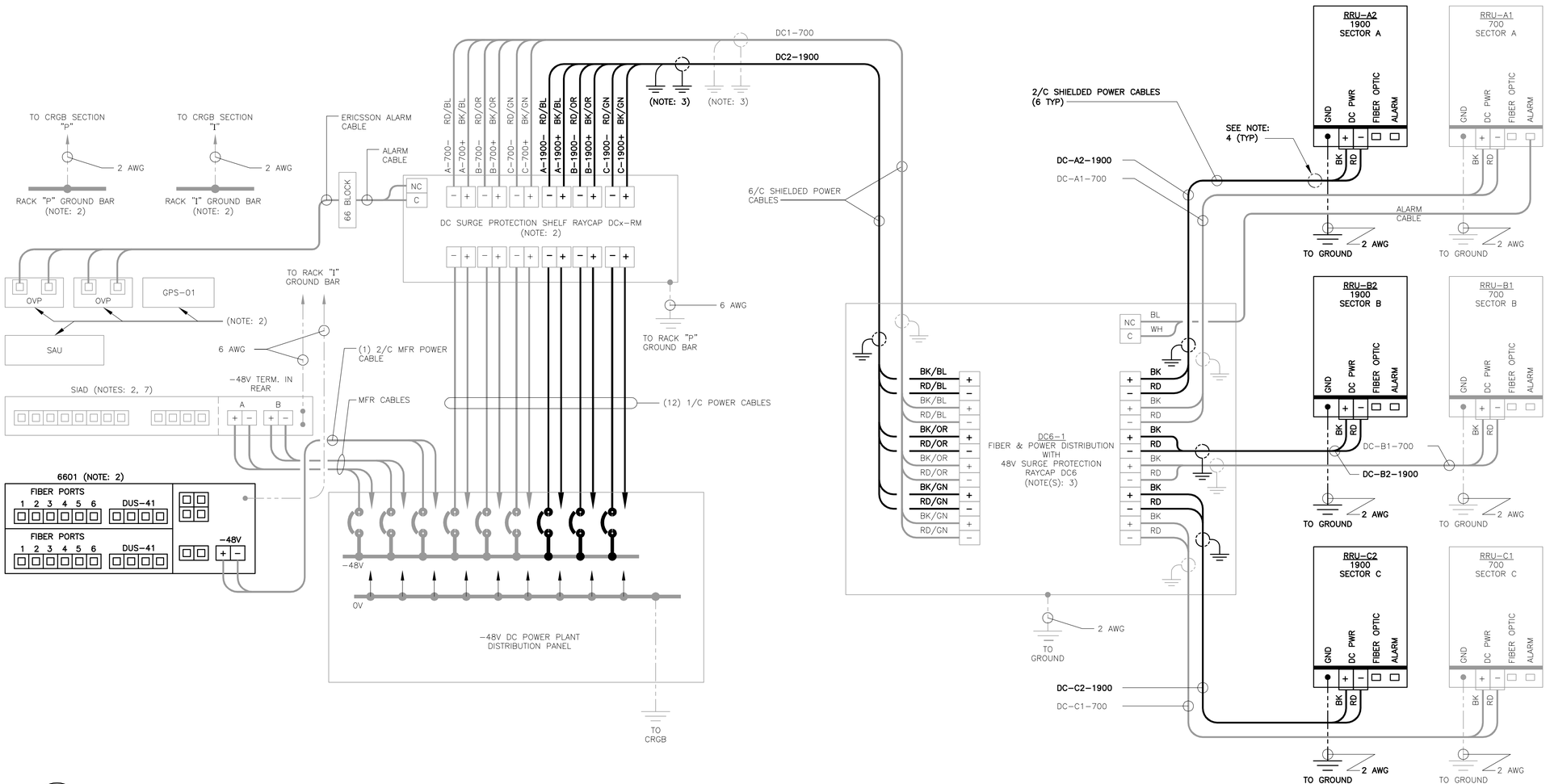
MILFORD
CT5098 - LTE 2C
111 SCHOOLHOUSE RD.
MILFORD, CT 06460

DATE: 06/21/16
SCALE: AS NOTED
JOB NO. 16071.14

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
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MILFORD

CT5098 - LTE 2C

111 SCHOOLHOUSE RD.
MILFORD, CT 06460

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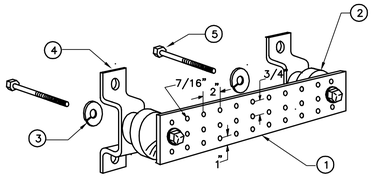
SCALE: AS NOTED
JOB NO. 16071.14

LTE WIRING DIAGRAM

E-2

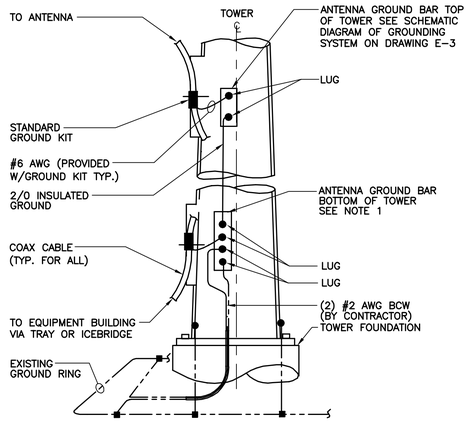
Sheet No. 6 of 7



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.

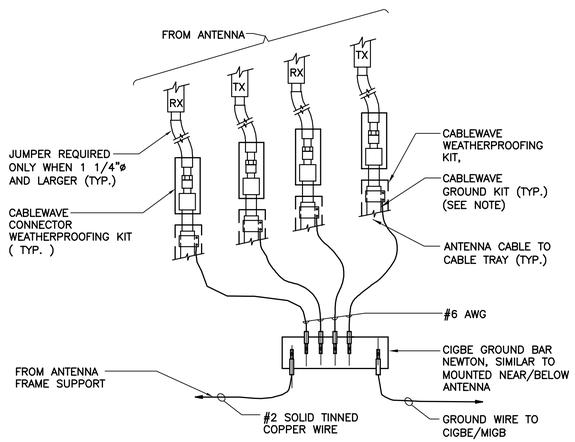
3 E-3 **GROUND BAR DETAIL**
NOT TO SCALE



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.

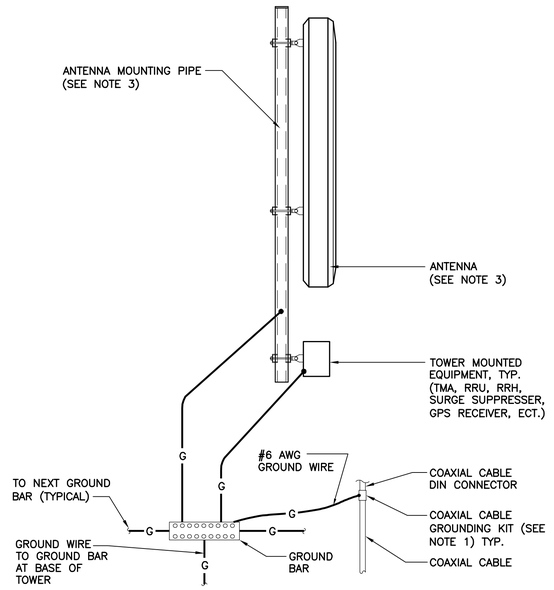
2 E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



NOTE:

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

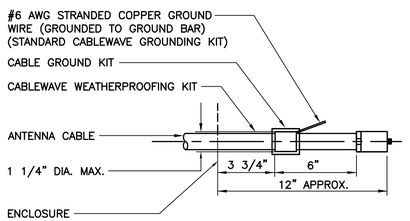
5 E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



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
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MILFORD, CT 06460

DATE:	06/21/16
SCALE:	AS NOTED
JOB NO.	16071.14

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 7 of 7

PJF PAUL J. FORD & COMPANY

Date: **June 15, 2016**

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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

Subject: Structural Analysis Report

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10071132
	Carrier Site Name:	CTL05098
Crown Castle Designation:	**Crown Castle BU Number:**	876342
	Crown Castle Site Name:	BIC DRIVE (SSUSA)
	Crown Castle JDE Job Number:	382555
	Crown Castle Work Order Number:	1251736
	Crown Castle Application Number:	345673 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-1994.001.7805

Site Data: **111 School House Road, a/k/a Bic Drive, MILFORD, New Haven County, CT**
Latitude *41° 12' 46.06"*, Longitude *-73° 5' 7.1"*
140 Foot - Monopole Tower

Dear Charles Trask,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 913725, in accordance with application 345673, 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:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

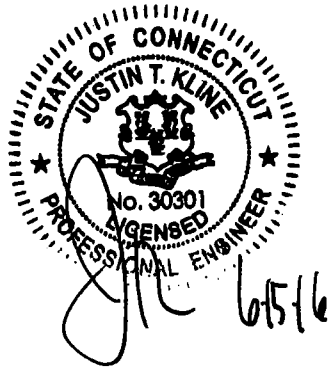
This analysis has been performed in accordance with 2005 CT State Building Code based upon a 3-second gust wind speed of 110 mph converted to a fastest mile wind speed of 90 mph per section 1609.3.1 as required for use in the TIA-222-F Standard per Exception #5 of Section 1609.1.1.

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

Structural analysis prepared by:

Respectfully submitted by:

Jared Smith, EI
Structural Designer



6/15/16

Date: **June 15, 2016**

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10071132
	Carrier Site Name:	CTL05098
Crown Castle Designation:	**Crown Castle BU Number:**	876342
	Crown Castle Site Name:	BIC DRIVE (SSUSA)
	Crown Castle JDE Job Number:	382555
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Structural analysis prepared by:

Respectfully submitted by:

Jared Smith, EI
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by SUMMIT in December of 1993. The tower was originally designed for a wind speed of 150 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with 2005 CT State Building Code based upon a 3-second gust wind speed of 110 mph converted to a fastest mile wind speed of 90 mph per section 1609.3.1 as required for use in the TIA-222-F Standard per Exception #5 of Section 1609.1.1.

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
121.0	123.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	-	-	-
		3	ericsson	RRUS 11			
		3	ericsson	RRUS12/RRUS A2			
		3	powerwave technologies	1001940			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
140.0	140.0	3	alcatel lucent	TD-RRH8x20-25	3 1 1	1-1/4 1-5/8 1/2	1
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 1201-1]			
137.0	137.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		3	alcatel lucent	TME-1900MHz RRH (65 MHz)			
		3	alcatel lucent	TME-800MHZ RRH			
		1	tower mounts	Side Arm Mount [SO 101-3]			
121.0	123.0	6	powerwave technologies	7770.00 w/ Mount Pipe	12 1 2	1-5/8 3/8 7/16	1
		1	raycap	DC6-48-60-18-8F			
	121.0	6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21901			
		1	tower mounts	Platform Mount [LP 1201-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
115.0	116.0	3	andrew	ETW200VS12UB	11 6	1-1/4 1-5/8	1
		6	ems wireless	RR90-17-02DP w/ Mount Pipe			
		6	remec	S20070A1			
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
	115.0	1	tower mounts	Platform Mount [LP 1201-1]			
104.0	107.0	1	trimble	ACUTIME 2000	-	-	1
	104.0	3	alcatel lucent	RRH2X60-PCS	1 2	1/2 1-5/8	2
		9	commscope	SBNHH-1D65B w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	alcatel lucent	RRH2x60-700			
		3	alcatel lucent	RRH4X45-AWS4 B66			
		3	andrew	LNX-6514DS-VTM w/ Mount Pipe	6	1-5/8	1
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 1201-1]			
95.0	95.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
80.0	82.0	1	kathrein	OG-860/1920/GPS-A	1	1/2	1
	80.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 08-12040E G1, 12/05/08	1531894	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit, 5403, 9/29/99	1631615	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit, 5403, 10/29/99	1630877	CCISITES
4-POST-MODIFICATION INSPECTION	PJF, 41709-0132, 12/04/2009	2547672	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25566, 4/21/2016	6234048	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The monopole was modified in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	140 - 104	Pole	TP23.3091x16x0.25	1	-10.18	965.01	96.9	Pass
L2	104 - 98.5	Pole	TP24.4257x23.3091x0.4484	2	-13.94	1322.20	92.3	Pass
L3	98.5 - 97	Pole	TP24.7303x24.4257x0.7154	3	-14.29	2112.68	62.4	Pass
L4	97 - 88.5	Pole	TP26.456x24.7303x0.4933	4	-15.58	1794.42	85.6	Pass
L5	88.5 - 88	Pole	TP26.0576x24.8095x0.5565	5	-16.78	2043.02	85.5	Pass
L6	88 - 71.75	Pole	TP29.3572x26.0576x0.6716	6	-21.09	2782.32	87.5	Pass
L7	71.75 - 70.5833	Pole	TP29.5941x29.3572x0.7851	7	-21.45	3306.97	75.6	Pass
L8	70.5833 - 47.25	Pole	TP34.332x29.5941x0.7176	8	-27.35	3436.22	92.1	Pass
L9	47.25 - 41.75	Pole	TP34.8235x32.0338x0.7655	9	-29.85	3618.99	94.7	Pass
L10	41.75 - 32.5	Pole	TP36.7016x34.8235x0.8008	10	-35.23	4166.01	92.3	Pass
L11	32.5 - 23.5	Pole	TP38.5288x36.7016x0.8175	11	-38.83	4578.91	89.7	Pass
L12	23.5 - 20.75	Pole	TP39.0872x38.5288x0.9506	12	-40.09	4989.34	84.5	Pass
L13	20.75 - 3	Pole	TP42.6909x39.0872x0.8077	13	-47.67	5053.88	92.1	Pass
L14	3 - 0	Pole	TP43.3x42.6909x0.8586	14	-49.07	5489.96	86.4	Pass
							Summary	
						Pole (L1)	96.9	Pass
						Rating =	96.9	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	98.8	Pass
1	Base Plate	0	76.2	Pass
1	Base Foundation Steel	0	64.5	Pass
1	Base Foundation Soil Interaction	0	94.0	Pass

