EMPIRE telecom

April 26, 2018

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

Regarding:	Notice of Exempt Modification – Swap of (6) antennas and addition of (9) remote radio units and (2) Surge Arrestors
Property Address:	46 Fenwood Lane, Wilton, CT (the "Property", AT&T Site # CT2143)
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 180 foot, Lattice Tower ("tower") at the above-referenced address, latitude 41.17251111, longitude -73.4339139. AT&T's facility consists of nine (9) wireless telecommunications antennas at 163 feet. The tower is controlled and owned by the Connecticut Department of Emergency Services and Public Protection (Connecticut State Police). Assessor's information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping six (6) antennas for newer models and adding nine (9) remote radios heads and two (2) surge arrestors. The centerline height of said antennas is and will remain at 163 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 First Selectwoman of the Town of Wilton, the Chief Building Official of the Town of Wilton, and the Zoning Enforcement Officer of the Town of Wilton. Notice is also being sent to the Connecticut Department of Emergency Services and Public Protection, the owner of the above-referenced tower.

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 associated lines will be installed at 163 foot level of the 180 foot 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.

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

EMPIRE telecom

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.
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 AECOM dated March 29, 2018).

For the foregoing reasons AT&T respectfully requests that the proposed swap of antennas and addition of remote radio heads and surge arrestors 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 Lynne Vanderslice, First Selectwoman, Town of Wilton
Robert Root, Chief Building Official, Town of Wilton
Timothy Bunting, CAZEO, Zoning Enforcement Officer, Town of Wilton
Connecticut Department of Emergency Services and Public Protection, c/o Brian Benito

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

46 FENWOOD LA

Location	46 FENWOOD LA	**Mblu**	99/ / 22/ /
Acct#	006298	**Owner**	CONNECTICUT STATE OF
Assessment	$275,030	**Appraisal**	$392,900
PID	5194	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$79,300	$313,600	$392,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$55,510	$219,520	$275,030

Owner of Record

Owner	CONNECTICUT STATE OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	450 CAPITOL AVE HARTFORD, CT 06134	**Book & Page**	0049/0403
		Sale Date	01/01/1901
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CONNECTICUT STATE OF	$0		0049/0403	00	01/01/1901

Building Information

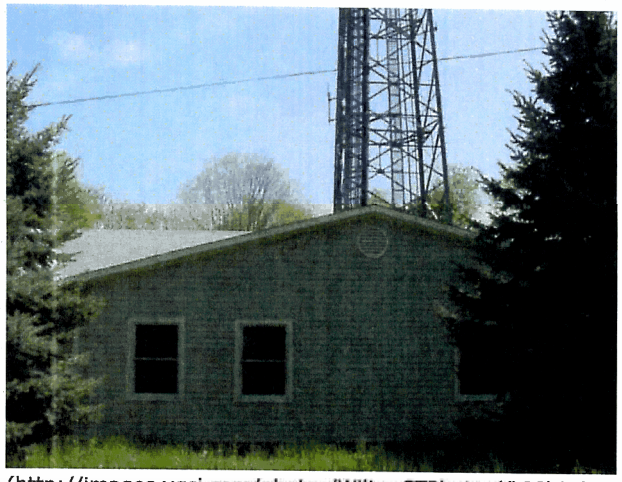
Building 1 : Section 1

Year Built:	1990
Living Area:	1,431
Replacement Cost:	$91,927
Building Percent Good:	83
Replacement Cost Less Depreciation:	$76,300

Building Attributes	
Field	**Description**

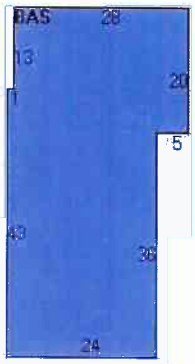
STYLE	Commercial
MODEL	Commercial
Grade	Average +10
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asphalt Shngl.
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	Central
Bldg Use	Ex Com MDL-96
Fireplace	
Elevator	
Cath Ceil	
Sauna	
1st Floor Use:	21I
Heat/AC	Heat A/C Split
Frame Type	Wood Frame
Baths/Plumbing	Average
Ceiling/Wall	Ceiling Only
Rooms/Prtns	Average
Wall Height	10
% Comn Wall	0

Building Photo



(http://images.vgsi.com/photos/WiltonCTPhotos//\00\00\03/49.j

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,431	1,431
		1,431	1,431

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 21I
Description Ex Com MDL-96
Zone R-2
Neighborhood 4000

Land Line Valuation

Size (Acres) 0.5
Frontage
Depth
Assessed Value $219,520

Alt Land Appr Category No

Appraised Value $313,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN3	Fence 6'			300 L.F.	$3,000	1

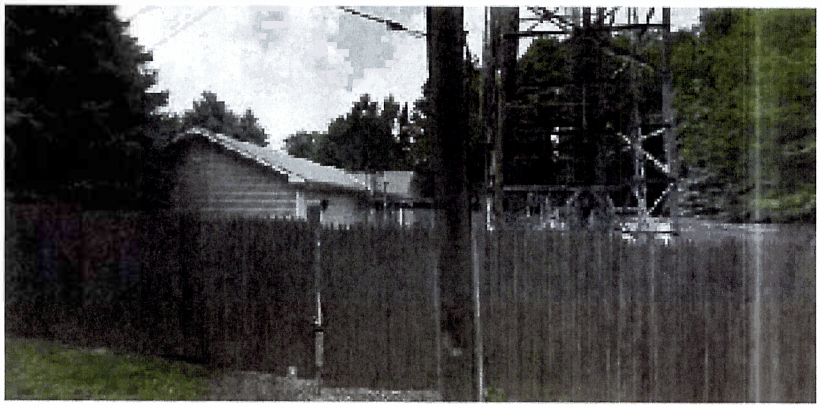
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$79,300	$313,600	$392,900
2015	$79,300	$313,600	$392,900
2014	$79,300	$313,600	$392,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$55,510	$219,520	$275,030
2015	$55,510	$219,520	$275,030
2014	$55,510	$219,520	$275,030

46 Fenwood Ln

Map data ©2018 Google 20 ft



46 Fenwood Ln

Wilton, CT 06897

WIRELESS COMMUNICATIONS FACILITY
CT2143 - LTE 3C/4C-WCS/5C-AWS/6C-700 UPPER D & BWE
GILBERTS CORNER
46 FENWOOD LANE
WILTON, CT 06897

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

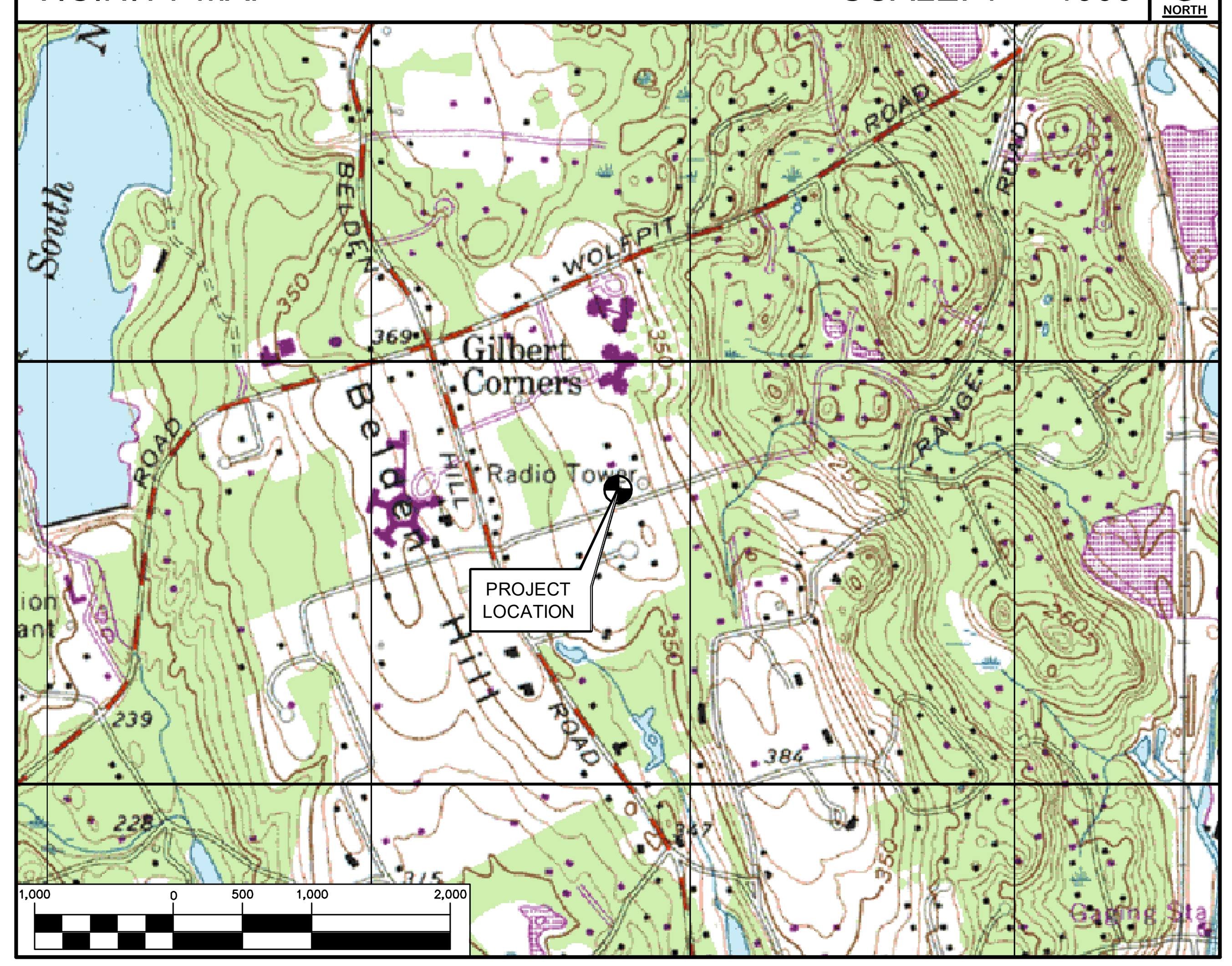
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 46 FENWOOD LANE, WILTON, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.36 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.59 MI
5.	MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.	44.27 MI
6.	TAKE THE CT-33 EXIT, EXIT 41, TOWARD WESTPORT/WILTON.	0.08 MI
7.	KEEP RIGHT AT THE FORK IN THE RAMP.	0.03 MI
8.	TURN LEFT ONTO CT-33/WILTON RD. CONTINUE TO FOLLOW CT-33.	2.66 MI
9.	TURN LEFT ONTO WOLFPIT RD/CT-106.	1.22 MI
10.	TURN LEFT ONTO BELDEN HILL RD.	0.29 MI
11.	TAKE THE 1ST LEFT ONTO FENWOOD LN.	0.13 MI
12.	46 FENWOOD LN, WILTON, CT 06897-3829, 46 FENWOOD LN IS ON THE LEFT.	

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:
      - REMOVE (6) EXISTING ANTENNAS
      - REMOVE (3) EXISTING RRUS-11
      - RELOCATE (3) EXISTING RRUS-11 TO POS.4
      - REMOVE (3) TMA'S
      - INSTALL (3) NEW RRUS-32
      - INSTALL (3) NEW RRUS-32 B2
      - INSTALL (3) NEW RRUS-32 B66
      - INSTALL (3) NEW B14 4478
      - INSTALL (6) NEW 12-PORT ANTENNAS
      - INSTALL (2) NEW SURGE ARRESTORS
   B. WORK WITHTIN EXISTING AT&T EQUIPMENT SHELTER:
      - INSTALL (2) ADDITIONAL XMU UNITS, (1) ADDITIONAL DUS, (1) IDL2 LINK AND (1) ADDITIONAL 5216+1DLE WITHIN EXISTING LTE EQUIPMENT RACK
      - DECOMMISSION AND REMOVE (2) EXISTING GSM CABINETS
      - INSTALL A EQUIPMENT RACK WITH (3) ERICSSON RRUS-12, WITH (6) SURGE ARRESTORS
      - REMOVE (6) EXISTING DIPLEXERS

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2143
AT&T SITE NAME:	GILBERTS CORNER
SITE ADDRESS:	46 FENWOOD LANE WILTON, CT 06897
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T PACE JOB NUMBER:	1. MRCTB026584 2. MRCTB026801 3. MRCTB026695
AT&T FA LOCATION CODE:	10035018
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-10'-21.04" N LONGITUDE: 73°-26'-02.1" W GROUND ELEVATION: ±374' 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 SCEHDULES	0
C-1	PLANS AND ELEVATION	0
C-2	LTE 3C/4C/5C/6C & BWE ANTENNA LAYOUT PLANS	0
C-3	DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0
P-1	PLUMBING DIAGRAMS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/12/18	KAWJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

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

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
GILBERTS CORNER
CT2143 - LTE 3C/4C/5C/6C + BWE
46 FENWOOD LANE
WILTON, CT 06897

DATE: 03/14/18
SCALE: AS NOTED
JOB NO. 18000.31

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 APPENDIX N)
- NOMINAL DESIGN SPEED (TOWER): 93 MPH (Vasd) (EXPOSURE C/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.

ANTENNA SCHEDULE

SECTOR	(E)/(P)	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/DIPLEXER/TRIPLEXER (QTY)	(E/P) RRU (QTY)	FEEDER	(E/P) RAYCAP (QTY)
A1	EXISTING	UMTS 850	POWERWAVE 7770	55X11X5	163'	263°	TMA: PWAV: LGP21401 SINGLE 1900 W/850BP (2) DIPLEXER: PWAV: LGP 21901 (2)		7/8ø COAX (2)	(E) RAYCAP DC6–48–60–18–8C (1)
A3	PROPOSED	LTE 700/AWS	KATHREIN 80010965	78.7X20X6.9	163'	30°		(P) B14 4478 (1), (P) RRUS–32 B66 (1)	FIBER AND DC POWER	(P) RAYCAP DC6–48–60–0–8C (2)
A4	PROPOSED	LTE 850/LTE WCS/700/1900/1900	QUINTEL QS66512–2	72X12X9.6	163'	30°		(E) RRUS–11 (1), (P) RRUS–12 (1), (P) RUUS–32 B2 (1), (P) RUUS–32 B2 (1)	7/8ø COAX (2), FIBER AND DC POWER	
B1	EXISTING	UMTS 850	POWERWAVE 7770	55X11X5	163'	150°	TMA: PWAV: LGP21401 SINGLE 1900 W/850BP (2) DIPLEXER: PWAV: LGP 21901 (2)		7/8ø COAX (2)	
B3	PROPOSED	LTE 700/AWS	KATHREIN 80010965	78.7X20X6.9	163'	150°		(P) B14 4478 (1), (P) RRUS–32 B66 (1)	FIBER AND DC POWER	
B4	PROPOSED	LTE 850/LTE WCS/700/1900/1900	QUINTEL QS66512–2	72X12X9.6	163'	150°		(E) RRUS–11 (1), (P) RRUS–12 (1), (P) RUUS–32 B2 (1), (P) RUUS–32 B2 (1)	7/8ø COAX (2), FIBER AND DC POWER	
C1	EXISTING	UMTS 850	POWERWAVE 7770	55X11X5	163'	23°	TMA: PWAV: LGP21401 SINGLE 1900 W/850BP (2) DIPLEXER: PWAV: LGP 21901 (2)		7/8ø COAX (2)	
C3	PROPOSED	LTE 700/AWS	KATHREIN 80010965	78.7X20X6.9	163'	270°		(P) B14 4478 (1), (P) RRUS–32 B66 (1)	FIBER AND DC POWER	
C4	PROPOSED	LTE 850/LTE WCS/700/1900/1900	QUINTEL QS66512–2	72X12X9.6	163'	270°		(E) RRUS–11 (1), (P) RRUS–12 (1), (P) RUUS–32 B2 (1), (P) RUUS–32 B2 (1)	7/8ø COAX (2), FIBER AND DC POWER	

RRU	SIZE (INCHES) (L x W x D)
RRUS–11	19.7 x 17 x 7.2
RRUS–12	20.4 x 18.5 x 7.5
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

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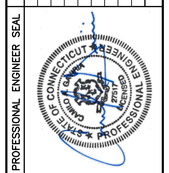

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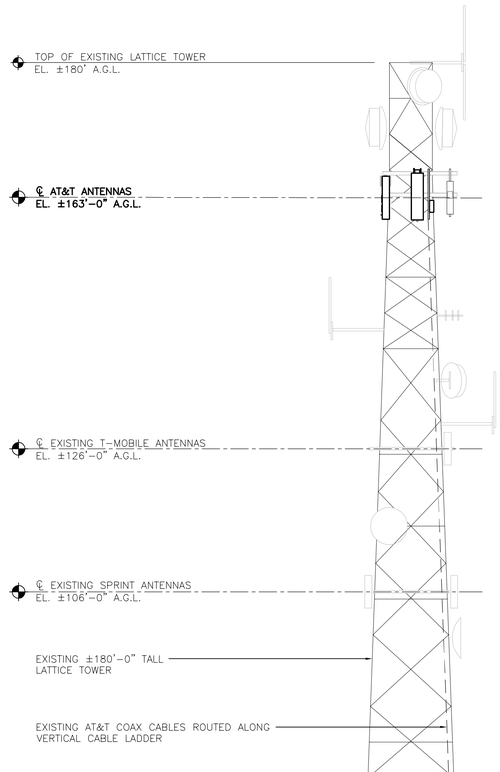
NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE

N–1

Sheet No. 2 of 9

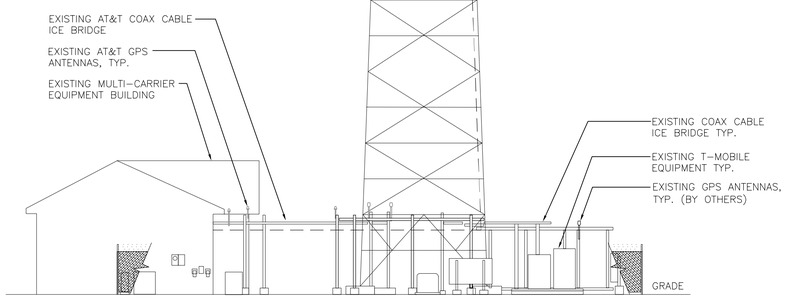


TOWER STRUCTURAL NOTES:

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

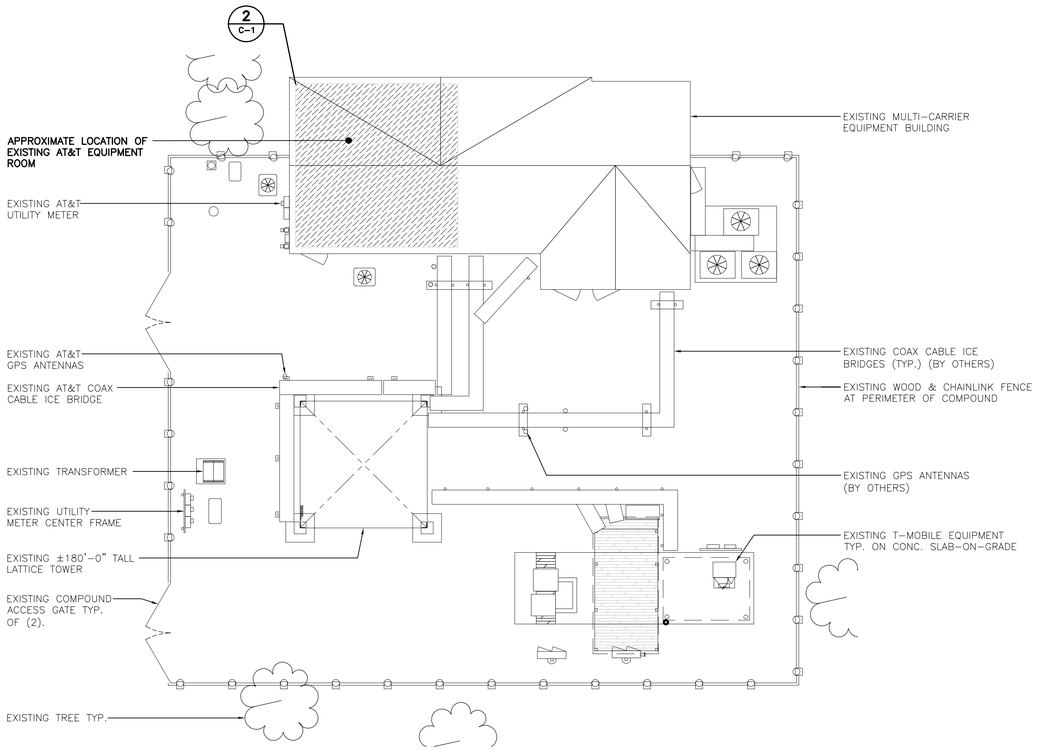
NOTES:

1. A.G.L. = ABOVE GRADE LEVEL



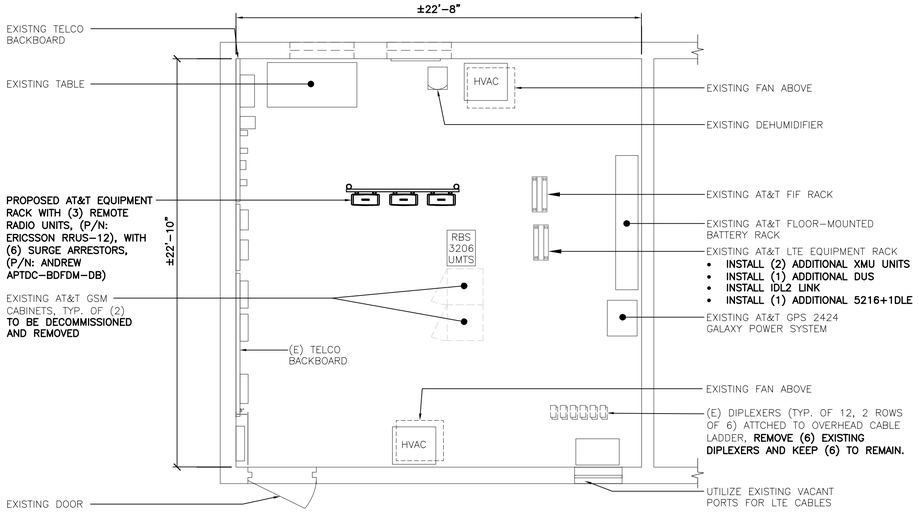
3 / C-1 **SOUTH ELEVATION - PROPOSED**
SCALE: 1" = 10'-0"

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



3 / C-1

1 / C-1 **COMPOUND PLAN**
SCALE: 1" = 10'-0"
APPROX. NORTH



2 / C-1 **EQUIPMENT ROOM FLOOR PLAN - PROPOSED**
SCALE: 1/4" = 1'-0"
APPROX. NORTH

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

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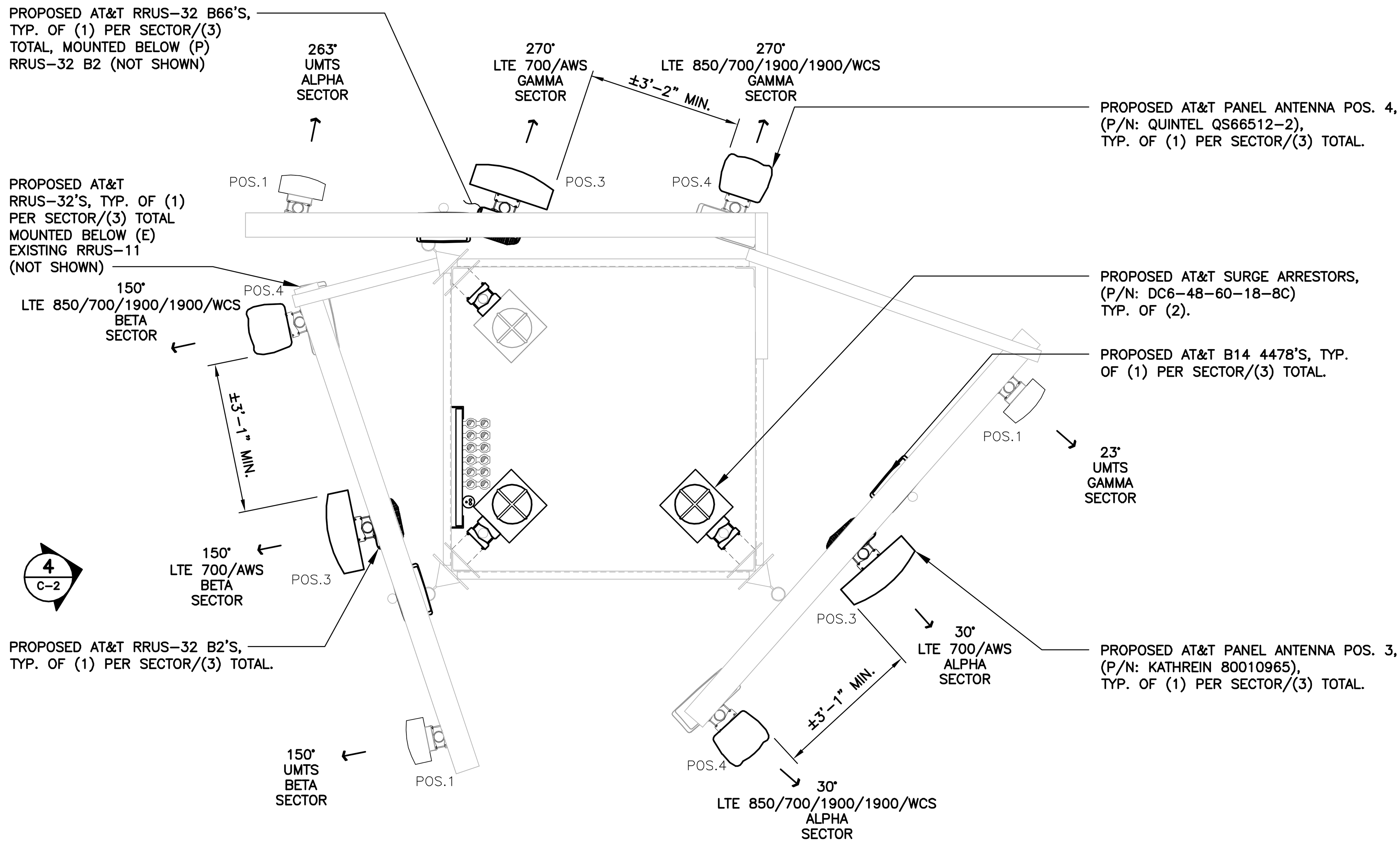
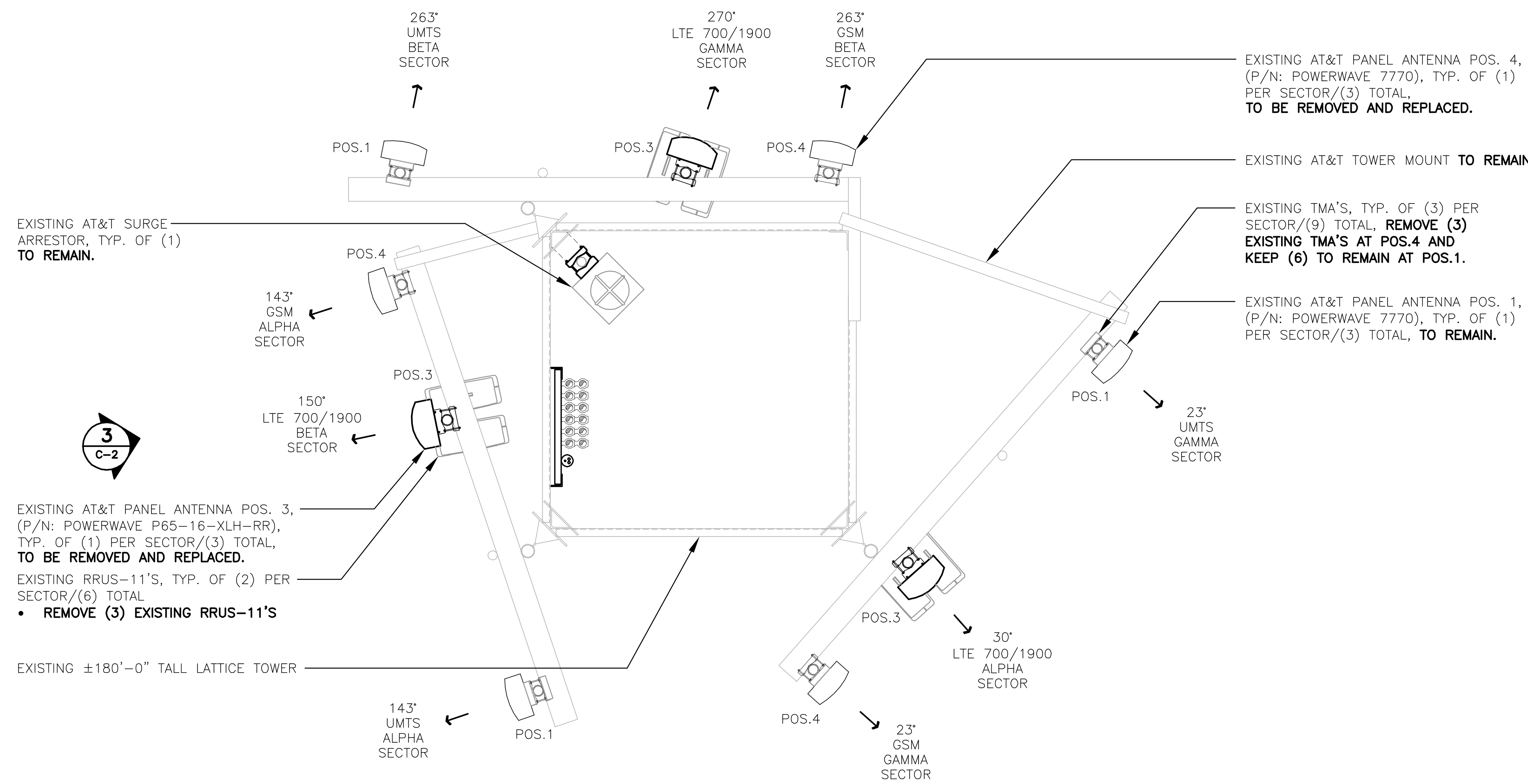
PLANS AND ELEVATION

