EMPIRE telecom

June 15, 2018

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

Regarding:	Notice of Exempt Modification – Addition of 3 Antennas and 6 radio heads
Property Address:	99 Cedarwood Lane, Newington, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 170 foot guyed lattice tower ("tower") at the above-referenced address, latitude 41.69477, longitude -72.7089711. AT&T's facility consists of nine (9) wireless telecommunications antennas at 120 feet. The tower is controlled and owned by Callahan Acres, LLC. Assessor's Information is attached hereto.

AT&T desires to modify its existing telecommunications facility by adding three (3) antennas, and six (6) remote radio heads ("RRHs"). The centerline height of said antennas is and will remain at 120 feet.

Please accept this application as notification pursuant to R.C.S.A. § 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.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor of Newington, the Town Manager of Newington, The Building Official of Newington and the Town Planner of Newington. A copy of this letter is also being sent to Callahan Acres, LLC, the owner of the structure that AT&T is located.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's antennas and RRHs will be installed at 120 foot level of the 170 foot tall guyed lattice tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Centek Engineering dated May 25, 2018).

For the foregoing reasons AT&T respectfully requests that the proposed addition of 3 antennas and 6 RRHs be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

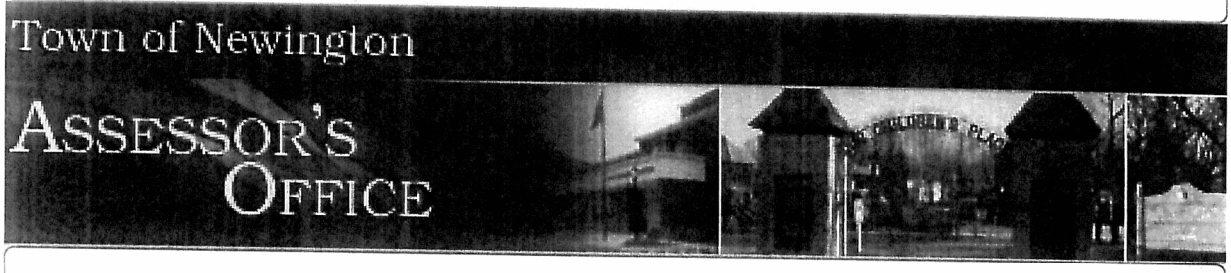
Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Roy Zartarian, Mayor, Town of Newington
Tanya Lane, Town Manager, Town of Newington
Craig Minor, Town Planner, Town of Newington
Douglas Jourdan, Building Official, Town of Newington
Callahan Acres, LLC c/o Fred Callahan

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2015.



Information on the Property Records for the Municipality of Newington was last updated on 5/12/2016.

Parcel Information

Location:	99 CEDARWOOD LN	Property Use:	Residential	Primary Use:	Residential
Unique ID:	C1000010	Map Block Lot:	17/480/000	Acres:	2.81
490 Acres:	0.00	Zone:	R-20	Volume / Page:	2117/0550
Developers Map / Lot:	N/E 2139 AKA 5	Census:			

Value Information

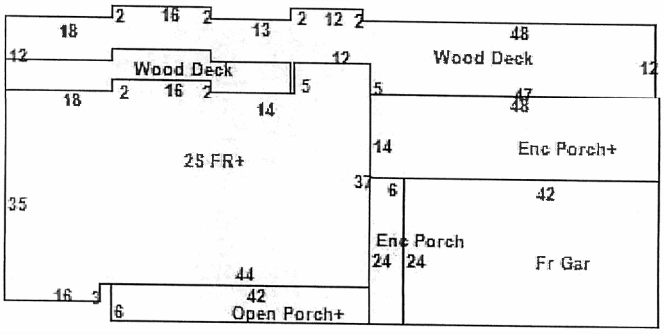
	Appraised Value	70% Assessed Value
Land	145,955	102,170

	Appraised Value	70% Assessed Value
Buildings	463,632	324,540
Detached Outbuildings	0	0
Total	609,587	426,710

Owner's Information

Owner's Data
CALLAHAN QUALIFIED PERSONAL RESIDENC THE CIOFFARI PAUL TRUSTEE 433 SOUTH MAIN ST STE 200 WEST HARTFORD CT 06110

Building 1



Building Use:	Single Family	Style:	Colonial	Living Area:	4,120
Stories:	2.00	Construction:	Wood Frame	Year Built:	1990
Total Rooms:	9	Bedrooms:	4	Full Baths:	3
Half Baths:	0	Fireplaces:	1	Heating:	Hot Water
Fuel:	Oil	Cooling Percent:	100	Basement Area:	2,060

Basement Finished Area:	500	Basement Garages:	0	Roof Material:	Asphalt
Siding:	Clapboards	Units:			

Special Features

Attached Components

Type:	Year Built:	Area:
Wood Deck	1990	235
Wood Deck	1990	1,248
Frame Garage	1990	1,008
Enclosed Porch	1990	672
Enclosed Porch	1990	144
Open Porch	1990	252

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Cell Tower	2000	0.00	0.00	0

Owner History - Sales

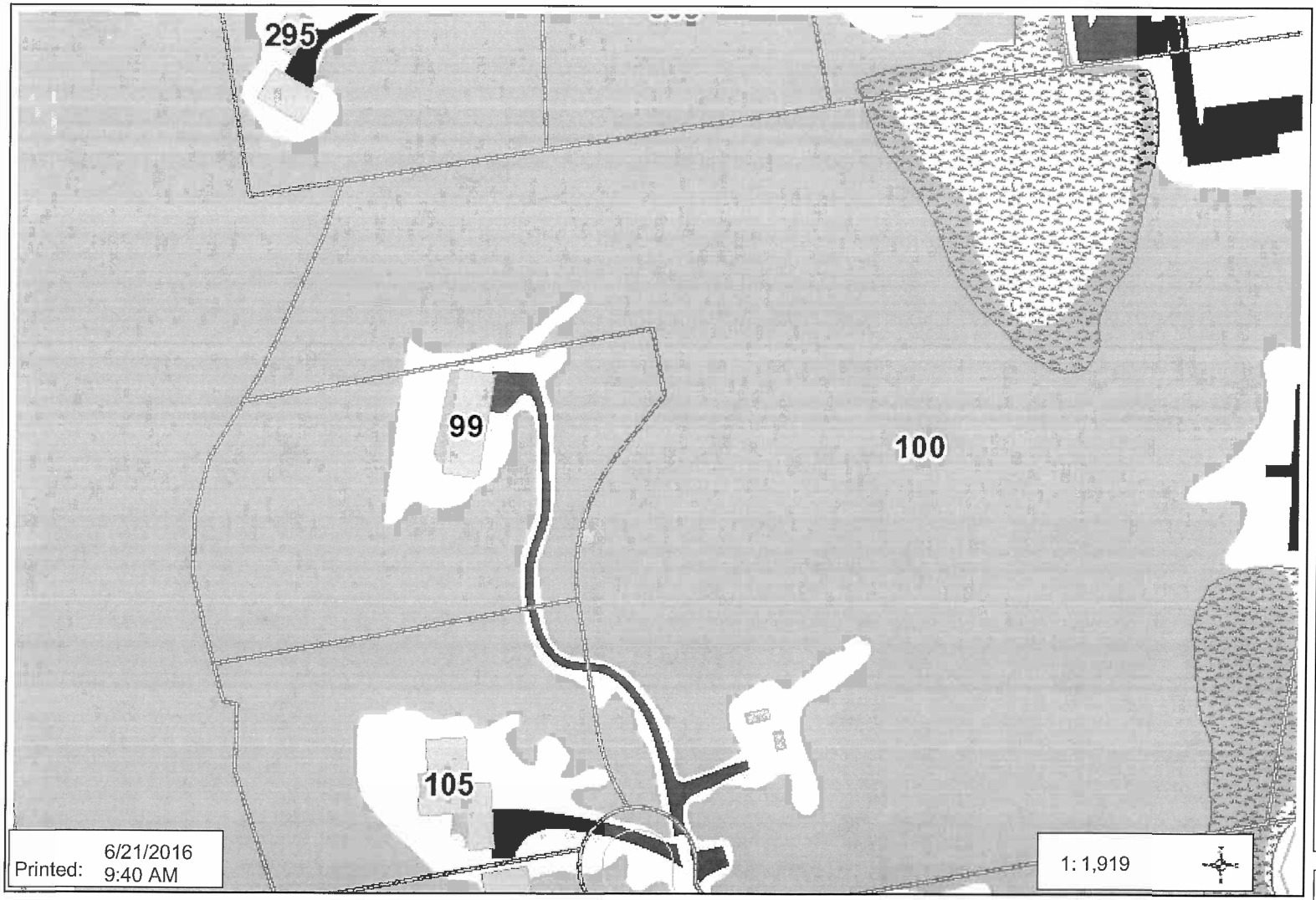
Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
CALLAHAN QUALIFIED PERSONAL RESIDENC THE	2117	550	04/01/2013		No	$0
CALLAHAN FREDERICK H III	737	309	01/02/1990		No	$0
CALLAHAN FREDERICK H JR	245	222	01/10/1974		No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
B-14-704	Remodel	11/06/2014		Closed	REMOVAL RADIO EQUIPMENT ADD HAMS CABLES ANTENNAS
TB-14-597		09/15/2014		Closed	Structural Modification Tower to include Plumb & Tension
B-14-541		09/05/2014		Needs Visit	INSTALL 3 RADIO HEADS
B-13-78	Remodel	03/07/2013		Closed	REPLACE ONE RADIO CABINET
76601		11/25/2008		Closed	3 ANTENNAS & 6 CABLES ON TOWER

Newington GIS Web Map



Legend

- Parcel
- Structures
  - BUILDING
  - CEMENT
  - DECK
  - FOOTBRIDGE
  - FOUNDATION
  - GREENHOUSE
  - POOL
  - STEPS
  - TANK
- Paved Areas
  - Driveway and Parking Lot
  - Sidewalk
- Rail Road Line
- Hydrography
  - Water
  - Swamp area
- Stream
- Vegetation Area

Notes

Notes

319.9 0 159.94 319.9 Feet

This map is user generated static output. This map is for reference only and should be used for REPRESENTATION ONLY. The Town of Newington refutes any liability for any actions taken or not taken based on this map.

THIS MAP IS NOT TO BE USED FOR NAVIGATION AND IS NOT CONSIDERED SURVEY QUALITY.

at&t

WIRELESS COMMUNICATIONS FACILITY
CT1145 - LTE 5C/6C/7C FIRSTNET
NEWINGTON
99 CEDARWOOD LANE
NEWINGTON, CT 06111

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA–222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD–OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS–BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON–SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB–CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1–800–922–4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

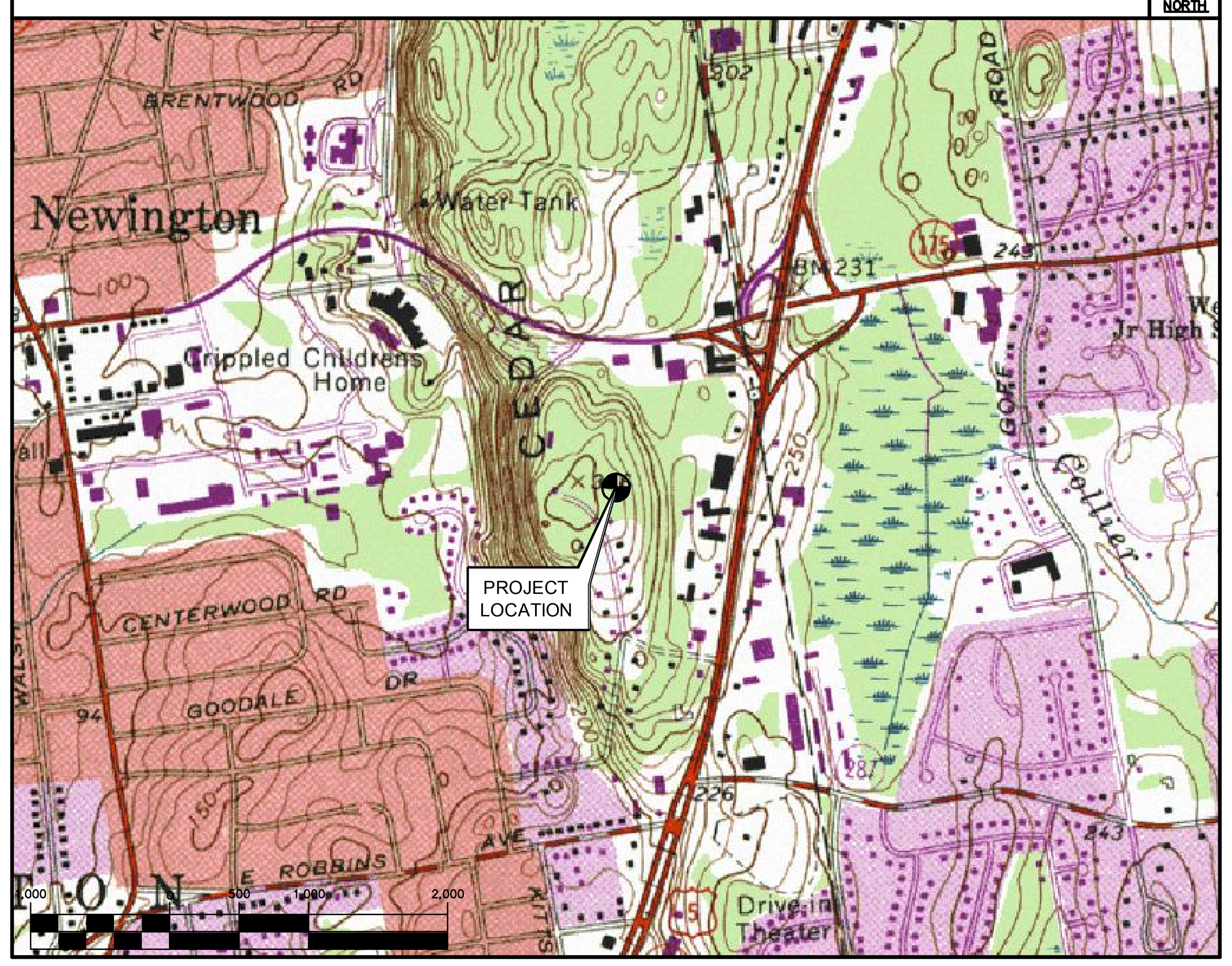
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 99 CEDARWOOD LANE, NEWINGTON, CONNECTICUT

1.	TURN LEFT ONTO CAPITAL BLVD.	0.36 MI
2.	TURN LEFT ONTO WEST ST.	0.27 MI
3.	TURN RIGHT ONTO CROMWELL AVE/CT–3.	0.59 MI
4.	TURN LEFT ONTO NEW BRITAIN AVE/CT–160.	0.81 MI
5.	TAKE THE 3RD RIGHT ONTO HAYES RD.	0.39 MI
6.	HAYES RD BECOMES HIGHLAND ST.	0.82 MI
7.	HIGHLAND ST BECOMES THORNBUSH RD.	0.66 MI
8.	TURN LEFT ONTO PROSPECT ST/CT–287.	0.57 MI
9.	TURN LEFT ONTO US–5 S/CT–15 S/CT–287/BERLIN TURNPIKE.	0.77 MI
10.	TAKE THE 1ST RIGHT ONTO E ROBBINS AVE/CT–287.	0.06 MI
11.	TAKE THE 1ST RIGHT ONTO GOODALE DR	0.22 MI
12.	TAKE THE 1ST RIGHT ONTO CEDARWOOD LN.	0.10 MI
13.	99 CEDARWOOD LN, NEWINGTON, CT 06111–3127, 99 CEDARWOOD LN IS ON THE LEFT.	0.50 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. AT ANTENNA SECTORS:
   - REPLACE THE EXISTING ANTENNA BOOM MOUNTS WITH NEW BOOM MOUNTS AS SPECIFIED HEREING (TYPICAL OF (3).
   - INSTALL KATHREIN ANTENNA AT POS 3. (TOTAL OF 3)
   - INSTALL (1) DC SQUID
   - INSTALL RRUS–32 B66 AT POS. 3. (TOTAL OF 3)
   - INSTALL B14–4478 AT POS. 3. (TOTAL OF 3)

   B. AT THE EQUIPMENT SHELTER
   - REMOVE EXISTING RRU RACK AND REPLACE WITH NEW RRU RACK TO ACCOMMODATE EXISTING/PROPOSED EQUIPMENT.
   - RRUS (TOTAL OF 6) FROM EXISTING RACK, TO BE MOUNTED ON NEWLY PROPOSED RACK.
   - INSTALL (3) RRUS–E2 ON NEWLY PROPOSED RRU RACK WITH (6) SURGE ARRESTORS (APTDC–BDFDM–DB)
   - IN LTE RACK, ADD 2ND 5216 WITH XMU AND IDLe.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT1145
AT&T SITE NAME:	NEWINGTON
SITE ADDRESS:	99 CEDARWOOD LANE NEWINGTON, CT 06111
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T PACE ID NUMBER:	PACE JOB 1 – MRCTB024103 PACE JOB 2 – MRCTB022772
AT&T FA LOCATION CODE:	10035097
ENGINEER:	CENTEK ENGINEERING, INC. 63–2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°–41'–41.25" N LONGITUDE: 72°–42'–32.37" W GROUND ELEVATION: ±345' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	0
N–1	NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE	0
C–1	PLANS AND ELEVATION	0
C–2	ANTENNA CONFIGURATION DETAILS	0
C–3	DETAILS	0
C–4	DETAILS	0
E–1	SCHEMATIC DIAGRAM AND NOTES	0
E–2	WIRING DIAGRAM	0
E–3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	05/31/18	DMD	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

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

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NEWINGTON
CT1145 – LTE 5C/6C/7C FIRSTNET
99 CEDARWOOD LANE
NEWINGTON, CT 06111

DATE: 03/15/18
SCALE: AS NOTED
JOB NO. 18000.21

TITLE SHEET

T–1

Sheet No. 1 of 9

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90–110 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 93 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

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

PROPOSED ANTENNA AND APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) TMA/DIPLEXER/TRIPLEXER (QTY)	(E/P) RRU (QTY)	FEEDER	(E/P) RAYCAP (QTY)
A1	EXISTING	UMTS 850	POWERWAVE (7770)	55 x 11 x 5	120'	143°	(E) PWAV TMA: LGP21401 SINGLE 1900 W/ 850BP (2), (E) KATHREIN DIPLEX.: 782–10250		7/8ø COAX (2)	(E) RAYCAP DC6–48–60–18–8F (2) (P) RAYCAP DC6–48–60–0–8F (1)
A2	EXISTING	LTE WCS/850/700DE	CCI (OPA–65R–LCUU–H6)	72.0 x 14.8 x 7.4	120'	90°	(E) CCI TRIPLEX.: TPX–070821	(E) RRUS–11 (1), (E) RRUS–32 (1), (P)RRUS–E2 (1)	7/8ø COAX (2), FIBER AND DC POWER	
A3	PROPOSED	LTE 700 B14/AWS	KATHREIN (800–10965)	78.7 x 20.0 x 6.9	120'	90°		(P) B14–4478 (1), (P) RRUS–32 B66 (1)	FIBER AND DC POWER	
A4	EXISTING	LTE 700/PCS	QUINTEL (QS66512–2)	72.0 x 12.0 x 9.6	120'	90°		(E) RRUS–11 (1), (E) RRUS–32 B2 (1)	FIBER AND DC POWER	
B1	EXISTING	UMTS 850	POWERWAVE (7770)	55 x 11 x 5	120'	263°	(E) PWAV TMA: LGP21401 SINGLE 1900 W/ 850BP (2), (E) KATHREIN DIPLEX.: 782–10250		7/8ø COAX (2)	
B2	EXISTING	LTE WCS/850/700DE	CCI (OPA–65R–LCUU–H6)	72.0 x 14.8 x 7.4	120'	220°	(E) CCI TRIPLEX.: TPX–070821	(E) RRUS–11 (1), (E) RRUS–32 (1), (P)RRUS–E2 (1)	7/8ø COAX (2), FIBER AND DC POWER	
B3	PROPOSED	LTE 700 B14/AWS	KATHREIN (800–10965)	78.7 x 20.0 x 6.9	120'	220°		(P) B14–4478 (1), (P) RRUS–32 B66 (1)	FIBER AND DC POWER	
B4	EXISTING	LTE 700/PCS	QUINTEL (QS66512–2)	72.0 x 12.0 x 9.6	120'	220°		(E) RRUS–11 (1), (E) RRUS–32 B2 (1)	FIBER AND DC POWER	
C1	EXISTING	UMTS 850	POWERWAVE (7770)	55 x 11 x 5	120'	23°	(E) PWAV TMA: LGP21401 SINGLE 1900 W/ 850BP (2), (E) KATHREIN DIPLEX.: 782–10250		7/8ø COAX (2)	
C2	EXISTING	LTE WCS/850/700DE	CCI (OPA–65R–LCUU–H6)	72.0 x 14.8 x 7.4	120'	340°	(E) CCI TRIPLEX.: TPX–070821	(E) RRUS–11 (1), (E) RRUS–32 (1), (P)RRUS–E2 (1)	7/8ø COAX (2), FIBER AND DC POWER	
C3	PROPOSED	LTE 700 B14/AWS	KATHREIN (800–10965)	78.7 x 20.0 x 6.9	120'	340°		(P) B14–4478 (1), (P) RRUS–32 B66 (1)	FIBER AND DC POWER	
C4	EXISTING	LTE 700/PCS	QUINTEL (QS66512–2)	72.0 x 12.0 x 9.6	120'	340°		(E) RRUS–11 (1), (E) RRUS–32 B2 (1)	FIBER AND DC POWER	

RRU	SIZE (INCHES) (L x W x D)
RRUS–11	19.7 x 17 x 7.2
RRUS–32	27.2 x 12.1 x 7
RRUS–32 B2	27.2 x 12.1 x 7
RRUS–32 B66	27.2 x 12.1 x 7
B14–4478	14.9 x 13.1 x 7.3
RRUS–E2	20.4 x 18.5 x 7.5

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NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE

N–1

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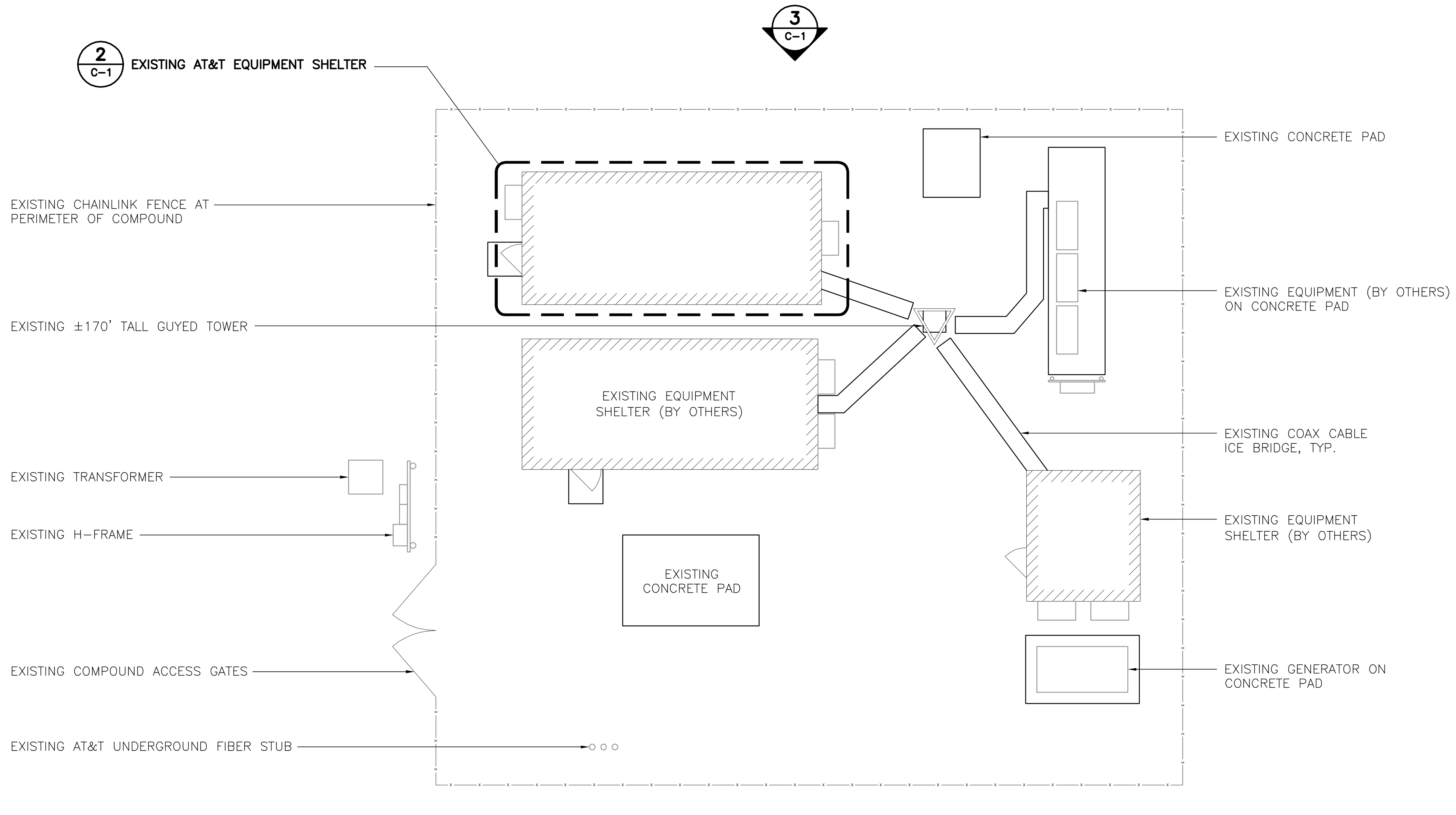
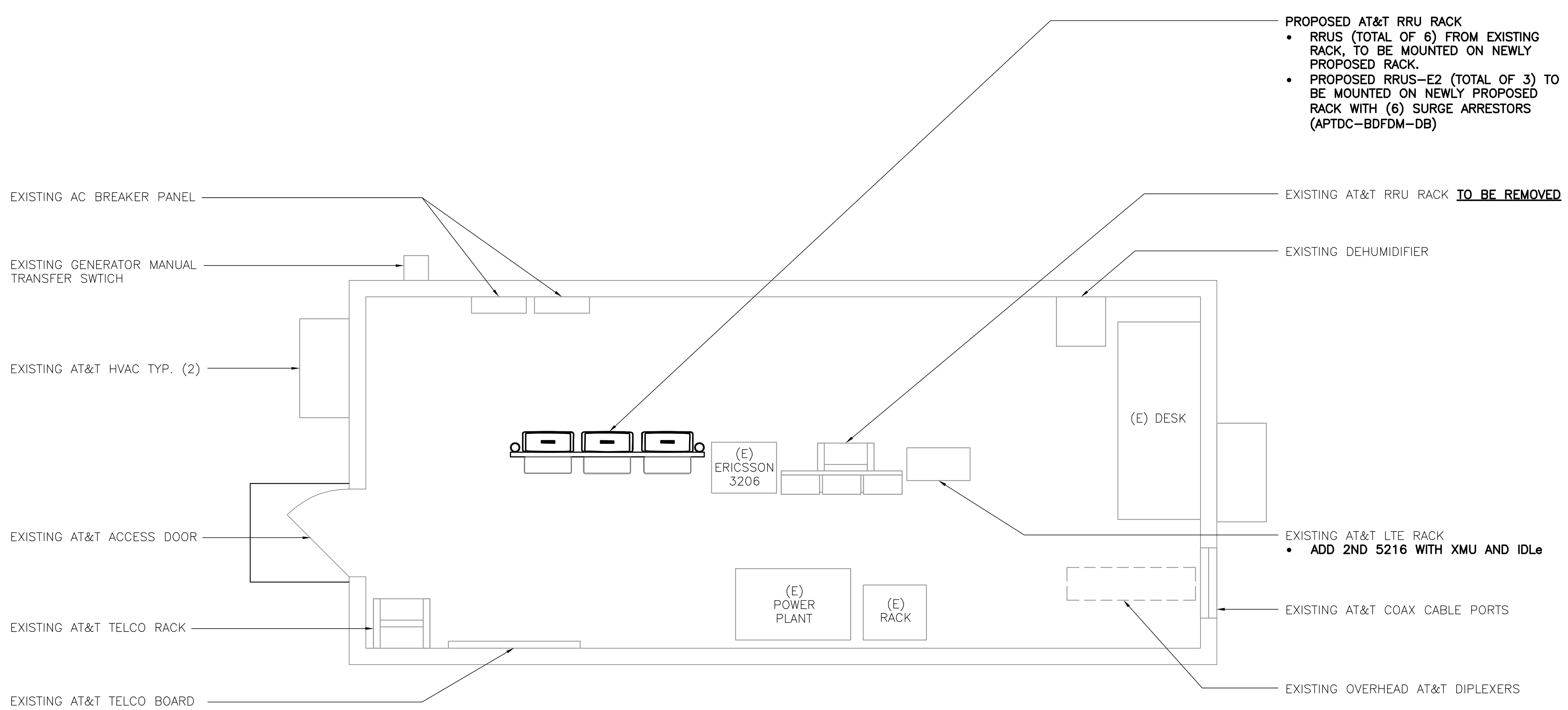


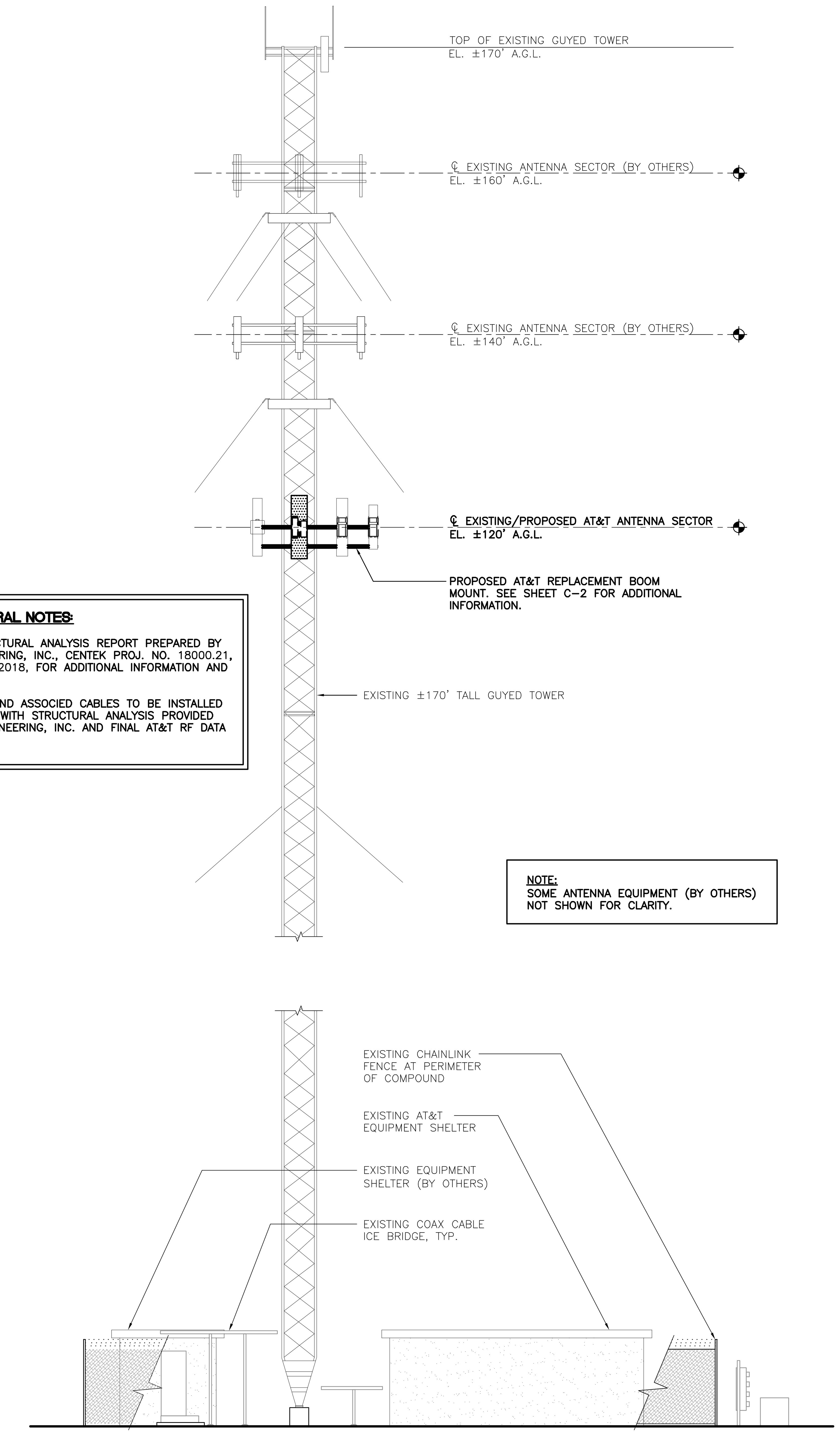
1 C-1 PARTIAL SITE PLAN
SCALE: 1/8" = 1'-0"



2 C-1 PROPOSED EQUIPMENT LAYOUT PLAN
SCALE: 3/8" = 1'-0"

TOWER STRUCTURAL NOTES:

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., CENTEK PROJ. NO. 18000.21, DATED MAY 25, 2018, FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND ASSOCIED CABLES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CENTEK ENGINEERING, INC. AND FINAL AT&T RF DATA SHEET.



3 C-1 PARTIAL NORTH ELEVATION - PROPOSED
SCALE: 1/8" = 1'-0"

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PLANS AND ELEVATION

C-1

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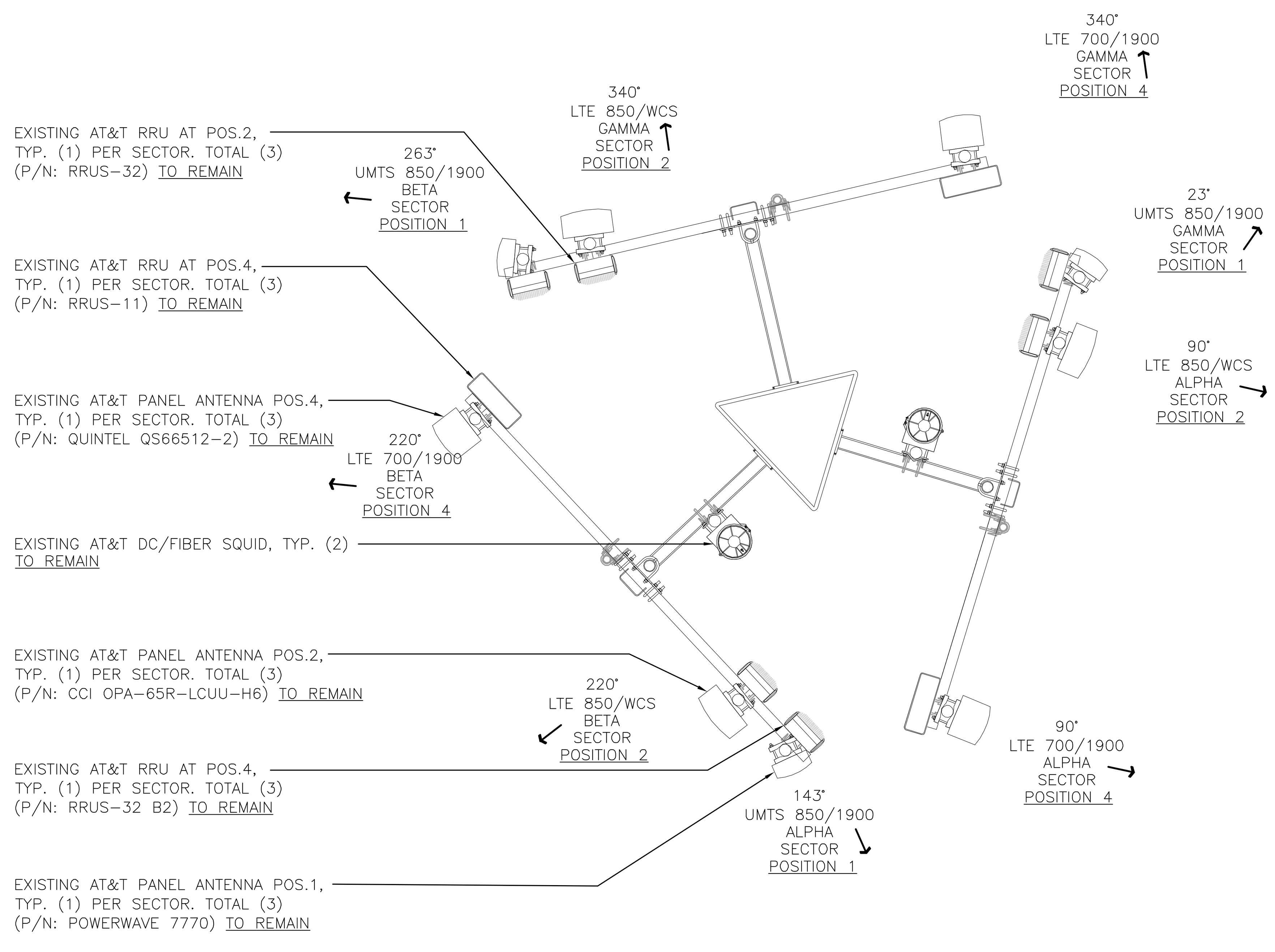
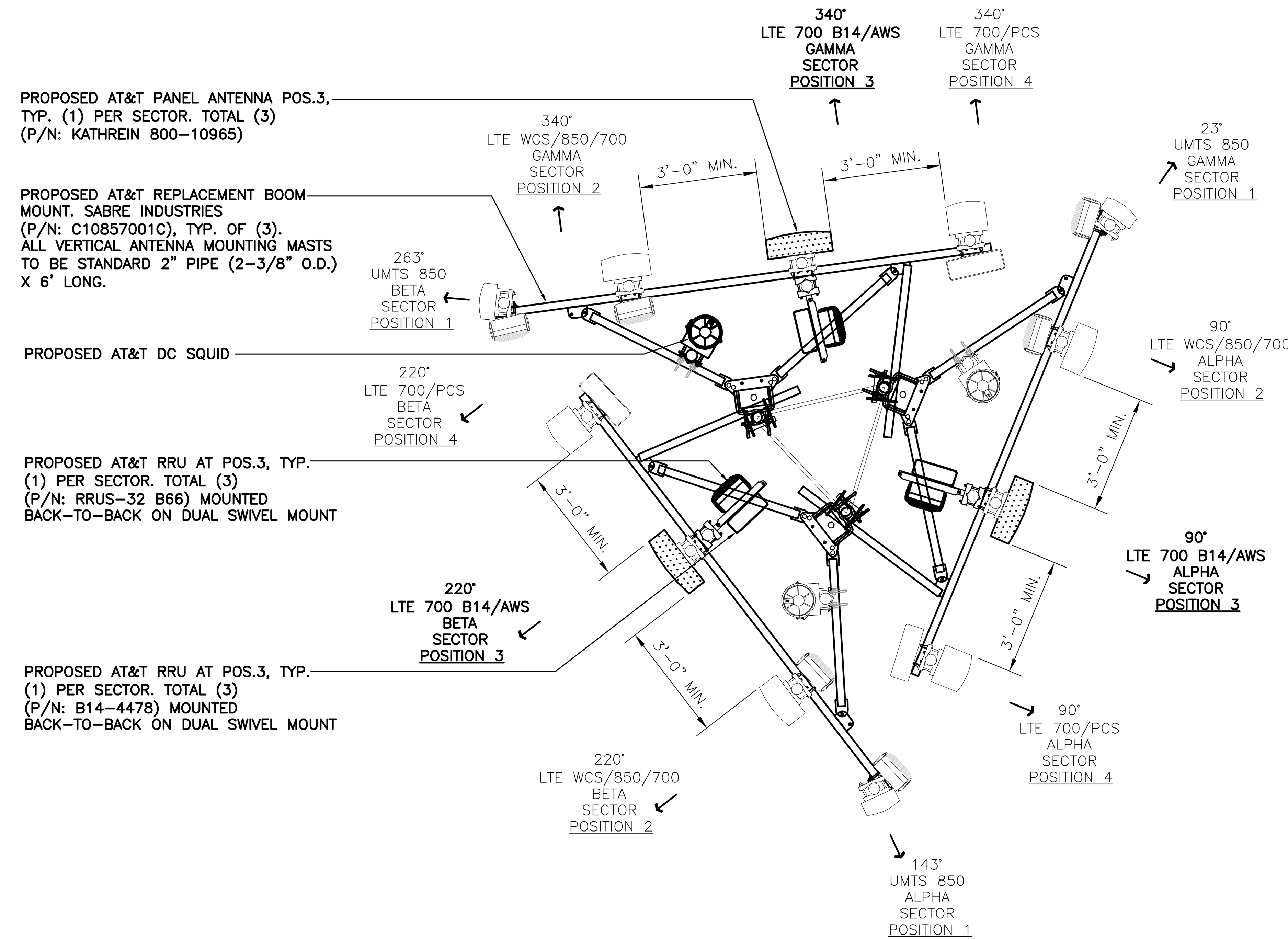
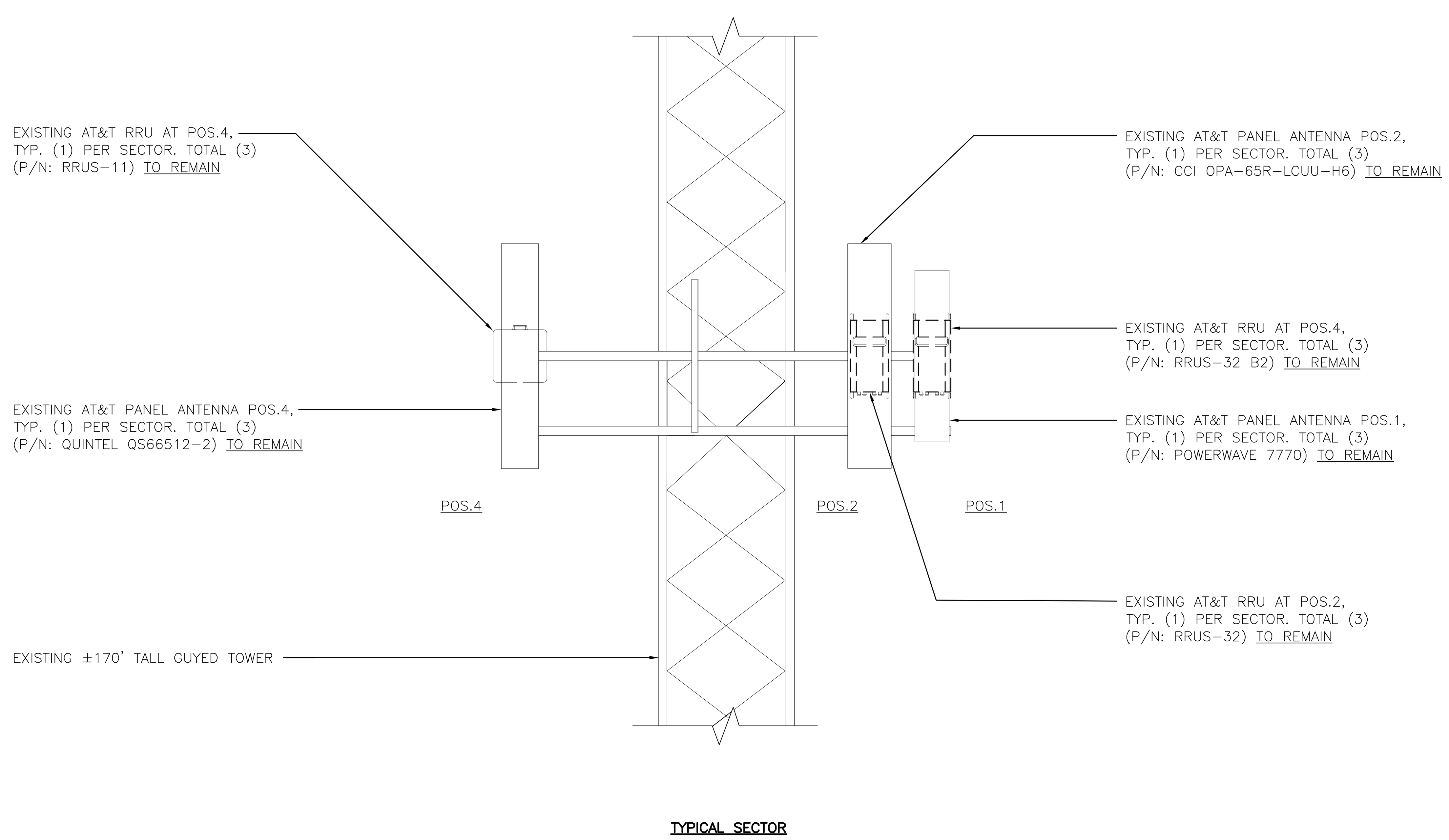


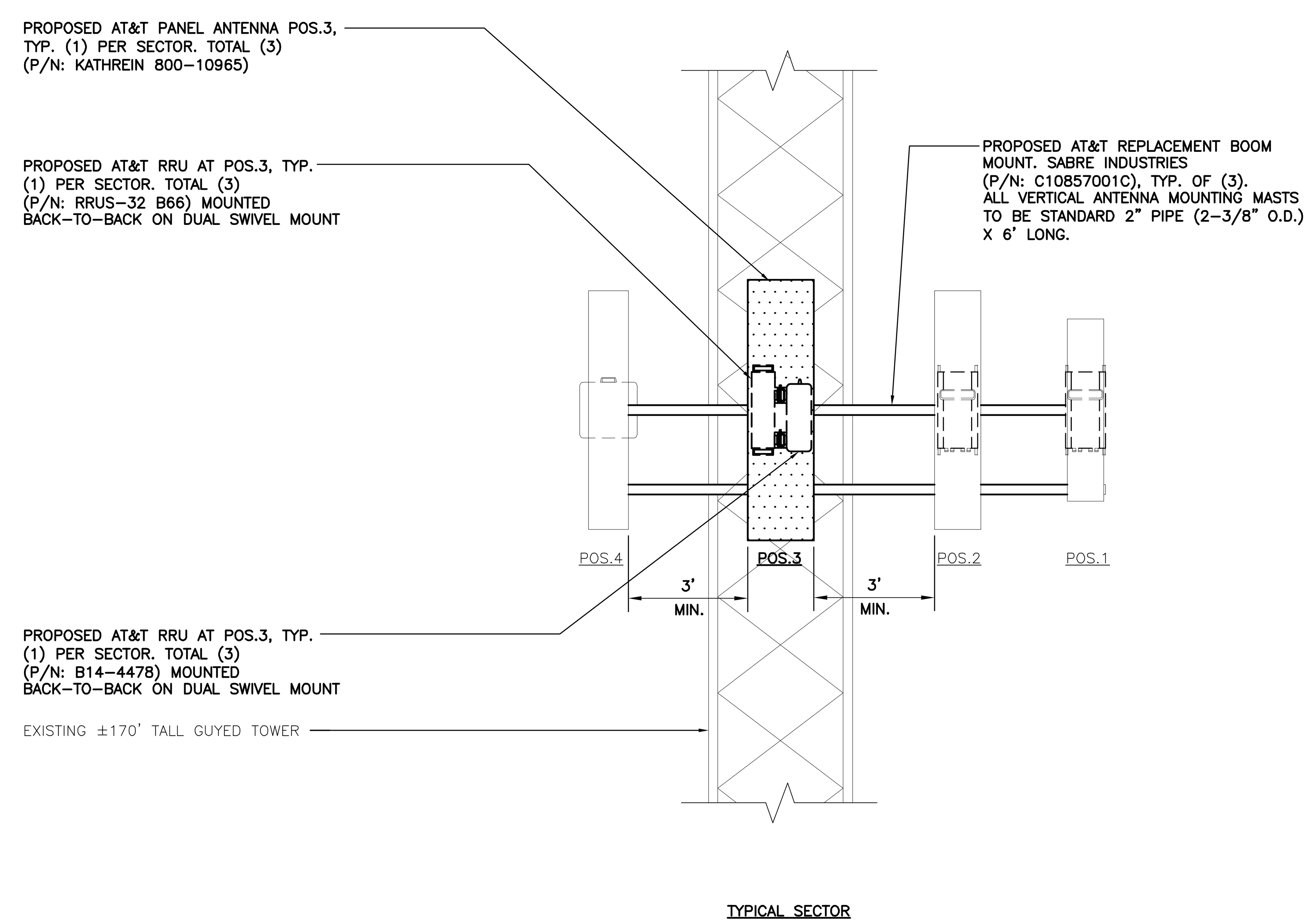
1 C-2 **EXISTING ANTENNA PLAN**
SCALE: 3/8" = 1'-0"
TRUE NORTH



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



1A C-2 **EXISTING ANTENNA ELEVATION**
SCALE: 3/8" = 1'-0"



2A C-2 **PROPOSED ANTENNA ELEVATION**
SCALE: 3/8" = 1'-0"

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ANTENNA CONFIGURATION DETAILS

C-2

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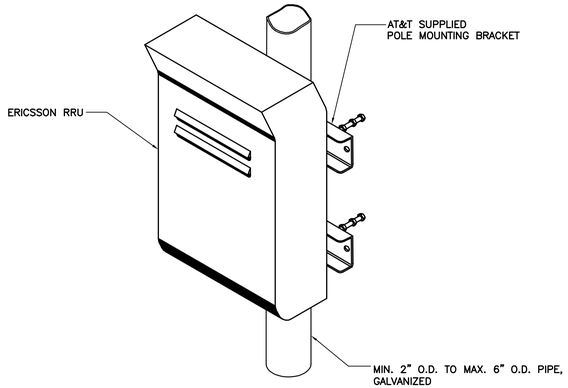


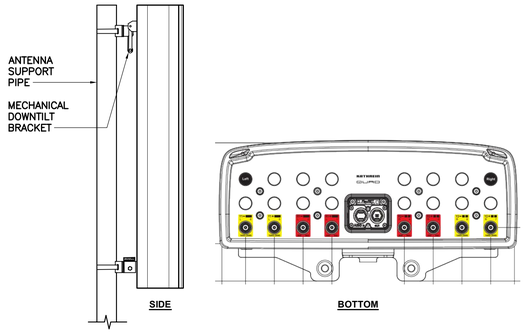
ISOMETRIC VIEW

NOTES:

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

1 C-3 TYPICAL RRUS MOUNTING DETAILS

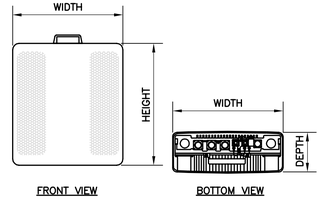
NOT TO SCALE



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KATHREIN MODEL: 800-10965	78.7"L x 20"W x 6.9"D	108.6 LBS.

2 C-3 PROPOSED ANTENNA DETAIL

NOT TO SCALE



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-E2	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.

3 C-3 ERICSSON RRUS-E2 DETAIL

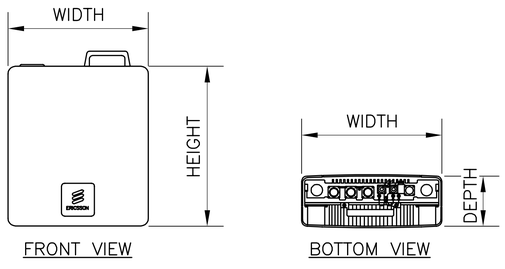
NOT TO SCALE

SURGE ARESSTOR		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ANDREW MODEL: APTDC-BDFDM-DB	3.46"H x 3.46"W x 1.65"D	1.32 LBS.

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

4 C-3 ANDREW APTDC-BDFDM-DB DETAIL

NOT TO SCALE

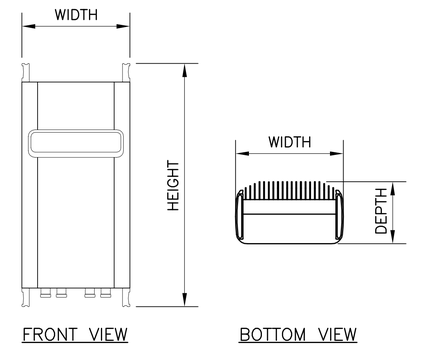


RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: B14 4478	14.9"L x 13.1"W x 7.3"D	60 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

5 C-3 ERICSSON B14 4478 DETAIL

NOT TO SCALE



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B66	27.17"L x 12.05"W x 7.01"D	52.91 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-3 ERICSSON RRUS-32 B66 DETAIL

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DETAILS

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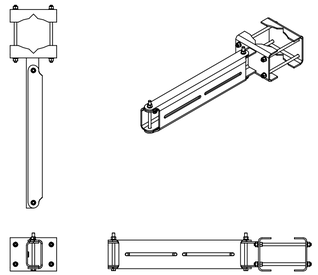
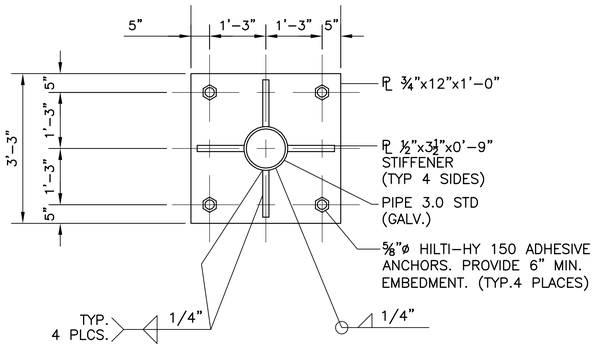
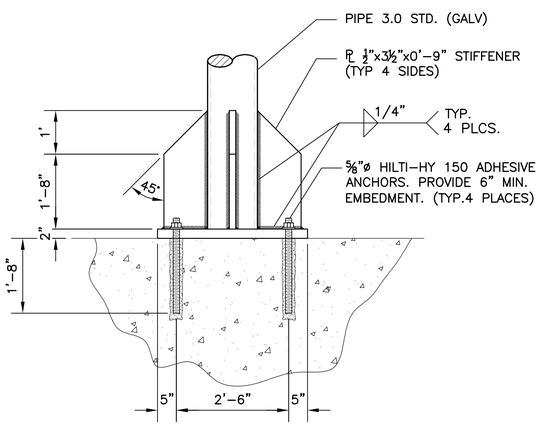


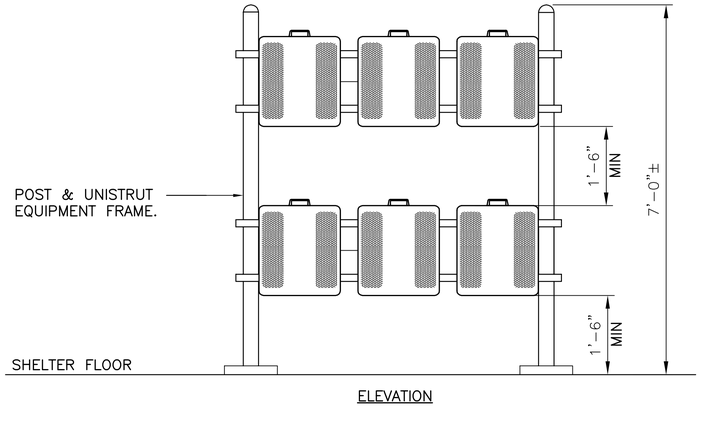
RRU DUAL SWIVEL MOUNT		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRUDSM	27.75"L x 6.5"W x 4.7"D	39.4 LBS.