Structure Rating (max from all components) =	**98.8%**

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in New Haven County, Connecticut.
2) Basic wind speed of 90 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56.00 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) 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	140.0000-104.0000	36.0000	0.00	12	16.0000	23.3090	0.2500	1.0000	A572-65 (65 ksi)
L2	104.0000-98.5000	5.5000	0.00	12	23.3090	24.4257	0.4484	1.7937	Reinf 47.75 ksi (48 ksi)
L3	98.5000-97.0000	1.5000	0.00	12	24.4257	24.7303	0.7154	2.8616	Reinf 47.75 ksi (48 ksi)
L4	97.0000-88.5000	8.5000	3.25	12	24.7303	26.4560	0.4933	1.9733	Reinf 55.82 ksi (56 ksi)
L5	88.5000-88.0000	3.7500	0.00	12	24.8095	26.0576	0.5565	2.2260	Reinf 55.90 ksi (56 ksi)
L6	88.0000-71.7500	16.2500	0.00	12	26.0576	29.3572	0.6716	2.6863	Reinf 56.08 ksi (56 ksi)
L7	71.7500-70.5833	1.1667	0.00	12	29.3572	29.5941	0.7851	3.1406	Reinf 56.77 ksi (57 ksi)
L8	70.5833-47.2500	23.3333	4.25	12	29.5941	34.3320	0.7176	2.8705	Reinf 56.77 ksi (57 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
L9	47.2500-41.7500	9.7500	0.00	12	32.0338	34.8235	0.7655	3.0620	Reinf 56.51 ksi (57 ksi)
L10	41.7500-32.5000	9.2500	0.00	12	34.8235	36.7015	0.8008	3.2030	Reinf 56.27 ksi (56 ksi)
L11	32.5000-23.5000	9.0000	0.00	12	36.7015	38.5288	0.8175	3.2701	Reinf 57.67 ksi (58 ksi)
L12	23.5000-20.7500	2.7500	0.00	12	38.5288	39.0872	0.9506	3.8024	Reinf 53.44 ksi (53 ksi)
L13	20.7500-3.0000	17.7500	0.00	12	39.0872	42.6909	0.8077	3.2308	Reinf 58.01 ksi (58 ksi)
L14	3.0000-0.0000	3.0000		12	42.6909	43.3000	0.8586	3.4344	Reinf 58.50 ksi (59 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	16.5644	12.6788	401.4426	5.6385	8.2880	48.4366	813.4316	6.2401	3.6180	14.472
	24.1313	18.5625	1259.8129	8.2551	12.0741	104.3402	2552.7226	9.1359	5.5768	22.307
L2	24.1313	33.0087	2201.8685	8.1841	12.0741	182.3631	4461.5826	16.2459	5.0451	11.251
	25.2874	34.6211	2540.5461	8.5839	12.6525	200.7937	5147.8352	17.0395	5.3443	11.918
L3	25.2874	54.6180	3919.1955	8.4883	12.6525	309.7562	7941.3527	26.8813	4.6288	6.47
	25.6026	55.3196	4072.1603	8.5973	12.8103	317.8825	8251.3008	27.2266	4.7105	6.584
L4	25.6026	38.5001	2886.7114	8.6768	12.8103	225.3435	5849.2600	18.9486	5.3056	10.755
	27.3893	41.2415	3548.2900	9.2946	13.7042	258.9197	7189.7975	20.2978	5.7681	11.692
L5	26.8046	43.4597	3262.9030	8.6826	12.8513	253.8962	6611.5261	21.3895	5.1575	9.268
	26.9769	45.6963	3793.0256	9.1294	13.4979	281.0095	7685.6983	22.4903	5.4920	9.869
L6	26.9769	54.8970	4515.7042	9.0882	13.4979	334.5497	9150.0409	27.0187	5.1836	7.719
	30.3928	62.0324	6515.2887	10.2695	15.2070	428.4388	13201.7412	30.5304	6.0679	9.035
L7	30.3928	72.2346	7526.8793	10.2288	15.2070	494.9600	15251.4982	35.5516	5.7636	7.341
	30.6381	72.8335	7715.6590	10.3136	15.3298	503.3125	15634.0169	35.8464	5.8271	7.422
L8	30.6381	66.7260	7101.8332	10.3378	15.3298	463.2710	14390.2394	32.8405	6.0080	8.372
	35.5431	77.6740	11202.4154	12.0339	17.7840	629.9162	22699.1307	38.2288	7.2778	10.142
L9	34.4228	77.0745	9618.4402	11.1940	16.5935	579.6510	19489.5676	37.9337	6.5335	8.535
	36.0520	83.9511	12429.4204	12.1928	18.0386	689.0462	25185.3756	41.3182	7.2811	9.511
L10	36.0520	87.7259	12961.4384	12.1802	18.0386	718.5395	26263.3882	43.1760	7.1867	8.975
	37.9962	92.5683	15228.4678	12.8525	19.0114	801.0176	30857.0044	45.5593	7.6900	9.603
L11	37.9962	94.4628	15525.6142	12.8465	19.0114	816.6475	31459.1036	46.4917	7.6450	9.351
	39.8880	99.2730	18020.2033	13.5006	19.9579	902.9095	36513.8174	48.8591	8.1347	9.95
L12	39.8880	115.0244	20732.3363	13.4530	19.9579	1038.8020	42009.3342	56.6115	7.7781	8.182
	40.4660	116.7334	21670.2459	13.6529	20.2471	1070.2866	43909.7932	57.4526	7.9277	8.34
L13	40.4660	99.5558	18620.1826	13.7040	20.2471	919.6449	37729.5381	48.9983	8.3107	10.29
	44.1969	108.9283	24389.7145	14.9942	22.1139	1102.9137	49420.1740	53.6112	9.2766	11.485
L14	44.1969	115.6521	25832.3253	14.9760	22.1139	1168.1492	52343.2945	56.9205	9.1401	10.646
	44.8275	117.3361	26977.2116	15.1940	22.4294	1202.7612	54663.1447	57.7492	9.3034	10.836

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 140.0000-104.0000				1	1	1			
L2 104.0000-98.5000				1	1	1			
L3 98.5000-97.0000				1	1	1			
L4 97.0000-88.5000				1	1	1			
L5 88.5000-88.0000				1	1	1			
L6 88.0000-71.7500				1	1	1			
L7 71.7500-70.5833				1	1	1			
L8 70.5833-47.2500				1	1	1			
L9 47.2500-41.7500				1	1	1			
L10 41.7500-32.5000				1	1	1			
L11 32.5000-23.5000				1	1	1			
L12 23.5000-20.7500				1	1	1			
L13 20.7500-3.0000				1	1	1			
L14 3.0000-0.0000				1	1	1			

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
Aero MP3-08	C	No	CaAa (Out Of Face)	41.7500 - 0.0000	1	No Ice	0.4667	0.00
						1/2" Ice	0.5778	0.00
						1" Ice	0.6889	0.00
						2" Ice	0.9111	0.00
						4" Ice	1.3556	0.00
Aero MP3-06	C	No	CaAa (Out Of Face)	71.7500 - 41.7500	1	No Ice	0.4343	0.00
						1/2" Ice	0.5454	0.00
						1" Ice	0.6566	0.00
						2" Ice	0.8788	0.00
						4" Ice	1.3232	0.00
Aero MP3-05	C	No	CaAa (Out Of Face)	100.7500 - 71.7500	1	No Ice	0.3478	0.00
						1/2" Ice	0.4001	0.00
						1" Ice	0.6566	0.00
						2" Ice	0.8788	0.00
						4" Ice	1.3232	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	105.5000 - 100.7500	1	No Ice	0.1667	0.11
						1/2" Ice	0.2778	0.80
						1" Ice	0.3889	1.84
						2" Ice	0.6111	4.95
						4" Ice	1.0556	15.32
***								
LDF4-50A(1/2")	C	No	Inside Pole	140.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF7-50A(1-5/8")	C	No	Inside Pole	140.0000 - 0.0000	1	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
HB114-1-0813U4-M5J(1-1/4")	C	No	Inside Pole	140.0000 - 0.0000	3	No Ice	0.0000	1.20
						1/2" Ice	0.0000	1.20
						1" Ice	0.0000	1.20
						2" Ice	0.0000	1.20
						4" Ice	0.0000	1.20
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	121.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
FB-L98B-002-75000(3/8")	C	No	Inside Pole	121.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
						2" Ice	0.0000	0.06
						4" Ice	0.0000	0.06
WR-VG122ST-BRDA(7/16")	C	No	Inside Pole	121.0000 - 0.0000	2	No Ice	0.0000	0.14
						1/2" Ice	0.0000	0.14
						1" Ice	0.0000	0.14
						2" Ice	0.0000	0.14
						4" Ice	0.0000	0.14
***								
HJ7-50A(1-5/8")	C	No	CaAa (Out Of Face)	115.0000 - 0.0000	5	No Ice	0.0000	1.04
						1/2" Ice	0.0000	2.55
						1" Ice	0.0000	4.68
						2" Ice	0.0000	10.76
						4" Ice	0.0000	30.26
HJ7-50A(1-5/8")	C	No	CaAa (Out Of Face)	115.0000 - 0.0000	1	No Ice	0.1980	1.04
						1/2" Ice	0.2980	2.55
						1" Ice	0.3980	4.68
						2" Ice	0.5980	10.76
						4" Ice	0.9980	30.26
LDF6-50A(1-1/4")	C	No	Inside Pole	115.0000 - 0.0000	11	No Ice	0.0000	0.66
						1/2" Ice	0.0000	0.66
						1" Ice	0.0000	0.66
						2" Ice	0.0000	0.66
						4" Ice	0.0000	0.66
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	104.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
LDF4-50A(1/2")	C	No	Inside Pole	104.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
HB158-1-08U8-S8J18(1-5/8")	C	No	Inside Pole	104.0000 - 0.0000	2	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
						2" Ice	0.0000	1.30
						4" Ice	0.0000	1.30
***								
CR 50 1873(1-5/8")	C	No	CaAa (Out Of Face)	95.0000 - 0.0000	6	No Ice	0.0000	0.83
						1/2" Ice	0.0000	2.34
						1" Ice	0.0000	4.47
						2" Ice	0.0000	10.55
						4" Ice	0.0000	30.05
***								
LDF4-50A(1/2")	C	No	Inside Pole	80.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.0000-104.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.428	0.49
L2	104.0000-98.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.413	0.20
L3	98.5000-97.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.819	0.05
L4	97.0000-88.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.639	0.34
L5	88.5000-88.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.273	0.02
L6	88.0000-71.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.869	0.67
L7	71.7500-70.5833	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.738	0.05
L8	70.5833-47.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	14.754	0.96
L9	47.2500-41.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.478	0.23
L10	41.7500-32.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.148	0.38
L11	32.5000-23.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.982	0.37
L12	23.5000-20.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.828	0.11
L13	20.7500-3.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.798	0.73
L14	3.0000-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.994	0.12

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.0000-104.0000	A	0.877	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.649	0.69
L2	104.0000-98.5000	A	0.858	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.507	0.30
L3	98.5000-97.0000	A	0.854	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.426	0.08
L4	97.0000-88.5000	A	0.849	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.048	0.61
L5	88.5000-88.0000	A	0.844	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.473	0.04
L6	88.0000-71.7500	A	0.834	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.210	1.24
L7	71.7500-70.5833	A	0.822	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.143	0.09
L8	70.5833-47.2500	A	0.804	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	22.671	1.74
L9	47.2500-41.7500	A	0.777	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.344	0.41
L10	41.7500-32.5000	A	0.761	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.119	0.67
L11	32.5000-23.5000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.832	0.65
L12	23.5000-20.7500	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.699	0.20
L13	20.7500-3.0000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.419	1.28
L14	3.0000-0.0000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.944	0.22

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140.0000-104.0000	-0.0954	0.0551	-0.1630	0.0941
L2	104.0000-98.5000	-0.4681	0.2702	-0.7185	0.4148
L3	98.5000-97.0000	-0.5598	0.3232	-0.8053	0.4649
L4	97.0000-88.5000	-0.5645	0.3259	-0.8144	0.4702
L5	88.5000-88.0000	-0.5662	0.3269	-0.8185	0.4726
L6	88.0000-71.7500	-0.5735	0.3311	-0.8297	0.4790
L7	71.7500-70.5833	-0.6533	0.3772	-0.8748	0.5051
L8	70.5833-47.2500	-0.6638	0.3833	-0.8920	0.5150
L9	47.2500-41.7500	-0.6717	0.3878	-0.9082	0.5243
L10	41.7500-32.5000	-0.7060	0.4076	-0.9325	0.5384
L11	32.5000-23.5000	-0.7124	0.4113	-0.9422	0.5440
L12	23.5000-20.7500	-0.7162	0.4135	-0.9498	0.5484
L13	20.7500-3.0000	-0.7225	0.4171	-0.9623	0.5556
L14	3.0000-0.0000	-0.7283	0.4205	-0.9740	0.5624