C-1

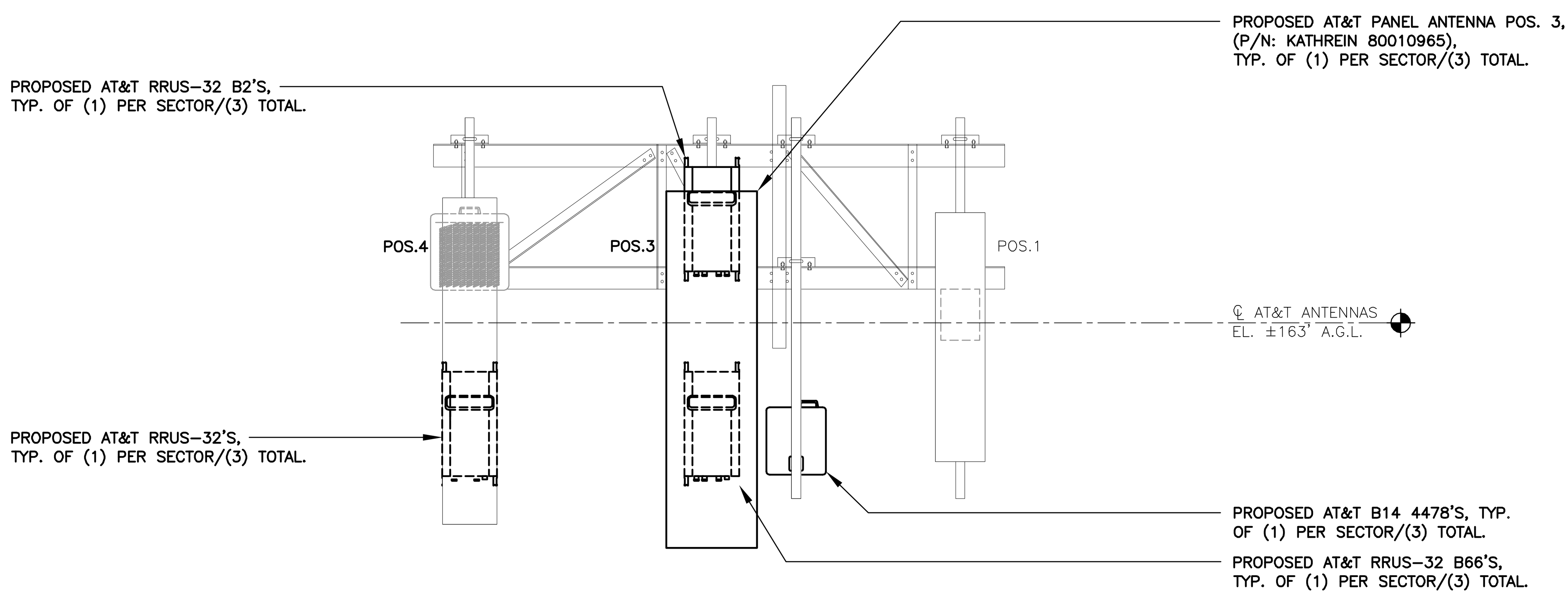
Sheet No. 3 of 9



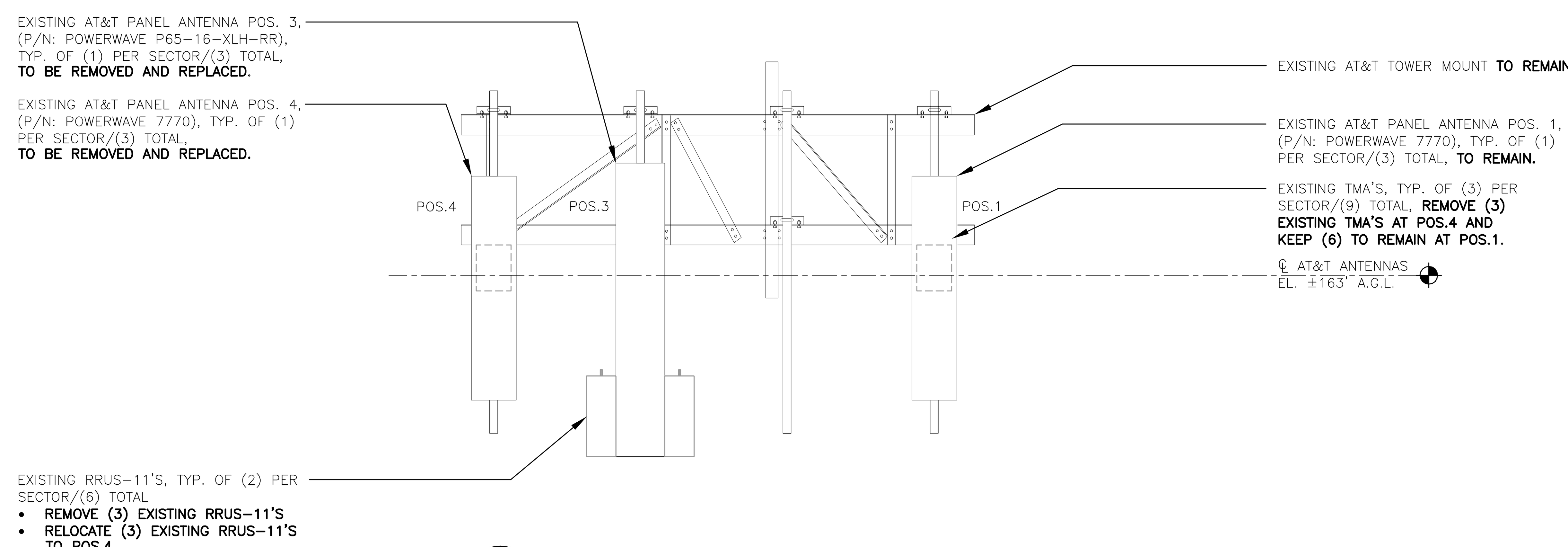
2 C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"
NORTH



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



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



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

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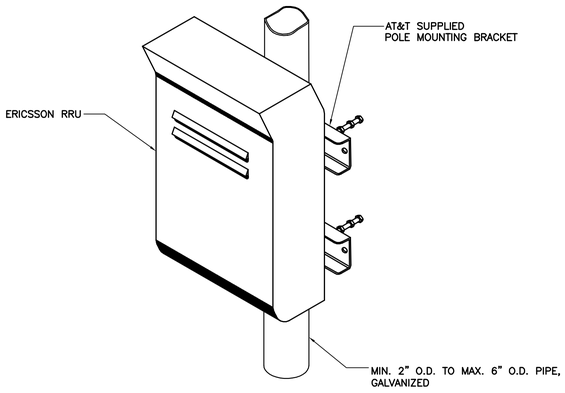
LTE 3C/4C/5C/6C & BWE ANTENNA LAYOUT PLANS

C-2

Sheet No. 4 of 9



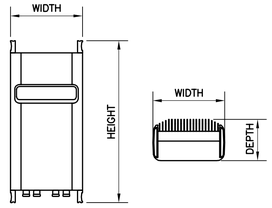
ISOMETRIC VIEW

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

SCALE: NTS



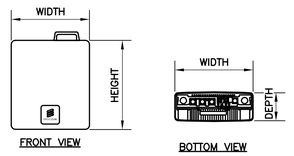
FRONT VIEW TOP VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B2	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS-32	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS-32 B66	27.17"H 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.

2 C-3 ERICSSON REMOTE RADIO DETAILS

SCALE: 1" = 1'-0"



FRONT VIEW BOTTOM VIEW

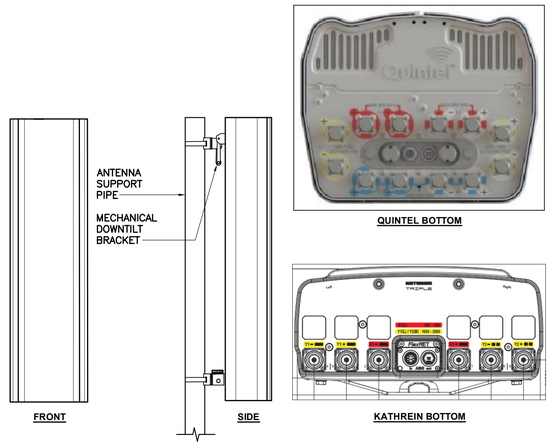
B14 4478

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.

3 C-3 ERICSSON B14 4478 DETAIL

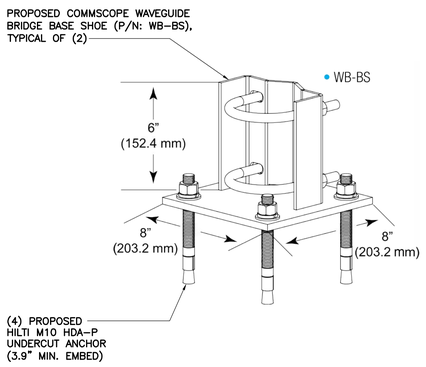
SCALE: 1" = 1'-0"



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KATHREIN MODEL: 80010965	78.7"L x 20"W x 6.9"D	108.6 LBS.
MAKE: QUINTEL MODEL: QS66512-2	72"L x 12"W x 9.6"D	111 LBS.

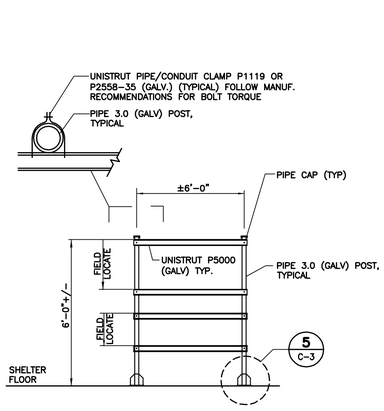
4 C-3 PROPOSED ANTENNA DETAIL

SCALE: NTS



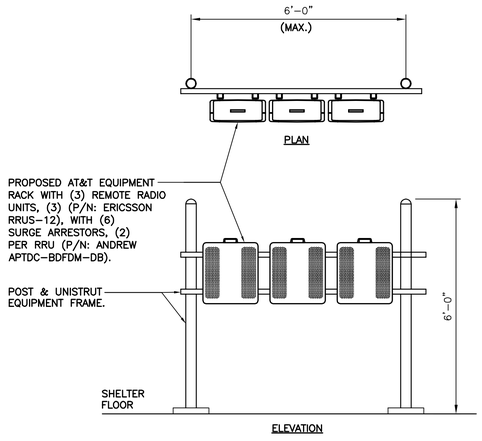
5 C-3 EQUIPMENT FRAME POST ATTACHMENT DETAIL

SCALE: NOT TO SCALE



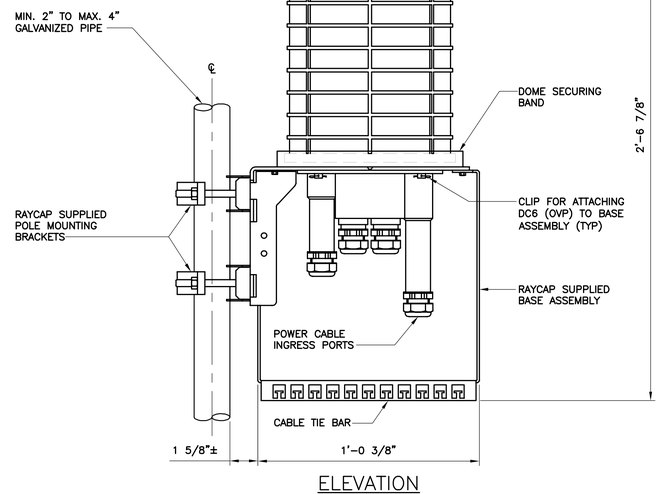
6 C-3 PROPOSED EQUIPMENT MOUNTING FRAME DETAIL

SCALE: NOT TO SCALE



7 C-3 PROPOSED EQUIPMENT RACK

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

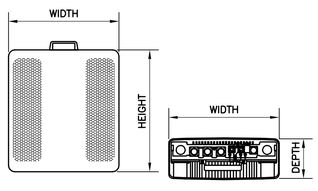


NOTES:

1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

8 C-3 RAYCAP DC6 MOUNTING DETAIL

SCALE: 3" = 1'-0"



FRONT VIEW BOTTOM VIEW

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

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

9 C-3 ERICSSON RRUS 12 DETAIL

SCALE: 1" = 1'-0"

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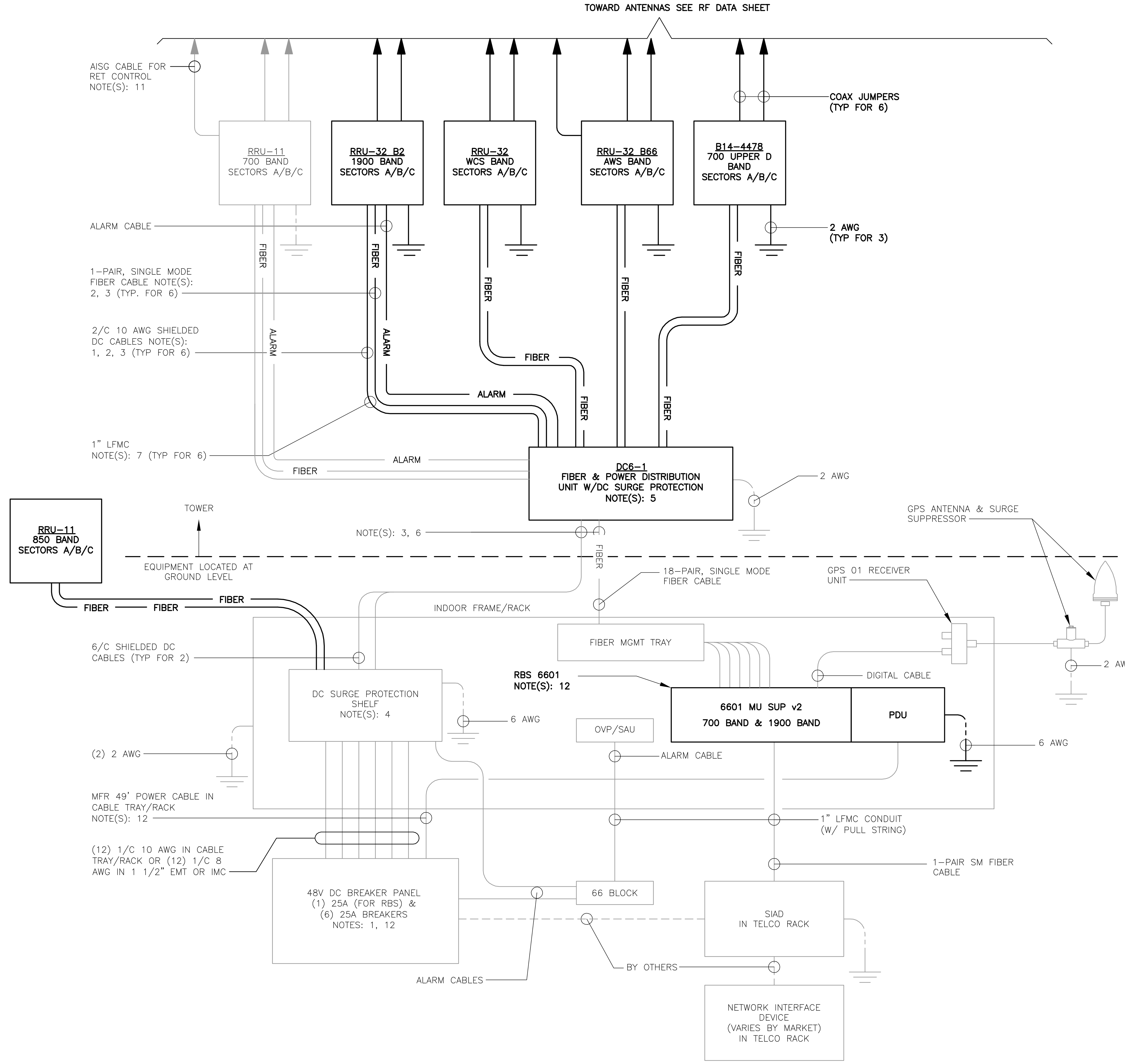
DETAILS

C-3

Sheet No. 5 of 9



1 E-1 LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

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

ELECTRICAL NOTES

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

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

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

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

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

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

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

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

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

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JOB NO. 18000.31

LTE SCHEMATIC DIAGRAM AND NOTES

E-1

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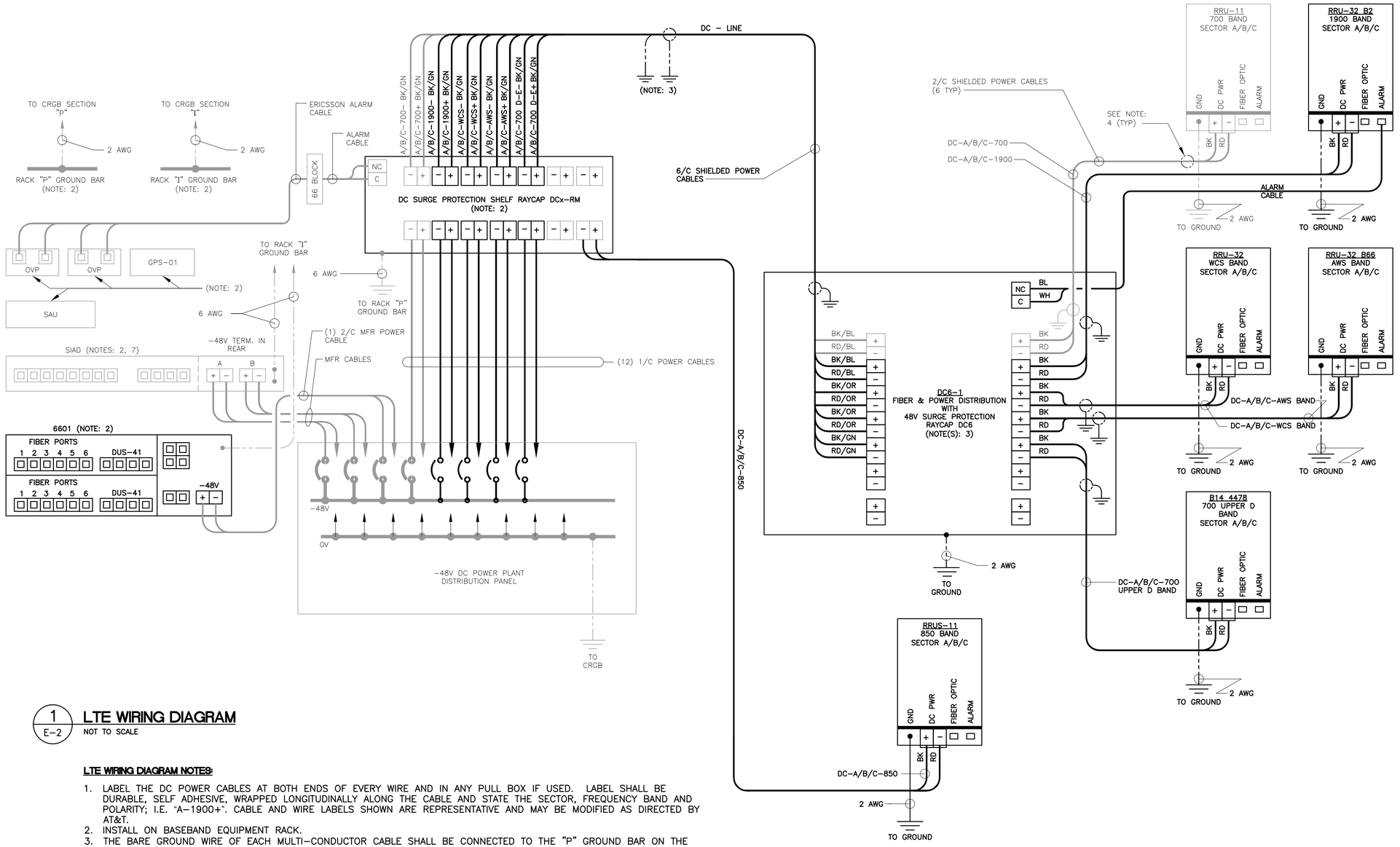

1 / E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

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

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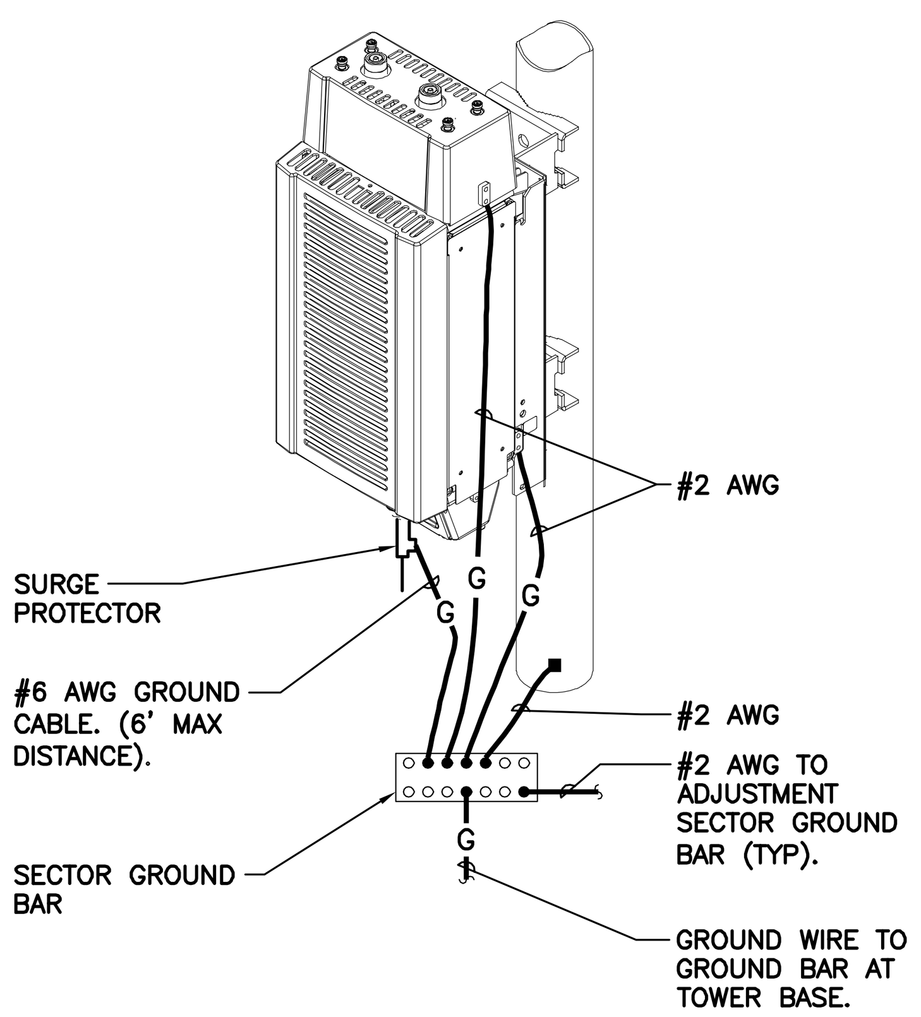
LTE WIRING DIAGRAM

E-2

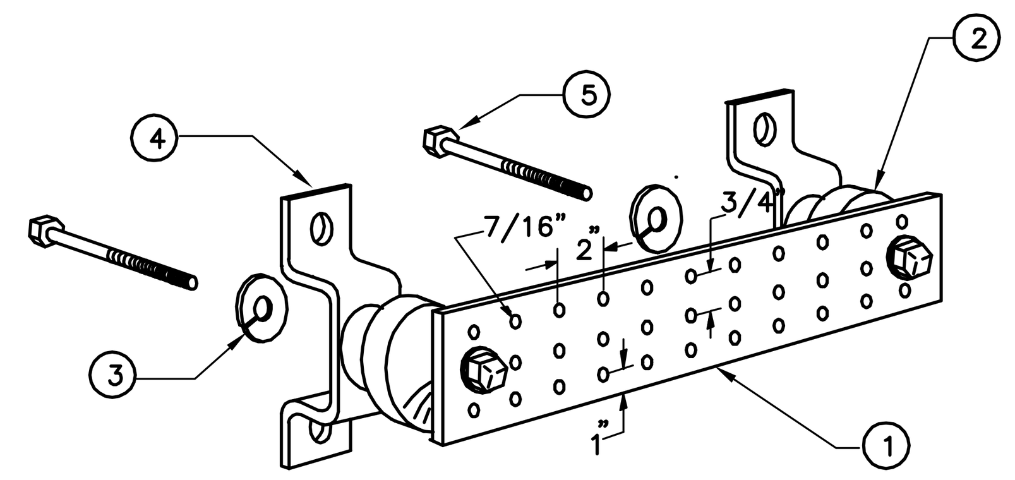
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



4 E-3 **RRU POLE MOUNT GROUNDING**

NOT TO SCALE

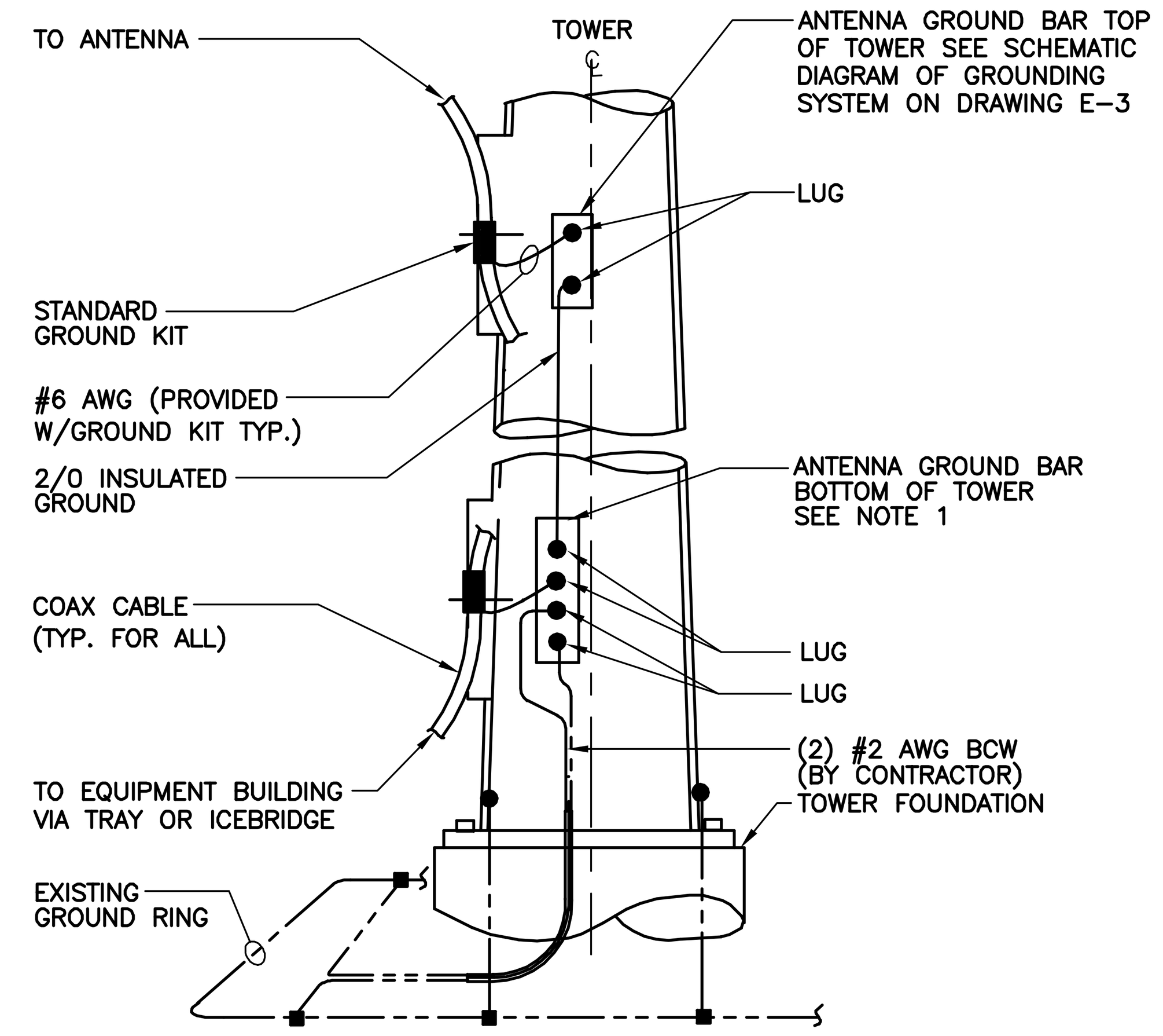


LEGEND

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

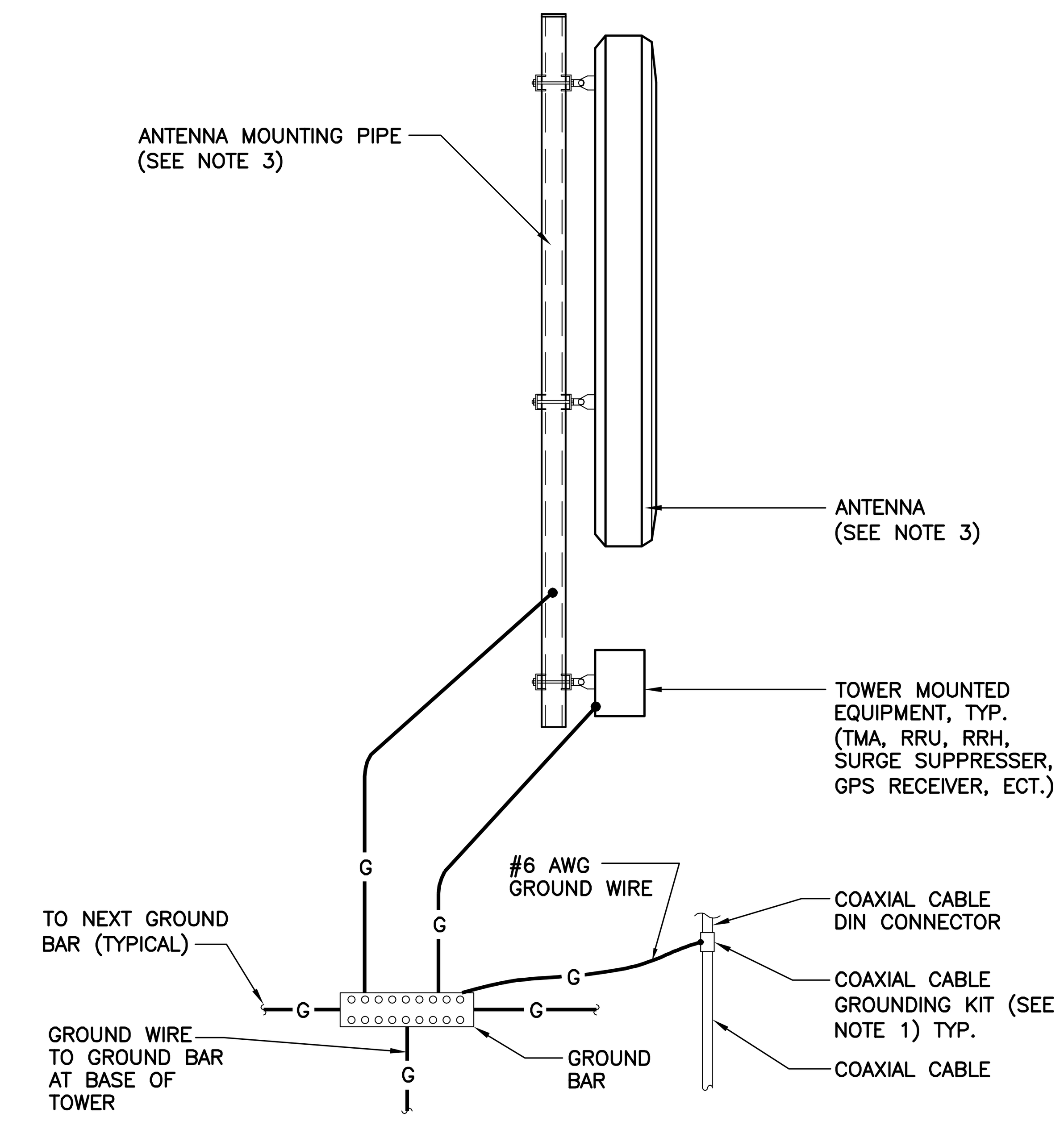


NOTES:

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

2 E-3 **ANTENNA CABLE GROUNDING - TOWER**

NOT TO SCALE

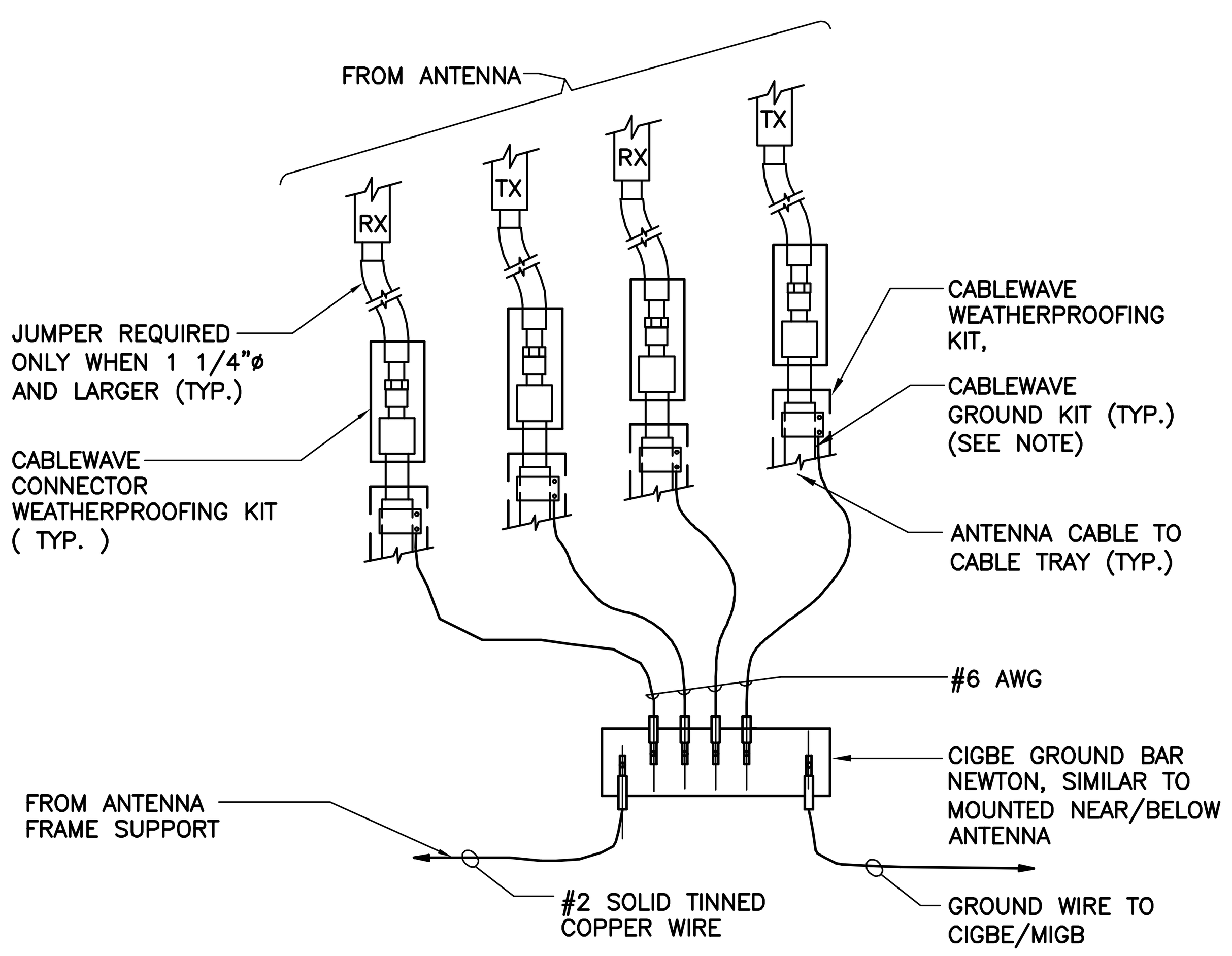


NOTES:

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

1 E-3 **TYPICAL ANTENNA GROUNDING DETAIL**

NOT TO SCALE

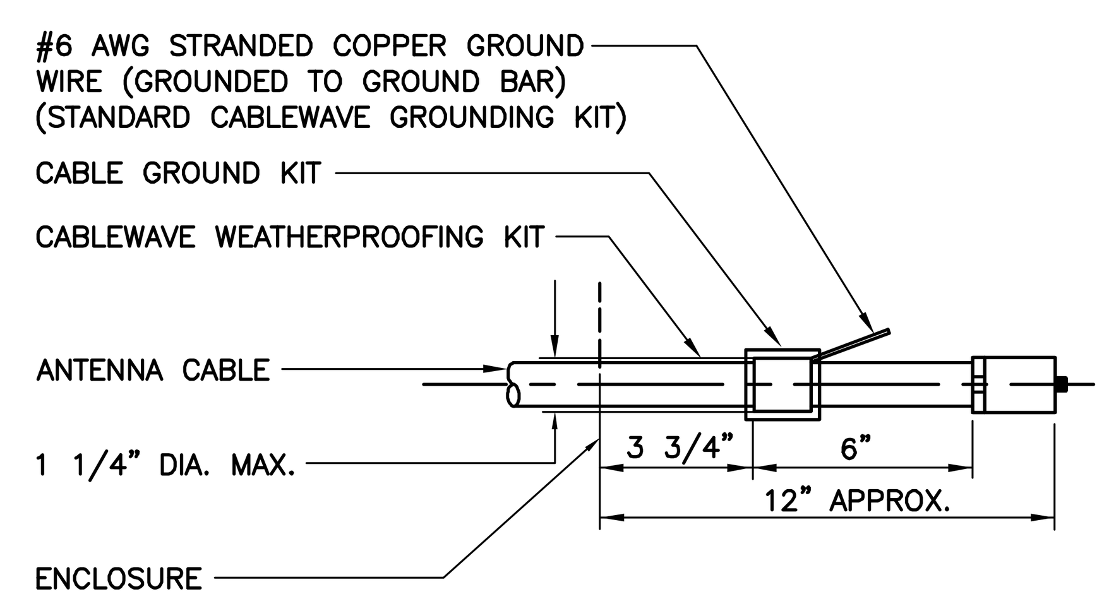


NOTE:

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

6 E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**

NOT TO SCALE



NOTE:

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

5 E-3 **ANTENNA CABLE GROUNDING DETAIL**

NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-3

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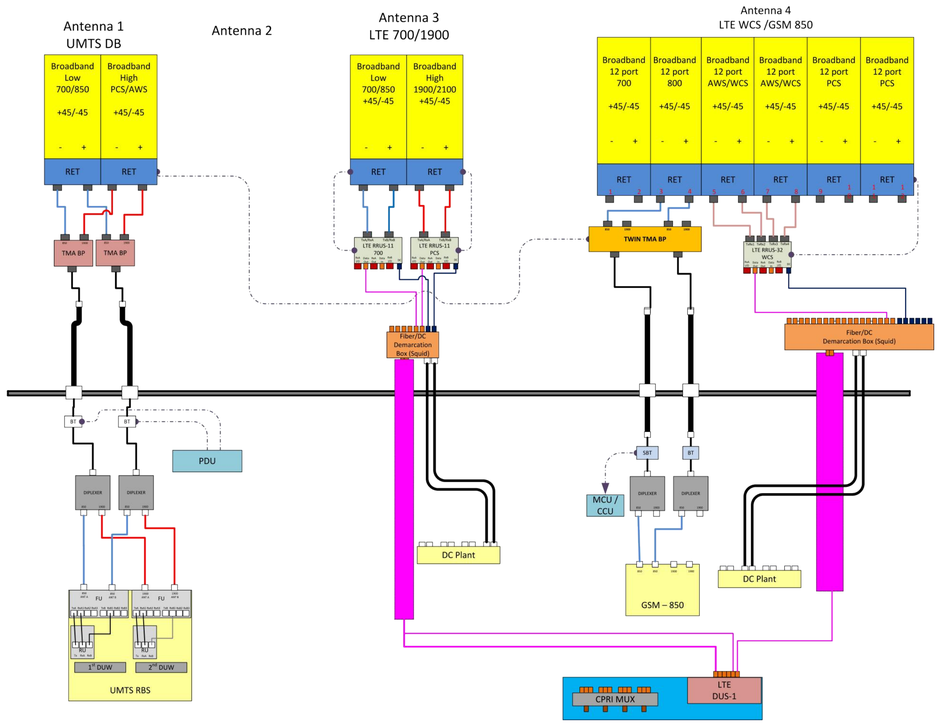
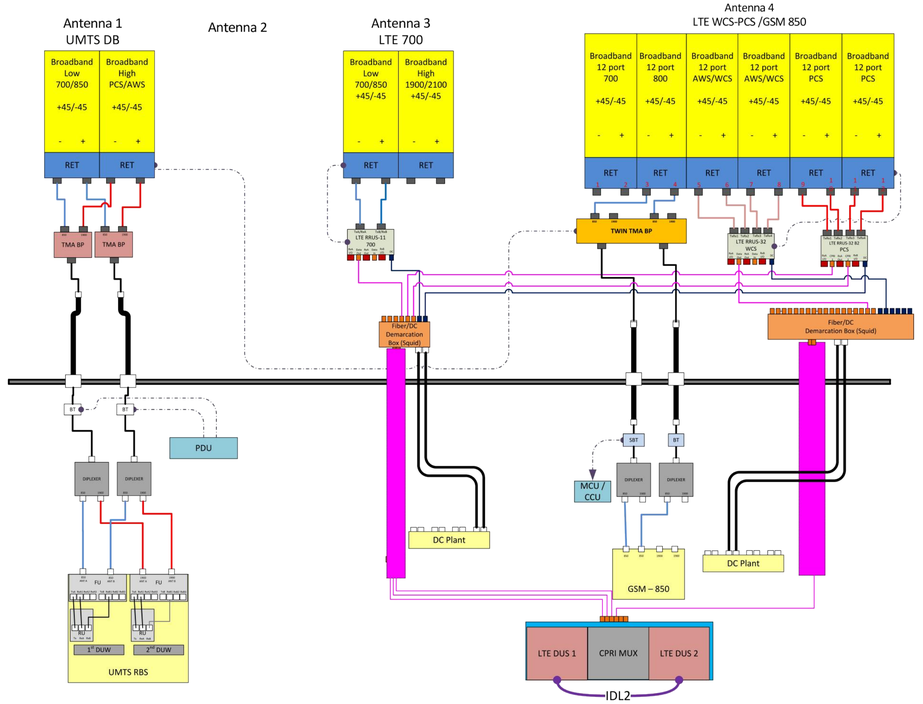
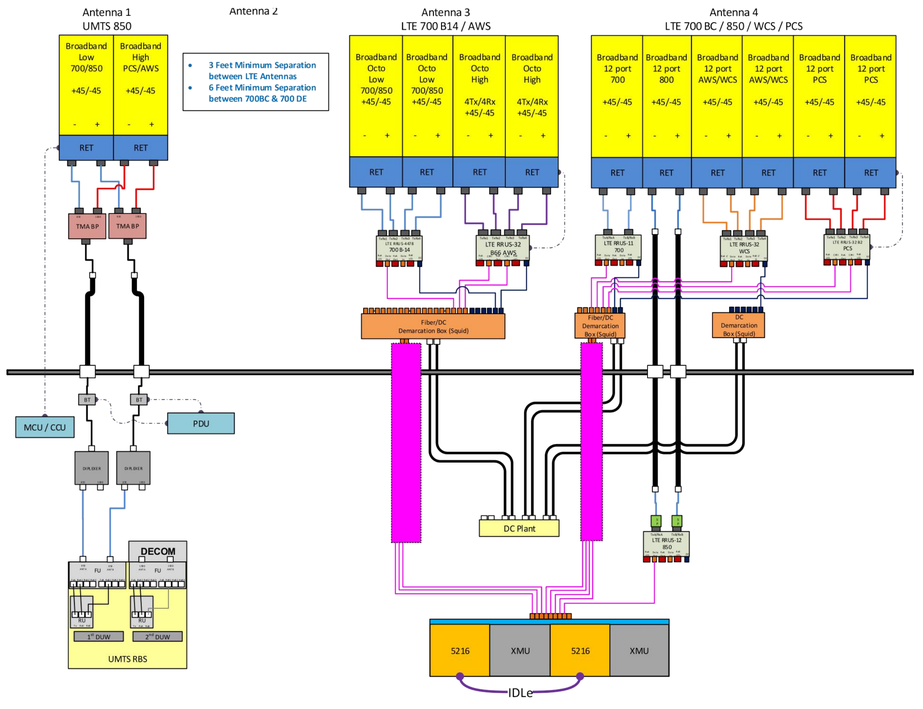


1 P–1 **RF PLUMBING DIAGRAM – 3C**
NOT TO SCALE



2 P–1 **RF PLUMBING DIAGRAM – RRH ADD**
NOT TO SCALE



3 P–1 **RF PLUMBING DIAGRAM – 4C WCS/5C AWS/6C 700 UPPER D**
NOT TO SCALE

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PLUMBING DIAGRAMS

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Sheet No. 9 of 9

AECOM

Submitted to
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
March 29, 2018

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

AT&T

EMPIRE telecom

AT&T Site Number : CT2143
AT&T Site Name : Wilton
Site Address: 46 Fenwood Lane
Wilton, Connecticut

60566142
EMP-004 Revision 1

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the 180' self-supporting lattice tower located at 46 Fenwood Lane in Wilton, Connecticut.

The structural analysis was conducted in accordance with the 2016 Connecticut State Building Code which includes the TIA-222-G[1] Standard, 2012 International Building Code, the 2016 Connecticut State Building Code Amendments, the AISC[2] Load Resistance Factor Design (LRFD), the ASCE 7[3] design Code, and the Connecticut State Police Requirements which include the TIA/EIA-222-F[4].

The antenna loading considered in the analysis consists of all the existing and proposed antennas, transmission lines and ancillary items as outlined in the Introduction Section of this Report.

The proposed AT&T antenna installation is listed below:

Proposed Appurtenances	Carrier	Antenna Center Elevation
Remove: **(3) Powerwave 7770 Panels (1 Removal per sector, 1 Remains per sector)** **(3) Powerwave P65-16-XLH-RR Panel Antennas** **(3) Ericsson RRUS-11 RRH Units (1 Removal per sector, 1 Remains per sector)** **(6) LGP21901 Diplexer Units (2 Removal per sector, 2 Remains per sector)** **(3) Powerwave TT19-08BP111-001 TMA units**	**AT&T (Existing)**	**@ 163'**
Install: **(3) Quintel QS66512-2 Panel Antennas** **(3) Kathrein 800-10965 Panel Antennas** **(3) Ericsson B14 4478 RRH Radio Units** **(3) Ericsson RRUS-32 B66 (AWS) RRH Units** **(3) Ericsson RRUS-32 B2 (1900 MHz) RRH Units** **(3) Ericsson RRUS-32 RRH Units** **(2) DC Squid / Surge Arrestor Units** **(1) Fiber Optic Cable** **(4) DC Cables**	**AT&T (Proposed)**	**@ 163'**

1. TIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version G)
2. AISC = American Institute of Steel Construction (14th Edition)
3. ASCE 7 = American Society of Civil Engineers Standard 7 (2010 Edition)
4. TIA/EIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version F)

1. EXECUTIVE SUMMARY - *continued*

The results of the structural analysis indicated that:

1. **The existing steel tower structure IS NOT considered structurally adequate for the proposed antenna loading with the wind classification specified above.**
2. The existing tower anchor bolts ARE considered structurally adequate for the proposed antenna loading with the classification specified above.
3. The existing foundation IS considered structurally adequate for the proposed antenna loading with the load classification specified above.
4. The existing tower's sway (deflection) is 0.5560 degrees, and the existing tower's twist (rotation) is 0.0319 degrees. These figures combined ARE within the Connecticut State Police requirement of 0.75 degrees for twist (rotation) and sway (deflection) with the load classification specified above.

This analysis is based on:

1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes utilized in the preparation of this report obtained from the original design documents prepared by Bayar and Associates dated July 1990.
3) Previous structural analysis performed by URS Corporation, on behalf of T-Mobile, project number 36931390.00000 / NSS-017, signed and sealed March 3, 2015
4) Previous structural analysis and modification performed by AECOM, on behalf of T-Mobile, project number 60405835, signed and sealed May 5, 2015.
5) Tower Mapping and Inventory by D&K Nationwide Communications, Inc., dated March 17, 2016.
6) Antenna inventory provided by the Connecticut State Police via email on June 20, 2016.
7) Previous structural analysis and evaluation performed by AECOM, on behalf of Pyramid Network Services, LLC, project number 60509756.03 / PNS-603, signed and sealed on August 9, 2016
8) Proposed update to AT&T antenna inventory provided by Contract Drawings, obtained via e-mail dated March 21, 2018.
9) Antenna and mount configuration as specified on the following page of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the antenna, cabling and mount configurations used, as well as the physical condition of tower members, connections and foundations. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please contact this office at (860) 529-8882.

Sincerely,

AECOM,

Richard A. Sambor, P.E.
Senior Structural Engineer
RAS/mcd

2. INTRODUCTION

The subject tower is located at 46 Fenwood Lane in Wilton, Connecticut. The structure is a 180' four sided self-supporting lattice tower designed by Bayar and Associates.

The structural analysis was conducted in accordance with the following:

- TIA-222-G Standard for Standard for a wind velocity of range of 90 mph to 110 mph (3-second gust) and 50 mph (3-second gust) concurrent with 0.75" ice thickness, considered to increase in thickness with height
- 2012 International Building Code with 2016 Connecticut State Building Code Amendments for a wind speed of 101 mph (3-second gust)
- 2010 AISC Load Resistance Factor Design (LRFD)
- 2010 ASCE 7 Minimum Design Loads for Buildings and Other Structures for the ice thickness referenced in the TIA-222-G Standard
- Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) and 90 mph (fastest mile) concurrent with 0.5" ice. Twist (rotation) and sway (deflection) were determined in accordance with Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) concurrent with 0.5" ice, analyzed under the TIA/EIA-222-F design Standard.

The inventory together with the proposed AT&T antenna arrangement is summarized in the table below:

The inventory is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Mount Elevation***	***Cable***
(1) 10' Lightning Rod	Tower (existing)	Tower mounted	185'	---
(1) 8'x6-5/8" Dia Omni Antenna	(A31) CSP-4 (existing)	*Shared Mount (See CSP-2 Mount)*	185'	(1) 7/8"
(1) 20' 4-Bay Dipole Antenna (1) 20' 2-Bay Dipole Antenna	(A29) FBI-12, FCP-12 (existing)	*Shared Mount (See CSP-1 Mount)*	185'	(2) 7/8"
(1) Sinclair SC479-HF1LFD (D00-E5764) Omni Antenna	(A30) CSP-3 (existing)	*Shared Mount (See CSP-2 Mount)*	183'	(1) 1-5/8" (existing Cable)
(1) Sinclair SC479-HF1LFD (D00-E5764) Omni Antenna	(A28) CSP-6 (existing)	*Shared Mount (See CSP-1 Mount)*	183'	(1) 1-5/8" (existing Cable)
(1) Bird 432-83H-01T TTA Control Box	(A27) CSP-67 (existing)	*Shared Mount (See CSP-1 Mount)*	181'	(1) 1/2"
(1) 6' Dish with Radome	(A25) CSP-36 (existing)	Pipe Mounted to Tower	173'	(1) WEP65
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A24) CSP-65 (existing)	*Shared Mount (See CSP-2 Mount)*	172'	(1) 1-5/8" (existing Cable)

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A23) CSP-2 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 180' (Shared with CSP-65, CSP-3 & CSP-4)	172'	(1) 1-5/8" (existing Cable)
(1) 6' Dish with Radome	(A22) CSP-5 (existing)	Pipe Mounted to Tower	170.5'	(1) WEP65
(1) 6' Dish with Radome	(A33) CSP-59 (existing)	Pipe Mounted to Tower	170'	(1) WEP65
(1) BA-1312 Omni Antenna	(A21) CAP-25 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 170'	170'	(1) 7/8"
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A26) CSP-1 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 180' (Shared with CSP-67, CSP-6 & FBI/FCP-12)	170'	(1) 1-5/8" (existing Cable)
(1) BA1010-2 Omni Antenna	(A20) CSP-10 (existing)	*Shared with Above Mount*	169'	(1) 7/8"
(3) Ericsson B14 4478 RRH Radio Unit **(3) Ericsson RRUS-32 B66 (AWS) RRH Units** **(3) Ericsson RRUS-32 B2 (1900 MHz) RRH Units** **(3) Ericsson RRUS-32 RRH Units** **(2) DC Squid / Surge Arrestor Units**				
(3) QS66512-2 Panel Antennas **(3) 800-10965 Panel Antennas** **(3) B14 4478 RRH Units** **(3) RRUS-32 B66 RRH Units** **(3) RRUS-32 B2 RRH Units** **(3) RRUS-32 RRH Units** **(2) DC Squid / Surge Arrestor Units**	**AT&T (Proposed)**	*Shared with Below Mount*	**163'**	**(1) Fiber Optic Cable** **(4) DC Cables**

Antenna Type	Carrier	Mount	Mount Elevation	Cable
(3) Powerwave 7770 (6) LGP21401 TMAs (6) RRUS-11 RRU Units (6) LGP21901 Diplexers (1) DC6-48-Surge Protector	AT&T (existing)	(3) T-Frames	163'	(12) 1-5/8" (1) 2" Flex Conduit with (1) Fiber & (2) DC Cables
(1) Decibel DB408-B Dipole Antenna	(A19) FCP-12 (existing)	(2) 6' Standoff	161'	(1) 7/8"
(1) DB636 12' Omni Antenna	(A15) D&K-30 NEU-57 (existing)	8' Standoff	140'	(1) 7//8"
-----	(A18) D&K-33 (existing)	6' Standoff	139'	N/A
(1) ASP-816 3' Yagi Antenna	(A17) D&K-32 WTR-28 (existing)	6' Standoff	138'	(1) 7/8"
(1) Decibel DB-222-A 12' Dipole Antenna	(A16) D&K-31 (existing)	4' Standoff	136.5'	(1) 7/8"
(1) Bird (TX/RX) 101-83B-08-T5 Omni Antenna	(A14) D&K-29 CSP-63 (existing)	*Shared with Below Mount*	134'	(1) 1-5/8"
(1) Bird 432-83H-01T TTA Junction Box	(A13) D&K-28 CSP-66 (existing)	6' Standoff	133'	(1) 1/2"
(1) (inverted) Bird (TX/RX) 101-83B-08-T5 Omni Antenna	(A12) D&K-27 CSP-64 (existing)	*Shared with Above Mount*	132'	(1) 1-5/8"
(1) Dish Antenna Ice Shield	(A11) D&K-26 (existing)	*Shared with Below Mount*	131'	N/A
(1) 6' Dish with Radome	(A10) D&K-25 CSP-35 (existing)	Pipe Mounted to Tower	125'	(1) WEP65

Antenna Type	Carrier	Mount	Mount Elevation	Cable
(3) Ericsson AIR21 B2A|B4P Panel Antennas (3) Ericsson AIR21 B4A/B12P Panel Antennas (3) (UMTS) TMA Units (3) (LTE) TMA Units (3) Antenna Mounts (3) Ericsson RRUS-11 RRH Units (3) Ericsson AIR21 B2A|B4P Panel Antennas (3) (UMTS) TMA Units	T-Mobile (existing)	(3) Antenna Mounts	122'	(12) 1-1/4" Coaxial Cables (2) Fiber Optic Cables
(1) 7' Omni Antenna	(A8) D&K-14 (existing)	10' Standoff Arm	121'	(1) 7/8"
(1) BDC806-09NE 22' Omni Antenna	(A7) D&K-13 CSP-62 (existing)	6' Standoff	107'	(1) 1-5/8"
(1) PD-128 12' Omni Antenna	(A9) D&K-15 (existing)	6' Standoff	106'	(1) 7/8"
(1) 4' Grid Dish	(A6) D&K-12 CSP-11 (existing)	Pipe Mounted to Tower	106'	(1) 7/8"
(3) APXVSPP18-C (3) ALU 800 MHz RRH Units (3) ALU 1900 MHz RRH Units	Sprint (existing)	(3) 10' Frame w/ tie-back arms (existing)	105'	(3) RFS Hybriflex Cables (1-1/4" Dia.)
(1) (inverted) 12' Omni Antenna	(A4) D&K-4 DEA-32 (existing)	10' Standoff Arm	91'	(1) 7/8"
(1) 22' 4-Bay Dipole Antenna	(A5) D&K-11 USS-26 (existing)	3' Standoff	86'	(1) 7/8"
(1) Ice Shield for Dish Mounted Below	CSP-13 (existing)	Pipe Mounted to Tower	76'	N/A
-----	(A3) D&K-3 (existing)	Pipe Mount for Dish Antenna	71'	N/A

Antenna Type	Carrier	Mount	Mount Elevation	Cable
(1) GPS	(A2) D&K-2 Sprint (existing)	6' Standoff	61'	(1) 1/2"
(1) DB-803 3' Omni Antenna	(A1) D&K-1 CSP-68 (existing)	3' Standoff	50'	(1) 1/2"

NOTES: Antenna ID numbering of antenna and appurtenances obtained from Tower Mapping and Existing Inventory via tower climb, performed by D&K Nationwide Communications, Inc. on March 17, 2016.

"A#" refers to the antenna number used in the structural analysis program to identify tower appurtenances.

This structural analysis of the communications tower was performed by AECOM for AT&T. The purpose of this analysis was to investigate the structural integrity of the existing tower and foundation for existing and proposed antenna loads in compliance with the 2016 Connecticut State Building Code. This analysis was conducted to evaluate stress on the tower and the effect forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with, the TIA-222-G–Structural Standard for Antenna Towers and Antenna Supporting Structures and Antennas, the 2012 International Building Code with 2016 Connecticut State Building Code Amendments and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Load Resistance Factor Design (LRFD)

The structural analysis was conducted using TNX Tower version 7.0.8.3 and used the following conditions for this tower review (following the TIA/EIA-222-G Standard):

- Structure Class 3 – (Essential Communications)
  - NOTE: ASCE 7 and CT State Building Code Applied Risk Category 4 for design wind loads (see below)
- Topographic Category 3 – (Tower location on top of hill – rolling wind conditions considered)
  - Crest Height used for analysis: (approximate elevations listed below)
    - Tower Base Elevation = 370 feet
    - High point (2 mile Radius) = 460 feet (Ref. Huckleberry Hills)
    - Low Point (2 mile Radius) = 150 feet (Ref. Winnipauk Millpond)
    - "H" = (Avg of High/Low) – Base Elevation = 65 feet
- Exposure Class C – (Open Terrain with scattered obstructions)
- Load Conditions:
  - Two load conditions were evaluated as shown which were compared to design stresses according to AISC and TIA-222-G Standard.

Basic Wind Speed:

- TIA-222-G:
  - Fairfield County (Wind Speed Range): V = 90 mph - 110 mph (3-second gust) [Annex of TIA/EIA-222-G 2006]
- IBC 2012 w/ 2016 CT State Building Code Amendment:
  - (2012) IBC Section 1609.1.1 – Determination of Wind Loads – Exception 5 "Designs using TIA-222" applies for determination of Design Wind Load obtained as "V.ult" are to be converted to "V.asd" when applying the TIA-222-G design Standard (under Section 1609.3) for Basic Wind Speed.
  - (2016) CT State Building Code Amendment to the IBC Section 1609.3 wind loads are obtained from Appendix N of the State Building Code.
    - **V.asd = 101 mph** (3-Second Gust) Wind Design Parameter for the Town of Wilton, Connecticut for Risk Category four (IV) for essential communications (Connecticut State Police).