1 C-4 **RRH DUAL SWIVEL MOUNT DETAIL**
NOT TO SCALE



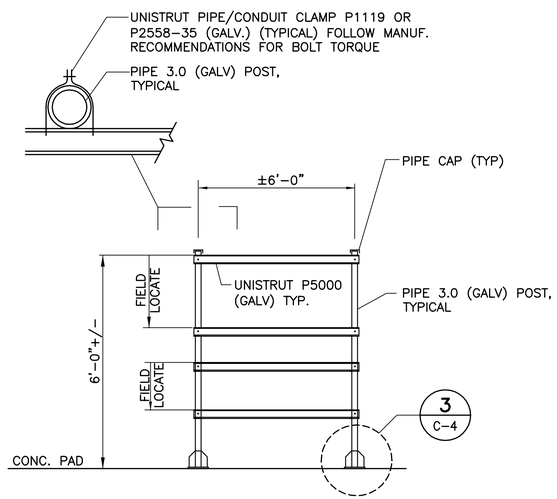


3 C-4 **FRAME TO CONCRETE CONNECTION DETAIL**
NOT TO SCALE

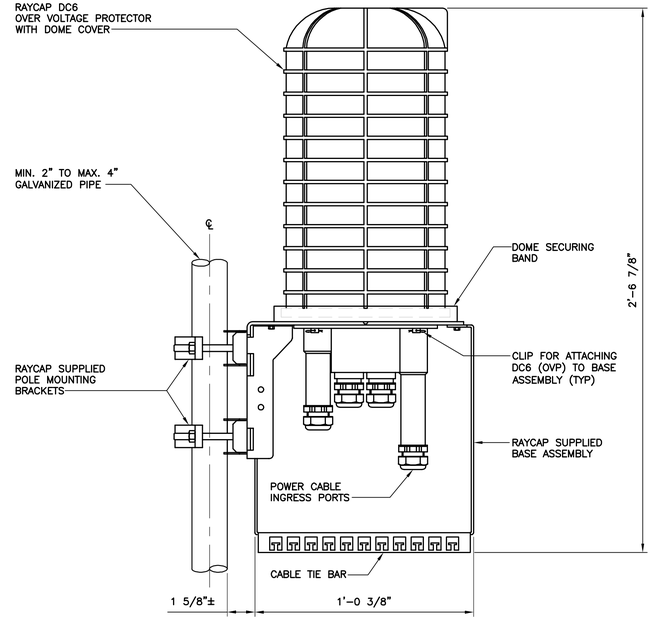


ELEVATION

2 C-4 **EQUIPMENT FRAME ELEVATION DETAIL**
NOT TO SCALE



4 C-4 **EQUIPMENT MOUNTING FRAME DETAIL (TYP)**
NOT TO SCALE



ELEVATION

SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-0-8F	(1) PER SITE	TOWER, ADJACENT TO AT&T ANTENNAS AND RRUs.	20 LBS. (WITHOUT MOUNT)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATIONS.
3. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

5 C-4 **TYPICAL DC FIBER SQUID DETAIL**
NOT TO SCALE

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DETAILS

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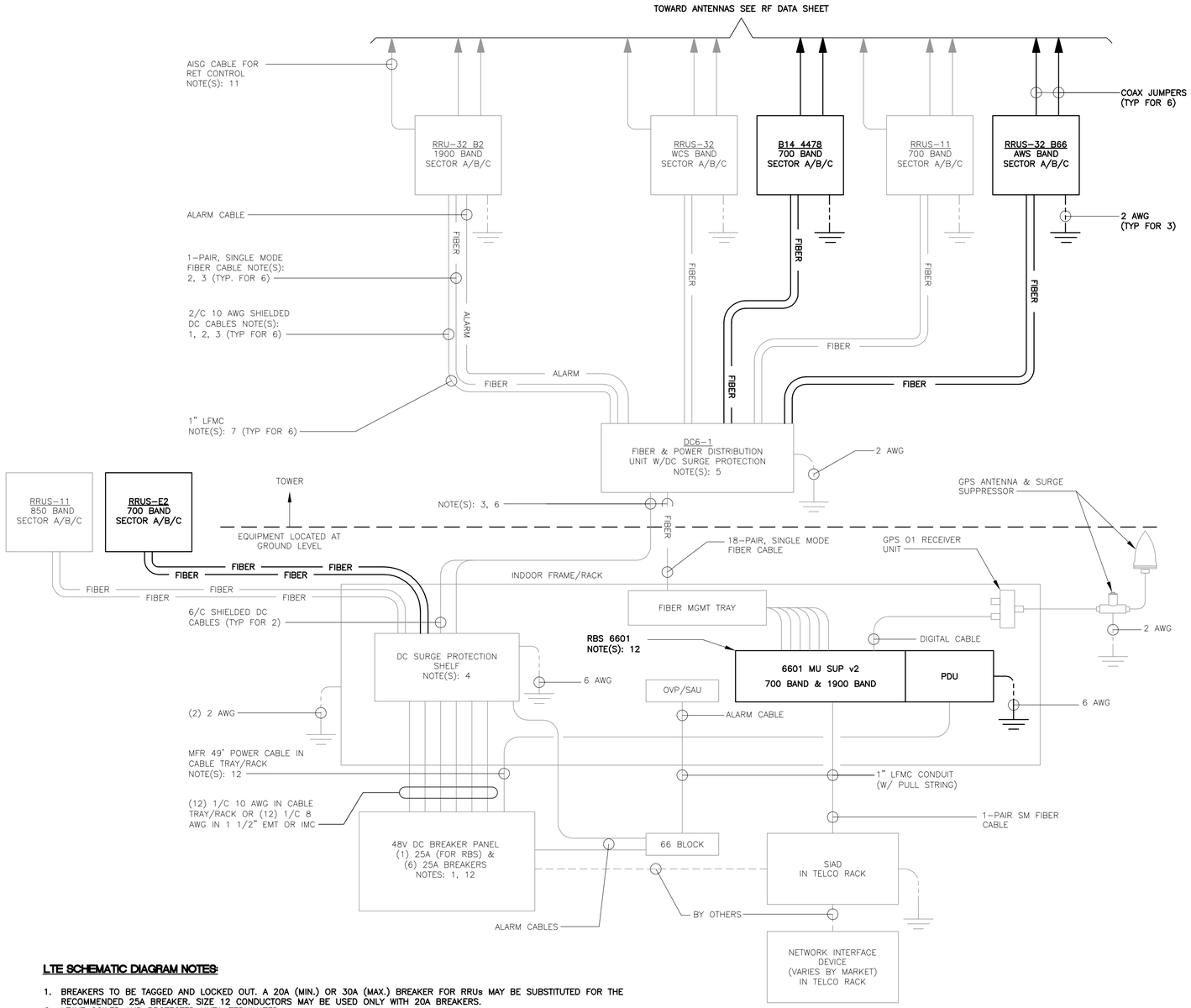

LTE SCHEMATIC DIAGRAM NOTES:

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.

1 / E-1 **SCHEMATIC DIAGRAM**

NOT TO SCALE

ELECTRICAL NOTES

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

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

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

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	05/31/18	DMD	CAG	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

NEWINGTON

CT1145 - LTE 5C/6C/7C FIRSTNET

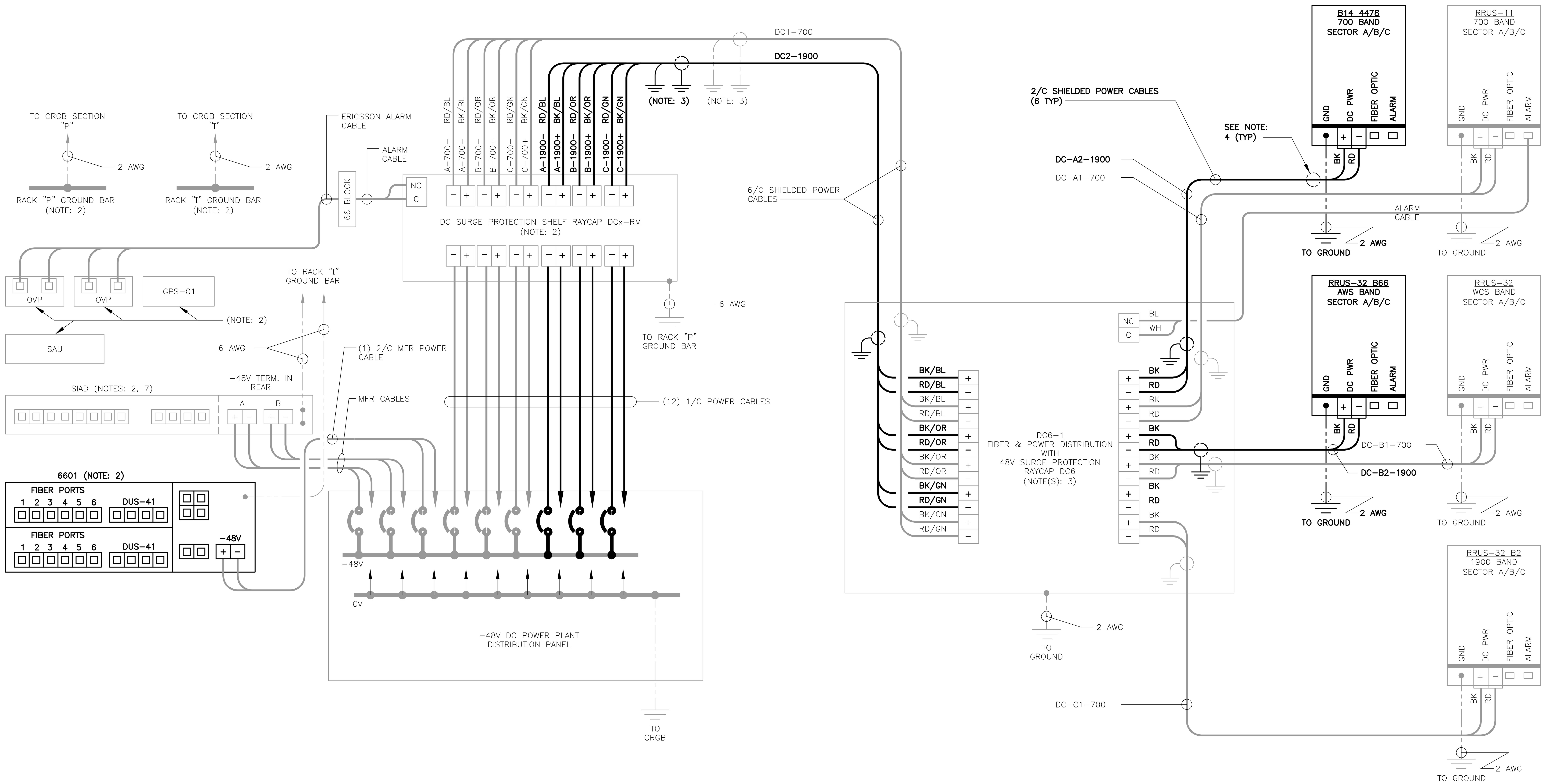
99 CEDARWOOD LANE
NEWINGTON, CT 06111

DATE: 03/15/18
SCALE: AS NOTED
JOB NO. 18000.21

SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 7 of 9



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.

1
E-2

WIRING DIAGRAM

NOT TO SCALE

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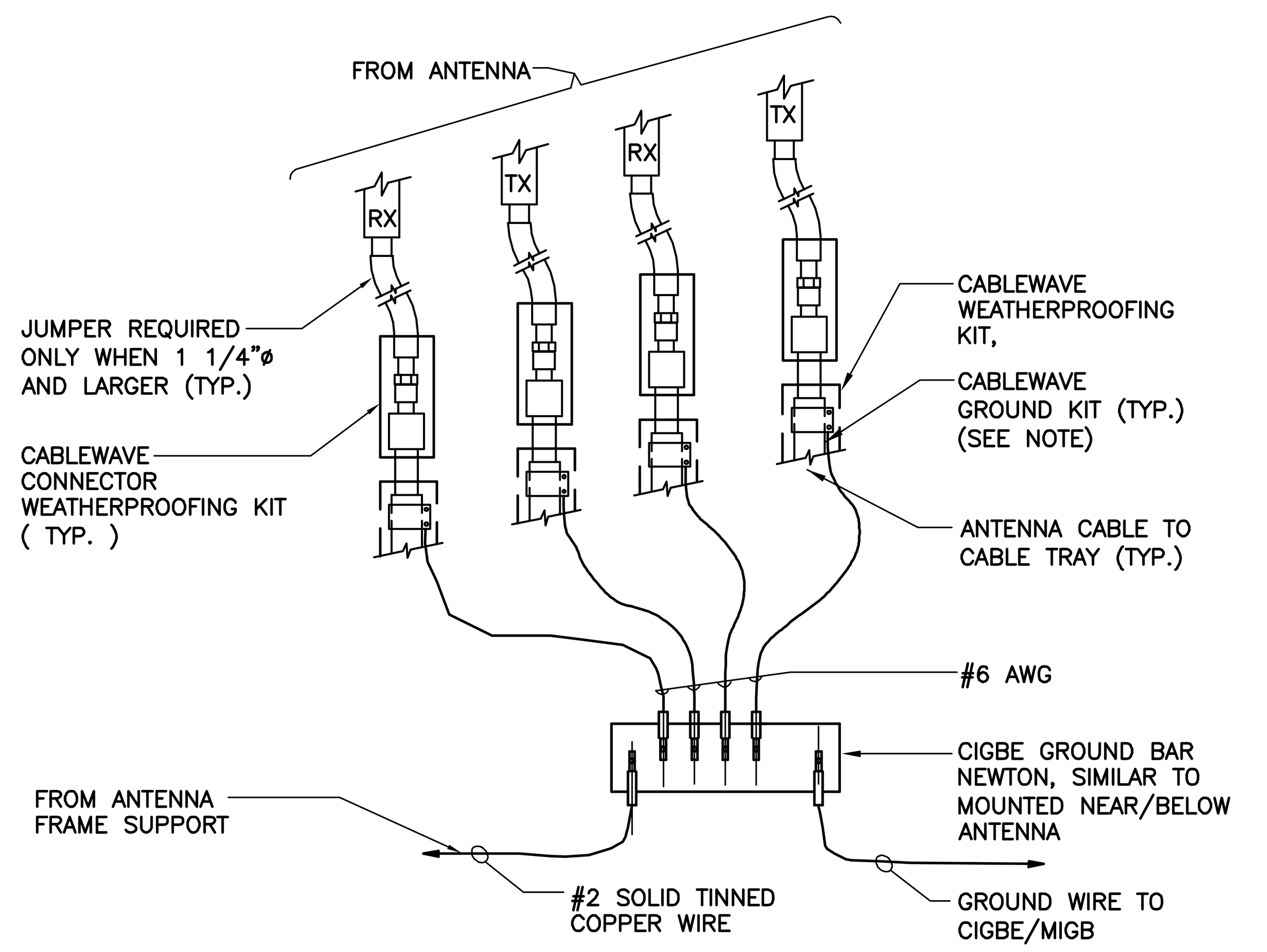
NEWINGTON, CT 06111

DATE: 03/15/18
SCALE: AS NOTED
JOB NO. 18000.21

WIRING DIAGRAM

E-2

Sheet No. 8 of 9

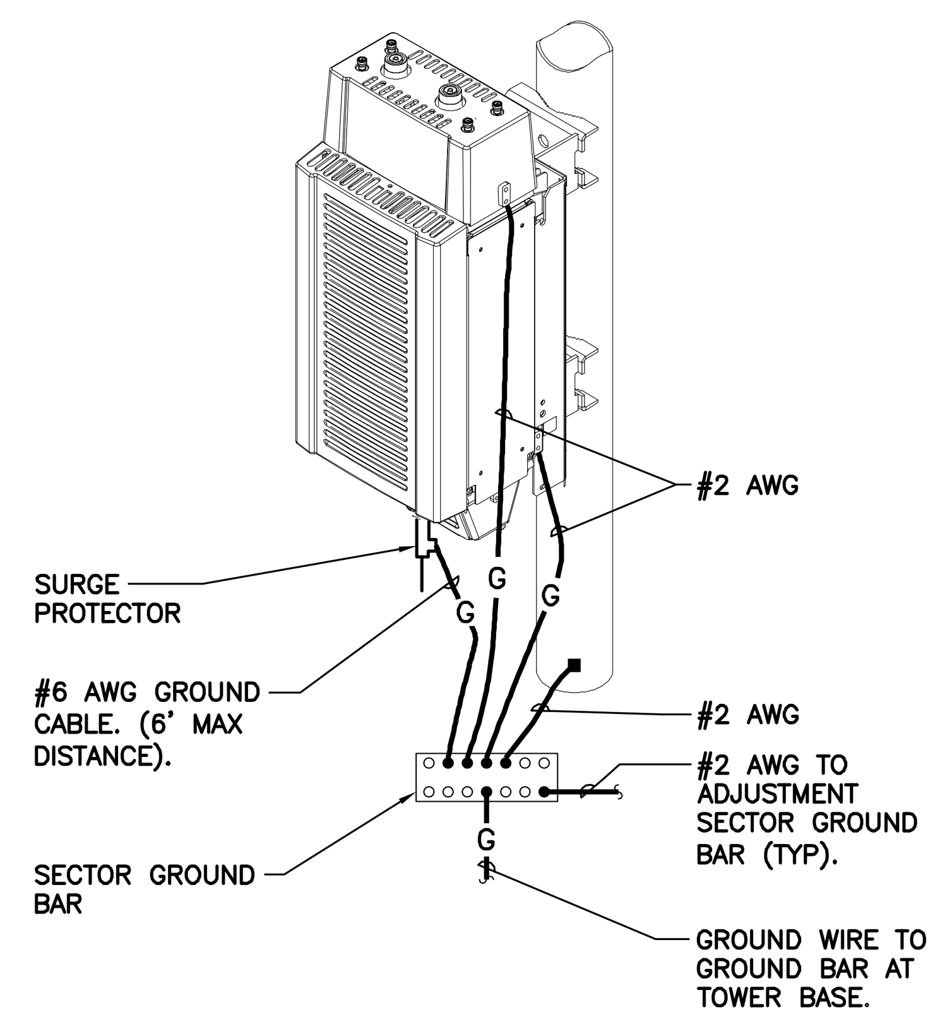


NOTE:

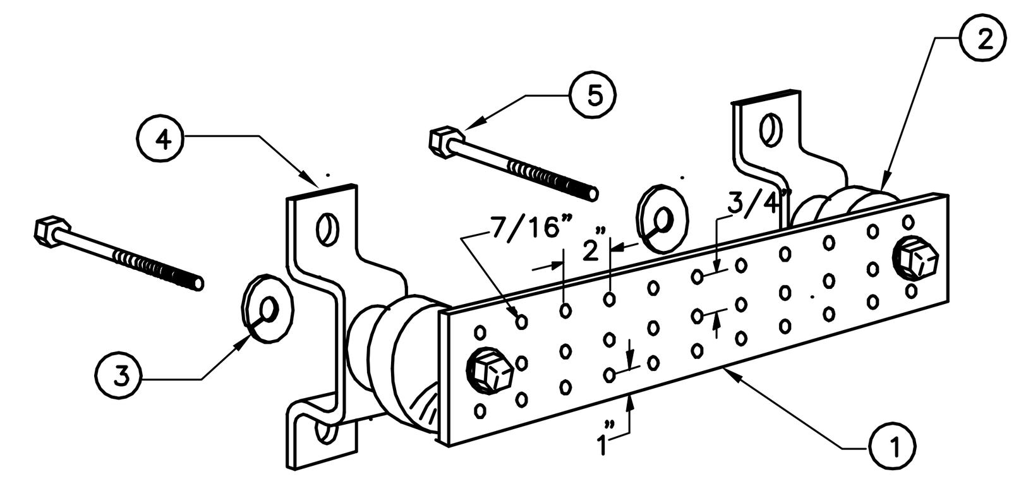
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

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

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



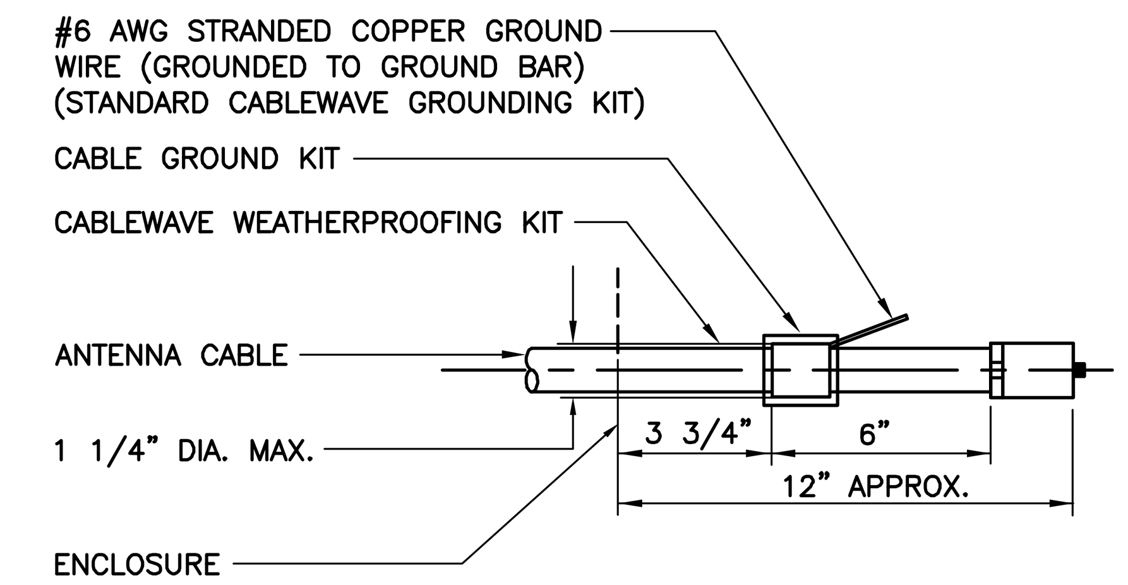
2 E-3 **RRU POLE MOUNT GROUNDING**
NOT TO SCALE



LEGEND

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

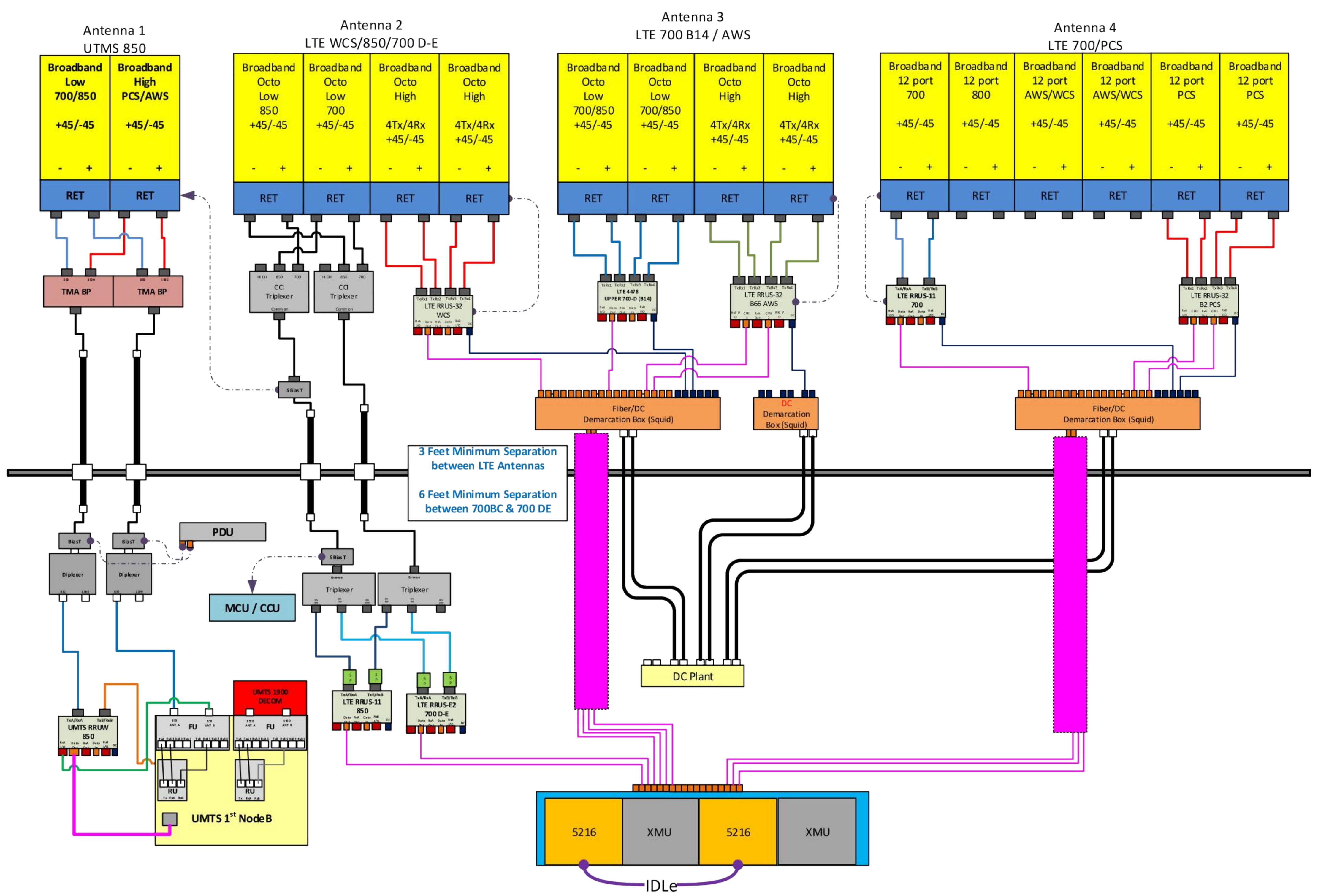
3 E-3 **GROUND BAR DETAIL**
NOT TO SCALE



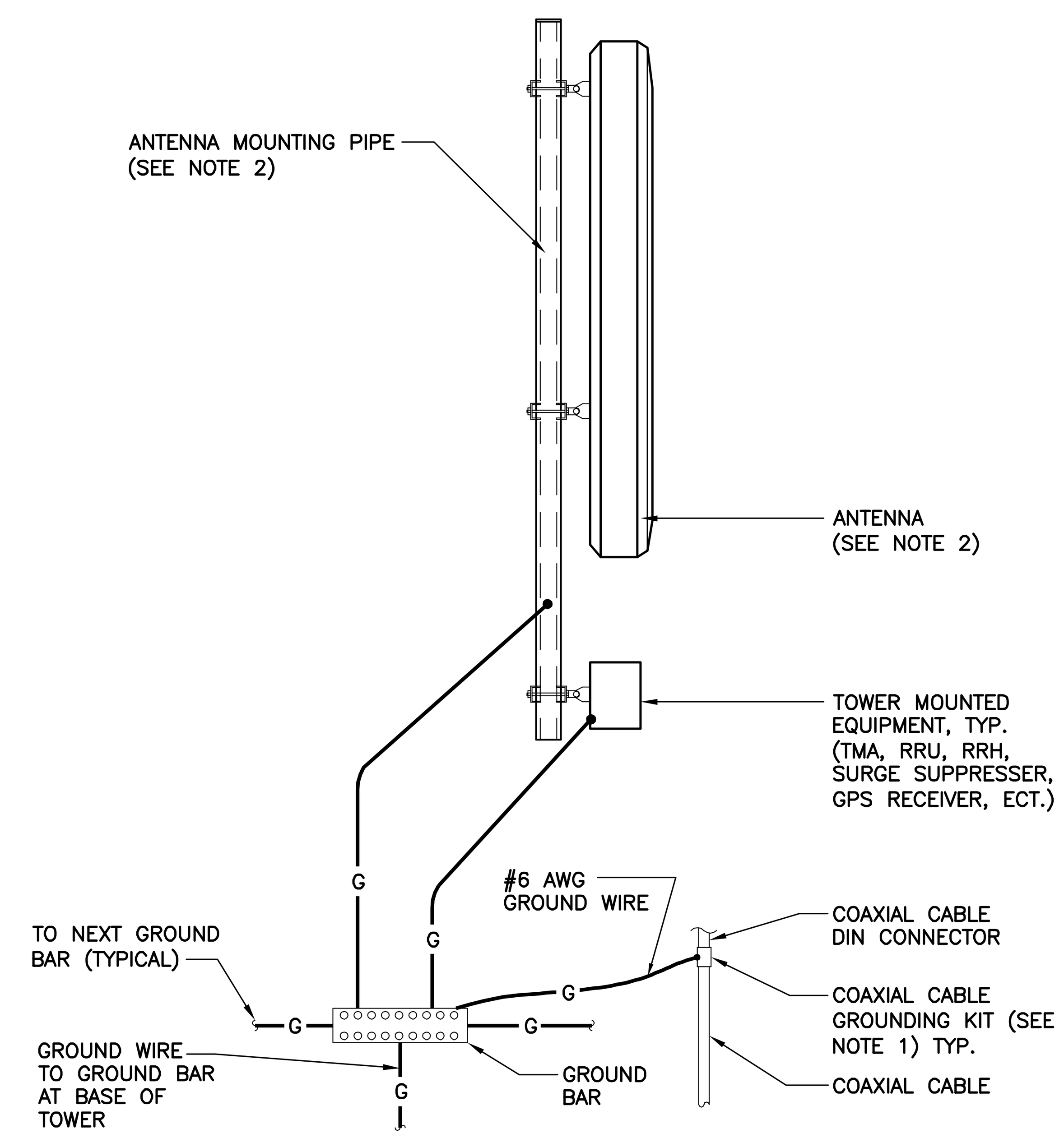
NOTE:

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



5 E-3 **RF PLUMBING DIAGRAM**
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.

6 E-3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE

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NEWINGTON, CT 06111

DATE: 03/15/18
SCALE: AS NOTED
JOB NO. 18000.21

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 9 of 9

CENTEK engineering

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Structural Analysis Report

170' Existing Guyed Lattice Tower

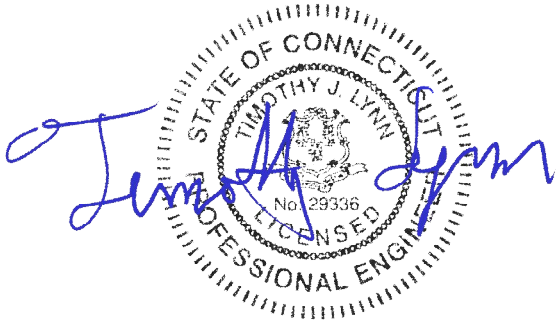
Site #: CT1145
Site Name: Newington
Project: LTE 5C-6C-7C Firstnet
PACE #: MRCTB024103 /MRCTB022772
PT #: 2051A0B9JN /2051A0AD2A
FA #: 10035097

99 Cedarwood Lane
Newington, CT 06111

Centek Project No. 18000.21

Date: May 25, 2018

Max Stress Ratio = 98.2%



Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

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Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by AT&T Mobility on the existing guyed lattice tower located in Newington, CT.

The host tower is a 170-ft, three legged, guyed lattice tower. The tower geometry, structure member sizes, tower reinforcement and foundation system information were taken from a previous structural report prepared by Maser Consulting dated December 21, 2017.

Antenna and appurtenance information were obtained from the aforementioned Maser Consulting structural report, visual verification from grade conducted by Centek personnel on January 1, 2018 and a Verizon RF data sheet.

The tower consists of ten (10) vertical sections consisting of pipe legs conforming to ASTM A572-50. Diagonal and horizontal lateral support bracing consists of pipe and steel angle conforming to ASTM A36. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of bolted connections. The width of the tower face is 3.42-ft throughout its length with the exception of a 5' tapered base section.

Antenna and Appurtenance Summary

The existing and proposed loads considered in the analysis consist of the following:

- UNKOWN (EXISTING):
  Antennas: Two (2) dbSpecta DS4C03F36U-D Omni-directional whips and one (1) TTA mounted on two (2) 3-ft side arms with an elevation of 175-ft above grade.
  Coax Cables: Two (2) 1-5/8" ∅ and one (1) 1/2" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- UNKOWN (EXISTING):
  Antennas: Three (3) Sinclair SC473-HF1LDF whip antennas leg mounted with an elevation of 175-ft above grade.
  Coax Cables: Three (3) 7/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- UNKOWN (EXISTING):
  Antennas: One (1) 5-ft panel antenna and one (1) TTA leg mounted with an elevation of 168-ft above grade.
  Coax Cables: One (1) 1-5/8" ∅ one (1) 1/2" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- UNKOWN (EXISTING):
  Antennas: One (1) 2-ft dish leg mounted with an elevation of 167-ft above grade.
  Coax Cables: One (1) 1/2" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- T-MOBILE (EXISTING):
  Antennas: Three (3) Ericsson AIR32 panel antennas, three (3) RFS APX16DWV-16DWVS panel antennas, three (3) Andrew LNX-6515DS panel antennas and six (6) TMA's mounted on three (3) 12-ft boom gates with a RAD center elevation of 163-ft above grade.
  Coax Cables: Eighteen (18) 1-5/8" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- SPRINT (EXISTING):
  Antennas: Three (3) KMW ETCR-654L12H6 panel antennas, six (6) 800 MHz RRH, three (3) 1900 MHz RRH, three (3) TD-RRH8x20-25 remote radio heads and three (3) 2-ft microwave dishes mounted on three (3) 12-ft T-Frames with a RAD center elevation of 141.5-ft above grade.
  Coax Cables: Three (3) 1-1/4" ∅ and (1) 7/8" ∅ fiber cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- UNKOWN (EXISTING):
  Antennas: Two (2) GPS antennas leg mounted with an elevation of 30-ft above grade.
  Coax Cables: Two (2) 1/2" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- AT&T (EXISTING TO REMAIN):
  Antennas: Three (3) Qunitel QS66512-2 panel antennas, three (3) Powerwave 7770 panel antennas, three (3) CCI OPA-65R-LCUU-H6 panel antennas, six (6) Powerwave LGP21401 TMAs, six (6) CCI TPX-070821 triplexers, three (3) Ericsson RRUS-32 remote radio heads, three (3) Ericsson RRUS-11 remote radio heads, three (3) Ericsson RRUS-32 B2 remote radio heads and two (2) Raycap DC6-48-60-18-8F surge arrestor mounted on three (3) 12-ft T-Frames with a RAD center elevation of 120-ft above grade.
  Coax Cables: Twelve (12) 7/8" ∅ coax cables, two (2) fiber cable and four (4) dc control cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- **AT&T (EXISTING TO REMOVE):**
  Mounts: Three (3) 12-ft T-Frames with a RAD center elevation of 120-ft above grade.
- **AT&T (PROPOSED):**
  Antennas: Three (3) Kathrein 800-10965 panel antennas, three (3) Ericsson RRUS-32 B66 remote radio heads, three (3) Ericsson 4478 remote radio heads one (1) Raycap DC6-48-60-18-8F surge arrestor mounted on three (3) Sabre 12' HD V-Booms (p/n C10857001C) with a RAD center elevation of 120-ft above grade.
  Coax Cables: One (1) fiber cable and two (2) dc control cables running on a leg/face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables routed as specified in Section 3 of this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled "Structural Standard for Antenna Support Structures and Antennas", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-G-2005 Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 1.00" radial ice on the tower structure and its components.

Basic Wind Speed:	Hartford County; v = 90-105 mph (3-second gust)	*[Annex B of TIA-222-G-2005]*
	Newington; v = 97 mph (Nominal)	*[Appendix N of the 2016 CT Building Code]*
Load Cases:	Load Case 1; 97 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2016 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 1.00" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*

[1] The 2012 International Building Code as amended by the 2016 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits. This tower was found to be at **98.2%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T11)	100'-0"-102'-6"	98.2%	**PASS**
Diagonal (T2)	140'-0"-155'-0"	81.9%	**PASS**
Guy A @ 106-ft radius (T2)	152.33'	80.3%	**PASS**

Foundation and Anchors

The existing tower base foundation consists of a 2-ft square x 1.75-ft long reinforced concrete pier on a 9.5-ft square x 2.75-ft thick reinforced concrete pad bearing directly on existing sub grade. The guy anchor foundation consists of three (3) 4.0-ft x 12-ft x 1'-10" thick concrete blocks.

- The worst case tower base and guy anchor reactions developed from the governing Load Case 2 were used in the verification of the anchorage foundations:

Tower Guy Reactions	
Vector	**Proposed Reactions Guy Anchor A @ Radius of 106-ft**
Horizontal (In Plane of GW)	**39 kips**
Horizontal (Out of Plane of GW)	**1 kips**
Vertical	**43 kips**
Resultant Force at end of Guy Wire	**58 kips**
Tower Base Reactions	
Vector	**Proposed Reaction**
Horizontal Shear	**2.0 kips**
Axial Compression	**200.0 kips**
Moment	**0 kip-ft**

Foundation	Design Limit	TIA-222-G Section 9.4 FS[(1)]	Proposed Loading (FS)[(1)]	Result
Reinf. Conc. Anchor Block (A) at 106-ft radius.	Uplift	1.0	1.9	**PASS**
	Sliding	1.0	1.8	**PASS**
		Ultimate Bearing	**Proposed**	
Base Foundation	Bearing	8.0 ksf	2.64 ksf	**PASS**
	Sliding	2.0	40.9	**PASS**

Note 1: FS denotes 'Factor of Safety'.

Conclusion

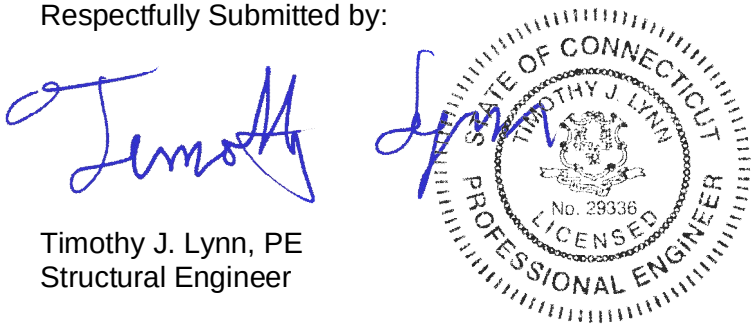
This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration with the below requirement.

- **All reinforcements detailed in the structural analysis and modification report prepared by Maser Consulting dated December 1, 2017 for Sprint must be completed prior to equipment installation.**

The analysis is based, in part, on the information provided to this office by AT&T Mobility. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

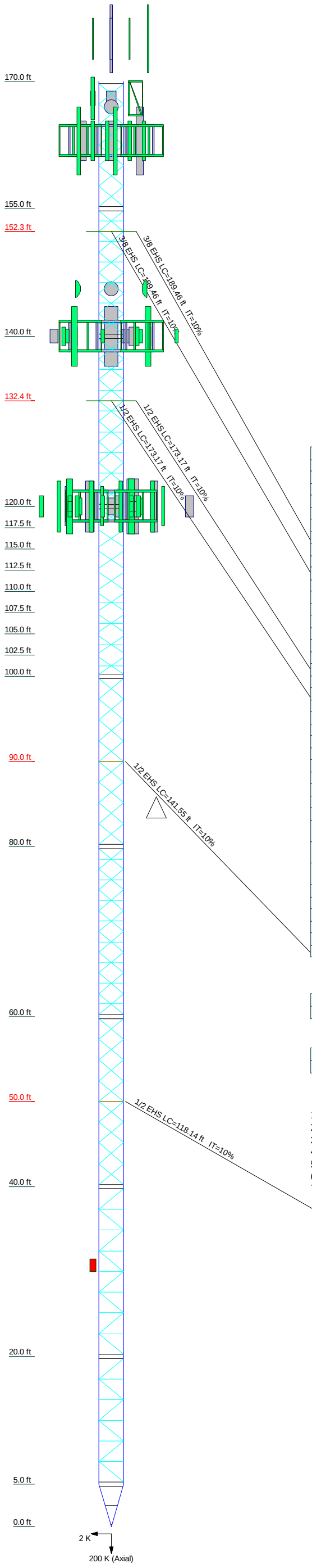
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		2.5 Std. Pipe w/ 1/4 3 Std. Pipe		ROHN 2.5 STD	ROHN 2.0 Std. w/ 1/3 HSS3.5x.3	ROHN 2.5 STD			ROHN 2 STD					A	ROHN 2.0 Std. w/ 1" SR	ROHN 2 STD	
Leg Grade				A572-50													
Diagonals	N.A.				4x3/8	4x3/8									L1 3/4x1 3/4x1/4		
Diagonal Grade	N.A.																
Top Girts	3x1/4				ROHN TS1.5x16 ga												
Mid Girts	3x1/4	N.A.				ROHN TS1.5x16 ga											
Bottom Girts	3x1/4																
Horizontals	N.A.		SR 1		L2x2x3/16												
Sec. Horizontals			N.A.			N.A.									N.A.		
Top Guy Pull-Offs		N.A.			N.A.												
Face Width (ft)																	
# Panels @ (ft)	4 @ 1.125	6 @ 2.41667			32 @ 2.4375										8 @ 2.4375	12 @ 2.41667	3.42
Weight (K)	6.9	0.2	0.6	0.8	0.6	0.8	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.1	1.6	0.9	0.3



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DS4C03F36U-D	175	(2) FD-RRH 2x50 800 (Sprint - Existing)	140
DS4C03F36U-D	175	(2) FD-RRH 2x50 800 (Sprint - Existing)	140
SC473-HF1LDF	175	FD-RRH 4x45 1900 (Sprint - Existing)	140
SC473-HF1LDF	175	TD-RRH8x20-25 (Sprint - Existing)	140
SC473-HF1LDF	175	TD-RRH8x20-25 (Sprint - Existing)	140
Tower Top Amplifier	168	B14 4478 (ATI - Proposed)	120
ROHN 3-ft Side Arm	168	B14 4478 (ATI - Proposed)	120
ROHN 3-ft Side Arm	168	B14 4478 (ATI - Proposed)	120
Tower Top Amplifier	168	DC6-48-60-18-8F Surge Arrestor (ATI - Proposed)	120
5' Panel Antenna	168	Sabre 12" HD V-Boom (ATI - Proposed)	120
2' Dish	167	Sabre 12" HD V-Boom (ATI - Proposed)	120
APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	163	Sabre 12" HD V-Boom (ATI - Proposed)	120
AIR32 (T-Mobile - Existing)	163	(2) TPX-070821 (ATI - Existing)	120
LNX-6515DS (T-Mobile - Existing)	163	RRUS-11 (ATI - Existing)	120
APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	163	RRUS-11 (ATI - Existing)	120
AIR32 (T-Mobile - Existing)	163	RRUS-11 (ATI - Existing)	120
LNX-6515DS (T-Mobile - Existing)	163	7770.00 (ATI - Existing)	120
APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	163	OPA-65R-LCUU-H6 (ATI - Existing)	120
AIR32 (T-Mobile - Existing)	163	QS66512-2 (ATI - Existing)	120
LNX-6515DS (T-Mobile - Existing)	163	7770.00 (ATI - Existing)	120
(2) TMA 10"x8"x3" (T-Mobile - Existing)	163	OPA-65R-LCUU-H6 (ATI - Existing)	120
(2) TMA 10"x8"x3" (T-Mobile - Existing)	163	QS66512-2 (ATI - Existing)	120
(2) TMA 10"x8"x3" (T-Mobile - Existing)	163	7770.00 (ATI - Existing)	120
Rohn 6' x 12' Boom Gate (1) (T-Mobile - Existing)	163	OPA-65R-LCUU-H6 (ATI - Existing)	120
Rohn 6' x 12' Boom Gate (1) (T-Mobile - Existing)	163	QS66512-2 (ATI - Existing)	120
Rohn 6' x 12' Boom Gate (1) (T-Mobile - Existing)	163	(2) LGP21401 TMA (ATI - Existing)	120
VHLP2-180	145.6	(2) LGP21401 TMA (ATI - Existing)	120
VHLP2-180	145.6	(2) RRUS-32 (ATI - Existing)	120
VHLP2-180	145.6	(2) RRUS-32 (ATI - Existing)	120
TD-RRH8x20-25 (Sprint - Existing)	140	(2) RRUS-32 (ATI - Existing)	120
Pirod 12' T-Frame Sector Mount (1) (Sprint - Existing)	140	DC6-48-60-18-8F Surge Arrestor (ATI - Existing)	120
		DC6-48-60-18-8F Surge Arrestor (ATI - Existing)	120
Pirod 12' T-Frame Sector Mount (1) (Sprint - Existing)	140	80010965 (ATI - Proposed)	120
		80010965 (ATI - Proposed)	120
Pirod 12' T-Frame Sector Mount (1) (Sprint - Existing)	140	80010965 (ATI - Proposed)	120
		RRUS-32 (ATI - Proposed)	120
ETCR-654L12H6 (Sprint - Existing)	140	RRUS-32 (ATI - Proposed)	120
(2) FD-RRH 2x50 800 (Sprint - Existing)	140	(2) LGP21401 TMA (ATI - Existing)	120
FD-RRH 4x45 1900 (Sprint - Existing)	140	(2) TPX-070821 (ATI - Existing)	120
ETCR-654L12H6 (Sprint - Existing)	140	(2) TPX-070821 (ATI - Existing)	120
FD-RRH 4x45 1900 (Sprint - Existing)	140	RRUS-32 (ATI - Proposed)	120
ETCR-654L12H6 (Sprint - Existing)	140	(2) GPS	30

SYMBOL LIST

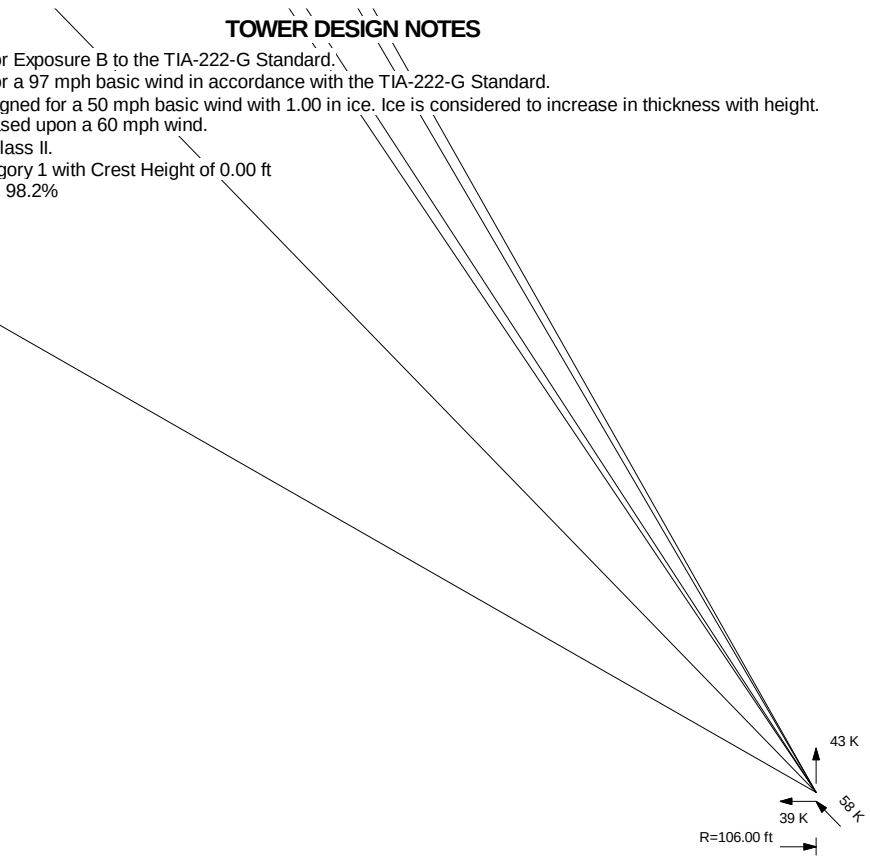
MARK	SIZE	MARK	SIZE
A	ROHN TS1.5x16 ga		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 98.2%



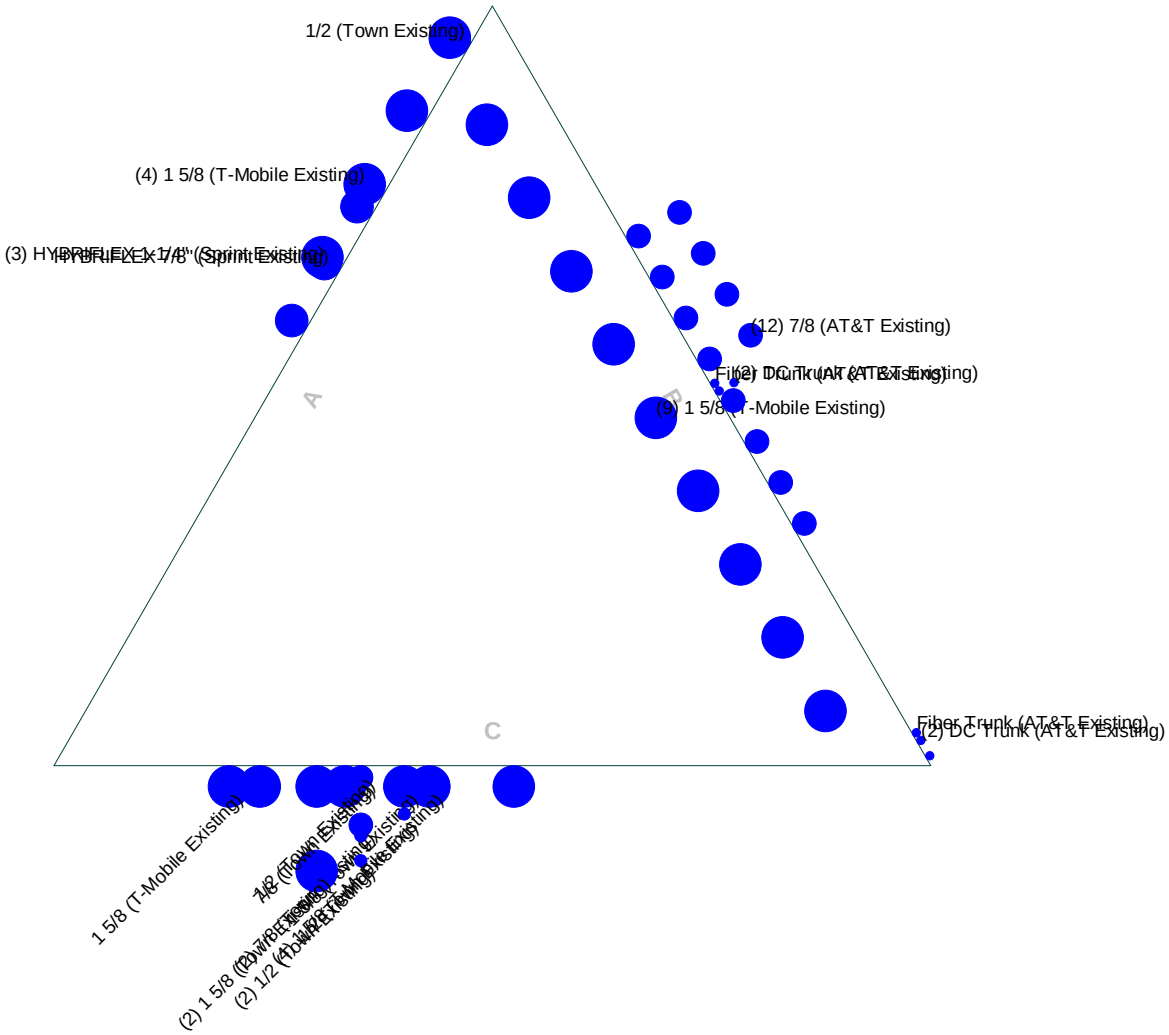
ALL REACTIONS ARE FACTORED

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: ***18000.21 - CT1145***			
Project: ***170' Guyed Tower - 99 Cedarwood Ln., Newington, CT***			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Plan

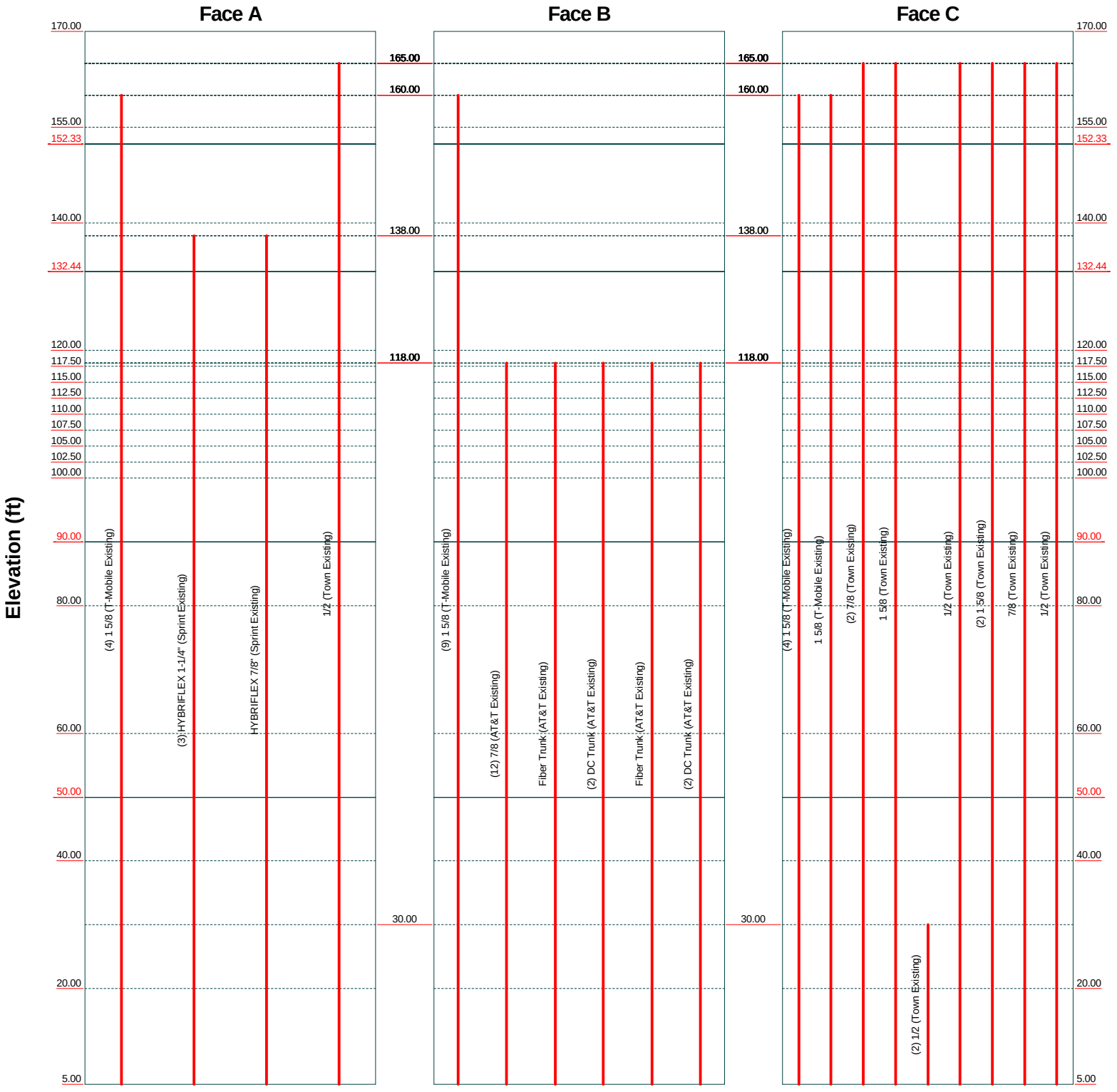
Round Flat App In Face App Out Face



Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: **18000.21 - CT1145**		
	Project: ***170' Guyed Tower - 99 Cedarwood Ln., Newington, CT***		
	Client: AT&T Mobility	Drawn by: TJL	App'd:
	Code: TIA-222-G	Date: 05/24/18	Scale: NTS
	Path:		Dwg No. E-7