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 K
Platform Mount [LP 1201-1]	C	None		0.00	140.0000	No Ice 1/2"	23.1000 26.8000	23.1000 26.8000	2.10 2.50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						Ice	30.5000	30.5000	2.90
						1" Ice	37.9000	37.9000	3.70
						2" Ice	52.7000	52.7000	5.30
						4" Ice			
(2) 6' x 2" Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.4250 1.9250 2.2939 3.0596 4.7022	1.4250 1.9250 2.2939 3.0596 4.7022	0.02 0.03 0.05 0.09 0.23
(2) 6' x 2" Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.4250 1.9250 2.2939 3.0596 4.7022	1.4250 1.9250 2.2939 3.0596 4.7022	0.02 0.03 0.05 0.09 0.23
(2) 6' x 2" Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.4250 1.9250 2.2939 3.0596 4.7022	1.4250 1.9250 2.2939 3.0596 4.7022	0.02 0.03 0.05 0.09 0.23
TD-RRH8x20-25	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.7198 5.0138 5.3165 5.9478 7.3141	1.7027 1.9196 2.1453 2.6224 3.6805	0.07 0.10 0.13 0.20 0.40
(3) ACU-A20-N	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0778 0.1210 0.1728 0.3025 0.6654	0.1361 0.1890 0.2506 0.3997 0.8015	0.00 0.00 0.00 0.01 0.04
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.9458 8.1266 9.0212 10.8440 14.8507	0.08 0.15 0.23 0.41 0.91
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.1342 7.6618 8.1830 9.2563 11.5262	4.9591 5.7544 6.4723 8.0099 11.4120	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.7198 5.0138 5.3165 5.9478 7.3141	1.7027 1.9196 2.1453 2.6224 3.6805	0.07 0.10 0.13 0.20 0.40
(3) ACU-A20-N	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0778 0.1210 0.1728 0.3025 0.6654	0.1361 0.1890 0.2506 0.3997 0.8015	0.00 0.00 0.00 0.01 0.04
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.9458 8.1266 9.0212 10.8440 14.8507	0.08 0.15 0.23 0.41 0.91
APXVTM14-C-120 w/	B	From Leg	4.0000	0.00	140.0000	No Ice	7.1342	4.9591	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	7.6618 8.1830 9.2563 11.5262	5.7544 6.4723 8.0099 11.4120	0.13 0.19 0.34 0.75
TD-RRH8x20-25	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.7198 5.0138 5.3165 5.9478 7.3141	1.7027 1.9196 2.1453 2.6224 3.6805	0.07 0.10 0.13 0.20 0.40
(3) ACU-A20-N	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.0778 0.1210 0.1728 0.3025 0.6654	0.1361 0.1890 0.2506 0.3997 0.8015	0.00 0.00 0.00 0.01 0.04
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.9458 8.1266 9.0212 10.8440 14.8507	0.08 0.15 0.23 0.41 0.91
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	140.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.1342 7.6618 8.1830 9.2563 11.5262	4.9591 5.7544 6.4723 8.0099 11.4120	0.08 0.13 0.19 0.34 0.75
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800MHz 2X50W RRH W/FILTER	A	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4014 2.6131 2.8335 3.3001 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
TME-800MHZ RRH	A	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4899 2.7061 2.9310 3.4068 4.4620	2.0685 2.2705 2.4812 2.9284 3.9265	0.05 0.07 0.10 0.16 0.32
800MHz 2X50W RRH W/FILTER	B	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4014 2.6131 2.8335 3.3001 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
TME-800MHZ RRH	B	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4899 2.7061 2.9310 3.4068 4.4620	2.0685 2.2705 2.4812 2.9284 3.9265	0.05 0.07 0.10 0.16 0.32
800MHz 2X50W RRH W/FILTER	C	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4014 2.6131 2.8335 3.3001 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
TME-800MHZ RRH	C	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice Ice 1" Ice 2" Ice	2.4899 2.7061 2.9310 3.4068 4.4620	2.0685 2.2705 2.4812 2.9284 3.9265	0.05 0.07 0.10 0.16 0.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice			
TME-1900MHz RRH (65 MHz)	A	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.6979 2.9362 3.1832 3.7030 4.8463	2.7708 3.0111 3.2600 3.7837 4.9348	0.06 0.08 0.11 0.18 0.35
TME-1900MHz RRH (65 MHz)	B	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.6979 2.9362 3.1832 3.7030 4.8463	2.7708 3.0111 3.2600 3.7837 4.9348	0.06 0.08 0.11 0.18 0.35
TME-1900MHz RRH (65 MHz)	C	From Leg	4.0000 0.00 0.00	0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.6979 2.9362 3.1832 3.7030 4.8463	2.7708 3.0111 3.2600 3.7837 4.9348	0.06 0.08 0.11 0.18 0.35
Side Arm Mount [SO 101-3]	C	None		0.00	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.5000 8.9000 10.3000 13.1000 18.7000	7.5000 8.9000 10.3000 13.1000 18.7000	0.25 0.33 0.41 0.58 0.90
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(2) 7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
(2) LGP21401	A	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7883	0.3640 0.4785 0.6017 0.8739 1.5220	0.01 0.02 0.03 0.05 0.14
(2) LGP21901	A	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.2695 0.3432 0.4255 0.6160 1.1009	0.1838 0.2483 0.3216 0.4940 0.9425	0.01 0.01 0.01 0.02 0.07
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.5975 11.2684 11.9061 13.2089 15.9341	8.1125 9.3041 10.2095 12.1748 16.3544	0.08 0.16 0.25 0.46 1.02
RRUS 11	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2560 3.4982 3.7490 4.2766 5.4355	1.3790 1.5577 1.7450 2.1455 3.0504	0.05 0.07 0.10 0.15 0.31
RRUS12/RRUS A2	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.6674 3.9238 4.1888 4.7448 5.9604	2.1410 2.3474 2.5625 3.0187 4.0347	0.07 0.10 0.13 0.20 0.40
1001940	A	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice	0.2050 0.2703 0.3442	0.0942 0.1465 0.2074	0.00 0.00 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	0.5179	0.3552	0.01
						2" Ice	0.9690	0.7545	0.05
						4" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
(2) LGP21401	B	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7883	0.3640 0.4785 0.6017 0.8739 1.5220	0.01 0.02 0.03 0.05 0.14
(2) LGP21901	B	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.2695 0.3432 0.4255 0.6160 1.1009	0.1838 0.2483 0.3216 0.4940 0.9425	0.01 0.01 0.01 0.02 0.07
DC6-48-60-18-8F	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.4667 1.6667 1.8778 2.3333 3.3778	1.4667 1.6667 1.8778 2.3333 3.3778	0.02 0.04 0.06 0.11 0.24
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.5975 11.2684 11.9061 13.2089 15.9341	8.1125 9.3041 10.2095 12.1748 16.3544	0.08 0.16 0.25 0.46 1.02
RRUS 11	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2560 3.4982 3.7490 4.2766 5.4355	1.3790 1.5577 1.7450 2.1455 3.0504	0.05 0.07 0.10 0.15 0.31
RRUS12/RRUS A2	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.6674 3.9238 4.1888 4.7448 5.9604	2.1410 2.3474 2.5625 3.0187 4.0347	0.07 0.10 0.13 0.20 0.40
1001940	B	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.2050 0.2703 0.3442 0.5179 0.9690	0.0942 0.1465 0.2074 0.3552 0.7545	0.00 0.00 0.01 0.01 0.05
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
(2) LGP21401	C	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.2880 1.4453 1.6112 1.9690 2.7883	0.3640 0.4785 0.6017 0.8739 1.5220	0.01 0.02 0.03 0.05 0.14
(2) LGP21901	C	From Leg	4.0000 0.00	0.00	121.0000	No Ice 1/2"	0.2695 0.3432	0.1838 0.2483	0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	0.4255	0.3216	0.01
						1" Ice	0.6160	0.4940	0.02
						2" Ice	1.1009	0.9425	0.07
						4" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.5975 11.2684 11.9061 13.2089 15.9341	8.1125 9.3041 10.2095 12.1748 16.3544	0.08 0.16 0.25 0.46 1.02
RRUS 11	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2560 3.4982 3.7490 4.2766 5.4355	1.3790 1.5577 1.7450 2.1455 3.0504	0.05 0.07 0.10 0.15 0.31
RRUS12/RRUS A2	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.6674 3.9238 4.1888 4.7448 5.9604	2.1410 2.3474 2.5625 3.0187 4.0347	0.07 0.10 0.13 0.20 0.40
1001940	C	From Leg	4.0000 0.00 2.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.2050 0.2703 0.3442 0.5179 0.9690	0.0942 0.1465 0.2074 0.3552 0.7545	0.00 0.00 0.01 0.01 0.05
Platform Mount [LP 1201-1]	C	None		0.00	121.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.1000 26.8000 30.5000 37.9000 52.7000	23.1000 26.8000 30.5000 37.9000 52.7000	2.10 2.50 2.90 3.70 5.30
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ETW200VS12UB	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4716 0.5667 0.6704 0.9037 1.4741	0.1899 0.2551 0.3290 0.5027 0.9538	0.01 0.01 0.02 0.03 0.09
(2) RR90-17-02DP w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.5931 5.0883 5.5778 6.5876 8.7306	3.3194 4.0888 4.7844 6.2255 9.3076	0.03 0.07 0.12 0.22 0.56
(2) S20070A1	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.7653 0.8909 1.0250 1.3193 2.0115	0.3588 0.4622 0.5744 0.8246 1.4286	0.01 0.01 0.02 0.04 0.10
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.4657 7.9944 8.5176 9.5949 11.8728	3.4938 4.2631 4.9598 6.4031 9.4897	0.06 0.11 0.16 0.30 0.68
ETW200VS12UB	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4716 0.5667 0.6704 0.9037 1.4741	0.1899 0.2551 0.3290 0.5027 0.9538	0.01 0.01 0.02 0.03 0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) RR90-17-02DP w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.5931 5.0883 5.5778 6.5876 8.7306	3.3194 4.0888 4.7844 6.2255 9.3076	0.03 0.07 0.12 0.22 0.56
(2) S20070A1	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.7653 0.8909 1.0250 1.3193 2.0115	0.3588 0.4622 0.5744 0.8246 1.4286	0.01 0.01 0.02 0.04 0.10
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.4657 7.9944 8.5176 9.5949 11.8728	3.4938 4.2631 4.9598 6.4031 9.4897	0.06 0.11 0.16 0.30 0.68
ETW200VS12UB	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.4716 0.5667 0.6704 0.9037 1.4741	0.1899 0.2551 0.3290 0.5027 0.9538	0.01 0.01 0.02 0.03 0.09
(2) RR90-17-02DP w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.5931 5.0883 5.5778 6.5876 8.7306	3.3194 4.0888 4.7844 6.2255 9.3076	0.03 0.07 0.12 0.22 0.56
(2) S20070A1	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.7653 0.8909 1.0250 1.3193 2.0115	0.3588 0.4622 0.5744 0.8246 1.4286	0.01 0.01 0.02 0.04 0.10
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.4657 7.9944 8.5176 9.5949 11.8728	3.4938 4.2631 4.9598 6.4031 9.4897	0.06 0.11 0.16 0.30 0.68
Platform Mount [LP 1201-1]	C	None		0.00	115.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.1000 26.8000 30.5000 37.9000 52.7000	23.1000 26.8000 30.5000 37.9000 52.7000	2.10 2.50 2.90 3.70 5.30
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LNX-6514DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.6346 9.2852 9.9050 11.1720 13.8246	7.0679 8.2532 9.1523 10.9842 15.0105	0.06 0.13 0.21 0.39 0.90
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.6000 5.9154 6.2395 6.9136 8.3654	2.3333 2.5580 2.7914 3.2839 4.3728	0.04 0.08 0.12 0.21 0.45
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice 1/2" Ice 1" Ice	0.3665 0.4506 0.5433 0.7546	0.0846 0.1362 0.1965 0.3430	0.00 0.01 0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	1.2809	0.7396	0.06
						4" Ice			
RRH2x60-700	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.9569	1.8157	0.06
						1/2" Ice	4.2724	2.0751	0.08
						1" Ice	4.5964	2.3603	0.11
						2" Ice	5.2705	2.9566	0.17
						4" Ice	6.7224	4.2529	0.35
RRH2X60-PCS	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.5667	2.0106	0.06
						1/2" Ice	2.7914	2.2184	0.08
						1" Ice	3.0247	2.4349	0.10
						2" Ice	3.5173	2.8938	0.16
						4" Ice	4.6062	3.9152	0.31
RRH4X45-AWS4 B66	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.1033	1.7586	0.06
						1/2" Ice	3.3578	1.9794	0.08
						1" Ice	3.6210	2.2088	0.11
						2" Ice	4.1732	2.6936	0.17
						4" Ice	5.3814	3.7670	0.33
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.6393	7.0730	0.07
						1/2" Ice	9.2963	8.2637	0.14
						1" Ice	9.9210	9.1753	0.21
						2" Ice	11.1952	11.0130	0.39
						4" Ice	13.8631	15.0524	0.90
LNX-6514DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.6346	7.0679	0.06
						1/2" Ice	9.2852	8.2532	0.13
						1" Ice	9.9050	9.1523	0.21
						2" Ice	11.1720	10.9842	0.39
						4" Ice	13.8246	15.0105	0.90
(2) FD9R6004/2C-3L	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2809	0.7396	0.06
ACUTIME 2000	B	From Leg	4.0000 0.00 3.00	0.00	104.0000	No Ice	0.2975	0.2975	0.00
						1/2" Ice	0.3739	0.3739	0.00
						1" Ice	0.4589	0.4589	0.01
						2" Ice	0.6549	0.6549	0.02
						4" Ice	1.1506	1.1506	0.08
RRH2x60-700	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.9569	1.8157	0.06
						1/2" Ice	4.2724	2.0751	0.08
						1" Ice	4.5964	2.3603	0.11
						2" Ice	5.2705	2.9566	0.17
						4" Ice	6.7224	4.2529	0.35
RRH2X60-PCS	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.5667	2.0106	0.06
						1/2" Ice	2.7914	2.2184	0.08
						1" Ice	3.0247	2.4349	0.10
						2" Ice	3.5173	2.8938	0.16
						4" Ice	4.6062	3.9152	0.31
RRH4X45-AWS4 B66	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.1033	1.7586	0.06
						1/2" Ice	3.3578	1.9794	0.08
						1" Ice	3.6210	2.2088	0.11
						2" Ice	4.1732	2.6936	0.17
						4" Ice	5.3814	3.7670	0.33
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.6393	7.0730	0.07
						1/2" Ice	9.2963	8.2637	0.14
						1" Ice	9.9210	9.1753	0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	11.1952	11.0130	0.39
						2" Ice	13.8631	15.0524	0.90
						4" Ice			
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.6346	7.0679	0.06
						1/2" Ice	9.2852	8.2532	0.13
						1" Ice	9.9050	9.1523	0.21
						2" Ice	11.1720	10.9842	0.39
						4" Ice	13.8246	15.0105	0.90
(2) FD9R6004/2C-3L	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2809	0.7396	0.06
RRH2x60-700	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.9569	1.8157	0.06
						1/2" Ice	4.2724	2.0751	0.08
						1" Ice	4.5964	2.3603	0.11
						2" Ice	5.2705	2.9566	0.17
						4" Ice	6.7224	4.2529	0.35
RRH2X60-PCS	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	2.5667	2.0106	0.06
						1/2" Ice	2.7914	2.2184	0.08
						1" Ice	3.0247	2.4349	0.10
						2" Ice	3.5173	2.8938	0.16
						4" Ice	4.6062	3.9152	0.31
RRH4X45-AWS4 B66	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	3.1033	1.7586	0.06
						1/2" Ice	3.3578	1.9794	0.08
						1" Ice	3.6210	2.2088	0.11
						2" Ice	4.1732	2.6936	0.17
						4" Ice	5.3814	3.7670	0.33
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	8.6393	7.0730	0.07
						1/2" Ice	9.2963	8.2637	0.14
						1" Ice	9.9210	9.1753	0.21
						2" Ice	11.1952	11.0130	0.39
						4" Ice	13.8631	15.0524	0.90
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 0.00	0.00	104.0000	No Ice	5.6000	2.3333	0.04
						1/2" Ice	5.9154	2.5580	0.08
						1" Ice	6.2395	2.7914	0.12
						2" Ice	6.9136	3.2839	0.21
						4" Ice	8.3654	4.3728	0.45
Platform Mount [LP 1201-1]	C	None		0.00	104.0000	No Ice	23.1000	23.1000	2.10
						1/2" Ice	26.8000	26.8000	2.50
						1" Ice	30.5000	30.5000	2.90
						2" Ice	37.9000	37.9000	3.70
						4" Ice	52.7000	52.7000	5.30
***									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	95.0000	No Ice	5.4042	4.7000	0.05
						1/2" Ice	5.9597	5.8600	0.10
						1" Ice	6.4808	6.7338	0.15
						2" Ice	7.5467	8.5150	0.28
						4" Ice	9.9193	12.2774	0.68
APXV18-206517S-C w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	95.0000	No Ice	5.4042	4.7000	0.05
						1/2" Ice	5.9597	5.8600	0.10
						1" Ice	6.4808	6.7338	0.15
						2" Ice	7.5467	8.5150	0.28
						4" Ice	9.9193	12.2774	0.68
APXV18-206517S-C w/	C	From Leg	4.0000	0.00	95.0000	No Ice	5.4042	4.7000	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00 0.00			1/2" Ice 1" Ice 2" Ice 4" Ice	5.9597 6.4808 7.5467 9.9193	5.8600 6.7338 8.5150 12.2774	0.10 0.15 0.28 0.68
Pipe Mount [PM 601-3]	C	None		0.00	95.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.3900 5.4800 6.5700 8.7500 13.1100	4.3900 5.4800 6.5700 8.7500 13.1100	0.20 0.24 0.28 0.36 0.53
***									
OG-860/1920/GPS-A	A	From Leg	4.0000 0.00 2.00	0.00	80.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3286 0.4340 0.5481 0.8022 1.4140	0.4044 0.5138 0.6317 0.8936 1.5210	0.00 0.01 0.01 0.02 0.08
Side Arm Mount [SO 701-1]	A	From Leg	2.0000 0.00 0.00	0.00	80.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.8500 1.1400 1.4300 2.0100 3.1700	1.6700 2.3400 3.0100 4.3500 7.0300	0.07 0.08 0.09 0.12 0.18