LOAD CONDITION 1 = 101 MPH (3-SECOND GUST) WIND LOAD (WITHOUT ICE) + TOWER DEAD LOAD
Load Condition 2 = 50 mph (3-second gust) Wind Load (with ice) + Ice Load + Tower Dead Load

Ice thickness used for this analysis is **0.75 inch** (assumed to start at the base of the tower) and is considered to increase in thickness with height. The initial ice thickness for design is referenced in the Annex of TIA-222-G and follows the same design criteria as the ASCE 7 Standard.

The below load condition implements the design requirements of the Connecticut State Police for the tower structures deflection limits with the allowable deflection limit of the combination of the tower's sway (deflection) and twist (rotation) under the TIA-222-F design Standard. This design limit required the design combined value of sway (deflection) and twist (rotation) to be under 0.75 degrees following the TIA-222-F design Standard.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS (cont.)

Load Condition 3 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Seismic event consideration factors/values for design:

- S.s = 0.231 (2016 CT State Building Code – Location Specific Value)
- S.1 = 0.068 (2016 CT State Building Code – Location Specific Value)
- Site Classification = "D" – from Geotechnical Report
- Seismic Design Category = "C" – (2012 International Building Code)
- F.a = 1.6 (Obtained from TIA-222-G Table 2-12 Considering above conditions)
- F.v = 2.4 (Obtained from TIA-222-G Table 2-13 Considering above conditions)

Strength Limit State Load Combinations (TIA-222-G Section 2.3.2):

The structural analysis herein has considered the following load combinations within the analysis:

1. ***1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.6 Wind load without ice***
2. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Dead weight of ice due to factored ice thickness + 1.0 Concurrent wind load with factored ice thickness + 1.0 Load effects due to temperature
3. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Earthquake Load

NOTE 1: The above **bolded** load combination is considered to create the governing design loads per the results of the analysis.

NOTE 2: The above "Dead Load Guy Assemblies" are not considered as part of the analysis and are considered as a value of zero.

NOTE 3: The "Load effects due to temperature" do not apply for structures that are self-sustaining (from the TIA-222-G Standard)

4. FINDINGS AND EVALUATION

Stresses on the tower structure were evaluated to compare with the allowable stress in accordance with AISC. The results of the analysis indicate that the existing steel tower structure has sufficient capacity to support the proposed loading without modification. The tower anchor bolts and foundation have sufficient capacity to support the proposed loading without modification.

The tower sway (deflection) is 0.5560 degrees and the tower twist (rotation) is 0.0319 degrees. These figures are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).

Tower Base Reactions:

Description	Current
Pier Compression (kips)	453
Pier Uplift (kips)	415
Overall Overturning (kip-ft)	10825
Overall Shear (kips)	116
Shear per Leg (kips)	46

Controlling Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Critical Component Size	Controlling Elevation	Stress (% capacity)	Pass/Fail
Leg (T19)	L8x8x1 1/8"	0' – 10'	83.0	Pass
Diagonal (T19)	2L2 1/2x2 1/2x1/4	0' – 10'	110.3	FAIL
Horizontal (T19)	2L2 1/2x2 1/2x1/4	0'-10'	55.0	Pass
Secondary Horizontal (T18)	L3 1/2x3 1/2x1/4	10'-20'	36.5	Pass
Top Girt (T16)	2L2-1/2x2-1/2x1/4	30'-40'	21.0	Pass
Redund Horz 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	39.2	Pass
Redund Diag 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	80.0	Pass
Redund Hip 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	0.6	Pass
Redund Sub Horz Bracing (T19)	L3x3x5/16	0'-10'	73.5	Pass
Inner Bracing (T19)	2L2x2 1/2x3/16	0'-10'	2.7	Pass
Tower Connection Bolts	(2) A325X 5/8" Dia. Bolts	90'	73.4	Pass
(Foundation) Anchor Bolts	(4) 2-1/2" dia. A36 bolts	N/A	65.6	Pass

Foundation Summary:

Component	Required	Computed	% Capacity	Pass/Fail
Anchor Rod Capacity (TIA-222-G – 4.9.9)	Ratio < 1.0	0.672	67.2	Pass
Overturning Moment Factor of Safety TIA-222-G Conditions	Resist OT * (0.75) Reduction Factor (TIA-222-G – Section 9.4.1) 18165 Kip*ft	11931 kip*ft	65.7	Pass
Bearing Pressure (TIA-222-G Conditions)	5.100 ksf max	2.5906 ksf	50.8	Pass

4. FINDINGS AND EVALUATION (cont.)

Maximum Deformations – Proposed Condition

ANSI/TIA-222-G Section 2.8.2 - Limit State Deformations

1. A rotation of 4 degrees about the vertical axis (twist) or any horizontal axis (sway) of the structure
2. A horizontal displacement (in feet) of 3% of the height of the structure.

Load Case Description	Current		Allowable	
	Sway (degree)	Displacement (Feet)	Sway (degree)	Displacement (Feet)
Service Wind Load	0.129	0.250	4.0	5.40

Tower Twist & Sway at Top (Connecticut State Police Requirements - TIA-222-F):

Description	Current	Total	Allowable
Tower Twist (degrees)	0.0319	0.5879	0.750
Tower Sway (degrees)	0.5560		

5. CONCLUSIONS

The results of the structural analysis indicated that:

1. **The existing steel tower structure IS NOT considered structurally adequate for the proposed antenna loading with the wind classification specified above.**
2. The existing tower anchor bolts ARE considered structurally adequate for the proposed antenna loading with the classification specified above.
3. The existing foundation IS considered structurally adequate for the proposed antenna loading with the load classification specified above.
4. The existing tower's sway (deflection) is 0.5560 degrees, and the existing tower's twist (rotation) is 0.0319 degrees. These figures combined ARE within the Connecticut State Police requirement of 0.75 degrees for twist (rotation) and sway (deflection) with the load classification specified above.

Limitations/Assumptions:

This report is based on the following:

1) Tower inventory as listed in this report.

2) Tower is properly installed and maintained.

3) All members are as specified in the original design documents and are in good condition.

4) All required members are in place.

5) All bolts are in place and are properly tightened.

6) Tower is in plumb condition.

7) All member protective coatings are in good condition.

8) All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

9) Foundations are in good condition without defects and were properly constructed to support original design loads as specified in the original design documents.

AECOM is not responsible for any modifications completed prior to or hereafter in which AECOM is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

AECOM hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact AECOM. AECOM disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Ongoing and Periodic Inspection and Maintenance:

After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA-222-G Section 14.2 for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. It is also recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

6.) DRAWINGS AND DATA

SEISMIC BASE SHEAR ANALYSIS

AECOM

Seismic (Vs) Base Shear Implementing TIA–222-G, IBC 2012 & Connecticut State Building Code of 2016

Calculation of Seismic Base Shear Implementing TIA-222-G, IBC 2012 & & CT State Building Code 2016.

Location: Wilton, CT -Site Class "D"

$S_{DS} = \frac{2}{3} F_A S_S$, where $S_S = 0.231$ and $F_A = 1.6$ $S_{DS} = \frac{2}{3} F_A S_S = \frac{2}{3} * 1.6 * 0.231 = 0.246$

$S_{D1} = \frac{2}{3} F_V S_1$, where $S_1 = 0.068$ and $F_V = 2.4$ $S_{D1} = \frac{2}{3} F_V S_1 = \frac{2}{3} * 2.4 * 0.068 = 0.109$

TIA-222-G SECTION 2.7 EARTHQUAKE LOADS (PROCEDURES):

1. Importance Factor "I" (tables 2-3 TIA-222-G) = 1.5 (Structure Class 3)

ANSI/TIA-222-G 2.7.7.1 (TOTAL BASE SEISMIC SHEAR (Vs)

W=DL TOWER	=	51.640	Kips
W=Antennas/Mounts	=	12.744	Kips
W=Cables	=	6.8499	Kips
		71.234	Kips = WT Total = "W"

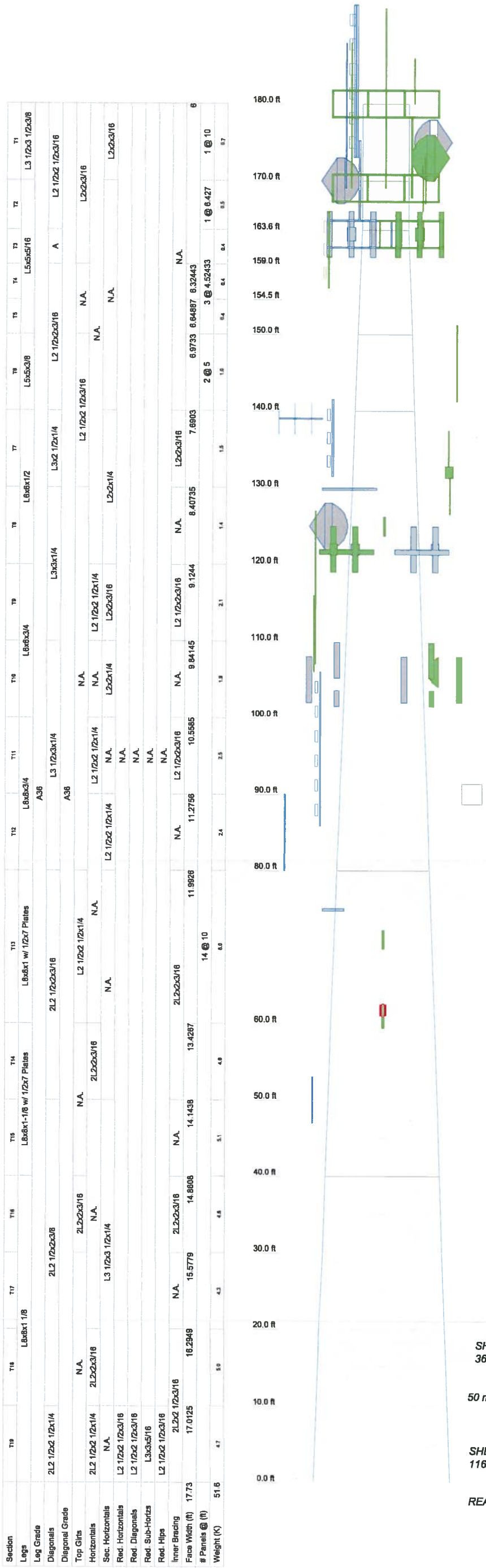
$$V_s = \frac{S_{DS} * W * I}{R} = \frac{0.246 * 71.234 kips * 1.5}{3.0} = 8.762 \ kips,$$ where R = 3.0 for Lattice Tower

$$V_{S.min} = \frac{0.5 * S_{D1} * W * I}{R} = \frac{0.5 * 0.109 * 71.234 kips * 1.5}{3.0} = 1.941 \ kips$$

*By visual inspection, the above "Base Shear" value when considering the following Load Combination is less that the base shear of wind on structure.

$1.2 * DL + 1.0\, E < 1.2\, DL + 1.6\, W$, (116 Kips), therefore seismic effect on structure Does NOT control Design.

TNX TOWER INPUT/OUTPUT SUMMARY



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 2"x15' (A32)	185	12' Omni Antenna (A15 / DK-30)	152 - 140.5
SC479-HF1LDF (D00-E5764) (A28)	183	8' Side Arm Mount (A15 / DK-30)	140.5
ANT150D (A29a)	183	Yagi ASP-816 (A17 / DK-32)	139
DB222 (A29b)	183	6' Side-Arm Mount (A17 / DK-32)	139
SC479-HF1LDF (D00-E5764) (A30)	183	6' Side-Arm Mount (A18 / DK-33)	139
ALR8-0 (A31)	183	BA1010 (A14 / DK-29)	137 - 132
TMA 432-83H-01T - Future Decom. (A27)	181	DB222-A (A16 / DK-31)	136.5
SC479-HF1LDF (D00I-E5764) (A23)	180 - 168	4' Side Mount Standoff (A16 / DK-31)	136.5
15' T-Frame Sector Mount (1) (A23,24,30,31)	180	BA1010 (A12 / DK-27)	132 - 127
SC479-HF1LDF (D00I-E5764) (A24)	180 - 168	432E-83I-01T TTA Unit (A13 / DK-28)	132
SC479-HF1LDF (D00I-E5764) (A26)	180 - 168	6' Side-Arm Mount (A12,13,14 / DK-27,28,29)	132
15' T-Frame Sector Mount (1) (A26,27,28,29)	180	Dish Ice Shield (A11 / DK-26)	130
6' PAD w/ Radome (A33)	175	PD128-1 (A8 / DK-14)	128 - 121
10'6"x4" Pipe Mount (A25)	173	3" Dia 20' Omni (A7 / DK-13)	127 - 107
6' PAD w/ Radome (A25 /)	173	2'6"x4" Pipe Mount (A10 / DK-25)	125
DB586-Y (A21)	170	6' PAD w/ Radome (A10 / DK-25)	125
10'6"x4" Pipe Mount (A22)	170	AIR B2A/B4P (T-Mobile / DK 16-24)	122
10'6"x4" Pipe Mount (A33)	170	AIR B2A/B4P (T-Mobile / DK 16-24)	122
6' PAD w/ Radome (A22 /)	170	(2) TMA (T-Mobile / DK 16-24)	122
BA1010-2 (A20)	169	(2) TMA (T-Mobile / DK 16-24)	122
15' T-Frame Sector Mount (1) (A20)	169	(2) TMA (T-Mobile / DK 16-24)	122
T-Frame (ATT)	163	AIR21 B4A|B12P (T-Mobile / DK 16-24)	122
T-Frame (ATT)	163	AIR21 B4A|B12P (T-Mobile / DK 16-24)	122
T-Frame (ATT)	163	AIR21 B4A|B12P (T-Mobile / DK 16-24)	122
7770.00 (ATT)	163	RRUS-11 (T-Mobile / DK 16-24)	122
(2) LGP 21901 Diplexer Unit (ATT)	163	RRUS-11 (T-Mobile / DK 16-24)	122
Kathrein 800-10965 Panel Antenna (ATT)	163	RRUS-11 (T-Mobile / DK 16-24)	122
QS66512-3 Quintel Panel (ATT)	163	EUSF10-U (T-Mobile / DK 16-24)	122
RRUS-11 (ATT)	163	EUSF10-U (T-Mobile / DK 16-24)	122
Raycap DC6-48-60-18-8F DC Power Surge Protection (ATT)	163	AIR B2A/B4P (T-Mobile / DK 16-24)	122
7770.00 (ATT)	163	EUSF10-U (T-Mobile / DK 16-24)	122
(2) LGP 21901 Diplexer Unit (ATT)	163	10' Standoff (A8 / DK-14)	121
Kathrein 800-10965 Panel Antenna (ATT)	163	12' Omni Antenna (A9 - DK-15)	116 - 106
QS66512-3 Quintel Panel (ATT)	163	6' Side-Arm Mount (A7 / DK-13)	107
RRUS-11 (ATT)	163	6' Side-Arm Mount (A9 - DK-15)	106
7770.00 (ATT)	163	DB264-A (A5 / DK-11)	106 - 86
(2) LGP 21901 Diplexer Unit (ATT)	163	10'6"x4" Pipe Mount (A6 / DK-12 / CSP-11)	106
Kathrein 800-10965 Panel Antenna (ATT)	163	4' Grid Dish (A6 / DK 12 / CSP-11)	106
QS66512-3 Quintel Panel (ATT)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-11 (ATT)	163	1900 RRH (1900 MHz) Unit (Sprint / DK 5-10)	105
4478 Radio Unit (4x40W) (ATT)	163	800 RRH (800 MHz) Unit (Sprint / DK 5-10)	105
4478 Radio Unit (4x40W) (ATT)	163	1900 RRH (1900 MHz) Unit (Sprint / DK 5-10)	105
4478 Radio Unit (4x40W) (ATT)	163	APXVSPP18-C (Sprint / DK 5-10)	105
RRUS-32 B66 (ATT)	163	800 RRH (800 MHz) Unit (Sprint / DK 5-10)	105
RRUS-32 B66 (ATT)	163	800 RRH (800 MHz) Unit (Sprint / DK 5-10)	105
RRUS-32 B66 (ATT)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-32 B2 (ATT)	163	1900 RRH (1900 MHz) Unit (Sprint / DK 5-10)	105
RRUS-32 B2 (ATT)	163	APXVSPP18-C (Sprint / DK 5-10)	105
RRUS-32 B2 (ATT)	163	APXVSPP18-C (Sprint / DK 5-10)	105
RRUS-32 (ATT)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-32 (ATT)	163	SC479-HF1LDF (A4 / DK-4)	91 - 79
RRUS-32 (ATT)	163	10' Standoff (A4 / DK-4)	91
DC6-48-60-18-8C Squid / Surge Arrestor (ATT)	163	4' Side Mount Standoff (A5 / DK-11)	86
DC6-48-60-18-8C Squid / Surge Arrestor (ATT)	163	Dish Ice Shield (A3 / DK-3)	75
(2) LPG21401 TMA (ATT)	163	2'6"x4" Pipe Mount (A3 / DK-3)	71
(2) LPG21401 TMA (ATT)	163	3'4"x4" Pipe Mount (A2 / Sprint)	61
(2) LPG21401 TMA (ATT)	163	GPS (A2 / Sprint)	61
DB408-B (A19)	161	3' Stand-off (A1 / DK-1)	50
(2) 6' Side Mount Standoff (A19)	161	DB803M-Y (A1 / DK-1)	50

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

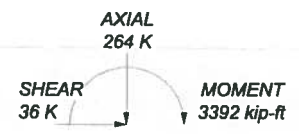
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 3 with Crest Height of 65.00 ft
7. TOWER RATING: 110.3%

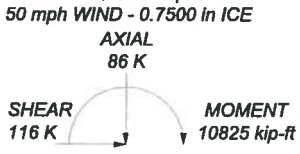
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 453 K
SHEAR: 46 K

UPLIFT: -415 K
SHEAR: 44 K



TORQUE 35 kip-ft
50 mph WIND - 0.7500 in ICE

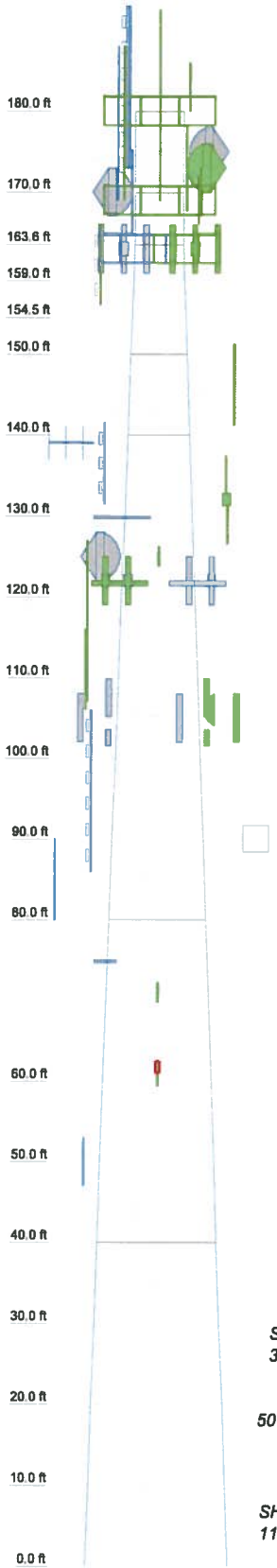


TORQUE 60 kip-ft
REACTIONS - 93 mph WIND

AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: 180' Lattice Tower - CSP			
Project: Structural Analysis			
Client: Empire Telecom / EMP-004	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 03/29/18	Scale: NTS	
Path:		Dwg No. E-1	

Section	T19	T18	T17	T16	T15	B	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		L8x8x1 1/8						L8x8x1 w/ 1/2x7 Plates	L8x8x3/4		L6x6x3/4			L6x6x1/2		L5x5x3/8		L5x5x5/16		A
Leg Grade									A36											6
Diagonals	D		2L2 1/2x2x3/8					2L2 1/2x2x3/16		L3 1/2x3x1/4			L3x3x1/4		L3x2 1/2x1/4		L2 1/2x2x3/16		C	L2 1/2x2 1/2x3/16
Diagonal Grade										A36										
Top Girts		N.A.		2L2x2x3/16		N.A.		L2 1/2x2 1/2x1/4			N.A.			L2 1/2x2 1/2x3/16		N.A.			L2x2x3/16	
Horizontals	D	2L2x2x3/16		N.A.		2L2x2x3/16		N.A.		E	N.A.	E		N.A.		N.A.				
Sec. Horizontals	N.A.		L3 1/2x3 1/2x1/4					N.A.	E	N.A.	L2x2x1/4	L2x2x3/16	L2x2x1/4							L2x2x3/16
Red. Horizontals	F									N.A.										
Red. Diagonals	F									N.A.										
Red. Sub-Horizs	L3x3x5/16									N.A.										
Red. Hips	F									N.A.										
Inner Bracing	2L2x2 1/2x3/16		N.A.	2L2x2x3/16		N.A.		2L2x2x3/16				G	N.A.	L2x2x3/16				N.A.		
Face Width (ft)	17.73	16.2949	15.5779	14.8608		14.1438		13.4267		11.2756	9.84145	9.1244	8.40735	7.6903						
# Panels @ (ft)	17.0125							14 @ 10								2 @ 5	3 @ 4.52433	1 @ 6.427	1 @ 10	
Weight (K)	51.6	5.0	4.3	4.8		5.1		8.9		2.4	1.9	2.1	1.4	1.5		1.0	0.4	0.4	0.5	0.7



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3 1/2x3 1/2x3/8	E	L2 1/2x2 1/2x1/4
B	L8x8x1-1/8 w/ 1/2x7 Plates	F	L2 1/2x2 1/2x3/16
C	L2x2x3/16	G	L2 1/2x2x3/16
D	2L2 1/2x2 1/2x1/4		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 3 with Crest Height of 65.00 ft
7. TOWER RATING: 110.3%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 453 K
SHEAR: 46 K

UPLIFT: -415 K
SHEAR: 44 K

AXIAL 264 K
SHEAR 36 K *MOMENT 3392 kip-ft*
TORQUE 35 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 86 K
SHEAR 116 K *MOMENT 10825 kip-ft*
TORQUE 60 kip-ft
REACTIONS - 93 mph WIND

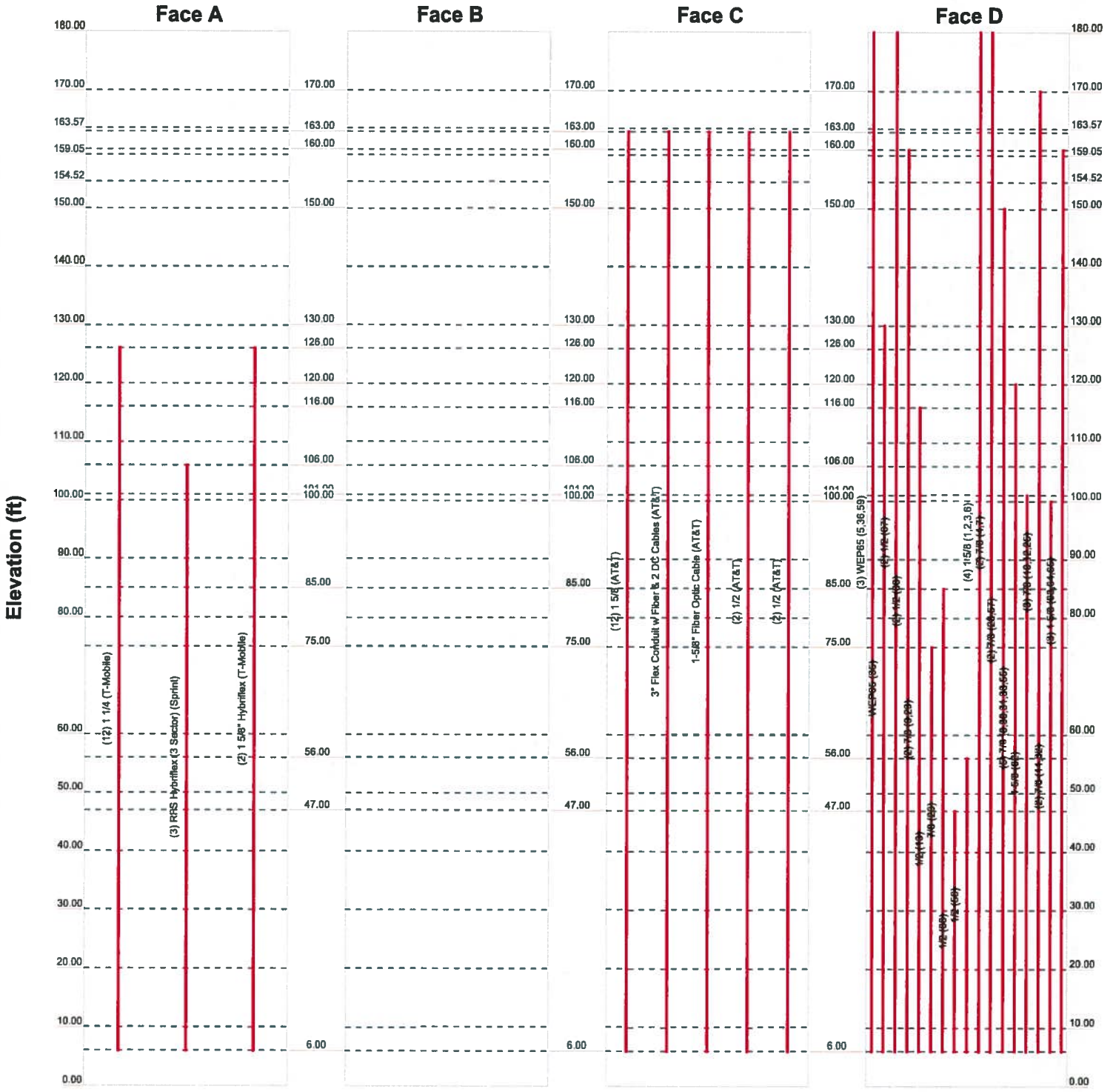
AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: 180' Lattice Tower - CSP
Project: Structural Analysis
Client: Empire Telecom / EMP-004 Drawn by: MCD App'd:
Code: TIA-222-G Date: 03/29/18 Scale: NT
Path: Dwg No. E

TNX TOWER FEEDLINE DISTRIBUTION

Feed Line Distribution Chart
0' - 180'

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

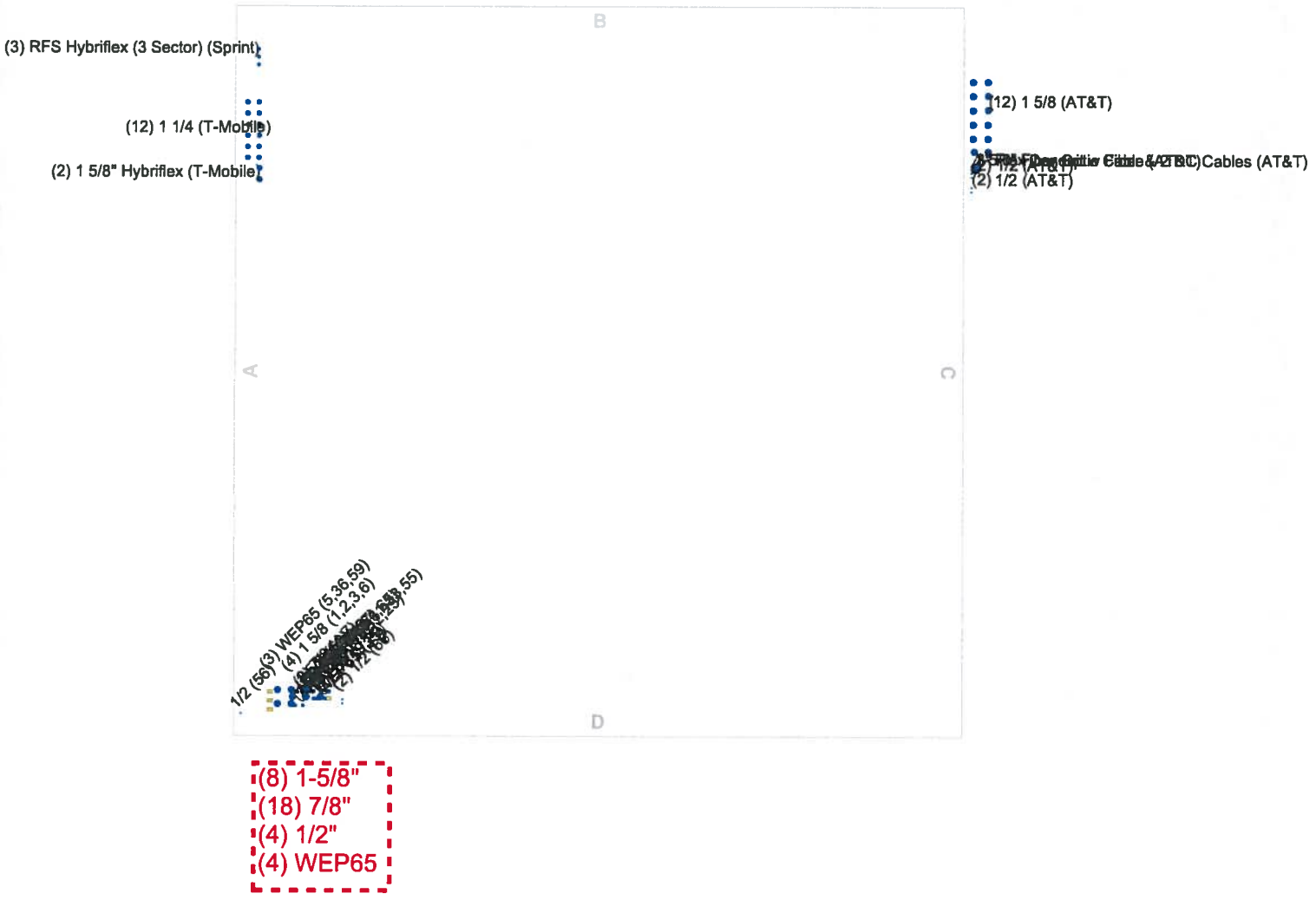


AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Job: *180' Lattice Tower - CSP* Project: *Structural Analysis* Client: Empire Telecom / EMP-004 Drawn by: MCD App'd: Code: TIA-222-G Date: 03/29/18 Scale: NT Path: Dwg No. E

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round Flat App In Face App Out Face



AECOM
500 Enterprise Drive, Suite 3B
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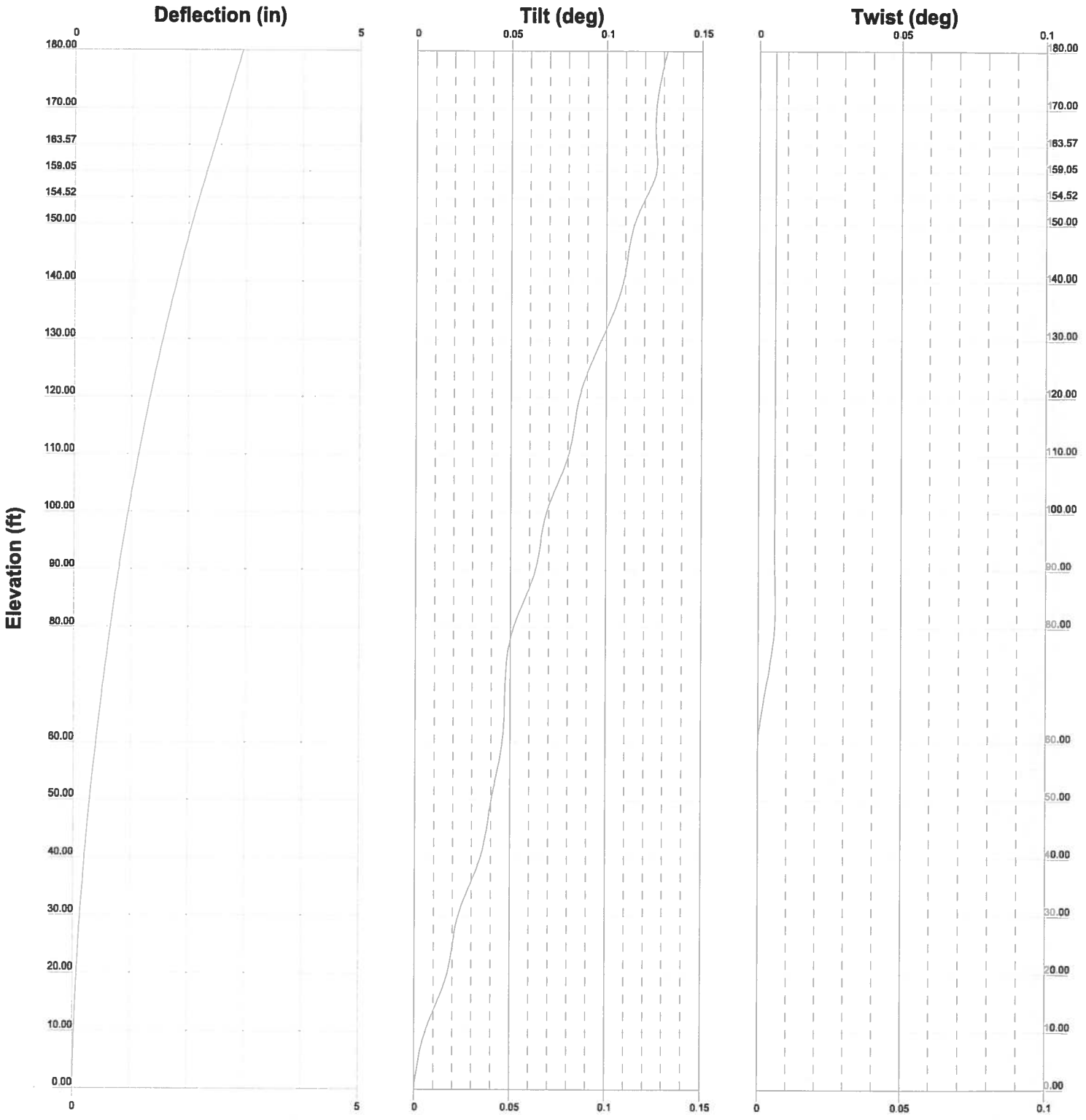
Phone: 860-529-8882
FAX: 860-529-3991

Job:	180' Lattice Tower - CSP		
Project:	Structural Analysis		
Client:	Empire Telecom / EMP-004	Drawn by: MCD	App'd:
Code:	TIA-222-G	Date: 03/29/18	Scale: N
Path:			Dwg No.