Feed Line Distribution Chart
5' - 170'

Round | Flat | App In Face | App Out Face | Truss Leg



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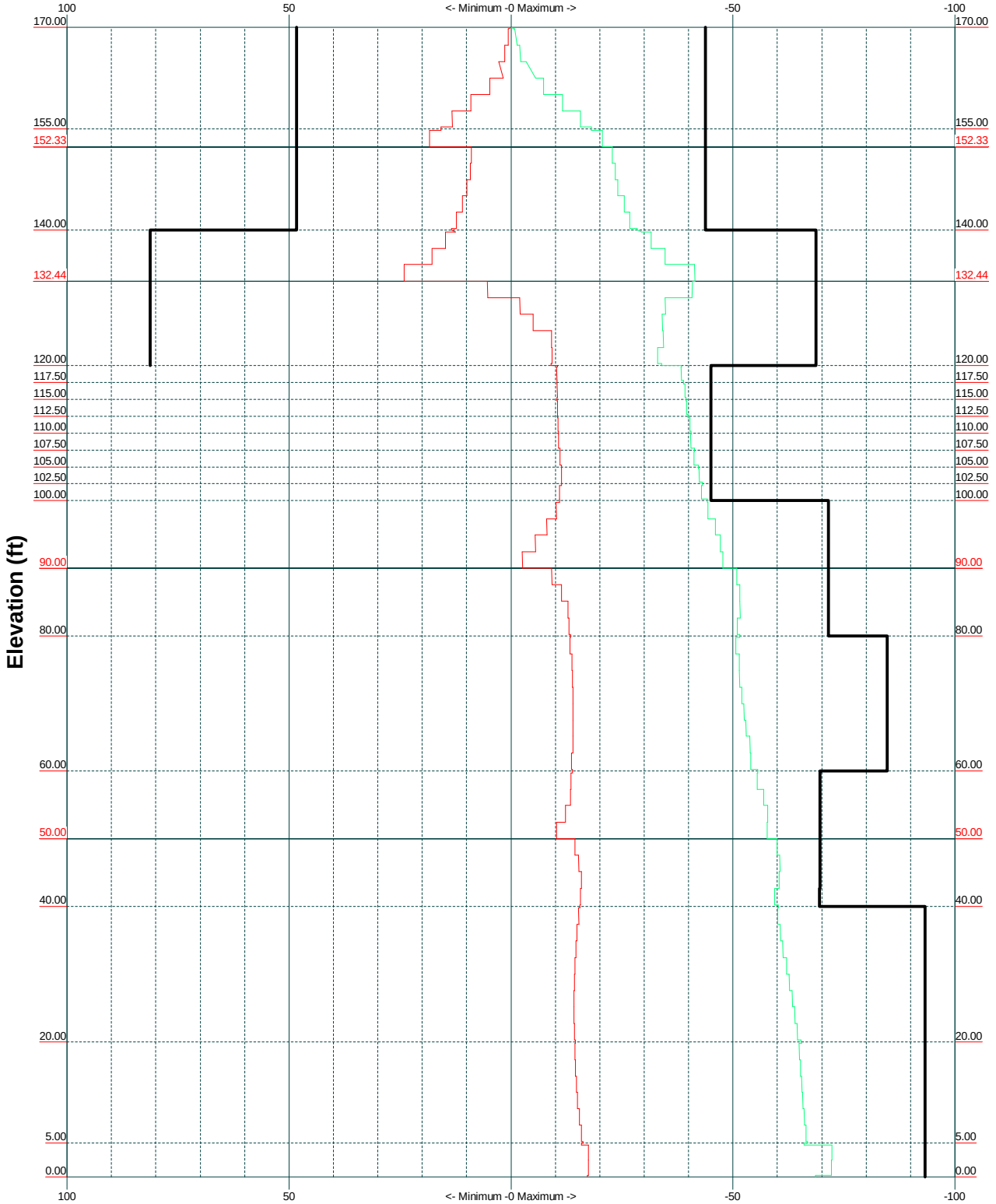
Project: ***170' Guyed Tower - 99 Cedarwood Ln., Newington, CT***			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-7	

TIA-222-G - 97 mph/50 mph 1.0000 in Ice Exposure B

Leg Capacity ——— **Leg Compression (K)**



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Job: 18000.21 - CT1145			
Project: 170' Guyed Tower - 99 Cedarwood Ln., Newington, CT			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-3	

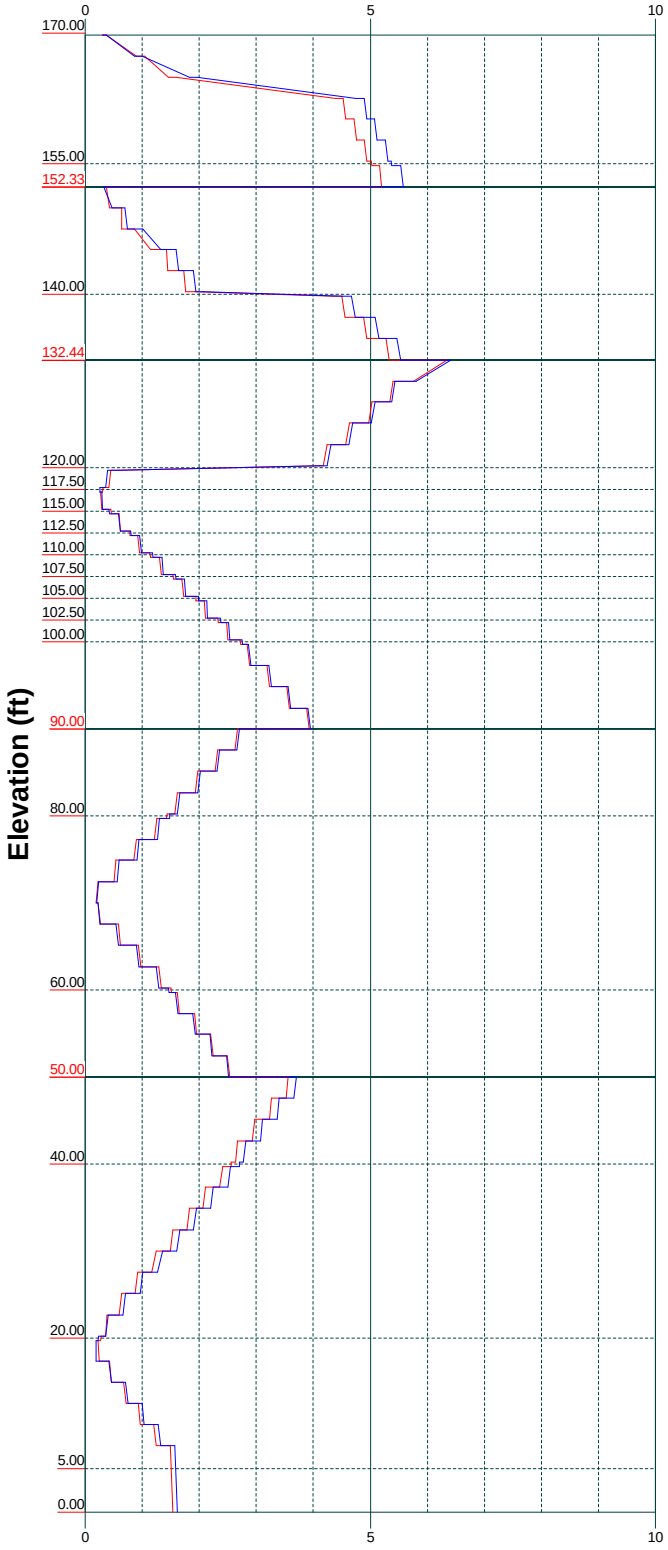
TIA-222-G - 97 mph/50 mph 1.0000 in Ice Exposure B

Vx Vz

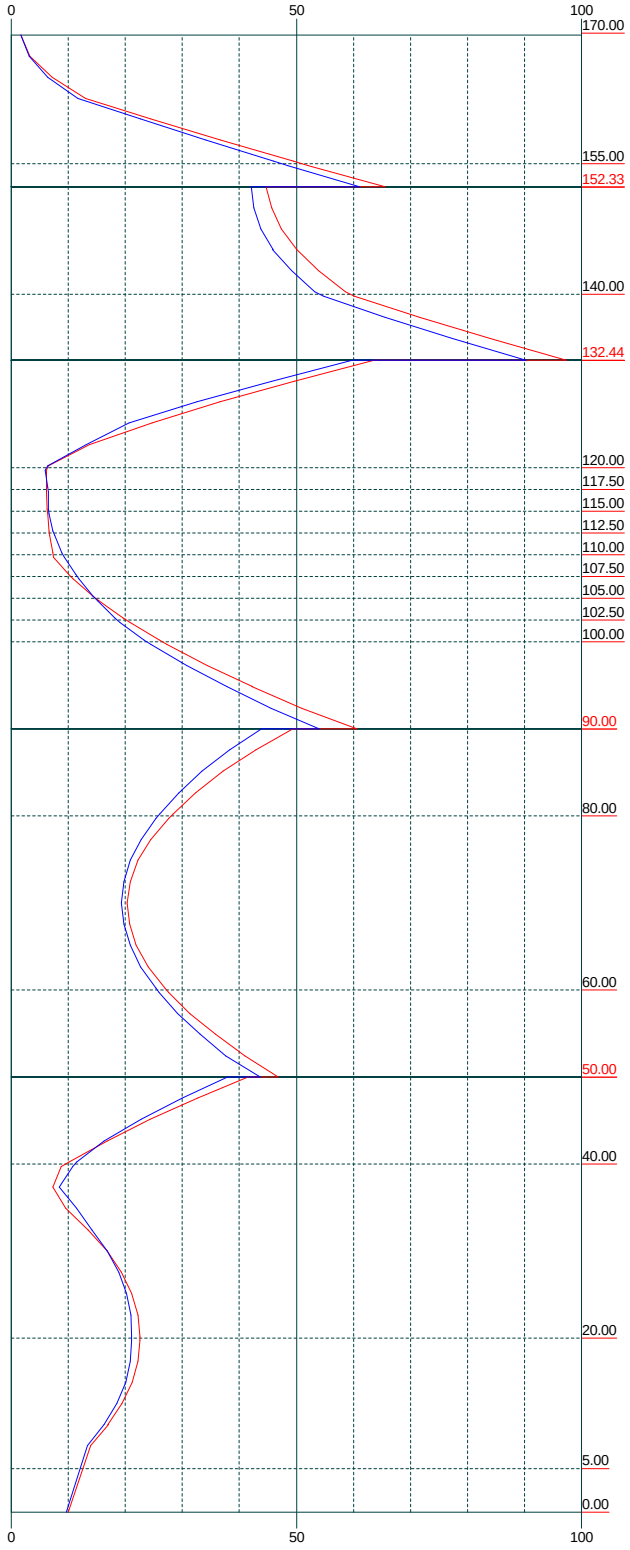
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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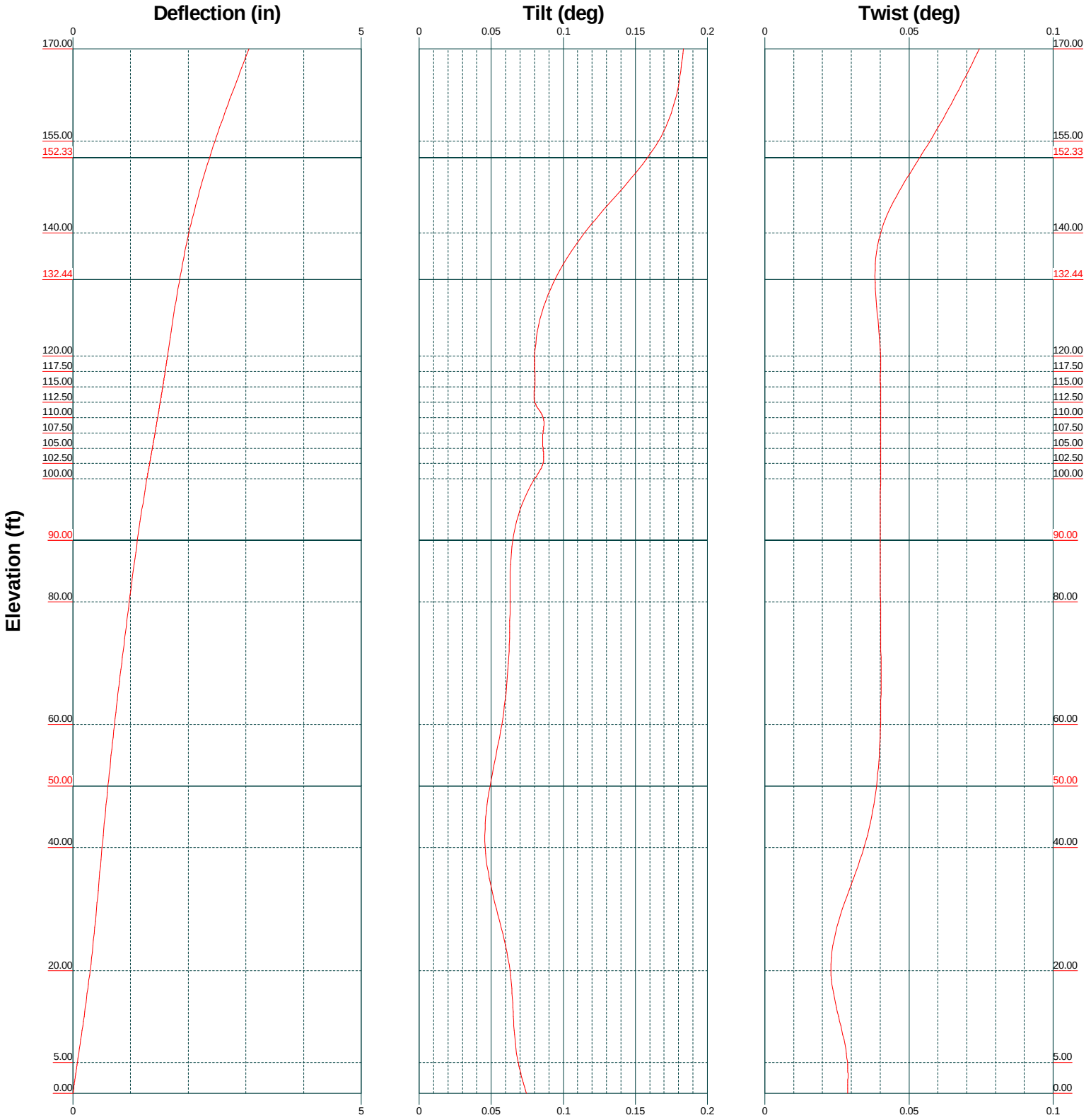
Project: ***170' Guyed Tower - 99 Cedarwood Ln., Newington, CT***			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-G - Service - 60 mph

Maximum Values



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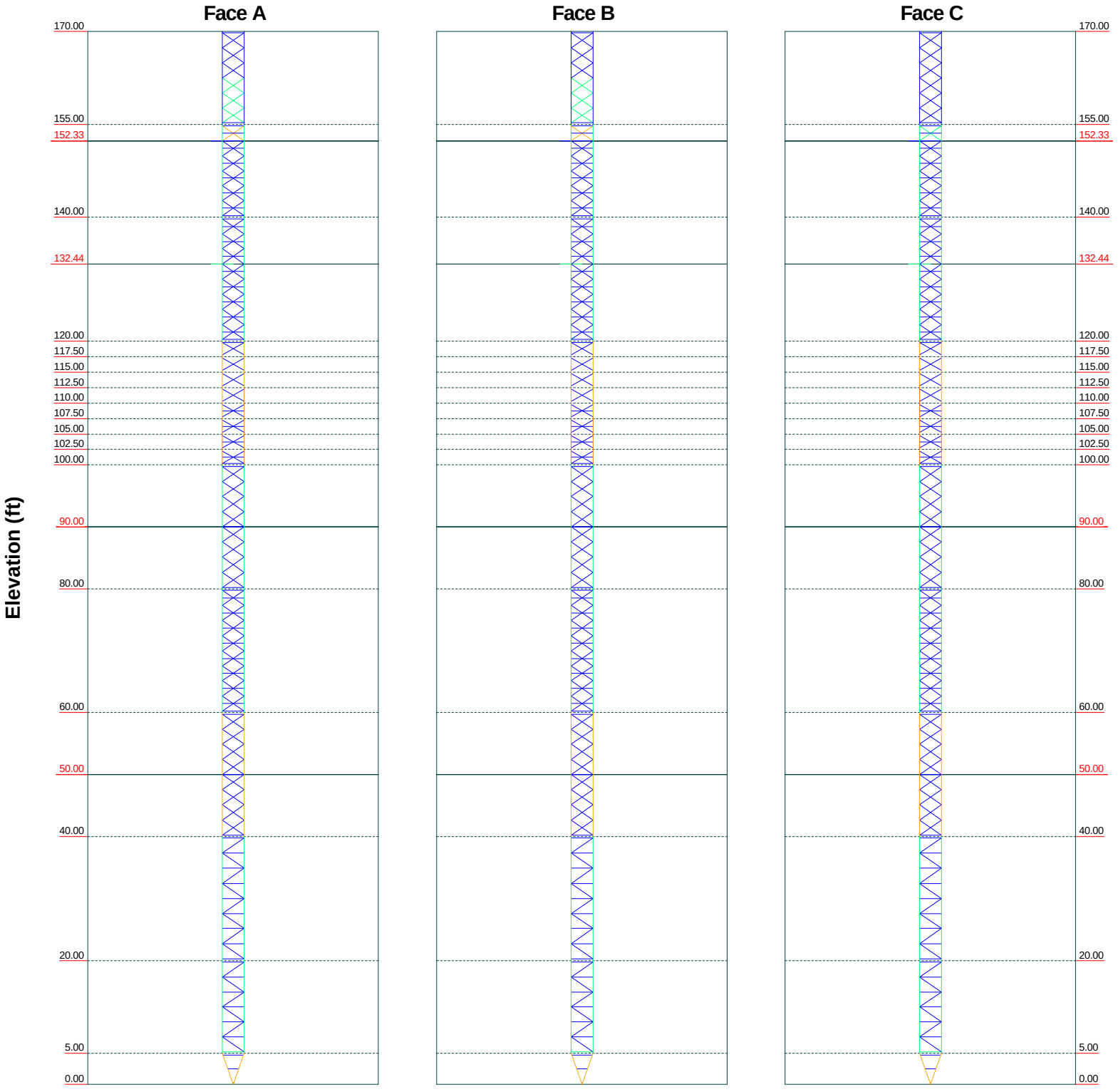
Job: ***18000.21 - CT1145***			
Project: ***170' Guyed Tower - 99 Cedarwood Ln., Newington, CT***			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-5	

Stress Distribution Chart
0' - 170'

> 100% | 90%-100% | 75%-90% | 50%-75% | < 50% Overstress



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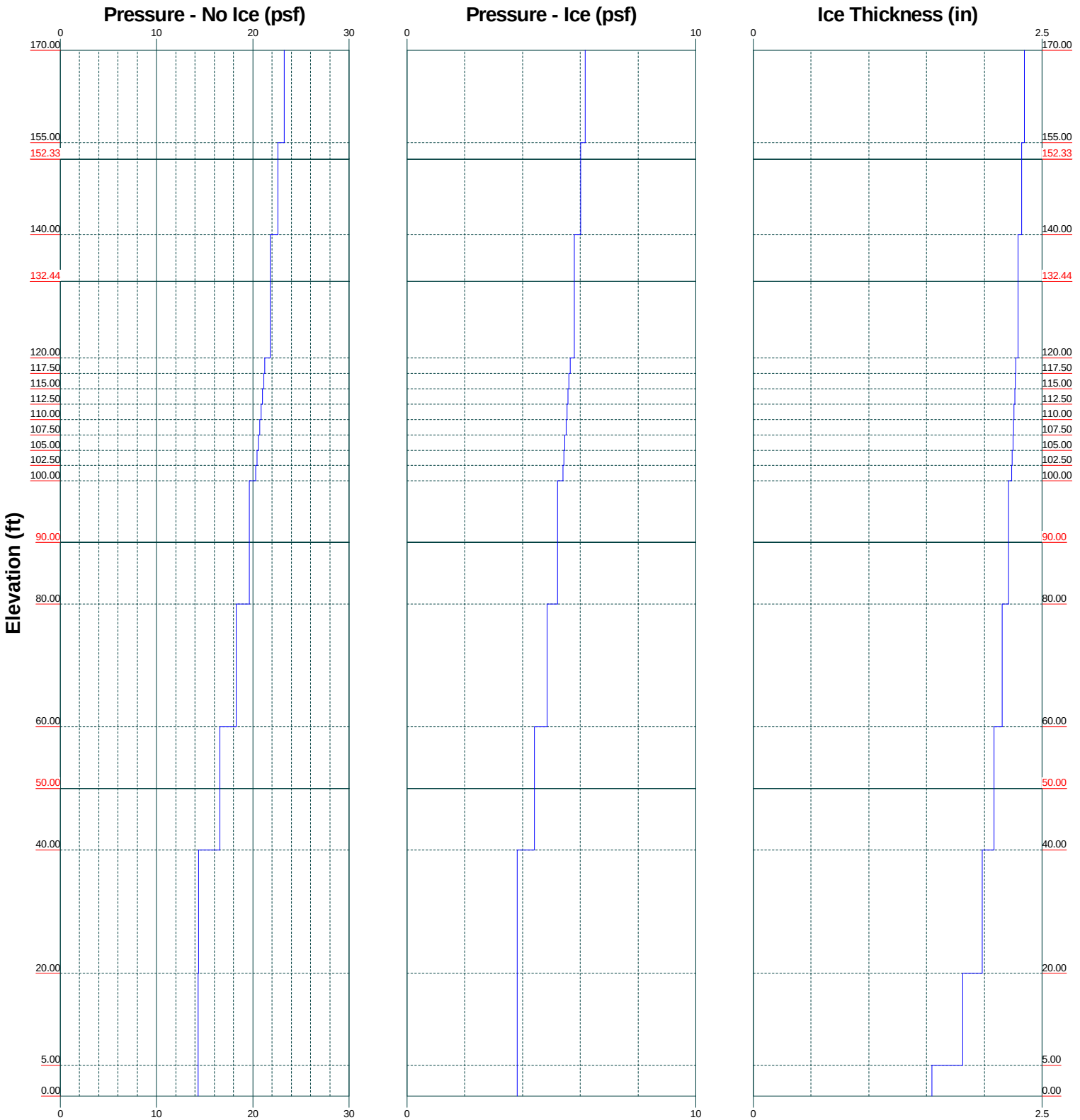
Job: 18000.21 - CT1145			
Project: 170' Guyed Tower - 99 Cedarwood Ln., Newington, CT			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-8	

Wind Pressures and Ice Thickness

TIA-222-G - 97 mph/50 mph 1.0000 in Ice Exposure B



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Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-9	

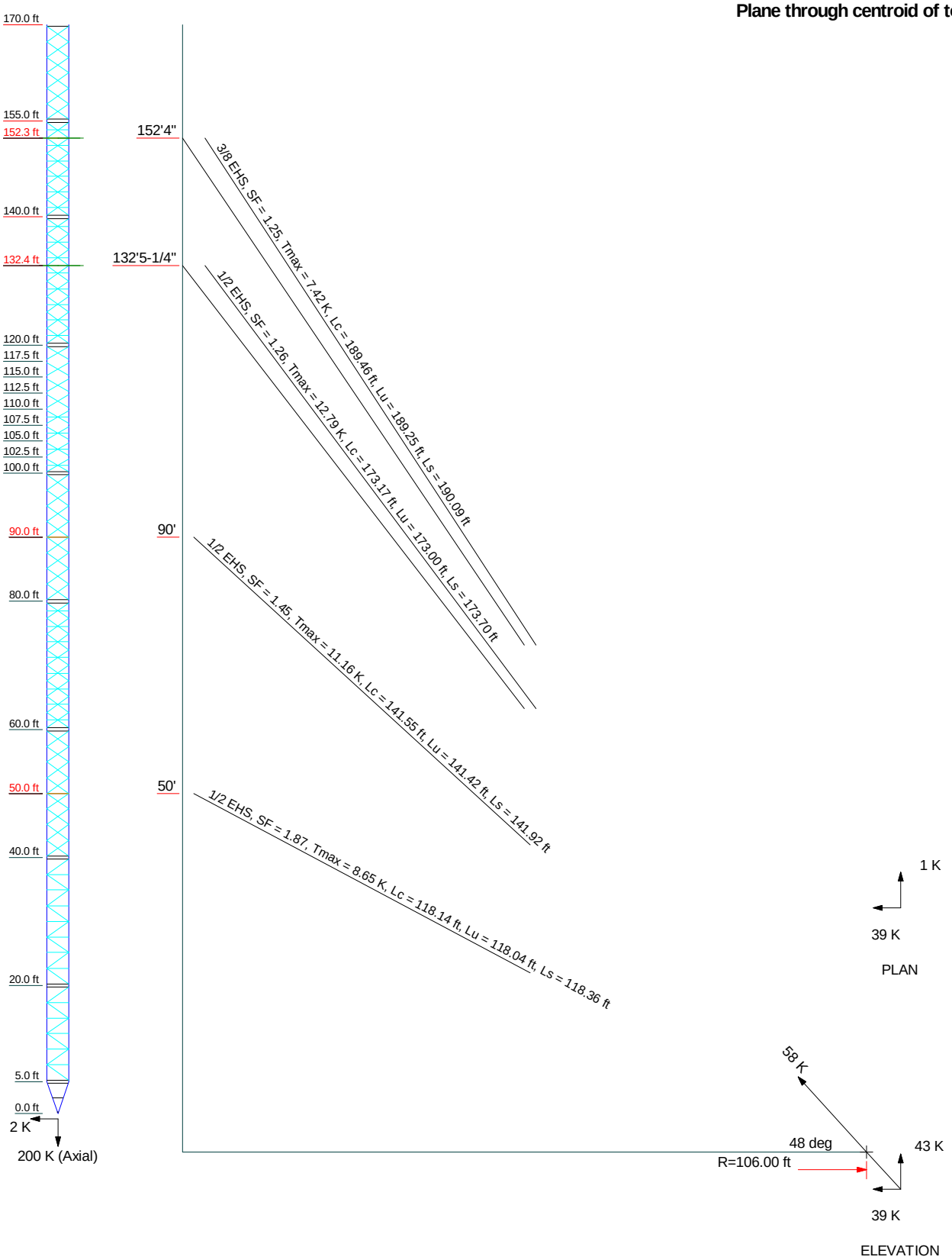
Guy Tensions and Tower Reactions

TIA-222-G - 97 mph/50 mph 1.0000 in Ice Exposure B

Maximum Values

Anchor 'A'@106 ft Azimuth 0 deg Elev -6 ft

Plane through centroid of tower



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Job: ***18000.21 - CT1145***			
Project: ***170' Guyed Tower - 99 Cedarwood Ln., Newington, CT***			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/24/18	Scale: NTS	
Path:		Dwg No. E-6	

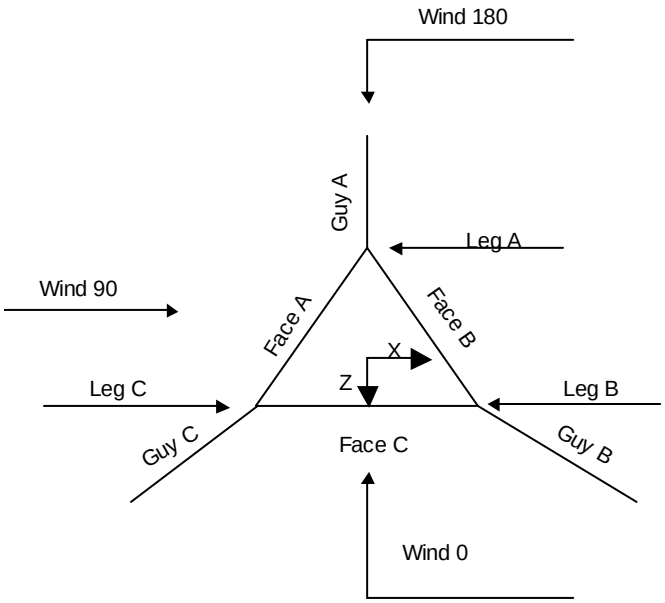
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

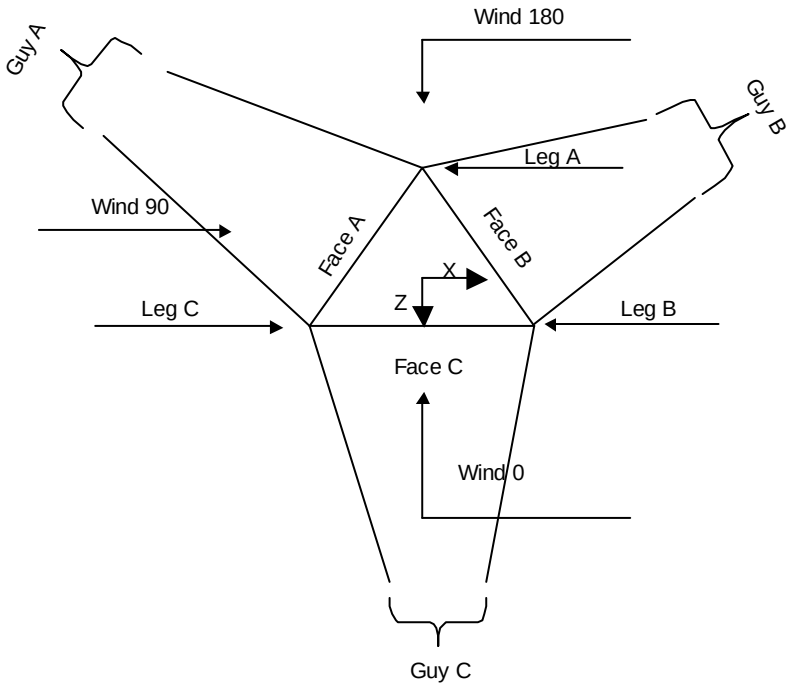
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	170.00-155.00			3.42	1	15.00
T2	155.00-140.00			3.42	1	15.00
T3	140.00-120.00			3.42	1	20.00
T4	120.00-117.50			3.42	1	2.50
T5	117.50-115.00			3.42	1	2.50
T6	115.00-112.50			3.42	1	2.50
T7	112.50-110.00			3.42	1	2.50
T8	110.00-107.50			3.42	1	2.50
T9	107.50-105.00			3.42	1	2.50
T10	105.00-102.50			3.42	1	2.50
T11	102.50-100.00			3.42	1	2.50
T12	100.00-80.00			3.42	1	20.00
T13	80.00-60.00			3.42	1	20.00
T14	60.00-40.00			3.42	1	20.00
T15	40.00-20.00			3.42	1	20.00
T16	20.00-5.00			3.42	1	15.00

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T17	5.00-0.00			3.42	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	170.00-155.00	2.42	X Brace	No	No	3.0000	3.0000
T2	155.00-140.00	2.42	X Brace	No	Yes	3.0000	3.0000
T3	140.00-120.00	2.44	X Brace	No	Yes	3.0000	3.0000
T4	120.00-117.50	2.00	X Brace	No	Yes	3.0000	3.0000
T5	117.50-115.00	2.00	X Brace	No	Yes	3.0000	3.0000
T6	115.00-112.50	2.00	X Brace	No	Yes	3.0000	3.0000
T7	112.50-110.00	2.00	X Brace	No	Yes	3.0000	3.0000
T8	110.00-107.50	2.00	X Brace	No	Yes	3.0000	3.0000
T9	107.50-105.00	2.00	X Brace	No	Yes	3.0000	3.0000
T10	105.00-102.50	2.00	X Brace	No	Yes	3.0000	3.0000
T11	102.50-100.00	2.00	X Brace	No	Yes	3.0000	3.0000
T12	100.00-80.00	2.44	X Brace	No	No	3.0000	3.0000
T13	80.00-60.00	2.44	X Brace	No	Yes	3.0000	3.0000
T14	60.00-40.00	2.44	X Brace	No	No	3.0000	3.0000
T15	40.00-20.00	2.44	K Brace Right	No	Yes	3.0000	3.0000
T16	20.00-5.00	2.42	K Brace Right	No	Yes	3.0000	3.0000
T17	5.00-0.00	1.13	X Brace	No	Yes	3.0000	3.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 170.00-155.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T2 155.00-140.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T3 140.00-120.00	Arbitrary Shape	ROHN 2.0 Std. w/ 1" SR	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)
T4 120.00-117.50	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T5 117.50-115.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T6 115.00-112.50	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T7 112.50-110.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T8 110.00-107.50	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T9 107.50-105.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T10 105.00-102.50	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T11	Pipe	ROHN 2 STD	A572-50	Pipe	ROHN TS1.5x16 ga	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
102.50-100.00			(50 ksi)			(36 ksi)
T12 100.00-80.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T13 80.00-60.00	Arbitrary Shape	ROHN 2.0 Std. w/ 1/3 HSS3.5x.3	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T14 60.00-40.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T15 40.00-20.00	Arbitrary Shape	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T16 20.00-5.00	Arbitrary Shape	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T17 5.00-0.00	Arbitrary Shape	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	A572-50 (50 ksi)	Pipe		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 170.00-155.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T2 155.00-140.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T3 140.00-120.00	Single Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Single Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 120.00-117.50	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe		A36 (36 ksi)
T11 102.50-100.00	Solid Round		A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T12 100.00-80.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T13 80.00-60.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T14 60.00-40.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T15 40.00-20.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T16 20.00-5.00	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)	Pipe	ROHN TS1.5x16 ga	A36 (36 ksi)
T17 5.00-0.00	Flat Bar	3x1/4	A36 (36 ksi)	Flat Bar	3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T12 100.00-80.00	1	Pipe	ROHN TS1.5x16 ga	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T14 60.00-40.00	1	Pipe	ROHN TS1.5x16 ga	A572-50	Solid Round		A572-50

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T15 40.00-20.00	None	Solid Round		(50 ksi) A572-50 (50 ksi)	Solid Round	1	(50 ksi) A572-50 (50 ksi)
T16 20.00-5.00	None	Solid Round		(50 ksi) A572-50 (50 ksi)	Solid Round	1	(50 ksi) A572-50 (50 ksi)
T17 5.00-0.00	1	Flat Bar	3x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 155.00-140.00	Solid Round	1	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T3 140.00-120.00	Single Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T8 110.00-107.50	Single Angle	L2x2x3/16	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T9 107.50-105.00	Single Angle	L2x2x3/16	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T10 105.00-102.50	Single Angle	L2x2x3/16	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T11 102.50-100.00	Single Angle	L2x2x3/16	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T13 80.00-60.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

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
T1 170.00-155.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 155.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 120.00-117.50	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 117.50-115.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 115.00-112.50	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 112.50-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000

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
110.00-107.50			(36 ksi)						
T9	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
107.50-105.00			(36 ksi)						
T10	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
105.00-102.50			(36 ksi)						
T11	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
102.50-100.00			(36 ksi)						
T12	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
100.00-80.00			(36 ksi)						
T13	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
80.00-60.00			(36 ksi)						
T14	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
60.00-40.00			(36 ksi)						
T15	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
40.00-20.00			(36 ksi)						
T16 20.00-5.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T17 5.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
170.00-155.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
155.00-140.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
120.00-117.50				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
117.50-115.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
115.00-112.50				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
112.50-110.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
110.00-107.50				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
107.50-105.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
105.00-102.50				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
102.50-100.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
60.00-40.00				1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T16	Yes	Yes	1	1	1	1	1	1	1	1
20.00-5.00				1	1	1	1	1	1	1
T17 5.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 170.00-155.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 155.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120.00-117.50	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 117.50-115.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 115.00-112.50	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 112.50-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 110.00-107.50	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 107.50-105.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 105.00-102.50	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 102.50-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20.00-5.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 5.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0
170.00-155.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0
155.00-140.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	0.7500	4	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
140.00-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.7500	4	0.5000	1	0.5000	1	0.0000	0	0.5000	0	0.5000	0	0.5000	0
120.00-117.50		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	0.7500	0	0.5000	1	0.5000	0	0.0000	0	0.5000	0	0.5000	0	0.5000	0
117.50-115.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	0.7500	0	0.5000	1	0.5000	0	0.0000	0	0.5000	0	0.5000	0	0.5000	0
115.00-112.50		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	0.7500	0	0.5000	1	0.5000	0	0.0000	0	0.5000	0	0.5000	0	0.5000	0
112.50-110.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	0.7500	0	0.5000	1	0.5000	0	0.0000	0	0.5000	0	0.5000	0	0.5000	0
110.00-107.50		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	0.7500	0	0.5000	1	0.5000	0	0.0000	0	0.5000	0	0.5000	0	0.5000	0
107.50-105.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	0.7500	0	0.5000	1	0.5000	0	0.0000	0	0.5000	0	0.5000	0	0.5000	0
105.00-102.50		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	0.7500	0	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0	0.5000	0
102.50-100.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0
100.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	0.7500	4	0.5000	1	0.5000	1	0.7500	0	0.5000	0	0.5000	0	0.5000	0
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0
60.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16 20.00-5.00	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	0	0.5000	0	0.5000	0	0.5000	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17 5.00-0.00	Flange	0.7500	4	0.5000	0	0.5000	0	0.5000	0	0.5000	0	0.5000	0	0.5000	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
152.333	EHS	A	3/8	1.54	10%	21000	0.273	189.28	106.00	0.0000	-6.00	100%
		B	3/8	1.54	10%	21000	0.273	181.01	106.00	0.0000	4.00	100%
		C	3/8	1.54	10%	21000	0.273	176.73	107.00	0.0000	10.00	100%
132.438	EHS	A	1/2	2.69	10%	21000	0.517	173.03	106.00	0.0000	-6.00	100%
		B	1/2	2.69	10%	21000	0.517	165.15	106.00	0.0000	4.00	100%
		C	1/2	2.69	10%	21000	0.517	161.18	107.00	0.0000	10.00	100%
90	EHS	A	1/2	2.69	10%	21000	0.517	141.43	106.00	0.0000	-6.00	100%
		B	1/2	2.69	10%	21000	0.517	134.86	106.00	0.0000	4.00	100%
		C	1/2	2.69	10%	21000	0.517	131.91	107.00	0.0000	10.00	100%

50	EHS	A	1/2	2.69	10%	21000	0.517	118.04	106.00	0.0000	-6.00	100%
		B	1/2	2.69	10%	21000	0.517	113.65	106.00	0.0000	4.00	100%
		C	1/2	2.69	10%	21000	0.517	112.29	107.00	0.0000	10.00	100%

Guy Data*(cont'd)*

Guy Elevation ft	*Mount Type*	*Torque-Arm Spread ft*	*Torque-Arm Leg Angle °*	*Torque-Arm Style*	*Torque-Arm Grade*	*Torque-Arm Type*	*Torque-Arm Size*
152.333	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
132.438	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
90	Corner						
50	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	*Diagonal Grade*	*Diagonal Type*	*Upper Diagonal Size*	*Lower Diagonal Size*	*Is Strap.*	*Pull-Off Grade*	*Pull-Off Type*	*Pull-Off Size*
152.33	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L2x3x3/16
132.44	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
90.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	4x3/8
50.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	4x3/8

Guy Data *(cont'd)*

Guy Elevation ft	*Cable Weight A K*	*Cable Weight B K*	*Cable Weight C K*	*Cable Weight D K*	*Tower Intercept A ft*	*Tower Intercept B ft*	*Tower Intercept C ft*	*Tower Intercept D ft*
152.333	0.05	0.05	0.05		3.13 3.1 sec/pulse	2.87 2.9 sec/pulse	2.74 2.9 sec/pulse	
132.438	0.09	0.09	0.08		2.84 2.9 sec/pulse	2.59 2.8 sec/pulse	2.47 2.7 sec/pulse	
90	0.07	0.07	0.07		1.91 2.4 sec/pulse	1.73 2.3 sec/pulse	1.66 2.2 sec/pulse	
50	0.06	0.06	0.06		1.33 2.0 sec/pulse	1.24 1.9 sec/pulse	1.21 1.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
152.333	No	No	1	1	1	1	1	1
132.438	No	No	1	1	1	1	1	1
90	No	No			1	1	1	1
50	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
152.333	0.7500 A325N	8	0.0000	1	0.7500 A325N	1	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
132.438	0.7500 A325N	8	0.0000	1	0.7500 A325N	1	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
90	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
50	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
152.333	A	73.17	19	5	2.1658
	B	78.17	19	5	2.1801
	C	81.17	19	5	2.1883
132.438	A	63.22	18	5	2.1343
	B	68.22	18	5	2.1506
	C	71.22	18	5	2.1599
90	A	42.00	16	4	2.0488
	B	47.00	16	4	2.0720
	C	50.00	17	4	2.0849
50	A	22.00	14	4	1.9205
	B	27.00	14	4	1.9603
	C	30.00	14	4	1.9810

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension K	0 F Intercept ft	20 F Initial Tension K	20 F Intercept ft	40 F Initial Tension K	40 F Intercept ft	60 F Initial Tension K	60 F Intercept ft	80 F Initial Tension K	80 F Intercept ft	100 F Initial Tension K	100 F Intercept ft	120 F Initial Tension K	120 F Intercept ft
152.333	A	104.04	158.33	1.731	2.79	1.667	2.90	1.604	3.01	1.540	3.13	1.477	3.27	1.414	3.41	1.351	3.57
	B	104.04	148.33	1.749	2.53	1.679	2.63	1.609	2.75	1.540	2.87	1.471	3.00	1.402	3.15	1.333	3.31
	C	105.04	142.33	1.764	2.39	1.689	2.50	1.614	2.61	1.540	2.74	1.466	2.87	1.393	3.02	1.320	3.19

				Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
Guy Elevation		H	V	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft
132.438	A	104.04	138.44	3.120	2.45	2.976	2.57	2.833	2.70	2.690	2.84	2.548	3.00	2.407	3.17	2.268	3.36
	B	104.04	128.44	3.162	2.21	3.004	2.32	2.847	2.45	2.690	2.59	2.534	2.75	2.380	2.93	2.227	3.12
	C	105.04	122.44	3.195	2.08	3.026	2.20	2.858	2.33	2.690	2.47	2.524	2.63	2.359	2.81	2.196	3.02
90	A	104.03	96.00	3.335	1.54	3.119	1.65	2.904	1.77	2.690	1.91	2.478	2.07	2.269	2.26	2.063	2.48
	B	104.03	86.00	3.400	1.37	3.162	1.48	2.925	1.60	2.690	1.73	2.457	1.90	2.228	2.09	2.002	2.33
	C	105.03	80.00	3.446	1.30	3.193	1.40	2.940	1.52	2.690	1.66	2.442	1.83	2.198	2.03	1.960	2.27
50	A	104.03	56.00	3.619	0.99	3.307	1.09	2.997	1.20	2.690	1.33	2.387	1.50	2.089	1.71	1.801	1.99
	B	104.03	46.00	3.693	0.90	3.356	0.99	3.022	1.10	2.690	1.24	2.363	1.41	2.043	1.63	1.734	1.91
	C	105.03	40.00	3.737	0.87	3.385	0.96	3.036	1.07	2.690	1.21	2.349	1.38	2.015	1.61	1.695	1.91

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (T-Mobile Existing)	A	No	Ar (CaAa)	160.00 - 0.00	0.0000	0.3	4	4	1.9800	1.9800		1.04
1 5/8 (T-Mobile Existing)	B	No	Ar (CaAa)	160.00 - 0.00	-2.0000	0	9	9	1.9800	1.9800		1.04
1 5/8 (T-Mobile Existing)	C	No	Ar (CaAa)	160.00 - 0.00	0.0000	0.12	4	4	1.9800	1.9800		1.04
1 5/8 (T-Mobile Existing)	C	No	Ar (CaAa)	160.00 - 0.00	0.0000	0.3	1	1	1.9800	1.9800		1.04
HYBRIFLEX 1-1/4" (Sprint Existing)	A	No	Ar (CaAa)	138.00 - 0.00	0.0000	0.15	3	3	1.5400	1.5400		1.30
HYBRIFLEX 7/8" (Sprint Existing)	A	No	Ar (CaAa)	138.00 - 0.00	0.0000	0.15	1	1	1.0900	1.0900		0.53
7/8 (AT&T Existing)	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	0	12	8	1.1100	1.1100		0.54
7/8 (Town Existing)	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.15	2	1	1.1100	1.1100		0.54
1 5/8 (Town Existing)	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.1	1	1	1.9800	1.9800		1.04
1/2 (Town Existing)	C	No	Ar (CaAa)	30.00 - 0.00	3.0000	0.15	2	1	0.5800	0.5800		0.25
1/2 (Town Existing)	C	No	Ar (CaAa)	165.00 - 0.00	2.0000	0.1	1	1	0.5800	0.5800		0.25
1/2 (Town Existing)	A	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.45	1	1	0.5800	0.5800		0.25
1 5/8 (Town Existing)	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.2	2	1	1.9800	1.9800		1.04
7/8	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.15	1	1	1.1100	1.1100		0.54

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(Town Existing) 1/2	C	No	Ar (CaAa)	165.00 - 0.00	0.0000	0.15	1	1	0.5800	0.5800		0.25
(Town Existing) Fiber Trunk	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	0	1	1	0.4000	0.4000		1.00
(AT&T Existing) DC Trunk	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.01	2	1	0.4000	0.4000		0.11
(AT&T Existing) Fiber Trunk	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.46	1	1	0.4000	0.4000		1.00
(AT&T Existing) DC Trunk (AT&T Existing)	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.48	2	2	0.4000	0.4000		0.11

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
T1	170.00-155.00	A	0.000	0.000	4.540	0.000	0.02
		B	0.000	0.000	8.910	0.000	0.05
		C	0.000	0.000	15.380	0.000	0.08
T2	155.00-140.00	A	0.000	0.000	12.750	0.000	0.07
		B	0.000	0.000	26.730	0.000	0.14
		C	0.000	0.000	30.495	0.000	0.16
T3	140.00-120.00	A	0.000	0.000	27.278	0.000	0.17
		B	0.000	0.000	35.640	0.000	0.19
		C	0.000	0.000	40.660	0.000	0.21
T4	120.00-117.50	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	5.241	0.000	0.03
		C	0.000	0.000	5.082	0.000	0.03
T5	117.50-115.00	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T6	115.00-112.50	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T7	112.50-110.00	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T8	110.00-107.50	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T9	107.50-105.00	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T10	105.00-102.50	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T11	102.50-100.00	A	0.000	0.000	3.553	0.000	0.02
		B	0.000	0.000	8.385	0.000	0.05
		C	0.000	0.000	5.082	0.000	0.03
T12	100.00-80.00	A	0.000	0.000	28.420	0.000	0.18

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
		B	0.000	0.000	67.080	0.000	0.37
		C	0.000	0.000	40.660	0.000	0.21
T13	80.00-60.00	A	0.000	0.000	28.420	0.000	0.18
		B	0.000	0.000	67.080	0.000	0.37
		C	0.000	0.000	40.660	0.000	0.21
T14	60.00-40.00	A	0.000	0.000	28.420	0.000	0.18
		B	0.000	0.000	67.080	0.000	0.37
		C	0.000	0.000	40.660	0.000	0.21
T15	40.00-20.00	A	0.000	0.000	28.420	0.000	0.18
		B	0.000	0.000	67.080	0.000	0.37
		C	0.000	0.000	41.820	0.000	0.21
T16	20.00-5.00	A	0.000	0.000	21.315	0.000	0.13
		B	0.000	0.000	50.310	0.000	0.27
		C	0.000	0.000	32.235	0.000	0.16
T17	5.00-0.00	A	0.000	0.000	7.105	0.000	0.04
		B	0.000	0.000	16.770	0.000	0.09
		C	0.000	0.000	10.745	0.000	0.05

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
T1	170.00-155.00	A	2.346	0.000	0.000	17.593	0.000	0.31
		B		0.000	0.000	24.330	0.000	0.47
		C		0.000	0.000	66.735	0.000	1.18
T2	155.00-140.00	A	2.323	0.000	0.000	44.695	0.000	0.78
		B		0.000	0.000	72.891	0.000	1.40
		C		0.000	0.000	122.906	0.000	2.16
T3	140.00-120.00	A	2.294	0.000	0.000	100.405	0.000	1.71
		B		0.000	0.000	97.019	0.000	1.85
		C		0.000	0.000	162.701	0.000	2.84
T4	120.00-117.50	A	2.273	0.000	0.000	13.067	0.000	0.22
		B		0.000	0.000	14.968	0.000	0.28
		C		0.000	0.000	20.234	0.000	0.35
T5	117.50-115.00	A	2.268	0.000	0.000	13.054	0.000	0.22
		B		0.000	0.000	26.370	0.000	0.47
		C		0.000	0.000	20.209	0.000	0.35
T6	115.00-112.50	A	2.263	0.000	0.000	13.042	0.000	0.22
		B		0.000	0.000	26.349	0.000	0.47
		C		0.000	0.000	20.185	0.000	0.35
T7	112.50-110.00	A	2.258	0.000	0.000	13.028	0.000	0.22
		B		0.000	0.000	26.328	0.000	0.47
		C		0.000	0.000	20.159	0.000	0.35
T8	110.00-107.50	A	2.253	0.000	0.000	13.015	0.000	0.22
		B		0.000	0.000	26.306	0.000	0.47
		C		0.000	0.000	20.133	0.000	0.35
T9	107.50-105.00	A	2.248	0.000	0.000	13.001	0.000	0.22
		B		0.000	0.000	26.283	0.000	0.47
		C		0.000	0.000	20.107	0.000	0.35
T10	105.00-102.50	A	2.243	0.000	0.000	12.987	0.000	0.22
		B		0.000	0.000	26.260	0.000	0.47
		C		0.000	0.000	20.080	0.000	0.34
T11	102.50-100.00	A	2.237	0.000	0.000	12.972	0.000	0.22
		B		0.000	0.000	26.237	0.000	0.46
		C		0.000	0.000	20.053	0.000	0.34
T12	100.00-80.00	A	2.211	0.000	0.000	103.228	0.000	1.71
		B		0.000	0.000	208.996	0.000	3.68

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	159.368	0.000	2.70
T13	80.00-60.00	A	2.156	0.000	0.000	102.072	0.000	1.67
		B		0.000	0.000	207.116	0.000	3.59
		C		0.000	0.000	157.161	0.000	2.61
T14	60.00-40.00	A	2.085	0.000	0.000	100.572	0.000	1.61
		B		0.000	0.000	204.673	0.000	3.47
		C		0.000	0.000	154.294	0.000	2.50
T15	40.00-20.00	A	1.981	0.000	0.000	98.392	0.000	1.52
		B		0.000	0.000	201.120	0.000	3.30
		C		0.000	0.000	159.236	0.000	2.47
T16	20.00-5.00	A	1.815	0.000	0.000	71.185	0.000	1.05
		B		0.000	0.000	146.586	0.000	2.29
		C		0.000	0.000	120.391	0.000	1.74
T17	5.00-0.00	A	1.545	0.000	0.000	22.322	0.000	0.30
		B		0.000	0.000	46.564	0.000	0.66
		C		0.000	0.000	36.958	0.000	0.48

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	170.00-155.00	-0.2845	0.4856	-0.2666	0.4515
T2	155.00-140.00	-0.1433	0.1830	-0.0966	0.1581
T3	140.00-120.00	-0.2748	-0.0614	-0.1955	0.1343
T4	120.00-117.50	-0.1483	-0.1489	-0.1686	0.1261
T5	117.50-115.00	0.3687	-0.3452	0.1450	0.0440
T6	115.00-112.50	0.3687	-0.3452	0.1455	0.0435
T7	112.50-110.00	0.3687	-0.3452	0.1459	0.0429
T8	110.00-107.50	0.3564	-0.3337	0.1094	0.0316
T9	107.50-105.00	0.3564	-0.3337	0.1100	0.0312
T10	105.00-102.50	0.3564	-0.3337	0.1106	0.0308
T11	102.50-100.00	0.3477	-0.3255	0.0084	0.0023
T12	100.00-80.00	0.3565	-0.3338	0.1290	0.0320
T13	80.00-60.00	0.3474	-0.3252	0.0929	0.0182
T14	60.00-40.00	0.3565	-0.3338	0.1417	0.0185
T15	40.00-20.00	0.3506	-0.3100	0.1521	0.0622
T16	20.00-5.00	0.3364	-0.2788	0.1442	0.0892
T17	5.00-0.00	0.3947	-0.1134	0.2538	0.1488

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	1 5/8	155.00 - 160.00	0.6000	0.2447
T1	2	1 5/8	155.00 - 160.00	0.6000	0.2447
T1	3	1 5/8	155.00 - 160.00	0.6000	0.2447
T1	4	1 5/8	155.00 -	0.6000	0.2447

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	8	7/8	160.00 155.00 - 165.00	0.6000	0.2447
T1	9	1 5/8	155.00 - 165.00	0.6000	0.2447
T1	11	1/2	155.00 - 165.00	0.6000	0.2447
T1	12	1/2	155.00 - 165.00	0.6000	0.2447
T1	13	1 5/8	155.00 - 165.00	0.6000	0.2447
T1	14	7/8	155.00 - 165.00	0.6000	0.2447
T1	15	1/2	155.00 - 165.00	0.6000	0.2447
T2	1	1 5/8	140.00 - 155.00	0.6000	0.0681
T2	2	1 5/8	140.00 - 155.00	0.6000	0.0681
T2	3	1 5/8	140.00 - 155.00	0.6000	0.0681
T2	4	1 5/8	140.00 - 155.00	0.6000	0.0681
T2	8	7/8	140.00 - 155.00	0.6000	0.0681
T2	9	1 5/8	140.00 - 155.00	0.6000	0.0681
T2	11	1/2	140.00 - 155.00	0.6000	0.0681
T2	12	1/2	140.00 - 155.00	0.6000	0.0681
T2	13	1 5/8	140.00 - 155.00	0.6000	0.0681
T2	14	7/8	140.00 - 155.00	0.6000	0.0681
T2	15	1/2	140.00 - 155.00	0.6000	0.0681
T3	1	1 5/8	120.00 - 140.00	0.6000	0.1184
T3	2	1 5/8	120.00 - 140.00	0.6000	0.1184
T3	3	1 5/8	120.00 - 140.00	0.6000	0.1184
T3	4	1 5/8	120.00 - 140.00	0.6000	0.1184
T3	5	HYBRIFLEX 1-1/4"	120.00 - 138.00	0.6000	0.1184
T3	6	HYBRIFLEX 7/8"	120.00 - 138.00	0.6000	0.1184
T3	8	7/8	120.00 - 140.00	0.6000	0.1184
T3	9	1 5/8	120.00 - 140.00	0.6000	0.1184
T3	11	1/2	120.00 - 140.00	0.6000	0.1184
T3	12	1/2	120.00 - 140.00	0.6000	0.1184
T3	13	1 5/8	120.00 - 140.00	0.6000	0.1184
T3	14	7/8	120.00 - 140.00	0.6000	0.1184
T3	15	1/2	120.00 -	0.6000	0.1184