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 140.0000-104.0000	121.0724	1.45	30.03	58.964	A	0.000	58.964	58.964	100.00	0.000	0.000
					B	0.000	58.964		100.00	0.000	0.000
					C	0.000	58.964		100.00	0.000	2.428
L2 104.0000-98.5000	101.2286	1.377	28.56	10.939	A	0.000	10.939	10.939	100.00	0.000	0.000
					B	0.000	10.939		100.00	0.000	0.000
					C	0.000	10.939		100.00	0.000	2.413
L3 98.5000-97.0000	97.7485	1.364	28.28	3.072	A	0.000	3.072	3.072	100.00	0.000	0.000
					B	0.000	3.072		100.00	0.000	0.000
					C	0.000	3.072		100.00	0.000	0.819
L4 97.0000-88.5000	92.7022	1.343	27.85	18.128	A	0.000	18.128	18.128	100.00	0.000	0.000
					B	0.000	18.128		100.00	0.000	0.000
					C	0.000	18.128		100.00	0.000	4.639
L5 88.5000-88.0000	88.2497	1.325	27.47	1.082	A	0.000	1.082	1.082	100.00	0.000	0.000
					B	0.000	1.082		100.00	0.000	0.000
					C	0.000	1.082		100.00	0.000	0.273
L6 88.0000-71.7500	79.7137	1.287	26.68	37.520	A	0.000	37.520	37.520	100.00	0.000	0.000
					B	0.000	37.520		100.00	0.000	0.000
					C	0.000	37.520		100.00	0.000	8.869
L7 71.7500-70.5833	71.1659	1.246	25.83	2.866	A	0.000	2.866	2.866	100.00	0.000	0.000
					B	0.000	2.866		100.00	0.000	0.000
					C	0.000	2.866		100.00	0.000	0.738
L8 70.5833-47.2500	58.6284	1.178	24.44	62.150	A	0.000	62.150	62.150	100.00	0.000	0.000
					B	0.000	62.150		100.00	0.000	0.000
					C	0.000	62.150		100.00	0.000	14.754
L9 47.2500-41.7500	44.4788	1.089	22.58	15.600	A	0.000	15.600	15.600	100.00	0.000	0.000
					B	0.000	15.600		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	15.600		100.00	0.000	3.478
L10 41.7500-32.5000	37.0845	1.034	21.44	27.567	A	0.000	27.567	27.567	100.00	0.000	0.000
					B	0.000	27.567		100.00	0.000	0.000
					C	0.000	27.567		100.00	0.000	6.148
L11 32.5000-23.5000	27.9636	1	20.74	28.211	A	0.000	28.211	28.211	100.00	0.000	0.000
					B	0.000	28.211		100.00	0.000	0.000
					C	0.000	28.211		100.00	0.000	5.982
L12 23.5000-20.7500	22.1217	1	20.74	8.893	A	0.000	8.893	8.893	100.00	0.000	0.000
					B	0.000	8.893		100.00	0.000	0.000
					C	0.000	8.893		100.00	0.000	1.828
L13 20.7500-3.0000	11.7446	1	20.74	60.482	A	0.000	60.482	60.482	100.00	0.000	0.000
					B	0.000	60.482		100.00	0.000	0.000
					C	0.000	60.482		100.00	0.000	11.798
L14 3.0000-0.0000	1.4965	1	20.74	10.749	A	0.000	10.749	10.749	100.00	0.000	0.000
					B	0.000	10.749		100.00	0.000	0.000
					C	0.000	10.749		100.00	0.000	1.994

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 140.0000-104.0000	121.0724	1.45	5.24	0.8766	64.223	A	0.000	64.223	64.223	100.00	0.000	0.000
						B	0.000	64.223		100.00	0.000	0.000
						C	0.000	64.223		100.00	0.000	4.649
L2 104.0000-98.5000	101.2286	1.377	4.99	0.8580	11.726	A	0.000	11.726	11.726	100.00	0.000	0.000
						B	0.000	11.726		100.00	0.000	0.000
						C	0.000	11.726		100.00	0.000	4.507
L3 98.5000-97.0000	97.7485	1.364	4.94	0.8544	3.286	A	0.000	3.286	3.286	100.00	0.000	0.000
						B	0.000	3.286		100.00	0.000	0.000
						C	0.000	3.286		100.00	0.000	1.426
L4 97.0000-88.5000	92.7022	1.343	4.86	0.8490	19.331	A	0.000	19.331	19.331	100.00	0.000	0.000
						B	0.000	19.331		100.00	0.000	0.000
						C	0.000	19.331		100.00	0.000	8.048
L5 88.5000-88.0000	88.2497	1.325	4.79	0.8440	1.153	A	0.000	1.153	1.153	100.00	0.000	0.000
						B	0.000	1.153		100.00	0.000	0.000
						C	0.000	1.153		100.00	0.000	0.473
L6 88.0000-71.7500	79.7137	1.287	4.66	0.8337	39.778	A	0.000	39.778	39.778	100.00	0.000	0.000
						B	0.000	39.778		100.00	0.000	0.000
						C	0.000	39.778		100.00	0.000	15.210
L7 71.7500-70.5833	71.1659	1.246	4.51	0.8225	3.026	A	0.000	3.026	3.026	100.00	0.000	0.000
						B	0.000	3.026		100.00	0.000	0.000
						C	0.000	3.026		100.00	0.000	1.143
L8 70.5833-47.2500	58.6284	1.178	4.27	0.8035	65.275	A	0.000	65.275	65.275	100.00	0.000	0.000
						B	0.000	65.275		100.00	0.000	0.000
						C	0.000	65.275		100.00	0.000	22.671
L9 47.2500-41.7500	44.4788	1.089	3.94	0.7774	16.337	A	0.000	16.337	16.337	100.00	0.000	0.000
						B	0.000	16.337		100.00	0.000	0.000
						C	0.000	16.337		100.00	0.000	5.344
L10 41.7500-32.5000	37.0845	1.034	3.74	0.7606	28.740	A	0.000	28.740	28.740	100.00	0.000	0.000
						B	0.000	28.740		100.00	0.000	0.000
						C	0.000	28.740		100.00	0.000	9.119
L11 32.5000-23.5000	27.9636	1	3.62	0.7500	29.336	A	0.000	29.336	29.336	100.00	0.000	0.000
						B	0.000	29.336		100.00	0.000	0.000
						C	0.000	29.336		100.00	0.000	8.832
L12 23.5000-20.7500	22.1217	1	3.62	0.7500	9.237	A	0.000	9.237	9.237	100.00	0.000	0.000
						B	0.000	9.237		100.00	0.000	0.000
						C	0.000	9.237		100.00	0.000	2.699
L13 20.7500-3.0000	11.7446	1	3.62	0.7500	62.700	A	0.000	62.700	62.700	100.00	0.000	0.000
						B	0.000	62.700		100.00	0.000	0.000
						C	0.000	62.700		100.00	0.000	17.419
L14 3.0000-	1.4965	1	3.62	0.7500	11.124	A	0.000	11.124	11.124	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
0.0000						B	0.000	11.124		100.00	0.000	0.000
						C	0.000	11.124		100.00	0.000	2.944