TNX TOWER DEFLECTION, TILT, AND TWIST

TIA-222-G - Service - 60 mph

Maximum Values



AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: ***180' Lattice Tower - CSP***			
Project: ***Structural Analysis***			
Client: Empire Telecom / EMP-004	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 03/29/18	Scale: N	
Path:		Dwg No.	

TNX TOWER DETAILED OUTPUT

tnxTower	Job	Page
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	180' Lattice Tower - CSP	1 of 86
	Project Structural Analysis	Date 16:48:32 03/29/18
	Client Empire Telecom / EMP-004	Designed by MCD

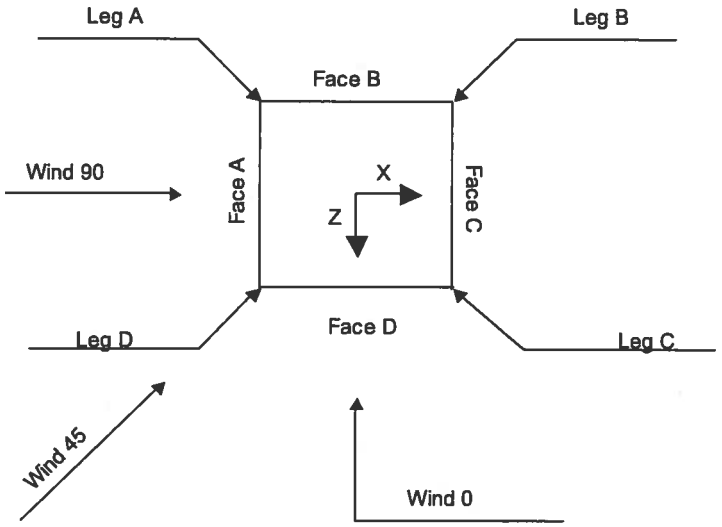
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 180.00 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 6.00 ft at the top and 17.73 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 93 mph.
Structure Class III.
Exposure Category C.
Topographic Category 3.
Crest Height 65.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in 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				



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-170.00			6.00	1	10.00
T2	170.00-163.57			6.00	1	6.43
T3	163.57-159.05			6.00	1	4.52
T4	159.05-154.52			6.32	1	4.52
T5	154.52-150.00			6.65	1	4.52
T6	150.00-140.00			6.97	1	10.00
T7	140.00-130.00			7.69	1	10.00
T8	130.00-120.00			8.41	1	10.00
T9	120.00-110.00			9.12	1	10.00
T10	110.00-100.00			9.84	1	10.00
T11	100.00-90.00			10.56	1	10.00
T12	90.00-80.00			11.28	1	10.00
T13	80.00-60.00			11.99	1	20.00
T14	60.00-50.00			13.43	1	10.00
T15	50.00-40.00			14.14	1	10.00
T16	40.00-30.00			14.86	1	10.00
T17	30.00-20.00			15.58	1	10.00
T18	20.00-10.00			16.29	1	10.00
T19	10.00-0.00			17.01	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in

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	180.00-170.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	170.00-163.57	6.43	X Brace	No	No	0.0000	0.0000
T3	163.57-159.05	4.52	X Brace	No	No	0.0000	0.0000
T4	159.05-154.52	4.52	X Brace	No	No	0.0000	0.0000
T5	154.52-150.00	4.52	X Brace	No	No	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T7	140.00-130.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	130.00-120.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	80.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T15	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	30.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	20.00-10.00	10.00	X Brace	No	Yes	0.0000	0.0000
T19	10.00-0.00	10.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Single Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 170.00-163.57	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 163.57-159.05	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 159.05-154.52	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T5 154.52-150.00	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 150.00-140.00	Single Angle	L5x5x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 140.00-130.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T9 120.00-110.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T11 100.00-90.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T13 80.00-60.00	Arbitrary Shape	L8x8x1 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T16 40.00-30.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 30.00-20.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T18 20.00-10.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T19 10.00-0.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	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 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 170.00-163.57	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 163.57-159.05	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 150.00-140.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Double Angle	2L2x2x3/16	A36 (36 ksi)	Single Angle		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
T1 180.00-170.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 120.00-110.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 100.00-90.00	None	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T14 60.00-50.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T18 20.00-10.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T19 10.00-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 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
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 120.00-110.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 100.00-90.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T17 30.00-20.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 20.00-10.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)
T19 10.00-0.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T19 10.00-0.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Sub-Horizontal	Single Angle	L3x3x5/16	1
		Hip (1)	Single Angle	L2 1/2x2 1/2x3/16	1

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 180.00-170.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T2 170.00-163.57	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
T3 163.57-159.05	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T4 159.05-154.52	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T5 154.52-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T6 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T7 140.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T8 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T9 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T10 110.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T11 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T12 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T14 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T15 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T16 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T17 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T18 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T19 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 180.00-170.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 170.00-163.57	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 163.57-159.05	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 159.05-154.52	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 154.52-150.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 150.00-140.00	Yes	No	1	1	1	1	1	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	X Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T7	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
140.00-130.00				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
130.00-120.00				1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
120.00-110.00				1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
110.00-100.00				1	1	1	1	1	1	1	1	1	1	1	1
T11	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
100.00-90.00				1	1	1	1	1	1	1	1	1	1	1	1
T12	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
90.00-80.00				1	1	1	1	1	1	1	1	1	1	1	1
T13	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1	1	1	1	1	1
T14	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
60.00-50.00				1	1	1	1	1	1	1	1	1	1	1	1
T15	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
50.00-40.00				1	1	1	1	1	1	1	1	1	1	1	1
T16	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
40.00-30.00				1	1	1	1	1	1	1	1	1	1	1	1
T17	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
30.00-20.00				1	1	1	1	1	1	1	1	1	1	1	1
T18	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
20.00-10.00				1	1	1	1	1	1	1	1	1	1	1	1
T19	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
10.00-0.00				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	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
180.00-170.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
170.00-163.57														
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
163.57-159.05														
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
159.05-154.52														
T5	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
154.52-150.00														
T6	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T7	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
140.00-130.00														
T8	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
130.00-120.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T9 120.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T12 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	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	0.6250	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T15 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T16 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T17 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T19 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 180.00-170.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 170.00-163.57	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 163.57-159.05	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 159.05-154.52	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 154.52-150.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 150.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 140.00-130.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 130.00-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 120.00-110.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 110.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T11 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T14 60.00-50.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T15 50.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T16 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T17 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T18 20.00-10.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T19 10.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-170.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325X	2
T2 170.00-163.57	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T3 163.57-159.05	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T4 159.05-154.52	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T5 154.52-150.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T6 150.00-140.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T7 140.00-130.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T8 130.00-120.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T9 120.00-110.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T10 110.00-100.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T11 100.00-90.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T12 90.00-80.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T13 80.00-60.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T14 60.00-50.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T15 50.00-40.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T16 40.00-30.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.0000 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T17 30.00-20.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T18 20.00-10.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T19 10.00-0.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0

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 1/4 (T-Mobile)	A	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.33	12	6	1.5500	1.5500		0.66
WEP65 (5,36,59)	D	No	Af (CaAa)	180.00 - 6.00	-12.0000	0.45	3	1	1.5836	1.5836		0.53
WEP65 (35)	D	No	Af (CaAa)	130.00 - 6.00	-10.0000	0.37	1	1	1.5836	1.5836		0.53
1/2 (67)	D	No	Ar (CaAa)	180.00 - 6.00	-10.0000	0.35	2	1	0.5800	0.5800		0.25
1/2 (66)	D	No	Ar (CaAa)	160.00 - 6.00	-10.0000	0.35	2	1	0.5800	0.5800		0.25
7/8 (9,29)	D	No	Ar (CaAa)	116.00 - 6.00	-10.0000	0.38	2	2	1.1100	1.1100		0.54
1/2 (13)	D	No	Ar (CaAa)	75.00 - 6.00	-10.0000	0.39	1	1	0.5800	0.5800		0.25
7/8 (26)	D	No	Ar (CaAa)	85.00 - 6.00	-10.0000	0.39	1	1	1.1100	1.1100		0.54
1/2 (68)	D	No	Ar (CaAa)	47.00 - 6.00	-10.0000	0.4	1	1	0.5800	0.5800		0.25
1/2 (56)	D	No	Ar (CaAa)	56.00 - 6.00	-6.0000	0.49	1	1	0.5800	0.5800		0.25
1 5/8 (1,2,3,6)	D	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.43	4	2	1.9800	1.9800		1.04
7/8 (4,7)	D	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.41	2	2	1.1100	1.1100		0.54
7/8 (28,57)	D	No	Ar (CaAa)	150.00 - 6.00	-12.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (8,30,31,33,55)	D	No	Ar (CaAa)	120.00 - 6.00	-12.0000	0.39	5	5	1.1100	1.1100		0.54
1 5/8 (62)	D	No	Ar (CaAa)	101.00 - 6.00	-12.0000	0.4	1	1	1.9800	1.9800		1.04
7/8 (10,12,25)	D	No	Ar (CaAa)	170.00 - 6.00	-12.0000	0.38	3	3	1.1100	1.1100		0.54
7/8 (11,32)	D	No	Ar (CaAa)	100.00 - 6.00	-8.0000	0.41	2	2	1.1100	1.1100		0.54
1 5/8	D	No	Ar (CaAa)	160.00 - 6.00	-10.0000	0.4	3	3	1.9800	1.9800		1.04

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
(63,64,65) 1 5/8 (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.35	12	6	1.9800	1.9800		1.04
3" Flex Conduit w Fiber & 2 DC Cables (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.28	1	1	3.0000	3.0000		3.00
RFS Hybriflex (3 Sector) (Sprint)	A	No	Ar (CaAa)	106.00 - 6.00	-6.0000	0.43	3	3	1.0900	1.0900		0.37
1 5/8" Hybriflex (T-Mobile)	A	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.27	2	2	1.6250	1.6250		0.21
1-5/8" Fiber Optic Cable (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.28	1	1	1.9800	1.9800		1.30
1/2 (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.27	2	2	0.5800	0.5800		0.25
1/2 (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.25	2	2	0.5800	0.5800		0.25

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	180.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	19.218	0.000	0.07
T2	170.00-163.57	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	14.492	0.000	0.06
T3	163.57-159.05	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.273	0.000	0.07
		D	0.000	0.000	10.877	0.000	0.04
T4	159.05-154.52	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	14.053	0.000	0.08
		D	0.000	0.000	13.414	0.000	0.06
T5	154.52-150.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	14.053	0.000	0.08
		D	0.000	0.000	13.414	0.000	0.06
T6	150.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	31.868	0.000	0.14
T7	140.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	31.868	0.000	0.14
T8	130.00-120.00	A	0.000	0.000	13.110	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00

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
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	34.507	0.000	0.14
T9	120.00-110.00	A	0.000	0.000	21.850	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	41.389	0.000	0.18
T10	110.00-100.00	A	0.000	0.000	23.812	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	42.475	0.000	0.18
T11	100.00-90.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	46.477	0.000	0.20
T12	90.00-80.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	47.032	0.000	0.20
T13	80.00-60.00	A	0.000	0.000	50.240	0.000	0.19
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	62.120	0.000	0.36
		D	0.000	0.000	96.044	0.000	0.42
T14	60.00-50.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	48.515	0.000	0.21
T15	50.00-40.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	49.153	0.000	0.21
T16	40.00-30.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	49.327	0.000	0.21
T17	30.00-20.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	49.327	0.000	0.21
T18	20.00-10.00	A	0.000	0.000	25.120	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	49.327	0.000	0.21
T19	10.00-0.00	A	0.000	0.000	10.048	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.405	0.000	0.07
		D	0.000	0.000	19.731	0.000	0.09

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	180.00-170.00	A	2.219	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	55.411	0.000	1.05
T2	170.00-163.57	A	2.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	44.685	0.000	0.79
T3	163.57-159.05	A	2.203	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	27.175	0.000	0.59
		D		0.000	0.000	34.210	0.000	0.60
T4	159.05-154.52	A	2.198	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	31.081	0.000	0.68
		D		0.000	0.000	44.683	0.000	0.77
T5	154.52-150.00	A	2.192	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	31.045	0.000	0.68
		D		0.000	0.000	44.623	0.000	0.76
T6	150.00-140.00	A	2.183	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	68.493	0.000	1.49
		D		0.000	0.000	110.224	0.000	1.82
T7	140.00-130.00	A	2.171	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	68.318	0.000	1.48
		D		0.000	0.000	109.886	0.000	1.81
T8	130.00-120.00	A	2.159	0.000	0.000	25.590	0.000	0.53
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	68.145	0.000	1.47
		D		0.000	0.000	116.507	0.000	1.92
T9	120.00-110.00	A	2.147	0.000	0.000	42.571	0.000	0.88
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.975	0.000	1.47
		D		0.000	0.000	142.255	0.000	2.27
T10	110.00-100.00	A	2.136	0.000	0.000	50.821	0.000	0.98
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.814	0.000	1.46
		D		0.000	0.000	147.142	0.000	2.32
T11	100.00-90.00	A	2.126	0.000	0.000	56.268	0.000	1.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.666	0.000	1.46
		D		0.000	0.000	163.978	0.000	2.55
T12	90.00-80.00	A	2.117	0.000	0.000	56.178	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.540	0.000	1.45
		D		0.000	0.000	166.280	0.000	2.58
T13	80.00-60.00	A	2.108	0.000	0.000	112.175	0.000	2.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	134.823	0.000	2.89
		D		0.000	0.000	344.308	0.000	5.33
T14	60.00-50.00	A	2.106	0.000	0.000	56.072	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.390	0.000	1.44
		D		0.000	0.000	176.158	0.000	2.73
T15	50.00-40.00	A	2.110	0.000	0.000	56.114	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.450	0.000	1.45
		D		0.000	0.000	181.637	0.000	2.81
T16	40.00-30.00	A	2.118	0.000	0.000	56.196	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.565	0.000	1.45
		D		0.000	0.000	183.479	0.000	2.85
T17	30.00-20.00	A	2.127	0.000	0.000	56.280	0.000	1.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.683	0.000	1.46

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		D		0.000	0.000	183.891	0.000	2.86
T18	20.00-10.00	A	2.120	0.000	0.000	56.214	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.591	0.000	1.45
		D		0.000	0.000	183.569	0.000	2.85
T19	10.00-0.00	A	2.018	0.000	0.000	22.072	0.000	0.40
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	26.453	0.000	0.56
		D		0.000	0.000	71.392	0.000	1.07

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-170.00	-7.5212	6.1936	-10.2507	8.8161
T2	170.00-163.57	-7.4744	6.1873	-9.8544	8.4800
T3	163.57-159.05	2.8319	-0.1297	-2.8016	4.0737
T4	159.05-154.52	2.5731	0.5340	-3.0433	4.9770
T5	154.52-150.00	2.6133	0.6763	-3.0548	5.2260
T6	150.00-140.00	2.0429	1.3458	-3.5512	5.8439
T7	140.00-130.00	2.0090	1.6119	-3.6071	6.3290
T8	130.00-120.00	-2.3906	-0.1994	-6.6300	6.0480
T9	120.00-110.00	-6.1524	-0.0352	-9.2109	6.6586
T10	110.00-100.00	-7.3823	-0.1123	-10.2152	6.6911
T11	100.00-90.00	-8.4975	0.7154	-11.4345	7.5338
T12	90.00-80.00	-9.0954	1.0509	-12.3577	8.4398
T13	80.00-60.00	-13.0678	2.0998	-15.2640	11.0476
T14	60.00-50.00	-13.9302	2.6345	-16.7123	12.5063
T15	50.00-40.00	-14.1332	3.0122	-17.9049	13.8067
T16	40.00-30.00	-11.8633	2.6726	-17.4141	13.6332
T17	30.00-20.00	-12.7867	2.9771	-18.6134	14.7018
T18	20.00-10.00	-12.6936	3.0423	-18.6584	14.8312
T19	10.00-0.00	-6.5128	1.4638	-11.5873	9.1394

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	WEP65	170.00 - 180.00	0.6000	0.5020
T1	4	1/2	170.00 - 180.00	1.0000	1.0000
T1	11	1 5/8	170.00 - 180.00	0.6000	0.5020
T1	12	7/8	170.00 - 180.00	0.6000	0.5020
T2	2	WEP65	163.57 - 170.00	0.6000	0.4598
T2	4	1/2	163.57 - 170.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	11	1 5/8	163.57 - 170.00	0.6000	0.4598
T2	12	7/8	163.57 - 170.00	0.6000	0.4598
T2	16	7/8	163.57 - 170.00	0.6000	0.4598
T3	2	WEP65	159.05 - 163.57	0.6000	0.4170
T3	4	1/2	159.05 - 163.57	1.0000	1.0000
T3	5	1/2	159.05 - 160.00	1.0000	1.0000
T3	11	1 5/8	159.05 - 163.57	0.6000	0.4170
T3	12	7/8	159.05 - 163.57	0.6000	0.4170
T3	16	7/8	159.05 - 163.57	0.6000	0.4170
T3	18	1 5/8	159.05 - 160.00	0.6000	0.4170
T3	19	1 5/8	159.05 - 163.00	0.6000	0.4170
T3	20	3" Flex Conduit w Fiber & 2 DC Cables	159.05 - 163.00	0.6000	0.4170
T3	23	1-5/8" Fiber Optic Cable	159.05 - 163.00	0.6000	0.4170
T3	24	1/2	159.05 - 163.00	0.6000	0.4170
T3	25	1/2	159.05 - 163.00	0.6000	0.4170
T4	2	WEP65	154.52 - 159.05	0.6000	0.5093
T4	4	1/2	154.52 - 159.05	1.0000	1.0000
T4	5	1/2	154.52 - 159.05	1.0000	1.0000
T4	11	1 5/8	154.52 - 159.05	0.6000	0.5093
T4	12	7/8	154.52 - 159.05	0.6000	0.5093
T4	16	7/8	154.52 - 159.05	0.6000	0.5093
T4	18	1 5/8	154.52 - 159.05	0.6000	0.5093
T4	19	1 5/8	154.52 - 159.05	0.6000	0.5093
T4	20	3" Flex Conduit w Fiber & 2 DC Cables	154.52 - 159.05	0.6000	0.5093
T4	23	1-5/8" Fiber Optic Cable	154.52 - 159.05	0.6000	0.5093
T4	24	1/2	154.52 - 159.05	0.6000	0.5093
T4	25	1/2	154.52 - 159.05	0.6000	0.5093
T5	2	WEP65	150.00 - 154.52	0.6000	0.5224
T5	4	1/2	150.00 - 154.52	1.0000	1.0000
T5	5	1/2	150.00 - 154.52	1.0000	1.0000
T5	11	1 5/8	150.00 - 154.52	0.6000	0.5224

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	12	7/8	150.00 - 154.52	0.6000	0.5224
T5	16	7/8	150.00 - 154.52	0.6000	0.5224
T5	18	1 5/8	150.00 - 154.52	0.6000	0.5224
T5	19	1 5/8	150.00 - 154.52	0.6000	0.5224
T5	20	3" Flex Conduit w Fiber & 2 DC Cables	150.00 - 154.52	0.6000	0.5224
T5	23	1-5/8" Fiber Optic Cable	150.00 - 154.52	0.6000	0.5224
T5	24	1/2	150.00 - 154.52	0.6000	0.5224
T5	25	1/2	150.00 - 154.52	0.6000	0.5224
T6	2	WEP65	140.00 - 150.00	0.6000	0.5110
T6	4	1/2	140.00 - 150.00	1.0000	1.0000
T6	5	1/2	140.00 - 150.00	1.0000	1.0000
T6	11	1 5/8	140.00 - 150.00	0.6000	0.5110
T6	12	7/8	140.00 - 150.00	0.6000	0.5110
T6	13	7/8	140.00 - 150.00	0.6000	0.5110
T6	16	7/8	140.00 - 150.00	0.6000	0.5110
T6	18	1 5/8	140.00 - 150.00	0.6000	0.5110
T6	19	1 5/8	140.00 - 150.00	0.6000	0.5110
T6	20	3" Flex Conduit w Fiber & 2 DC Cables	140.00 - 150.00	0.6000	0.5110
T6	23	1-5/8" Fiber Optic Cable	140.00 - 150.00	0.6000	0.5110
T6	24	1/2	140.00 - 150.00	0.6000	0.5110
T6	25	1/2	140.00 - 150.00	0.6000	0.5110
T7	2	WEP65	130.00 - 140.00	0.6000	0.5314
T7	4	1/2	130.00 - 140.00	1.0000	1.0000
T7	5	1/2	130.00 - 140.00	1.0000	1.0000
T7	11	1 5/8	130.00 - 140.00	0.6000	0.5314
T7	12	7/8	130.00 - 140.00	0.6000	0.5314
T7	13	7/8	130.00 - 140.00	0.6000	0.5314
T7	16	7/8	130.00 - 140.00	0.6000	0.5314
T7	18	1 5/8	130.00 - 140.00	0.6000	0.5314
T7	19	1 5/8	130.00 - 140.00	0.6000	0.5314
T7	20	3" Flex Conduit w Fiber & 2 DC Cables	130.00 - 140.00	0.6000	0.5314

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	23	1-5/8" Fiber Optic Cable	130.00 - 140.00	0.6000	0.5314
T7	24	1/2	130.00 - 140.00	0.6000	0.5314
T7	25	1/2	130.00 - 140.00	0.6000	0.5314
T8	1	1 1/4	120.00 - 126.00	0.6000	0.6000
T8	2	WEP65	120.00 - 130.00	0.6000	0.6000
T8	3	WEP65	120.00 - 130.00	0.6000	0.6000
T8	4	1/2	120.00 - 130.00	1.0000	1.0000
T8	5	1/2	120.00 - 130.00	1.0000	1.0000
T8	11	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	12	7/8	120.00 - 130.00	0.6000	0.6000
T8	13	7/8	120.00 - 130.00	0.6000	0.6000
T8	16	7/8	120.00 - 130.00	0.6000	0.6000
T8	18	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	19	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	20	3" Flex Conduit w Fiber & 2 DC Cables	120.00 - 130.00	0.6000	0.6000
T8	22	1 5/8" Hybriflex	120.00 - 126.00	0.6000	0.6000
T8	23	1-5/8" Fiber Optic Cable	120.00 - 130.00	0.6000	0.6000
T8	24	1/2	120.00 - 130.00	0.6000	0.6000
T8	25	1/2	120.00 - 130.00	0.6000	0.6000
T9	1	1 1/4	110.00 - 120.00	0.6000	0.5746
T9	2	WEP65	110.00 - 120.00	0.6000	0.5746
T9	3	WEP65	110.00 - 120.00	0.6000	0.5746
T9	4	1/2	110.00 - 120.00	1.0000	1.0000
T9	5	1/2	110.00 - 120.00	1.0000	1.0000
T9	6	7/8	110.00 - 116.00	0.6000	0.5746
T9	11	1 5/8	110.00 - 120.00	0.6000	0.5746
T9	12	7/8	110.00 - 120.00	0.6000	0.5746
T9	13	7/8	110.00 - 120.00	0.6000	0.5746
T9	14	7/8	110.00 - 120.00	0.6000	0.5746
T9	16	7/8	110.00 - 120.00	0.6000	0.5746
T9	18	1 5/8	110.00 - 120.00	0.6000	0.5746