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	1	1 5/8	140.00 117.50 - 120.00	0.6000	0.1724
T4	2	1 5/8	117.50 - 120.00	0.6000	0.1724
T4	3	1 5/8	117.50 - 120.00	0.6000	0.1724
T4	4	1 5/8	117.50 - 120.00	0.6000	0.1724
T4	5	HYBRIFLEX 1-1/4"	117.50 - 120.00	0.6000	0.1724
T4	6	HYBRIFLEX 7/8"	117.50 - 120.00	0.6000	0.1724
T4	7	7/8	117.50 - 118.00	0.6000	0.1724
T4	8	7/8	117.50 - 120.00	0.6000	0.1724
T4	9	1 5/8	117.50 - 120.00	0.6000	0.1724
T4	11	1/2	117.50 - 120.00	0.6000	0.1724
T4	12	1/2	117.50 - 120.00	0.6000	0.1724
T4	13	1 5/8	117.50 - 120.00	0.6000	0.1724
T4	14	7/8	117.50 - 120.00	0.6000	0.1724
T4	15	1/2	117.50 - 120.00	0.6000	0.1724
T4	16	Fiber Trunk	117.50 - 118.00	0.6000	0.1724
T4	17	DC Trunk	117.50 - 118.00	0.6000	0.1724
T4	18	Fiber Trunk	117.50 - 118.00	0.6000	0.1724
T4	19	DC Trunk	117.50 - 118.00	0.6000	0.1724
T5	1	1 5/8	115.00 - 117.50	0.6000	0.3358
T5	2	1 5/8	115.00 - 117.50	0.6000	0.3358
T5	3	1 5/8	115.00 - 117.50	0.6000	0.3358
T5	4	1 5/8	115.00 - 117.50	0.6000	0.3358
T5	5	HYBRIFLEX 1-1/4"	115.00 - 117.50	0.6000	0.3358
T5	6	HYBRIFLEX 7/8"	115.00 - 117.50	0.6000	0.3358
T5	7	7/8	115.00 - 117.50	0.6000	0.3358
T5	8	7/8	115.00 - 117.50	0.6000	0.3358
T5	9	1 5/8	115.00 - 117.50	0.6000	0.3358
T5	11	1/2	115.00 - 117.50	0.6000	0.3358
T5	12	1/2	115.00 - 117.50	0.6000	0.3358
T5	13	1 5/8	115.00 - 117.50	0.6000	0.3358
T5	14	7/8	115.00 -	0.6000	0.3358

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	15	1/2	117.50 115.00 - 117.50	0.6000	0.3358
T5	16	Fiber Trunk	115.00 - 117.50	0.6000	0.3358
T5	17	DC Trunk	115.00 - 117.50	0.6000	0.3358
T5	18	Fiber Trunk	115.00 - 117.50	0.6000	0.3358
T5	19	DC Trunk	115.00 - 117.50	0.6000	0.3358
T6	1	1 5/8	112.50 - 115.00	0.6000	0.3367
T6	2	1 5/8	112.50 - 115.00	0.6000	0.3367
T6	3	1 5/8	112.50 - 115.00	0.6000	0.3367
T6	4	1 5/8	112.50 - 115.00	0.6000	0.3367
T6	5	HYBRIFLEX 1-1/4"	112.50 - 115.00	0.6000	0.3367
T6	6	HYBRIFLEX 7/8"	112.50 - 115.00	0.6000	0.3367
T6	7	7/8	112.50 - 115.00	0.6000	0.3367
T6	8	7/8	112.50 - 115.00	0.6000	0.3367
T6	9	1 5/8	112.50 - 115.00	0.6000	0.3367
T6	11	1/2	112.50 - 115.00	0.6000	0.3367
T6	12	1/2	112.50 - 115.00	0.6000	0.3367
T6	13	1 5/8	112.50 - 115.00	0.6000	0.3367
T6	14	7/8	112.50 - 115.00	0.6000	0.3367
T6	15	1/2	112.50 - 115.00	0.6000	0.3367
T6	16	Fiber Trunk	112.50 - 115.00	0.6000	0.3367
T6	17	DC Trunk	112.50 - 115.00	0.6000	0.3367
T6	18	Fiber Trunk	112.50 - 115.00	0.6000	0.3367
T6	19	DC Trunk	112.50 - 115.00	0.6000	0.3367
T7	1	1 5/8	110.00 - 112.50	0.6000	0.3376
T7	2	1 5/8	110.00 - 112.50	0.6000	0.3376
T7	3	1 5/8	110.00 - 112.50	0.6000	0.3376
T7	4	1 5/8	110.00 - 112.50	0.6000	0.3376
T7	5	HYBRIFLEX 1-1/4"	110.00 - 112.50	0.6000	0.3376
T7	6	HYBRIFLEX 7/8"	110.00 - 112.50	0.6000	0.3376
T7	7	7/8	110.00 - 112.50	0.6000	0.3376
T7	8	7/8	110.00 -	0.6000	0.3376

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	9	1 5/8	112.50 110.00 -	0.6000	0.3376
T7	11	1/2	112.50 110.00 -	0.6000	0.3376
T7	12	1/2	112.50 110.00 -	0.6000	0.3376
T7	13	1 5/8	112.50 110.00 -	0.6000	0.3376
T7	14	7/8	112.50 110.00 -	0.6000	0.3376
T7	15	1/2	112.50 110.00 -	0.6000	0.3376
T7	16	Fiber Trunk	112.50 110.00 -	0.6000	0.3376
T7	17	DC Trunk	112.50 110.00 -	0.6000	0.3376
T7	18	Fiber Trunk	112.50 110.00 -	0.6000	0.3376
T7	19	DC Trunk	112.50 110.00 -	0.6000	0.3376
T8	1	1 5/8	112.50 107.50 -	0.6000	0.1635
T8	2	1 5/8	110.00 107.50 -	0.6000	0.1635
T8	3	1 5/8	110.00 107.50 -	0.6000	0.1635
T8	4	1 5/8	110.00 107.50 -	0.6000	0.1635
T8	5	HYBRIFLEX 1-1/4"	110.00 107.50 -	0.6000	0.1635
T8	6	HYBRIFLEX 7/8"	110.00 107.50 -	0.6000	0.1635
T8	7	7/8	110.00 107.50 -	0.6000	0.1635
T8	8	7/8	110.00 107.50 -	0.6000	0.1635
T8	9	1 5/8	110.00 107.50 -	0.6000	0.1635
T8	11	1/2	110.00 107.50 -	0.6000	0.1635
T8	12	1/2	110.00 107.50 -	0.6000	0.1635
T8	13	1 5/8	110.00 107.50 -	0.6000	0.1635
T8	14	7/8	110.00 107.50 -	0.6000	0.1635
T8	15	1/2	110.00 107.50 -	0.6000	0.1635
T8	16	Fiber Trunk	110.00 107.50 -	0.6000	0.1635
T8	17	DC Trunk	110.00 107.50 -	0.6000	0.1635
T8	18	Fiber Trunk	110.00 107.50 -	0.6000	0.1635
T8	19	DC Trunk	110.00 107.50 -	0.6000	0.1635
T9	1	1 5/8	110.00 105.00 -	0.6000	0.1647
T9	2	1 5/8	107.50 105.00 -	0.6000	0.1647
T9	3	1 5/8	107.50 105.00 -	0.6000	0.1647

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	4	1 5/8	105.00 - 107.50	0.6000	0.1647
T9	5	HYBRIFLEX 1-1/4"	105.00 - 107.50	0.6000	0.1647
T9	6	HYBRIFLEX 7/8"	105.00 - 107.50	0.6000	0.1647
T9	7	7/8	105.00 - 107.50	0.6000	0.1647
T9	8	7/8	105.00 - 107.50	0.6000	0.1647
T9	9	1 5/8	105.00 - 107.50	0.6000	0.1647
T9	11	1/2	105.00 - 107.50	0.6000	0.1647
T9	12	1/2	105.00 - 107.50	0.6000	0.1647
T9	13	1 5/8	105.00 - 107.50	0.6000	0.1647
T9	14	7/8	105.00 - 107.50	0.6000	0.1647
T9	15	1/2	105.00 - 107.50	0.6000	0.1647
T9	16	Fiber Trunk	105.00 - 107.50	0.6000	0.1647
T9	17	DC Trunk	105.00 - 107.50	0.6000	0.1647
T9	18	Fiber Trunk	105.00 - 107.50	0.6000	0.1647
T9	19	DC Trunk	105.00 - 107.50	0.6000	0.1647
T10	1	1 5/8	102.50 - 105.00	0.6000	0.1659
T10	2	1 5/8	102.50 - 105.00	0.6000	0.1659
T10	3	1 5/8	102.50 - 105.00	0.6000	0.1659
T10	4	1 5/8	102.50 - 105.00	0.6000	0.1659
T10	5	HYBRIFLEX 1-1/4"	102.50 - 105.00	0.6000	0.1659
T10	6	HYBRIFLEX 7/8"	102.50 - 105.00	0.6000	0.1659
T10	7	7/8	102.50 - 105.00	0.6000	0.1659
T10	8	7/8	102.50 - 105.00	0.6000	0.1659
T10	9	1 5/8	102.50 - 105.00	0.6000	0.1659
T10	11	1/2	102.50 - 105.00	0.6000	0.1659
T10	12	1/2	102.50 - 105.00	0.6000	0.1659
T10	13	1 5/8	102.50 - 105.00	0.6000	0.1659
T10	14	7/8	102.50 - 105.00	0.6000	0.1659
T10	15	1/2	102.50 - 105.00	0.6000	0.1659
T10	16	Fiber Trunk	102.50 - 105.00	0.6000	0.1659
T10	17	DC Trunk	102.50 -	0.6000	0.1659

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			105.00		
T10	18	Fiber Trunk	102.50 - 105.00	0.6000	0.1659
T10	19	DC Trunk	102.50 - 105.00	0.6000	0.1659
T11	1	1 5/8	100.00 - 102.50	0.6000	0.0064
T11	2	1 5/8	100.00 - 102.50	0.6000	0.0064
T11	3	1 5/8	100.00 - 102.50	0.6000	0.0064
T11	4	1 5/8	100.00 - 102.50	0.6000	0.0064
T11	5	HYBRIFLEX 1-1/4"	100.00 - 102.50	0.6000	0.0064
T11	6	HYBRIFLEX 7/8"	100.00 - 102.50	0.6000	0.0064
T11	7	7/8	100.00 - 102.50	0.6000	0.0064
T11	8	7/8	100.00 - 102.50	0.6000	0.0064
T11	9	1 5/8	100.00 - 102.50	0.6000	0.0064
T11	11	1/2	100.00 - 102.50	0.6000	0.0064
T11	12	1/2	100.00 - 102.50	0.6000	0.0064
T11	13	1 5/8	100.00 - 102.50	0.6000	0.0064
T11	14	7/8	100.00 - 102.50	0.6000	0.0064
T11	15	1/2	100.00 - 102.50	0.6000	0.0064
T11	16	Fiber Trunk	100.00 - 102.50	0.6000	0.0064
T11	17	DC Trunk	100.00 - 102.50	0.6000	0.0064
T11	18	Fiber Trunk	100.00 - 102.50	0.6000	0.0064
T11	19	DC Trunk	100.00 - 102.50	0.6000	0.0064
T12	1	1 5/8	80.00 - 100.00	0.6000	0.2291
T12	2	1 5/8	80.00 - 100.00	0.6000	0.2291
T12	3	1 5/8	80.00 - 100.00	0.6000	0.2291
T12	4	1 5/8	80.00 - 100.00	0.6000	0.2291
T12	5	HYBRIFLEX 1-1/4"	80.00 - 100.00	0.6000	0.2291
T12	6	HYBRIFLEX 7/8"	80.00 - 100.00	0.6000	0.2291
T12	7	7/8	80.00 - 100.00	0.6000	0.2291
T12	8	7/8	80.00 - 100.00	0.6000	0.2291
T12	9	1 5/8	80.00 - 100.00	0.6000	0.2291
T12	11	1/2	80.00 - 100.00	0.6000	0.2291
T12	12	1/2	80.00 - 100.00	0.6000	0.2291
T12	13	1 5/8	80.00 - 100.00	0.6000	0.2291
T12	14	7/8	80.00 - 100.00	0.6000	0.2291
T12	15	1/2	80.00 - 100.00	0.6000	0.2291
T12	16	Fiber Trunk	80.00 - 100.00	0.6000	0.2291
T12	17	DC Trunk	80.00 - 100.00	0.6000	0.2291
T12	18	Fiber Trunk	80.00 - 100.00	0.6000	0.2291
T12	19	DC Trunk	80.00 - 100.00	0.6000	0.2291
T13	1	1 5/8	60.00 - 80.00	0.6000	0.1139
T13	2	1 5/8	60.00 - 80.00	0.6000	0.1139
T13	3	1 5/8	60.00 - 80.00	0.6000	0.1139

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	4	1 5/8	60.00 - 80.00	0.6000	0.1139
T13	5	HYBRIFLEX 1-1/4"	60.00 - 80.00	0.6000	0.1139
T13	6	HYBRIFLEX 7/8"	60.00 - 80.00	0.6000	0.1139
T13	7	7/8	60.00 - 80.00	0.6000	0.1139
T13	8	7/8	60.00 - 80.00	0.6000	0.1139
T13	9	1 5/8	60.00 - 80.00	0.6000	0.1139
T13	11	1/2	60.00 - 80.00	0.6000	0.1139
T13	12	1/2	60.00 - 80.00	0.6000	0.1139
T13	13	1 5/8	60.00 - 80.00	0.6000	0.1139
T13	14	7/8	60.00 - 80.00	0.6000	0.1139
T13	15	1/2	60.00 - 80.00	0.6000	0.1139
T13	16	Fiber Trunk	60.00 - 80.00	0.6000	0.1139
T13	17	DC Trunk	60.00 - 80.00	0.6000	0.1139
T13	18	Fiber Trunk	60.00 - 80.00	0.6000	0.1139
T13	19	DC Trunk	60.00 - 80.00	0.6000	0.1139
T14	1	1 5/8	40.00 - 60.00	0.6000	0.2553
T14	2	1 5/8	40.00 - 60.00	0.6000	0.2553
T14	3	1 5/8	40.00 - 60.00	0.6000	0.2553
T14	4	1 5/8	40.00 - 60.00	0.6000	0.2553
T14	5	HYBRIFLEX 1-1/4"	40.00 - 60.00	0.6000	0.2553
T14	6	HYBRIFLEX 7/8"	40.00 - 60.00	0.6000	0.2553
T14	7	7/8	40.00 - 60.00	0.6000	0.2553
T14	8	7/8	40.00 - 60.00	0.6000	0.2553
T14	9	1 5/8	40.00 - 60.00	0.6000	0.2553
T14	11	1/2	40.00 - 60.00	0.6000	0.2553
T14	12	1/2	40.00 - 60.00	0.6000	0.2553
T14	13	1 5/8	40.00 - 60.00	0.6000	0.2553
T14	14	7/8	40.00 - 60.00	0.6000	0.2553
T14	15	1/2	40.00 - 60.00	0.6000	0.2553
T14	16	Fiber Trunk	40.00 - 60.00	0.6000	0.2553
T14	17	DC Trunk	40.00 - 60.00	0.6000	0.2553
T14	18	Fiber Trunk	40.00 - 60.00	0.6000	0.2553
T14	19	DC Trunk	40.00 - 60.00	0.6000	0.2553
T15	1	1 5/8	20.00 - 40.00	0.6000	0.4325
T15	2	1 5/8	20.00 - 40.00	0.6000	0.4325
T15	3	1 5/8	20.00 - 40.00	0.6000	0.4325
T15	4	1 5/8	20.00 - 40.00	0.6000	0.4325
T15	5	HYBRIFLEX 1-1/4"	20.00 - 40.00	0.6000	0.4325
T15	6	HYBRIFLEX 7/8"	20.00 - 40.00	0.6000	0.4325
T15	7	7/8	20.00 - 40.00	0.6000	0.4325
T15	8	7/8	20.00 - 40.00	0.6000	0.4325
T15	9	1 5/8	20.00 - 40.00	0.6000	0.4325
T15	10	1/2	20.00 - 30.00	0.6000	0.4325
T15	11	1/2	20.00 - 40.00	0.6000	0.4325
T15	12	1/2	20.00 - 40.00	0.6000	0.4325
T15	13	1 5/8	20.00 - 40.00	0.6000	0.4325
T15	14	7/8	20.00 - 40.00	0.6000	0.4325
T15	15	1/2	20.00 - 40.00	0.6000	0.4325
T15	16	Fiber Trunk	20.00 - 40.00	0.6000	0.4325
T15	17	DC Trunk	20.00 - 40.00	0.6000	0.4325
T15	18	Fiber Trunk	20.00 - 40.00	0.6000	0.4325
T15	19	DC Trunk	20.00 - 40.00	0.6000	0.4325
T16	1	1 5/8	5.00 - 20.00	0.6000	0.4529
T16	2	1 5/8	5.00 - 20.00	0.6000	0.4529
T16	3	1 5/8	5.00 - 20.00	0.6000	0.4529
T16	4	1 5/8	5.00 - 20.00	0.6000	0.4529
T16	5	HYBRIFLEX 1-1/4"	5.00 - 20.00	0.6000	0.4529
T16	6	HYBRIFLEX 7/8"	5.00 - 20.00	0.6000	0.4529
T16	7	7/8	5.00 - 20.00	0.6000	0.4529
T16	8	7/8	5.00 - 20.00	0.6000	0.4529
T16	9	1 5/8	5.00 - 20.00	0.6000	0.4529
T16	10	1/2	5.00 - 20.00	0.6000	0.4529

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	11	1/2	5.00 - 20.00	0.6000	0.4529
T16	12	1/2	5.00 - 20.00	0.6000	0.4529
T16	13	1 5/8	5.00 - 20.00	0.6000	0.4529
T16	14	7/8	5.00 - 20.00	0.6000	0.4529
T16	15	1/2	5.00 - 20.00	0.6000	0.4529
T16	16	Fiber Trunk	5.00 - 20.00	0.6000	0.4529
T16	17	DC Trunk	5.00 - 20.00	0.6000	0.4529
T16	18	Fiber Trunk	5.00 - 20.00	0.6000	0.4529
T16	19	DC Trunk	5.00 - 20.00	0.6000	0.4529
T17	1	1 5/8	0.00 - 5.00	0.6000	0.3853
T17	2	1 5/8	0.00 - 5.00	0.6000	0.3853
T17	3	1 5/8	0.00 - 5.00	0.6000	0.3853
T17	4	1 5/8	0.00 - 5.00	0.6000	0.3853
T17	5	HYBRIFLEX 1-1/4"	0.00 - 5.00	0.6000	0.3853
T17	6	HYBRIFLEX 7/8"	0.00 - 5.00	0.6000	0.3853
T17	7	7/8	0.00 - 5.00	0.6000	0.3853
T17	8	7/8	0.00 - 5.00	0.6000	0.3853
T17	9	1 5/8	0.00 - 5.00	0.6000	0.3853
T17	10	1/2	0.00 - 5.00	0.6000	0.3853
T17	11	1/2	0.00 - 5.00	0.6000	0.3853
T17	12	1/2	0.00 - 5.00	0.6000	0.3853
T17	13	1 5/8	0.00 - 5.00	0.6000	0.3853
T17	14	7/8	0.00 - 5.00	0.6000	0.3853
T17	15	1/2	0.00 - 5.00	0.6000	0.3853
T17	16	Fiber Trunk	0.00 - 5.00	0.6000	0.3853
T17	17	DC Trunk	0.00 - 5.00	0.6000	0.3853
T17	18	Fiber Trunk	0.00 - 5.00	0.6000	0.3853
T17	19	DC Trunk	0.00 - 5.00	0.6000	0.3853

Discrete Tower Loads

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
ETCR-654L12H6	A	From Leg	4.00	0.0000	140.00	No Ice	15.71	6.00	0.09
(Sprint - Existing)			0.00			1/2" Ice	16.28	6.52	0.17
			0.00			1" Ice	16.86	7.05	0.26
ETCR-654L12H6	B	From Leg	4.00	0.0000	140.00	No Ice	15.71	6.00	0.09
(Sprint - Existing)			0.00			1/2" Ice	16.28	6.52	0.17
			0.00			1" Ice	16.86	7.05	0.26
ETCR-654L12H6	C	From Leg	4.00	0.0000	140.00	No Ice	15.71	6.00	0.09
(Sprint - Existing)			0.00			1/2" Ice	16.28	6.52	0.17
			0.00			1" Ice	16.86	7.05	0.26
(2) FD-RRH 2x50 800	A	From Leg	4.00	0.0000	140.00	No Ice	2.06	1.93	0.06
(Sprint - Existing)			-3.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
(2) FD-RRH 2x50 800	B	From Leg	4.00	0.0000	140.00	No Ice	2.06	1.93	0.06
(Sprint - Existing)			-3.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
(2) FD-RRH 2x50 800	C	From Leg	4.00	0.0000	140.00	No Ice	2.06	1.93	0.06
(Sprint - Existing)			-3.00			1/2" Ice	2.24	2.11	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
			0.00			1" Ice	2.43	2.29	0.11
FD-RRH 4x45 1900	A	From Leg	4.00	0.0000	140.00	No Ice	2.32	2.38	0.06
(Sprint - Existing)			3.00			1/2" Ice	2.52	2.59	0.08
			0.00			1" Ice	2.74	2.80	0.11
FD-RRH 4x45 1900	B	From Leg	4.00	0.0000	140.00	No Ice	2.32	2.38	0.06
(Sprint - Existing)			3.00			1/2" Ice	2.52	2.59	0.08
			0.00			1" Ice	2.74	2.80	0.11
FD-RRH 4x45 1900	C	From Leg	4.00	0.0000	140.00	No Ice	2.32	2.38	0.06
(Sprint - Existing)			3.00			1/2" Ice	2.52	2.59	0.08
			0.00			1" Ice	2.74	2.80	0.11
TD-RRH8x20-25	A	From Leg	4.00	0.0000	140.00	No Ice	4.05	1.53	0.07
(Sprint - Existing)			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Leg	4.00	0.0000	140.00	No Ice	4.05	1.53	0.07
(Sprint - Existing)			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	4.00	0.0000	140.00	No Ice	4.05	1.53	0.07
(Sprint - Existing)			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
Pirod 12' T-Frame Sector	A	From Leg	3.00	0.0000	140.00	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(Sprint - Existing)			0.00			1" Ice	23.20	23.20	0.73
Pirod 12' T-Frame Sector	B	From Leg	3.00	0.0000	140.00	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(Sprint - Existing)			0.00			1" Ice	23.20	23.20	0.73
Pirod 12' T-Frame Sector	C	From Leg	3.00	0.0000	140.00	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(Sprint - Existing)			0.00			1" Ice	23.20	23.20	0.73
7770.00	A	From Leg	3.00	0.0000	120.00	No Ice	5.51	2.93	0.04
(AT&T - Existing)			-6.00			1/2" Ice	5.87	3.27	0.07
			0.00			1" Ice	6.23	3.63	0.11
OPA-65R-LCUU-H6	A	From Leg	3.00	0.0000	120.00	No Ice	9.66	5.52	0.07
(AT&T - Existing)			-3.00			1/2" Ice	10.13	5.97	0.13
			0.00			1" Ice	10.61	6.43	0.20
QS66512-2	A	From Leg	3.00	0.0000	120.00	No Ice	8.13	6.80	0.11
(AT&T - Existing)			6.00			1/2" Ice	8.59	7.27	0.17
			0.00			1" Ice	9.05	7.72	0.23
7770.00	B	From Leg	3.00	0.0000	120.00	No Ice	5.51	2.93	0.04
(AT&T - Existing)			-6.00			1/2" Ice	5.87	3.27	0.07
			0.00			1" Ice	6.23	3.63	0.11
OPA-65R-LCUU-H6	B	From Leg	3.00	0.0000	120.00	No Ice	9.66	5.52	0.07
(AT&T - Existing)			-3.00			1/2" Ice	10.13	5.97	0.13
			0.00			1" Ice	10.61	6.43	0.20
QS66512-2	B	From Leg	3.00	0.0000	120.00	No Ice	8.13	6.80	0.11
(AT&T - Existing)			6.00			1/2" Ice	8.59	7.27	0.17
			0.00			1" Ice	9.05	7.72	0.23
7770.00	C	From Leg	3.00	0.0000	120.00	No Ice	5.51	2.93	0.04
(AT&T - Existing)			-6.00			1/2" Ice	5.87	3.27	0.07
			0.00			1" Ice	6.23	3.63	0.11
OPA-65R-LCUU-H6	C	From Leg	3.00	0.0000	120.00	No Ice	9.66	5.52	0.07
(AT&T - Existing)			-3.00			1/2" Ice	10.13	5.97	0.13
			0.00			1" Ice	10.61	6.43	0.20
QS66512-2	C	From Leg	3.00	0.0000	120.00	No Ice	8.13	6.80	0.11
(AT&T - Existing)			6.00			1/2" Ice	8.59	7.27	0.17
			0.00			1" Ice	9.05	7.72	0.23
(2) LGP21401 TMA	A	From Leg	3.00	0.0000	120.00	No Ice	0.00	0.37	0.02
(AT&T - Existing)			-6.00			1/2" Ice	0.00	0.48	0.02

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
			0.00			1" Ice	0.00	0.60	0.03
(2) LGP21401 TMA	B	From Leg	3.00	0.0000	120.00	No Ice	0.00	0.37	0.02
(AT&T - Existing)			-6.00			1/2" Ice	0.00	0.48	0.02
			0.00			1" Ice	0.00	0.60	0.03
(2) LGP21401 TMA	C	From Leg	3.00	0.0000	120.00	No Ice	0.00	0.37	0.02
(AT&T - Existing)			-6.00			1/2" Ice	0.00	0.48	0.02
			0.00			1" Ice	0.00	0.60	0.03
(2) TPX-070821	A	From Leg	3.00	0.0000	120.00	No Ice	0.00	0.12	0.01
(AT&T - Existing)			-3.00			1/2" Ice	0.00	0.17	0.01
			0.00			1" Ice	0.00	0.24	0.02
(2) TPX-070821	B	From Leg	3.00	0.0000	120.00	No Ice	0.00	0.12	0.01
(AT&T - Existing)			-3.00			1/2" Ice	0.00	0.17	0.01
			0.00			1" Ice	0.00	0.24	0.02
(2) TPX-070821	C	From Leg	3.00	0.0000	120.00	No Ice	0.00	0.12	0.01
(AT&T - Existing)			-3.00			1/2" Ice	0.00	0.17	0.01
			0.00			1" Ice	0.00	0.24	0.02
RRUS-11	A	From Leg	3.00	0.0000	120.00	No Ice	0.00	1.25	0.05
(AT&T - Existing)			6.00			1/2" Ice	0.00	1.41	0.07
			0.00			1" Ice	0.00	1.59	0.09
RRUS-11	B	From Leg	3.00	0.0000	120.00	No Ice	0.00	1.25	0.05
(AT&T - Existing)			6.00			1/2" Ice	0.00	1.41	0.07
			0.00			1" Ice	0.00	1.59	0.09
RRUS-11	C	From Leg	3.00	0.0000	120.00	No Ice	0.00	1.25	0.05
(AT&T - Existing)			6.00			1/2" Ice	0.00	1.41	0.07
			0.00			1" Ice	0.00	1.59	0.09
(2) RRUS-32	A	From Leg	3.00	0.0000	120.00	No Ice	3.31	2.42	0.08
(AT&T - Existing)			6.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
(2) RRUS-32	B	From Leg	3.00	0.0000	120.00	No Ice	3.31	2.42	0.08
(AT&T - Existing)			6.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
(2) RRUS-32	C	From Leg	3.00	0.0000	120.00	No Ice	3.31	2.42	0.08
(AT&T - Existing)			6.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
DC6-48-60-18-8F Surge	A	From Leg	3.00	0.0000	120.00	No Ice	1.91	1.91	0.02
Arrestor			0.00			1/2" Ice	2.10	2.10	0.04
(AT&T - Existing)			0.00			1" Ice	2.29	2.29	0.06
DC6-48-60-18-8F Surge	B	From Leg	3.00	0.0000	120.00	No Ice	1.91	1.91	0.02
Arrestor			0.00			1/2" Ice	2.10	2.10	0.04
(AT&T - Existing)			0.00			1" Ice	2.29	2.29	0.06
80010965	A	From Leg	3.00	0.0000	120.00	No Ice	13.81	5.83	0.11
(AT&T - Proposed)			3.00			1/2" Ice	14.35	6.32	0.19
			0.00			1" Ice	14.89	6.82	0.27
80010965	B	From Leg	3.00	0.0000	120.00	No Ice	13.81	5.83	0.11
(AT&T - Proposed)			3.00			1/2" Ice	14.35	6.32	0.19
			0.00			1" Ice	14.89	6.82	0.27
80010965	C	From Leg	3.00	0.0000	120.00	No Ice	13.81	5.83	0.11
(AT&T - Proposed)			3.00			1/2" Ice	14.35	6.32	0.19
			0.00			1" Ice	14.89	6.82	0.27
RRUS-32	A	From Leg	3.00	0.0000	120.00	No Ice	3.31	2.42	0.08
(AT&T - Proposed)			3.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
RRUS-32	B	From Leg	3.00	0.0000	120.00	No Ice	3.31	2.42	0.08
(AT&T - Proposed)			3.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
RRUS-32	C	From Leg	3.00	0.0000	120.00	No Ice	3.31	2.42	0.08
(AT&T - Proposed)			3.00			1/2" Ice	3.56	2.64	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	3.81	2.86	0.14
B14 4478	A	From Leg	3.00	0.0000	120.00	No Ice	1.63	0.91	0.06
(AT&T - Proposed)			3.00			1/2" Ice	1.79	1.03	0.07
			0.00			1" Ice	1.95	1.17	0.09
B14 4478	B	From Leg	3.00	0.0000	120.00	No Ice	1.63	0.91	0.06
(AT&T - Proposed)			3.00			1/2" Ice	1.79	1.03	0.07
			0.00			1" Ice	1.95	1.17	0.09
B14 4478	C	From Leg	3.00	0.0000	120.00	No Ice	1.63	0.91	0.06
(AT&T - Proposed)			3.00			1/2" Ice	1.79	1.03	0.07
			0.00			1" Ice	1.95	1.17	0.09
DC6-48-60-18-8F Surge	C	From Leg	3.00	0.0000	120.00	No Ice	1.91	1.91	0.02
Arrestor			0.00			1/2" Ice	2.10	2.10	0.04
(AT&T - Proposed)			0.00			1" Ice	2.29	2.29	0.06
Sabre 12" HD V-Boom	A	From Leg	2.00	0.0000	120.00	No Ice	9.12	8.00	0.60
(AT&T - Proposed)			0.00			1/2" Ice	11.00	9.60	0.75
			0.00			1" Ice	12.88	11.20	0.90
Sabre 12" HD V-Boom	B	From Leg	2.00	0.0000	120.00	No Ice	9.12	8.00	0.60
(AT&T - Proposed)			0.00			1/2" Ice	11.00	9.60	0.75
			0.00			1" Ice	12.88	11.20	0.90
Sabre 12" HD V-Boom	C	From Leg	2.00	0.0000	120.00	No Ice	9.12	8.00	0.60
(AT&T - Proposed)			0.00			1/2" Ice	11.00	9.60	0.75
			0.00			1" Ice	12.88	11.20	0.90
APX16DWV-16DWVS-E-A	A	From Leg	1.00	0.0000	163.00	No Ice	6.46	2.15	0.04
20			-4.00			1/2" Ice	6.83	2.49	0.07
(T-Mobile - Existing)			0.00			1" Ice	7.21	2.84	0.11
AIR32	A	From Leg	1.00	0.0000	163.00	No Ice	6.51	4.71	0.13
(T-Mobile - Existing)			0.00			1/2" Ice	6.89	5.07	0.18
			0.00			1" Ice	7.27	5.43	0.23
LNX-6515DS	A	From Leg	1.00	0.0000	163.00	No Ice	11.45	7.70	0.06
(T-Mobile - Existing)			4.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
APX16DWV-16DWVS-E-A	B	From Leg	1.00	0.0000	163.00	No Ice	6.46	2.15	0.04
20			-4.00			1/2" Ice	6.83	2.49	0.07
(T-Mobile - Existing)			0.00			1" Ice	7.21	2.84	0.11
AIR32	B	From Leg	1.00	0.0000	163.00	No Ice	6.51	4.71	0.13
(T-Mobile - Existing)			0.00			1/2" Ice	6.89	5.07	0.18
			0.00			1" Ice	7.27	5.43	0.23
LNX-6515DS	B	From Leg	1.00	0.0000	163.00	No Ice	11.45	7.70	0.06
(T-Mobile - Existing)			4.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
APX16DWV-16DWVS-E-A	C	From Leg	1.00	0.0000	163.00	No Ice	6.46	2.15	0.04
20			-4.00			1/2" Ice	6.83	2.49	0.07
(T-Mobile - Existing)			0.00			1" Ice	7.21	2.84	0.11
AIR32	C	From Leg	1.00	0.0000	163.00	No Ice	6.51	4.71	0.13
(T-Mobile - Existing)			0.00			1/2" Ice	6.89	5.07	0.18
			0.00			1" Ice	7.27	5.43	0.23
LNX-6515DS	C	From Leg	1.00	0.0000	163.00	No Ice	11.45	7.70	0.06
(T-Mobile - Existing)			4.00			1/2" Ice	12.06	8.29	0.12
			0.00			1" Ice	12.69	8.89	0.19
(2) TMA 10"x8"x3"	A	From Leg	1.00	0.0000	163.00	No Ice	0.00	0.29	0.02
(T-Mobile - Existing)			-4.00			1/2" Ice	0.00	0.38	0.02
			0.00			1" Ice	0.00	0.48	0.03
(2) TMA 10"x8"x3"	B	From Leg	1.00	0.0000	163.00	No Ice	0.00	0.29	0.02
(T-Mobile - Existing)			-4.00			1/2" Ice	0.00	0.38	0.02
			0.00			1" Ice	0.00	0.48	0.03
(2) TMA 10"x8"x3"	C	From Leg	1.00	0.0000	163.00	No Ice	0.00	0.29	0.02
(T-Mobile - Existing)			-4.00			1/2" Ice	0.00	0.38	0.02

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
			0.00			1" Ice	0.00	0.48	0.03
Rohn 6' x 12' Boom Gate (1)	A	From Leg	3.00	0.0000	163.00	No Ice	16.60	16.60	0.56
(T-Mobile - Existing)			0.00			1/2" Ice	19.80	19.80	0.70
			0.00			1" Ice	23.00	23.00	0.84
Rohn 6' x 12' Boom Gate (1)	B	From Leg	3.00	0.0000	163.00	No Ice	16.60	16.60	0.56
(T-Mobile - Existing)			0.00			1/2" Ice	19.80	19.80	0.70
			0.00			1" Ice	23.00	23.00	0.84
Rohn 6' x 12' Boom Gate (1)	C	From Leg	3.00	0.0000	163.00	No Ice	16.60	16.60	0.56
(T-Mobile - Existing)			0.00			1/2" Ice	19.80	19.80	0.70
			0.00			1" Ice	23.00	23.00	0.84
DS4C03F36U-D	A	From Leg	4.00	0.0000	175.00	No Ice	2.40	2.40	0.03
			0.00			1/2" Ice	3.19	3.19	0.04
			0.00			1" Ice	3.67	3.67	0.07
Tower Top Amplifier	A	From Leg	4.00	0.0000	168.00	No Ice	2.67	1.03	0.04
			0.00			1/2" Ice	2.87	1.17	0.06
			0.00			1" Ice	3.08	1.32	0.08
ROHN 3-ft Side Arm	A	From Leg	2.00	0.0000	168.00	No Ice	3.10	3.10	0.07
			0.00			1/2" Ice	5.00	5.00	0.10
			0.00			1" Ice	6.90	6.90	0.13
DS4C03F36U-D	B	From Leg	4.00	0.0000	175.00	No Ice	2.40	2.40	0.03
			0.00			1/2" Ice	3.19	3.19	0.04
			0.00			1" Ice	3.67	3.67	0.07
ROHN 3-ft Side Arm	B	From Leg	2.00	0.0000	168.00	No Ice	3.10	3.10	0.07
			0.00			1/2" Ice	5.00	5.00	0.10
			0.00			1" Ice	6.90	6.90	0.13
SC473-HF1LDF	A	From Leg	1.00	0.0000	175.00	No Ice	1.44	1.44	0.02
			0.00			1/2" Ice	1.74	1.74	0.03
			0.00			1" Ice	2.05	2.05	0.05
SC473-HF1LDF	B	From Leg	1.00	0.0000	175.00	No Ice	1.44	1.44	0.02
			0.00			1/2" Ice	1.74	1.74	0.03
			0.00			1" Ice	2.05	2.05	0.05
SC473-HF1LDF	C	From Leg	1.00	0.0000	175.00	No Ice	1.44	1.44	0.02
			0.00			1/2" Ice	1.74	1.74	0.03
			0.00			1" Ice	2.05	2.05	0.05
Tower Top Amplifier	C	From Leg	1.00	0.0000	168.00	No Ice	2.67	1.03	0.04
			0.00			1/2" Ice	2.87	1.17	0.06
			0.00			1" Ice	3.08	1.32	0.08
5' Panel Antenna	C	From Leg	1.00	0.0000	168.00	No Ice	6.56	2.29	0.02
			0.00			1/2" Ice	6.95	2.65	0.06
			0.00			1" Ice	7.34	3.02	0.09
(2) GPS	C	From Leg	1.00	0.0000	30.00	No Ice	1.00	1.00	0.01
			0.00			1/2" Ice	1.50	1.50	0.01
			0.00			1" Ice	2.00	2.00	0.02

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft^2	Weight K

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-180	A	Paraboloid w/o Radome	From Leg	3.00 0.00 0.00	0.0000		145.60	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.03 0.04 0.06
VHLP2-180	B	Paraboloid w/o Radome	From Leg	3.00 0.00 0.00	0.0000		145.60	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.03 0.04 0.06
VHLP2-180	C	Paraboloid w/o Radome	From Leg	3.00 0.00 0.00	0.0000		145.60	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.03 0.04 0.06
2' Dish	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		167.00	2.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.87	0.05 0.10 0.12

Tower Pressures - No Ice

G_H = 0.850

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
T1 170.00-155.00	162.50	1.135	23	54.269	A B C	0.000 0.000 0.000	12.661 12.661 12.661	5.938	46.90 46.90 46.90	4.540 8.910 15.380	0.000 0.000 0.000
T2 155.00-140.00	147.50	1.104	23	54.269	A B C	0.537 0.537 0.537	14.272 14.272 14.272	5.938	40.09 40.09 40.09	12.750 26.730 30.495	0.000 0.000 0.000
T3 140.00-120.00	130.00	1.065	22	72.367	A B C	24.770 24.770 24.770	0.000 0.000 0.000	11.267	45.48 45.48 45.48	27.278 35.640 40.660	0.000 0.000 0.000
T4 120.00-117.50	118.75	1.038	21	9.045	A B C	0.000 0.000 0.000	2.325 2.325 2.325	0.990	42.55 42.55 42.55	3.553 5.241 5.082	0.000 0.000 0.000
T5 117.50-115.00	116.25	1.032	21	9.045	A B C	0.000 0.000 0.000	1.923 1.923 1.923	0.990	51.47 51.47 51.47	3.553 8.385 5.082	0.000 0.000 0.000
T6 115.00-112.50	113.75	1.025	21	9.045	A B C	0.000 0.000 0.000	1.923 1.923 1.923	0.990	51.47 51.47 51.47	3.553 8.385 5.082	0.000 0.000 0.000
T7 112.50-110.00	111.25	1.019	21	9.045	A B C	0.000 0.000 0.000	1.923 1.923 1.923	0.990	51.47 51.47 51.47	3.553 8.385 5.082	0.000 0.000 0.000
T8 110.00-107.50	108.75	1.012	21	9.045	A B C	0.537 0.537 0.537	1.923 1.923 1.923	0.990	40.23 40.23 40.23	3.553 8.385 5.082	0.000 0.000 0.000
T9 107.50-105.00	106.25	1.005	21	9.045	A B C	0.537 0.537 0.537	1.923 1.923 1.923	0.990	40.23 40.23 40.23	3.553 8.385 5.082	0.000 0.000 0.000
T10 105.00-102.50	103.75	0.999	20	9.045	A B C	0.537 0.537 0.537	1.923 1.923 1.923	0.990	40.23 40.23 40.23	3.553 8.385 5.082	0.000 0.000 0.000
T11 102.50-100.00	101.25	0.992	20	9.045	A B C	0.537 0.537 0.537	2.325 2.325 2.325	0.990	34.57 34.57 34.57	3.553 8.385 5.082	0.000 0.000 0.000
T12	90.00	0.959	20	73.192	A	1.060	18.587	9.583	48.78	28.420	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
100.00-80.00					B	1.060	18.587		48.78	67.080	0.000
					C	1.060	18.587		48.78	40.660	0.000
T13	70.00	0.892	18	73.452	A	4.263	18.755	10.104	43.90	28.420	0.000
80.00-60.00					B	4.263	18.755		43.90	67.080	0.000
					C	4.263	18.755		43.90	40.660	0.000
T14	50.00	0.811	17	73.192	A	1.060	18.587	9.583	48.78	28.420	0.000
60.00-40.00					B	1.060	18.587		48.78	67.080	0.000
					C	1.060	18.587		48.78	40.660	0.000
T15	30.00	0.701	14	73.192	A	10.303	6.519	10.303	61.25	28.420	0.000
40.00-20.00					B	10.303	6.519		61.25	67.080	0.000
					C	10.303	6.519		61.25	41.820	0.000
T16 20.00-5.00	12.50	0.7	14	54.894	A	7.728	5.012	7.728	60.66	21.315	0.000
					B	7.728	5.012		60.66	50.310	0.000
					C	7.728	5.012		60.66	32.235	0.000
T17 5.00-0.00	2.50	0.7	14	9.816	A	3.880	0.000	2.769	71.37	7.105	0.000
					B	3.880	0.000		71.37	16.770	0.000
					C	3.880	0.000		71.37	10.745	0.000

Tower Pressure - With Ice

$G_H = 0.850$

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
T1	162.50	1.135	6	2.3457	60.133	A	0.000	45.417	17.666	38.90	17.593	0.000
170.00-155.00						B	0.000	45.417		38.90	24.330	0.000
						C	0.000	45.417		38.90	66.735	0.000
T2	147.50	1.104	6	2.3230	60.076	A	0.537	55.445	17.553	31.35	44.695	0.000
155.00-140.00						B	0.537	55.445		31.35	72.891	0.000
						C	0.537	55.445		31.35	122.906	0.000
T3	130.00	1.065	6	2.2939	80.013	A	34.965	35.573	21.462	30.43	100.405	0.000
140.00-120.00						B	34.965	35.573		30.43	97.019	0.000
						C	34.965	35.573		30.43	162.701	0.000
T4	118.75	1.038	6	2.2732	9.992	A	0.000	8.269	2.884	34.88	13.067	0.000
120.00-117.50						B	0.000	8.269		34.88	14.968	0.000
						C	0.000	8.269		34.88	20.234	0.000
T5	116.25	1.032	6	2.2684	9.990	A	0.000	6.635	2.880	43.40	13.054	0.000
117.50-115.00						B	0.000	6.635		43.40	26.370	0.000
						C	0.000	6.635		43.40	20.209	0.000
T6	113.75	1.025	6	2.2635	9.988	A	0.000	6.625	2.876	43.41	13.042	0.000
115.00-112.50						B	0.000	6.625		43.41	26.349	0.000
						C	0.000	6.625		43.41	20.185	0.000
T7	111.25	1.019	6	2.2584	9.986	A	0.000	6.615	2.872	43.41	13.028	0.000
112.50-110.00						B	0.000	6.615		43.41	26.328	0.000
						C	0.000	6.615		43.41	20.159	0.000
T8	108.75	1.012	6	2.2533	9.984	A	0.537	7.814	2.867	34.33	13.015	0.000
110.00-107.50						B	0.537	7.814		34.33	26.306	0.000
						C	0.537	7.814		34.33	20.133	0.000
T9	106.25	1.005	5	2.2481	9.981	A	0.537	7.800	2.863	34.34	13.001	0.000
107.50-105.00						B	0.537	7.800		34.34	26.283	0.000
						C	0.537	7.800		34.34	20.107	0.000
T10	103.75	0.999	5	2.2427	9.979	A	0.537	7.786	2.859	34.34	12.987	0.000
105.00-102.50						B	0.537	7.786		34.34	26.260	0.000
						C	0.537	7.786		34.34	20.080	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
T11	101.25	0.992	5	2.2373	9.977	A	0.537	9.376	2.854	28.79	12.972	0.000
102.50-100.00						B	0.537	9.376		28.79	26.237	0.000
						C	0.537	9.376		28.79	20.053	0.000
T12	90.00	0.959	5	2.2111	80.562	A	1.060	61.043	24.324	39.17	103.228	0.000
100.00-80.00						B	1.060	61.043		39.17	208.996	0.000
						C	1.060	61.043		39.17	159.368	0.000
T13 80.00-60.00	70.00	0.892	5	2.1562	80.639	A	4.263	67.193	24.478	34.26	102.072	0.000
						B	4.263	67.193		34.26	207.116	0.000
						C	4.263	67.193		34.26	157.161	0.000
T14 60.00-40.00	50.00	0.811	4	2.0849	80.141	A	1.060	58.620	23.482	39.35	100.572	0.000
						B	1.060	58.620		39.35	204.673	0.000
						C	1.060	58.620		39.35	154.294	0.000
T15 40.00-20.00	30.00	0.701	4	1.9810	79.795	A	19.108	26.174	19.108	42.20	98.392	0.000
						B	19.108	26.174		42.20	201.120	0.000
						C	19.108	26.174		42.20	159.236	0.000
T16 20.00-5.00	12.50	0.7	4	1.8150	59.431	A	13.777	18.737	13.777	42.37	71.185	0.000
						B	13.777	18.737		42.37	146.586	0.000
						C	13.777	18.737		42.37	120.391	0.000
T17 5.00-0.00	2.50	0.7	4	1.5452	11.177	A	5.726	1.144	4.615	67.17	22.322	0.000
						B	5.726	1.144		67.17	46.564	0.000
						C	5.726	1.144		67.17	36.958	0.000