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 140.0000-104.0000	121.0724	1.45	9.27	58.964	A	0.000	58.964	58.964	100.00	0.000	0.000
					B	0.000	58.964		100.00	0.000	0.000
					C	0.000	58.964		100.00	0.000	2.428
L2 104.0000-98.5000	101.2286	1.377	8.82	10.939	A	0.000	10.939	10.939	100.00	0.000	0.000
					B	0.000	10.939		100.00	0.000	0.000
					C	0.000	10.939		100.00	0.000	2.413
L3 98.5000-97.0000	97.7485	1.364	8.73	3.072	A	0.000	3.072	3.072	100.00	0.000	0.000
					B	0.000	3.072		100.00	0.000	0.000
					C	0.000	3.072		100.00	0.000	0.819
L4 97.0000-88.5000	92.7022	1.343	8.60	18.128	A	0.000	18.128	18.128	100.00	0.000	0.000
					B	0.000	18.128		100.00	0.000	0.000
					C	0.000	18.128		100.00	0.000	4.639
L5 88.5000-88.0000	88.2497	1.325	8.48	1.082	A	0.000	1.082	1.082	100.00	0.000	0.000
					B	0.000	1.082		100.00	0.000	0.000
					C	0.000	1.082		100.00	0.000	0.273
L6 88.0000-71.7500	79.7137	1.287	8.23	37.520	A	0.000	37.520	37.520	100.00	0.000	0.000
					B	0.000	37.520		100.00	0.000	0.000
					C	0.000	37.520		100.00	0.000	8.869
L7 71.7500-70.5833	71.1659	1.246	7.97	2.866	A	0.000	2.866	2.866	100.00	0.000	0.000
					B	0.000	2.866		100.00	0.000	0.000
					C	0.000	2.866		100.00	0.000	0.738
L8 70.5833-47.2500	58.6284	1.178	7.54	62.150	A	0.000	62.150	62.150	100.00	0.000	0.000
					B	0.000	62.150		100.00	0.000	0.000
					C	0.000	62.150		100.00	0.000	14.754
L9 47.2500-41.7500	44.4788	1.089	6.97	15.600	A	0.000	15.600	15.600	100.00	0.000	0.000
					B	0.000	15.600		100.00	0.000	0.000
					C	0.000	15.600		100.00	0.000	3.478
L10 41.7500-32.5000	37.0845	1.034	6.62	27.567	A	0.000	27.567	27.567	100.00	0.000	0.000
					B	0.000	27.567		100.00	0.000	0.000
					C	0.000	27.567		100.00	0.000	6.148
L11 32.5000-23.5000	27.9636	1	6.40	28.211	A	0.000	28.211	28.211	100.00	0.000	0.000
					B	0.000	28.211		100.00	0.000	0.000
					C	0.000	28.211		100.00	0.000	5.982
L12 23.5000-20.7500	22.1217	1	6.40	8.893	A	0.000	8.893	8.893	100.00	0.000	0.000
					B	0.000	8.893		100.00	0.000	0.000
					C	0.000	8.893		100.00	0.000	1.828
L13 20.7500-3.0000	11.7446	1	6.40	60.482	A	0.000	60.482	60.482	100.00	0.000	0.000
					B	0.000	60.482		100.00	0.000	0.000
					C	0.000	60.482		100.00	0.000	11.798
L14 3.0000-0.0000	1.4965	1	6.40	10.749	A	0.000	10.749	10.749	100.00	0.000	0.000
					B	0.000	10.749		100.00	0.000	0.000
					C	0.000	10.749		100.00	0.000	1.994

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice

Comb. No.	Description
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
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 K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	140 - 104	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-18.97	0.01	-0.25
			Max. Mx	5	-10.19	-432.44	-0.03
			Max. My	8	-10.18	-0.00	-432.60
			Max. Vy	11	-19.15	432.39	-0.03
			Max. Vx	2	-19.16	-0.00	432.45
			Max. Torque	9			0.35
L2	104 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.28	0.09	0.74
			Max. Mx	11	-13.99	580.35	0.26
			Max. My	2	-13.94	0.03	582.54
			Max. Vy	11	-27.23	580.35	0.26
			Max. Vx	2	-27.55	0.03	582.54
			Max. Torque	12			-0.97
L3	98.5 - 97	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.69	0.12	0.72
			Max. Mx	11	-14.34	621.33	0.26
			Max. My	2	-14.29	0.04	623.99
			Max. Vy	11	-27.43	621.33	0.26
			Max. Vx	2	-27.75	0.04	623.99
			Max. Torque	12			-0.95
L4	97 - 88.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.58	0.33	0.61
			Max. Mx	11	-15.62	770.15	0.24
			Max. My	2	-15.58	0.09	774.43
			Max. Vy	11	-29.04	770.15	0.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-29.36	0.09	774.43
			Max. Torque	12			-0.94
L5	88.5 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.07	0.47	0.52
			Max. Mx	11	-16.83	880.08	0.23
			Max. My	2	-16.78	0.12	885.52
			Max. Vy	11	-29.58	880.08	0.23
			Max. Vx	2	-29.91	0.12	885.52
			Max. Torque	12			-0.89
L6	88 - 71.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.12	1.23	0.40
			Max. Mx	11	-21.12	1378.52	0.33
			Max. My	2	-21.09	0.30	1388.83
			Max. Vy	11	-31.78	1378.52	0.33
			Max. Vx	2	-32.06	0.30	1388.83
			Max. Torque	11			-1.19
L7	71.75 - 70.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.53	1.28	0.37
			Max. Mx	11	-21.48	1415.68	0.33
			Max. My	2	-21.45	0.32	1426.31
			Max. Vy	11	-31.94	1415.68	0.33
			Max. Vx	2	-32.22	0.32	1426.31
			Max. Torque	11			-1.16
L8	70.5833 - 47.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-42.21	2.27	-0.20
			Max. Mx	11	-27.37	2048.22	0.20
			Max. My	2	-27.35	0.57	2063.87
			Max. Vy	11	-34.38	2048.22	0.20
			Max. Vx	2	-34.66	0.57	2063.87
			Max. Torque	11			-1.15
L9	47.25 - 41.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-47.19	2.80	-0.50
			Max. Mx	11	-31.76	2390.25	0.13
			Max. My	2	-31.74	0.70	2408.45
			Max. Vy	11	-35.69	2390.25	0.13
			Max. Vx	8	35.98	0.70	-2408.18
			Max. Torque	11			-1.04
L10	41.75 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.02	3.31	-0.79
			Max. Mx	11	-35.24	2725.31	0.05
			Max. My	2	-35.23	0.83	2745.91
			Max. Vy	11	-36.76	2725.31	0.05
			Max. Vx	8	37.05	0.83	-2745.80
			Max. Torque	11			-1.02
L11	32.5 - 23.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-54.96	3.82	-1.09
			Max. Mx	11	-38.84	3060.72	-0.03
			Max. My	8	-38.83	0.97	-3083.67
			Max. Vy	11	-37.78	3060.72	-0.03
			Max. Vx	8	38.06	0.97	-3083.67
			Max. Torque	11			-0.98
L12	23.5 - 20.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-56.34	3.98	-1.19
			Max. Mx	11	-40.10	3165.06	-0.05
			Max. My	8	-40.09	1.02	-3188.76
			Max. Vy	11	-38.11	3165.06	-0.05
			Max. Vx	8	38.39	1.02	-3188.76
			Max. Torque	11			-0.93
L13	20.75 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-64.61	5.09	-1.82
			Max. Mx	11	-47.67	3859.33	-0.22
			Max. My	8	-47.67	1.31	-3887.83
			Max. Vy	11	-40.14	3859.33	-0.22
			Max. Vx	8	40.41	1.31	-3887.83
			Max. Torque	10			-0.92
L14	3 - 0	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-66.14	5.28	-1.94
			Max. Mx	11	-49.07	3980.26	-0.25
			Max. My	8	-49.07	1.36	-4009.57
			Max. Vy	11	-40.49	3980.26	-0.25
			Max. Vx	8	40.76	1.36	-4009.57
			Max. Torque	10			-0.92

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	66.14	0.00	-0.00
	Max. H_x	11	49.09	40.47	0.00
	Max. H_z	2	49.09	-0.00	40.74
	Max. M_x	2	4009.07	-0.00	40.74
	Max. M_z	5	3977.54	-40.47	0.00
	Max. Torsion	4	0.92	-35.05	20.37
	Min. Vert	2	49.09	-0.00	40.74
	Min. H_x	5	49.09	-40.47	0.00
	Min. H_z	8	49.09	-0.00	-40.74
	Min. M_x	8	-4009.57	-0.00	-40.74
	Min. M_z	11	-3980.26	40.47	0.00
	Min. Torsion	10	-0.92	35.05	-20.37

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	49.09	-0.00	-0.00	0.25	1.32	0.00
Dead+Wind 0 deg - No Ice	49.09	0.00	-40.74	-4009.07	1.36	-0.43
Dead+Wind 30 deg - No Ice	49.09	20.24	-35.29	-3472.35	-1988.14	-0.78
Dead+Wind 60 deg - No Ice	49.09	35.05	-20.37	-2004.68	-3444.59	-0.92
Dead+Wind 90 deg - No Ice	49.09	40.47	-0.00	0.25	-3977.54	-0.81
Dead+Wind 120 deg - No Ice	49.09	35.05	20.37	2005.18	-3444.59	-0.49
Dead+Wind 150 deg - No Ice	49.09	20.24	35.29	3472.85	-1988.13	-0.03
Dead+Wind 180 deg - No Ice	49.09	0.00	40.74	4009.57	1.36	0.43
Dead+Wind 210 deg - No Ice	49.09	-20.24	35.29	3472.84	1990.85	0.78
Dead+Wind 240 deg - No Ice	49.09	-35.05	20.37	2005.18	3447.31	0.92
Dead+Wind 270 deg - No Ice	49.09	-40.47	-0.00	0.25	3980.26	0.81
Dead+Wind 300 deg - No Ice	49.09	-35.05	-20.37	-2004.68	3447.31	0.49
Dead+Wind 330 deg - No Ice	49.09	-20.24	-35.29	-3472.35	1990.86	0.03
Dead+Ice+Temp	66.14	-0.00	0.00	1.94	5.28	0.00
Dead+Wind 0 deg+Ice+Temp	66.14	0.00	-8.46	-859.63	5.53	-0.14
Dead+Wind 30 deg+Ice+Temp	66.14	4.21	-7.32	-744.20	-422.59	-0.21
Dead+Wind 60 deg+Ice+Temp	66.14	7.28	-4.23	-428.83	-736.00	-0.22
Dead+Wind 90 deg+Ice+Temp	66.14	8.41	-0.00	1.97	-850.72	-0.17
Dead+Wind 120 deg+Ice+Temp	66.14	7.28	4.23	432.78	-736.00	-0.08
Dead+Wind 150 deg+Ice+Temp	66.14	4.21	7.32	748.15	-422.59	0.03
Dead+Wind 180 deg+Ice+Temp	66.14	0.00	8.46	863.58	5.53	0.14
Dead+Wind 210 deg+Ice+Temp	66.14	-4.21	7.32	748.15	433.66	0.21
Dead+Wind 240	66.14	-7.28	4.23	432.78	747.06	0.22

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+Ice+Temp						
Dead+Wind 270 deg+Ice+Temp	66.14	-8.41	-0.00	1.97	861.78	0.17
Dead+Wind 300 deg+Ice+Temp	66.14	-7.28	-4.23	-428.83	747.06	0.08
Dead+Wind 330 deg+Ice+Temp	66.14	-4.21	-7.32	-744.20	433.66	-0.03
Dead+Wind 0 deg - Service	49.09	0.00	-12.58	-1239.26	1.36	-0.13
Dead+Wind 30 deg - Service	49.09	6.25	-10.89	-1073.28	-613.68	-0.24
Dead+Wind 60 deg - Service	49.09	10.82	-6.29	-619.57	-1063.95	-0.29
Dead+Wind 90 deg - Service	49.09	12.49	-0.00	0.25	-1228.62	-0.25
Dead+Wind 120 deg - Service	49.09	10.82	6.29	620.05	-1063.92	-0.15
Dead+Wind 150 deg - Service	49.09	6.25	10.89	1073.77	-613.68	-0.01
Dead+Wind 180 deg - Service	49.09	0.00	12.58	1239.75	1.36	0.13
Dead+Wind 210 deg - Service	49.09	-6.25	10.89	1073.77	616.40	0.24
Dead+Wind 240 deg - Service	49.09	-10.82	6.29	620.05	1066.64	0.29
Dead+Wind 270 deg - Service	49.09	-12.49	-0.00	0.25	1231.35	0.25
Dead+Wind 300 deg - Service	49.09	-10.82	-6.29	-619.57	1066.68	0.15
Dead+Wind 330 deg - Service	49.09	-6.25	-10.89	-1073.28	616.40	0.01