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	19	1 5/8	110.00 - 120.00	0.6000	0.5746
T9	20	3" Flex Conduit w Fiber & 2 DC Cables	110.00 - 120.00	0.6000	0.5746
T9	22	1 5/8" Hybriflex	110.00 - 120.00	0.6000	0.5746
T9	23	1-5/8" Fiber Optic Cable	110.00 - 120.00	0.6000	0.5746
T9	24	1/2	110.00 - 120.00	0.6000	0.5746
T9	25	1/2	110.00 - 120.00	0.6000	0.5746
T10	1	1 1/4	100.00 - 110.00	0.6000	0.6000
T10	2	WEP65	100.00 - 110.00	0.6000	0.6000
T10	3	WEP65	100.00 - 110.00	0.6000	0.6000
T10	4	1/2	100.00 - 110.00	1.0000	1.0000
T10	5	1/2	100.00 - 110.00	1.0000	1.0000
T10	6	7/8	100.00 - 110.00	0.6000	0.6000
T10	11	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	12	7/8	100.00 - 110.00	0.6000	0.6000
T10	13	7/8	100.00 - 110.00	0.6000	0.6000
T10	14	7/8	100.00 - 110.00	0.6000	0.6000
T10	15	1 5/8	100.00 - 101.00	0.6000	0.6000
T10	16	7/8	100.00 - 110.00	0.6000	0.6000
T10	18	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	19	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	20	3" Flex Conduit w Fiber & 2 DC Cables	100.00 - 110.00	0.6000	0.6000
T10	21	RFS Hybriflex (3 Sector)	100.00 - 106.00	0.6000	0.6000
T10	22	1 5/8" Hybriflex	100.00 - 110.00	0.6000	0.6000
T10	23	1-5/8" Fiber Optic Cable	100.00 - 110.00	0.6000	0.6000
T10	24	1/2	100.00 - 110.00	0.6000	0.6000
T10	25	1/2	100.00 - 110.00	0.6000	0.6000
T11	1	1 1/4	90.00 - 100.00	0.6000	0.6000
T11	2	WEP65	90.00 - 100.00	0.6000	0.6000
T11	3	WEP65	90.00 - 100.00	0.6000	0.6000
T11	4	1/2	90.00 - 100.00	1.0000	1.0000
T11	5	1/2	90.00 - 100.00	1.0000	1.0000
T11	6	7/8	90.00 - 100.00	0.6000	0.6000
T11	11	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	12	7/8	90.00 - 100.00	0.6000	0.6000
T11	13	7/8	90.00 - 100.00	0.6000	0.6000
T11	14	7/8	90.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	15	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	16	7/8	90.00 - 100.00	0.6000	0.6000
T11	17	7/8	90.00 - 100.00	0.6000	0.6000
T11	18	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	19	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	20	3" Flex Conduit w Fiber & 2 DC Cables	90.00 - 100.00	0.6000	0.6000
T11	21	RFS Hybriflex (3 Sector)	90.00 - 100.00	0.6000	0.6000
T11	22	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T11	23	1-5/8" Fiber Optic Cable	90.00 - 100.00	0.6000	0.6000
T11	24	1/2	90.00 - 100.00	0.6000	0.6000
T11	25	1/2	90.00 - 100.00	0.6000	0.6000
T12	1	1 1/4	80.00 - 90.00	0.6000	0.6000
T12	2	WEP65	80.00 - 90.00	0.6000	0.6000
T12	3	WEP65	80.00 - 90.00	0.6000	0.6000
T12	4	1/2	80.00 - 90.00	1.0000	1.0000
T12	5	1/2	80.00 - 90.00	1.0000	1.0000
T12	6	7/8	80.00 - 90.00	0.6000	0.6000
T12	8	7/8	80.00 - 85.00	0.6000	0.6000
T12	11	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	12	7/8	80.00 - 90.00	0.6000	0.6000
T12	13	7/8	80.00 - 90.00	0.6000	0.6000
T12	14	7/8	80.00 - 90.00	0.6000	0.6000
T12	15	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	16	7/8	80.00 - 90.00	0.6000	0.6000
T12	17	7/8	80.00 - 90.00	0.6000	0.6000
T12	18	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	19	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	20	3" Flex Conduit w Fiber & 2 DC Cables	80.00 - 90.00	0.6000	0.6000
T12	21	RFS Hybriflex (3 Sector)	80.00 - 90.00	0.6000	0.6000
T12	22	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T12	23	1-5/8" Fiber Optic Cable	80.00 - 90.00	0.6000	0.6000
T12	24	1/2	80.00 - 90.00	0.6000	0.6000
T12	25	1/2	80.00 - 90.00	0.6000	0.6000
T13	1	1 1/4	60.00 - 80.00	0.6000	0.6000
T13	2	WEP65	60.00 - 80.00	0.6000	0.6000
T13	3	WEP65	60.00 - 80.00	0.6000	0.6000
T13	4	1/2	60.00 - 80.00	1.0000	1.0000
T13	5	1/2	60.00 - 80.00	1.0000	1.0000
T13	6	7/8	60.00 - 80.00	0.6000	0.6000
T13	7	1/2	60.00 - 75.00	0.6000	0.6000
T13	8	7/8	60.00 - 80.00	0.6000	0.6000
T13	11	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	12	7/8	60.00 - 80.00	0.6000	0.6000
T13	13	7/8	60.00 - 80.00	0.6000	0.6000
T13	14	7/8	60.00 - 80.00	0.6000	0.6000
T13	15	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	16	7/8	60.00 - 80.00	0.6000	0.6000
T13	17	7/8	60.00 - 80.00	0.6000	0.6000
T13	18	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	19	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	20	3" Flex Conduit w Fiber & 2 DC Cables	60.00 - 80.00	0.6000	0.6000
T13	21	RFS Hybriflex (3 Sector)	60.00 - 80.00	0.6000	0.6000
T13	22	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T13	23	1-5/8" Fiber Optic Cable	60.00 - 80.00	0.6000	0.6000
T13	24	1/2	60.00 - 80.00	0.6000	0.6000
T13	25	1/2	60.00 - 80.00	0.6000	0.6000
T14	1	1 1/4	50.00 - 60.00	0.6000	0.6000
T14	2	WEP65	50.00 - 60.00	0.6000	0.6000
T14	3	WEP65	50.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	4	1/2	50.00 - 60.00	1.0000	1.0000
T14	5	1/2	50.00 - 60.00	1.0000	1.0000
T14	6	7/8	50.00 - 60.00	0.6000	0.6000
T14	7	1/2	50.00 - 60.00	0.6000	0.6000
T14	8	7/8	50.00 - 60.00	0.6000	0.6000
T14	10	1/2	50.00 - 56.00	0.6000	0.6000
T14	11	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	12	7/8	50.00 - 60.00	0.6000	0.6000
T14	13	7/8	50.00 - 60.00	0.6000	0.6000
T14	14	7/8	50.00 - 60.00	0.6000	0.6000
T14	15	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	16	7/8	50.00 - 60.00	0.6000	0.6000
T14	17	7/8	50.00 - 60.00	0.6000	0.6000
T14	18	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	19	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	20	3" Flex Conduit w Fiber & 2 DC Cables	50.00 - 60.00	0.6000	0.6000
T14	21	RFS Hybriflex (3 Sector)	50.00 - 60.00	0.6000	0.6000
T14	22	1 5/8" Hybriflex	50.00 - 60.00	0.6000	0.6000
T14	23	1-5/8" Fiber Optic Cable	50.00 - 60.00	0.6000	0.6000
T14	24	1/2	50.00 - 60.00	0.6000	0.6000
T14	25	1/2	50.00 - 60.00	0.6000	0.6000
T15	1	1 1/4	40.00 - 50.00	0.6000	0.6000
T15	2	WEP65	40.00 - 50.00	0.6000	0.6000
T15	3	WEP65	40.00 - 50.00	0.6000	0.6000
T15	4	1/2	40.00 - 50.00	1.0000	1.0000
T15	5	1/2	40.00 - 50.00	1.0000	1.0000
T15	6	7/8	40.00 - 50.00	0.6000	0.6000
T15	7	1/2	40.00 - 50.00	0.6000	0.6000
T15	8	7/8	40.00 - 50.00	0.6000	0.6000
T15	9	1/2	40.00 - 47.00	0.6000	0.6000
T15	10	1/2	40.00 - 50.00	0.6000	0.6000
T15	11	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	12	7/8	40.00 - 50.00	0.6000	0.6000
T15	13	7/8	40.00 - 50.00	0.6000	0.6000
T15	14	7/8	40.00 - 50.00	0.6000	0.6000
T15	15	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	16	7/8	40.00 - 50.00	0.6000	0.6000
T15	17	7/8	40.00 - 50.00	0.6000	0.6000
T15	18	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	19	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	20	3" Flex Conduit w Fiber & 2 DC Cables	40.00 - 50.00	0.6000	0.6000
T15	21	RFS Hybriflex (3 Sector)	40.00 - 50.00	0.6000	0.6000
T15	22	1 5/8" Hybriflex	40.00 - 50.00	0.6000	0.6000
T15	23	1-5/8" Fiber Optic Cable	40.00 - 50.00	0.6000	0.6000
T15	24	1/2	40.00 - 50.00	0.6000	0.6000
T15	25	1/2	40.00 - 50.00	0.6000	0.6000
T16	1	1 1/4	30.00 - 40.00	0.6000	0.6000
T16	2	WEP65	30.00 - 40.00	0.6000	0.6000
T16	3	WEP65	30.00 - 40.00	0.6000	0.6000
T16	4	1/2	30.00 - 40.00	1.0000	1.0000
T16	5	1/2	30.00 - 40.00	1.0000	1.0000
T16	6	7/8	30.00 - 40.00	0.6000	0.6000
T16	7	1/2	30.00 - 40.00	0.6000	0.6000
T16	8	7/8	30.00 - 40.00	0.6000	0.6000
T16	9	1/2	30.00 - 40.00	0.6000	0.6000
T16	10	1/2	30.00 - 40.00	0.6000	0.6000
T16	11	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	12	7/8	30.00 - 40.00	0.6000	0.6000
T16	13	7/8	30.00 - 40.00	0.6000	0.6000
T16	14	7/8	30.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	15	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	16	7/8	30.00 - 40.00	0.6000	0.6000
T16	17	7/8	30.00 - 40.00	0.6000	0.6000
T16	18	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	19	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	20	3" Flex Conduit w Fiber & 2 DC Cables	30.00 - 40.00	0.6000	0.6000
T16	21	RFS Hybriflex (3 Sector)	30.00 - 40.00	0.6000	0.6000
T16	22	1 5/8" Hybriflex	30.00 - 40.00	0.6000	0.6000
T16	23	1-5/8" Fiber Optic Cable	30.00 - 40.00	0.6000	0.6000
T16	24	1/2	30.00 - 40.00	0.6000	0.6000
T16	25	1/2	30.00 - 40.00	0.6000	0.6000
T17	1	1 1/4	20.00 - 30.00	0.6000	0.6000
T17	2	WEP65	20.00 - 30.00	0.6000	0.6000
T17	3	WEP65	20.00 - 30.00	0.6000	0.6000
T17	4	1/2	20.00 - 30.00	1.0000	1.0000
T17	5	1/2	20.00 - 30.00	1.0000	1.0000
T17	6	7/8	20.00 - 30.00	0.6000	0.6000
T17	7	1/2	20.00 - 30.00	0.6000	0.6000
T17	8	7/8	20.00 - 30.00	0.6000	0.6000
T17	9	1/2	20.00 - 30.00	0.6000	0.6000
T17	10	1/2	20.00 - 30.00	0.6000	0.6000
T17	11	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	12	7/8	20.00 - 30.00	0.6000	0.6000
T17	13	7/8	20.00 - 30.00	0.6000	0.6000
T17	14	7/8	20.00 - 30.00	0.6000	0.6000
T17	15	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	16	7/8	20.00 - 30.00	0.6000	0.6000
T17	17	7/8	20.00 - 30.00	0.6000	0.6000
T17	18	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	19	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	20	3" Flex Conduit w Fiber & 2 DC Cables	20.00 - 30.00	0.6000	0.6000
T17	21	RFS Hybriflex (3 Sector)	20.00 - 30.00	0.6000	0.6000
T17	22	1 5/8" Hybriflex	20.00 - 30.00	0.6000	0.6000
T17	23	1-5/8" Fiber Optic Cable	20.00 - 30.00	0.6000	0.6000
T17	24	1/2	20.00 - 30.00	0.6000	0.6000
T17	25	1/2	20.00 - 30.00	0.6000	0.6000
T18	1	1 1/4	10.00 - 20.00	0.6000	0.6000
T18	2	WEP65	10.00 - 20.00	0.6000	0.6000
T18	3	WEP65	10.00 - 20.00	0.6000	0.6000
T18	4	1/2	10.00 - 20.00	1.0000	1.0000
T18	5	1/2	10.00 - 20.00	1.0000	1.0000
T18	6	7/8	10.00 - 20.00	0.6000	0.6000
T18	7	1/2	10.00 - 20.00	0.6000	0.6000
T18	8	7/8	10.00 - 20.00	0.6000	0.6000
T18	9	1/2	10.00 - 20.00	0.6000	0.6000
T18	10	1/2	10.00 - 20.00	0.6000	0.6000
T18	11	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	12	7/8	10.00 - 20.00	0.6000	0.6000
T18	13	7/8	10.00 - 20.00	0.6000	0.6000
T18	14	7/8	10.00 - 20.00	0.6000	0.6000
T18	15	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	16	7/8	10.00 - 20.00	0.6000	0.6000
T18	17	7/8	10.00 - 20.00	0.6000	0.6000
T18	18	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	19	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	20	3" Flex Conduit w Fiber & 2 DC Cables	10.00 - 20.00	0.6000	0.6000
T18	21	RFS Hybriflex (3 Sector)	10.00 - 20.00	0.6000	0.6000
T18	22	1 5/8" Hybriflex	10.00 - 20.00	0.6000	0.6000
T18	23	1-5/8" Fiber Optic Cable	10.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T18	24	1/2	10.00 - 20.00	0.6000	0.6000
T18	25	1/2	10.00 - 20.00	0.6000	0.6000
T19	1	1 1/4	6.00 - 10.00	0.6000	0.6000
T19	2	WEP65	6.00 - 10.00	0.6000	0.6000
T19	3	WEP65	6.00 - 10.00	0.6000	0.6000
T19	4	1/2	6.00 - 10.00	1.0000	1.0000
T19	5	1/2	6.00 - 10.00	1.0000	1.0000
T19	6	7/8	6.00 - 10.00	0.6000	0.6000
T19	7	1/2	6.00 - 10.00	0.6000	0.6000
T19	8	7/8	6.00 - 10.00	0.6000	0.6000
T19	9	1/2	6.00 - 10.00	0.6000	0.6000
T19	10	1/2	6.00 - 10.00	0.6000	0.6000
T19	11	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	12	7/8	6.00 - 10.00	0.6000	0.6000
T19	13	7/8	6.00 - 10.00	0.6000	0.6000
T19	14	7/8	6.00 - 10.00	0.6000	0.6000
T19	15	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	16	7/8	6.00 - 10.00	0.6000	0.6000
T19	17	7/8	6.00 - 10.00	0.6000	0.6000
T19	18	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	19	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	20	3" Flex Conduit w Fiber & 2 DC Cables	6.00 - 10.00	1.0000	0.6000
T19	21	RFS Hybriflex (3 Sector)	6.00 - 10.00	0.6000	0.6000
T19	22	1 5/8" Hybriflex	6.00 - 10.00	0.6000	0.6000
T19	23	1-5/8" Fiber Optic Cable	6.00 - 10.00	0.6000	0.6000
T19	24	1/2	6.00 - 10.00	0.6000	0.6000
T19	25	1/2	6.00 - 10.00	0.6000	0.6000

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
DB803M-Y	A	From Leg	3.00	0.0000	50.00	No Ice	0.50	0.50	0.00
(A1 / D&K-1)			0.00			1/2" Ice	0.68	0.68	0.01
			0.00			1" Ice	0.87	0.87	0.02
3' Stand-off	A	None		0.0000	50.00	No Ice	1.00	2.00	0.05
(A1 / D&K-1)						1/2" Ice	1.20	2.70	0.07
						1" Ice	1.40	3.40	0.10
GPS	B	From Face	4.00	0.0000	61.00	No Ice	1.00	1.00	0.01
(A2 / Sprint)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00			1" Ice	2.00	2.00	0.02
3'4"x4" Pipe Mount	B	None		0.0000	61.00	No Ice	0.91	0.91	0.04
(A2 / Sprint)						1/2" Ice	1.27	1.27	0.05
						1" Ice	1.49	1.49	0.06
2'6"x4" Pipe Mount	A	None		0.0000	71.00	No Ice	0.66	0.66	0.03
(A3 / D&K-3)						1/2" Ice	0.91	0.91	0.04
						1" Ice	1.09	1.09	0.05
Dish Ice Shield	A	From Leg	0.50	0.0000	75.00	No Ice	4.00	4.00	0.20
(A3 / D&K-3)			0.00			1/2" Ice	5.07	5.07	0.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	6.14	6.14	0.30
SC479-HF1LDF	A	From Leg	10.00	0.0000	79.00 - 91.00	No Ice	4.84	4.84	0.03
(A4 / D&K-4)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
10' Standoff	A	None		0.0000	91.00	No Ice	17.00	17.00	0.55
(A4 / D&K-4)						1/2" Ice	22.00	22.00	0.75
						1" Ice	27.00	27.00	0.95
DB264-A	A	From Leg	4.00	0.0000	106.00 - 86.00	No Ice	3.16	3.16	0.04
(A5 / D&K-11)			0.00			1/2" Ice	5.69	5.69	0.05
			0.00			1" Ice	8.22	8.22	0.06
4' Side Mount Standoff	A	None		0.0000	86.00	No Ice	2.72	2.72	0.05
(A5 / D&K-11)						1/2" Ice	4.91	4.91	0.09
						1" Ice	7.10	7.10	0.13
10'6"x4" Pipe Mount	C	None		0.0000	106.00	No Ice	3.50	3.50	0.11
(A6 / D&K-12 / CSP-11)						1/2" Ice	5.62	5.62	0.15
						1" Ice	6.25	6.25	0.19
3" Dia 20' Omni	D	From Leg	6.00	0.0000	127.00 - 107.00	No Ice	4.00	4.00	0.06
(A7 / D&K-13)			0.00			1/2" Ice	6.00	6.00	0.10
			0.00			1" Ice	8.00	8.00	0.14
6' Side-Arm Mount	D	None		0.0000	107.00	No Ice	10.60	10.60	0.14
(A7 / D&K-13)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
PD128-1	C	From Leg	10.00	0.0000	128.00 - 121.00	No Ice	1.00	1.00	0.01
(A8 / D&K-14)			0.00			1/2" Ice	1.80	1.80	0.02
			0.00			1" Ice	2.60	2.60	0.02
10' Standoff	C	None		0.0000	121.00	No Ice	17.00	17.00	0.55
(A8 / D&K-14)						1/2" Ice	22.00	22.00	0.75
						1" Ice	27.00	27.00	0.95
12' Omni Antenna	D	From Leg	6.00	0.0000	116.00 - 106.00	No Ice	5.06	5.06	0.03
(A9 - D&K-15)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
6' Side-Arm Mount	D	None		0.0000	106.00	No Ice	10.60	10.60	0.14
(A9 - D&K-15)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
EUSF10-U	A	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00			1" Ice	16.41	6.81	0.61
EUSF10-U	D	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00			1" Ice	16.41	6.81	0.61
EUSF10-U	B	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00			1" Ice	16.41	6.81	0.61
AIR B2A/B4P	A	From Leg	1.00	0.0000	122.00	No Ice	6.42	4.22	0.08
(T-Mobile / D&K 16-24)			-2.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P	B	From Leg	1.00	0.0000	122.00	No Ice	6.42	4.22	0.08
(T-Mobile / D&K 16-24)			-2.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P	D	From Leg	1.00	0.0000	122.00	No Ice	6.42	4.22	0.08
(T-Mobile / D&K 16-24)			-2.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
(2) TMA	A	From Leg	1.00	0.0000	122.00	No Ice	1.00	1.00	0.01
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	1.50	1.50	0.02
			0.00			1" Ice	2.00	2.00	0.03
(2) TMA	B	From Leg	1.00	0.0000	122.00	No Ice	1.00	1.00	0.01
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	1.50	1.50	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	2.00	2.00	0.03
(2) TMA	D	From Leg	1.00	0.0000	122.00	No Ice	1.00	1.00	0.01
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	1.50	1.50	0.02
			0.00			1" Ice	2.00	2.00	0.03
AIR21 B4A|B12P	A	From Leg	1.00	0.0000	122.00	No Ice	11.54	11.20	0.17
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	12.16	12.63	0.27
			0.00			1" Ice	OTE	13.73	0.38
AIR21 B4A|B12P	B	From Leg	1.00	0.0000	122.00	No Ice	11.54	11.20	0.17
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	12.16	12.63	0.27
			0.00			1" Ice	12.79	13.73	0.38
AIR21 B4A|B12P	D	From Leg	1.00	0.0000	122.00	No Ice	11.54	11.20	0.17
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	12.16	12.63	0.27
			0.00			1" Ice	12.79	13.73	0.38
RRUS-11	A	From Leg	1.00	0.0000	122.00	No Ice	2.57	1.07	0.05
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
RRUS-11	B	From Leg	1.00	0.0000	122.00	No Ice	2.57	1.07	0.05
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
RRUS-11	D	From Leg	1.00	0.0000	122.00	No Ice	2.57	1.07	0.05
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
2'6"x4" Pipe Mount	A	None		0.0000	125.00	No Ice	0.65	0.65	0.03
(A10 / D&K-25)						1/2" Ice	0.91	0.91	0.04
						1" Ice	1.09	1.09	0.05
Dish Ice Shield	A	From Leg	0.50	0.0000	130.00	No Ice	4.00	4.00	0.20
(A11 / D&K-26)			0.00			1/2" Ice	5.07	5.07	0.25
			0.00			1" Ice	6.14	6.14	0.30
BA1010	C	From Leg	6.00	0.0000	127.00 - 132.00	No Ice	1.55	1.55	0.01
(A12 / D&K-27)			0.00			1/2" Ice	2.29	2.29	0.01
			0.00			1" Ice	3.03	3.03	0.02
BA1010	C	From Leg	6.00	0.0000	137.00 - 132.00	No Ice	1.55	1.55	0.01
(A14 / D&K-29)			0.00			1/2" Ice	2.29	2.29	0.01
			0.00			1" Ice	3.03	3.03	0.02
432E-83I-01T TTA Unit	C	From Leg	6.00	0.0000	132.00	No Ice	2.85	0.97	0.03
(A13 / D&K-28)			0.00			1/2" Ice	3.06	1.11	0.04
			0.00			1" Ice	3.28	1.26	0.07
6' Side-Arm Mount	C	None		0.0000	132.00	No Ice	10.60	10.60	0.14
(A12,13,14 / D&K-27,28,29)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
12' Omni Antenna	C	From Leg	8.00	0.0000	152.00 - 140.50	No Ice	5.06	5.06	0.03
(A15 / D&K-30)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
8' Side Arm Mount	C	None		0.0000	140.50	No Ice	17.20	17.20	0.33
(A15 / D&K-30)						1/2" Ice	24.50	24.50	0.45
						1" Ice	31.80	31.80	0.57
DB222-A	A	From Leg	4.00	0.0000	136.50	No Ice	1.60	1.60	0.02
(A16 / D&K-31)			0.00			1/2" Ice	2.88	2.88	0.02
			0.00			1" Ice	4.16	4.16	0.03
4' Side Mount Standoff	A	None		0.0000	136.50	No Ice	2.72	2.72	0.05
(A16 / D&K-31)						1/2" Ice	4.91	4.91	0.09
						1" Ice	7.10	7.10	0.13
Yagi ASP-816	A	From Leg	6.00	0.0000	139.00	No Ice	0.79	0.02	0.01
(A17 / D&K-32)			0.00			1/2" Ice	1.04	0.04	0.01
			0.00			1" Ice	1.29	0.07	0.02
6' Side-Arm Mount	A	None		0.0000	139.00	No Ice	10.60	10.60	0.14
(A17 / D&K-32)						1/2" Ice	15.40	15.40	0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice	20.20	20.20	0.28
6' Side-Arm Mount (A18 / D&K-33)	D	None			0.0000	139.00	No Ice	10.60	10.60	0.14
							1/2" Ice	15.40	15.40	0.21
							1" Ice	20.20	20.20	0.28
*** Following Are D&K NOT Inventoried Appurtenances										
DB408-B (A19)	D	From Leg	6.00	0.00	0.0000	161.00	No Ice	1.65	1.65	0.02
			0.00				1/2" Ice	2.61	2.61	0.03
			0.00				1" Ice	3.60	3.60	0.05
(2) 6' Side Mount Standoff (A19)	D	None			0.0000	161.00	No Ice	1.40	0.13	0.01
							1/2" Ice	1.56	0.21	0.02
							1" Ice	1.73	0.30	0.02
BA1010-2 (A20)	C	From Leg	2.50	0.00	0.0000	169.00	No Ice	1.39	1.39	0.02
			0.00				1/2" Ice	1.74	1.74	0.03
			0.00				1" Ice	2.12	2.12	0.05
15' T-Frame Sector Mount (1) (A20)	C	None			0.0000	169.00	No Ice	15.00	15.00	0.50
							1/2" Ice	20.60	20.60	0.65
							1" Ice	26.20	26.20	0.80
DB586-Y (A21)	C	From Leg	3.00	0.00	0.0000	170.00	No Ice	1.01	1.01	0.01
			0.00				1/2" Ice	1.28	1.28	0.02
			0.00				1" Ice	1.56	1.56	0.03
10'6"x4" Pipe Mount (A22)	A	From Leg	0.50	0.00	0.0000	170.00	No Ice	3.39	3.39	0.11
			0.00				1/2" Ice	5.62	5.62	0.15
			0.00				1" Ice	6.25	6.25	0.19
SC479-HF1LDF (D00I-E5764) (A23)	D	From Leg	2.00	0.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
			0.00				1/2" Ice	6.54	6.54	0.07
			0.00				1" Ice	8.04	8.04	0.11
15' T-Frame Sector Mount (1) (A23,24,30,31)	D	From Face	2.00	0.00	0.0000	180.00	No Ice	15.00	15.00	0.50
			0.00				1/2" Ice	20.60	20.60	0.65
			0.00				1" Ice	26.20	26.20	0.80
SC479-HF1LDF (D00I-E5764) (A24)	D	From Face	2.00	0.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
			0.00				1/2" Ice	6.54	6.54	0.07
			0.00				1" Ice	8.04	8.04	0.11
10'6"x4" Pipe Mount (A25)	C	From Leg	0.50	0.00	0.0000	173.00	No Ice	3.38	3.38	0.11
			0.00				1/2" Ice	5.62	5.62	0.15
			0.00				1" Ice	6.25	6.25	0.19
SC479-HF1LDF (D00I-E5764) (A26)	A	From Leg	3.00	0.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
			0.00				1/2" Ice	6.54	6.54	0.07
			0.00				1" Ice	8.04	8.04	0.11
15' T-Frame Sector Mount (1) (A26,27,28,29)	B	From Face	2.00	0.00	0.0000	180.00	No Ice	15.00	15.00	0.50
			0.00				1/2" Ice	20.60	20.60	0.65
			0.00				1" Ice	26.20	26.20	0.80
TMA 432-83H-01T - Future Decom. (A27)	A	From Leg	2.00	0.00	0.0000	181.00	No Ice	1.63	0.95	0.03
			0.00				1/2" Ice	1.81	1.09	0.04
			0.00				1" Ice	1.99	1.24	0.05
SC479-HF1LDF (D00-E5764) (A28)	A	From Leg	3.00	0.00	0.0000	183.00	No Ice	5.06	5.06	0.03
			0.00				1/2" Ice	6.54	6.54	0.07
			0.00				1" Ice	8.04	8.04	0.11
ANT150D (A29a)	A	From Leg	1.00	0.00	0.0000	183.00	No Ice	6.56	2.02	0.08
			0.00				1/2" Ice	6.95	2.90	0.12
			0.00				1" Ice	7.34	3.79	0.17
DB222 (A29b)	A	From Leg	1.50	0.00	0.0000	183.00	No Ice	1.60	1.60	0.02
			0.00				1/2" Ice	2.88	2.88	0.02
			0.00				1" Ice	4.16	4.16	0.03
SC479-HF1LDF (D00-E5764)	D	From Leg	2.00	0.00	0.0000	183.00	No Ice	5.06	5.06	0.03
			0.00				1/2" Ice	6.54	6.54	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(A30)			0.00				1" Ice	8.04	8.04	0.11
ALR8-0	C	From Leg	1.00		0.0000	183.00	No Ice	3.99	3.99	0.05
(A31)			0.00				1/2" Ice	8.21	8.21	0.11
			0.00				1" Ice	8.94	8.94	0.17
Lightning Rod 2"x15'	C	None			0.0000	185.00	No Ice	3.00	3.00	0.08
(A32)							1/2" Ice	4.53	4.53	0.10
							1" Ice	6.07	6.07	0.14
10'6"x4" Pipe Mount	A	From Leg	0.50		0.0000	170.00	No Ice	3.39	3.39	0.11
(A33)			0.00				1/2" Ice	5.62	5.62	0.15
			0.00				1" Ice	6.25	6.25	0.19
12' Wireless Frame	A	From Leg	1.00		0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00				1/2" Ice	15.53	15.53	0.35
			0.00				1" Ice	19.99	19.99	0.45
12' Wireless Frame	B	From Leg	1.00		0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00				1/2" Ice	15.53	15.53	0.35
			0.00				1" Ice	19.99	19.99	0.45
12' Wireless Frame	C	From Leg	1.00		0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00				1/2" Ice	15.53	15.53	0.35
			0.00				1" Ice	19.99	19.99	0.45
APXVSPP18-C	A	From Leg	1.50		0.0000	105.00	No Ice	8.26	5.28	0.06
(Sprint / D&K 5-10)			-5.00				1/2" Ice	8.81	5.74	0.11
			0.00				1" Ice	9.36	6.20	0.16
APXVSPP18-C	B	From Leg	1.50		0.0000	105.00	No Ice	8.26	5.28	0.06
(Sprint / D&K 5-10)			-5.00				1/2" Ice	8.81	5.74	0.11
			0.00				1" Ice	9.36	6.20	0.16
APXVSPP18-C	C	From Leg	1.50		0.0000	105.00	No Ice	8.26	5.28	0.06
(Sprint / D&K 5-10)			-5.00				1/2" Ice	8.81	5.74	0.11
			0.00				1" Ice	9.36	6.20	0.16
800 RRH (800 MHz) Unit	A	From Leg	1.50		0.0000	105.00	No Ice	6.34	5.58	0.06
(Sprint / D&K 5-10)			0.00				1/2" Ice	6.72	5.94	0.11
			2.50				1" Ice	7.10	6.31	0.16
800 RRH (800 MHz) Unit	B	From Leg	1.50		0.0000	105.00	No Ice	6.34	5.58	0.06
(Sprint / D&K 5-10)			0.00				1/2" Ice	6.72	5.94	0.11
			2.50				1" Ice	7.10	6.31	0.16
800 RRH (800 MHz) Unit	C	From Leg	1.50		0.0000	105.00	No Ice	6.34	5.58	0.06
(Sprint / D&K 5-10)			0.00				1/2" Ice	6.72	5.94	0.11
			2.50				1" Ice	7.10	6.31	0.16
1900 RRH (1900 MHz) Unit	A	From Leg	1.50		0.0000	105.00	No Ice	2.58	2.54	0.06
(Sprint / D&K 5-10)			0.00				1/2" Ice	2.79	2.75	0.09
			-2.50				1" Ice	3.01	2.97	0.12
1900 RRH (1900 MHz) Unit	B	From Leg	1.50		0.0000	105.00	No Ice	2.58	2.54	0.06
(Sprint / D&K 5-10)			0.00				1/2" Ice	2.79	2.75	0.09
			-2.50				1" Ice	3.01	2.97	0.12
1900 RRH (1900 MHz) Unit	C	From Leg	1.50		0.0000	105.00	No Ice	2.58	2.54	0.06
(Sprint / D&K 5-10)			0.00				1/2" Ice	2.79	2.75	0.09
			-2.50				1" Ice	3.01	2.97	0.12
*** Empire EMP-004 Proposed Inventory										
T-Frame	A	From Leg	0.50		0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00				1/2" Ice	16.20	16.20	0.60
			0.00				1" Ice	22.20	22.20	0.80
T-Frame	B	From Leg	0.50		0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00				1/2" Ice	16.20	16.20	0.60
			0.00				1" Ice	22.20	22.20	0.80
T-Frame	C	From Leg	0.50		0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00				1/2" Ice	16.20	16.20	0.60
			0.00				1" Ice	22.20	22.20	0.80

tnxTower	Job: 180' Lattice Tower - CSP	Page: 27 of 86
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project: Structural Analysis	Date: 16:48:32 03/29/18
	Client: Empire Telecom / EMP-004	Designed by: MCD