Tower Pressure - Service

$G_H = 0.850$

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
T1	162.50	1.135	9	54.269	A	0.000	12.661	5.938	46.90	4.540	0.000
170.00-155.00					B	0.000	12.661		46.90	8.910	0.000
					C	0.000	12.661		46.90	15.380	0.000
T2	147.50	1.104	9	54.269	A	0.537	14.272	5.938	40.09	12.750	0.000
155.00-140.00					B	0.537	14.272		40.09	26.730	0.000
					C	0.537	14.272		40.09	30.495	0.000
T3	130.00	1.065	8	72.367	A	24.770	0.000	11.267	45.48	27.278	0.000
140.00-120.00					B	24.770	0.000		45.48	35.640	0.000
					C	24.770	0.000		45.48	40.660	0.000
T4	118.75	1.038	8	9.045	A	0.000	2.325	0.990	42.55	3.553	0.000
120.00-117.50					B	0.000	2.325		42.55	5.241	0.000
					C	0.000	2.325		42.55	5.082	0.000
T5	116.25	1.032	8	9.045	A	0.000	1.923	0.990	51.47	3.553	0.000
117.50-115.00					B	0.000	1.923		51.47	8.385	0.000
					C	0.000	1.923		51.47	5.082	0.000
T6	113.75	1.025	8	9.045	A	0.000	1.923	0.990	51.47	3.553	0.000
115.00-112.50					B	0.000	1.923		51.47	8.385	0.000
					C	0.000	1.923		51.47	5.082	0.000
T7	111.25	1.019	8	9.045	A	0.000	1.923	0.990	51.47	3.553	0.000
112.50-110.00					B	0.000	1.923		51.47	8.385	0.000
					C	0.000	1.923		51.47	5.082	0.000
T8	108.75	1.012	8	9.045	A	0.537	1.923	0.990	40.23	3.553	0.000
110.00-107.50					B	0.537	1.923		40.23	8.385	0.000
					C	0.537	1.923		40.23	5.082	0.000
T9	106.25	1.005	8	9.045	A	0.537	1.923	0.990	40.23	3.553	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
107.50-105.00					B	0.537	1.923		40.23	8.385	0.000
					C	0.537	1.923		40.23	5.082	0.000
T10	103.75	0.999	8	9.045	A	0.537	1.923	0.990	40.23	3.553	0.000
105.00-102.50					B	0.537	1.923		40.23	8.385	0.000
					C	0.537	1.923		40.23	5.082	0.000
T11	101.25	0.992	8	9.045	A	0.537	2.325	0.990	34.57	3.553	0.000
102.50-100.00					B	0.537	2.325		34.57	8.385	0.000
					C	0.537	2.325		34.57	5.082	0.000
T12	90.00	0.959	8	73.192	A	1.060	18.587	9.583	48.78	28.420	0.000
100.00-80.00					B	1.060	18.587		48.78	67.080	0.000
					C	1.060	18.587		48.78	40.660	0.000
T13	70.00	0.892	7	73.452	A	4.263	18.755	10.104	43.90	28.420	0.000
80.00-60.00					B	4.263	18.755		43.90	67.080	0.000
					C	4.263	18.755		43.90	40.660	0.000
T14	50.00	0.811	6	73.192	A	1.060	18.587	9.583	48.78	28.420	0.000
60.00-40.00					B	1.060	18.587		48.78	67.080	0.000
					C	1.060	18.587		48.78	40.660	0.000
T15	30.00	0.701	5	73.192	A	10.303	6.519	10.303	61.25	28.420	0.000
40.00-20.00					B	10.303	6.519		61.25	67.080	0.000
					C	10.303	6.519		61.25	41.820	0.000
T16 20.00-5.00	12.50	0.7	5	54.894	A	7.728	5.012	7.728	60.66	21.315	0.000
					B	7.728	5.012		60.66	50.310	0.000
					C	7.728	5.012		60.66	32.235	0.000
T17 5.00-0.00	2.50	0.7	5	9.816	A	3.880	0.000	2.769	71.37	7.105	0.000
					B	3.880	0.000		71.37	16.770	0.000
					C	3.880	0.000		71.37	10.745	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	23	1	1	7.357	0.70	46.90	C
170.00-155.00			B	0.233	2.489		1	1	7.357			
			C	0.233	2.489		1	1	7.357			
T2	0.36	0.51	A	0.273	2.371	23	1	1	8.971	1.22	81.04	C
155.00-140.00		TA 0.44	B	0.273	2.371		1	1	8.971			
			C	0.273	2.371		1	1	8.971			
T3	0.56	1.18	A	0.342	2.19	22	1	1	24.770	2.16	107.87	C
140.00-120.00		TA 0.44	B	0.342	2.19		1	1	24.770			
			C	0.342	2.19		1	1	24.770			
T4	0.08	0.06	A	0.257	2.416	21	1	1	1.365	0.21	83.98	C
120.00-117.50			B	0.257	2.416		1	1	1.365			
			C	0.257	2.416		1	1	1.365			
T5	0.09	0.05	A	0.213	2.555	21	1	1	1.109	0.23	93.68	C
117.50-115.00			B	0.213	2.555		1	1	1.109			
			C	0.213	2.555		1	1	1.109			
T6	0.09	0.05	A	0.213	2.555	21	1	1	1.109	0.23	93.10	C
115.00-112.50			B	0.213	2.555		1	1	1.109			
			C	0.213	2.555		1	1	1.109			
T7	0.09	0.05	A	0.213	2.555	21	1	1	1.109	0.23	92.52	C
112.50-110.00			B	0.213	2.555		1	1	1.109			
			C	0.213	2.555		1	1	1.109			
T8	0.09	0.07	A	0.272	2.373	21	1	1	1.673	0.25	99.93	C
110.00-107.50			B	0.272	2.373		1	1	1.673			
			C	0.272	2.373		1	1	1.673			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T9	0.09	0.07	A	0.272	2.373	21	1	1	1.673	0.25	99.27	C
107.50-105.00			B	0.272	2.373		1	1	1.673			
			C	0.272	2.373		1	1	1.673			
T10	0.09	0.07	A	0.272	2.373	20	1	1	1.673	0.25	98.59	C
105.00-102.50			B	0.272	2.373		1	1	1.673			
			C	0.272	2.373		1	1	1.673			
T11	0.09	0.08	A	0.316	2.253	20	1	1	1.942	0.25	100.71	C
102.50-100.00			B	0.316	2.253		1	1	1.942			
			C	0.316	2.253		1	1	1.942			
T12	0.75	0.61	A	0.268	2.383	20	1	1	12.022	1.84	92.07	C
100.00-80.00			B	0.268	2.383		1	1	12.022			
			C	0.268	2.383		1	1	12.022			
T13	0.75	0.82	A	0.313	2.261	18	1	1	15.576	1.82	90.79	C
80.00-60.00			B	0.313	2.261		1	1	15.576			
			C	0.313	2.261		1	1	15.576			
T14	0.75	0.61	A	0.268	2.383	17	1	1	12.022	1.56	77.84	C
60.00-40.00			B	0.268	2.383		1	1	12.022			
			C	0.268	2.383		1	1	12.022			
T15	0.76	0.77	A	0.23	2.499	14	1	1	14.086	1.43	71.69	C
40.00-20.00			B	0.23	2.499		1	1	14.086			
			C	0.23	2.499		1	1	14.086			
T16	0.57	0.57	A	0.232	2.492	14	1	1	10.639	1.08	72.14	C
20.00-5.00			B	0.232	2.492		1	1	10.639			
			C	0.232	2.492		1	1	10.639			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	14	1	1	3.880	0.25*	50.22	C
			B	0.395	2.073		1	1	3.880			
			C	0.395	2.073		1	1	3.880			
Sum Weight:	5.58	6.93			*2.1A_g limit					13.96		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	23	0.825	1	7.357	0.70	46.90	C
170.00-155.00			B	0.233	2.489		0.825	1	7.357			
			C	0.233	2.489		0.825	1	7.357			
T2	0.36	0.51	A	0.273	2.371	23	0.825	1	8.877	1.21	80.75	C
155.00-140.00		TA 0.44	B	0.273	2.371		0.825	1	8.877			
			C	0.273	2.371		0.825	1	8.877			
T3	0.56	1.18	A	0.342	2.19	22	0.825	1	20.436	1.98	99.07	C
140.00-120.00		TA 0.44	B	0.342	2.19		0.825	1	20.436			
			C	0.342	2.19		0.825	1	20.436			
T4	0.08	0.06	A	0.257	2.416	21	0.825	1	1.365	0.21	83.98	C
120.00-117.50			B	0.257	2.416		0.825	1	1.365			
			C	0.257	2.416		0.825	1	1.365			
T5	0.09	0.05	A	0.213	2.555	21	0.825	1	1.109	0.23	93.68	C
117.50-115.00			B	0.213	2.555		0.825	1	1.109			
			C	0.213	2.555		0.825	1	1.109			
T6	0.09	0.05	A	0.213	2.555	21	0.825	1	1.109	0.23	93.10	C
115.00-112.50			B	0.213	2.555		0.825	1	1.109			
			C	0.213	2.555		0.825	1	1.109			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T7	0.09	0.05	A	0.213	2.555	21	0.825	1	1.109	0.23	92.52	C
112.50-110.00			B	0.213	2.555		0.825	1	1.109			
			C	0.213	2.555		0.825	1	1.109			
T8	0.09	0.07	A	0.272	2.373	21	0.825	1	1.579	0.25	98.36	C
110.00-107.50			B	0.272	2.373		0.825	1	1.579			
			C	0.272	2.373		0.825	1	1.579			
T9	0.09	0.07	A	0.272	2.373	21	0.825	1	1.579	0.24	97.70	C
107.50-105.00			B	0.272	2.373		0.825	1	1.579			
			C	0.272	2.373		0.825	1	1.579			
T10	0.09	0.07	A	0.272	2.373	20	0.825	1	1.579	0.24	97.04	C
105.00-102.50			B	0.272	2.373		0.825	1	1.579			
			C	0.272	2.373		0.825	1	1.579			
T11	0.09	0.08	A	0.316	2.253	20	0.825	1	1.848	0.25	99.25	C
102.50-100.00			B	0.316	2.253		0.825	1	1.848			
			C	0.316	2.253		0.825	1	1.848			
T12	0.75	0.61	A	0.268	2.383	20	0.825	1	11.836	1.83	91.71	C
100.00-80.00			B	0.268	2.383		0.825	1	11.836			
			C	0.268	2.383		0.825	1	11.836			
T13	0.75	0.82	A	0.313	2.261	18	0.825	1	14.830	1.79	89.48	C
80.00-60.00			B	0.313	2.261		0.825	1	14.830			
			C	0.313	2.261		0.825	1	14.830			
T14	0.75	0.61	A	0.268	2.383	17	0.825	1	11.836	1.55	77.53	C
60.00-40.00			B	0.268	2.383		0.825	1	11.836			
			C	0.268	2.383		0.825	1	11.836			
T15	0.76	0.77	A	0.23	2.499	14	0.825	1	12.283	1.38	68.94	C
40.00-20.00			B	0.23	2.499		0.825	1	12.283			
			C	0.23	2.499		0.825	1	12.283			
T16	0.57	0.57	A	0.232	2.492	14	0.825	1	9.287	1.04	69.41	C
20.00-5.00			B	0.232	2.492		0.825	1	9.287			
			C	0.232	2.492		0.825	1	9.287			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	14	0.825	1	3.201	0.25*	50.22	C
			B	0.395	2.073		0.825	1	3.201			
			C	0.395	2.073		0.825	1	3.201			
Sum Weight:	5.58	6.93			*2.1A_g limit					13.63		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	23	0.8	1	7.357	0.70	46.90	C
170.00-155.00			B	0.233	2.489		0.8	1	7.357			
			C	0.233	2.489		0.8	1	7.357			
T2	0.36	0.51	A	0.273	2.371	23	0.8	1	8.864	1.21	80.71	C
155.00-140.00		TA 0.44	B	0.273	2.371		0.8	1	8.864			
			C	0.273	2.371		0.8	1	8.864			
T3	0.56	1.18	A	0.342	2.19	22	0.8	1	19.816	1.96	97.82	C
140.00-120.00		TA 0.44	B	0.342	2.19		0.8	1	19.816			
			C	0.342	2.19		0.8	1	19.816			
T4	0.08	0.06	A	0.257	2.416	21	0.8	1	1.365	0.21	83.98	C
120.00-117.50			B	0.257	2.416		0.8	1	1.365			
			C	0.257	2.416		0.8	1	1.365			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T5	0.09	0.05	A	0.213	2.555	21	0.8	1	1.109	0.23	93.68	C
117.50-115.00			B	0.213	2.555		0.8	1	1.109			
			C	0.213	2.555		0.8	1	1.109			
T6	0.09	0.05	A	0.213	2.555	21	0.8	1	1.109	0.23	93.10	C
115.00-112.50			B	0.213	2.555		0.8	1	1.109			
			C	0.213	2.555		0.8	1	1.109			
T7	0.09	0.05	A	0.213	2.555	21	0.8	1	1.109	0.23	92.52	C
112.50-110.00			B	0.213	2.555		0.8	1	1.109			
			C	0.213	2.555		0.8	1	1.109			
T8	0.09	0.07	A	0.272	2.373	21	0.8	1	1.565	0.25	98.13	C
110.00-107.50			B	0.272	2.373		0.8	1	1.565			
			C	0.272	2.373		0.8	1	1.565			
T9	0.09	0.07	A	0.272	2.373	21	0.8	1	1.565	0.24	97.48	C
107.50-105.00			B	0.272	2.373		0.8	1	1.565			
			C	0.272	2.373		0.8	1	1.565			
T10	0.09	0.07	A	0.272	2.373	20	0.8	1	1.565	0.24	96.82	C
105.00-102.50			B	0.272	2.373		0.8	1	1.565			
			C	0.272	2.373		0.8	1	1.565			
T11	0.09	0.08	A	0.316	2.253	20	0.8	1	1.835	0.25	99.04	C
102.50-100.00			B	0.316	2.253		0.8	1	1.835			
			C	0.316	2.253		0.8	1	1.835			
T12	0.75	0.61	A	0.268	2.383	20	0.8	1	11.810	1.83	91.65	C
100.00-80.00			B	0.268	2.383		0.8	1	11.810			
			C	0.268	2.383		0.8	1	11.810			
T13	0.75	0.82	A	0.313	2.261	18	0.8	1	14.723	1.79	89.30	C
80.00-60.00			B	0.313	2.261		0.8	1	14.723			
			C	0.313	2.261		0.8	1	14.723			
T14	0.75	0.61	A	0.268	2.383	17	0.8	1	11.810	1.55	77.48	C
60.00-40.00			B	0.268	2.383		0.8	1	11.810			
			C	0.268	2.383		0.8	1	11.810			
T15	0.76	0.77	A	0.23	2.499	14	0.8	1	12.026	1.37	68.55	C
40.00-20.00			B	0.23	2.499		0.8	1	12.026			
			C	0.23	2.499		0.8	1	12.026			
T16	0.57	0.57	A	0.232	2.492	14	0.8	1	9.093	1.04	69.02	C
20.00-5.00			B	0.232	2.492		0.8	1	9.093			
			C	0.232	2.492		0.8	1	9.093			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	14	0.8	1	3.104	0.25*	50.22	C
			B	0.395	2.073		0.8	1	3.104			
			C	0.395	2.073		0.8	1	3.104			
Sum Weight:	5.58	6.93			*2.1A_g limit					13.58		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	23	0.85	1	7.357	0.70	46.90	C
170.00-155.00			B	0.233	2.489		0.85	1	7.357			
			C	0.233	2.489		0.85	1	7.357			
T2	0.36	0.51	A	0.273	2.371	23	0.85	1	8.891	1.21	80.79	C
155.00-140.00		TA 0.44	B	0.273	2.371		0.85	1	8.891			
			C	0.273	2.371		0.85	1	8.891			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T3	0.56	1.18	A	0.342	2.19	22	0.85	1	21.055	2.01	100.33	C
140.00-120.00		TA 0.44	B	0.342	2.19		0.85	1	21.055			
			C	0.342	2.19		0.85	1	21.055			
T4	0.08	0.06	A	0.257	2.416	21	0.85	1	1.365	0.21	83.98	C
120.00-117.50			B	0.257	2.416		0.85	1	1.365			
			C	0.257	2.416		0.85	1	1.365			
T5	0.09	0.05	A	0.213	2.555	21	0.85	1	1.109	0.23	93.68	C
117.50-115.00			B	0.213	2.555		0.85	1	1.109			
			C	0.213	2.555		0.85	1	1.109			
T6	0.09	0.05	A	0.213	2.555	21	0.85	1	1.109	0.23	93.10	C
115.00-112.50			B	0.213	2.555		0.85	1	1.109			
			C	0.213	2.555		0.85	1	1.109			
T7	0.09	0.05	A	0.213	2.555	21	0.85	1	1.109	0.23	92.52	C
112.50-110.00			B	0.213	2.555		0.85	1	1.109			
			C	0.213	2.555		0.85	1	1.109			
T8	0.09	0.07	A	0.272	2.373	21	0.85	1	1.592	0.25	98.58	C
110.00-107.50			B	0.272	2.373		0.85	1	1.592			
			C	0.272	2.373		0.85	1	1.592			
T9	0.09	0.07	A	0.272	2.373	21	0.85	1	1.592	0.24	97.93	C
107.50-105.00			B	0.272	2.373		0.85	1	1.592			
			C	0.272	2.373		0.85	1	1.592			
T10	0.09	0.07	A	0.272	2.373	20	0.85	1	1.592	0.24	97.26	C
105.00-102.50			B	0.272	2.373		0.85	1	1.592			
			C	0.272	2.373		0.85	1	1.592			
T11	0.09	0.08	A	0.316	2.253	20	0.85	1	1.862	0.25	99.46	C
102.50-100.00			B	0.316	2.253		0.85	1	1.862			
			C	0.316	2.253		0.85	1	1.862			
T12	0.75	0.61	A	0.268	2.383	20	0.85	1	11.863	1.84	91.76	C
100.00-80.00			B	0.268	2.383		0.85	1	11.863			
			C	0.268	2.383		0.85	1	11.863			
T13	0.75	0.82	A	0.313	2.261	18	0.85	1	14.936	1.79	89.67	C
80.00-60.00			B	0.313	2.261		0.85	1	14.936			
			C	0.313	2.261		0.85	1	14.936			
T14	0.75	0.61	A	0.268	2.383	17	0.85	1	11.863	1.55	77.57	C
60.00-40.00			B	0.268	2.383		0.85	1	11.863			
			C	0.268	2.383		0.85	1	11.863			
T15	0.76	0.77	A	0.23	2.499	14	0.85	1	12.541	1.39	69.34	C
40.00-20.00			B	0.23	2.499		0.85	1	12.541			
			C	0.23	2.499		0.85	1	12.541			
T16	0.57	0.57	A	0.232	2.492	14	0.85	1	9.480	1.05	69.80	C
20.00-5.00			B	0.232	2.492		0.85	1	9.480			
			C	0.232	2.492		0.85	1	9.480			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	14	0.85	1	3.298	0.25*	50.22	C
			B	0.395	2.073		0.85	1	3.298			
			C	0.395	2.073		0.85	1	3.298			
Sum Weight:	5.58	6.93			*2.1A_g limit					13.68		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.95	2.81	A	0.755	1.79	6	1	1	38.670	0.50	33.53	C
170.00-155.00			B	0.755	1.79		1	1	38.670			
			C	0.755	1.79		1	1	38.670			
T2	4.35	3.73	A	0.932	1.973	6	1	1	55.545	0.64	42.88	C
155.00-140.00		TA 1.31	B	0.932	1.973		1	1	55.545			
			C	0.932	1.973		1	1	55.545			
T3	6.40	5.24	A	0.882	1.899	6	1	1	68.778	0.83*	41.38	C
140.00-120.00		TA 1.30	B	0.882	1.899		1	1	68.778			
			C	0.882	1.899		1	1	68.778			
T4	0.85	0.51	A	0.828	1.839	6	1	1	7.501	0.10*	40.28	C
120.00-117.50			B	0.828	1.839		1	1	7.501			
			C	0.828	1.839		1	1	7.501			
T5	1.04	0.39	A	0.664	1.778	6	1	1	5.216	0.10*	40.03	C
117.50-115.00			B	0.664	1.778		1	1	5.216			
			C	0.664	1.778		1	1	5.216			
T6	1.04	0.39	A	0.663	1.778	6	1	1	5.204	0.10*	39.78	C
115.00-112.50			B	0.663	1.778		1	1	5.204			
			C	0.663	1.778		1	1	5.204			
T7	1.04	0.39	A	0.662	1.779	6	1	1	5.192	0.10*	39.52	C
112.50-110.00			B	0.662	1.779		1	1	5.192			
			C	0.662	1.779		1	1	5.192			
T8	1.03	0.56	A	0.836	1.848	6	1	1	7.680	0.10*	39.25	C
110.00-107.50			B	0.836	1.848		1	1	7.680			
			C	0.836	1.848		1	1	7.680			
T9	1.03	0.56	A	0.835	1.846	5	1	1	7.661	0.10*	38.98	C
107.50-105.00			B	0.835	1.846		1	1	7.661			
			C	0.835	1.846		1	1	7.661			
T10	1.03	0.55	A	0.834	1.845	5	1	1	7.640	0.10*	38.71	C
105.00-102.50			B	0.834	1.845		1	1	7.640			
			C	0.834	1.845		1	1	7.640			
T11	1.02	0.67	A	0.994	2.087	5	1	1	9.913	0.10*	38.43	C
102.50-100.00			B	0.994	2.087		1	1	9.913			
			C	0.994	2.087		1	1	9.913			
T12	8.09	3.93	A	0.771	1.797	5	1	1	53.752	0.75*	37.51	C
100.00-80.00			B	0.771	1.797		1	1	53.752			
			C	0.771	1.797		1	1	53.752			
T13	7.86	5.11	A	0.886	1.905	5	1	1	68.380	0.70*	34.94	C
80.00-60.00			B	0.886	1.905		1	1	68.380			
			C	0.886	1.905		1	1	68.380			
T14	7.58	3.65	A	0.745	1.785	4	1	1	50.509	0.63*	31.54	C
60.00-40.00			B	0.745	1.785		1	1	50.509			
			C	0.745	1.785		1	1	50.509			
T15	7.30	3.12	A	0.567	1.828	4	1	1	38.048	0.54*	27.14	C
40.00-20.00			B	0.567	1.828		1	1	38.048			
			C	0.567	1.828		1	1	38.048			
T16	5.07	2.16	A	0.547	1.846	4	1	1	27.109	0.40*	26.93	C
20.00-5.00			B	0.547	1.846		1	1	27.109			
			C	0.547	1.846		1	1	27.109			
T17 5.00-0.00	1.44	0.47	A	0.615	1.796	4	1	1	6.588	0.08*	15.19	C
			B	0.615	1.796		1	1	6.588			
			C	0.615	1.796		1	1	6.588			
Sum Weight:	58.11	36.85			*2.1A_g limit					5.86		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.95	2.81	A	0.755	1.79	6	0.825	1	38.670	0.50	33.53	C
170.00-155.00			B	0.755	1.79		0.825	1	38.670			
			C	0.755	1.79		0.825	1	38.670			
T2	4.35	3.73	A	0.932	1.973	6	0.825	1	55.451	0.64	42.82	C
155.00-140.00		TA 1.31	B	0.932	1.973		0.825	1	55.451			
			C	0.932	1.973		0.825	1	55.451			
T3	6.40	5.24	A	0.882	1.899	6	0.825	1	62.659	0.80	39.81	C
140.00-120.00		TA 1.30	B	0.882	1.899		0.825	1	62.659			
			C	0.882	1.899		0.825	1	62.659			
T4	0.85	0.51	A	0.828	1.839	6	0.825	1	7.501	0.10*	40.28	C
120.00-117.50			B	0.828	1.839		0.825	1	7.501			
			C	0.828	1.839		0.825	1	7.501			
T5	1.04	0.39	A	0.664	1.778	6	0.825	1	5.216	0.10*	40.03	C
117.50-115.00			B	0.664	1.778		0.825	1	5.216			
			C	0.664	1.778		0.825	1	5.216			
T6	1.04	0.39	A	0.663	1.778	6	0.825	1	5.204	0.10*	39.78	C
115.00-112.50			B	0.663	1.778		0.825	1	5.204			
			C	0.663	1.778		0.825	1	5.204			
T7	1.04	0.39	A	0.662	1.779	6	0.825	1	5.192	0.10*	39.52	C
112.50-110.00			B	0.662	1.779		0.825	1	5.192			
			C	0.662	1.779		0.825	1	5.192			
T8	1.03	0.56	A	0.836	1.848	6	0.825	1	7.586	0.10*	39.25	C
110.00-107.50			B	0.836	1.848		0.825	1	7.586			
			C	0.836	1.848		0.825	1	7.586			
T9	1.03	0.56	A	0.835	1.846	5	0.825	1	7.567	0.10*	38.98	C
107.50-105.00			B	0.835	1.846		0.825	1	7.567			
			C	0.835	1.846		0.825	1	7.567			
T10	1.03	0.55	A	0.834	1.845	5	0.825	1	7.546	0.10*	38.71	C
105.00-102.50			B	0.834	1.845		0.825	1	7.546			
			C	0.834	1.845		0.825	1	7.546			
T11	1.02	0.67	A	0.994	2.087	5	0.825	1	9.819	0.10	38.28	C
102.50-100.00			B	0.994	2.087		0.825	1	9.819			
			C	0.994	2.087		0.825	1	9.819			
T12	8.09	3.93	A	0.771	1.797	5	0.825	1	53.567	0.75*	37.51	C
100.00-80.00			B	0.771	1.797		0.825	1	53.567			
			C	0.771	1.797		0.825	1	53.567			
T13	7.86	5.11	A	0.886	1.905	5	0.825	1	67.634	0.70*	34.94	C
80.00-60.00			B	0.886	1.905		0.825	1	67.634			
			C	0.886	1.905		0.825	1	67.634			
T14	7.58	3.65	A	0.745	1.785	4	0.825	1	50.323	0.63*	31.54	C
60.00-40.00			B	0.745	1.785		0.825	1	50.323			
			C	0.745	1.785		0.825	1	50.323			
T15	7.30	3.12	A	0.567	1.828	4	0.825	1	34.704	0.54*	27.14	C
40.00-20.00			B	0.567	1.828		0.825	1	34.704			
			C	0.567	1.828		0.825	1	34.704			
T16	5.07	2.16	A	0.547	1.846	4	0.825	1	24.698	0.40*	26.93	C
20.00-5.00			B	0.547	1.846		0.825	1	24.698			
			C	0.547	1.846		0.825	1	24.698			
T17 5.00-0.00	1.44	0.47	A	0.615	1.796	4	0.825	1	5.586	0.08*	15.19	C
			B	0.615	1.796		0.825	1	5.586			
			C	0.615	1.796		0.825	1	5.586			
Sum Weight:	58.11	36.85			*2.1A_g limit					5.83		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.95	2.81	A	0.755	1.79	6	0.8	1	38.670	0.50	33.53	C
170.00-155.00			B	0.755	1.79		0.8	1	38.670			
			C	0.755	1.79		0.8	1	38.670			
T2	4.35	3.73	A	0.932	1.973	6	0.8	1	55.438	0.64	42.81	C
155.00-140.00		TA 1.31	B	0.932	1.973		0.8	1	55.438			
			C	0.932	1.973		0.8	1	55.438			
T3	6.40	5.24	A	0.882	1.899	6	0.8	1	61.785	0.79	39.40	C
140.00-120.00		TA 1.30	B	0.882	1.899		0.8	1	61.785			
			C	0.882	1.899		0.8	1	61.785			
T4	0.85	0.51	A	0.828	1.839	6	0.8	1	7.501	0.10*	40.28	C
120.00-117.50			B	0.828	1.839		0.8	1	7.501			
			C	0.828	1.839		0.8	1	7.501			
T5	1.04	0.39	A	0.664	1.778	6	0.8	1	5.216	0.10*	40.03	C
117.50-115.00			B	0.664	1.778		0.8	1	5.216			
			C	0.664	1.778		0.8	1	5.216			
T6	1.04	0.39	A	0.663	1.778	6	0.8	1	5.204	0.10*	39.78	C
115.00-112.50			B	0.663	1.778		0.8	1	5.204			
			C	0.663	1.778		0.8	1	5.204			
T7	1.04	0.39	A	0.662	1.779	6	0.8	1	5.192	0.10*	39.52	C
112.50-110.00			B	0.662	1.779		0.8	1	5.192			
			C	0.662	1.779		0.8	1	5.192			
T8	1.03	0.56	A	0.836	1.848	6	0.8	1	7.573	0.10*	39.25	C
110.00-107.50			B	0.836	1.848		0.8	1	7.573			
			C	0.836	1.848		0.8	1	7.573			
T9	1.03	0.56	A	0.835	1.846	5	0.8	1	7.553	0.10*	38.98	C
107.50-105.00			B	0.835	1.846		0.8	1	7.553			
			C	0.835	1.846		0.8	1	7.553			
T10	1.03	0.55	A	0.834	1.845	5	0.8	1	7.533	0.10*	38.71	C
105.00-102.50			B	0.834	1.845		0.8	1	7.533			
			C	0.834	1.845		0.8	1	7.533			
T11	1.02	0.67	A	0.994	2.087	5	0.8	1	9.806	0.10	38.23	C
102.50-100.00			B	0.994	2.087		0.8	1	9.806			
			C	0.994	2.087		0.8	1	9.806			
T12	8.09	3.93	A	0.771	1.797	5	0.8	1	53.540	0.75*	37.51	C
100.00-80.00			B	0.771	1.797		0.8	1	53.540			
			C	0.771	1.797		0.8	1	53.540			
T13	7.86	5.11	A	0.886	1.905	5	0.8	1	67.527	0.70*	34.94	C
80.00-60.00			B	0.886	1.905		0.8	1	67.527			
			C	0.886	1.905		0.8	1	67.527			
T14	7.58	3.65	A	0.745	1.785	4	0.8	1	50.297	0.63*	31.54	C
60.00-40.00			B	0.745	1.785		0.8	1	50.297			
			C	0.745	1.785		0.8	1	50.297			
T15	7.30	3.12	A	0.567	1.828	4	0.8	1	34.227	0.54*	27.14	C
40.00-20.00			B	0.567	1.828		0.8	1	34.227			
			C	0.567	1.828		0.8	1	34.227			
T16	5.07	2.16	A	0.547	1.846	4	0.8	1	24.353	0.40*	26.93	C
20.00-5.00			B	0.547	1.846		0.8	1	24.353			
			C	0.547	1.846		0.8	1	24.353			
T17 5.00-0.00	1.44	0.47	A	0.615	1.796	4	0.8	1	5.443	0.08*	15.19	C
			B	0.615	1.796		0.8	1	5.443			
			C	0.615	1.796		0.8	1	5.443			
Sum Weight:	58.11	36.85			*2.1A_g limit					5.82		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.95	2.81	A	0.755	1.79	6	0.85	1	38.670	0.50	33.53	C
170.00-155.00			B	0.755	1.79		0.85	1	38.670			
			C	0.755	1.79		0.85	1	38.670			
T2	4.35	3.73	A	0.932	1.973	6	0.85	1	55.465	0.64	42.83	C
155.00-140.00		TA 1.31	B	0.932	1.973		0.85	1	55.465			
			C	0.932	1.973		0.85	1	55.465			
T3	6.40	5.24	A	0.882	1.899	6	0.85	1	63.533	0.80	40.21	C
140.00-120.00		TA 1.30	B	0.882	1.899		0.85	1	63.533			
			C	0.882	1.899		0.85	1	63.533			
T4	0.85	0.51	A	0.828	1.839	6	0.85	1	7.501	0.10*	40.28	C
120.00-117.50			B	0.828	1.839		0.85	1	7.501			
			C	0.828	1.839		0.85	1	7.501			
T5	1.04	0.39	A	0.664	1.778	6	0.85	1	5.216	0.10*	40.03	C
117.50-115.00			B	0.664	1.778		0.85	1	5.216			
			C	0.664	1.778		0.85	1	5.216			
T6	1.04	0.39	A	0.663	1.778	6	0.85	1	5.204	0.10*	39.78	C
115.00-112.50			B	0.663	1.778		0.85	1	5.204			
			C	0.663	1.778		0.85	1	5.204			
T7	1.04	0.39	A	0.662	1.779	6	0.85	1	5.192	0.10*	39.52	C
112.50-110.00			B	0.662	1.779		0.85	1	5.192			
			C	0.662	1.779		0.85	1	5.192			
T8	1.03	0.56	A	0.836	1.848	6	0.85	1	7.600	0.10*	39.25	C
110.00-107.50			B	0.836	1.848		0.85	1	7.600			
			C	0.836	1.848		0.85	1	7.600			
T9	1.03	0.56	A	0.835	1.846	5	0.85	1	7.580	0.10*	38.98	C
107.50-105.00			B	0.835	1.846		0.85	1	7.580			
			C	0.835	1.846		0.85	1	7.580			
T10	1.03	0.55	A	0.834	1.845	5	0.85	1	7.560	0.10*	38.71	C
105.00-102.50			B	0.834	1.845		0.85	1	7.560			
			C	0.834	1.845		0.85	1	7.560			
T11	1.02	0.67	A	0.994	2.087	5	0.85	1	9.833	0.10	38.33	C
102.50-100.00			B	0.994	2.087		0.85	1	9.833			
			C	0.994	2.087		0.85	1	9.833			
T12	8.09	3.93	A	0.771	1.797	5	0.85	1	53.593	0.75*	37.51	C
100.00-80.00			B	0.771	1.797		0.85	1	53.593			
			C	0.771	1.797		0.85	1	53.593			
T13	7.86	5.11	A	0.886	1.905	5	0.85	1	67.741	0.70*	34.94	C
80.00-60.00			B	0.886	1.905		0.85	1	67.741			
			C	0.886	1.905		0.85	1	67.741			
T14	7.58	3.65	A	0.745	1.785	4	0.85	1	50.350	0.63*	31.54	C
60.00-40.00			B	0.745	1.785		0.85	1	50.350			
			C	0.745	1.785		0.85	1	50.350			
T15	7.30	3.12	A	0.567	1.828	4	0.85	1	35.182	0.54*	27.14	C
40.00-20.00			B	0.567	1.828		0.85	1	35.182			
			C	0.567	1.828		0.85	1	35.182			
T16	5.07	2.16	A	0.547	1.846	4	0.85	1	25.042	0.40*	26.93	C
20.00-5.00			B	0.547	1.846		0.85	1	25.042			
			C	0.547	1.846		0.85	1	25.042			
T17 5.00-0.00	1.44	0.47	A	0.615	1.796	4	0.85	1	5.729	0.08*	15.19	C
			B	0.615	1.796		0.85	1	5.729			
			C	0.615	1.796		0.85	1	5.729			
Sum Weight:	58.11	36.85			*2.1A_g limit					5.84		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	9	1	1	7.357	0.27	17.94	C
170.00-155.00			B	0.233	2.489		1	1	7.357			
			C	0.233	2.489		1	1	7.357			
T2	0.36	0.51	A	0.273	2.371	9	1	1	8.971	0.47	31.01	C
155.00-140.00		TA 0.44	B	0.273	2.371		1	1	8.971			
			C	0.273	2.371		1	1	8.971			
T3	0.56	1.18	A	0.342	2.19	8	1	1	24.770	0.83	41.27	C
140.00-120.00		TA 0.44	B	0.342	2.19		1	1	24.770			
			C	0.342	2.19		1	1	24.770			
T4	0.08	0.06	A	0.257	2.416	8	1	1	1.365	0.08	32.13	C
120.00-117.50			B	0.257	2.416		1	1	1.365			
			C	0.257	2.416		1	1	1.365			
T5	0.09	0.05	A	0.213	2.555	8	1	1	1.109	0.09	35.84	C
117.50-115.00			B	0.213	2.555		1	1	1.109			
			C	0.213	2.555		1	1	1.109			
T6	0.09	0.05	A	0.213	2.555	8	1	1	1.109	0.09	35.62	C
115.00-112.50			B	0.213	2.555		1	1	1.109			
			C	0.213	2.555		1	1	1.109			
T7	0.09	0.05	A	0.213	2.555	8	1	1	1.109	0.09	35.40	C
112.50-110.00			B	0.213	2.555		1	1	1.109			
			C	0.213	2.555		1	1	1.109			
T8	0.09	0.07	A	0.272	2.373	8	1	1	1.673	0.10	38.23	C
110.00-107.50			B	0.272	2.373		1	1	1.673			
			C	0.272	2.373		1	1	1.673			
T9	0.09	0.07	A	0.272	2.373	8	1	1	1.673	0.09	37.98	C
107.50-105.00			B	0.272	2.373		1	1	1.673			
			C	0.272	2.373		1	1	1.673			
T10	0.09	0.07	A	0.272	2.373	8	1	1	1.673	0.09	37.72	C
105.00-102.50			B	0.272	2.373		1	1	1.673			
			C	0.272	2.373		1	1	1.673			
T11	0.09	0.08	A	0.316	2.253	8	1	1	1.942	0.10	38.53	C
102.50-100.00			B	0.316	2.253		1	1	1.942			
			C	0.316	2.253		1	1	1.942			
T12	0.75	0.61	A	0.268	2.383	8	1	1	12.022	0.70	35.23	C
100.00-80.00			B	0.268	2.383		1	1	12.022			
			C	0.268	2.383		1	1	12.022			
T13	0.75	0.82	A	0.313	2.261	7	1	1	15.576	0.69	34.74	C
80.00-60.00			B	0.313	2.261		1	1	15.576			
			C	0.313	2.261		1	1	15.576			
T14	0.75	0.61	A	0.268	2.383	6	1	1	12.022	0.60	29.78	C
60.00-40.00			B	0.268	2.383		1	1	12.022			
			C	0.268	2.383		1	1	12.022			
T15	0.76	0.77	A	0.23	2.499	5	1	1	14.086	0.55	27.43	C
40.00-20.00			B	0.23	2.499		1	1	14.086			
			C	0.23	2.499		1	1	14.086			
T16	0.57	0.57	A	0.232	2.492	5	1	1	10.639	0.41	27.60	C
20.00-5.00			B	0.232	2.492		1	1	10.639			
			C	0.232	2.492		1	1	10.639			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	5	1	1	3.880	0.10*	19.22	C
			B	0.395	2.073		1	1	3.880			
			C	0.395	2.073		1	1	3.880			
Sum Weight:	5.58	6.93			*2.1A_g limit					5.34		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	9	0.825	1	7.357	0.27	17.94	C
170.00-155.00			B	0.233	2.489		0.825	1	7.357			
			C	0.233	2.489		0.825	1	7.357			
T2	0.36	0.51	A	0.273	2.371	9	0.825	1	8.877	0.46	30.90	C
155.00-140.00		TA 0.44	B	0.273	2.371		0.825	1	8.877			
			C	0.273	2.371		0.825	1	8.877			
T3	0.56	1.18	A	0.342	2.19	8	0.825	1	20.436	0.76	37.91	C
140.00-120.00		TA 0.44	B	0.342	2.19		0.825	1	20.436			
			C	0.342	2.19		0.825	1	20.436			
T4	0.08	0.06	A	0.257	2.416	8	0.825	1	1.365	0.08	32.13	C
120.00-117.50			B	0.257	2.416		0.825	1	1.365			
			C	0.257	2.416		0.825	1	1.365			
T5	0.09	0.05	A	0.213	2.555	8	0.825	1	1.109	0.09	35.84	C
117.50-115.00			B	0.213	2.555		0.825	1	1.109			
			C	0.213	2.555		0.825	1	1.109			
T6	0.09	0.05	A	0.213	2.555	8	0.825	1	1.109	0.09	35.62	C
115.00-112.50			B	0.213	2.555		0.825	1	1.109			
			C	0.213	2.555		0.825	1	1.109			
T7	0.09	0.05	A	0.213	2.555	8	0.825	1	1.109	0.09	35.40	C
112.50-110.00			B	0.213	2.555		0.825	1	1.109			
			C	0.213	2.555		0.825	1	1.109			
T8	0.09	0.07	A	0.272	2.373	8	0.825	1	1.579	0.09	37.63	C
110.00-107.50			B	0.272	2.373		0.825	1	1.579			
			C	0.272	2.373		0.825	1	1.579			
T9	0.09	0.07	A	0.272	2.373	8	0.825	1	1.579	0.09	37.38	C
107.50-105.00			B	0.272	2.373		0.825	1	1.579			
			C	0.272	2.373		0.825	1	1.579			
T10	0.09	0.07	A	0.272	2.373	8	0.825	1	1.579	0.09	37.13	C
105.00-102.50			B	0.272	2.373		0.825	1	1.579			
			C	0.272	2.373		0.825	1	1.579			
T11	0.09	0.08	A	0.316	2.253	8	0.825	1	1.848	0.09	37.97	C
102.50-100.00			B	0.316	2.253		0.825	1	1.848			
			C	0.316	2.253		0.825	1	1.848			
T12	0.75	0.61	A	0.268	2.383	8	0.825	1	11.836	0.70	35.09	C
100.00-80.00			B	0.268	2.383		0.825	1	11.836			
			C	0.268	2.383		0.825	1	11.836			
T13	0.75	0.82	A	0.313	2.261	7	0.825	1	14.830	0.68	34.24	C
80.00-60.00			B	0.313	2.261		0.825	1	14.830			
			C	0.313	2.261		0.825	1	14.830			
T14	0.75	0.61	A	0.268	2.383	6	0.825	1	11.836	0.59	29.66	C
60.00-40.00			B	0.268	2.383		0.825	1	11.836			
			C	0.268	2.383		0.825	1	11.836			
T15	0.76	0.77	A	0.23	2.499	5	0.825	1	12.283	0.53	26.38	C
40.00-20.00			B	0.23	2.499		0.825	1	12.283			
			C	0.23	2.499		0.825	1	12.283			
T16	0.57	0.57	A	0.232	2.492	5	0.825	1	9.287	0.40	26.56	C
20.00-5.00			B	0.232	2.492		0.825	1	9.287			
			C	0.232	2.492		0.825	1	9.287			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	5	0.825	1	3.201	0.10*	19.22	C
			B	0.395	2.073		0.825	1	3.201			
			C	0.395	2.073		0.825	1	3.201			
Sum Weight:	5.58	6.93			*2.1A_g limit					5.22		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	9	0.8	1	7.357	0.27	17.94	C
170.00-155.00			B	0.233	2.489		0.8	1	7.357			
			C	0.233	2.489		0.8	1	7.357			
T2	0.36	0.51	A	0.273	2.371	9	0.8	1	8.864	0.46	30.88	C
155.00-140.00		TA 0.44	B	0.273	2.371		0.8	1	8.864			
			C	0.273	2.371		0.8	1	8.864			
T3	0.56	1.18	A	0.342	2.19	8	0.8	1	19.816	0.75	37.43	C
140.00-120.00		TA 0.44	B	0.342	2.19		0.8	1	19.816			
			C	0.342	2.19		0.8	1	19.816			
T4	0.08	0.06	A	0.257	2.416	8	0.8	1	1.365	0.08	32.13	C
120.00-117.50			B	0.257	2.416		0.8	1	1.365			
			C	0.257	2.416		0.8	1	1.365			
T5	0.09	0.05	A	0.213	2.555	8	0.8	1	1.109	0.09	35.84	C
117.50-115.00			B	0.213	2.555		0.8	1	1.109			
			C	0.213	2.555		0.8	1	1.109			
T6	0.09	0.05	A	0.213	2.555	8	0.8	1	1.109	0.09	35.62	C
115.00-112.50			B	0.213	2.555		0.8	1	1.109			
			C	0.213	2.555		0.8	1	1.109			
T7	0.09	0.05	A	0.213	2.555	8	0.8	1	1.109	0.09	35.40	C
112.50-110.00			B	0.213	2.555		0.8	1	1.109			
			C	0.213	2.555		0.8	1	1.109			
T8	0.09	0.07	A	0.272	2.373	8	0.8	1	1.565	0.09	37.55	C
110.00-107.50			B	0.272	2.373		0.8	1	1.565			
			C	0.272	2.373		0.8	1	1.565			
T9	0.09	0.07	A	0.272	2.373	8	0.8	1	1.565	0.09	37.30	C
107.50-105.00			B	0.272	2.373		0.8	1	1.565			
			C	0.272	2.373		0.8	1	1.565			
T10	0.09	0.07	A	0.272	2.373	8	0.8	1	1.565	0.09	37.04	C
105.00-102.50			B	0.272	2.373		0.8	1	1.565			
			C	0.272	2.373		0.8	1	1.565			
T11	0.09	0.08	A	0.316	2.253	8	0.8	1	1.835	0.09	37.89	C
102.50-100.00			B	0.316	2.253		0.8	1	1.835			
			C	0.316	2.253		0.8	1	1.835			
T12	0.75	0.61	A	0.268	2.383	8	0.8	1	11.810	0.70	35.07	C
100.00-80.00			B	0.268	2.383		0.8	1	11.810			
			C	0.268	2.383		0.8	1	11.810			
T13	0.75	0.82	A	0.313	2.261	7	0.8	1	14.723	0.68	34.17	C
80.00-60.00			B	0.313	2.261		0.8	1	14.723			
			C	0.313	2.261		0.8	1	14.723			
T14	0.75	0.61	A	0.268	2.383	6	0.8	1	11.810	0.59	29.65	C
60.00-40.00			B	0.268	2.383		0.8	1	11.810			
			C	0.268	2.383		0.8	1	11.810			
T15	0.76	0.77	A	0.23	2.499	5	0.8	1	12.026	0.52	26.23	C
40.00-20.00			B	0.23	2.499		0.8	1	12.026			
			C	0.23	2.499		0.8	1	12.026			
T16	0.57	0.57	A	0.232	2.492	5	0.8	1	9.093	0.40	26.41	C
20.00-5.00			B	0.232	2.492		0.8	1	9.093			
			C	0.232	2.492		0.8	1	9.093			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	5	0.8	1	3.104	0.10*	19.22	C
			B	0.395	2.073		0.8	1	3.104			
			C	0.395	2.073		0.8	1	3.104			
Sum Weight:	5.58	6.93			*2.1A_g					5.20		

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
					limit							

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.15	0.32	A	0.233	2.489	9	0.85	1	7.357	0.27	17.94	C
170.00-155.00			B	0.233	2.489		0.85	1	7.357			
			C	0.233	2.489		0.85	1	7.357			
T2	0.36	0.51	A	0.273	2.371	9	0.85	1	8.891	0.46	30.91	C
155.00-140.00		TA 0.44	B	0.273	2.371		0.85	1	8.891			
			C	0.273	2.371		0.85	1	8.891			
T3	0.56	1.18	A	0.342	2.19	8	0.85	1	21.055	0.77	38.39	C
140.00-120.00		TA 0.44	B	0.342	2.19		0.85	1	21.055			
			C	0.342	2.19		0.85	1	21.055			
T4	0.08	0.06	A	0.257	2.416	8	0.85	1	1.365	0.08	32.13	C
120.00-117.50			B	0.257	2.416		0.85	1	1.365			
			C	0.257	2.416		0.85	1	1.365			
T5	0.09	0.05	A	0.213	2.555	8	0.85	1	1.109	0.09	35.84	C
117.50-115.00			B	0.213	2.555		0.85	1	1.109			
			C	0.213	2.555		0.85	1	1.109			
T6	0.09	0.05	A	0.213	2.555	8	0.85	1	1.109	0.09	35.62	C
115.00-112.50			B	0.213	2.555		0.85	1	1.109			
			C	0.213	2.555		0.85	1	1.109			
T7	0.09	0.05	A	0.213	2.555	8	0.85	1	1.109	0.09	35.40	C
112.50-110.00			B	0.213	2.555		0.85	1	1.109			
			C	0.213	2.555		0.85	1	1.109			
T8	0.09	0.07	A	0.272	2.373	8	0.85	1	1.592	0.09	37.72	C
110.00-107.50			B	0.272	2.373		0.85	1	1.592			
			C	0.272	2.373		0.85	1	1.592			
T9	0.09	0.07	A	0.272	2.373	8	0.85	1	1.592	0.09	37.47	C
107.50-105.00			B	0.272	2.373		0.85	1	1.592			
			C	0.272	2.373		0.85	1	1.592			
T10	0.09	0.07	A	0.272	2.373	8	0.85	1	1.592	0.09	37.21	C
105.00-102.50			B	0.272	2.373		0.85	1	1.592			
			C	0.272	2.373		0.85	1	1.592			
T11	0.09	0.08	A	0.316	2.253	8	0.85	1	1.862	0.10	38.05	C
102.50-100.00			B	0.316	2.253		0.85	1	1.862			
			C	0.316	2.253		0.85	1	1.862			
T12	0.75	0.61	A	0.268	2.383	8	0.85	1	11.863	0.70	35.11	C
100.00-80.00			B	0.268	2.383		0.85	1	11.863			
			C	0.268	2.383		0.85	1	11.863			
T13	0.75	0.82	A	0.313	2.261	7	0.85	1	14.936	0.69	34.31	C
80.00-60.00			B	0.313	2.261		0.85	1	14.936			
			C	0.313	2.261		0.85	1	14.936			
T14	0.75	0.61	A	0.268	2.383	6	0.85	1	11.863	0.59	29.68	C
60.00-40.00			B	0.268	2.383		0.85	1	11.863			
			C	0.268	2.383		0.85	1	11.863			
T15	0.76	0.77	A	0.23	2.499	5	0.85	1	12.541	0.53	26.53	C
40.00-20.00			B	0.23	2.499		0.85	1	12.541			
			C	0.23	2.499		0.85	1	12.541			
T16	0.57	0.57	A	0.232	2.492	5	0.85	1	9.480	0.40	26.71	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
20.00-5.00			B	0.232	2.492		0.85	1	9.480			
			C	0.232	2.492		0.85	1	9.480			
T17 5.00-0.00	0.19	0.16	A	0.395	2.073	5	0.85	1	3.298	0.10*	19.22	C
			B	0.395	2.073		0.85	1	3.298			
			C	0.395	2.073		0.85	1	3.298			
Sum Weight:	5.58	6.93			*2.1A_g limit					5.23		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Leg Weight	2.98			
Bracing Weight	3.95			
Total Member Self-Weight	6.93			
Guy Weight	1.20			
Total Weight	23.21			
Wind 0 deg - No Ice		0.05	-21.02	0.43
Wind 30 deg - No Ice		10.41	-17.89	-0.38
Wind 45 deg - No Ice		14.60	-14.54	-0.68
Wind 60 deg - No Ice		17.77	-10.25	-0.95
Wind 90 deg - No Ice		20.57	-0.02	-1.33
Wind 120 deg - No Ice		18.15	10.51	-1.47
Wind 135 deg - No Ice		14.80	14.85	-1.38
Wind 150 deg - No Ice		10.32	18.02	-1.17
Wind 180 deg - No Ice		-0.05	20.72	-0.43
Wind 210 deg - No Ice		-10.40	18.07	0.43
Wind 225 deg - No Ice		-14.67	14.72	0.76
Wind 240 deg - No Ice		-18.20	10.60	1.03
Wind 270 deg - No Ice		-20.57	0.08	1.33
Wind 300 deg - No Ice		-17.72	-10.16	1.38
Wind 315 deg - No Ice		-14.72	-14.66	1.30
Wind 330 deg - No Ice		-10.32	-17.83	1.12
Member Ice	29.91			
Guy Ice	19.03			
Total Weight Ice	144.72			
Wind 0 deg - Ice		0.01	-8.84	0.24
Wind 30 deg - Ice		4.42	-7.61	-0.02
Wind 45 deg - Ice		6.22	-6.20	-0.13
Wind 60 deg - Ice		7.59	-4.38	-0.23
Wind 90 deg - Ice		8.77	-0.01	-0.40
Wind 120 deg - Ice		7.64	4.42	-0.49
Wind 135 deg - Ice		6.24	6.26	-0.49
Wind 150 deg - Ice		4.39	7.66	-0.45
Wind 180 deg - Ice		-0.01	8.83	-0.24
Wind 210 deg - Ice		-4.42	7.67	0.03
Wind 225 deg - Ice		-6.24	6.26	0.15
Wind 240 deg - Ice		-7.66	4.45	0.25
Wind 270 deg - Ice		-8.77	0.02	0.40
Wind 300 deg - Ice		-7.57	-4.35	0.47
Wind 315 deg - Ice		-6.22	-6.20	0.46
Wind 330 deg - Ice		-4.40	-7.60	0.43

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Total Weight	23.21			
Wind 0 deg - Service		0.02	-8.04	0.17
Wind 30 deg - Service		3.98	-6.84	-0.14
Wind 45 deg - Service		5.58	-5.56	-0.26
Wind 60 deg - Service		6.80	-3.92	-0.36
Wind 90 deg - Service		7.87	-0.01	-0.51
Wind 120 deg - Service		6.94	4.02	-0.56
Wind 135 deg - Service		5.66	5.68	-0.53
Wind 150 deg - Service		3.95	6.89	-0.45
Wind 180 deg - Service		-0.02	7.93	-0.16
Wind 210 deg - Service		-3.98	6.91	0.16
Wind 225 deg - Service		-5.61	5.63	0.29
Wind 240 deg - Service		-6.96	4.05	0.40
Wind 270 deg - Service		-7.87	0.03	0.51
Wind 300 deg - Service		-6.78	-3.89	0.53
Wind 315 deg - Service		-5.63	-5.61	0.50
Wind 330 deg - Service		-3.95	-6.82	0.43

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 45 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 135 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 225 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
14	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
15	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
16	1.2 Dead+1.6 Wind 315 deg - No Ice+1.0 Guy
17	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
18	1.2 Dead+1.0 Ice+1.0 Temp+Guy
19	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
28	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
29	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp+1.0 Guy
30	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
31	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
32	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy