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-49.09	0.00	0.00	49.09	0.00	0.000%
2	0.00	-49.09	-40.75	-0.00	49.09	40.74	0.007%
3	20.24	-49.09	-35.29	-20.24	49.09	35.29	0.000%
4	35.05	-49.09	-20.37	-35.05	49.09	20.37	0.000%
5	40.47	-49.09	0.00	-40.47	49.09	0.00	0.002%
6	35.05	-49.09	20.37	-35.05	49.09	-20.37	0.000%
7	20.24	-49.09	35.29	-20.24	49.09	-35.29	0.000%
8	0.00	-49.09	40.75	-0.00	49.09	-40.74	0.007%
9	-20.24	-49.09	35.29	20.24	49.09	-35.29	0.000%
10	-35.05	-49.09	20.37	35.05	49.09	-20.37	0.000%
11	-40.47	-49.09	0.00	40.47	49.09	0.00	0.002%
12	-35.05	-49.09	-20.37	35.05	49.09	20.37	0.000%
13	-20.24	-49.09	-35.29	20.24	49.09	35.29	0.000%
14	0.00	-66.14	0.00	0.00	66.14	-0.00	0.000%
15	0.00	-66.14	-8.46	-0.00	66.14	8.46	0.000%
16	4.21	-66.14	-7.32	-4.21	66.14	7.32	0.000%
17	7.28	-66.14	-4.23	-7.28	66.14	4.23	0.000%
18	8.41	-66.14	0.00	-8.41	66.14	0.00	0.000%
19	7.28	-66.14	4.23	-7.28	66.14	-4.23	0.000%
20	4.21	-66.14	7.32	-4.21	66.14	-7.32	0.000%
21	0.00	-66.14	8.46	-0.00	66.14	-8.46	0.000%
22	-4.21	-66.14	7.32	4.21	66.14	-7.32	0.000%
23	-7.28	-66.14	4.23	7.28	66.14	-4.23	0.000%
24	-8.41	-66.14	0.00	8.41	66.14	0.00	0.000%
25	-7.28	-66.14	-4.23	7.28	66.14	4.23	0.000%
26	-4.21	-66.14	-7.32	4.21	66.14	7.32	0.000%
27	0.00	-49.09	-12.58	-0.00	49.09	12.58	0.003%
28	6.25	-49.09	-10.89	-6.25	49.09	10.89	0.001%
29	10.82	-49.09	-6.29	-10.82	49.09	6.29	0.000%
30	12.49	-49.09	0.00	-12.49	49.09	0.00	0.003%
31	10.82	-49.09	6.29	-10.82	49.09	-6.29	0.001%
32	6.25	-49.09	10.89	-6.25	49.09	-10.89	0.001%
33	0.00	-49.09	12.58	-0.00	49.09	-12.58	0.003%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
34	-6.25	-49.09	10.89	6.25	49.09	-10.89	0.001%
35	-10.82	-49.09	6.29	10.82	49.09	-6.29	0.001%
36	-12.49	-49.09	0.00	12.49	49.09	0.00	0.003%
37	-10.82	-49.09	-6.29	10.82	49.09	6.29	0.000%
38	-6.25	-49.09	-10.89	6.25	49.09	10.89	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00007279	0.00009142
3	Yes	18	0.00000001	0.00006701
4	Yes	18	0.00000001	0.00006799
5	Yes	14	0.00002738	0.00007831
6	Yes	18	0.00000001	0.00006669
7	Yes	18	0.00000001	0.00006774
8	Yes	13	0.00007279	0.00009141
9	Yes	18	0.00000001	0.00006783
10	Yes	18	0.00000001	0.00006675
11	Yes	14	0.00002738	0.00007834
12	Yes	18	0.00000001	0.00006805
13	Yes	18	0.00000001	0.00006710
14	Yes	6	0.00000001	0.00000001
15	Yes	15	0.00000001	0.00011894
16	Yes	15	0.00000001	0.00013982
17	Yes	15	0.00000001	0.00013994
18	Yes	15	0.00000001	0.00011776
19	Yes	15	0.00000001	0.00013962
20	Yes	15	0.00000001	0.00014024
21	Yes	15	0.00000001	0.00011905
22	Yes	15	0.00000001	0.00014168
23	Yes	15	0.00000001	0.00014099
24	Yes	15	0.00000001	0.00011893
25	Yes	15	0.00000001	0.00014131
26	Yes	15	0.00000001	0.00014126
27	Yes	13	0.00007865	0.00003999
28	Yes	14	0.00000001	0.00014386
29	Yes	15	0.00000001	0.00006099
30	Yes	13	0.00007868	0.00004603
31	Yes	14	0.00000001	0.00014165
32	Yes	14	0.00000001	0.00014887
33	Yes	13	0.00007865	0.00003997
34	Yes	14	0.00000001	0.00014955
35	Yes	14	0.00000001	0.00014212
36	Yes	13	0.00007867	0.00004611
37	Yes	15	0.00000001	0.00006119
38	Yes	14	0.00000001	0.00014455

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 104	32.96	27	2.25	0.00
L2	104 - 98.5	17.46	27	1.68	0.00
L3	98.5 - 97	15.59	27	1.58	0.00
L4	97 - 88.5	15.09	27	1.56	0.00
L5	91.75 - 88	13.44	27	1.45	0.00
L6	88 - 71.75	12.31	27	1.41	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L7	71.75 - 70.5833	8.02	27	1.11	0.00
L8	70.5833 - 47.25	7.75	27	1.09	0.00
L9	51.5 - 41.75	4.05	33	0.76	0.00
L10	41.75 - 32.5	2.63	33	0.62	0.00
L11	32.5 - 23.5	1.57	33	0.47	0.00
L12	23.5 - 20.75	0.82	33	0.33	0.00
L13	20.75 - 3	0.63	33	0.30	0.00
L14	3 - 0	0.01	33	0.04	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.0000	Platform Mount [LP 1201-1]	27	32.96	2.25	0.00	13820
137.0000	800MHz 2X50W RRH W/FILTER	27	31.56	2.21	0.00	13820
121.0000	(2) 7770.00 w/ Mount Pipe	27	24.27	1.99	0.00	3636
115.0000	ETW200VS12UB	27	21.71	1.89	0.00	2763
104.0000	LNX-6514DS-VTM w/ Mount Pipe	27	17.46	1.68	0.00	2152
95.0000	APXV18-206517S-C w/ Mount Pipe	27	14.45	1.52	0.00	3302
80.0000	OG-860/1920/GPS-A	27	10.07	1.27	0.00	3226

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 104	106.31	2	7.26	0.00
L2	104 - 98.5	56.39	2	5.43	0.00
L3	98.5 - 97	50.33	2	5.09	0.00
L4	97 - 88.5	48.74	2	5.03	0.00
L5	91.75 - 88	43.40	2	4.69	0.00
L6	88 - 71.75	39.77	2	4.55	0.00
L7	71.75 - 70.5833	25.91	2	3.59	0.00
L8	70.5833 - 47.25	25.04	2	3.53	0.00
L9	51.5 - 41.75	13.11	8	2.44	0.00
L10	41.75 - 32.5	8.50	8	2.01	0.00
L11	32.5 - 23.5	5.09	8	1.52	0.00
L12	23.5 - 20.75	2.64	8	1.08	0.00
L13	20.75 - 3	2.05	8	0.96	0.00
L14	3 - 0	0.04	8	0.13	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.0000	Platform Mount [LP 1201-1]	2	106.31	7.26	0.00	4407
137.0000	800MHz 2X50W RRH W/FILTER	2	101.79	7.13	0.01	4407
121.0000	(2) 7770.00 w/ Mount Pipe	2	78.31	6.41	0.01	1157
115.0000	ETW200VS12UB	2	70.08	6.10	0.01	877
104.0000	LNX-6514DS-VTM w/ Mount Pipe	2	56.39	5.43	0.00	680
95.0000	APXV18-206517S-C w/ Mount Pipe	2	46.67	4.91	0.00	1039

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
80.0000	OG-860/1920/GPS-A	2	32.55	4.11	0.00	1010

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
L1	140 - 104 (1)	TP23.3091x16x0.25	36.0000	0.0000	0.0	39.00	18.5625	-10.18	723.94	0.014
L2	104 - 98.5 (2)	TP24.4257x23.3091x0.4484	5.5000	0.0000	0.0	28.65	34.6211	-13.94	991.89	0.014
L3	98.5 - 97 (3)	TP24.7303x24.4257x0.7154	1.5000	0.0000	0.0	28.65	55.3196	-14.29	1584.91	0.009
L4	97 - 88.5 (4)	TP26.456x24.7303x0.4933	8.5000	0.0000	0.0	33.49	40.1933	-15.58	1346.15	0.012
L5	88.5 - 88 (5)	TP26.0576x24.8095x0.5565	3.7500	0.0000	0.0	33.54	45.6963	-16.78	1532.65	0.011
L6	88 - 71.75 (6)	TP29.3572x26.0576x0.6716	16.2500	0.0000	0.0	33.65	62.0324	-21.09	2087.26	0.010
L7	71.75 - 70.5833 (7)	TP29.5941x29.3572x0.7851	1.1667	0.0000	0.0	34.06	72.8335	-21.45	2480.85	0.009
L8	70.5833 - 47.25 (8)	TP34.332x29.5941x0.7176	23.3333	0.0000	0.0	34.06	75.6799	-27.35	2577.81	0.011
L9	47.25 - 41.75 (9)	TP34.8235x32.0338x0.7655	9.7500	0.0000	0.0	33.91	80.0720	-29.85	2714.92	0.011
L10	41.75 - 32.5 (10)	TP36.7016x34.8235x0.8008	9.2500	0.0000	0.0	33.76	92.5683	-35.23	3125.29	0.011
L11	32.5 - 23.5 (11)	TP38.5288x36.7016x0.8175	9.0000	0.0000	0.0	34.60	99.2730	-38.83	3435.04	0.011
L12	23.5 - 20.75 (12)	TP39.0872x38.5288x0.9506	2.7500	0.0000	0.0	32.06	116.7330	-40.09	3742.94	0.011
L13	20.75 - 3 (13)	TP42.6909x39.0872x0.8077	17.7500	0.0000	0.0	34.81	108.9280	-47.67	3791.36	0.013
L14	3 - 0 (14)	TP43.3x42.6909x0.8586	3.0000	0.0000	0.0	35.10	117.3360	-49.07	4118.50	0.012

Pole Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		kip-ft	ksi	ksi		kip-ft	ksi	ksi	
L1	140 - 104 (1)	TP23.3091x16x0.25	432.62	49.75	39.00	1.276	0.00	0.00	39.00	0.000
L2	104 - 98.5 (2)	TP24.4257x23.3091x0.4484	582.54	34.81	28.65	1.215	0.00	0.00	28.65	0.000
L3	98.5 - 97 (3)	TP24.7303x24.4257x0.7154	624.00	23.56	28.65	0.822	0.00	0.00	28.65	0.000
L4	97 - 88.5 (4)	TP26.456x24.7303x0.4933	774.43	37.81	33.49	1.129	0.00	0.00	33.49	0.000
L5	88.5 - 88 (5)	TP26.0576x24.8095x0.5565	885.52	37.81	33.54	1.127	0.00	0.00	33.54	0.000
L6	88 - 71.75 (6)	TP29.3572x26.0576x0.6716	1388.83	38.90	33.65	1.156	0.00	0.00	33.65	0.000
L7	71.75 - 70.5833 (7)	TP29.5941x29.3572x0.7851	1426.31	34.01	34.06	0.998	0.00	0.00	34.06	0.000
L8	70.5833 - 47.25 (8)	TP34.332x29.5941x0.7176	2063.87	41.44	34.06	1.217	0.00	0.00	34.06	0.000
L9	47.25 - 41.75 (9)	TP34.8235x32.0338x0.7655	2212.50	42.40	33.91	1.251	0.00	0.00	33.91	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L10	41.75 - 32.5 (10)	TP36.7016x34.8235x0.8008	2745.92	41.14	33.76	1.218	0.00	0.00	33.76	0.000
L11	32.5 - 23.5 (11)	TP38.5288x36.7016x0.8175	3083.67	40.98	34.60	1.184	0.00	0.00	34.60	0.000
L12	23.5 - 20.75 (12)	TP39.0872x38.5288x0.9506	3188.76	35.75	32.06	1.115	0.00	0.00	32.06	0.000
L13	20.75 - 3 (13)	TP42.6909x39.0872x0.8077	3887.83	42.30	34.81	1.215	0.00	0.00	34.81	0.000
L14	3 - 0 (14)	TP43.3x42.6909x0.8586	4009.57	40.00	35.10	1.140	0.00	0.00	35.10	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 104 (1)	TP23.3091x16x0.25	19.16	1.03	26.00	0.081	0.15	0.01	26.00	0.000
L2	104 - 98.5 (2)	TP24.4257x23.3091x0.4484	27.55	0.80	19.10	0.085	0.32	0.01	19.10	0.000
L3	98.5 - 97 (3)	TP24.7303x24.4257x0.7154	27.75	0.50	19.10	0.054	0.32	0.01	19.10	0.000
L4	97 - 88.5 (4)	TP26.456x24.7303x0.4933	29.36	0.73	22.33	0.066	0.28	0.01	22.33	0.000
L5	88.5 - 88 (5)	TP26.0576x24.8095x0.5565	29.91	0.65	22.36	0.059	0.26	0.01	22.36	0.000
L6	88 - 71.75 (6)	TP29.3572x26.0576x0.6716	32.06	0.52	22.43	0.047	0.16	0.00	22.43	0.000
L7	71.75 - 70.5833 (7)	TP29.5941x29.3572x0.7851	32.22	0.44	22.71	0.040	0.15	0.00	22.71	0.000
L8	70.5833 - 47.25 (8)	TP34.332x29.5941x0.7176	34.66	0.46	22.71	0.041	0.01	0.00	22.71	0.000
L9	47.25 - 41.75 (9)	TP34.8235x32.0338x0.7655	35.46	0.44	22.60	0.039	0.05	0.00	22.60	0.000
L10	41.75 - 32.5 (10)	TP36.7016x34.8235x0.8008	37.05	0.40	22.51	0.036	0.15	0.00	22.51	0.000
L11	32.5 - 23.5 (11)	TP38.5288x36.7016x0.8175	38.06	0.38	23.07	0.034	0.22	0.00	23.07	0.000
L12	23.5 - 20.75 (12)	TP39.0872x38.5288x0.9506	38.39	0.33	21.38	0.031	0.25	0.00	21.38	0.000
L13	20.75 - 3 (13)	TP42.6909x39.0872x0.8077	40.41	0.37	23.20	0.032	0.40	0.00	23.20	0.000
L14	3 - 0 (14)	TP43.3x42.6909x0.8586	40.76	0.35	23.40	0.030	0.43	0.00	23.40	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 104 (1)	0.014	1.276	0.000	0.081	0.000	1.291 ✔	1.333	H1-3+VT ✔
L2	104 - 98.5 (2)	0.014	1.215	0.000	0.085	0.000	1.231 ✔	1.333	H1-3+VT ✔
L3	98.5 - 97 (3)	0.009	0.822	0.000	0.054	0.000	0.832 ✔	1.333	H1-3+VT ✔
L4	97 - 88.5 (4)	0.012	1.129	0.000	0.066	0.000	1.141 ✔	1.333	H1-3+VT ✔
L5	88.5 - 88 (5)	0.011	1.127	0.000	0.059	0.000	1.139 ✔	1.333	H1-3+VT ✔