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 (AT&T)	A	From Leg	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	5.53 5.89 6.26	4.01 4.64 5.28	0.05 0.10 0.15
(2) LGP 21901 Diplexer Unit (AT&T)	A	From Leg	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	0.23 0.30 0.38	0.12 0.17 0.22	0.01 0.01 0.01
Kathrein 800-10965 Panel Antenna (AT&T)	A	From Leg	2.00 -4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	13.81 14.35 14.89	5.83 6.32 6.82	0.11 0.19 0.27
QS66512-3 Quintel Panel (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	8.22 9.19 10.02	0.13 0.20 0.28
RRUS-11 (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	2.57 2.76 2.97	1.07 1.21 1.36	0.05 0.07 0.09
Raycap DC6-48-60-18-8F DC Power Surge Protection (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.27 1.46 1.66	1.27 1.46 1.66	0.05 0.07 0.08
7770.00 (AT&T)	B	From Leg	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	5.53 5.89 6.26	4.01 4.64 5.28	0.05 0.10 0.15
(2) LGP 21901 Diplexer Unit (AT&T)	B	From Leg	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	0.23 0.30 0.38	0.12 0.17 0.22	0.01 0.01 0.01
Kathrein 800-10965 Panel Antenna (AT&T)	B	From Leg	2.00 -4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	13.81 14.35 14.89	5.83 6.32 6.82	0.11 0.19 0.27
QS66512-3 Quintel Panel (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	8.22 9.19 10.02	0.13 0.20 0.28
RRUS-11 (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	2.57 2.76 2.97	1.07 1.21 1.36	0.05 0.07 0.09
7770.00 (AT&T)	C	From Leg	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	5.53 5.89 6.26	4.01 4.64 5.28	0.05 0.10 0.15
(2) LGP 21901 Diplexer Unit (AT&T)	C	From Leg	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	0.23 0.30 0.38	0.12 0.17 0.22	0.01 0.01 0.01
Kathrein 800-10965 Panel Antenna (AT&T)	C	From Leg	2.00 -4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	13.81 14.35 14.89	5.83 6.32 6.82	0.11 0.19 0.27
QS66512-3 Quintel Panel (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	8.22 9.19 10.02	0.13 0.20 0.28
RRUS-11 (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	2.57 2.76 2.97	1.07 1.21 1.36	0.05 0.07 0.09
4478 Radio Unit (4x40W) (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.08 1.21 1.35	1.08 1.21 1.35	0.06 0.07 0.09
4478 Radio Unit (4x40W) (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.08 1.21 1.35	1.08 1.21 1.35	0.06 0.07 0.09
4478 Radio Unit (4x40W) (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.08 1.21 1.35	1.08 1.21 1.35	0.06 0.07 0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS-32 B66 (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.88 4.14 4.41	2.76 2.98 3.22	0.08 0.11 0.15
RRUS-32 B66 (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.88 4.14 4.41	2.76 2.98 3.22	0.08 0.11 0.15
RRUS-32 B66 (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.88 4.14 4.41	2.76 2.98 3.22	0.08 0.11 0.15
RRUS-32 B2 (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.88 4.14 4.41	2.76 2.98 3.22	0.08 0.11 0.15
RRUS-32 B2 (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.88 4.14 4.41	2.76 2.98 3.22	0.08 0.11 0.15
RRUS-32 B2 (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.88 4.14 4.41	2.76 2.98 3.22	0.08 0.11 0.15
RRUS-32 (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.33 3.55 3.78	2.36 2.56 2.76	0.08 0.11 0.15
RRUS-32 (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.33 3.55 3.78	2.36 2.56 2.76	0.08 0.11 0.15
RRUS-32 (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	3.33 3.55 3.78	2.36 2.56 2.76	0.08 0.11 0.15
DC6-48-60-18-8C Squid / Surge Arrestor (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	0.03 0.05 0.07
DC6-48-60-18-8C Squid / Surge Arrestor (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	0.03 0.05 0.07
(2) LPG21401 TMA (AT&T)	A	From Face	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	0.95 1.09 1.24	0.37 0.48 0.60	0.02 0.02 0.03
(2) LPG21401 TMA (AT&T)	B	From Face	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	0.95 1.09 1.24	0.37 0.48 0.60	0.02 0.02 0.03
(2) LPG21401 TMA (AT&T)	C	From Face	2.00 4.00 0.00	0.0000	163.00	No Ice 1/2" Ice 1" Ice	0.95 1.09 1.24	0.37 0.48 0.60	0.02 0.02 0.03
*** Empire EMP-004 Proposed Inventory									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
4' Grid Dish (A6 / D&K 12 / CSP-11)	C	Grid	From Leg	1.00 0.00 0.00	Worst		106.00	4.00	No Ice 1/2" Ice 1" Ice	12.57 13.10 13.62	0.06 0.11 0.17
6' PAD w/ Radome (A10 / D&K-25)	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		125.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.87	0.24 0.29 0.34
6' PAD w/ Radome (A33)	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	Worst		175.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.87	0.24 0.29 0.34
6' PAD w/ Radome (A22 /)	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		170.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.87	0.24 0.29 0.34
6' PAD w/ Radome (A25 /)	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		173.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.87	0.24 0.29 0.34

222-G Verification Constants

Constant	Value
Wind Importance Factor Without Ice	1.15
Wind Importance Factor With Ice Factor	1
Ice Importance Factor	1.25
K_d	0.85
Z_g	900
α	9.5
K_{zmin}	0.85
K_e	1
K_t	0.53
f	2

222-G Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
T1					A		Sum:	0.000	0.000	0.000	0.000
180.00-170.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T2					A		Sum:	0.000	0.000	0.000	0.000
170.00-163.57					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T3					A		Sum:	0.000	0.000	0.000	0.000
163.57-159.05					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T4					A		Sum:	0.000	0.000	0.000	0.000
159.05-154.52					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T5					A		Sum:	0.000	0.000	0.000	0.000

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
154.52-150.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T6					A		Sum:	0.000	0.000	0.000	0.000
150.00-140.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T7					A		Sum:	0.000	0.000	0.000	0.000
140.00-130.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T8					A		Sum:	0.000	0.000	0.000	0.000
130.00-120.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T9					A		Sum:	0.000	0.000	0.000	0.000
120.00-110.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T10					A		Sum:	0.000	0.000	0.000	0.000
110.00-100.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T11					A		Sum:	0.000	0.000	0.000	0.000
100.00-90.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T12 90.00-80.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T13 80.00-60.00	220	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	D	0.167	0.311	14.185	21.219	6.062	12.785
	220	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	A	0.167	0.311	14.185	21.219	6.062	12.785
	221	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	D	0.167	0.311	14.185	21.219	6.062	12.785
	221	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	C	0.167	0.311	14.185	21.219	6.062	12.785
	222	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	C	0.167	0.311	14.185	21.219	6.062	12.785
	222	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	B	0.167	0.311	14.185	21.219	6.062	12.785
	223	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	B	0.167	0.311	14.185	21.219	6.062	12.785
	223	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	A	0.167	0.311	14.185	21.219	6.062	12.785
					A		Sum:	28.370	42.439	12.125	25.569
					B			28.370	42.439	12.125	25.569
					C			28.370	42.439	12.125	25.569
					D			28.370	42.439	12.125	25.569
T14 60.00-50.00	249	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	D	0.163	0.318	7.092	10.607	3.018	6.414
	249	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	A	0.163	0.318	7.092	10.607	3.018	6.414
	250	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	D	0.163	0.318	7.092	10.607	3.018	6.414
	250	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	C	0.163	0.318	7.092	10.607	3.018	6.414
	251	L8x8x1-1/8 w/ 1/2x7	81.907	54.631	C	0.163	0.318	7.092	10.607	3.018	6.414

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
		Plates									
	251	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	B	0.163	0.318	7.092	10.607	3.018	6.414
	252	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	B	0.163	0.318	7.092	10.607	3.018	6.414
	252	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	A	0.163	0.318	7.092	10.607	3.018	6.414
					A		Sum:	14.185	21.214	6.035	12.829
					B			14.185	21.214	6.035	12.829
					C			14.185	21.214	6.035	12.829
					D			14.185	21.214	6.035	12.829
T15 50.00-40.00	270	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	D	0.17	0.322	7.092	10.614	3.042	6.435
	270	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	A	0.17	0.322	7.092	10.614	3.042	6.435
	271	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	D	0.17	0.322	7.092	10.614	3.042	6.435
	271	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	C	0.17	0.322	7.092	10.614	3.042	6.435
	272	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	C	0.17	0.322	7.092	10.614	3.042	6.435
	272	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	B	0.17	0.322	7.092	10.614	3.042	6.435
	273	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	B	0.17	0.322	7.092	10.614	3.042	6.435
	273	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	A	0.17	0.322	7.092	10.614	3.042	6.435
					A		Sum:	14.185	21.228	6.084	12.869
					B			14.185	21.228	6.084	12.869
					C			14.185	21.228	6.084	12.869
					D			14.185	21.228	6.084	12.869
T16 40.00-30.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T17 30.00-20.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T18 20.00-10.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T19 10.00-0.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000

222-G Section Verification Tables - No Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00		1.424	218.026	1.005		31	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T2 170.00-163.57	166.79		1.41	169.337	1.006		31	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T3 163.57-159.05	161.31		1.4	143.081	1.007		31	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T4 159.05-154.52	156.79		1.391	124.487	1.009		30	A	0.227	0.000
								B	0.227	0.000
								C	0.227	0.000
								D	0.227	0.000
T5 154.52-150.00	152.26		1.383	108.309	1.01		30	A	0.22	0.000
								B	0.22	0.000
								C	0.22	0.000
								D	0.22	0.000
T6 150.00-140.00	145.00		1.369	86.621	1.012		30	A	0.222	0.000
								B	0.222	0.000
								C	0.222	0.000
								D	0.222	0.000
T7 140.00-130.00	135.00		1.348	63.678	1.017		30	A	0.229	0.000
								B	0.229	0.000
								C	0.229	0.000
								D	0.229	0.000
T8 130.00-120.00	125.00		1.326	46.813	1.023		29	A	0.198	0.000
								B	0.198	0.000
								C	0.198	0.000
								D	0.198	0.000
T9 120.00-110.00	115.00		1.303	34.414	1.031		29	A	0.205	0.000
								B	0.205	0.000
								C	0.205	0.000
								D	0.205	0.000
T10 110.00-100.00	105.00		1.279	25.299	1.042		29	A	0.188	0.000
								B	0.188	0.000
								C	0.188	0.000
								D	0.188	0.000
T11 100.00-90.00	95.00		1.252	18.598	1.058		29	A	0.211	0.000
								B	0.211	0.000
								C	0.211	0.000
								D	0.211	0.000
T12 90.00-80.00	85.00		1.223	13.672	1.079		29	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T13 80.00-60.00	70.00		1.174	8.618	1.127		29	A	0.167	12.125
								B	0.167	12.125
								C	0.167	12.125
								D	0.167	12.125
T14 60.00-50.00	55.00		1.116	5.432	1.205		29	A	0.163	6.035
								B	0.163	6.035
								C	0.163	6.035
								D	0.163	6.035
T15 50.00-40.00	45.00		1.07	3.993	1.283		30	A	0.17	6.084
								B	0.17	6.084
								C	0.17	6.084
								D	0.17	6.084

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T16 40.00-30.00	35.00		1.015	2.936	1.394		31	A	0.175	0.000
								B	0.175	0.000
								C	0.175	0.000
								D	0.175	0.000
T17 30.00-20.00	25.00		0.945	2.158	1.551		32	A	0.156	0.000
								B	0.156	0.000
								C	0.156	0.000
								D	0.156	0.000
T18 20.00-10.00	15.00		0.85	1.587	1.78		33	A	0.167	0.000
								B	0.167	0.000
								C	0.167	0.000
								D	0.167	0.000
T19 10.00-0.00	5.00		0.85	1.166	2.115		39	A	0.16	0.000
								B	0.16	0.000
								C	0.16	0.000
								D	0.16	0.000

222-G Section Verification Tables - Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00	175.00	1.424	218.026	1.005	2.2192	8	A	0.498	13.721
								B	0.498	13.721
								C	0.498	13.721
								D	0.498	13.721
T2 170.00-163.57	166.79	166.79	1.41	169.337	1.006	2.2096	8	A	0.54	9.244
								B	0.54	9.244
								C	0.54	9.244
								D	0.54	9.244
T3 163.57-159.05	161.31	161.31	1.4	143.081	1.007	2.2031	8	A	0.583	7.845
								B	0.583	7.845
								C	0.583	7.845
								D	0.583	7.845
T4 159.05-154.52	156.79	156.79	1.391	124.487	1.009	2.1977	8	A	0.491	5.996
								B	0.491	5.996
								C	0.491	5.996
								D	0.491	5.996
T5 154.52-150.00	152.26	152.26	1.383	108.309	1.01	2.1923	8	A	0.478	6.049
								B	0.478	6.049
								C	0.478	6.049
								D	0.478	6.049
T6 150.00-140.00	145.00	145.00	1.369	86.621	1.012	2.1834	8	A	0.489	14.941
								B	0.489	14.941
								C	0.489	14.941
								D	0.489	14.941
T7 140.00-130.00	135.00	135.00	1.348	63.678	1.017	2.1712	7	A	0.469	14.491
								B	0.469	14.491
								C	0.469	14.491
								D	0.469	14.491
T8 130.00-120.00	125.00	125.00	1.326	46.813	1.023	2.1591	7	A	0.398	12.396
								B	0.398	12.396
								C	0.398	12.396
								D	0.398	12.396
T9 120.00-110.00	115.00	115.00	1.303	34.414	1.031	2.1472	7	A	0.425	14.951
								B	0.425	14.951

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								C	0.425	14.951
								D	0.425	14.951
T10 110.00-100.00	105.00	105.00	1.279	25.299	1.042	2.1359	7	A	0.371	12.795
								B	0.371	12.795
								C	0.371	12.795
								D	0.371	12.795
T11 100.00-90.00	95.00	95.00	1.252	18.598	1.058	2.1255	7	A	0.384	13.152
								B	0.384	13.152
								C	0.384	13.152
								D	0.384	13.152
T12 90.00-80.00	85.00	85.00	1.223	13.672	1.079	2.1167	7	A	0.371	13.413
								B	0.371	13.413
								C	0.371	13.413
								D	0.371	13.413
T13 80.00-60.00	70.00	70.00	1.174	8.618	1.127	2.1077	7	A	0.311	41.332
								B	0.311	41.332
								C	0.311	41.332
								D	0.311	41.332
T14 60.00-50.00	55.00	55.00	1.116	5.432	1.205	2.1061	7	A	0.318	22.589
								B	0.318	22.589
								C	0.318	22.589
								D	0.318	22.589
T15 50.00-40.00	45.00	45.00	1.07	3.993	1.283	2.1104	7	A	0.322	23.148
								B	0.322	23.148
								C	0.322	23.148
								D	0.322	23.148
T16 40.00-30.00	35.00	35.00	1.015	2.936	1.394	2.1184	8	A	0.358	18.428
								B	0.358	18.428
								C	0.358	18.428
								D	0.358	18.428
T17 30.00-20.00	25.00	25.00	0.945	2.158	1.551	2.1267	8	A	0.306	15.347
								B	0.306	15.347
								C	0.306	15.347
								D	0.306	15.347
T18 20.00-10.00	15.00	15.00	0.85	1.587	1.78	2.1202	8	A	0.346	19.465
								B	0.346	19.465
								C	0.346	19.465
								D	0.346	19.465
T19 10.00-0.00	5.00	5.00	0.85	1.166	2.115	2.0180	10	A	0.325	19.744
								B	0.325	19.744
								C	0.325	19.744
								D	0.325	19.744

222-G Section Verification Tables - Service

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00		1.424	218.026	1.005		11	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T2 170.00-163.57	166.79		1.41	169.337	1.006		11	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T3 163.57-159.05	161.31		1.4	143.081	1.007		11	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T4 159.05-154.52	156.79		1.391	124.487	1.009		11	A	0.227	0.000
								B	0.227	0.000
								C	0.227	0.000
								D	0.227	0.000
T5 154.52-150.00	152.26		1.383	108.309	1.01		11	A	0.22	0.000
								B	0.22	0.000
								C	0.22	0.000
								D	0.22	0.000
T6 150.00-140.00	145.00		1.369	86.621	1.012		11	A	0.222	0.000
								B	0.222	0.000
								C	0.222	0.000
								D	0.222	0.000
T7 140.00-130.00	135.00		1.348	63.678	1.017		11	A	0.229	0.000
								B	0.229	0.000
								C	0.229	0.000
								D	0.229	0.000
T8 130.00-120.00	125.00		1.326	46.813	1.023		11	A	0.198	0.000
								B	0.198	0.000
								C	0.198	0.000
								D	0.198	0.000
T9 120.00-110.00	115.00		1.303	34.414	1.031		11	A	0.205	0.000
								B	0.205	0.000
								C	0.205	0.000
								D	0.205	0.000
T10 110.00-100.00	105.00		1.279	25.299	1.042		10	A	0.188	0.000
								B	0.188	0.000
								C	0.188	0.000
								D	0.188	0.000
T11 100.00-90.00	95.00		1.252	18.598	1.058		10	A	0.211	0.000
								B	0.211	0.000
								C	0.211	0.000
								D	0.211	0.000
T12 90.00-80.00	85.00		1.223	13.672	1.079		10	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T13 80.00-60.00	70.00		1.174	8.618	1.127		10	A	0.167	12.125
								B	0.167	12.125
								C	0.167	12.125
								D	0.167	12.125
T14 60.00-50.00	55.00		1.116	5.432	1.205		11	A	0.163	6.035
								B	0.163	6.035
								C	0.163	6.035
								D	0.163	6.035
T15 50.00-40.00	45.00		1.07	3.993	1.283		11	A	0.17	6.084
								B	0.17	6.084
								C	0.17	6.084
								D	0.17	6.084
T16 40.00-30.00	35.00		1.015	2.936	1.394		11	A	0.175	0.000
								B	0.175	0.000
								C	0.175	0.000
								D	0.175	0.000
T17 30.00-20.00	25.00		0.945	2.158	1.551		11	A	0.156	0.000
								B	0.156	0.000
								C	0.156	0.000
								D	0.156	0.000

tnxTower	Job: 180' Lattice Tower - CSP	Page: 36 of 86
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project: Structural Analysis	Date: 16:48:32 03/29/18
	Client: Empire Telecom / EMP-004	Designed by: MCD

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_AR_r ft²
T18 20.00-10.00	15.00		0.85	1.587	1.78		12	A	0.167	0.000
								B	0.167	0.000
								C	0.167	0.000
								D	0.167	0.000
T19 10.00-0.00	5.00		0.85	1.166	2.115		14	A	0.16	0.000
								B	0.16	0.000
								C	0.16	0.000
								D	0.16	0.000

Tower Pressures - No Ice

$G_H = 0.850$

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	175.00	1.424	31	61.674	A	12.491	0.000	5.833	46.70	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	12.491	0.000		46.70	19.218	0.000
T2	166.79	1.41	31	40.022	A	9.832	0.000	5.356	54.47	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.832	0.000		54.47	14.492	0.000
T3	161.31	1.4	31	28.908	A	7.122	0.000	3.775	53.00	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	7.122	0.000		53.00	12.273	0.000
					D	7.122	0.000		53.00	10.877	0.000
T4	156.79	1.391	30	30.376	A	6.903	0.000	3.775	54.69	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.903	0.000		54.69	14.053	0.000
					D	6.903	0.000		54.69	13.414	0.000
T5	152.26	1.383	30	31.844	A	7.011	0.000	3.775	53.84	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	7.011	0.000		53.84	14.053	0.000
					D	7.011	0.000		53.84	13.414	0.000
T6	145.00	1.369	30	75.634	A	16.767	0.000	8.344	49.76	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	16.767	0.000		49.76	31.060	0.000
					D	16.767	0.000		49.76	31.868	0.000
T7	135.00	1.348	30	83.296	A	19.051	0.000	10.013	52.56	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	19.051	0.000		52.56	31.060	0.000
					D	19.051	0.000		52.56	31.868	0.000
T8	125.00	1.326	29	90.466	A	17.878	0.000	10.013	56.01	13.110	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	17.878	0.000		56.01	31.060	0.000
					D	17.878	0.000		56.01	34.507	0.000
T9	115.00	1.303	29	97.774	A	20.028	0.000	10.013	49.99	21.850	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	20.028	0.000		49.99	31.060	0.000
					D	20.028	0.000		49.99	41.389	0.000
T10	105.00	1.279	29	104.945	A	19.757	0.000	10.013	50.68	23.812	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	19.757	0.000		50.68	31.060	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
					D	19.757	0.000		50.68	42.475	0.000
T11	95.00	1.252	29	112.984	A	23.872	0.000	13.350	55.93	25.120	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	23.872	0.000		55.93	31.060	0.000
					D	23.872	0.000		55.93	46.477	0.000
T12	85.00	1.223	29	120.155	A	24.365	0.000	13.350	54.79	25.120	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	24.365	0.000		54.79	31.060	0.000
					D	24.365	0.000		54.79	47.032	0.000
T13	70.00	1.174	29	263.233	A	15.516	28.370	28.370	64.64	50.240	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	15.516	28.370		64.64	62.120	0.000
					D	15.516	28.370		64.64	96.044	0.000
T14	55.00	1.116	29	142.444	A	9.050	14.185	14.185	61.05	25.120	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	9.050	14.185		61.05	31.060	0.000
					D	9.050	14.185		61.05	48.515	0.000
T15	45.00	1.07	30	149.614	A	11.192	14.185	14.185	55.90	25.120	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	11.192	14.185		55.90	31.060	0.000
					D	11.192	14.185		55.90	49.153	0.000
T16	35.00	1.015	31	156.196	A	27.367	0.000	13.350	48.78	25.120	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	27.367	0.000		48.78	31.060	0.000
					D	27.367	0.000		48.78	49.327	0.000
T17	25.00	0.945	32	163.366	A	25.467	0.000	13.350	52.42	25.120	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	25.467	0.000		52.42	31.060	0.000
					D	25.467	0.000		52.42	49.327	0.000
T18	15.00	0.85	33	170.539	A	28.533	0.000	13.350	46.79	25.120	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	28.533	0.000		46.79	31.060	0.000
					D	28.533	0.000		46.79	49.327	0.000
T19 10.00-0.00	5.00	0.85	39	177.715	A	28.435	0.000	13.350	46.95	10.048	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	28.435	0.000		46.95	12.405	0.000
					D	28.435	0.000		46.95	19.731	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	175.00	1.424	8	2.2192	65.373	A	12.491	20.062	13.231	40.64	0.000	0.000
180.00-170.00						B	12.491	20.062		40.64	0.000	0.000
						C	12.491	20.062		40.64	0.000	0.000
						D	12.491	20.062		40.64	55.411	0.000
T2	166.79	1.41	8	2.2096	42.389	A	9.832	13.066	10.090	44.06	0.000	0.000
170.00-163.57						B	9.832	13.066		44.06	0.000	0.000
						C	9.832	13.066		44.06	0.000	0.000
						D	9.832	13.066		44.06	44.685	0.000
T3	161.31	1.4	8	2.2031	30.571	A	7.122	10.701	7.102	39.85	0.000	0.000
163.57-159.05						B	7.122	10.701		39.85	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	7.122	10.701		39.85	27.175	0.000
						D	7.122	10.701		39.85	34.210	0.000
T4 159.05-154.52	156.79	1.391	8	2.1977	32.034	A	6.903	8.817	7.094	45.13	0.000	0.000
						B	6.903	8.817		45.13	0.000	0.000
						C	6.903	8.817		45.13	31.081	0.000
						D	6.903	8.817		45.13	44.683	0.000
T5 154.52-150.00	152.26	1.383	8	2.1923	33.498	A	7.011	8.986	7.086	44.29	0.000	0.000
						B	7.011	8.986		44.29	0.000	0.000
						C	7.011	8.986		44.29	31.045	0.000
						D	7.011	8.986		44.29	44.623	0.000
T6 150.00-140.00	145.00	1.369	8	2.1834	79.275	A	16.767	22.001	15.632	40.32	0.000	0.000
						B	16.767	22.001		40.32	0.000	0.000
						C	16.767	22.001		40.32	68.493	0.000
						D	16.767	22.001		40.32	110.224	0.000
T7 140.00-130.00	135.00	1.348	7	2.1712	86.917	A	19.051	21.676	17.260	42.38	0.000	0.000
						B	19.051	21.676		42.38	0.000	0.000
						C	19.051	21.676		42.38	68.318	0.000
						D	19.051	21.676		42.38	109.886	0.000
T8 130.00-120.00	125.00	1.326	7	2.1591	94.067	A	17.878	19.516	17.219	46.05	25.590	0.000
						B	17.878	19.516		46.05	0.000	0.000
						C	17.878	19.516		46.05	68.145	0.000
						D	17.878	19.516		46.05	116.507	0.000
T9 120.00-110.00	115.00	1.303	7	2.1472	101.355	A	20.028	23.087	17.179	39.85	42.571	0.000
						B	20.028	23.087		39.85	0.000	0.000
						C	20.028	23.087		39.85	67.975	0.000
						D	20.028	23.087		39.85	142.255	0.000
T10 110.00-100.00	105.00	1.279	7	2.1359	108.507	A	19.757	20.499	17.142	42.58	50.821	0.000
						B	19.757	20.499		42.58	0.000	0.000
						C	19.757	20.499		42.58	67.814	0.000
						D	19.757	20.499		42.58	147.142	0.000
T11 100.00-90.00	95.00	1.252	7	2.1255	116.529	A	23.872	20.891	20.445	45.67	56.268	0.000
						B	23.872	20.891		45.67	0.000	0.000
						C	23.872	20.891		45.67	67.666	0.000
						D	23.872	20.891		45.67	163.978	0.000
T12 90.00-80.00	85.00	1.223	7	2.1167	123.685	A	24.365	21.492	20.415	44.52	56.178	0.000
						B	24.365	21.492		44.52	0.000	0.000
						C	24.365	21.492		44.52	67.540	0.000
						D	24.365	21.492		44.52	166.280	0.000
T13 80.00-60.00	70.00	1.174	7	2.1077	270.263	A	15.516	68.601	42.439	50.45	112.175	0.000
						B	15.516	68.601		50.45	0.000	0.000
						C	15.516	68.601		50.45	134.823	0.000
						D	15.516	68.601		50.45	344.308	0.000
T14 60.00-50.00	55.00	1.116	7	2.1061	145.956	A	9.050	37.355	21.214	45.72	56.072	0.000
						B	9.050	37.355		45.72	0.000	0.000
						C	9.050	37.355		45.72	67.390	0.000
						D	9.050	37.355		45.72	176.158	0.000
T15 50.00-40.00	45.00	1.07	7	2.1104	153.134	A	11.192	38.184	21.228	42.99	56.114	0.000
						B	11.192	38.184		42.99	0.000	0.000
						C	11.192	38.184		42.99	67.450	0.000
						D	11.192	38.184		42.99	181.637	0.000
T16 40.00-30.00	35.00	1.015	8	2.1184	159.729	A	27.367	29.771	20.421	35.74	56.196	0.000
						B	27.367	29.771		35.74	0.000	0.000
						C	27.367	29.771		35.74	67.565	0.000
						D	27.367	29.771		35.74	183.479	0.000
T17 30.00-20.00	25.00	0.945	8	2.1267	166.913	A	25.467	25.548	20.449	40.08	56.280	0.000
						B	25.467	25.548		40.08	0.000	0.000
						C	25.467	25.548		40.08	67.683	0.000
						D	25.467	25.548		40.08	183.891	0.000
T18 20.00-10.00	15.00	0.85	8	2.1202	174.075	A	28.533	31.675	20.427	33.93	56.214	0.000
						B	28.533	31.675		33.93	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	28.533	31.675		33.93	67.591	0.000
						D	28.533	31.675		33.93	183.569	0.000
T19 10.00-0.00	5.00	0.85	10	2.0180	181.080	A	28.435	30.492	20.086	34.09	22.072	0.000
						B	28.435	30.492		34.09	0.000	0.000
						C	28.435	30.492		34.09	26.453	0.000
						D	28.435	30.492		34.09	71.392	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	175.00	1.424	11	61.674	A	12.491	0.000	5.833	46.70	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	12.491	0.000		46.70	19.218	0.000
T2	166.79	1.41	11	40.022	A	9.832	0.000	5.356	54.47	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.832	0.000		54.47	14.492	0.000
T3	161.31	1.4	11	28.908	A	7.122	0.000	3.775	53.00	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	7.122	0.000		53.00	12.273	0.000
					D	7.122	0.000		53.00	10.877	0.000
T4	156.79	1.391	11	30.376	A	6.903	0.000	3.775	54.69	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.903	0.000		54.69	14.053	0.000
					D	6.903	0.000		54.69	13.414	0.000
T5	152.26	1.383	11	31.844	A	7.011	0.000	3.775	53.84	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	7.011	0.000		53.84	14.053	0.000
					D	7.011	0.000		53.84	13.414	0.000
T6	145.00	1.369	11	75.634	A	16.767	0.000	8.344	49.76	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	16.767	0.000		49.76	31.060	0.000
					D	16.767	0.000		49.76	31.868	0.000
T7	135.00	1.348	11	83.296	A	19.051	0.000	10.013	52.56	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	19.051	0.000		52.56	31.060	0.000
					D	19.051	0.000		52.56	31.868	0.000
T8	125.00	1.326	11	90.466	A	17.878	0.000	10.013	56.01	13.110	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	17.878	0.000		56.01	31.060	0.000
					D	17.878	0.000		56.01	34.507	0.000
T9	115.00	1.303	11	97.774	A	20.028	0.000	10.013	49.99	21.850	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	20.028	0.000		49.99	31.060	0.000
					D	20.028	0.000		49.99	41.389	0.000
T10	105.00	1.279	10	104.945	A	19.757	0.000	10.013	50.68	23.812	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	19.757	0.000		50.68	31.060	0.000
					D	19.757	0.000		50.68	42.475	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
T11 100.00-90.00	95.00	1.252	10	112.984	A	23.872	0.000	13.350	55.93	25.120	0.000
					B	23.872	0.000		55.93	0.000	0.000
					C	23.872	0.000		55.93	31.060	0.000
					D	23.872	0.000		55.93	46.477	0.000
T12 90.00-80.00	85.00	1.223	10	120.155	A	24.365	0.000	13.350	54.79	25.120	0.000
					B	24.365	0.000		54.79	0.000	0.000
					C	24.365	0.000		54.79	31.060	0.000
					D	24.365	0.000		54.79	47.032	0.000
T13 80.00-60.00	70.00	1.174	10	263.233	A	15.516	28.370	28.370	64.64	50.240	0.000
					B	15.516	28.370		64.64	0.000	0.000
					C	15.516	28.370		64.64	62.120	0.000
					D	15.516	28.370		64.64	96.044	0.000
T14 60.00-50.00	55.00	1.116	11	142.444	A	9.050	14.185	14.185	61.05	25.120	0.000
					B	9.050	14.185		61.05	0.000	0.000
					C	9.050	14.185		61.05	31.060	0.000
					D	9.050	14.185		61.05	48.515	0.000
T15 50.00-40.00	45.00	1.07	11	149.614	A	11.192	14.185	14.185	55.90	25.120	0.000
					B	11.192	14.185		55.90	0.000	0.000
					C	11.192	14.185		55.90	31.060	0.000
					D	11.192	14.185		55.90	49.153	0.000
T16 40.00-30.00	35.00	1.015	11	156.196	A	27.367	0.000	13.350	48.78	25.120	0.000
					B	27.367	0.000		48.78	0.000	0.000
					C	27.367	0.000		48.78	31.060	0.000
					D	27.367	0.000		48.78	49.327	0.000
T17 30.00-20.00	25.00	0.945	11	163.366	A	25.467	0.000	13.350	52.42	25.120	0.000
					B	25.467	0.000		52.42	0.000	0.000
					C	25.467	0.000		52.42	31.060	0.000
					D	25.467	0.000		52.42	49.327	0.000
T18 20.00-10.00	15.00	0.85	12	170.539	A	28.533	0.000	13.350	46.79	25.120	0.000
					B	28.533	0.000		46.79	0.000	0.000
					C	28.533	0.000		46.79	31.060	0.000
					D	28.533	0.000		46.79	49.327	0.000
T19 10.00-0.00	5.00	0.85	14	177.715	A	28.435	0.000	13.350	46.95	10.048	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	28.435	0.000		46.95	12.405	0.000
					D	28.435	0.000		46.95	19.731	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 180.00-170.00	0.07	0.75	A	0.203	2.969	31	1	1	12.491	1.29	129.20	D
			B	0.203	2.969		1	1	12.491			
			C	0.203	2.969		1	1	12.491			
			D	0.203	2.969		1	1	12.491			
T2 170.00-163.57	0.06	0.54	A	0.246	2.792	31	1	1	9.832	0.95	147.96	D
			B	0.246	2.792		1	1	9.832			
			C	0.246	2.792		1	1	9.832			
			D	0.246	2.792		1	1	9.832			
T3 163.57-159.05	0.11	0.39	A	0.246	2.789	31	1	1	7.122	0.88	194.99	D
			B	0.246	2.789		1	1	7.122			
			C	0.246	2.789		1	1	7.122			
			D	0.246	2.789		1	1	7.122			
T4 159.05-154.52	0.14	0.36	A	0.227	2.866	30	1	1	6.903	0.95	209.29	D
			B	0.227	2.866		1	1	6.903			

tnxTower	Job: 180' Lattice Tower - CSP	Page: 41 of 86
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	Client: Empire Telecom / EMP-004	Designed by: MCD