Comb. No.	Description
33	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp+1.0 Guy
34	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
35	Dead+Wind 0 deg - Service+Guy
36	Dead+Wind 30 deg - Service+Guy
37	Dead+Wind 45 deg - Service+Guy
38	Dead+Wind 60 deg - Service+Guy
39	Dead+Wind 90 deg - Service+Guy
40	Dead+Wind 120 deg - Service+Guy
41	Dead+Wind 135 deg - Service+Guy
42	Dead+Wind 150 deg - Service+Guy
43	Dead+Wind 180 deg - Service+Guy
44	Dead+Wind 210 deg - Service+Guy
45	Dead+Wind 225 deg - Service+Guy
46	Dead+Wind 240 deg - Service+Guy
47	Dead+Wind 270 deg - Service+Guy
48	Dead+Wind 300 deg - Service+Guy
49	Dead+Wind 315 deg - Service+Guy
50	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	170 - 155	Leg	Max Tension	10	15.73	0.01	0.45
			Max. Compression	2	-18.16	0.00	0.11
			Max. Mx	13	-18.06	-0.35	0.27
			Max. My	10	13.24	0.01	0.45
			Max. Vy	13	-1.79	0.09	-0.07
			Max. Vx	10	2.28	-0.00	-0.12
		Diagonal	Max Tension	9	2.70	0.00	0.00
			Max. Compression	8	-2.77	0.00	0.00
			Max. Mx	19	0.63	-0.01	0.00
			Max. My	8	-2.41	0.00	-0.01
			Max. Vy	19	0.02	-0.01	0.00
			Max. Vx	8	-0.00	0.00	-0.01
		Top Girt	Max Tension	14	0.02	0.00	0.00
			Max. Compression	32	-0.04	0.00	0.00
			Max. Mx	18	-0.02	0.02	0.00
			Max. My	31	-0.02	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Bottom Girt	Max Tension	10	0.70	0.00	0.00
			Max. Compression	13	-0.62	0.00	0.00
			Max. Mx	18	0.14	0.02	0.00
			Max. My	31	0.13	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
T2	155 - 140	Leg	Max Tension	10	18.34	-0.02	-0.69
			Max. Compression	12	-28.44	-0.11	0.04
			Max. Mx	14	-0.57	0.60	-0.18
			Max. My	10	18.34	-0.02	-0.69
			Max. Vy	13	-1.79	0.54	-0.41
			Max. Vx	10	2.29	-0.02	-0.69
		Diagonal	Max Tension	9	3.14	0.00	0.00
			Max. Compression	8	-3.42	0.01	-0.00
			Max. Mx	30	-0.17	-0.02	-0.00
			Max. My	14	-2.38	0.00	0.01
			Max. Vy	30	0.02	-0.02	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	-0.00	0.00	0.01
		Secondary Horizontal	Max Tension	7	1.26	0.00	0.00
			Max. Compression	15	-0.97	0.00	0.00
			Max. Mx	24	0.21	-0.01	0.00
			Max. My	7	-0.56	-0.00	-0.00
			Max. Vy	24	0.02	-0.01	0.00
			Max. Vx	13	0.00	0.00	0.00
		Top Girt	Max Tension	13	0.27	0.00	0.00
			Max. Compression	10	-0.23	0.00	0.00
			Max. Mx	18	0.12	0.02	0.00
			Max. My	31	0.11	0.00	-0.00
			Max. Vy	18	-0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
		Bottom Girt	Max Tension	27	0.32	0.00	0.00
			Max. Compression	12	-0.07	0.00	0.00
			Max. Mx	22	0.29	0.02	0.00
			Max. My	31	0.23	0.00	-0.00
			Max. Vy	22	-0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
		Guy A	Bottom Tension	11	7.38		
			Top Tension	11	7.42		
			Top Cable Vert	11	6.22		
			Top Cable Norm	11	4.05		
			Top Cable Tan	11	0.00		
			Bot Cable Vert	11	-6.10		
			Bot Cable Norm	11	4.14		
			Bot Cable Tan	11	0.09		
		Guy B	Bottom Tension	14	6.92		
			Top Tension	14	6.96		
			Top Cable Vert	14	5.72		
			Top Cable Norm	14	3.97		
			Top Cable Tan	14	0.00		
			Bot Cable Vert	14	-5.61		
			Bot Cable Norm	14	4.05		
			Bot Cable Tan	14	0.08		
		Guy C	Bottom Tension	3	6.82		
			Top Tension	3	6.86		
			Top Cable Vert	3	5.54		
			Top Cable Norm	3	4.04		
			Top Cable Tan	3	0.00		
			Bot Cable Vert	3	-5.43		
			Bot Cable Norm	3	4.13		
			Bot Cable Tan	3	0.08		
		Top Guy Pull-Off	Max Tension	10	3.82	0.00	0.00
			Max. Compression	2	-3.41	0.00	0.00
			Max. Mx	18	0.48	-0.03	0.00
			Max. My	14	0.11	0.00	0.00
			Max. Vy	18	-0.04	0.00	0.00
			Max. Vx	14	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	11	4.40	0.00	0.00
			Max. Compression	11	-2.14	0.00	0.00
			Max. Mx	11	-0.08	-21.98	-0.00
			Max. My	7	-1.71	-16.23	-0.00
			Max. Vy	11	6.32	-21.98	-0.00
			Max. Vx	7	-0.00	-16.23	-0.00
T3	140 - 120	Leg	Max Tension	10	24.10	-0.28	-0.02
			Max. Compression	13	-41.45	-0.46	-0.10
			Max. Mx	10	5.03	0.60	0.02
			Max. My	11	-8.28	-0.38	3.14
			Max. Vy	13	-1.95	0.37	-0.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	11	-3.01	-0.38	3.14
		Diagonal	Max Tension	5	3.04	0.00	0.00
			Max. Compression	11	-3.51	-0.03	-0.02
			Max. Mx	11	1.44	-0.08	0.02
			Max. My	9	-2.51	0.03	-0.04
			Max. Vy	27	-0.04	0.06	-0.00
			Max. Vx	9	0.02	0.03	-0.04
		Secondary Horizontal	Max Tension	11	3.30	0.00	0.00
			Max. Compression	11	-2.63	0.00	0.00
			Max. Mx	10	2.93	-0.06	-0.01
			Max. My	8	1.41	-0.05	-0.01
			Max. Vy	10	0.04	0.00	0.00
			Max. Vx	8	0.01	0.00	0.00
		Top Girt	Max Tension	13	0.79	0.00	0.00
			Max. Compression	10	-0.65	0.00	0.00
			Max. Mx	22	-0.04	-0.02	0.00
			Max. My	31	0.18	0.00	0.00
			Max. Vy	22	0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
		Bottom Girt	Max Tension	7	0.95	0.00	0.00
			Max. Compression	5	-0.57	0.00	0.00
			Max. Mx	22	0.17	-0.02	0.00
			Max. My	31	0.35	0.00	0.00
			Max. Vy	22	0.03	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
		Guy A	Bottom Tension	11	12.72		
			Top Tension	11	12.79		
			Top Cable Vert	11	10.24		
			Top Cable Norm	11	7.66		
			Top Cable Tan	11	0.02		
			Bot Cable Vert	11	-10.08		
			Bot Cable Norm	11	7.75		
			Bot Cable Tan	11	0.12		
		Guy B	Bottom Tension	14	12.01		
			Top Tension	14	12.07		
			Top Cable Vert	14	9.41		
			Top Cable Norm	14	7.57		
			Top Cable Tan	14	0.02		
			Bot Cable Vert	14	-9.25		
			Bot Cable Norm	14	7.66		
			Bot Cable Tan	14	0.11		
		Guy C	Bottom Tension	3	11.65		
			Top Tension	3	11.71		
			Top Cable Vert	3	8.92		
			Top Cable Norm	3	7.59		
			Top Cable Tan	3	0.01		
			Bot Cable Vert	3	-8.76		
			Bot Cable Norm	3	7.68		
			Bot Cable Tan	3	0.10		
		Torque Arm Top	Max Tension	11	8.56	0.00	0.00
			Max. Compression	9	-4.36	0.00	0.00
			Max. Mx	11	-0.20	-35.14	-0.00
			Max. My	7	-3.66	-25.26	-0.00
			Max. Vy	11	10.08	-35.14	-0.00
			Max. Vx	7	-0.00	-25.26	-0.00
T4	120 - 117.5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	27	-38.88	-0.09	0.04
			Max. Mx	6	-21.31	0.23	-0.09
			Max. My	10	-17.38	0.00	0.24
			Max. Vy	4	-0.53	0.08	-0.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	10	-0.55	-0.00	0.11
		Diagonal	Max Tension	5	0.20	0.01	-0.00
			Max. Compression	25	-0.41	0.00	0.00
			Max. Mx	28	-0.28	0.02	0.00
			Max. My	3	0.12	0.01	-0.00
			Max. Vy	27	0.02	0.00	0.00
			Max. Vx	3	-0.00	0.01	-0.00
		Top Girt	Max Tension	32	0.56	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	22	0.55	0.02	0.00
			Max. My	31	0.53	0.00	-0.00
			Max. Vy	22	-0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T5	117.5 - 115	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	27	-39.38	0.05	-0.03
			Max. Mx	32	-34.97	0.10	0.06
			Max. My	27	-35.22	0.00	-0.12
			Max. Vy	22	-0.31	-0.10	0.06
			Max. Vx	7	0.29	-0.00	0.03
		Diagonal	Max Tension	13	0.27	0.00	0.00
			Max. Compression	13	-0.15	0.00	0.00
			Max. Mx	28	0.20	-0.03	0.00
			Max. My	2	0.04	-0.01	-0.00
			Max. Vy	28	0.02	-0.03	0.00
			Max. Vx	2	0.00	0.00	0.00
T6	115 - 112.5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	28	-39.92	-0.01	0.00
			Max. Mx	13	-25.25	-0.10	0.07
			Max. My	2	-24.36	0.00	-0.10
			Max. Vy	13	-0.44	0.01	-0.00
			Max. Vx	2	-0.46	-0.00	0.01
		Diagonal	Max Tension	13	0.28	0.00	0.00
			Max. Compression	13	-0.42	0.00	0.00
			Max. Mx	27	0.00	-0.02	-0.00
			Max. My	2	-0.33	0.01	-0.00
			Max. Vy	27	0.02	-0.02	-0.00
			Max. Vx	2	-0.00	0.01	-0.00
T7	112.5 - 110	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	28	-40.57	-0.07	0.04
			Max. Mx	13	-26.25	-0.16	0.10
			Max. My	2	-25.25	0.00	-0.17
			Max. Vy	14	-0.51	0.04	0.02
			Max. Vx	9	0.57	-0.00	-0.05
		Diagonal	Max Tension	11	0.55	0.00	0.00
			Max. Compression	13	-0.49	0.00	0.00
			Max. Mx	27	0.20	-0.02	-0.00
			Max. My	12	-0.48	0.01	0.00
			Max. Vy	27	0.02	-0.02	-0.00
			Max. Vx	12	0.00	0.01	0.00
T8	110 - 107.5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-41.35	-0.26	0.15
			Max. Mx	13	-27.57	-0.34	0.20
			Max. My	2	-26.47	0.00	-0.37
			Max. Vy	13	-0.71	-0.16	0.09
			Max. Vx	2	-0.77	-0.00	-0.18
		Diagonal	Max Tension	11	0.48	0.01	-0.00
			Max. Compression	12	-0.99	0.00	0.00
			Max. Mx	27	-0.24	-0.02	-0.00
			Max. My	25	-0.65	0.01	-0.00
			Max. Vy	27	0.02	-0.02	-0.00
			Max. Vx	25	-0.00	0.01	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Secondary Horizontal	Max Tension	28	0.64	-0.01	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	28	0.64	-0.01	-0.00
			Max. My	27	0.64	-0.01	-0.00
			Max. Vy	28	-0.02	0.00	0.00
			Max. Vx	32	0.00	0.00	0.00
T9	107.5 - 105	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-42.23	-0.18	0.10
			Max. Mx	13	-29.23	-0.36	0.22
			Max. My	2	-28.03	0.00	-0.40
			Max. Vy	13	-0.98	-0.12	0.07
			Max. Vx	2	-1.08	-0.00	-0.13
		Diagonal	Max Tension	11	0.63	0.01	-0.00
			Max. Compression	12	-1.24	0.00	0.00
			Max. Mx	28	-0.21	-0.02	-0.00
			Max. My	25	-0.79	0.01	-0.00
			Max. Vy	28	0.02	-0.02	-0.00
			Max. Vx	26	-0.00	0.01	-0.00
		Secondary Horizontal	Max Tension	28	0.76	0.02	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	29	0.70	0.02	-0.00
			Max. My	27	0.75	0.02	-0.00
			Max. Vy	29	-0.03	0.02	-0.00
			Max. Vx	27	-0.00	0.00	0.00
T10	105 - 102.5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-43.17	-0.32	0.18
			Max. Mx	13	-31.20	-0.43	0.25
			Max. My	2	-29.90	-0.00	-0.47
			Max. Vy	14	-1.06	0.16	0.07
			Max. Vx	10	1.15	0.00	-0.14
		Diagonal	Max Tension	11	0.94	0.01	-0.00
			Max. Compression	12	-1.26	0.00	0.00
			Max. Mx	27	-0.34	0.02	-0.00
			Max. My	25	-0.60	0.02	-0.00
			Max. Vy	27	0.02	0.00	0.00
			Max. Vx	25	-0.00	0.02	-0.00
		Secondary Horizontal	Max Tension	28	0.73	-0.02	-0.01
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	27	0.73	-0.02	-0.01
			Max. My	28	0.73	-0.02	-0.01
			Max. Vy	27	-0.03	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
T11	102.5 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-44.22	0.05	-0.03
			Max. Mx	14	-18.52	0.43	0.16
			Max. My	27	-36.78	-0.00	-0.48
			Max. Vy	13	-1.35	0.06	-0.04
			Max. Vx	2	-1.51	0.00	0.07
		Diagonal	Max Tension	11	0.81	0.00	-0.00
			Max. Compression	12	-1.73	0.00	0.00
			Max. Mx	29	-0.35	-0.03	-0.00
			Max. My	26	-0.73	0.00	-0.00
			Max. Vy	29	0.03	-0.03	-0.00
			Max. Vx	27	-0.00	0.00	-0.00
		Secondary Horizontal	Max Tension	28	0.68	0.05	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	30	0.64	0.05	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	27	0.67	0.05	-0.00
			Max. Vy	30	0.04	0.05	-0.00
			Max. Vx	27	-0.00	0.00	0.00
		Bottom Girt	Max Tension	11	0.28	0.00	0.00
			Max. Compression	13	-0.13	0.00	0.00
			Max. Mx	22	0.22	0.02	0.00
			Max. My	31	0.18	0.00	-0.00
			Max. Vy	22	-0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T12	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-51.60	-0.23	0.13
			Max. Mx	13	-33.48	0.40	-0.24
			Max. My	2	-32.09	0.00	0.45
			Max. Vy	13	-1.36	0.40	-0.24
			Max. Vx	2	-1.51	0.00	0.45
		Diagonal	Max Tension	11	1.53	0.00	0.00
			Max. Compression	12	-1.81	0.00	0.00
			Max. Mx	29	-0.55	-0.03	-0.00
			Max. My	13	-1.67	-0.01	0.00
			Max. Vy	29	0.02	-0.03	-0.00
			Max. Vx	13	-0.00	0.00	0.00
		Top Girt	Max Tension	24	0.65	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	22	0.62	0.02	0.00
			Max. My	31	0.62	0.00	-0.00
			Max. Vy	22	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Bottom Girt	Max Tension	28	0.75	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	27	0.75	0.02	0.00
			Max. My	31	0.74	0.00	-0.00
			Max. Vy	27	-0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Mid Girt	Max Tension	7	0.65	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	27	0.44	0.02	0.00
			Max. My	31	0.49	0.00	-0.00
			Max. Vy	27	-0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Guy A	Bottom Tension	9	11.11		
			Top Tension	9	11.16		
			Top Cable Vert	9	7.59		
			Top Cable Norm	9	8.18		
			Top Cable Tan	9	0.01		
			Bot Cable Vert	9	-7.47		
			Bot Cable Norm	9	8.22		
			Bot Cable Tan	9	0.07		
		Guy B	Bottom Tension	17	10.62		
			Top Tension	17	10.67		
			Top Cable Vert	17	6.82		
			Top Cable Norm	17	8.20		
			Top Cable Tan	17	0.01		
			Bot Cable Vert	17	-6.71		
			Bot Cable Norm	17	8.24		
			Bot Cable Tan	17	0.06		
		Guy C	Bottom Tension	6	10.24		
			Top Tension	6	10.28		
			Top Cable Vert	6	6.26		
			Top Cable Norm	6	8.16		
			Top Cable Tan	6	0.01		
			Bot Cable Vert	6	-6.14		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Norm	6	8.19		
			Bot Cable Tan	6	0.06		
		Top Guy Pull-Off	Max Tension	7	3.73	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	27	2.51	0.03	0.00
			Max. My	7	2.31	0.00	0.00
			Max. Vy	27	0.04	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
T13	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-55.60	0.08	-0.00
			Max. Mx	30	-53.99	-0.75	-0.00
			Max. My	6	-22.31	-0.01	-0.09
			Max. Vy	30	1.14	-0.75	-0.00
			Max. Vx	6	-0.33	0.03	-0.00
		Diagonal	Max Tension	5	0.31	0.00	0.00
			Max. Compression	8	-1.32	0.00	0.00
			Max. Mx	30	-0.84	-0.02	-0.00
			Max. My	24	-0.64	0.01	-0.00
			Max. Vy	30	0.02	-0.02	-0.00
			Max. Vx	24	-0.00	0.01	-0.00
		Secondary Horizontal	Max Tension	29	1.18	-0.01	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	29	0.74	0.03	-0.00
			Max. My	27	1.17	-0.01	-0.00
			Max. Vy	29	-0.03	0.03	-0.00
			Max. Vx	27	0.00	0.00	0.00
		Top Girt	Max Tension	22	0.27	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	27	0.27	0.02	0.00
			Max. My	31	0.23	0.00	-0.00
			Max. Vy	27	-0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Bottom Girt	Max Tension	27	0.30	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.30	0.02	0.00
			Max. My	31	0.28	0.00	-0.00
			Max. Vy	33	-0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
T14	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-60.58	0.30	-0.16
			Max. Mx	13	-36.90	0.49	-0.15
			Max. My	2	-34.56	-0.10	0.48
			Max. Vy	6	-1.36	-0.38	-0.21
			Max. Vx	2	1.34	-0.10	0.48
		Diagonal	Max Tension	6	1.48	0.00	0.00
			Max. Compression	6	-1.72	-0.01	0.00
			Max. Mx	30	-0.94	-0.03	0.00
			Max. My	7	-1.11	-0.01	-0.00
			Max. Vy	30	0.02	-0.03	0.00
			Max. Vx	7	0.00	0.00	0.00
		Top Girt	Max Tension	28	0.81	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.80	0.01	0.00
			Max. My	31	0.79	0.00	-0.00
			Max. Vy	33	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Bottom Girt	Max Tension	27	0.83	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.68	0.01	0.00
			Max. My	31	0.68	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	33	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Mid Girt	Max Tension	30	0.66	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.56	0.01	0.00
			Max. My	31	0.60	0.00	-0.00
			Max. Vy	33	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
		Guy A	Bottom Tension	9	8.62		
			Top Tension	9	8.65		
			Top Cable Vert	9	4.13		
			Top Cable Norm	9	7.60		
			Top Cable Tan	9	0.00		
			Bot Cable Vert	9	-4.04		
			Bot Cable Norm	9	7.62		
			Bot Cable Tan	9	0.03		
		Guy B	Bottom Tension	14	8.27		
			Top Tension	14	8.29		
			Top Cable Vert	14	3.38		
			Top Cable Norm	14	7.57		
			Top Cable Tan	14	0.00		
			Bot Cable Vert	14	-3.30		
			Bot Cable Norm	14	7.58		
			Bot Cable Tan	14	0.03		
		Guy C	Bottom Tension	6	8.00		
			Top Tension	6	8.02		
			Top Cable Vert	6	2.88		
			Top Cable Norm	6	7.48		
			Top Cable Tan	6	0.00		
			Bot Cable Vert	6	-2.81		
			Bot Cable Norm	6	7.49		
			Bot Cable Tan	6	0.03		
		Top Guy Pull-Off	Max Tension	30	3.76	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	3.19	0.03	0.00
			Max. My	7	2.30	0.00	0.00
			Max. Vy	33	-0.04	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
T15	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	27	-65.39	-0.00	0.53
			Max. Mx	14	-29.11	0.30	-0.04
			Max. My	29	-63.25	-0.00	0.65
			Max. Vy	7	1.38	0.15	0.16
			Max. Vx	13	0.69	0.08	0.14
		Diagonal	Max Tension	14	1.87	0.00	0.00
			Max. Compression	6	-2.59	0.00	0.00
			Max. Mx	29	-1.28	0.02	0.00
			Max. My	23	-1.31	0.00	0.00
			Max. Vy	29	-0.02	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Horizontal	Max Tension	28	1.00	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	21	0.93	0.02	0.00
			Max. My	7	0.14	0.00	0.00
			Max. Vy	21	0.02	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Top Girt	Max Tension	7	0.68	0.00	0.00
			Max. Compression	14	-0.45	0.00	0.00
			Max. Mx	33	0.14	0.01	0.00
			Max. My	7	-0.28	0.00	0.00
			Max. Vy	33	-0.02	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	7	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	0.45	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.42	0.01	0.00
			Max. My	7	0.23	0.00	0.00
			Max. Vy	33	-0.02	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
T16	20 - 5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	28	-66.77	-3.11	-0.01
			Max. Mx	28	-66.77	-3.11	-0.01
			Max. My	30	-64.83	0.02	-0.67
			Max. Vy	27	10.17	-3.11	0.00
			Max. Vx	30	-0.55	-0.07	0.65
		Diagonal	Max Tension	5	1.18	0.00	0.00
			Max. Compression	15	-1.56	0.00	0.00
			Max. Mx	29	-0.66	0.02	0.00
			Max. My	23	-0.16	0.00	0.00
			Max. Vy	29	0.01	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Horizontal	Max Tension	31	1.07	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.76	0.01	0.00
			Max. My	7	0.36	0.00	0.00
			Max. Vy	33	-0.02	0.00	0.00
			Max. Vx	7	0.00	0.00	0.00
		Top Girt	Max Tension	28	0.46	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	0.42	0.01	0.00
			Max. My	7	0.24	0.00	0.00
			Max. Vy	33	0.01	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
		Bottom Girt	Max Tension	30	5.82	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	33	5.67	0.01	0.00
			Max. My	28	5.81	0.00	-0.00
			Max. Vy	33	0.01	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
T17	5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	28	-72.30	-0.13	0.04
			Max. Mx	28	-66.04	-3.11	-0.01
			Max. My	7	-34.11	0.74	0.24
			Max. Vy	30	-15.31	1.02	0.01
			Max. Vx	6	-0.58	0.67	0.19
		Top Girt	Max Tension	30	9.72	-0.14	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	30	9.51	-0.19	-0.00
			Max. My	23	9.42	-0.17	-0.00
			Max. Vy	30	0.04	-0.19	-0.00
			Max. Vx	23	0.00	-0.17	-0.00
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-5.02	-0.41	0.00
			Max. Mx	24	-4.98	-0.47	-0.00
			Max. My	6	-2.13	-0.33	-0.00
			Max. Vy	7	2.09	-0.37	-0.00
			Max. Vx	6	0.03	-0.33	-0.00
		Mid Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-0.31	0.00	0.00
			Max. Mx	33	-0.29	0.00	0.00
			Max. My	23	-0.27	0.00	0.00
			Max. Vy	33	0.01	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	30	200.34	0.15	-0.02
	Max. H_x	15	72.51	1.56	0.88
	Max. H_z	2	95.21	-0.04	1.26
	Max. M_x	1	0.00	0.00	-0.00
	Max. M_z	1	0.00	0.00	-0.00
	Max. Torsion	7	0.36	-1.05	-0.50
	Min. Vert	1	51.52	0.00	-0.00
	Min. H_x	5	71.33	-1.60	0.91
	Min. H_z	10	74.89	0.00	-1.70
	Min. M_x	1	0.00	0.00	-0.00
	Min. M_z	1	0.00	0.00	-0.00
	Min. Torsion	15	-0.35	1.56	0.88
Guy C @ 107 ft Elev 10 ft Azimuth 240 deg	Max. Vert	13	-0.67	-0.40	0.23
	Max. H_x	13	-0.67	-0.40	0.23
	Max. H_z	3	-36.97	-33.52	19.84
	Min. Vert	3	-36.97	-33.52	19.84
	Min. H_x	6	-36.50	-33.65	18.94
	Min. H_z	12	-0.79	-0.55	0.21
Guy B @ 106 ft Elev 4 ft Azimuth 120 deg	Max. Vert	7	-0.79	0.43	0.25
	Max. H_x	14	-38.92	33.67	18.93
	Max. H_z	17	-39.23	33.42	19.80
	Min. Vert	17	-39.23	33.42	19.80
	Min. H_x	7	-0.79	0.43	0.25
	Min. H_z	8	-0.92	0.58	0.22
Guy A @ 106 ft Elev -6 ft Azimuth 0 deg	Max. Vert	2	-1.00	0.00	-0.56
	Max. H_x	31	-18.27	0.92	-19.75
	Max. H_z	2	-1.00	0.00	-0.56
	Min. Vert	11	-43.35	0.47	-39.23
	Min. H_x	23	-18.26	-0.91	-19.74
	Min. H_z	11	-43.35	0.47	-39.23

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	51.52	-0.00	0.00	0.00	0.00	-0.01
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	95.21	0.04	-1.26	0.00	0.00	0.12
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	86.50	0.99	-1.14	0.00	0.00	0.01

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
1.2 Dead+1.6 Wind 45 deg - No Ice+1.0 Guy	78.17	1.39	-1.01	0.00	0.00	-0.08
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	71.33	1.60	-0.91	0.00	0.00	-0.23
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	87.47	1.46	-0.32	0.00	0.00	-0.34
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	97.66	1.05	0.50	0.00	0.00	-0.36
1.2 Dead+1.6 Wind 135 deg - No Ice+1.0 Guy	95.86	0.72	0.87	0.00	0.00	-0.32
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	90.98	0.41	1.24	0.00	0.00	-0.28
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	74.89	-0.00	1.70	0.00	0.00	-0.18
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	92.52	-0.37	1.23	0.00	0.00	-0.02
1.2 Dead+1.6 Wind 225 deg - No Ice+1.0 Guy	97.90	-0.65	0.86	0.00	0.00	0.06
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	100.08	-0.97	0.50	0.00	0.00	0.15
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	89.90	-1.37	-0.32	0.00	0.00	0.27
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	72.51	-1.56	-0.88	0.00	0.00	0.35
1.2 Dead+1.6 Wind 315 deg - No Ice+1.0 Guy	79.33	-1.34	-0.96	0.00	0.00	0.26
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	87.43	-0.93	-1.10	0.00	0.00	0.20
1.2 Dead+1.0 Ice+1.0 Temp+Guy	196.75	-0.02	-0.05	0.00	0.00	-0.06
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.60	-0.01	-0.22	0.00	0.00	-0.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.20	0.09	-0.21	0.00	0.00	-0.00
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.06	0.13	-0.19	0.00	0.00	-0.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.09	0.16	-0.15	0.00	0.00	-0.08
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.71	0.18	-0.06	0.00	0.00	-0.16
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.51	0.13	0.02	0.00	0.00	-0.11
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.53	0.10	0.06	0.00	0.00	-0.07
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.40	0.07	0.10	0.00	0.00	-0.05
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.33	-0.02	0.13	0.00	0.00	-0.08
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.90	-0.10	0.10	0.00	0.00	-0.11
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp+1.0 Guy	200.24	-0.13	0.06	0.00	0.00	-0.08
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	200.34	-0.15	0.02	0.00	0.00	-0.03
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.49	-0.20	-0.06	0.00	0.00	0.04
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.65	-0.19	-0.14	0.00	0.00	-0.01
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.49	-0.16	-0.18	0.00	0.00	-0.05
1.2 Dead+1.0 Wind 330	198.50	-0.12	-0.21	0.00	0.00	-0.07

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+1.0 Ice+1.0 Temp+1.0 Guy						
Dead+Wind 0 deg - Service+Guy	51.92	-0.00	-0.49	0.00	0.00	0.02
Dead+Wind 30 deg - Service+Guy	51.98	0.24	-0.42	0.00	0.00	-0.01
Dead+Wind 45 deg - Service+Guy	52.00	0.34	-0.34	0.00	0.00	-0.03
Dead+Wind 60 deg - Service+Guy	51.98	0.42	-0.24	0.00	0.00	-0.05
Dead+Wind 90 deg - Service+Guy	51.83	0.49	0.00	0.00	0.00	-0.08
Dead+Wind 120 deg - Service+Guy	51.65	0.44	0.25	0.00	0.00	-0.08
Dead+Wind 135 deg - Service+Guy	51.62	0.34	0.34	0.00	0.00	-0.07
Dead+Wind 150 deg - Service+Guy	51.63	0.24	0.42	0.00	0.00	-0.06
Dead+Wind 180 deg - Service+Guy	51.65	-0.01	0.48	0.00	0.00	-0.05
Dead+Wind 210 deg - Service+Guy	51.60	-0.25	0.42	0.00	0.00	-0.02
Dead+Wind 225 deg - Service+Guy	51.58	-0.35	0.35	0.00	0.00	-0.00
Dead+Wind 240 deg - Service+Guy	51.60	-0.45	0.26	0.00	0.00	0.02
Dead+Wind 270 deg - Service+Guy	51.75	-0.49	0.01	0.00	0.00	0.05
Dead+Wind 300 deg - Service+Guy	51.91	-0.42	-0.23	0.00	0.00	0.05
Dead+Wind 315 deg - Service+Guy	51.93	-0.35	-0.33	0.00	0.00	0.04
Dead+Wind 330 deg - Service+Guy	51.93	-0.25	-0.41	0.00	0.00	0.03

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	-23.21	0.00	-0.00	23.21	0.00	0.008%
2	0.07	-27.69	-35.79	-0.07	27.68	35.75	0.098%
3	17.71	-27.59	-30.48	-17.72	27.59	30.42	0.121%
4	24.86	-27.52	-24.78	-24.86	27.52	24.74	0.090%
5	30.26	-27.49	-17.48	-30.21	27.49	17.47	0.119%
6	35.03	-27.60	-0.03	-34.98	27.60	0.06	0.113%
7	30.88	-27.71	17.90	-30.82	27.71	-17.86	0.157%
8	24.88	-27.69	24.98	-24.82	27.68	-24.94	0.151%
9	17.58	-27.62	30.70	-17.53	27.62	-30.67	0.130%
10	-0.07	-27.54	35.31	0.04	27.54	-35.29	0.092%
11	-17.71	-27.63	30.77	17.67	27.63	-30.74	0.103%
12	-24.98	-27.70	25.07	24.94	27.70	-25.05	0.120%
13	-30.95	-27.73	18.02	30.90	27.73	-17.99	0.127%
14	-35.03	-27.62	0.12	34.99	27.62	-0.10	0.093%
15	-30.19	-27.51	-17.35	30.17	27.51	17.38	0.077%
16	-24.75	-27.53	-24.68	24.76	27.53	24.64	0.098%
17	-17.59	-27.60	-30.41	17.59	27.59	30.36	0.126%
18	0.00	-149.11	0.00	-0.00	149.11	0.01	0.006%
19	-0.00	-149.25	-12.66	0.00	149.25	12.65	0.007%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
20	6.29	-149.08	-10.90	-6.30	149.08	10.89	0.007%
21	8.87	-148.97	-8.88	-8.87	148.97	8.86	0.009%
22	10.83	-148.93	-6.27	-10.82	148.93	6.27	0.007%
23	12.50	-149.10	0.00	-12.49	149.10	0.01	0.007%
24	10.90	-149.28	6.35	-10.89	149.28	-6.34	0.010%
25	8.90	-149.24	8.95	-8.88	149.24	-8.94	0.009%
26	6.29	-149.13	10.97	-6.28	149.13	-10.96	0.011%
27	0.00	-148.98	12.65	-0.01	148.98	-12.63	0.014%
28	-6.29	-149.14	10.96	6.27	149.14	-10.95	0.010%
29	-8.89	-149.26	8.94	8.88	149.26	-8.93	0.008%
30	-10.90	-149.30	6.34	10.88	149.30	-6.33	0.009%
31	-12.50	-149.13	0.01	12.49	149.13	-0.00	0.009%
32	-10.83	-148.95	-6.28	10.81	148.95	6.28	0.012%
33	-8.87	-148.99	-8.89	8.87	148.99	8.88	0.009%
34	-6.30	-149.10	-10.91	6.30	149.10	10.90	0.007%
35	0.02	-23.23	-8.56	-0.02	23.23	8.54	0.079%
36	4.24	-23.20	-7.29	-4.24	23.20	7.28	0.038%
37	5.94	-23.19	-5.92	-5.94	23.19	5.91	0.051%
38	7.24	-23.18	-4.18	-7.23	23.18	4.18	0.040%
39	8.38	-23.21	-0.01	-8.37	23.21	0.01	0.050%
40	7.38	-23.23	4.28	-7.37	23.23	-4.27	0.057%
41	5.95	-23.23	5.97	-5.94	23.23	-5.96	0.056%
42	4.20	-23.21	7.34	-4.19	23.21	-7.33	0.056%
43	-0.02	-23.19	8.44	0.02	23.19	-8.43	0.046%
44	-4.23	-23.22	7.36	4.22	23.22	-7.35	0.068%
45	-5.97	-23.23	6.00	5.96	23.23	-5.99	0.070%
46	-7.40	-23.24	4.31	7.39	23.24	-4.30	0.073%
47	-8.38	-23.21	0.03	8.36	23.21	-0.02	0.061%
48	-7.22	-23.19	-4.15	7.21	23.19	4.15	0.057%
49	-5.92	-23.19	-5.90	5.91	23.19	5.89	0.057%
50	-4.21	-23.21	-7.27	4.20	23.21	7.25	0.073%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	11	0.00000001	0.00006267
2	Yes	19	0.00090934	0.00096725
3	Yes	18	0.00131378	0.00121432
4	Yes	18	0.00123960	0.00094245
5	Yes	11	0.00126955	0.00098367
6	Yes	19	0.00123414	0.00109152
7	Yes	19	0.00138028	0.00143046
8	Yes	19	0.00133614	0.00138241
9	Yes	19	0.00124396	0.00123582
10	Yes	14	0.00136343	0.00073671
11	Yes	20	0.00098625	0.00098369
12	Yes	20	0.00105741	0.00110742
13	Yes	20	0.00109046	0.00115335
14	Yes	20	0.00097323	0.00089797
15	Yes	14	0.00133006	0.00044749
16	Yes	18	0.00125929	0.00100968
17	Yes	18	0.00130636	0.00125204
18	Yes	14	0.00125685	0.00008979
19	Yes	18	0.00112440	0.00016509
20	Yes	17	0.00116296	0.00016240

21	Yes	15	0.00141036	0.00022506
22	Yes	15	0.00100500	0.00017999
23	Yes	18	0.00103107	0.00014745
24	Yes	18	0.00138799	0.00022577
25	Yes	18	0.00120865	0.00020815
26	Yes	17	0.00133902	0.00023654
27	Yes	15	0.00140877	0.00032693
28	Yes	18	0.00116196	0.00021989
29	Yes	19	0.00097971	0.00018860
30	Yes	19	0.00108095	0.00020315
31	Yes	18	0.00122810	0.00020217
32	Yes	15	0.00145861	0.00025550
33	Yes	15	0.00117986	0.00023812
34	Yes	17	0.00099884	0.00015734
35	Yes	8	0.00140824	0.00025618
36	Yes	9	0.00090318	0.00022700
37	Yes	8	0.00127977	0.00038065
38	Yes	8	0.00105948	0.00037532
39	Yes	9	0.00108821	0.00024697
40	Yes	9	0.00102852	0.00031514
41	Yes	9	0.00100938	0.00026139
42	Yes	9	0.00107615	0.00028358
43	Yes	9	0.00097474	0.00035291
44	Yes	9	0.00127201	0.00033934
45	Yes	9	0.00124286	0.00035021
46	Yes	9	0.00128692	0.00043409
47	Yes	9	0.00123593	0.00029965
48	Yes	8	0.00127112	0.00040300
49	Yes	8	0.00130154	0.00038259
50	Yes	8	0.00149320	0.00033783

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 155	3.052	43	0.1858	0.0736
T2	155 - 140	2.464	43	0.1672	0.0545
T3	140 - 120	2.011	43	0.1144	0.0393
T4	120 - 117.5	1.640	43	0.0777	0.0375
T5	117.5 - 115	1.600	43	0.0792	0.0379
T6	115 - 112.5	1.558	43	0.0809	0.0384
T7	112.5 - 110	1.514	43	0.0824	0.0388
T8	110 - 107.5	1.470	43	0.0837	0.0392
T9	107.5 - 105	1.424	43	0.0846	0.0396
T10	105 - 102.5	1.377	43	0.0848	0.0399
T11	102.5 - 100	1.330	43	0.0843	0.0402
T12	100 - 80	1.283	43	0.0828	0.0405
T13	80 - 60	0.977	43	0.0627	0.0411
T14	60 - 40	0.720	43	0.0596	0.0403
T15	40 - 20	0.505	43	0.0472	0.0356
T16	20 - 5	0.298	43	0.0609	0.0250
T17	5 - 0	0.077	43	0.0715	0.0271

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	DS4C03F36U-D	43	3.052	0.1858	0.0736	46887
168.00	Tower Top Amplifier	43	2.970	0.1846	0.0710	46887
167.00	2' Dish	43	2.930	0.1840	0.0697	46887
163.00	APX16DWV-16DWVS-E-A20	43	2.769	0.1807	0.0646	33490
152.33	Guy	43	2.371	0.1596	0.0512	15389
145.60	VHLP2-180	43	2.160	0.1355	0.0438	14573
140.00	ETCR-654L12H6	43	2.011	0.1144	0.0393	14670
132.44	Guy	43	1.849	0.0915	0.0366	21754
120.00	7770.00	43	1.640	0.0777	0.0375	85411
90.00	Guy	43	1.118	0.0723	0.0410	48313
50.00	Guy	43	0.607	0.0525	0.0384	108014
30.00	(2) GPS	43	0.409	0.0517	0.0320	69604

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 155	27.116	13	1.3877	0.4045
T2	155 - 140	22.804	13	1.3024	0.3214
T3	140 - 120	19.072	13	1.0616	0.2534
T4	120 - 117.5	15.143	13	0.8778	0.2427
T5	117.5 - 115	14.686	13	0.8762	0.2428
T6	115 - 112.5	14.225	13	0.8744	0.2427
T7	112.5 - 110	13.764	13	0.8715	0.2425
T8	110 - 107.5	13.302	13	0.8668	0.2420
T9	107.5 - 105	12.841	13	0.8595	0.2414
T10	105 - 102.5	12.382	13	0.8490	0.2405
T11	102.5 - 100	11.926	13	0.8344	0.2395
T12	100 - 80	11.479	13	0.8151	0.2383
T13	80 - 60	8.396	13	0.6497	0.2293
T14	60 - 40	5.848	13	0.5670	0.2148
T15	40 - 20	3.800	13	0.4356	0.1911
T16	20 - 5	2.048	13	0.4575	0.1412
T17	5 - 0	0.524	13	0.4926	0.1048

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	DS4C03F36U-D	13	27.116	1.3877	0.4045	12007
168.00	Tower Top Amplifier	13	26.527	1.3821	0.3934	12007
167.00	2' Dish	13	26.232	1.3791	0.3878	12007
163.00	APX16DWV-16DWVS-E-A20	13	25.064	1.3641	0.3656	8577
152.33	Guy	13	22.087	1.2676	0.3068	3815
145.60	VHLP2-180	13	20.376	1.1573	0.2735	3340
140.00	ETCR-654L12H6	13	19.072	1.0616	0.2534	3200
132.44	Guy	13	17.486	0.9581	0.2420	4655
120.00	7770.00	13	15.143	0.8778	0.2427	34592
90.00	Guy	13	9.843	0.7261	0.2340	6361
50.00	Guy	13	4.761	0.4953	0.2049	9553

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
30.00	(2) GPS	13	2.934	0.4312	0.1708	21654

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	170	Leg	A325N	0.7500	4	0.13	29.82	0.004 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2.70	3.83	0.705 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.04	6.46	0.006 ✔	1	Member Bearing
T2	155	Leg	A325N	0.7500	4	3.93	29.82	0.132 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3.14	3.83	0.819 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.27	3.83	0.069 ✔	1	Member Bearing
		Top Guy Pull-Off@152.333	A325N	0.7500	1	3.82	9.46	0.403 ✔	1	Member Bearing
		Torque Arm Top@152.333	A325N	0.7500	8	0.55	17.89	0.031 ✔	1	Bolt Shear
T3	140	Leg	A325N	0.7500	4	3.35	29.82	0.112 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3.04	10.44	0.291 ✔	1	Member Bearing
		Top Girt	A325N	0.6250	1	0.79	5.22	0.152 ✔	1	Member Bearing
		Torque Arm Top@132.438	A325N	0.7500	8	1.07	17.89	0.060 ✔	1	Bolt Shear
T4	120	Leg	A325N	0.7500	4	3.20	29.82	0.107 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	0.41	6.46	0.064 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.56	3.83	0.145 ✔	1	Member Bearing
T5	117.5	Diagonal	A325N	0.5000	1	0.27	3.83	0.070 ✔	1	Member Bearing
T6	115	Diagonal	A325N	0.5000	1	0.28	3.83	0.073 ✔	1	Member Bearing
T7	112.5	Diagonal	A325N	0.5000	1	0.55	3.83	0.144 ✔	1	Member Bearing
T8	110	Diagonal	A325N	0.5000	1	0.99	6.46	0.153 ✔	1	Member Bearing
T9	107.5	Diagonal	A325N	0.5000	1	1.24	6.46	0.192 ✔	1	Member Bearing
T10	105	Diagonal	A325N	0.5000	1	0.94	3.83	0.245 ✔	1	Member Bearing
T11	102.5	Diagonal	A325N	0.5000	1	1.73	6.46	0.268 ✔	1	Member Bearing
T12	100	Leg	A325N	0.7500	4	3.69	29.82	0.124 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.53	3.83	0.400 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.65	3.83	0.169 ✔	1	Member Bearing
T13	80	Leg	A325N	0.7500	4	4.30	29.82	0.144 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.32	6.46	0.205 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.27	3.83	0.069 ✔	1	Member Bearing
T14	60	Leg	A325N	0.7500	4	4.63	29.82	0.155 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.48	3.83	0.387 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.81	3.83	0.211 ✔	1	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T15	40	Leg	A325N	0.7500	4	5.02	29.82	0.168 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.87	3.83	0.486 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.68	3.83	0.177 ✔	1	Member Bearing
T16	20	Leg	A325N	0.7500	4	5.45	29.82	0.183 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1.18	3.83	0.307 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	0.46	3.83	0.120 ✔	1	Member Bearing
T17	5	Leg	A325N	0.7500	4	5.50	29.82	0.185 ✔	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T2	152.33 (A) (600)	3/8 EHS	1.54	15.40	7.42	9.24	1.000	1.245 ✔
	152.33 (A) (601)	3/8 EHS	1.54	15.40	7.30	9.24	1.000	1.266 ✔
	152.33 (B) (596)	3/8 EHS	1.54	15.40	6.90	9.24	1.000	1.338 ✔
	152.33 (B) (597)	3/8 EHS	1.54	15.40	6.96	9.24	1.000	1.328 ✔
	152.33 (C) (589)	3/8 EHS	1.54	15.40	6.80	9.24	1.000	1.359 ✔
	152.33 (C) (590)	3/8 EHS	1.54	15.40	6.86	9.24	1.000	1.347 ✔
T3	132.44 (A) (612)	1/2 EHS	2.69	26.90	12.79	16.14	1.000	1.262 ✔
	132.44 (A) (613)	1/2 EHS	2.69	26.90	12.64	16.14	1.000	1.277 ✔
	132.44 (B) (608)	1/2 EHS	2.69	26.90	11.95	16.14	1.000	1.351 ✔
	132.44 (B) (609)	1/2 EHS	2.69	26.90	12.07	16.14	1.000	1.337 ✔
	132.44 (C) (604)	1/2 EHS	2.69	26.90	11.69	16.14	1.000	1.380 ✔
	132.44 (C) (605)	1/2 EHS	2.69	26.90	11.71	16.14	1.000	1.378 ✔
T12	90.00 (A) (621)	1/2 EHS	2.69	26.90	11.16	16.14	1.000	1.447 ✔
	90.00 (B) (620)	1/2 EHS	2.69	26.90	10.67	16.14	1.000	1.513 ✔
	90.00 (C) (616)	1/2 EHS	2.69	26.90	10.28	16.14	1.000	1.570 ✔
T14	50.00 (A) (627)	1/2 EHS	2.69	26.90	8.65	16.14	1.000	1.866 ✔
	50.00 (B) (626)	1/2 EHS	2.69	26.90	8.29	16.14	1.000	1.947 ✔
	50.00 (C) (622)	1/2 EHS	2.69	26.90	8.02	16.14	1.000	2.013 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 155	ROHN 2 STD	15.00	2.42	36.8 K=1.00	1.0745	1.00	-18.16	43.79	0.415 [1] ✓
T2	155 - 140	ROHN 2 STD	15.00	2.42	36.8 K=1.00	1.0745	1.00	-28.44	43.79	0.649 [1] ✓
T3	140 - 120	ROHN 2.0 Std. w/ 1" SR	20.00	2.44	47.8 K=1.00	1.8050	1.00	-41.45	68.73	0.603 [1] ✓
T4	120 - 117.5	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-38.88	45.05	0.863 [1] ✓
T5	117.5 - 115	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-39.38	45.05	0.874 [1] ✓
T6	115 - 112.5	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-39.92	45.05	0.886 [1] ✓
T7	112.5 - 110	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-40.57	45.05	0.900 [1] ✓
T8	110 - 107.5	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-41.35	45.05	0.918 [1] ✓
T9	107.5 - 105	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-42.23	45.05	0.937 [1] ✓
T10	105 - 102.5	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-43.17	45.05	0.958 [1] ✓
T11	102.5 - 100	ROHN 2 STD	2.50	2.00	30.5 K=1.00	1.0745	1.00	-44.22	45.05	0.982 [1] ✓
T12	100 - 80	ROHN 2.5 STD	20.00	2.44	30.9 K=1.00	1.7040	1.00	-51.60	71.52	0.721 [1] ✓
T13	80 - 60	ROHN 2.0 Std. w/ 1/3 HSS3.5x.3	20.00	2.44	36.7 K=1.00	2.0798	1.00	-55.60	84.80	0.656 [1] ✓
T14	60 - 40	ROHN 2.5 STD	20.00	2.44	30.9 K=1.00	1.7040	0.97	-60.58	69.57	0.871 [1] ✓
T15	40 - 20	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	20.00	2.44	32.8 K=1.00	2.2856	0.98	-65.39	93.30	0.701 [1] ✓
T16	20 - 5	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	15.00	2.42	32.5 K=1.00	2.2856	0.98	-66.77	93.27	0.716 [1] ✓
T17	5 - 0	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	5.38	2.42	32.5 K=1.00	2.2856	0.98	-72.30	93.27	0.775 [1] ✓

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 155	ROHN TS1.5x16 ga	4.19	1.97	46.4 K=1.00	0.2627	-2.77	7.60	0.364 [1] ✔
T2	155 - 140	ROHN TS1.5x16 ga	4.19	1.97	46.4 K=1.00	0.2627	-3.42	7.60	0.450 [1] ✔
T3	140 - 120	L1 3/4x1 3/4x1/4	4.20	1.81	77.6 K=1.22	0.8125	-3.51	19.17	0.183 [1] ✔
T4	120 - 117.5	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-0.41	7.69	0.054 [1] ✔
T5	117.5 - 115	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-0.15	7.69	0.020 [1] ✔
T6	115 - 112.5	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-0.42	7.69	0.055 [1] ✔
T7	112.5 - 110	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-0.49	7.69	0.064 [1] ✔
T8	110 - 107.5	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-0.99	7.69	0.128 [1] ✔
T9	107.5 - 105	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-1.24	7.69	0.161 [1] ✔
T10	105 - 102.5	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-1.26	7.69	0.164 [1] ✔
T11	102.5 - 100	ROHN TS1.5x16 ga	3.96	1.87	43.9 K=1.00	0.2627	-1.73	7.69	0.225 [1] ✔
T12	100 - 80	ROHN TS1.5x16 ga	4.20	1.95	45.9 K=1.00	0.2627	-1.81	7.62	0.238 [1] ✔
T13	80 - 60	ROHN TS1.5x16 ga	4.20	1.96	46.2 K=1.00	0.2627	-1.32	7.61	0.174 [1] ✔
T14	60 - 40	ROHN TS1.5x16 ga	4.20	1.95	45.9 K=1.00	0.2627	-1.72	7.62	0.226 [1] ✔
T15	40 - 20	ROHN TS1.5x16 ga	4.20	3.88	91.3 K=1.00	0.2627	-2.59	5.49	0.473 [1] ✔
T16	20 - 5	ROHN TS1.5x16 ga	4.19	3.87	91.1 K=1.00	0.2627	-1.56	5.50	0.283 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	155 - 140	1	3.42	3.22	108.3 K=0.70	0.7854	-0.97	15.00	0.065 [1] ✔
T3	140 - 120	L1 3/4x1 3/4x1/4	3.42	3.14	95.6 K=1.34	0.8125	-2.63	16.27	0.162 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	170 - 155	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	0.2627	-0.04	6.29	0.006 [1] ✔
T2	155 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	0.2627	-0.23	6.29	0.036 [1] ✔
T3	140 - 120	L1 1/2x1 1/2x1/8	3.42	2.90	118.7 K=1.01	0.3594	-0.65	5.54	0.118 [1] ✔
T15	40 - 20	ROHN TS1.5x16 ga	3.42	3.16	74.4 K=1.00	0.2627	-0.45	6.36	0.071 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	170 - 155	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	0.2627	-0.62	6.29	0.099 [1] ✔
T2	155 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	0.2627	-0.07	6.29	0.011 [1] ✔
T3	140 - 120	L1 3/4x1 3/4x1/8	3.42	3.14	114.3 K=1.05	0.4219	-0.57	6.87	0.083 [1] ✔
T11	102.5 - 100	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	0.2627	-0.13	6.29	0.021 [1] ✔
T17	5 - 0	3x1/4	0.17	0.00	0.0 K=1.00	0.7500	-5.02	24.30	0.206 [1] ✔

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T17	5 - 0	3x1/4	1.71	1.45	241.5 K=1.00	0.7500	-0.31	2.91	0.106 [1] ✔
		KL/R > 200 (C) - 588							

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	155 - 140	L2x3x3/16	3.42	3.22	88.1 K=1.00	0.9020	-3.41	19.03	0.179 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	155 - 140	L2x3x3/16	0.00	1.90	0.000	0.00	0.65	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140	L2x3x3/16	0.179	0.000	0.000	0.179 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	155 - 140 (591)	C12x20.7	3.50	3.40	51.1 K=1.00	6.0900	-2.10	171.99	0.012
T2	155 - 140 (592)	C12x20.7	3.50	3.40	51.1 K=1.00	6.0900	-2.14	171.99	0.012
T2	155 - 140 (598)	C12x20.7	3.50	3.40	51.1 K=1.00	6.0900	-0.00	171.99	0.000
T2	155 - 140 (599)	C12x20.7	3.50	3.40	51.1 K=1.00	6.0900	-0.12	171.99	0.001
T2	155 - 140 (602)	C12x20.7	3.50	3.40	51.1 K=1.00	6.0900	-2.07	171.99	0.012
T2	155 - 140 (603)	C12x20.7	3.50	3.40	51.1 K=1.00	6.0900	-0.08	171.99	0.000
T3	140 - 120 (606)	C12x20.7	3.50	3.36	50.5 K=1.00	6.0900	-4.30	172.57	0.025
T3	140 - 120 (607)	C12x20.7	3.50	3.36	50.5 K=1.00	6.0900	-0.15	172.57	0.001
T3	140 - 120 (610)	C12x20.7	3.50	3.36	50.5 K=1.00	6.0900	-0.11	172.57	0.001
T3	140 - 120 (611)	C12x20.7	3.50	3.36	50.5	6.0900	-0.21	172.57	0.001

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	140 - 120 (614)	C12x20.7	3.50	3.36	K=1.00 50.5	6.0900	-4.31	172.57	0.025
T3	140 - 120 (615)	C12x20.7	3.50	3.36	K=1.00 50.5	6.0900	-0.20	172.57	0.001
					K=1.00				

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	155 - 140 (591)	C12x20.7	-19.23	58.05	0.331	-0.00	9.42	0.000
T2	155 - 140 (592)	C12x20.7	-21.56	58.05	0.371	0.00	9.42	0.000
T2	155 - 140 (598)	C12x20.7	-20.22	58.05	0.348	-0.00	9.42	0.000
T2	155 - 140 (599)	C12x20.7	-19.62	58.05	0.338	0.00	9.42	0.000
T2	155 - 140 (602)	C12x20.7	-19.80	58.05	0.341	0.00	9.42	0.000
T2	155 - 140 (603)	C12x20.7	-21.98	58.05	0.379	-0.00	9.42	0.000
T3	140 - 120 (606)	C12x20.7	-29.57	58.05	0.509	0.00	9.42	0.000
T3	140 - 120 (607)	C12x20.7	-34.90	58.05	0.601	0.00	9.42	0.000
T3	140 - 120 (610)	C12x20.7	-32.19	58.05	0.555	-0.00	9.42	0.000
T3	140 - 120 (611)	C12x20.7	-30.70	58.05	0.529	0.00	9.42	0.000
T3	140 - 120 (614)	C12x20.7	-31.14	58.05	0.536	0.00	9.42	0.000
T3	140 - 120 (615)	C12x20.7	-35.14	58.05	0.605	-0.00	9.42	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140 (591)	C12x20.7	0.012	0.331	0.000	0.337 ✔	1.000	4.8.1 ✔
T2	155 - 140 (592)	C12x20.7	0.012	0.371	0.000	0.378 ✔	1.000	4.8.1 ✔
T2	155 - 140 (598)	C12x20.7	0.000	0.348	0.000	0.348 ✔	1.000	4.8.1 ✔
T2	155 - 140 (599)	C12x20.7	0.001	0.338	0.000	0.338 ✔	1.000	4.8.1 ✔
T2	155 - 140 (602)	C12x20.7	0.012	0.341	0.000	0.347 ✔	1.000	4.8.1 ✔
T2	155 - 140 (603)	C12x20.7	0.000	0.379	0.000	0.379 ✔	1.000	4.8.1 ✔
T3	140 - 120 (606)	C12x20.7	0.025	0.509	0.000	0.522 ✔	1.000	4.8.1 ✔
T3	140 - 120 (607)	C12x20.7	0.001	0.601	0.000	0.602 ✔	1.000	4.8.1 ✔
T3	140 - 120 (610)	C12x20.7	0.001	0.555	0.000	0.555 ✔	1.000	4.8.1 ✔
T3	140 - 120 (611)	C12x20.7	0.001	0.529	0.000	0.529 ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T3	140 - 120 (614)	C12x20.7	0.025	0.536	0.000	0.549 ✔	1.000	4.8.1 ✔
T3	140 - 120 (615)	C12x20.7	0.001	0.605	0.000	0.606 ✔	1.000	4.8.1 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 155	ROHN 2 STD	15.00	2.42	36.8	1.0745	15.73	48.35	0.325 [1] ✔
T2	155 - 140	ROHN 2 STD	15.00	2.42	36.8	1.0745	18.34	48.35	0.379 [1] ✔
T3	140 - 120	ROHN 2.0 Std. w/ 1" SR	20.00	2.44	47.8	1.8050	24.10	81.22	0.297 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 155	ROHN TS1.5x16 ga	4.19	1.97	46.4	0.2627	2.70	8.51	0.318 [1] ✔
T2	155 - 140	ROHN TS1.5x16 ga	4.19	1.97	46.4	0.2627	3.14	8.51	0.369 [1] ✔
T3	140 - 120	L1 3/4x1 3/4x1/4	4.20	1.81	43.7	0.4688	3.04	20.39	0.149 [1] ✔
T4	120 - 117.5	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.20	8.51	0.023 [1] ✔
T5	117.5 - 115	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.27	8.51	0.032 [1] ✔
T6	115 - 112.5	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.28	8.51	0.033 [1] ✔
T7	112.5 - 110	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.55	8.51	0.065 [1] ✔
T8	110 - 107.5	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.48	8.51	0.057 [1] ✔
T9	107.5 - 105	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.63	8.51	0.074 [1] ✔
T10	105 - 102.5	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.94	8.51	0.111 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	102.5 - 100	ROHN TS1.5x16 ga	3.96	1.87	43.9	0.2627	0.81	8.51	0.095 [1]
T12	100 - 80	ROHN TS1.5x16 ga	4.20	1.95	45.9	0.2627	1.53	8.51	0.180 [1]
T13	80 - 60	ROHN TS1.5x16 ga	4.20	1.96	46.2	0.2627	0.31	8.51	0.037 [1]
T14	60 - 40	ROHN TS1.5x16 ga	4.20	1.95	45.9	0.2627	1.48	8.51	0.174 [1]
T15	40 - 20	ROHN TS1.5x16 ga	4.20	3.88	91.3	0.2627	1.87	8.51	0.219 [1]
T16	20 - 5	ROHN TS1.5x16 ga	4.19	3.87	91.1	0.2627	1.18	8.51	0.138 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T15	40 - 20	1	3.42	3.16	151.8	0.7854	1.00	35.34	0.028 [1]
T16	20 - 5	1	3.42	3.16	151.8	0.7854	1.07	35.34	0.030 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	155 - 140	1	3.42	3.22	154.7	0.7854	1.26	35.34	0.036 [1]
T3	140 - 120	L1 3/4x1 3/4x1/4	3.42	3.14	71.2	0.8125	3.30	26.32	0.125 [1]
T8	110 - 107.5	L2x2x3/16	3.42	3.22	62.7	0.5363	0.64	26.14	0.025 [1]
T9	107.5 - 105	L2x2x3/16	3.42	3.22	62.7	0.5363	0.76	26.14	0.029 [1]
T10	105 - 102.5	L2x2x3/16	3.42	3.22	62.7	0.5363	0.73	26.14	0.028 [1]
T11	102.5 - 100	L2x2x3/16	3.42	3.22	62.7	0.5363	0.68	26.14	0.026 [1]
T13	80 - 60	L2x2x3/16	3.42	3.20	62.2	0.7150	1.18	23.17	0.051 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 155	ROHN TS1.5x16 ga	3.42	3.22	75.8	0.2627	0.02	8.51	0.002 [1]
T2	155 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8	0.2627	0.27	8.51	0.031 [1]
T3	140 - 120	L1 1/2x1 1/2x1/8	3.42	2.90	81.0	0.1992	0.79	8.67	0.091 [1]
T4	120 - 117.5	ROHN TS1.5x16 ga	3.42	3.22	75.8	0.2627	0.56	8.51	0.065 [1]
T12	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8	0.2627	0.65	8.51	0.076 [1]
T13	80 - 60	ROHN TS1.5x16 ga	3.42	3.20	75.2	0.2627	0.27	8.51	0.031 [1]
T14	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8	0.2627	0.81	8.51	0.095 [1]
T15	40 - 20	ROHN TS1.5x16 ga	3.42	3.16	74.4	0.2627	0.68	8.51	0.080 [1]
T16	20 - 5	ROHN TS1.5x16 ga	3.42	3.16	74.4	0.2627	0.46	8.51	0.054 [1]
T17	5 - 0	3x1/4	3.25	2.99	497.4	0.7500	9.72	24.30	0.400 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 155	ROHN TS1.5x16 ga	3.42	3.22	75.8	0.2627	0.70	8.51	0.083 [1]
T2	155 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8	0.2627	0.32	8.51	0.038 [1]
T3	140 - 120	L1 3/4x1 3/4x1/8	3.42	3.14	69.0	0.4219	0.95	13.67	0.069 [1]
T11	102.5 - 100	ROHN TS1.5x16 ga	3.42	3.22	75.8	0.2627	0.28	8.51	0.033 [1]
T12	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8	0.2627	0.75	8.51	0.088 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T13	80 - 60	ROHN TS1.5x16 ga	3.42	3.20	75.2	0.2627	0.30	8.51	0.035 [1]
T14	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8	0.2627	0.83	8.51	0.097 [1]
T15	40 - 20	ROHN TS1.5x16 ga	3.42	3.16	74.4	0.2627	0.45	8.51	0.052 [1]
T16	20 - 5	ROHN TS1.5x16 ga	3.42	3.16	74.4	0.2627	5.82	8.51	0.684 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8	0.2627	0.65	11.82	0.055 [1]
T14	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8	0.2627	0.66	11.82	0.056 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	155 - 140	L2x3x3/16	3.42	3.22	66.3	0.5535	3.82	24.08	0.159 [1]
T12	100 - 80	4x3/8	3.42	3.18	352.6	1.5000	3.73	48.60	0.077 [1]
T14	60 - 40	4x3/8	3.42	3.18	352.6	1.5000	3.76	48.60	0.077 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	155 - 140	L2x3x3/16	0.00	1.90	0.000	0.00	0.65	0.000
T12	100 - 80	4x3/8	0.00	4.05	0.000	0.00	0.38	0.000
T14	60 - 40	4x3/8	0.00	4.05	0.000	0.00	0.38	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140	L2x3x3/16	0.159	0.000	0.000	0.159 [1] ✔	1.000	4.8.1 ✔
T12	100 - 80	4x3/8	0.077	0.000	0.000	0.077 [1] ✔	1.000	4.8.1 ✔
T14	60 - 40	4x3/8	0.077	0.000	0.000	0.077 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	155 - 140 (591)	C12x20.7	3.50	3.40	51.1	6.0900	0.20	197.32	0.001
T2	155 - 140 (592)	C12x20.7	3.50	3.40	51.1	6.0900	0.95	197.32	0.005
T2	155 - 140 (598)	C12x20.7	3.50	3.40	51.1	6.0900	1.88	197.32	0.010
T2	155 - 140 (599)	C12x20.7	3.50	3.40	51.1	6.0900	1.72	197.32	0.009
T2	155 - 140 (602)	C12x20.7	3.50	3.40	51.1	6.0900	0.21	197.32	0.001
T2	155 - 140 (603)	C12x20.7	3.50	3.40	51.1	6.0900	0.90	197.32	0.005
T3	140 - 120 (606)	C12x20.7	3.50	3.36	50.5	6.0900	3.32	197.32	0.017
T3	140 - 120 (607)	C12x20.7	3.50	3.36	50.5	6.0900	1.77	197.32	0.009
T3	140 - 120 (610)	C12x20.7	3.50	3.36	50.5	6.0900	3.57	197.32	0.018
T3	140 - 120 (611)	C12x20.7	3.50	3.36	50.5	6.0900	3.43	197.32	0.017
T3	140 - 120 (614)	C12x20.7	3.50	3.36	50.5	6.0900	3.40	197.32	0.017
T3	140 - 120 (615)	C12x20.7	3.50	3.36	50.5	6.0900	1.72	197.32	0.009