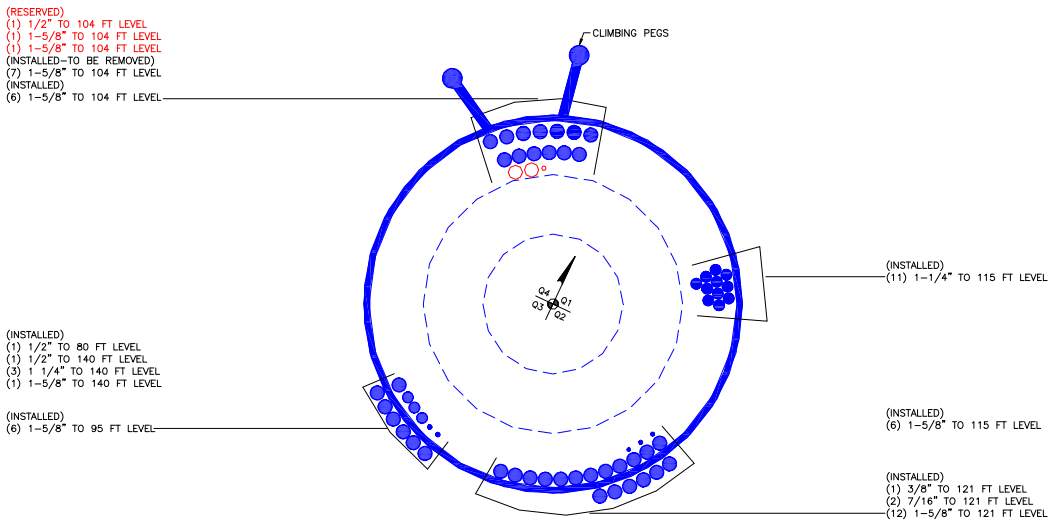
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L6	88 - 71.75 (6)	0.010	1.156	0.000	0.047	0.000	1.167 ✔	1.333	H1-3+VT ✔
L7	71.75 - 70.5833 (7)	0.009	0.998	0.000	0.040	0.000	1.007 ✔	1.333	H1-3+VT ✔
L8	70.5833 - 47.25 (8)	0.011	1.217	0.000	0.041	0.000	1.228 ✔	1.333	H1-3+VT ✔
L9	47.25 - 41.75 (9)	0.011	1.251	0.000	0.039	0.000	1.262 ✔	1.333	H1-3+VT ✔
L10	41.75 - 32.5 (10)	0.011	1.218	0.000	0.036	0.000	1.230 ✔	1.333	H1-3+VT ✔
L11	32.5 - 23.5 (11)	0.011	1.184	0.000	0.034	0.000	1.196 ✔	1.333	H1-3+VT ✔
L12	23.5 - 20.75 (12)	0.011	1.115	0.000	0.031	0.000	1.126 ✔	1.333	H1-3+VT ✔
L13	20.75 - 3 (13)	0.013	1.215	0.000	0.032	0.000	1.228 ✔	1.333	H1-3+VT ✔
L14	3 - 0 (14)	0.012	1.140	0.000	0.030	0.000	1.152 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
L1	140 - 104	Pole	TP23.3091x16x0.25	1	-10.18	965.01	96.9	Pass
L2	104 - 98.5	Pole	TP24.4257x23.3091x0.4484	2	-13.94	1322.20	92.3	Pass
L3	98.5 - 97	Pole	TP24.7303x24.4257x0.7154	3	-14.29	2112.68	62.4	Pass
L4	97 - 88.5	Pole	TP26.456x24.7303x0.4933	4	-15.58	1794.42	85.6	Pass
L5	88.5 - 88	Pole	TP26.0576x24.8095x0.5565	5	-16.78	2043.02	85.5	Pass
L6	88 - 71.75	Pole	TP29.3572x26.0576x0.6716	6	-21.09	2782.32	87.5	Pass
L7	71.75 - 70.5833	Pole	TP29.5941x29.3572x0.7851	7	-21.45	3306.97	75.6	Pass
L8	70.5833 - 47.25	Pole	TP34.332x29.5941x0.7176	8	-27.35	3436.22	92.1	Pass
L9	47.25 - 41.75	Pole	TP34.8235x32.0338x0.7655	9	-29.85	3618.99	94.7	Pass
L10	41.75 - 32.5	Pole	TP36.7016x34.8235x0.8008	10	-35.23	4166.01	92.3	Pass
L11	32.5 - 23.5	Pole	TP38.5288x36.7016x0.8175	11	-38.83	4578.91	89.7	Pass
L12	23.5 - 20.75	Pole	TP39.0872x38.5288x0.9506	12	-40.09	4989.34	84.5	Pass
L13	20.75 - 3	Pole	TP42.6909x39.0872x0.8077	13	-47.67	5053.88	92.1	Pass
L14	3 - 0	Pole	TP43.3x42.6909x0.8586	14	-49.07	5489.96	86.4	Pass
							Summary	
						Pole (L1)	96.9	Pass
						RATING =	**96.9**	**Pass**

APPENDIX B

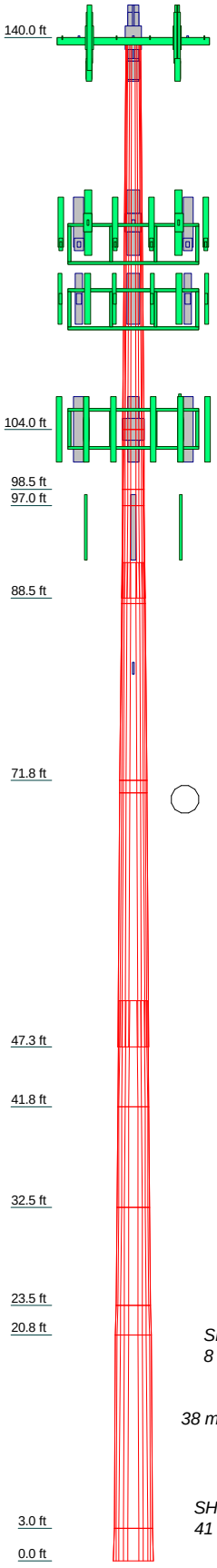
BASE LEVEL DRAWING

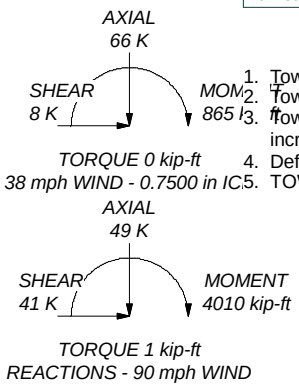


APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Length (ft)	36.0000	5.5000	1.5000	3.5000	3.7500	16.2500	1.1667	23.3333	9.7500	9.2500	9.0000	2.7500	17.7500	3.0000
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.2500	0.4484	0.7150	0.4933	0.5565	0.6716	0.7851	0.7176	0.7655	0.8008	0.8175	0.9506	0.8077	0.8586
Socket Length (ft)				3.2500				4.2500						
Top Dia (in)	16.0000	23.3090	24.4257	24.7303	24.8095	26.0576	29.3572	29.5941	32.0338	34.8235	36.7015	38.5288	39.0872	42.6909
Bot Dia (in)	23.3090	24.4257	24.7303	26.4560	26.0576	29.3572	29.5941	34.3320	34.8235	36.7015	38.5288	39.0872	42.6909	43.3000
Grade	A572-65							Reinf 56.77 ksi	Reinf 56.51 ksi	Reinf 56.27 ksi	Reinf 57.67 ksi	Reinf 53.44 ksi	Reinf 58.01 ksi	Reinf 58.50 ksi
Weight (K)	1.9	0.6	0.3	1.2	0.6	3.2	0.3	5.7	2.7	2.8	3.0	1.1	6.3	1.2





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1201-1]	140	1001940	121
(2) 6' x 2" Mount Pipe	140	Platform Mount [LP 1201-1]	121
(2) 6' x 2" Mount Pipe	140	ETW200VS12UB	115
(2) 6' x 2" Mount Pipe	140	(2) RR90-17-02DP w/ Mount Pipe	115
TD-RRH8x20-25	140	(2) S20070A1	115
(3) ACU-A20-N	140	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	115
APXVSPP18-C-A20 w/ Mount Pipe	140		
APXVTM14-C-120 w/ Mount Pipe	140	ETW200VS12UB	115
TD-RRH8x20-25	140	(2) RR90-17-02DP w/ Mount Pipe	115
(3) ACU-A20-N	140	(2) S20070A1	115
APXVSPP18-C-A20 w/ Mount Pipe	140	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	115
APXVTM14-C-120 w/ Mount Pipe	140		
TD-RRH8x20-25	140	ETW200VS12UB	115
(3) ACU-A20-N	140	(2) RR90-17-02DP w/ Mount Pipe	115
APXVSPP18-C-A20 w/ Mount Pipe	140	(2) S20070A1	115
APXVTM14-C-120 w/ Mount Pipe	140	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	115
800MHz 2X50W RRH W/FILTER	137		
TME-800MHZ RRH	137	Platform Mount [LP 1201-1]	115
800MHz 2X50W RRH W/FILTER	137	LNX-6514DS-VTM w/ Mount Pipe	104
TME-800MHZ RRH	137	DB-T1-6Z-8AB-0Z	104
800MHz 2X50W RRH W/FILTER	137	(2) FD9R6004/2C-3L	104
TME-800MHZ RRH	137	RRH2x60-700	104
TME-1900MHz RRH (65 MHz)	137	RRH2X60-PCS	104
TME-1900MHz RRH (65 MHz)	137	RRH4X45-AWS4 B66	104
TME-1900MHz RRH (65 MHz)	137	(3) SBNHH-1D65B w/ Mount Pipe	104
Side Arm Mount [SO 101-3]	137	LNX-6514DS-VTM w/ Mount Pipe	104
(2) 7770.00 w/ Mount Pipe	121	(2) FD9R6004/2C-3L	104
(2) LGP21401	121	ACUTIME 2000	104
(2) LGP21901	121	RRH2x60-700	104
HPA-65R-BUU-H6 w/ Mount Pipe	121	RRH2X60-PCS	104
RRUS 11	121	RRH4X45-AWS4 B66	104
RRUS12/RRUS A2	121	(3) SBNHH-1D65B w/ Mount Pipe	104
1001940	121	LNX-6514DS-VTM w/ Mount Pipe	104
(2) 7770.00 w/ Mount Pipe	121	(2) FD9R6004/2C-3L	104
(2) LGP21401	121	RRH2x60-700	104
(2) LGP21901	121	RRH2X60-PCS	104
DC6-48-60-18-8F	121	RRH4X45-AWS4 B66	104
HPA-65R-BUU-H6 w/ Mount Pipe	121	(3) SBNHH-1D65B w/ Mount Pipe	104
RRUS 11	121	DB-T1-6Z-8AB-0Z	104
RRUS12/RRUS A2	121	Platform Mount [LP 1201-1]	104
1001940	121	APXV18-206517S-C w/ Mount Pipe	95
(2) 7770.00 w/ Mount Pipe	121	APXV18-206517S-C w/ Mount Pipe	95
(2) LGP21401	121	APXV18-206517S-C w/ Mount Pipe	95
(2) LGP21901	121	Pipe Mount [PM 601-3]	95
HPA-65R-BUU-H6 w/ Mount Pipe	121	OG-860/1920/GPS-A	80
RRUS 11	121	Side Arm Mount [SO 701-1]	80
RRUS12/RRUS A2	121		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 56.51 ksi	57 ksi	71 ksi
Reinf 47.75 ksi	48 ksi	60 ksi	Reinf 56.27 ksi	56 ksi	71 ksi
Reinf 55.82 ksi	56 ksi	70 ksi	Reinf 57.67 ksi	58 ksi	73 ksi
Reinf 55.90 ksi	56 ksi	70 ksi	Reinf 53.44 ksi	53 ksi	67 ksi
Reinf 56.08 ksi	56 ksi	71 ksi	Reinf 58.01 ksi	58 ksi	73 ksi
Reinf 56.77 ksi	57 ksi	71 ksi	Reinf 58.50 ksi	59 ksi	74 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 96.9%

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

Job:	***140' MP; BIC Drive (SSUSA); Milford, CT***		
Project:	***PJF# 37516-1994 (BU# 876342)***		
Client: CCI	Drawn by: Jared Smith	App'd:	
Code: TIA/EIA-222-F	Date: 06/15/16	Scale: NTS	
Path:		Dwg No. E-1	

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#:
Site Name:
App #:

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	54	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	56	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Stiffened	
Weld Type:	Both	**
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.3125	in
Width:	7.75	in
Height:	18	in
Thick:	1.25	in
Notch:	0.75	in
Grade:	65	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	43.3	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3486	ft-kips
Unfactored Axial, P:	41.3	kips
Unfactored Shear, V:	34.5	kips

Reactions have been adjusted due to modifications

Anchor Rod Results

TIA F --> Maximum Rod Tension	191.1 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	98.0% **Pass**

Base Plate Results Shear Check Only

Base Plate Stress:	4.2 ksi
Allowable PL Bending Stress:	26.7 ksi
Base Plate Stress Ratio:	15.8% **Pass**

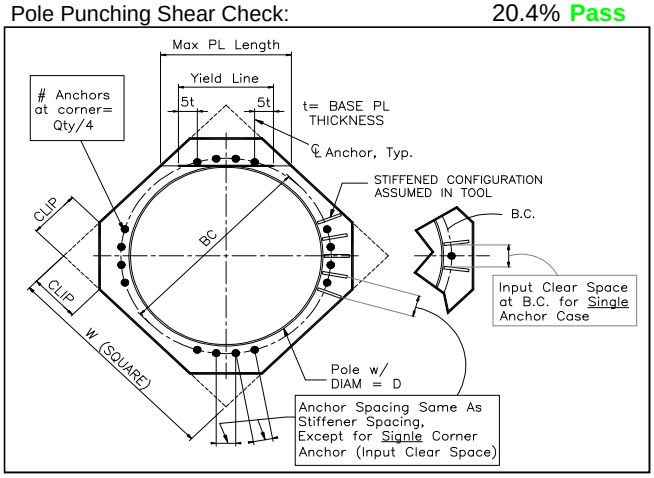
PL Ref. Data
Yield Line (in):
N/A, Roark
Max PL Length:
35.90

Stiffener Results

Horizontal Weld :	68.7% **Pass**
Vertical Weld:	76.2% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	11.4% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	32.1% **Pass**
Plate Comp. (AISC Bracket):	40.6% **Pass**

Pole Results

Pole Punching Shear Check:	20.4% **Pass**



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

PAUL J. FORD & COMPANY
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v4.4 - Effective 7-12-13

Date: 6/15/2016
PJF Project: 37516-1994.001
Client Ref. # 876342
Site Name: Site Name
Description: Description
Owner: Owner
Engineer: JWS

Asymmetric Anchor Rod Analysis

Moment =	4010	k-ft	TIA Ref.	F	Location =	Base Plate		
Axial =	49.0	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	41.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	19							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	25.5	54.00	0.00	3.98	168.82	163.67	163.67	0.00	195.00	83.9%
2	2.250	#18J A615 Gr 75	75	100	38.5	54.00	0.00	3.98	167.62	162.46	162.46	0.00	195.00	83.3%
3	2.250	#18J A615 Gr 75	75	100	51.5	54.00	0.00	3.98	168.95	163.79	163.79	0.00	195.00	84.0%
4	2.250	#18J A615 Gr 75	75	100	64.5	54.00	0.00	3.98	172.25	167.09	167.09	0.00	195.00	85.7%
5	2.250	#18J A615 Gr 75	75	100	115.5	54.00	0.00	3.98	184.66	179.50	179.50	0.00	195.00	92.1%
6	2.250	#18J A615 Gr 75	75	100	128.5	54.00	0.00	3.98	183.72	178.56	178.56	0.00	195.00	91.6%
7	2.250	#18J A615 Gr 75	75	100	141.5	54.00	0.00	3.98	180.64	175.48	175.48	0.00	195.00	90.0%
8	2.250	#18J A615 Gr 75	75	100	154.5	54.00	0.00	3.98	175.92	170.76	170.76	0.00	195.00	87.6%
9	2.250	#18J A615 Gr 75	75	100	205.5	54.00	0.00	3.98	160.88	155.72	155.72	0.00	195.00	79.9%
10	2.250	#18J A615 Gr 75	75	100	218.5	54.00	0.00	3.98	162.82	157.66	157.66	0.00	195.00	80.9%
11	2.250	#18J A615 Gr 75	75	100	231.5	54.00	0.00	3.98	167.55	162.39	162.39	0.00	195.00	83.3%
12	2.250	#18J A615 Gr 75	75	100	244.5	54.00	0.00	3.98	174.17	169.01	169.01	0.00	195.00	86.7%
13	2.250	#18J A615 Gr 75	75	100	295.5	54.00	0.00	3.98	195.92	190.76	190.76	0.00	195.00	97.8%
14	2.250	#18J A615 Gr 75	75	100	308.5	54.00	0.00	3.98	196.25	191.09	191.09	0.00	195.00	98.0%
15	2.250	#18J A615 Gr 75	75	100	321.5	54.00	0.00	3.98	193.98	188.82	188.82	0.00	195.00	96.8%
16	2.250	#18J A615 Gr 75	75	100	334.5	54.00	0.00	3.98	189.54	184.38	184.38	0.00	195.00	94.6%
17	2.250	A193 Gr B7	105	125	30.0	66.30	0.00	3.98	204.78	199.63	199.63	0.00	218.68	91.3%
18	2.250	A193 Gr B7	105	125	145.0	66.30	0.00	3.98	221.12	215.96	215.96	0.00	218.68	98.8%
19	2.250	A193 Gr B7	105	125	235.0	66.30	0.00	3.98	206.93	201.78	201.78	0.00	218.68	92.3%
								75.61						

Foundation Loads:

Pole weight or tower leg compression =	**49**	(kips)
Horizontal load at top of pier =	**40**	(kips)
Overturning moment at top of pier=	**4010**	(ft-kips)

Design criteria:

Safety factor against overturning =	**2**	

Soil Properties:

Soil density =	**130**	(pcf)
Allowable soil bearing =	**10**	(ksf)
Depth to water table =	**99**	(ft)

Dimensions:

Pier shape (round or square)	**S**	("R" or "S")
Pier width =	**7**	(ft)
Pier height above grade =	**0.5**	(ft)
depth to bottom of footing =	**10**	(ft)
Footing thickness =	**4**	(ft)
Footing width =	**22.5**	(ft)
Footing length =	**22.5**	(ft)

Concrete:

Concrete strength =	**3**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

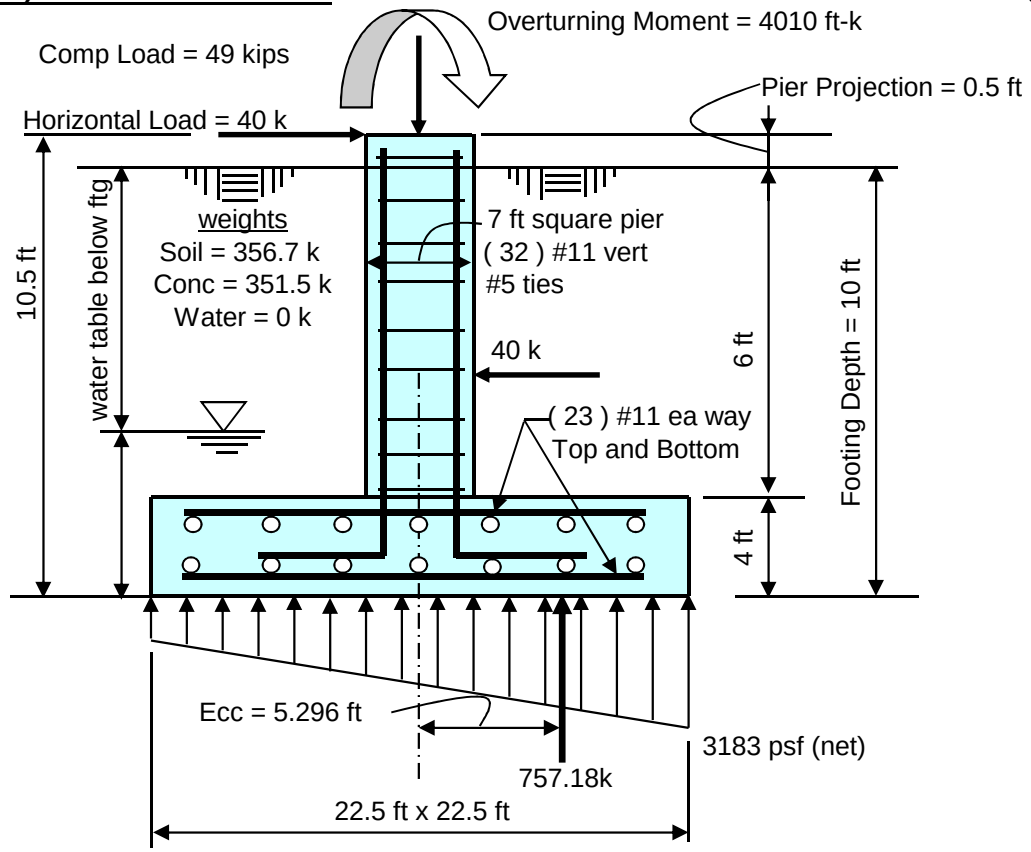
Reinforcing Steel:

	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#11**	bar
quantity of pad rebar =	**23**	(ea direction)

Reinforcing Steel:

	Pier	
size of vert rebar in pier=	**#11**	bar
vertical rebar quantity =	**32**	
size of pier ties =	**#5**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete = 86.8 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 3.183 ksf Allowable Net Soil Bearing = 10 ksf **Soil Bearing Stress Ratio = 0.32 Okay**	Ult Bending Shear Capacity = 110 psi Ult Bending Shear Stress = 31 psi **Bending Shear Stress Ratio = 0.28 Okay**
Ftg Overturning Resistance = 8518 ft-kips Overturning Moment = 4010 ft-kips Required Overturning Safety Factor = 2 Overturning Safety Factor = 2.124 **Ratio = 0.94 Okay**	Pad Bending Moment Capacity= 6680 ft-k Pad Bending Moment = 1619 ft-k **Bending Moment Stress Ratio = 0.24 OK**

General Information:
==========
File Name: g:\tower\375_crown_castle\2016\37516-1994_876342_bic drive (ssusa)\...\37516-1994.001.col
Project: 37515-2876.001.7805
Column: Engineer: CMM
Code: ACI 318-05 Units: English

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

Material Properties:
==========
Concrete: Standard Steel: Standard
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
fc = 2.55 ksi Eps_yt = 0.00206897 in/in
Eps_u = 0.003 in/in
Beta1 = 0.85

Section:
========
Rectangular: Width = 84 in Depth = 84 in

Gross section area, Ag = 7056 in^2
Ix = 4.14893e+006 in^4 Iy = 4.14893e+006 in^4
rx = 24.2487 in ry = 24.2487 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

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

Confinement: Tied; #5 ties with #11 bars, #5 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Rectangular
Pattern: All Sides Equal (Cover to longitudinal reinforcement)
Total steel area: As = 49.92 in^2 at rho = 0.71% (Note: rho < 1.0%)
Minimum clear spacing = 8.16 in

32 #11 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	49.00	5551.00	8608.63	1.551	10.37	80.29	0.02022	0.900

*** End of output ***

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

AT&T Existing Facility

Site ID: CT5098

Milford Naugatuk Gardens
111 School House Road
Milford, CT 06460

July 10, 2016

EBI Project Number: 6216003141

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	9.13 %

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

EBI Consulting
environmental | engineering | due diligence

July 10, 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: **CT5098 – Milford Naugatuk Gardens**

EBI Consulting was directed to analyze the proposed AT&T facility located at **111 School House Road, Milford, 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 **111 School House Road, Milford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 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 **Powerwave 7770 and the CCI HPA-65R-BUU-H6** 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 **123 feet** above ground level (AGL) for **Sector A**, **123 feet** above ground level (AGL) for **Sector B** and **123 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:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**123 feet**	Height (AGL):	**123 feet**	Height (AGL):	**123 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**0.73 %**	Antenna B1 MPE%	**0.73 %**	Antenna C1 MPE%	**0.73 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	**123 feet**	Height (AGL):	**123 feet**	Height (AGL):	**123 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):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A2 MPE%	**2.00 %**	Antenna B2 MPE%	**2.00 %**	Antenna C2 MPE%	**2.00 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 dBd	Gain:	11.4 dBd	Gain:	11.4 dBd
Height (AGL):	**123 feet**	Height (AGL):	**123 feet**	Height (AGL):	**123 feet**
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts	Total TX Power(W):	60 Watts
ERP (W):	828.23	ERP (W):	828.23	ERP (W):	828.23
Antenna A3 MPE%	**0.38 %**	Antenna B3 MPE%	**0.38 %**	Antenna C3 MPE%	**0.38 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**3.11 %**
Verizon Wireless	3.97 %
MetroPCS	0.86 %
Sprint	0.43 %
T-Mobile	0.76 %
Site Total MPE %:	**9.13 %**

AT&T Sector A Total:	3.11 %
AT&T Sector B Total:	3.11 %
AT&T Sector C Total:	3.11 %
Site Total:	9.13 %

AT&T _ Max Values Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	123	2.18	850 MHz	567	0.38%
AT&T 1900 MHz (PCS) UMTS	2	656.33	123	3.45	1900 MHz (PCS)	1000	0.34%
AT&T 700 MHz LTE	2	940.05	123	4.94	700 MHz	467	1.06%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	123	9.41	1900 MHz (PCS)	1000	0.94%
AT&T 850 MHz GSM	2	414.12	123	2.18	850 MHz	567	0.38%
						Total:	**3.11 %**

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:	3.11 %
Sector B:	3.11 %
Sector C:	3.11 %
AT&T Maximum Total (per sector):	3.11 %
Site Total:	9.13 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.13 %** 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.