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	155 - 140 (591)	C12x20.7	-17.45	58.05	0.301	-0.00	9.42	0.000
T2	155 - 140 (592)	C12x20.7	-20.95	58.05	0.361	0.00	9.42	0.000
T2	155 - 140 (598)	C12x20.7	-17.91	58.05	0.308	-0.00	9.42	0.000
T2	155 - 140 (599)	C12x20.7	-17.28	58.05	0.298	-0.00	9.42	0.000
T2	155 - 140 (602)	C12x20.7	-18.08	58.05	0.312	0.00	9.42	0.000
T2	155 - 140 (603)	C12x20.7	-21.20	58.05	0.365	-0.00	9.42	0.000
T3	140 - 120 (606)	C12x20.7	-27.33	58.05	0.471	0.00	9.42	0.000
T3	140 - 120 (607)	C12x20.7	-33.95	58.05	0.585	0.00	9.42	0.000
T3	140 - 120 (610)	C12x20.7	-29.17	58.05	0.502	-0.00	9.42	0.000
T3	140 - 120 (611)	C12x20.7	-27.76	58.05	0.478	-0.00	9.42	0.000
T3	140 - 120 (614)	C12x20.7	-29.03	58.05	0.500	-0.00	9.42	0.000
T3	140 - 120 (615)	C12x20.7	-34.26	58.05	0.590	-0.00	9.42	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140 (591)	C12x20.7	0.001	0.301	0.000	0.301 ✔	1.000	4.8.1 ✔
T2	155 - 140 (592)	C12x20.7	0.005	0.361	0.000	0.363 ✔	1.000	4.8.1 ✔
T2	155 - 140 (598)	C12x20.7	0.010	0.308	0.000	0.313 ✔	1.000	4.8.1 ✔
T2	155 - 140 (599)	C12x20.7	0.009	0.298	0.000	0.302 ✔	1.000	4.8.1 ✔
T2	155 - 140 (602)	C12x20.7	0.001	0.312	0.000	0.312 ✔	1.000	4.8.1 ✔
T2	155 - 140 (603)	C12x20.7	0.005	0.365	0.000	0.368 ✔	1.000	4.8.1 ✔
T3	140 - 120 (606)	C12x20.7	0.017	0.471	0.000	0.479 ✔	1.000	4.8.1 ✔
T3	140 - 120 (607)	C12x20.7	0.009	0.585	0.000	0.589 ✔	1.000	4.8.1 ✔
T3	140 - 120 (610)	C12x20.7	0.018	0.502	0.000	0.512 ✔	1.000	4.8.1 ✔
T3	140 - 120 (611)	C12x20.7	0.017	0.478	0.000	0.487 ✔	1.000	4.8.1 ✔
T3	140 - 120 (614)	C12x20.7	0.017	0.500	0.000	0.509 ✔	1.000	4.8.1 ✔
T3	140 - 120 (615)	C12x20.7	0.009	0.590	0.000	0.594 ✔	1.000	4.8.1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	170 - 155	Leg	ROHN 2 STD	3	-18.16	43.79	41.5	Pass
T2	155 - 140	Leg	ROHN 2 STD	46	-28.44	43.79	64.9	Pass
T3	140 - 120	Leg	ROHN 2.0 Std. w/ 1" SR	109	-41.45	68.73	60.3	Pass
T4	120 - 117.5	Leg	ROHN 2 STD	190	-38.88	45.05	86.3	Pass
T5	117.5 - 115	Leg	ROHN 2 STD	202	-39.38	45.05	87.4	Pass
T6	115 - 112.5	Leg	ROHN 2 STD	211	-39.92	45.05	88.6	Pass
T7	112.5 - 110	Leg	ROHN 2 STD	220	-40.57	45.05	90.0	Pass
T8	110 - 107.5	Leg	ROHN 2 STD	229	-41.35	45.05	91.8	Pass
T9	107.5 - 105	Leg	ROHN 2 STD	241	-42.23	45.05	93.7	Pass
T10	105 - 102.5	Leg	ROHN 2 STD	253	-43.17	45.05	95.8	Pass
T11	102.5 - 100	Leg	ROHN 2 STD	265	-44.22	45.05	98.2	Pass
T12	100 - 80	Leg	ROHN 2.5 STD	280	-51.60	71.52	72.1	Pass
T13	80 - 60	Leg	ROHN 2.0 Std. w/ 1/3 HSS3.5x.3	340	-55.60	84.80	65.6	Pass
T14	60 - 40	Leg	ROHN 2.5 STD	423	-60.58	69.57	87.1	Pass
T15	40 - 20	Leg	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	483	-65.39	93.30	70.1	Pass
T16	20 - 5	Leg	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	537	-66.77	93.27	71.6	Pass
T17	5 - 0	Leg	2.5 Std. Pipe w/ 1/4 3 Std. Pipe	579	-72.30	93.27	77.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	170 - 155	Diagonal	ROHN TS1.5x16 ga	12	-2.77	7.60	36.4 70.5 (b)	Pass
T2	155 - 140	Diagonal	ROHN TS1.5x16 ga	102	-3.42	7.60	45.0 81.9 (b)	Pass
T3	140 - 120	Diagonal	L1 3/4x1 3/4x1/4	157	-3.51	19.17	18.3 29.1 (b)	Pass
T4	120 - 117.5	Diagonal	ROHN TS1.5x16 ga	196	-0.41	7.69	5.4 6.4 (b)	Pass
T5	117.5 - 115	Diagonal	ROHN TS1.5x16 ga	209	0.27	8.51	3.2 7.0 (b)	Pass
T6	115 - 112.5	Diagonal	ROHN TS1.5x16 ga	219	-0.42	7.69	5.5 7.3 (b)	Pass
T7	112.5 - 110	Diagonal	ROHN TS1.5x16 ga	227	0.55	8.51	6.5 14.4 (b)	Pass
T8	110 - 107.5	Diagonal	ROHN TS1.5x16 ga	237	-0.99	7.69	12.8 15.3 (b)	Pass
T9	107.5 - 105	Diagonal	ROHN TS1.5x16 ga	249	-1.24	7.69	16.1 19.2 (b)	Pass
T10	105 - 102.5	Diagonal	ROHN TS1.5x16 ga	261	-1.26	7.69	16.4 24.5 (b)	Pass
T11	102.5 - 100	Diagonal	ROHN TS1.5x16 ga	276	-1.73	7.69	22.5 26.8 (b)	Pass
T12	100 - 80	Diagonal	ROHN TS1.5x16 ga	321	-1.81	7.62	23.8 40.0 (b)	Pass
T13	80 - 60	Diagonal	ROHN TS1.5x16 ga	351	-1.32	7.61	17.4 20.5 (b)	Pass
T14	60 - 40	Diagonal	ROHN TS1.5x16 ga	451	-1.72	7.62	22.6 38.7 (b)	Pass
T15	40 - 20	Diagonal	ROHN TS1.5x16 ga	532	-2.59	5.49	47.3 48.6 (b)	Pass
T16	20 - 5	Diagonal	ROHN TS1.5x16 ga	545	-1.56	5.50	28.3 30.7 (b)	Pass
T15	40 - 20	Horizontal	1	500	1.00	35.34	2.8	Pass
T16	20 - 5	Horizontal	1	560	1.07	35.34	3.0	Pass
T2	155 - 140	Secondary Horizontal	1	107	-0.97	15.00	6.5	Pass
T3	140 - 120	Secondary Horizontal	L1 3/4x1 3/4x1/4	170	-2.63	16.27	16.2	Pass
T8	110 - 107.5	Secondary Horizontal	L2x2x3/16	238	0.64	26.14	2.5	Pass
T9	107.5 - 105	Secondary Horizontal	L2x2x3/16	250	0.76	26.14	2.9	Pass
T10	105 - 102.5	Secondary Horizontal	L2x2x3/16	262	0.73	26.14	2.8	Pass
T11	102.5 - 100	Secondary Horizontal	L2x2x3/16	277	0.68	26.14	2.6	Pass
T13	80 - 60	Secondary Horizontal	L2x2x3/16	364	1.18	23.17	5.1	Pass
T1	170 - 155	Top Girt	ROHN TS1.5x16 ga	6	-0.04	6.29	0.6	Pass
T2	155 - 140	Top Girt	ROHN TS1.5x16 ga	49	-0.23	6.29	3.6 6.9 (b)	Pass
T3	140 - 120	Top Girt	L1 1/2x1 1/2x1/8	112	-0.65	5.54	11.8 15.2 (b)	Pass
T4	120 - 117.5	Top Girt	ROHN TS1.5x16 ga	195	0.56	8.51	6.5 14.5 (b)	Pass
T12	100 - 80	Top Girt	ROHN TS1.5x16 ga	285	0.65	8.51	7.6 16.9 (b)	Pass
T13	80 - 60	Top Girt	ROHN TS1.5x16 ga	344	0.27	8.51	3.1 6.9 (b)	Pass
T14	60 - 40	Top Girt	ROHN TS1.5x16 ga	424	0.81	8.51	9.5 21.1 (b)	Pass
T15	40 - 20	Top Girt	ROHN TS1.5x16 ga	484	0.68	8.51	8.0 17.7 (b)	Pass
T16	20 - 5	Top Girt	ROHN TS1.5x16 ga	539	0.46	8.51	5.4 12.0 (b)	Pass
T17	5 - 0	Top Girt	3x1/4	581	9.72	24.30	40.0	Pass
T1	170 - 155	Bottom Girt	ROHN TS1.5x16 ga	8	-0.62	6.29	9.9	Pass
T2	155 - 140	Bottom Girt	ROHN TS1.5x16 ga	52	0.32	8.51	3.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T3	140 - 120	Bottom Girt	L1 3/4x1 3/4x1/8	116	-0.57	6.87	8.3	Pass
T11	102.5 - 100	Bottom Girt	ROHN TS1.5x16 ga	268	0.28	8.51	3.3	Pass
T12	100 - 80	Bottom Girt	ROHN TS1.5x16 ga	286	0.75	8.51	8.8	Pass
T13	80 - 60	Bottom Girt	ROHN TS1.5x16 ga	346	0.30	8.51	3.5	Pass
T14	60 - 40	Bottom Girt	ROHN TS1.5x16 ga	429	0.83	8.51	9.7	Pass
T15	40 - 20	Bottom Girt	ROHN TS1.5x16 ga	489	0.45	8.51	5.2	Pass
T16	20 - 5	Bottom Girt	ROHN TS1.5x16 ga	543	5.82	8.51	68.4	Pass
T17	5 - 0	Bottom Girt	3x1/4	585	-5.02	24.30	20.6	Pass
T12	100 - 80	Mid Girt	ROHN TS1.5x16 ga	291	0.65	11.82	5.5	Pass
T14	60 - 40	Mid Girt	ROHN TS1.5x16 ga	431	0.66	11.82	5.6	Pass
T17	5 - 0	Mid Girt	3x1/4	588	-0.31	2.91	10.6	Pass
T2	155 - 140	Guy A@152.333	3/8	600	7.42	9.24	80.3	Pass
T3	140 - 120	Guy A@132.438	1/2	612	12.79	16.14	79.2	Pass
T12	100 - 80	Guy A@90	1/2	621	11.16	16.14	69.1	Pass
T14	60 - 40	Guy A@50	1/2	627	8.65	16.14	53.6	Pass
T2	155 - 140	Guy B@152.333	3/8	597	6.96	9.24	75.3	Pass
T3	140 - 120	Guy B@132.438	1/2	609	12.07	16.14	74.8	Pass
T12	100 - 80	Guy B@90	1/2	620	10.67	16.14	66.1	Pass
T14	60 - 40	Guy B@50	1/2	626	8.29	16.14	51.4	Pass
T2	155 - 140	Guy C@152.333	3/8	590	6.86	9.24	74.3	Pass
T3	140 - 120	Guy C@132.438	1/2	605	11.71	16.14	72.6	Pass
T12	100 - 80	Guy C@90	1/2	616	10.28	16.14	63.7	Pass
T14	60 - 40	Guy C@50	1/2	622	8.02	16.14	49.7	Pass
T2	155 - 140	Top Guy Pull-Off@152.333	L2x3x3/16	593	-3.41	19.03	17.9 40.3 (b)	Pass
T12	100 - 80	Top Guy Pull-Off@90	4x3/8	619	3.73	48.60	7.7	Pass
T14	60 - 40	Top Guy Pull-Off@50	4x3/8	624	3.76	48.60	7.7	Pass
T2	155 - 140	Torque Arm Top@152.333	C12x20.7	603	0.90	197.32	37.9	Pass
T3	140 - 120	Torque Arm Top@132.438	C12x20.7	615	1.72	197.32	60.6	Pass

Summary		
Leg (T11)	98.2	Pass
Diagonal (T2)	81.9	Pass
Horizontal (T16)	3.0	Pass
Secondary Horizontal (T3)	16.2	Pass
Top Girt (T17)	40.0	Pass
Bottom Girt (T16)	68.4	Pass
Mid Girt (T17)	10.6	Pass
Guy A (T2)	80.3	Pass
Guy B (T2)	75.3	Pass
Guy C (T2)	74.3	Pass
Top Guy Pull-Off (T2)	40.3	Pass
Torque Arm Top (T3)	60.6	Pass
Bolt Checks	81.9	Pass
RATING =	**98.2**	**Pass**

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CENTEK engineering
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Job :	AT&T ~ CT1145: 170-ft Guyed Lattice Tower	Project No.	18000.21	Sheet	1	of	2
Address:	99 Cedarwood Lane Newington, CT	Computed by	TJL	Date		5/24/18	
Description:	Guy Anchor Evaluation	Checked by	CFC	Date			

CHECK UPLIFT RESISTANCE

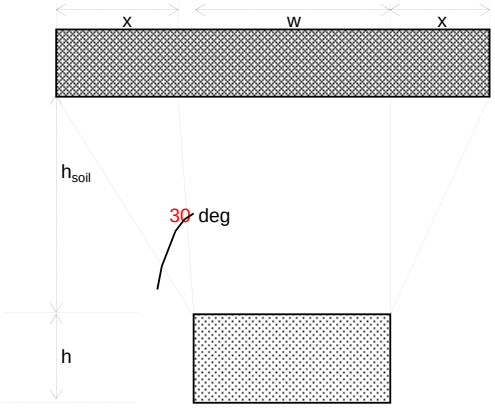
ANCHOR (A) AT 106.0 ft RADIUS

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	43	kips
Sliding =	39	kips
Wdepth =	50	ft

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
$\gamma_{conc.sub}$ =	87.6	pcf
w =	4	ft
h =	1.833	ft
d =	12	ft
Vol. =	87.98	ft^3
Vol.sub =	0.00	ft^3
Wc =	*13.20*	kips
Ø =	*0.90*	
	11.88	



Foundation Section

SOIL PARAMETERS:

γ_{soil} =	100	pcf
$\gamma_{soil.sub}$ =	37.6	pcf
h_{soil} =	7	ft
x =	*4.04*	ft

Soil Weight (Wr):

B1 =	48.00	
B2 =	48.00	
B3 =	242.66	
W.soil =	93.00	kips
W.soil.sub =	0.00	kips
Total =	*93.00*	kips
Ø =	*0.75*	
	69.75	

SF AGAINST SLIDING

1.90 **>** *1* ***OK***

GUY ANCHORS AGAINST UPLIFT ARE ADEQUATE

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Job :	AT&T ~ CT1145: 170-ft Guyed Lattice Tower	Project No.	18000.21	Sheet	2	of	2
Address:	99 Cedarwood Lane Newington, CT	Computed by	TJL	Date		5/24/18	
Description:	Guy Anchor Evaluation	Checked by	CFC	Date			

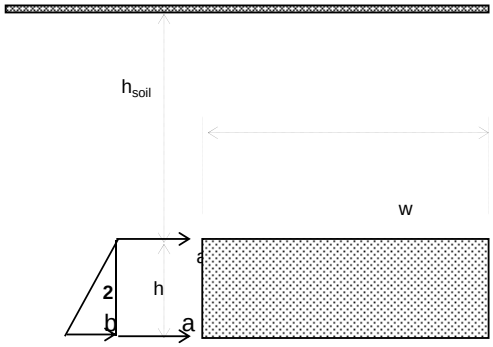
CHECK SLIDING RESISTANCE

SOIL PARAMETERS

$\gamma soil$ =	100	pcf
$\gamma soil$ =	37.6	pcf
h_{soil} =	7	ft
h =	1.833	ft
ϕ =	30	degrees

ANCHOR PARAMETERS

w =	4.0	ft
h =	1.8	ft
d =	12.0	ft



Foundation Elevation View

κ_p = 3.00

HORIZONTAL FORCES

		2.10	ksf
		2.65	ksf
RESIST TO SLIDING =		52.24	k
SOIL & CONCRETE WEIGHT =	Wr + Wc =	81.63	k
UPLIFT REACTIONS =		-43	k
SUM =		38.63	k
COEF. OF FRICTION, (0.45) =		17.38	k
RESIST TO SLIDING =		52.24	k
SUM =		69.62	k

SF AGAINST SLIDING

SF = 1.8 > 1 OK

GUY ANCHORS AGAINST SLIDING NEED REINFORCEMENT

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Subject:	Base Foundation Analysis
Location:	170-ft Guyed Lattice Tower Newington, CT
Rev. 0: 5/24/18	Prepared by: T.J.L. Checked by: C.F.C. Job No. 18000.21

Guyed Tower Base Foundation:

Input Data:

Tower Data

Shear Force =	$Shear := 2 \cdot kip$	(User Input from tnxTower)	
Axial Force =	$Axial := 200 \cdot kip$	(User Input from tnxTower)	
Tower Height =	$H_t := 170 \cdot ft$	(User Input)	

Footing Data:

Overall Depth of Footing =	$D_f := 3 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 1.75 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 1.5 \cdot ft$	(User Input)	
Diameter of Pier =	$D_p := 2.0 \cdot ft$	(User Input)	
Width of Pad =	$W_{pad} := 9.5 \cdot ft$	(User Input)	
Thickness of Pad =	$t_{pad} := 2.75 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 3000 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Ultimate Soil Bearing Capacity =	$q_s := 8000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 120 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Calculated Factors:

Coefficient of Lateral Soil Pressure =

$$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$$

Load Factor =

$$LF := \begin{cases} 1.333 & \text{if } H_t \le 700 \cdot ft \\ 1.7 & \text{if } H_t \ge 1200 \cdot ft \\ 1.333 + \left(\frac{H_t - 700ft}{1200ft - 700ft}\right) \cdot 0.4 & \text{otherwise} \end{cases} = 1.333$$

Stability of Footing:

Adjusted Concrete Unit Weight = $\gamma_c := if\left(Bouyancy = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}\right) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := if\left(Bouyancy = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}\right) = 120 \cdot pcf$

Passive Pressure = $P_{top} := 0$

$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 1.08 \cdot ksf$

$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 0.54 \cdot ksf$

$A_p := D_p \cdot L_p = 3.5$

Soil Shear Resistance = $Sl_1 := P_{ave} \cdot A_p = 1.89 \cdot kip$

Weight of Concrete = $WT_c := \left(D_p^2 \cdot L_p + W_{pad}^2 \cdot t_{pad}\right) \cdot \gamma_c = 38.28 \cdot kip$

Total Weight = $WT_{tot} := WT_c + Axial = 238.28 \cdot kip$

Soil/Concrete Friction Resistance = $Sl_2 := \mu \cdot WT_{tot} = 107.23 \cdot kips$

Total Sliding Resistance = $Sl_{tot} := Sl_1 + Sl_2 = 109.12 \cdot kips$

Sliding Resistance Ratio = $Sliding\_Resistance_{ratio} := \frac{0.75 Sl_{tot}}{Shear} = 40.92$

$Sliding\_Resistance\_Check := if\left[\left(\frac{Shear}{0.75 Sl_{tot}} < 1.0\right), "Okay", "No Good"\right]$

Sliding_Resistance_Check = "Okay"

Bearing Pressure Caused by Footing:

Maximum Pressure in Mat = $P_{max} := \frac{WT_{tot}}{W_{pad}^2} = 2.64 \cdot ksf$

$Max\_Pressure\_Check := if\left(P_{max} < 0.6 q_s, "Okay", "No Good"\right)$

Max_Pressure_Check = "Okay"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTL01145	DATE:	09/22/2017	RF DESIGN ENG:	Mohammad Minhaj Hussain
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	510 493 3024
REVISION:	Final	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	mh705r@att.com
INITIATIVE /PROJECT:	Add LTE 5C, 6C, 7C [700 Upper D].				

RF PERF ENG:		RFDS PROGRAM TYPE:	2018 LTE Next Carrier		
RF PERF PHONE:		RFDS TECHNOLOGY:	LTE		
RF PERF EMAIL:		STATE/STATUS:	Final/Approved		
RFDS VERSION:	3.00	RFDS ID:	1787008		
GSM FREQUENCY:		Created By:	om636a	Updated By:	om636a
UMTS FREQUENCY:	850	Date Created:	5/27/2017 4:28:39 PM	Date Updated:	1/17/2018 10:24:21 AM
LTE FREQUENCY:	700, 850, 1900, AWS, WCS				
I-PLAN JOB # 1:	NER-RCTB-17-03661	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 6C		
I-PLAN JOB # 2:	NER-RCTB-17-00926	IPLAN PRD GRP || SUB GRP #2:	LTE Next Carrier || LTE 5C		
I-PLAN JOB # 3:	NER-RCTB-17-06790	IPLAN PRD GRP || SUB GRP #3:	LTE Next Carrier || LTE 7C		
I-PLAN JOB # 4:		IPLAN PRD GRP || SUB GRP #4:			
I-PLAN JOB # 5:		IPLAN PRD GRP || SUB GRP #5:			
I-PLAN JOB # 6:		IPLAN PRD GRP || SUB GRP #6:			
I-PLAN JOB # 7:		IPLAN PRD GRP || SUB GRP #7:			
I-PLAN JOB # 8:		IPLAN PRD GRP || SUB GRP #8:			

Section 2 - LOCATION INFORMATION

USID:	59389	FA LOCATION CODE:	10035097	LOCATION NAME:	NEWINGTON
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT
ADDRESS:	99 CEDARWOOD LANE	CITY:	NEWINGTON	STATE:	CT
ZIP CODE:	06111	COUNTY:	HARTFORD	LONG (DEC. DEG.):	-72.7089711
LATITUDE (D-M-S):	41d 41m 41.172s	LONGITUDE (D-M-S):	-72d -42m -32.29596s	LAT (DEC. DEG.):	41.6947700
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	1145 NEWINGTON CALLAHAN RT 5 15 NORTH TO RT 287 MCDONALDS ON CORNER. TURN LEFT ONTO EAST ROBBINS AVE TAKE 1ST RIGHT ONTO GOODATE DRIVE TAKE 1ST RIGHT ONTO CEDARWOOD LANE SITE AT TOP ON RIGHT COMBO 0043 & CIPHER SHELTER:GROUND LEVEL GSM 1 DHXV 238585 ET62 2 DHXV 238586 ET171 3 HCGS 717249 ET184 4 HCGS768911SN ET99 UMTS:ON FIBER METER:89-205-050				

ORACLE PTN # 1:	2051A0B9JN	PACE JOB # 1:	MRCTB024103		
ORACLE PTN # 2:	2051A0AD2A	PACE JOB # 2:	MRCTB022772		
ORACLE PTN # 3:		PACE JOB # 3:			
ORACLE PTN # 4:		PACE JOB # 4:			
ORACLE PTN # 5:		PACE JOB # 5:			
ORACLE PTN # 6:		PACE JOB # 6:			
ORACLE PTN # 7:		PACE JOB # 7:			
ORACLE PTN # 8:		PACE JOB # 8:			
BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:			
AM STUDY REQ'D (Y/N):	No	SEARCH_RING_ID:			
FREQ COORD:		BTA:		MSA / RSA:	
OPS DISTRICT:	CT-North	LAC(GSM):			
OPS ZONE:	NE_CT_N_HRFR_S_CS	LAC(UMTS):	05986		
RF DISTRICT:	NPO Triage	BSC(GSM):			
RF ZONE:	Hotseat	RNC(UMTS):	MDTWCTNICRBR06		
PARENT NAME(GSM):		MME POOL ID(LTE):	FF01		
PARENT NAME(UMTS):	MIDDLETOWN RNC06				

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:	
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:			

CGSA CALL SIGNS:	

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):		STRUCTURE TYPE:	GUYED
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	0.00	FCC ASR NUMBER:	NR
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	0.00		
LIGHTING TYPE:	NOT REQUIRED				

MARKET LOCATION 700 MHz Band:			
MARKET LOCATION 850 MHz Band:			
MARKET LOCATION 1900 MHz Band:			
MARKET LOCATION AWS Band:			
MARKET LOCATION WCS Band:			
MARKET LOCATION Future Band:			

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911						0				
SECTOR B						0				
SECTOR C						0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911						0				
SECTOR B						0				
SECTOR C						0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 6 - RBS GENERAL INFORMATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS								
RBS ID:	172517	246917	366838	568638								
CTS COMMON ID:	CTU1145	CTV1145	CTL01145	CTL00145R								
CELL ID / BCF:	CTU1145	CTU1145	CTL01145	CTL00145R								
BTA/TID:	184V	184U	184L	184L								
4-9 DIGIT SITE ID:	1145	1145	1145	0145								
COW OR TOY?:	No	No	No	No								
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED								
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL								
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL	INTERNAL								
BASE STATION TYPE:	BASE	OVERLAY	BASE	OVERLAY								
EQUIPMENT NAME:	NEWINGTON	NEWINGTON	NEWINGTON	NEWINGTON								
DISASTER PRIORITY:	2	0	3	3								

Section 6 - RBS GENERAL INFORMATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS								
RBS ID:	172517	246917	366838	568638								
CTS COMMON ID:	CTU1145	CTV1145	CTL01145	CTL00145R								
CELL ID / BCF:	CTU1145	CTU1145	CTL01145	CTL00145R								
BTA/TID:	184V	184U	184L	184L								
4-9 DIGIT SITE ID:	1145	1145	1145	0145								
COW OR TOY?:	No	No	No	No								
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED								
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL								
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL	INTERNAL								
BASE STATION TYPE:	BASE	OVERLAY	BASE	OVERLAY								
EQUIPMENT NAME:	NEWINGTON	NEWINGTON	NEWINGTON	NEWINGTON								
DISASTER PRIORITY:	2	0	3	3								

Section 7 - RBS SPECIFIC INFORMATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS								
RAC:												
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON	ERICSSON								
EQUIPMENT TYPE:	3206 INDOOR	3206 INDOOR	6601 INDOOR MU	6601 INDOOR MU								
BASEBAND CONFIGURATION:			1x6601 / 1x5216 / 1xXMU03									
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:			CT	CT								
AGPS:	Yes	Yes	Yes	Yes								
NODE B NUMBER:	0	0	1145	145								

Section 7 - RBS SPECIFIC INFORMATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS								
RAC:												
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON	ERICSSON								
EQUIPMENT TYPE:	3206 INDOOR	3206 INDOOR	6601 INDOOR MU	6601 INDOOR MU								
BASEBAND CONFIGURATION:			2x6601 / 2x5216 / 2xXMU03 + IDLe									
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:			CT	CT								
AGPS:	Yes	Yes	Yes	Yes								
NODE B NUMBER:	0	0	1145	145								

Section 8 - RBS/SECTOR ASSOCIATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS																
CTS Common ID	CTU1145	CTV1145	CTL01145	CTL00145R																
Soft Sector IDs	CTU11457	CTV11451	CTL01145_3A_1	CTL00145_3B_1																
	CTU11458	CTV11452	CTL01145_3B_1	CTL00145_7B_1																
	CTU11459	CTV11453	CTL01145_3C_1	CTL00145_9B_1																
		CTV1145A	CTL01145_7A_1																	
		CTV1145B	CTL01145_7B_1																	
		CTV1145C	CTL01145_7C_1																	
			CTL01145_8A_1																	
			CTL01145_8B_1																	
			CTL01145_8C_1																	
			CTL01145_9A_1																	
			CTL01145_9A_2																	
			CTL01145_9B_1																	
			CTL01145_9B_2																	
			CTL01145_9C_1																	
			CTL01145_9C_2																	

Section 8 - RBS/SECTOR ASSOCIATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	LTE 2ND RBS																
CTS Common ID	CTU1145	CTV1145	CTL01145	CTL00145R																
Soft Sector IDs	CTU11457	CTV11451	CTL01145_3A_1	CTL00145_2A_2																
	CTU11458	CTV11452	CTL01145_3B_1	CTL00145_2B_2																
	CTU11459	CTV11453	CTL01145_3C_1	CTL00145_2C_2																
			CTL01145_7A_1	CTL00145_7A_2_E																
			CTL01145_7B_1	CTL00145_7A_3_F																
			CTL01145_7C_1	CTL00145_7B_2_E																
			CTL01145_9A_1	CTL00145_7B_3_F																
			CTL01145_9A_2	CTL00145_7C_2_E																
			CTL01145_9B_1	CTL00145_7C_3_F																
			CTL01145_9B_2	CTL00145_8A_1																
			CTL01145_9C_1	CTL00145_8B_1																
			CTL01145_9C_2	CTL00145_8C_1																

Section 9 - SOFT SECTOR ID - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND WCS	LTE 3RD 1900	LTE 4TH 700	LTE 4TH 1900	LTE 5TH 700											
USEID (excluding Hard Sector)	59389.850.3G.1	59389.1900.3G.1	59389.850.3G.2																						
SECTOR A **SOFT SECTOR ID**	CTV11451	CTU11457	CTV1145A	CTL01145_7A_1	CTL01145_8A_1	CTL01145_9A_1		CTL01145_3A_1		CTL01145_9A_2															
SECTOR B	CTV11452	CTU11458	CTV1145B	CTL01145_7B_1	CTL01145_8B_1	CTL01145_9B_1		CTL01145_3B_1	CTL00145_7B_1	CTL01145_9B_2	CTL00145_3B_1	CTL00145_9B_1													
SECTOR C	CTV11453	CTU11459	CTV1145C	CTL01145_7C_1	CTL01145_8C_1	CTL01145_9C_1		CTL01145_3C_1		CTL01145_9C_2															
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - SOFT SECTOR ID - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND WCS	LTE 3RD 1900	LTE 4TH 700	LTE 4TH 1900	LTE 5TH 700											
USEID (excluding Hard Sector)	59389.850.3G.1	59389.1900.3G.1																							
SECTOR A **SOFT SECTOR ID**	CTV11451	CTU11457		CTL01145_7A_1	CTL00145_8A_1	CTL01145_9A_1	CTL00145_2A_2	CTL01145_3A_1					CTL00145_7A_2_E	CTL01145_9A_2	CTL00145_7A_3_F											
SECTOR B	CTV11452	CTU11458		CTL01145_7B_1	CTL00145_8B_1	CTL01145_9B_1	CTL00145_2B_2	CTL01145_3B_1					CTL00145_7B_2_E	CTL01145_9B_2	CTL00145_7B_3_F											
SECTOR C	CTV11453	CTU11459		CTL01145_7C_1	CTL00145_8C_1	CTL01145_9C_1	CTL00145_2C_2	CTL01145_3C_1					CTL00145_7C_2_E	CTL01145_9C_2	CTL00145_7C_3_F											
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - Cell Number - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND WCS	LTE 3RD 1900	LTE 4TH 700	LTE 4TH 1900	LTE 5TH 700											
USEID (excluding Hard Sector)	59389.850.3G.1	59389.1900.3G.1	59389.850.3G.2																						
SECTOR A **CELL NUMBER**				15	1	8		149		178															
SECTOR B				16	2	9		150	16	179	150	9													
SECTOR C				17	3	10		151		180															
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - Cell Number - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND WCS	LTE 3RD 1900	LTE 4TH 700	LTE 4TH 1900	LTE 5TH 700											
USEID (excluding Hard Sector)	59389.850.3G.1	59389.1900.3G.1																							
SECTOR A **CELL NUMBER**				15	1	8	22	149					185	178	171											
SECTOR B				16	2	9	23	150					186	179	172											
SECTOR C				17	3	10	24	151					187	180	173											
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 10 - CID/SAC - existing

		UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND WCS	LTE 3RD 1900	LTE 4TH 700	LTE 4TH 1900	LTE 5TH 700												
SECTOR A	CID/SAC	11451	11457	01451																								
SECTOR B		11452	11458	01452																								
SECTOR C		11453	11459	01453																								
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 10 - CID/SAC - final

		UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND WCS	LTE 3RD 1900	LTE 4TH 700	LTE 4TH 1900	LTE 5TH 700												
SECTOR A	CID/SAC	11451	11457																									
SECTOR B		11452	11458																									
SECTOR C		11453	11459																									
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		QS66512-2			
ANTENNA VENDOR	Powerwave	CCI Products		Quintel			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X12X9.6			
ANTENNA WEIGHT	35	73		111			
AZIMUTH	143	90		90			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	120	120		120			
ANTENNA TIP HEIGHT	122	123		123			
MECHANICAL DOWNTILT	3	0		0			
FEEDER AMOUNT	2	Fiber + 2 Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave 7020	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)		3 DC/Fiber Squid (1) + APTDC-BDFDM-DB (2)		1 DC/Fiber Squid			
DIPLEXER (QTY/MODEL)	2 Kathrein / 782-10250	4 CCI Triplexer -TPX-070821					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Powerwave 7070	LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)	1 Powerwave LGP12104						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Pwav 1001983 (1) & 1001940 (1)					
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		59389.A.850.3G.1	CTV11451	CTV11451		UMTS 850	7770.00.850.06	13.5	143	6	None	RFS 7/8 (850)	135.03						273.53			
	PORT 2		59389.A.850.3G.2	CTV11451	CTV1145A		UMTS 850	7770.00.850.06	13.5	143	6	Bottom	RFS 7/8 (850)	135.03						273.53			
	PORT 3		59389.A.1900.3G.1	CTU11457	CTU11457		UMTS 1900	7770.00.1900.03	15.5	143	3	None	RFS 7/8 (850)	135.03						273.53			
ANTENNA POSITION 2	PORT 2		59389.A.850.4G.1	CTL01145_8A_1	CTL01145_8A_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	90	2	BOTTOM	RFS 7/8 (850)	135.03						1000			
	PORT 3		59389.A.WCS.4G.1	CTL01145_3A_1	CTL01145_3A_1		LTE WCS	OPA-65R-LCUU-	17.8	90	3	Top	FIBER	0						1227.4392			

								H6_2350MHz_03DT															
ANTENNA POSITION 4	**PORT 1**		59389.A.700.4G.1	CTL01145_7A_1	CTL01145_7A_1		LTE 700	QS66512-2_719MHz_02DT	14	90	2	Top	FIBER	0						1119.4378			
	PORT 3		59389.A.1900.4G.1	CTL01145_9A_1	CTL01145_9A_1		LTE 1900	QS66512-2_1930MHz_02DT	17	90	2	Top	FIBER	0						2182.7299			
	PORT 4		59389.A.1900.4G.2	CTL01145_9A_2	CTL01145_9A_2		LTE 1900	QS66512-2_1930MHz_02DT	17	90	2	Top	FIBER	0						2182.7299			

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		OPA-65R-LCUU-H6				QS66512-2							
ANTENNA VENDOR	Powerwave		CCI Products				Quintel							
ANTENNA SIZE (H x W x D)	55X11X5		72X14.8X7.4				72X12X9.6							
ANTENNA WEIGHT	35		73				111							
AZIMUTH	263		220				220							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	120		120				120							
ANTENNA TIP HEIGHT	122		123				123							
MECHANICAL DOWNTILT	2		0				0							
FEEDER AMOUNT	2		Fiber + 2 Coax											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020		Built in				Built in						
SURGE ARRESTOR (QTY/MODEL)			2	APTDC-BDFDM-DB										
DIPLEXER (QTY/MODEL)	2	Kathrein / 782-10250	4	CCI Triplexer -TPX-070821										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)				LTE RRH				LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Pwav LGP21401 Single 1900 w/ 850BP (850)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)			1	RRUS-11										
RRH - 1900 band (QTY/MODEL)							1	RRUS-32 B2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	RRUS-32										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)			2	Pwav 1001983 (1) & 1001940 (1)										
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		59389.B.850.3G.1	CTV11452	CTV11452		UMTS 850	7770.00.850.08	13.5	263	8	None	RFS 7/8 (850)	135.03						273.53			
	PORT 2		59389.B.850.3G.2	CTV11452	CTV1145B		UMTS 850	7770.00.850.08	13.5	263	8	Bottom	RFS 7/8 (850)	135.03						273.53			
	PORT 3		59389.B.1900.3G.1	CTU11458	CTU11458		UMTS 1900	7770.00.1900.03	15.5	263	3	None	RFS 7/8 (850)	135.03						273.53			
ANTENNA POSITION 2	PORT 2		59389.B.850.4G.1	CTL01145_8B_1	CTL01145_8B_1		LTE 850	OPA-65R-LCUU-H6_849MHz_03DT	14.6	220	3	BOTTOM	RFS 7/8 (850)	135.03						1000			
	PORT 3		59389.B.WCS.4G.1	CTL01145_3B_1	CTL01145_3B_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_03DT	17.8	220	3	Top	FIBER	0						1227.4392			

ANTENNA POSITION 4	**PORT 1**		59389.B.700.4G.1	CTL01145_7B_1	CTL01145_7B_1		LTE 700	QS66512-2_719MHz_03DT	13.9	220	3	Top	FIBER	0						1119.4378			
	PORT 3		59389.B.1900.4G.1	CTL01145_9B_1	CTL01145_9B_1		LTE 1900	QS66512-2_1930MHz_04DT	17.4	220	4	Top	FIBER	0						2182.7299			
	PORT 4		59389.B.1900.4G.2	CTL01145_9B_2	CTL01145_9B_2		LTE 1900	QS66512-2_1930MHz_04DT	17.4	220	4	Top	FIBER	0						2182.7299			

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6		QS66512-2			
ANTENNA VENDOR	Powerwave	CCI Products		Quintel			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4		72X12X9.6			
ANTENNA WEIGHT	35	73		111			
AZIMUTH	23	340		340			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	120	120		120			
ANTENNA TIP HEIGHT	122	123		123			
MECHANICAL DOWNTILT	4	0		0			
FEEDER AMOUNT	2	Fiber + 2 Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave 7020	Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)	2 Kathrein / 782-10250	4 CCI Triplexer -TPX-070821					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)		1 RRUS-11					
RRH - 1900 band (QTY/MODEL)				1 RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Pwav 1001983 (1) & 1001940 (1)					
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		59389.C.850.3G.1	CTV11453	CTV11453		UMTS 850	7770.00.850.00	13.5	23	0	None	RFS 7/8 (850)	135.03						273.53			
	PORT 2		59389.C.850.3G.2	CTV11453	CTV1145C		UMTS 850	7770.00.850.00	13.5	23	0	Bottom	RFS 7/8 (850)	135.03						273.53			
	PORT 3		59389.C.1900.3G.1	CTU11459	CTU11459		UMTS 1900	7770.00.1900.03	15.5	23	3	None	RFS 7/8 (850)	135.03						273.53			
ANTENNA POSITION 2	PORT 2		59389.C.850.4G.1	CTL01145_8C_1	CTL01145_8C_1		LTE 850	OPA-65R-LCUU-H6_849MHz_10DT	14.3	340	10	BOTTOM	RFS 7/8 (850)	135.03						1000			
	PORT 3		59389.C.WCS.4G.1	CTL01145_3C_1	CTL01145_3C_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_07DT	17.7	340	7	Top	FIBER	0						1227.4392			

ANTENNA POSITION 4	**PORT 1**		59389.C.700.4G.1	CTL01145_7C_1	CTL01145_7C_1		LTE 700	QS66512-2_719MHz_11DT	13.5	340	11	Top	FIBER	0						1119.4378			
	PORT 3		59389.C.1900.4G.1	CTL01145_9C_1	CTL01145_9C_1		LTE 1900	QS66512-2_1930MHz_02DT	17	340	2	Top	FIBER	0						2182.7299			
	PORT 4		59389.C.1900.4G.2	CTL01145_9C_2	CTL01145_9C_2		LTE 1900	QS66512-2_1930MHz_02DT	17	340	2	Top	FIBER	0						2182.7299			

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?		Yes					
ANTENNA MAKE - MODEL			800-10965				
ANTENNA VENDOR			Kathrien				
ANTENNA SIZE (H x W x D)			78.7X20X6.9				
ANTENNA WEIGHT			108.6				
AZIMUTH			90				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			120				
ANTENNA TIP HEIGHT			123				
MECHANICAL DOWNTILT			0				
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB	1	DC Squid			
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2	1	B14 4478			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)			1	RRUS-32 B66			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Add LTE 700 D-E ,Bottom Mounted On ANT/POS2 ,Along with 2xSurge Arrestors - Add Octo port pos 3.// Add LTE 700 B14 4478// ADD LTE AWS RRUS-32 B66// Add DC only squid.// Add 2nd 5216 with XMU and IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU-5216-XMU-IDLe						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1		59389.A.700.4G.4	CTL00145_7A_2_E	CTL00145_7A_2_E		LTE 700	OPA-65R-LCUU-H6_719MHz_02DT	14	90	2	BOTTOM	RFS 7/8	135.03						1475.7065		3	
ANTENNA POSITION 3	PORT 1		59389.A.700.4G.5	CTL00145_7A_3_F	CTL00145_7A_3_F		LTE 700	80010965_777MHz_02DT	15.3	90	2	TOP	FIBER	0						2951.413		5	
	PORT 3		59389.A.AWS.4G.4	CTL00145_2A_2	CTL00145_2A_2		LTE AWS	80010965_2133MHz_04DT	18.6	90	4	TOP	FIBER	0						5070.2572		6	

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?		Yes					
ANTENNA MAKE - MODEL			800-10965				
ANTENNA VENDOR			Kathrien				
ANTENNA SIZE (H x W x D)			78.7X20X6.9				
ANTENNA WEIGHT			108.6				
AZIMUTH			220				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			120				
ANTENNA TIP HEIGHT			123				
MECHANICAL DOWNTILT			0				
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Built in		Built in			
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2	1	B14 4478			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)			1	RRUS-32 B66			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Add LTE 700 D-E ,Bottom Mounted On ANT/POS2 ,Along with 2xSurge Arrestors - Add Octo port pos 3.// Add LTE 700 B14 4478// ADD LTE AWS RRUS-32 B66// Add DC only squid.// Add 2nd 5216 with XMU and IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU-5216-XMU-IDLe						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1		59389.B.700.4G.4	CTL00145_7B_2_E	CTL00145_7B_2_E		LTE 700	OPA-65R-LCUU-H6_719MHz_03DT	13.9	220	3	BOTTOM	RFS 7/8	135.03						1475.7065		11	
ANTENNA POSITION 3	PORT 1		59389.B.700.4G.5	CTL00145_7B_3_F	CTL00145_7B_3_F		LTE 700	80010965_777MHz_03DT	15.3	220	3	TOP	FIBER	0						2951.413		13	
	PORT 3		59389.B.AWS.4G.4	CTL00145_2B_2	CTL00145_2B_2		LTE AWS	80010965_2133MHz_04DT	18.6	220	4	TOP	FIBER	0						5070.2572		14	

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?		Yes					
ANTENNA MAKE - MODEL			800-10965				
ANTENNA VENDOR			Kathrien				
ANTENNA SIZE (H x W x D)			78.7X20X6.9				
ANTENNA WEIGHT			108.6				
AZIMUTH			340				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)			120				
ANTENNA TIP HEIGHT			123				
MECHANICAL DOWNTILT			0				
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)		Built in	Built in				
SURGE ARRESTOR (QTY/MODEL)		2 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH	LTE RRH				
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)		1 RRUS-E2	1 B14 4478				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)			1 RRUS-32 B66				
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Add LTE 700 D-E ,Bottom Mounted On ANT/POS2 ,Along with 2xSurge Arrestors - Add Octo port pos 3.// Add LTE 700 B14 4478// ADD LTE AWS RRUS-32 B66// Add DC only squid.// Add 2nd 5216 with XMU and IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU-5216-XMU-IDLe						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1		59389.C.700.4G.4	CTL00145_7C_2_E	CTL00145_7C_2_E		LTE 700	OPA-65R-LCUU-H6_719MHz_08DT	13.6	340	8	BOTTOM	RFS 7/8	135.03						1475.7065		19	
ANTENNA POSITION 3	PORT 1		59389.C.700.4G.5	CTL00145_7C_3_F	CTL00145_7C_3_F		LTE 700	80010965_777MHz_10DT	15.2	340	10	TOP	FIBER	0						2951.413		21	
	PORT 3		59389.C.AWS.4G.4	CTL00145_2C_2	CTL00145_2C_2		LTE AWS	80010965_2133MHz_04DT	18.6	340	4	TOP	FIBER	0						5070.2572		22	

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6	800-10965	QS66512-2			
ANTENNA VENDOR	POWERWAVE	CCI Products	Kathrien	Quintel			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4	78.7X20X6.9	72X12X9.6			
ANTENNA WEIGHT	35	73	108.6	111			
AZIMUTH	143	90	90	90			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	120	120	120	120			
ANTENNA TIP HEIGHT	122	123	123	123			
MECHANICAL DOWNTILT	3	0	0	0			
FEEDER AMOUNT	2	Fiber + 2 Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave 7020	Built in	Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)	5 DC/Fiber Squid (1) +APTDC-BDFDM-DB (4)	1 DC Squid	1 DC/Fiber Squid				
DIPLEXER (QTY/MODEL)	2 Kathrein / 782-10250	4 CCI Triplexer -TPX-070821					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Powerwave 7070	LTE RRH	LTE RRH	LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)	1 Powerwave LGP12104						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-E2	1 B14 4478	1 RRUS-11				
RRH - 850 band (QTY/MODEL)	1 RRUS-11						
RRH - 1900 band (QTY/MODEL)			1 RRUS-32 B2				
RRH - AWS band (QTY/MODEL)		1 RRUS-32 B66					
RRH - WCS band (QTY/MODEL)	1 RRUS-32						
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	2 Pwav 1001983 (1) & 1001940 (1)						
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Add LTE 700 D-E ,Bottom Mounted On ANT/POS2 ,Along with 2xSurge Arrestors - Add Octo port pos 3.// Add LTE 700 B14 4478// ADD LTE AWS RRUS-32 B66// Add DC only squid.// Add 2nd 5216 with XMU and IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU-5216-XMU-IDLe						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	59389.A.850.3G.1	59389.A.850.3G.1	CTV11451	CTV11451		UMTS 850	7770.00.850.06	13.5	143	6	None	RFS 7/8 (850)	135.03						273.53		1	
	PORT 3	59389.A.1900.3G.1	59389.A.1900.3G.1	CTU11457	CTU11457		UMTS 1900	7770.00.1900.03	15.5	143	3	None	RFS 7/8	135.03						273.53		2	
ANTENNA POSITION 2	PORT 1	59389.A.700.4G.4	59389.A.700.4G.4	CTL00145_7A_2_E	CTL00145_7A_2_E		LTE 700	OPA-65R-LCUU-H6_719MHz_02DT	14	90	2	BOTTOM	RFS 7/8	135.03						1475.7065		3	
	PORT 2	59389.A.850.4G.2	59389.A.850.4G.1	CTL00145_8A_1	CTL00145_8A_1		LTE 850	OPA-65R-LCUU-H6_849MHz_02DT	14.6	90	2	BOTTOM	RFS 7/8	135.03						1000		3	

	PORT 3	59389.A.WCS.4G.1	59389.A.WCS.4G.1	CTL01145_3A_1	CTL01145_3A_1		LTE WCS	OPA-65R-LCUU-H6_2350MHz_03DT	17.8	90	3	TOP	FIBER	0						1285.2866		4	
ANTENNA POSITION 3	**PORT 1**	59389.A.700.4G.5	59389.A.700.4G.5	CTL00145_7A_3_F	CTL00145_7A_3_F		LTE 700	80010965_777MHz_02DT	15.3	90	2	TOP	FIBER	0						2951.413		5	
	PORT 3	59389.A.AWS.4G.1	59389.A.AWS.4G.4	CTL00145_2A_2	CTL00145_2A_2		LTE AWS	80010965_2133MHz_04DT	18.6	90	4	TOP	FIBER	0						5070.2572		6	
ANTENNA POSITION 4	**PORT 1**	59389.A.700.4G.1	59389.A.700.4G.1	CTL01145_7A_1	CTL01145_7A_1		LTE 700	QS66512-2_722MHz_02DT	13.6	90	2	TOP	FIBER	0						1475.7065		7	
	PORT 3	59389.A.1900.4G.1	59389.A.1900.4G.1	CTL01145_9A_1	CTL01145_9A_1		LTE 1900	QS66512-2_1930MHz_02DT	16	90	2	TOP	FIBER	0						4842.058		8	
	PORT 4	59389.A.1900.4G.3	59389.A.1900.4G.2	CTL01145_9A_2	CTL01145_9A_2		LTE 1900	QS66512-2_1930MHz_02DT	16	90	2	TOP	FIBER	0						4842.058		8	

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6	800-10965	QS66512-2			
ANTENNA VENDOR	POWERWAVE	CCI Products	Kathrien	Quintel			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4	78.7X20X6.9	72X12X9.6			
ANTENNA WEIGHT	35	73	108.6	111			
AZIMUTH	263	220	220	220			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	120	120	120	120			
ANTENNA TIP HEIGHT	122	123	123	123			
MECHANICAL DOWNTILT	2	0	0	0			
FEEDER AMOUNT	2	Fiber + 2 Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave 7020	Built in	Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)		4 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)	2 Kathrein / 782-10250	4 CCI Triplexer -TPX-070821					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH	LTE RRH	LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-E2	1 B14 4478	1 RRUS-11				
RRH - 850 band (QTY/MODEL)	1 RRUS-11						
RRH - 1900 band (QTY/MODEL)			1 RRUS-32 B2				
RRH - AWS band (QTY/MODEL)		1 RRUS-32 B66					
RRH - WCS band (QTY/MODEL)	1 RRUS-32						
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	2 Pwav 1001983 (1) & 1001940 (1)						
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Add LTE 700 D-E ,Bottom Mounted On ANT/POS2 ,Along with 2xSurge Arrestors - Add Octo port pos 3.// Add LTE 700 B14 4478// ADD LTE AWS RRUS-32 B66// Add DC only squid.// Add 2nd 5216 with XMU and IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU-5216-XMU-IDLe						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	59389.B.850.3G.1	59389.B.850.3G.1	CTV11452	CTV11452		UMTS 850	7770.00.850.08	13.5	263	8	None	RFS 7/8	135.03						273.53		9	
	PORT 3	59389.B.1900.3G.1	59389.B.1900.3G.1	CTU11458	CTU11458		UMTS 1900	7770.00.1900.03	15.5	263	3	None	RFS 7/8	135.03						273.53		10	
ANTENNA POSITION 2	PORT 1	59389.B.700.4G.4	59389.B.700.4G.4	CTL00145_7B_2_E	CTL00145_7B_2_E		LTE 700	OPA-65R-LCUU-H6_719MHz_03DT	13.9	220	3	BOTTOM	RFS 7/8	135.03						1475.7065		11	
	PORT 2	59389.B.850.4G.2	59389.B.850.4G.1	CTL00145_8B_1	CTL00145_8B_1		LTE 850	OPA-65R-LCUU-H6_849MHz_03DT	14.6	220	3	BOTTOM	RFS 7/8	135.03						1000		11	
	PORT 3	59389.B.WCS.4G.1	59389.B.WCS.4G.1	CTL01145_3B_1	CTL01145_3B_1		LTE WCS	OPA-65R-LCUU-	17.8	220	3	TOP	FIBER	0						1285.2866		12	

								H6_2350MHz_03DT															
ANTENNA POSITION 3	**PORT 1**	59389.B.700.4G.5	59389.B.700.4G.5	CTL00145_7B_3_F	CTL00145_7B_3_F		LTE 700	80010965_777MHz_03DT	15.3	220	3	TOP	FIBER	0						2951.413		13	
	PORT 3	59389.B.AWS.4G.1	59389.B.AWS.4G.4	CTL00145_2B_2	CTL00145_2B_2		LTE AWS	80010965_2133MHz_04DT	18.6	220	4	TOP	FIBER	0						5070.2572		14	
ANTENNA POSITION 4	**PORT 1**	59389.B.700.4G.1	59389.B.700.4G.1	CTL01145_7B_1	CTL01145_7B_1		LTE 700	QS66512-2_722MHz_03DT	13.5	220	3	TOP	FIBER	0						1475.7065		15	
	PORT 3	59389.B.1900.4G.1	59389.B.1900.4G.1	CTL01145_9B_1	CTL01145_9B_1		LTE 1900	QS66512-2_1930MHz_04DT	15.6	220	4	TOP	FIBER	0						4842.058		16	
	PORT 4	59389.B.1900.4G.3	59389.B.1900.4G.2	CTL01145_9B_2	CTL01145_9B_2		LTE 1900	QS66512-2_1930MHz_04DT	15.6	220	4	TOP	FIBER	0						4842.058		16	

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	OPA-65R-LCUU-H6	800-10965	QS66512-2			
ANTENNA VENDOR	POWERWAVE	CCI Products	Kathrien	Quintel			
ANTENNA SIZE (H x W x D)	55X11X5	72X14.8X7.4	78.7X20X6.9	72X12X9.6			
ANTENNA WEIGHT	35	73	108.6	111			
AZIMUTH	23	340	340	340			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	120	120	120	120			
ANTENNA TIP HEIGHT	122	123	123	123			
MECHANICAL DOWNTILT	4	0	0	0			
FEEDER AMOUNT	2	Fiber + 2 Coax					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Powerwave 7020	Built in	Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)		4 APTDC-BDFDM-DB					
DIPLEXER (QTY/MODEL)	2 Kathrein / 782-10250	4 CCI Triplexer -TPX-070821					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		LTE RRH	LTE RRH	LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Pwav LGP21401 Single 1900 w/ 850BP (850)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 RRUS-E2	1 B14 4478	1 RRUS-11				
RRH - 850 band (QTY/MODEL)	1 RRUS-11						
RRH - 1900 band (QTY/MODEL)			1 RRUS-32 B2				
RRH - AWS band (QTY/MODEL)		1 RRUS-32 B66					
RRH - WCS band (QTY/MODEL)	1 RRUS-32						
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	2 Pwav 1001983 (1) & 1001940 (1)						
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Add LTE 700 D-E ,Bottom Mounted On ANT/POS2 ,Along with 2xSurge Arrestors - Add Octo port pos 3.// Add LTE 700 B14 4478// ADD LTE AWS RRUS-32 B66// Add DC only squid.// Add 2nd 5216 with XMU and IDLe.						
Local Market Note 2							
Local Market Note 3	5216-XMU-5216-XMU-IDLe						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	59389.C.850.3G.1	59389.C.850.3G.1	CTV11453	CTV11453		UMTS 850	7770.00.850.00	13.5	23	0	None	RFS 7/8	135.03						273.53		17	
	PORT 3	59389.C.1900.3G.1	59389.C.1900.3G.1	CTU11459	CTU11459		UMTS 1900	7770.00.1900.03	15.5	23	3	None	RFS 7/8	135.03						273.53		18	
ANTENNA POSITION 2	PORT 1	59389.C.700.4G.4	59389.C.700.4G.4	CTL00145_7C_2_E	CTL00145_7C_2_E		LTE 700	OPA-65R-LCUU-H6_719MHz_08DT	13.6	340	8	BOTTOM	RFS 7/8	135.03						1475.7065		19	
	PORT 2	59389.C.850.4G.2	59389.C.850.4G.1	CTL00145_8C_1	CTL00145_8C_1		LTE 850	OPA-65R-LCUU-H6_849MHz_10DT	14.3	340	10	BOTTOM	RFS 7/8	135.03						1000		19	
	PORT 3	59389.C.WCS.4G.1	59389.C.WCS.4G.1	CTL01145_3C_1	CTL01145_3C_1		LTE WCS	OPA-65R-LCUU-	17.7	340	7	TOP	FIBER	0						1285.2866		20	

								H6_2350MHz_07DT															
ANTENNA POSITION 3	**PORT 1**	59389.C.700.4G.5	59389.C.700.4G.5	CTL00145_7C_3_F	CTL00145_7C_3_F		LTE 700	80010965_777MHz_10DT	15.2	340	10	TOP	FIBER	0						2951.413		21	
	PORT 3	59389.C.AWS.4G.1	59389.C.AWS.4G.4	CTL00145_2C_2	CTL00145_2C_2		LTE AWS	80010965_2133MHz_04DT	18.6	340	4	TOP	FIBER	0						5070.2572		22	
ANTENNA POSITION 4	**PORT 1**	59389.C.700.4G.1	59389.C.700.4G.1	CTL01145_7C_1	CTL01145_7C_1		LTE 700	QS66512-2_722MHz_10DT	13.1	340	10	TOP	FIBER	0						1475.7065		23	
	PORT 3	59389.C.1900.4G.1	59389.C.1900.4G.1	CTL01145_9C_1	CTL01145_9C_1		LTE 1900	QS66512-2_1930MHz_02DT	16	340	2	TOP	FIBER	0						4842.058		24	
	PORT 4	59389.C.1900.4G.4	59389.C.1900.4G.2	CTL01145_9C_2	CTL01145_9C_2		LTE 1900	QS66512-2_1930MHz_02DT	16	340	2	TOP	FIBER	0						4842.058		24	

Diagram - Sector A | Diagram File Name - CT1145_A_B_C_7C_Rev2.vsd

Atoll Site Name - CTL01145 | Location Name - NEWINGTON | Market - CONNECTICUT | Market Cluster - NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)

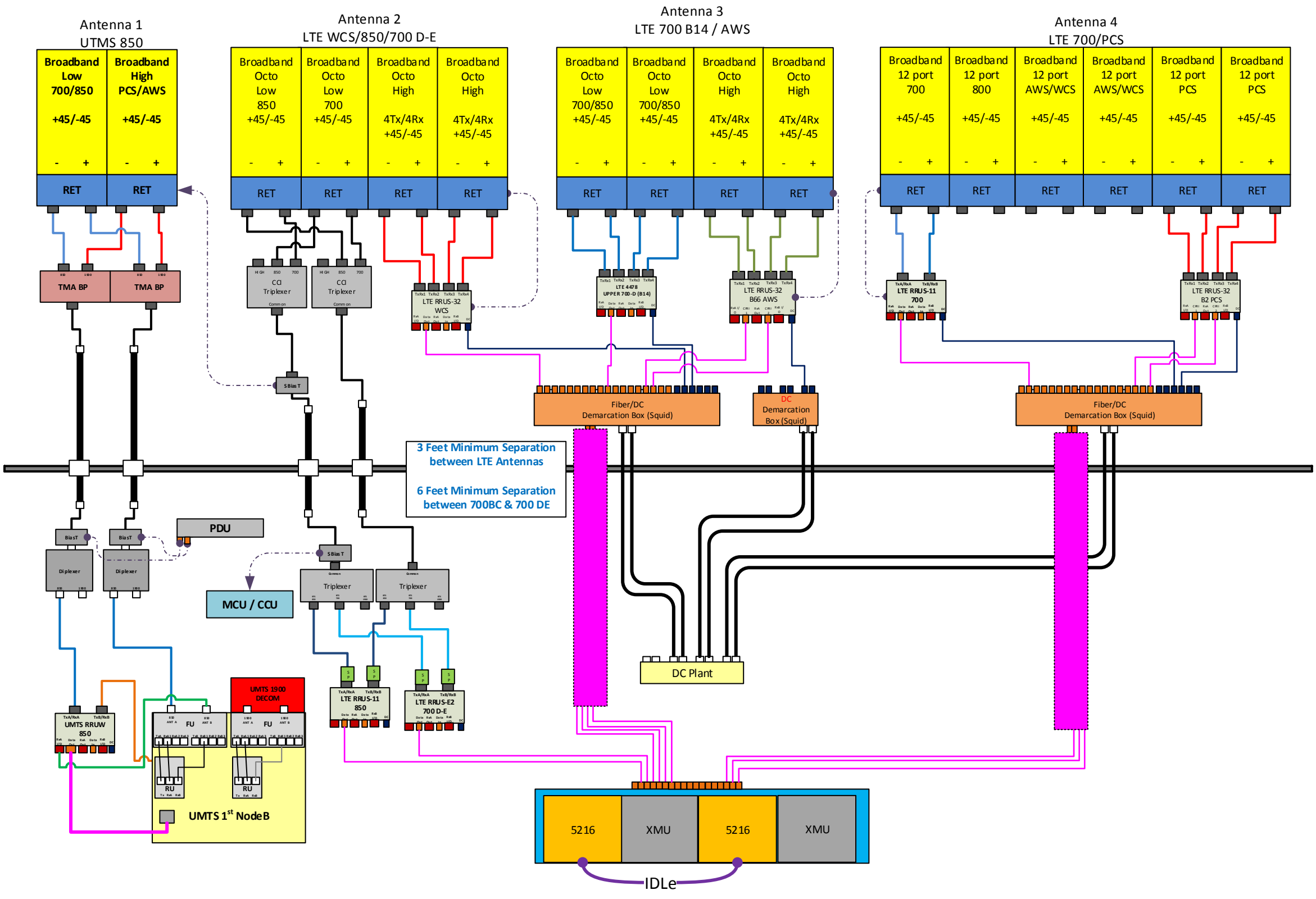


Diagram - Sector B | Diagram File Name - CT1145_A_B_C_7C_Rev2.vsd

Atoll Site Name - CTL01145 | Location Name - NEWINGTON | Market - CONNECTICUT | Market Cluster - NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)

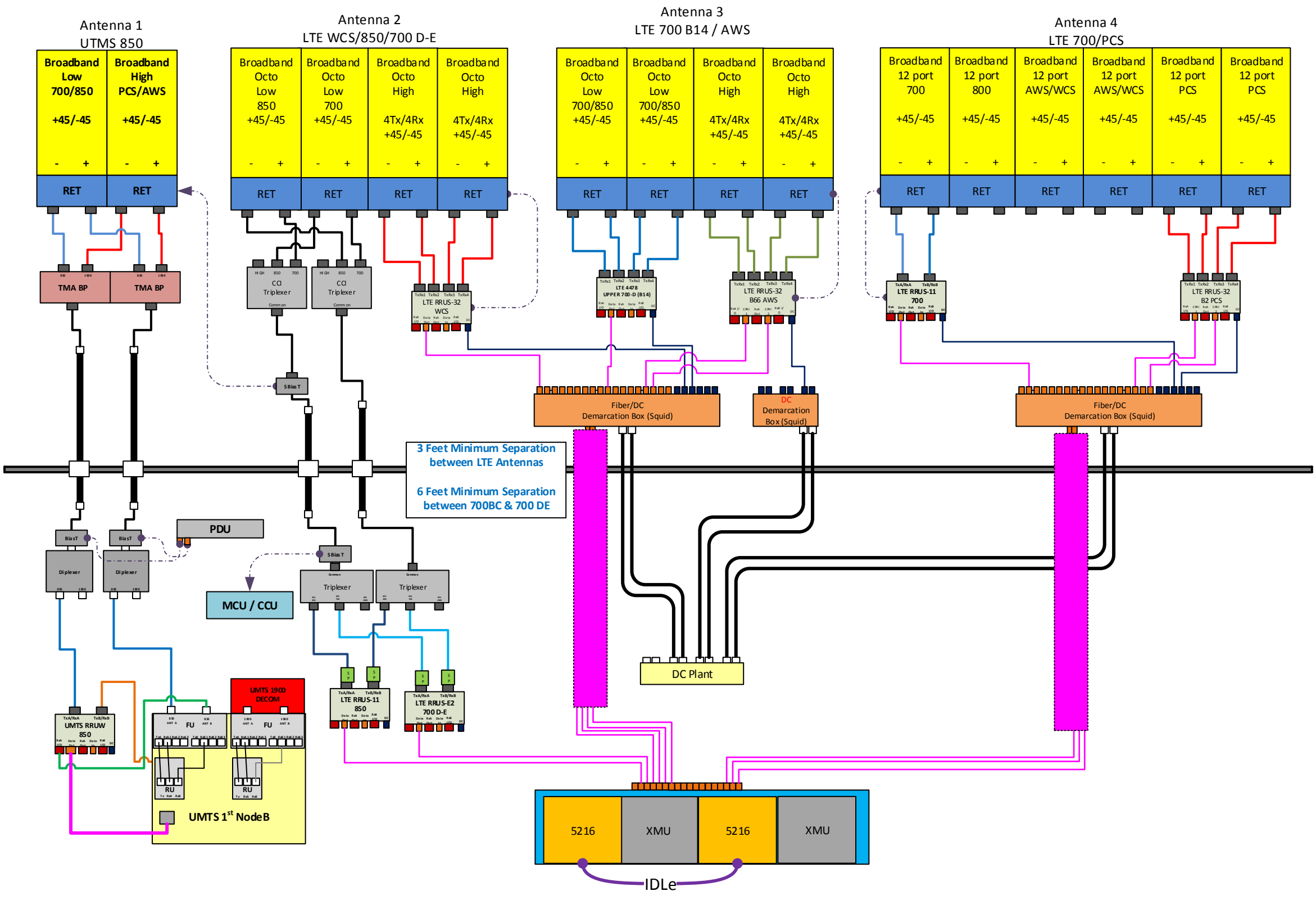
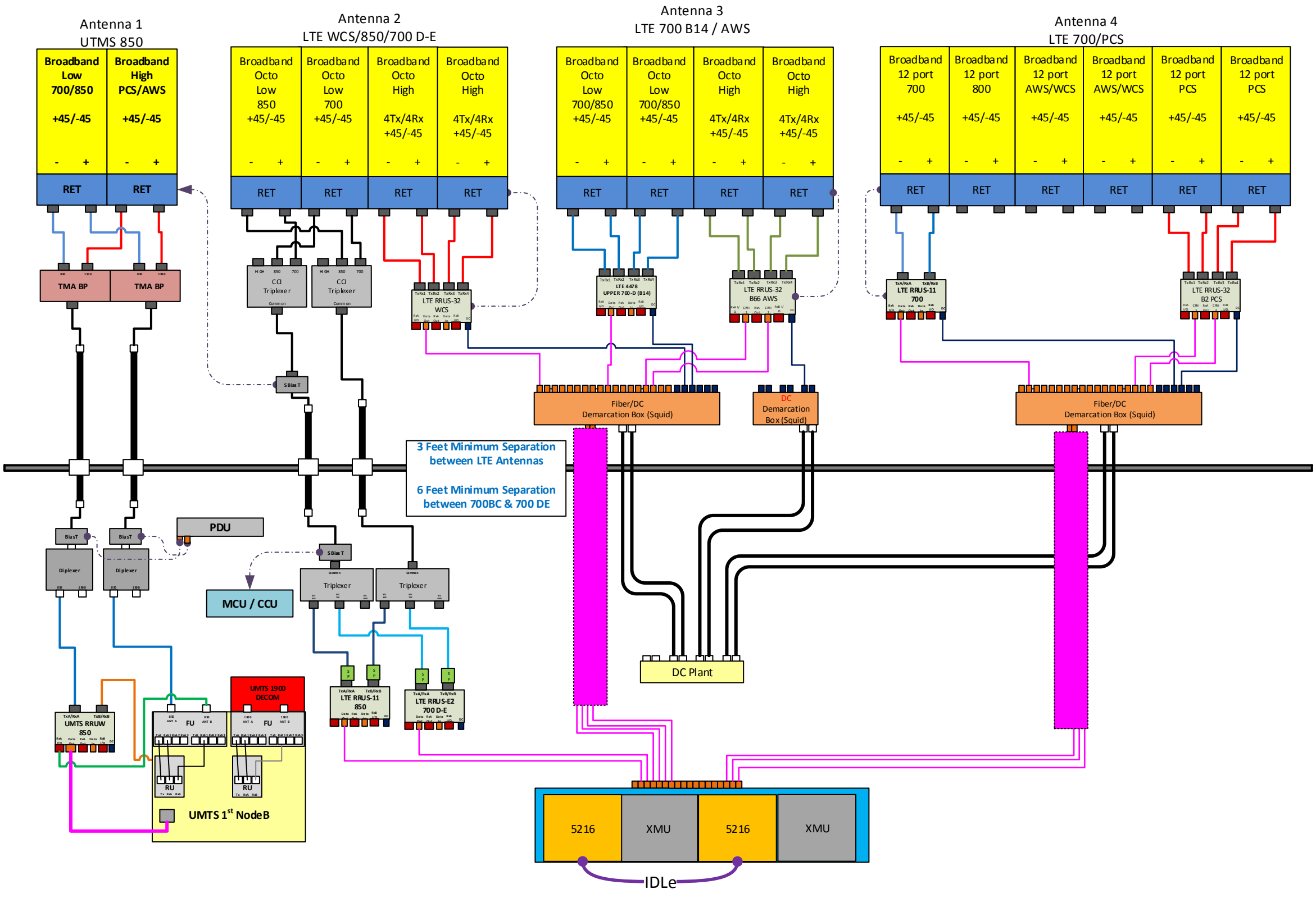


Diagram - Sector C | Diagram File Name - CT1145_A_B_C_7C_Rev2.vsd

Atoll Site Name - CTL01145 | Location Name - NEWINGTON | Market - CONNECTICUT | Market Cluster - NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)



NOTES			
Date Time (Eastern)	Version	ATTUID	Note
9/22/2017 11:40:21 AM	2.00	rx855w	RFDS VERSION incremented.
1/17/2018 10:24:15 AM	3.00	om636a	RFDS VERSION incremented.
1/17/2018 10:33:25 AM	3.00	om636a	RRUS-11 on 700 D-E is a typo. It should be RRUS-E2. Fixed this typo. Hope this will resolve the confusion.

WORKFLOW SUMMARY							
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments	PACE Status
05/30/2017	Preliminary In Progress	om636a	Preliminary Submitted for Approval	RC475S	Promote	LTE Preliminary RFDS	NER-RCTB-17-03661 PENDING 05/30/2017 4:05:32 PM NER-RCTB-17-00926 FAILURE 05/30/2017 4:05:32 PM
07/12/2017	Preliminary Submitted for Approval	RC475S	Preliminary Approved	DC5778	Promote		
08/03/2017	Preliminary Approved	DC5778	Preliminary In Progress	rx855w	Pull Back	to update RFDS as per scoping session held on "08-3-2017"	
08/14/2017	Preliminary In Progress	rx855w	Preliminary Submitted for Approval	RC475S	Promote	PRELIMINARY RFDS	NER-RCTB-17-03661 MRCTB024103 SUCCESS 08/14/2017 2:22:17 PM NER-RCTB-17-00926 FAILURE 08/14/2017 2:22:17 PM
08/14/2017	Preliminary Submitted for Approval	RC475S	Preliminary Approved	DC5778	Promote		
08/17/2017	Preliminary Approved	DC5778	Final RF Approval	OM636A	Promote	Please promote to final	
08/24/2017	Final RF Approval	OM636A	Final Approved	DC5778	Promote	Final RF Approved RFDS. Please demote if any errors found	NER-RCTB-17-00926 MRCTB022772 SUCCESS 08/24/2017 3:09:03 PM NER-RCTB-17-03661 MRCTB024103 SUCCESS 08/24/2017 3:09:03 PM
09/14/2017	Final Approved	DC5778	Final RF Approval	rx855w	Pull Back	Update RFDS for adding FirstNet carrier	
10/06/2017	Final RF Approval	rx855w	Final RF Approval	MH705R	Reassign		
10/10/2017	Final RF Approval	MH705R	Final Approved	DC5778	Promote	LTE RFDS updated with B14 SOW	NER-RCTB-17-03661 FAILURE 10/10/2017 11:26:07 AM NER-RCTB-17-00926 FAILURE 10/10/2017 11:26:07 AM NER-RCTB-17-06790 PENDING 10/10/2017 11:26:07 AM
01/12/2018	Final Approved	DC5778	Final Modification Recommended	OM636A	Demote	Refresh RFDS to add 7C PACE ID and Sections 16A-16C show an addition of (3) RRUS-E2s, however the plumbing diagram does not show where the E2s are being added, whether it is on the tower or on the ground. The plumbing shows also shows (2) RRUS-11s on the ground, but sections 15-17 do not show (3) RRUS-11s. RF is going to need to clarify these radios.	
01/17/2018	Final Modification Recommended	OM636A	Final Approved	DC5778	Promote	RRUS-11 on 700 D-E is a typo. It should be RRUS-E2. Fixed this typo. Hope this will resolve the confusion.	

8-Port Antenna	R1	R2	Y1	Y2
Frequency Range	698–960	698–960	1695–2690	1695–2690
Dual Polarization	X	X	X	X
HPBW	65°	65°	65°	65°
Adjust. Electr. DT	2°–12°	2°–12°	2.5°–12°	2.5°–12°

set by *FlexRET*

KATHREIN

AISG Antenna Interface Standards Group

8-Port Antenna 698–960/698–960/1695–2690/1695–2690 65°/65°/65°/65° 15.5/15.5/18/18dBi 2°–12°/2°–12°/2.5°–12°/2.5°–12°T

Type No.		80010965			
Left side, lowband		R1, connector 1–2			
		698–960			
Frequency Range	MHz	698 – 806	790 – 862	824 – 894	880 – 960
Gain at mid Tilt	dBi	14.8	15.4	15.6	15.9
Gain over all Tilts	dBi	14.8 ± 0.6	15.4 ± 0.4	15.6 ± 0.2	15.8 ± 0.2
Horizontal Pattern:					
Azimuth Beamwidth	°	62 ± 3.9	61 ± 3.2	60 ± 2.7	60 ± 2.1
Front-to-Back Ratio, Total Power, ± 30°	dB	> 22	> 25	> 27	> 25
Vertical Pattern:					
Elevation Beamwidth	°	11.9 ± 0.8	11.0 ± 0.8	10.5 ± 0.4	10.2 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 – 12.0			
Tilt Accuracy	°	< 0.7	< 0.7	< 0.7	< 0.7
First Upper Side Lobe Suppression	dB	> 14	> 14	> 15	> 14
Cross Polar Isolation	dB	> 30			
Port to Port Isolation	dB	> 27 (R1 // R2) > 30 (R1 // Y1, Y2)			
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)			
Max. Effective Power Port 1–2	W	800 (at 50 °C ambient temperature)			

Values based on NGMN-P-BASTA (version 9.6) requirements.

936.5306/b.1 ngmn 04.24.02.03 Subject to alteration.

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 27
Passive Intermodulation	dBc	< –153 (2 x 43 dBm carrier)
Polarization	°	+45, –45
Max. Effective Power for the Antenna	W	1200 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input		8 x 4.3-10 female
Connector Position		bottom
Adjustment Mechanism		FlexRET, continuously adjustable
Wind load (at Rated Wind Speed: 150 km/h) (93 mph)	N | lbf	Frontal: 1130 | 254 Maximal: 1140 | 256
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1999 / 508 / 175 78.7 / 20.0 / 6.9
Category of Mounting Hardware		XH (X-Heavy)
Weight	kg lb	44.3 / 49.3 (clamps incl.) 97.6 / 108.6 (clamps incl.)
Packing Size	mm inches	2200 / 542 / 268 86.6 / 21.3 / 10.6
Scope of Supply		Panel, FlexRET and clamps for 55–115 mm | 2.2–4.5 inches diameter

Accessories (order separately if required)

Type No.	Description	Remarks mm | inches	Weight approx. kg | lb	Units per antenna
85010097	2 clamps	Mast diameter: 110 – 220 | 4.3 – 8.7	9.4 | 20.7	1
85010099	1 downtilt kit	Downtilt angle: 0° – 13°	10.6 | 23.4	1
86010154	Site Sharing Adapter	3-way (see figure below)	0.7 | 1.5	
86010155	Site Sharing Adapter	6-way (see figure below)	1.4 | 3.1	
86010162	Gender Adapter	Solely to be used in combination with the FlexRET module 86010153V01	0.045 | 0.099	1
86010163	Port Extender		0.16 | 0.35	1

Accessories (included in the scope of supply)

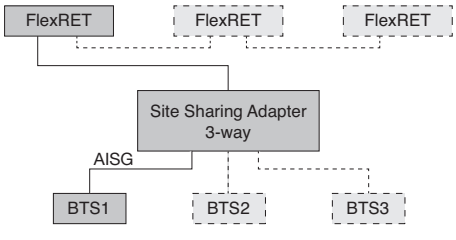
85010096	2 clamps	Mast diameter: 55 – 115 | 2.2 – 4.5	5.0 | 11.0	1
86010153V01	FlexRET			1

For downtilt mounting use the clamps for an appropriate mast diameter together with the downtilt kit.
Wall mounting: No additional mounting kit needed.

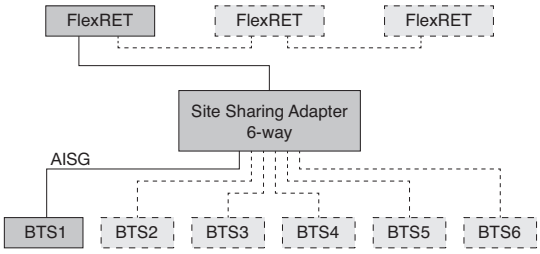
Material: **Reflector screen:** Aluminum.
Fiberglass housing: It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey.
All nuts and bolts: Stainless steel or hot-dip galvanized steel.

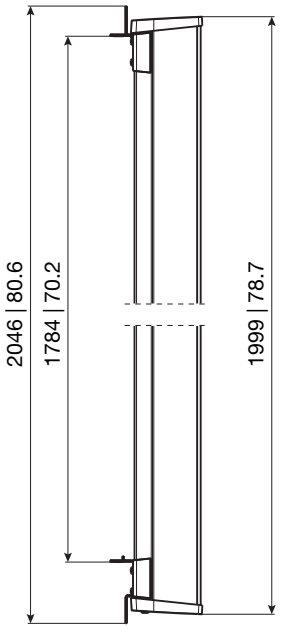
Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

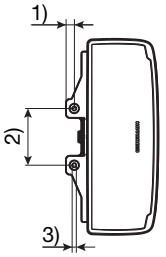
Configuration example with Site Sharing Adapter 86010154



Configuration example with Site Sharing Adapter 86010155







1) 22 | 0.9
2) 150 | 5.9
3) ∅ 11 | 0.4

All dimensions in mm | inches

936.5306/b.1 ngmn 04.24.02.03 Subject to alteration.

For more information please refer to the respective data sheets.

Dual Broadband Antenna

90° 1.4 m MET Antenna

806-960/1710-2170 MHz

Part Number: 7770.00

Horizontal Beamwidth: 90°
Gain: 13.5/16 dBi

Electrical Downtilt: Adjustable
Connector Type: 7/16 female

The Powerwave dual band dual polarized broadband antenna has individual adjustable electrical downtilt per band (upgradeable to Remote Electrical Tilt (RET). Four connector ports allow separate tilts on each frequency band and ensure the use of diversity concepts. The phase shifter technology, based on a patented sliding dielectric, minimizes intermodulation distortion and maximizes efficiency. The slant +/- 45° dual polarization system provides the independent fading signals needed for achieving top-quality coverage via diversity concepts. The Powerwave Broadband antenna design is based on a patented stacked aperture-coupled patch technology, which provides high isolation performance and a wide VSWR bandwidth. The antennas have superior radiation patterns due to a unique reflector design which provides a very small variation of the –3dB horizontal beam width over the frequency band as well as a high front-to-back ratio.

Key Benefits

- Excellent broad- and multi-band capabilities
- Polarization purity makes good diversity gain
- Excellent pattern performance and high gain over frequency
- High passive intermodulation performance
- Light, slim and robust design

Preliminary

ANTENNA SYSTEMS

BASE STATION SYSTEMS

COVERAGE SYSTEMS

806-960/1710-2170 MHz

Dual Broadband Antenna

Electrical Specifications (Preliminary)

Frequency band (MHz)	806-960		1710-2170
Gain, ± 0.5dB (dBi)	13.5		16.0
Polarization		Dual linear ±45°	
Nominal Impedance (Ohm)		50	
VSWR	1.5:1		
VSWR			1.5:1
Isolation between inputs (dB)	30		
Isolation between inputs (dB)			30
Inter band isolation (dB)		40	
Horizontal -3 dB beamwidth	85 ± 5°		85 ± 5°
Tracking, Horizontal plane, ±60° (dB)	<2.0		
Tracking, Horizontal plane, ±60° (dB)			<2.0
Electrical downtilt range (adjustable)	0° to 10°		0° to 8°
Vertical -3 dB beamwidth	14.3 ± 2.0°		6.6 ± 1°
Sidelobe suppression, Vertical 1 st upper (dB)	>17,16,15 x=0, 5, 10° MET		> 17, 16,15 x=0, 4, 8° MET
Vertical beam squint	<0.8°		<0.5°
First null-fill (dB)	<-25		<-25
Front-to-back ratio (dB)	>25		>27
Front-to-back ratio, total power (dB)	>20		>23
IM3, 2Tx@43dBm (dBc)	<-153		
IM3, 2Tx@43dBm (dBc)			<-153
IM7, 2Tx@43dBm (dBc)			<-160
Power Handling, Average per input (W)	400		250
Power Handling, Average total (W)	800		500

All specifications are subject to change without notice.
Contact your Powerwave representative for complete performance data.

Mechanical Specifications

Connector Type	4 x 7/16 DIN female
Connector Position	Bottom
Dimensions, HxWxD	1408mm x 280mm x 125mm (55”x11”x5”)
Weight Including Brackets	15.8 kg (35 lbs)
Wind Load, Frontal, 42m/s Cd=1	435N (98 lbf)
Survival Wind Speed (m/s)	70 (156mph)
Lightning Protection	DC grounded
Radome Material	GRP
Radome Color	Light Gray
Mounting	Pre-mounted Standard Brackets
Packing Size	1550mm x 355mm x 255mm (61”x14”x10”)

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COVERAGE AND CAPACITY | TECHNOLOGY LEADERSHIP | GLOBAL PARTNER | INTEGRATED SOLUTIONS | QUALITY AND RELIABILITY

D031-08208 Rev A

65° OctoPort Multi-Band Antenna

Model OPA-65R-LCUU-H6

Octoport Multi-Band Antenna Array

The CCI Octoport Multi-Band Antenna Array is an industry first 8-port antenna with full WCS Band Coverage. With four high band ports covering PCS, AWS and WCS bands, two 700 MHZ ports, and two 850 MHz ports our octoport antenna is ready for 4X4 high band MIMO.

Modern networks demand high performance, consequently CCI has incorporated several new and innovative design techniques to provide an antenna with excellent side-lobe performance, sharp elevation beams, and high front to back ratio.

Multiple networks can now be connected to a single antenna, reducing tower loading and leasing expense, while decreasing deployment time and installation cost.

Full band capability for 700 MHz , Cellular 850 MHz, PCS 1900 MHz, AWS 1710/2155 MHz and WCS 2300 MHz coverage in a single enclosure.

Benefits

- **RET System allows Independent Tilt of each band specific paired port**
- **Reduces tower loading**
- **Frees up space for tower mounted Remote Radio Heads**
- **Single radome with eight ports**
- **All Band design simplifies radio assignments**
- **Sharp elevation beam eases network planning**

Features

- High Band Ports include WCS Band
- Four High Band ports with four Low Band ports in one antenna
- Sharp elevation beam
- Excellent elevation side-lobe performance
- Excellent MIMO performance due to array spacing
- Excellent PIM Performance
- A multi-network solution in one radome

Applications

- 4x4 MIMO on High Band and Dual 2x2 MIMO on 700 & 850 Low Bands
- Adding additional capacity without adding additional antennas
- Adding WCS Band without increasing antenna count

ISO 9001:2008
Quality Management Systems
Système de Qualité
www.ca.sgs.com

65° OctoPort Multi-Band Antenna

Model OPA-65R-LCUU-H6

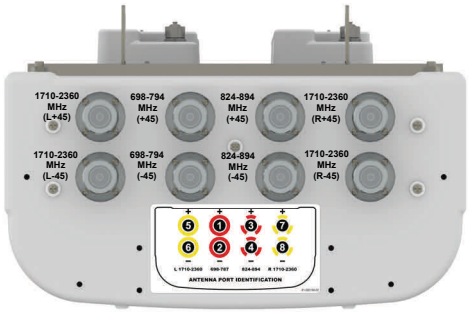
OPA-65R Multi-Band Antenna

Electrical Specifications

Frequency Range	2 X Low Band Ports (L) which cover the range from 698-787	2 X Low Band Ports (C) which cover the range from 824-894	4 X High Band Ports (H1 & H2) which cover the full range from 1710-2360 MHz			
			1850-1990 MHz	1710-1755/2110-2170 MHz	2305-2360 MHz	
Gain	13.8 dBi	14.6 dBi	17.0 dBi	16.3 dBi	17.4 dBi	17.6 dBi
Azimuth Beamwidth (-3dB)	66°	61°	60°	68°	64°	60°
Elevation Beamwidth (-3dB)	12.2°	10.3°	5.7°	6.3°	5.1°	4.5°
Electrical Downtilt	0° to 10°	0° to 10°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	< -17 dB	< -18 dB	< -19 dB	< -19 dB	< -18 dB	< -18 dB
Front-to-Back Ratio @180°	> 30 dB	> 27 dB	> 32 dB	> 32 dB	> 35 dB	> 35 dB
Front-to-Back Ratio over ± 20°	> 27 dB	> 25 dB	> 27 dB	> 27 dB	> 28 dB	> 28 dB
Cross-Polar Discrimination (at Peak)	> 22 dB	> 22 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination (at ± 60°)	> 16 dB	> 14 dB	> 17 dB	> 17 dB	> 17 dB	> 17 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
VSWR	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power	500 Watts CW	500 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

Mechanical Specifications

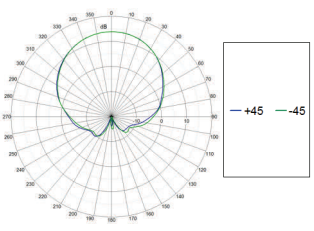
Dimensions (LxWxD)	72.0 x 14.8 x 7.4 inches (1828 x 376 x 189 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	247 lbs (1099 N) @ 100 mph
Side Wind Load	142 lbs (631 N) @ 100 mph
Equivalent Flat Plate Area	9.7 ft^2 (0.9 m^2)
Weight (w/o RET/Mounting)	73 lbs (33 kg)
RET System Weight	7.0 lbs (3.0 kg)
Connector	8; 7-16 DIN female long neck
Mounting Pole	2-5 inches (5-12 cm)



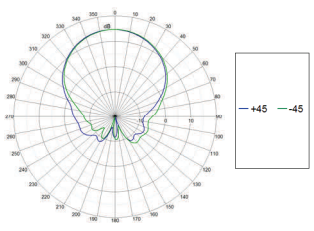
Bottom View

Rear View

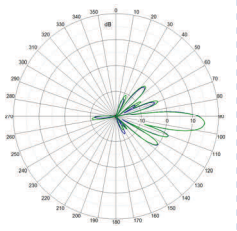
Antenna Patterns*



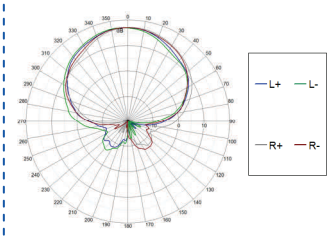
737 MHz Azimuth



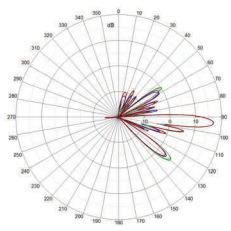
887 MHz Azimuth



Elevation 5°



1920 MHz Azimuth



Elevation 4°

*Typical antenna patterns. For detail information on antenna pattern, please contact us at info@cciproducts.com. All specifications are subject to change without notice.

Quintel®
New Dimensions in Wireless™

QS66512-2

6ft 65° XXX MultiServ™ 12-Port Antenna

2x698-806*MHz / 2x824-894MHz / 4x1850-1990MHz / 4x1695-1780+2110-2400MHz

MultiServ

- Provides 12 antenna Ports in a slim-line form factor
- Optimized Azimuth patterns for Min Inter-Sector Interference
- Industry leading Minimal Wind-Load design
- 700, 850, PCS, AWS & WCS bands in one antenna
- AISG & 3GPP compliant internal remote electrical tilt (RET)
- AWS & PCS Cross band PIM >159dBc

The Quintel MultiServ™ Multiband 12 Port Antenna with patented QTilt™ technology uniquely delivers four independent services in a single slim-line antenna. This enables existing antenna network sites to be upgraded constraint free to add new services such as LTE for 700, 850, PCS, AWS and WCS bands with the replacement of one antenna. The QS66512-2 also provides 4x1695-1780+2110-2400MHz & 4x1850-1990MHz ports as two side-by-side (CLA-2X) arrays, each set of 4 ports having independent tilt for connection to 2T4R/4T4R services.

Electrical Characteristics	2x Ports 1&2	2x Ports 3&4	4x Ports 5-8			4 Ports 9-12
Operating Frequency (MHz	698-806*	824-894	1695-1780 and 2110-2400			1850-1990
	698-806	824-894	1695-1780	2110-2180	2300-2400	1850-1990
Azimuth beamwidth[1]	67°	64°	68°	63°	58°	69°
Elevation beamwidth[1]	12°	10°	6.5°	5.5°	4.5°	5.5°
Gain[1] (dBi)	13.2	13.5	16.2	16.5	17.0	16.0
Polarization	±45°	±45°	±45° ±45°			±45° ±45°
Electrical down-tilt range	2°-10°	2°-10°	2° – 7°			2° – 7°
Upper SLL (20° > mainbeam)[1]	-17dB	-19dB	-18dB	-18B	-18dB	-16dB
Front to Back Ratio(180°±10°)[1]	≥27dB	≥29dB	≥28dB	≥28dB	≥28dB	≥27dB
Port to Port isolation[1]	≥28dB	≥30dB	≥30dB	≥30dB	≥30dB	≥30dB
Return loss (VSWR)	14dB(1.5)	14dB(1.5)	14dB(1.5)	14dB(1.5)	14dB (1.5)	14dB(1.5)
X Polar Discrimination (at 0°)	>18dB	>16dB	>20dB	>20dB	>18dB	>20dB
Max Power handling (per any port)	500 watts	500 watts	250 watts			250 watts
Total Composite Power (all ports)	1750 watts					
PIM (3rd Order) (2x43dBm)	>153dBc	>153dBc	>153dBc			>153dBc
XBand PIM (3rd Order) (2x43dBm)			>159dBc			

[1] *Typical Performance across frequency and Downtilt. *Products Ordered after Jan 2016 will be 698-806MHz*

Mechanical Characteristics	
Dimensions	L 72"(1828mm) x W 12"(304mm) x D 9.6"(245mm)
Weight (excl mounting brackets)	111lbs (50.3kg)
No. of Connectors	12x 4.3-10.0 DIN Female Long Neck
Max Wind Speed	150mph (67m/s)
Equivalent Flat Plate Area	2.96ft² (0.275m²)
Wind Load @160km/h (45m/s)	Front: 587N (132 lbs), Side: 382N (86 lbs)
Operating Temperature	-40°C to +65°C

Fully Integrated RET Characteristics	
AISG Standards	V1.1,V 2.0 and 3GPP
Factory Default	AISG 2.0
Surge immunity	IEC 61000-4-5:2005 4KV(AISG PIN)
Device Type	SRET Type 1
AISG Data rate	9.6 kbps
No of connectors	1in/1out.
Connector type	IEC 60130-9 (Ed 3.0)
MTBF	36,000 Operational moves

All specifications are subject to change without notice. Please contact your Quintel representative for complete information.

Tower Mounted Amplifier

Dual Band 1900 MHz with 850 MHz Bypass

1900/850 MHz

Part Number:
LGP 214nn

Up-link: 1850-1910 MHz
Down-link: 1930-1990 MHz
Bypass: 824-894 MHz

Gain: 12 dB
Noise Figure: < 1.7 dB

The Powerwave® TMA-DD 1900/850 is a dual band Tower Mounted Amplifier (TMA) to be installed near the antenna. Deployed in an AMPS, GSM, GPRS, EDGE and CDMA network it will increase capacity and coverage as well as extend the battery life time for the handsets. The TMA System will provide enhanced coverage and improved up-link signal quality. Appropriate for new rollouts by optimizing coverage with a reduced number of BTSs or as an upgrade to existing BTSs for enhancing the existing coverage.

Extended band TMA facilitates simplified logistics, especially when the frequency bands are scattered. The unit comprises of high Q band-pass filters, dual balanced low noise amplifiers with circuits for active bias, supervision, alarms and lightning protection circuit. The Powerwave patented design with all active components integrated within the filter body provides an extremely reliable, compact and lightweight TMA solution. The vented enclosure design is employed to prevent the effect of condensation, thereby guaranteeing long, reliable, maintenance-free service in all environmental conditions. These TMAs offer an easy to install, maintenance free, cost effective solution for coverage enhancement and increased quality in mobile communication networks.

Key Benefits:

- 850 MHz Bypass
- Improved Network Quality
- Increased Coverage
- State of the Art Performance
- Excellent Power Handling
- Low Tx Loss
- Exceptional Reliability

ANTENNA SYSTEMS

BASE STATION SYSTEMS

COVERAGE SYSTEMS

Powerwave technologies

Tower Mounted Amplifier

1900/850 MHz

Technical Specifications

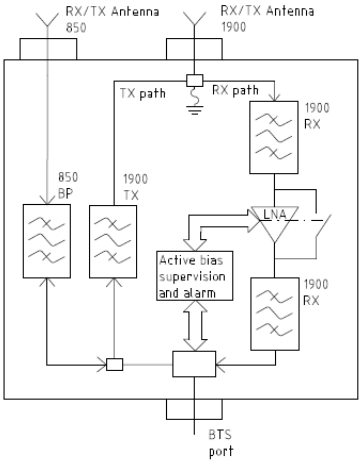
Product Number	LGP214nn	
850 MHz	Bypass (MHz)	824-894
	Return loss* (dB)	> 20
	Insertion loss* (dB)	< 0.3
1900 MHz		
Up-link	Frequency range, full band (60 MHz)	1850-1910
	Nominal gain (dB)	12
	Return loss* (dB)	> 20
	Noise figure* (dB)	< 1.7
	Output 3rd order Intercept Point* (dBm)	> +23
Down-link	Frequency range, full band (60 MHz)	1930-1990
	Insertion loss* (dB)	< 0.6
	Return loss* (dB)	> 20
Intermodulation	2 Tx@x43 dBm (dBc)	<-158
Alarm Functionality	Two levels,individually supervised LNAs	
Power Consumption	@12 VDC	1.2 W

* Typical

All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

Mechanical Specifications

Size,W x H x D (without mounting plate)	235 x 366 x 66 mm (9.2 x 14.4 x 2.6 in)
Weight	6.4 kg (14.1 lbs)
Color	Off white (NCS 1502-R)
Housing	Aluminum
RF-connectors	DIN 7/16 female.
Mounting kit	Mounting kit for pole and wall is included
Temperature range	-40 °C to +65 °C (-40 °F to +149 °F)
MTBF	>1 million hours
Safety	UL 60 950
Ingress protection, IP 65	EN 60 529
Environmental	ETS 300 019
EMC	FCC Part 15



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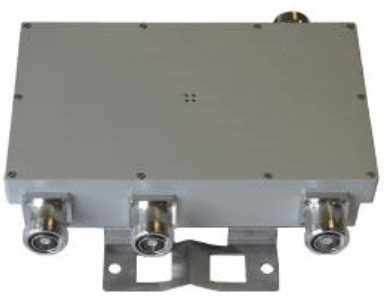
DATA SHEET

Outdoor Broadband Triplexer

TPX-070821



- Low Loss
- Small, lightweight
- AISG 2.0 compliant from PCS/AWS port to Common port
- Good Isolation
- Good IM
- Lightning protected
- High reliability
- Full 700, 850 MHz, and PCS/AWS (pre-combined) bands

Overview

Communication Components, Inc. Outdoor Broadband Triplexer combines 700 MHz, 850 MHz, and PCS/AWS band Basestation Tx/Rx signals onto a common port. Specifically intended for use in multi-band systems with limited feeder lines, the CCI Triplexer model TPX-070821 facilitates the addition of new technologies including LTE to existing sites while providing a high degree of isolation between systems. By reducing the number of feeder lines, the cost to upgrade a site (tower loading, leasing and installation costs) is reduced.
The CCI Outdoor Broadband Triplexer provides full band performance for each band with low insertion loss, low Intermodulation, and high power handling. Excellent return loss delivers the best match to the antennas and base station, saving precious transmit power. DC and AISG pass-through retains full RET and TMA capability utilizing CCI's AISG suite of products.

Technical Description:

The Outdoor Broadband Triplexer consists of multiple filters to combine (or divide) full band 700 MHz, 850 MHz and PCS/AWS signals. This tower mount unit can be used as either a splitter or combiner to aggregate multiple bands on a common feeder line. All RF ports are DIN 7-16 connectors. The fully weatherproof tower mount unit incorporates a unique intelligent Bias-T architecture which passes the DC and AISG carrier frequency from any of the input ports to the common port while blocking the DC and AISG signals from being re-injected into the other input ports. The unit has internal lightning strike protection using a multi-stage surge protection circuit.
The filters have been designed to minimize insertion loss while maximizing isolation. Particular attention has been given to the intermodulation performance of the Broadband Diplexer to minimize any passive intermodulation products from occurring. All DIN Connectors are fully IP68 rated and the unit body is rated for IP66.

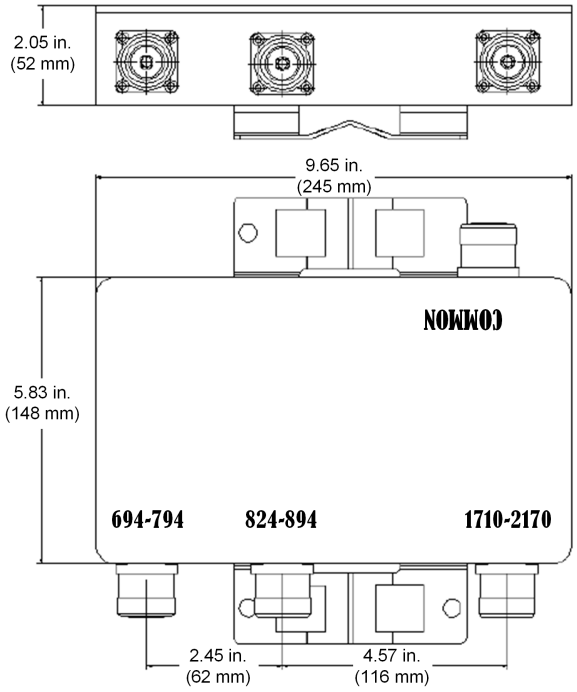
SPECIFICATIONS

Outdoor Broadband Triplexer

TPX-070821

Mechanical

Connectors	4 x 7-16 DIN female long neck
Dimensions (w/o connectors or brackets)(HxWxD)	5.83 x 9.65 x 2.05 in. (148 x 245 x 52 mm)
Weight	7.5 lbs (3.45 kg)
Mounting	Pole/Wall mounting bracket



Outdoor Broadband Triplexer Outline Drawing

RRUS 11

Frequency (AT&T)
- ✓ Band 12 (Lower 700 MHz)
- ✓ Band 4 (AWS, 17/2100 MHz) — 2Q2011

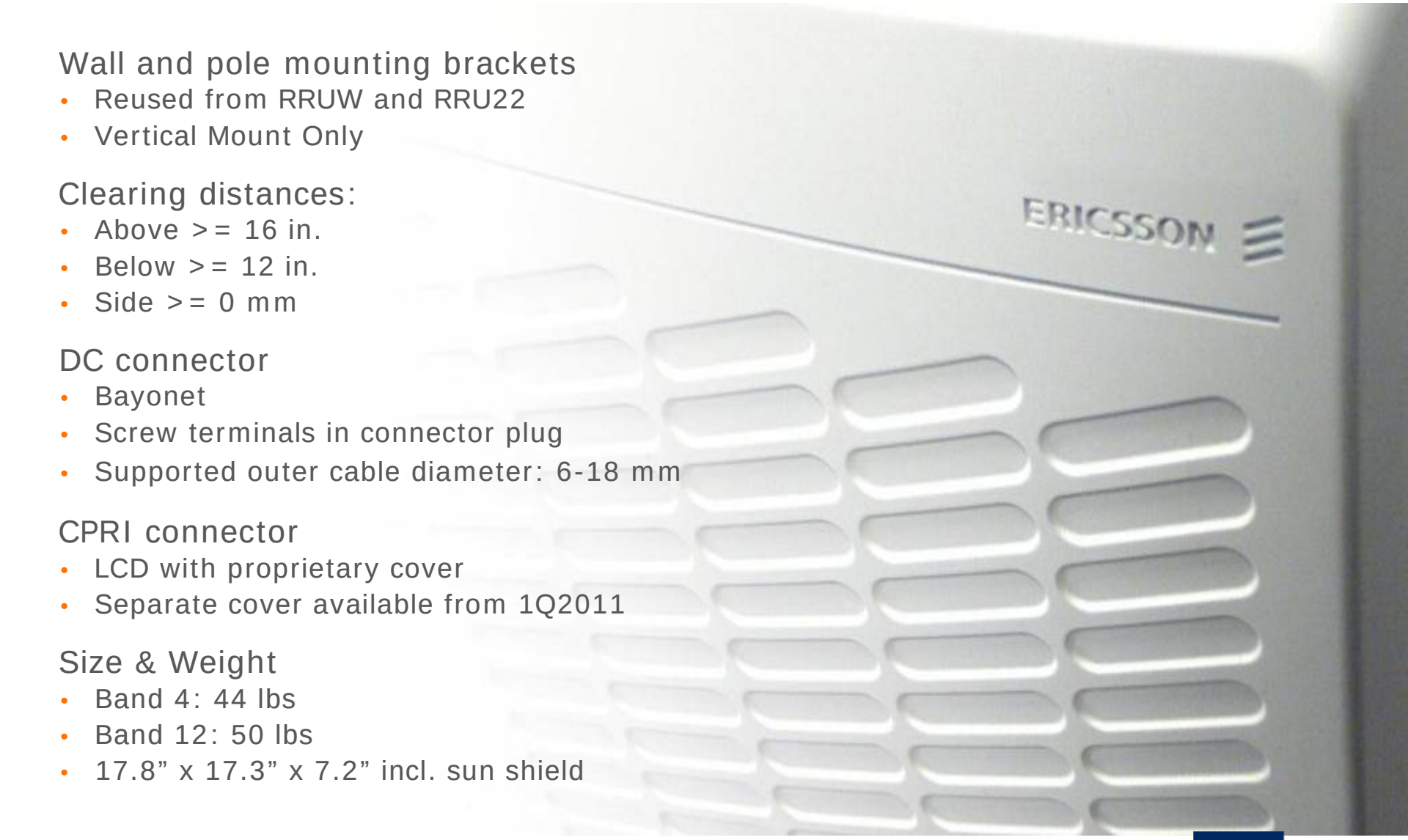
RF Characteristics
- ✓ Output power: 2x30 Watts
- ✓ 2x2 MIMO Capable
- ✓ IBW of 20 MHz
- ✓ Rx Sens.: Better than -105 dBm (5 MHz)

RET/TMA Support
- ✓ AISG 2.0 Compatible
- ✓ Via RET Port and Centre Conductor
- ✓ Cascading
- ✓ 30 VDC Bias

Environmental
- ✓ Self Convection
- ✓ Temperature -40 to 131 F

Power
- ✓ Input voltage: -48 VDC or AC (exemption)
- ✓ Fuse size: 13 – 32 A
  - Recommended: 25 A
- ✓ Power Consumption:
  - Typical 200 Watts
  - Max 310 Watts
  - Excl. RET and TMA load

RRUS 11 Mechanics



Wall and pole mounting brackets
- Reused from RRUW and RRU22
- Vertical Mount Only

Clearing distances:
- Above >= 16 in.
- Below >= 12 in.
- Side >= 0 mm

DC connector
- Bayonet
- Screw terminals in connector plug
- Supported outer cable diameter: 6-18 mm

CPRI connector
- LCD with proprietary cover
- Separate cover available from 1Q2011

Size & Weight
- Band 4: 44 lbs
- Band 12: 50 lbs
- 17.8” x 17.3” x 7.2” incl. sun shield

Radio 4478

4T4R low band platform

- 4TX/4RX, FDD LTE
- , 600MHz, B5, B12, B13, B14
- 4x40W, Full-band IBW
- 2x 2.5/5/10Gbps CPRI
- Weight < 60 lb (27.2kg)
  - 380Hx335Wx186D mm (24 l)
  - Two handles Dimensions: 14.9"L x 13.1"W x 7.3"D
- -48 VDC
- AISG TMA & RET support
- 2 external alarms
- IP65, -40 to +55˚C

PERFORMANCE EVOLUTION

MIMO // Cloud RAN // Gigabit speeds

- Dimensions now confirmed to be the same for all bands
- Handle design has changed based on usability analysis
- 600MHz availability on track for October 2017

ERICSSON

RRUS 32 B30 Data Sheet

RRUS 32 B30

PRELIMINARY

- WCS A+B blocks
  - TX = 2350 – 2360 MHz
  - RX = 2305 – 2315 MHz
- RF output 4 x 25 Watts
- 4T4R FDD
- 10 MHz IBW for LTE
- CPRI 2 ports x 10 Gbps
- Dimensions (incl. feet and sunshield)
  - Height: 26.7” (678 mm)
  - Width: 12.1” (306 mm)
  - Depth: 6.7” (171 mm)
- Weight, excl. mounting hardware
  - 60 lbs (23 kg)

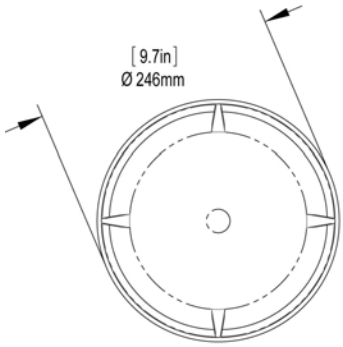
DC6-48-60-18-8F

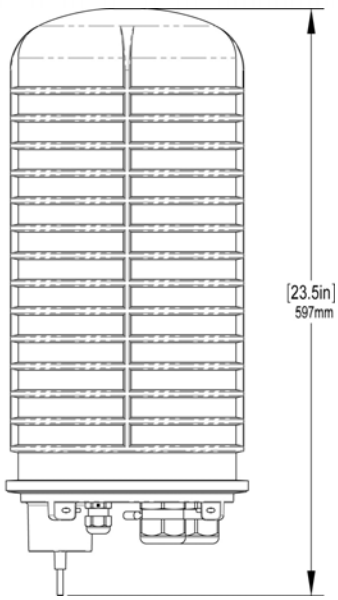
DC Surge Suppression Solution

The DC6-48-60-18 is a dual chambered, DC surge suppression system for use in multi-circuit, Distributed Antenna Systems. The system will protect up to 6 Remote Radio Heads from voltage surges and lightning, and connect up to 18 fiber pairs. The system is enclosed in a NEMA 4 rated, waterproof enclosure.

FEATURES

- Protects up to 6 Remote Radio Heads, each with its own protection circuit.
- Flexible design allows for installation at the top of a tower for Remote Radio Head protection.
- Includes fiber connections for up to 18 pairs of fiber.
- LED indicators on individual circuits provide visual indication of suppressor status.
- Form 'C' relays allow for remote monitoring of the suppressor status.
- Patented Strikesorb technology provides over 60 kA of surge current capacity per circuit.
- Strikesorb suppression modules are fully recognized to UL 1449-3rd Edition Safety Standard, meeting all intermediate and high current fault requirements to facilitate use in OEM applications.
- Raycap recommends that DC protection system be installed within 2 meters or 6 feet of the radio.
- Dome design is lightweight and aerodynamic providing maximum flexibility for installation on top of towers.





Raycap

Phone 208.777.1166 Toll Free 800.890.2569 Fax 208.777.4466 www.raycapsurgeprotection.com

DC6-48-60-18-8F

DC Power Surge Protection

Electrical Specifications	
Model Number	DC6-48-60-18-8F
Nominal Operating Voltage	48 VDC
Nominal Discharge Current (I_n)	20 kA 8/20 µs
Maximum Discharge Current (I_{max}) per NEMA LS-1	60 kA 8/20 µs
Maximum Continuous Operating Voltage (U_c)	75 VDC
Voltage Protection Rating	400 V

Mechanical Specifications	
Suppression Connection Method	Compression lug, #2-#14 AWG Copper, #2-#12 Aluminum
Fiber Connection Method	LC-LC Single mode duplex
Environmental Rating	IP 68, 7m 72hrs
Operating Temperature	-40° C to + 80° C
Storage Temperature	-70° C to + 80° C
Cold Temperature Cycling	IEC 61300-2-22e -30° C to + 60° C 200 hrs @ 5 psi
Resistance to Aggressive Materials	CEI IEC 61073-2 including acids and bases
UV Protection	ISO 4892-2 Method A Xenon-Arc 2160 hrs
Weight	20 lbs without Mounting Bracket

STANDARDS

Strikesorb modules are compliant to the following Surge Protection Device (SPD) Standards:

- ANSI/UL 1449 – 3rd Edition
- IEEE C62.41
- NEMA LS-1, IEC 61643-1:2005 2nd Edition:2005
- IEC 61643-12
- EN 61643-11:2002 (including A11:2007)

GS-07F-0435V

Certified to ISO 9001:2000

TÜV Rheinland of North America

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Phone 208.777.1166 • Toll Free 800.890.2569 • Fax 208.777.4466 • www.raycapsurgeprotection.com

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1145

FA#: 10035097

Newington
99 Cedarwood Lane
Newington, CT 06111

June 13, 2018

Centerline Communications Project Number: 950006-129

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**16.36 %**

June 13, 2018

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

Emissions Analysis for Site: **CT1145 – Newington**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **99 Cedarwood Lane, Newington, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **99 Cedarwood Lane, Newington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	4	60
LTE	700 MHz (Band 14)	4	60
LTE	850 MHz	2	60
LTE	1900 MHz (PCS)	4	60
LTE	2100 MHz (AWS)	4	60
LTE	2300 MHz (WCS)	4	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	140
A	2	CCI OPA-65R-LCUU-H6	140
A	3	Kathrein 800-10965	140
A	4	Quintel QS66512-2	140
B	1	Powerwave 7770	140
B	2	CCI OPA-65R-LCUU-H6	140
B	3	Kathrein 800-10965	140
B	4	Quintel QS66512-2	140
C	1	Powerwave 7770	140
C	2	CCI OPA-65R-LCUU-H6	140
C	3	Kathrein 800-10965	140
C	4	Quintel QS66512-2	140

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna A2	CCI OPA-65R-LCUU-H6	700 MHz / 850 MHz / 2300 MHz (WCS)	11.65 / 12.45 / 15.45	8	280	6,785.10	1.84
Antenna A3	Kathrein 800-10965	700 MHz (Band 14) / 2100 MHz (AWS)	12.65 / 15.95	8	280	7,667.84	2.21
Antenna A4	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	240	4,855.52	1.19
						Sector A Composite MPE%	**5.80**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna B2	CCI OPA-65R-LCUU-H6	700 MHz / 850 MHz / 2300 MHz (WCS)	11.65 / 12.45 / 15.45	8	280	6,785.10	1.84
Antenna B3	Kathrein 800-10965	700 MHz (Band 14)/ 2100 MHz (AWS)	12.65 / 15.95	8	280	7,667.84	2.21
Antenna B4	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	240	4,855.52	1.19
						Sector B Composite MPE%	**5.80**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna C2	CCI OPA-65R-LCUU-H6	700 MHz / 850 MHz / 2300 MHz (WCS)	11.65 / 12.45 / 15.45	8	280	6,785.10	1.84
Antenna C3	Kathrein 800-10965	700 MHz (Band 14) / 2100 MHz (AWS)	12.65 / 15.95	8	280	7,667.84	2.21
Antenna C4	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	240	4,855.52	1.19
						Sector C Composite MPE%	**5.80**

Table 3: AT&T Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**5.80 %**
Clearwire	0.10 %
Sprint	2.56 %
Carbone's Auto Body	6.45 %
Town of Wethersfield	0.08 %
T-Mobile	1.37 %
Site Total MPE %:	**16.36 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.80 %
AT&T Sector B Total:	5.80 %
AT&T Sector C Total:	5.80 %
Site Total:	16.36 %

Table 5: Site MPE Summary

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

AT&T _ Frequency Band / Technology Max Power 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 – Antenna 1	2	414.12	140	1.66	850 MHz	567	0.29%
AT&T 1900 MHz (PCS) UMTS – Antenna 1	2	656.33	140	2.63	1900 MHz (PCS)	1000	0.26%
AT&T 700 MHz LTE – Antenna 2	2	584.87	140	2.34	700 MHz	467	0.50%
AT&T 850 MHz LTE – Antenna 2	2	703.17	140	2.82	850 MHz	567	0.50%
AT&T 2300 MHz (WCS) LTE – Antenna 2	4	1,052.26	140	8.43	2300 MHz (WCS)	1000	0.84%
AT&T 700 MHz LTE (Band 14) – Antenna 3	4	736.31	140	5.90	700 MHz	467	1.26%
AT&T 2100 MHz (AWS) LTE – Antenna 3	4	1,180.65	140	9.46	2100 MHz (AWS)	1000	0.95%
AT&T 700 MHz LTE – Antenna 4	2	486.47	140	1.95	700 MHz	467	0.42%
AT&T 1900 MHz (PCS) LTE – Antenna 4	4	970.64	140	7.77	1900 MHz (PCS)	1000	0.78%
						Total:	**5.80**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	5.80 %
Sector B:	5.80 %
Sector C:	5.80 %
AT&T Maximum Total (per sector):	5.80 %
Site Total:	16.36 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.36 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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