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
			C	0.227	2.866		1	1	6.903			
			D	0.227	2.866		1	1	6.903			
T5	0.14	0.37	A	0.22	2.895	30	1	1	7.011	0.96	211.19	D
154.52-150.00			B	0.22	2.895		1	1	7.011			
			C	0.22	2.895		1	1	7.011			
			D	0.22	2.895		1	1	7.011			
T6	0.31	0.97	A	0.222	2.889	30	1	1	16.767	2.22	222.04	D
150.00-140.00			B	0.222	2.889		1	1	16.767			
			C	0.222	2.889		1	1	16.767			
			D	0.222	2.889		1	1	16.767			
T7	0.31	1.53	A	0.229	2.86	30	1	1	19.051	2.35	234.93	D
140.00-130.00			B	0.229	2.86		1	1	19.051			
			C	0.229	2.86		1	1	19.051			
			D	0.229	2.86		1	1	19.051			
T8	0.37	1.43	A	0.198	2.99	29	1	1	17.878	2.54	253.56	D
130.00-120.00			B	0.198	2.99		1	1	17.878			
			C	0.198	2.99		1	1	17.878			
			D	0.198	2.99		1	1	17.878			
T9	0.44	2.05	A	0.205	2.959	29	1	1	20.028	2.89	288.70	D
120.00-110.00			B	0.205	2.959		1	1	20.028			
			C	0.205	2.959		1	1	20.028			
			D	0.205	2.959		1	1	20.028			
T10	0.45	1.91	A	0.188	3.031	29	1	1	19.757	2.92	292.32	D
110.00-100.00			B	0.188	3.031		1	1	19.757			
			C	0.188	3.031		1	1	19.757			
			D	0.188	3.031		1	1	19.757			
T11	0.47	2.50	A	0.211	2.932	29	1	1	23.872	3.23	322.87	D
100.00-90.00			B	0.211	2.932		1	1	23.872			
			C	0.211	2.932		1	1	23.872			
			D	0.211	2.932		1	1	23.872			
T12	0.48	2.43	A	0.203	2.968	29	1	1	24.365	3.28	328.18	D
90.00-80.00			B	0.203	2.968		1	1	24.365			
			C	0.203	2.968		1	1	24.365			
			D	0.203	2.968		1	1	24.365			
T13	0.96	7.96	A	0.167	3.128	29	1	1	27.641	5.19	259.61	D
80.00-60.00			B	0.167	3.128		1	1	27.641			
			C	0.167	3.128		1	1	27.641			
			D	0.167	3.128		1	1	27.641			
T14	0.48	4.57	A	0.163	3.144	29	1	1	15.085	2.75	274.95	D
60.00-50.00			B	0.163	3.144		1	1	15.085			
			C	0.163	3.144		1	1	15.085			
			D	0.163	3.144		1	1	15.085			
T15	0.49	5.12	A	0.17	3.114	30	1	1	17.276	2.98	297.79	D
50.00-40.00			B	0.17	3.114		1	1	17.276			
			C	0.17	3.114		1	1	17.276			
			D	0.17	3.114		1	1	17.276			
T16	0.49	4.78	A	0.175	3.089	31	1	1	27.367	3.87	387.03	D
40.00-30.00			B	0.175	3.089		1	1	27.367			
			C	0.175	3.089		1	1	27.367			
			D	0.175	3.089		1	1	27.367			
T17	0.49	4.27	A	0.156	3.177	32	1	1	25.467	3.92	391.62	D
30.00-20.00			B	0.156	3.177		1	1	25.467			
			C	0.156	3.177		1	1	25.467			
			D	0.156	3.177		1	1	25.467			
T18	0.49	5.02	A	0.167	3.125	33	1	1	28.533	4.27	426.90	D
20.00-10.00			B	0.167	3.125		1	1	28.533			
			C	0.167	3.125		1	1	28.533			
			D	0.167	3.125		1	1	28.533			
T19	0.19	4.70	A	0.16	3.158	39	1	1	28.435	3.84	383.58	D
10.00-0.00			B	0.16	3.158		1	1	28.435			

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
			C	0.16	3.158		1	1	28.435			
			D	0.16	3.158		1	1	28.435			
Sum Weight:	6.93	51.64						OTM	3966.91 kip-ft	51.26		

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	0.07	0.75	A	0.203	2.969	31	1.152	1.152	14.389	1.44	144.03	D
180.00-170.00			B	0.203	2.969		1.152	1.152	14.389			
			C	0.203	2.969		1.152	1.152	14.389			
			D	0.203	2.969		1.152	1.152	14.389			
T2	0.06	0.54	A	0.246	2.792	31	1.184	1.184	11.643	1.08	168.49	D
170.00-163.57			B	0.246	2.792		1.184	1.184	11.643			
			C	0.246	2.792		1.184	1.184	11.643			
			D	0.246	2.792		1.184	1.184	11.643			
T3	0.11	0.39	A	0.246	2.789	31	1.185	1.185	8.438	0.98	216.04	D
163.57-159.05			B	0.246	2.789		1.185	1.185	8.438			
			C	0.246	2.789		1.185	1.185	8.438			
			D	0.246	2.789		1.185	1.185	8.438			
T4	0.14	0.36	A	0.227	2.866	30	1.17	1.17	8.079	1.03	228.52	D
159.05-154.52			B	0.227	2.866		1.17	1.17	8.079			
			C	0.227	2.866		1.17	1.17	8.079			
			D	0.227	2.866		1.17	1.17	8.079			
T5	0.14	0.37	A	0.22	2.895	30	1.165	1.165	8.169	1.04	230.22	D
154.52-150.00			B	0.22	2.895		1.165	1.165	8.169			
			C	0.22	2.895		1.165	1.165	8.169			
			D	0.22	2.895		1.165	1.165	8.169			
T6	0.31	0.97	A	0.222	2.889	30	1.166	1.166	19.555	2.43	242.56	D
150.00-140.00			B	0.222	2.889		1.166	1.166	19.555			
			C	0.222	2.889		1.166	1.166	19.555			
			D	0.222	2.889		1.166	1.166	19.555			
T7	0.31	1.53	A	0.229	2.86	30	1.172	1.172	22.319	2.58	258.50	D
140.00-130.00			B	0.229	2.86		1.172	1.172	22.319			
			C	0.229	2.86		1.172	1.172	22.319			
			D	0.229	2.86		1.172	1.172	22.319			
T8	0.37	1.43	A	0.198	2.99	29	1.148	1.148	20.527	2.73	273.34	D
130.00-120.00			B	0.198	2.99		1.148	1.148	20.527			
			C	0.198	2.99		1.148	1.148	20.527			
			D	0.198	2.99		1.148	1.148	20.527			
T9	0.44	2.05	A	0.205	2.959	29	1.154	1.154	23.105	3.11	311.21	D
120.00-110.00			B	0.205	2.959		1.154	1.154	23.105			
			C	0.205	2.959		1.154	1.154	23.105			
			D	0.205	2.959		1.154	1.154	23.105			
T10	0.45	1.91	A	0.188	3.031	29	1.141	1.141	22.546	3.13	313.05	D
110.00-100.00			B	0.188	3.031		1.141	1.141	22.546			
			C	0.188	3.031		1.141	1.141	22.546			
			D	0.188	3.031		1.141	1.141	22.546			
T11	0.47	2.50	A	0.211	2.932	29	1.158	1.158	27.655	3.50	349.89	D
100.00-90.00			B	0.211	2.932		1.158	1.158	27.655			
			C	0.211	2.932		1.158	1.158	27.655			

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
			D	0.211	2.932		1.158	1.158	27.655			
T12	0.48	2.43	A	0.203	2.968	29	1.152	1.152	28.071	3.55	354.88	D
90.00-80.00			B	0.203	2.968		1.152	1.152	28.071			
			C	0.203	2.968		1.152	1.152	28.071			
			D	0.203	2.968		1.152	1.152	28.071			
T13	0.96	7.96	A	0.167	3.128	29	1.125	1.125	31.097	5.46	272.77	D
80.00-60.00			B	0.167	3.128		1.125	1.125	31.097			
			C	0.167	3.128		1.125	1.125	31.097			
			D	0.167	3.128		1.125	1.125	31.097			
T14	0.48	4.57	A	0.163	3.144	29	1.122	1.122	16.931	2.89	289.30	D
60.00-50.00			B	0.163	3.144		1.122	1.122	16.931			
			C	0.163	3.144		1.122	1.122	16.931			
			D	0.163	3.144		1.122	1.122	16.931			
T15	0.49	5.12	A	0.17	3.114	30	1.127	1.127	19.474	3.15	315.07	D
50.00-40.00			B	0.17	3.114		1.127	1.127	19.474			
			C	0.17	3.114		1.127	1.127	19.474			
			D	0.17	3.114		1.127	1.127	19.474			
T16	0.49	4.78	A	0.175	3.089	31	1.131	1.131	30.964	4.16	415.93	D
40.00-30.00			B	0.175	3.089		1.131	1.131	30.964			
			C	0.175	3.089		1.131	1.131	30.964			
			D	0.175	3.089		1.131	1.131	30.964			
T17	0.49	4.27	A	0.156	3.177	32	1.117	1.117	28.444	4.17	417.15	D
30.00-20.00			B	0.156	3.177		1.117	1.117	28.444			
			C	0.156	3.177		1.117	1.117	28.444			
			D	0.156	3.177		1.117	1.117	28.444			
T18	0.49	5.02	A	0.167	3.125	33	1.125	1.125	32.114	4.58	458.03	D
20.00-10.00			B	0.167	3.125		1.125	1.125	32.114			
			C	0.167	3.125		1.125	1.125	32.114			
			D	0.167	3.125		1.125	1.125	32.114			
T19	0.19	4.70	A	0.16	3.158	39	1.12	1.12	31.847	4.19	419.23	D
10.00-0.00			B	0.16	3.158		1.12	1.12	31.847			
			C	0.16	3.158		1.12	1.12	31.847			
			D	0.16	3.158		1.12	1.12	31.847			
Sum Weight:	6.93	51.64						OTM	4296.34 kip-ft	55.21		

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
T1	1.05	3.61	A	0.498	2.054	8	1	1	26.212	0.57	57.30	D
180.00-170.00			B	0.498	2.054		1	1	26.212			
			C	0.498	2.054		1	1	26.212			
			D	0.498	2.054		1	1	26.212			
T2	0.79	2.56	A	0.54	1.98	8	1	1	19.076	0.41	63.03	D
170.00-163.57			B	0.54	1.98		1	1	19.076			
			C	0.54	1.98		1	1	19.076			
			D	0.54	1.98		1	1	19.076			
T3	1.19	1.96	A	0.583	1.92	8	1	1	14.967	0.37	82.85	D
163.57-159.05			B	0.583	1.92		1	1	14.967			
			C	0.583	1.92		1	1	14.967			
			D	0.583	1.92		1	1	14.967			

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	Client: Empire Telecom / EMP-004	Designed by: MCD

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
T4	1.44	1.68	A	0.491	2.068	8	1	1	12.898	0.44*	96.47	D
159.05-154.52			B	0.491	2.068		1	1	12.898			
			C	0.491	2.068		1	1	12.898			
			D	0.491	2.068		1	1	12.898			
T5	1.44	1.71	A	0.478	2.095	8	1	1	13.060	0.45*	100.39	D
154.52-150.00			B	0.478	2.095		1	1	13.060			
			C	0.478	2.095		1	1	13.060			
			D	0.478	2.095		1	1	13.060			
T6	3.31	4.33	A	0.489	2.071	8	1	1	31.709	1.07*	106.65	D
150.00-140.00			B	0.489	2.071		1	1	31.709			
			C	0.489	2.071		1	1	31.709			
			D	0.489	2.071		1	1	31.709			
T7	3.29	5.56	A	0.469	2.114	7	1	1	33.542	1.11	110.77	D
140.00-130.00			B	0.469	2.114		1	1	33.542			
			C	0.469	2.114		1	1	33.542			
			D	0.469	2.114		1	1	33.542			
T8	3.92	4.77	A	0.398	2.287	7	1	1	30.273	1.24*	123.92	D
130.00-120.00			B	0.398	2.287		1	1	30.273			
			C	0.398	2.287		1	1	30.273			
			D	0.398	2.287		1	1	30.273			
T9	4.61	6.50	A	0.425	2.214	7	1	1	34.979	1.32*	132.26	D
120.00-110.00			B	0.425	2.214		1	1	34.979			
			C	0.425	2.214		1	1	34.979			
			D	0.425	2.214		1	1	34.979			
T10	4.76	5.51	A	0.371	2.362	7	1	1	32.552	1.40*	140.43	D
110.00-100.00			B	0.371	2.362		1	1	32.552			
			C	0.371	2.362		1	1	32.552			
			D	0.371	2.362		1	1	32.552			
T11	5.05	7.10	A	0.384	2.324	7	1	1	37.023	1.50*	149.86	D
100.00-90.00			B	0.384	2.324		1	1	37.023			
			C	0.384	2.324		1	1	37.023			
			D	0.384	2.324		1	1	37.023			
T12	5.08	6.58	A	0.371	2.362	7	1	1	37.778	1.59*	158.50	D
90.00-80.00			B	0.371	2.362		1	1	37.778			
			C	0.371	2.362		1	1	37.778			
			D	0.371	2.362		1	1	37.778			
T13	10.30	16.24	A	0.311	2.551	7	1	1	56.848	3.15	157.55	D
80.00-60.00			B	0.311	2.551		1	1	56.848			
			C	0.311	2.551		1	1	56.848			
			D	0.311	2.551		1	1	56.848			
T14	5.21	9.77	A	0.318	2.529	7	1	1	31.639	1.66	166.23	D
60.00-50.00			B	0.318	2.529		1	1	31.639			
			C	0.318	2.529		1	1	31.639			
			D	0.318	2.529		1	1	31.639			
T15	5.30	9.81	A	0.322	2.513	7	1	1	34.339	1.76	175.86	D
50.00-40.00			B	0.322	2.513		1	1	34.339			
			C	0.322	2.513		1	1	34.339			
			D	0.322	2.513		1	1	34.339			
T16	5.34	11.75	A	0.358	2.401	8	1	1	45.795	1.97	197.46	D
40.00-30.00			B	0.358	2.401		1	1	45.795			
			C	0.358	2.401		1	1	45.795			
			D	0.358	2.401		1	1	45.795			
T17	5.36	9.57	A	0.306	2.57	8	1	1	40.814	2.02	201.62	D
30.00-20.00			B	0.306	2.57		1	1	40.814			
			C	0.306	2.57		1	1	40.814			
			D	0.306	2.57		1	1	40.814			
T18	5.35	12.46	A	0.346	2.438	8	1	1	47.999	2.16	216.23	D
20.00-10.00			B	0.346	2.438		1	1	47.999			
			C	0.346	2.438		1	1	47.999			
			D	0.346	2.438		1	1	47.999			

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
T19	2.03	12.06	A	0.325	2.504	10	1	1	48.179	1.63	162.57	D
10.00-0.00			B	0.325	2.504		1	1	48.179			
			C	0.325	2.504		1	1	48.179			
			D	0.325	2.504		1	1	48.179			
Sum Weight:	74.83	133.52			*2.1A_g limit			OTM	1952.83 kip-ft	25.82		

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 ft²	F K	w plf	Ctrl. Face
T1	1.05	3.61	A	0.498	2.054	8	1.2	1.2	31.454	0.64	64.42	D
180.00-170.00			B	0.498	2.054		1.2	1.2	31.454			
			C	0.498	2.054		1.2	1.2	31.454			
			D	0.498	2.054		1.2	1.2	31.454			
T2	0.79	2.56	A	0.54	1.98	8	1.2	1.2	22.892	0.45	70.73	D
170.00-163.57			B	0.54	1.98		1.2	1.2	22.892			
			C	0.54	1.98		1.2	1.2	22.892			
			D	0.54	1.98		1.2	1.2	22.892			
T3	1.19	1.96	A	0.583	1.92	8	1.2	1.2	17.961	0.41	91.13	D
163.57-159.05			B	0.583	1.92		1.2	1.2	17.961			
			C	0.583	1.92		1.2	1.2	17.961			
			D	0.583	1.92		1.2	1.2	17.961			
T4	1.44	1.68	A	0.491	2.068	8	1.2	1.2	15.478	0.44*	96.47	D
159.05-154.52			B	0.491	2.068		1.2	1.2	15.478			
			C	0.491	2.068		1.2	1.2	15.478			
			D	0.491	2.068		1.2	1.2	15.478			
T5	1.44	1.71	A	0.478	2.095	8	1.2	1.2	15.672	0.45*	100.39	D
154.52-150.00			B	0.478	2.095		1.2	1.2	15.672			
			C	0.478	2.095		1.2	1.2	15.672			
			D	0.478	2.095		1.2	1.2	15.672			
T6	3.31	4.33	A	0.489	2.071	8	1.2	1.2	38.050	1.07*	106.65	D
150.00-140.00			B	0.489	2.071		1.2	1.2	38.050			
			C	0.489	2.071		1.2	1.2	38.050			
			D	0.489	2.071		1.2	1.2	38.050			
T7	3.29	5.56	A	0.469	2.114	7	1.2	1.2	40.251	1.16*	115.69	D
140.00-130.00			B	0.469	2.114		1.2	1.2	40.251			
			C	0.469	2.114		1.2	1.2	40.251			
			D	0.469	2.114		1.2	1.2	40.251			
T8	3.92	4.77	A	0.398	2.287	7	1.2	1.2	36.328	1.24*	123.92	D
130.00-120.00			B	0.398	2.287		1.2	1.2	36.328			
			C	0.398	2.287		1.2	1.2	36.328			
			D	0.398	2.287		1.2	1.2	36.328			
T9	4.61	6.50	A	0.425	2.214	7	1.2	1.2	41.975	1.32*	132.26	D
120.00-110.00			B	0.425	2.214		1.2	1.2	41.975			
			C	0.425	2.214		1.2	1.2	41.975			
			D	0.425	2.214		1.2	1.2	41.975			
T10	4.76	5.51	A	0.371	2.362	7	1.2	1.2	39.062	1.40*	140.43	D
110.00-100.00			B	0.371	2.362		1.2	1.2	39.062			
			C	0.371	2.362		1.2	1.2	39.062			
			D	0.371	2.362		1.2	1.2	39.062			
T11	5.05	7.10	A	0.384	2.324	7	1.2	1.2	44.428	1.50*	149.86	D

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
100.00-90.00			B	0.384	2.324		1.2	1.2	44.428			
			C	0.384	2.324		1.2	1.2	44.428			
			D	0.384	2.324		1.2	1.2	44.428			
T12	5.08	6.58	A	0.371	2.362	7	1.2	1.2	45.334	1.59*	158.50	D
90.00-80.00			B	0.371	2.362		1.2	1.2	45.334			
			C	0.371	2.362		1.2	1.2	45.334			
			D	0.371	2.362		1.2	1.2	45.334			
T13	10.30	16.24	A	0.311	2.551	7	1.2	1.2	68.218	3.33	166.42	D
80.00-60.00			B	0.311	2.551		1.2	1.2	68.218			
			C	0.311	2.551		1.2	1.2	68.218			
			D	0.311	2.551		1.2	1.2	68.218			
T14	5.21	9.77	A	0.318	2.529	7	1.2	1.2	37.967	1.76	176.17	D
60.00-50.00			B	0.318	2.529		1.2	1.2	37.967			
			C	0.318	2.529		1.2	1.2	37.967			
			D	0.318	2.529		1.2	1.2	37.967			
T15	5.30	9.81	A	0.322	2.513	7	1.2	1.2	41.207	1.87	186.82	D
50.00-40.00			B	0.322	2.513		1.2	1.2	41.207			
			C	0.322	2.513		1.2	1.2	41.207			
			D	0.322	2.513		1.2	1.2	41.207			
T16	5.34	11.75	A	0.358	2.401	8	1.2	1.2	54.954	2.12	211.84	D
40.00-30.00			B	0.358	2.401		1.2	1.2	54.954			
			C	0.358	2.401		1.2	1.2	54.954			
			D	0.358	2.401		1.2	1.2	54.954			
T17	5.36	9.57	A	0.306	2.57	8	1.2	1.2	48.976	2.16	215.85	D
30.00-20.00			B	0.306	2.57		1.2	1.2	48.976			
			C	0.306	2.57		1.2	1.2	48.976			
			D	0.306	2.57		1.2	1.2	48.976			
T18	5.35	12.46	A	0.346	2.438	8	1.2	1.2	57.598	2.33	232.60	D
20.00-10.00			B	0.346	2.438		1.2	1.2	57.598			
			C	0.346	2.438		1.2	1.2	57.598			
			D	0.346	2.438		1.2	1.2	57.598			
T19	2.03	12.06	A	0.325	2.504	10	1.2	1.2	57.815	1.83	182.63	D
10.00-0.00			B	0.325	2.504		1.2	1.2	57.815			
			C	0.325	2.504		1.2	1.2	57.815			
			D	0.325	2.504		1.2	1.2	57.815			
Sum Weight:	74.83	133.52			*2.1A_g limit			OTM	2021.12 kip-ft	27.06		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.203	2.969	11	1	1	12.491	0.47	46.76	D
180.00-170.00			B	0.203	2.969		1	1	12.491			
			C	0.203	2.969		1	1	12.491			
			D	0.203	2.969		1	1	12.491			
T2	0.06	0.54	A	0.246	2.792	11	1	1	9.832	0.34	53.55	D
170.00-163.57			B	0.246	2.792		1	1	9.832			
			C	0.246	2.792		1	1	9.832			
			D	0.246	2.792		1	1	9.832			
T3	0.11	0.39	A	0.246	2.789	11	1	1	7.122	0.32	70.58	D
163.57-159.05			B	0.246	2.789		1	1	7.122			

tnxTower	Job	Page
	180' Lattice Tower - CSP	47 of 86
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project Structural Analysis	Date 16:48:32 03/29/18
	Client Empire Telecom / EMP-004	Designed by MCD

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
			C	0.246	2.789		1	1	7.122			
			D	0.246	2.789		1	1	7.122			
T4	0.14	0.36	A	0.227	2.866	11	1	1	6.903	0.34	75.75	D
159.05-154.52			B	0.227	2.866		1	1	6.903			
			C	0.227	2.866		1	1	6.903			
			D	0.227	2.866		1	1	6.903			
T5	0.14	0.37	A	0.22	2.895	11	1	1	7.011	0.35	76.44	D
154.52-150.00			B	0.22	2.895		1	1	7.011			
			C	0.22	2.895		1	1	7.011			
			D	0.22	2.895		1	1	7.011			
T6	0.31	0.97	A	0.222	2.889	11	1	1	16.767	0.80	80.36	D
150.00-140.00			B	0.222	2.889		1	1	16.767			
			C	0.222	2.889		1	1	16.767			
			D	0.222	2.889		1	1	16.767			
T7	0.31	1.53	A	0.229	2.86	11	1	1	19.051	0.85	85.03	D
140.00-130.00			B	0.229	2.86		1	1	19.051			
			C	0.229	2.86		1	1	19.051			
			D	0.229	2.86		1	1	19.051			
T8	0.37	1.43	A	0.198	2.99	11	1	1	17.878	0.92	91.78	D
130.00-120.00			B	0.198	2.99		1	1	17.878			
	.		C	0.198	2.99		1	1	17.878			
			D	0.198	2.99		1	1	17.878			
T9	0.44	2.05	A	0.205	2.959	11	1	1	20.028	1.04	104.49	D
120.00-110.00			B	0.205	2.959		1	1	20.028			
			C	0.205	2.959		1	1	20.028			
			D	0.205	2.959		1	1	20.028			
T10	0.45	1.91	A	0.188	3.031	10	1	1	19.757	1.06	105.80	D
110.00-100.00			B	0.188	3.031		1	1	19.757			
			C	0.188	3.031		1	1	19.757			
			D	0.188	3.031		1	1	19.757			
T11	0.47	2.50	A	0.211	2.932	10	1	1	23.872	1.17	116.86	D
100.00-90.00			B	0.211	2.932		1	1	23.872			
			C	0.211	2.932		1	1	23.872			
			D	0.211	2.932		1	1	23.872			
T12	0.48	2.43	A	0.203	2.968	10	1	1	24.365	1.19	118.78	D
90.00-80.00			B	0.203	2.968		1	1	24.365			
			C	0.203	2.968		1	1	24.365			
			D	0.203	2.968		1	1	24.365			
T13	0.96	7.96	A	0.167	3.128	10	1	1	27.641	1.88	93.97	D
80.00-60.00			B	0.167	3.128		1	1	27.641			
			C	0.167	3.128		1	1	27.641			
			D	0.167	3.128		1	1	27.641			
T14	0.48	4.57	A	0.163	3.144	11	1	1	15.085	1.00	99.52	D
60.00-50.00			B	0.163	3.144		1	1	15.085			
			C	0.163	3.144		1	1	15.085			
			D	0.163	3.144		1	1	15.085			
T15	0.49	5.12	A	0.17	3.114	11	1	1	17.276	1.08	107.78	D
50.00-40.00			B	0.17	3.114		1	1	17.276			
			C	0.17	3.114		1	1	17.276			
			D	0.17	3.114		1	1	17.276			
T16	0.49	4.78	A	0.175	3.089	11	1	1	27.367	1.40	140.08	D
40.00-30.00			B	0.175	3.089		1	1	27.367			
			C	0.175	3.089		1	1	27.367			
			D	0.175	3.089		1	1	27.367			
T17	0.49	4.27	A	0.156	3.177	11	1	1	25.467	1.42	141.74	D
30.00-20.00			B	0.156	3.177		1	1	25.467			
			C	0.156	3.177		1	1	25.467			
			D	0.156	3.177		1	1	25.467			
T18	0.49	5.02	A	0.167	3.125	12	1	1	28.533	1.55	154.51	D
20.00-10.00			B	0.167	3.125		1	1	28.533			

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
			C	0.167	3.125		1	1	28.533			
			D	0.167	3.125		1	1	28.533			
T19	0.19	4.70	A	0.16	3.158	14	1	1	28.435	1.39	138.83	D
10.00-0.00			B	0.16	3.158		1	1	28.435			
			C	0.16	3.158		1	1	28.435			
			D	0.16	3.158		1	1	28.435			
Sum Weight:	6.93	51.64						OTM	1435.79 kip-ft	18.55		

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 ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.203	2.969	11	1.152	1.152	14.389	0.52	52.13	D
180.00-170.00			B	0.203	2.969		1.152	1.152	14.389			
			C	0.203	2.969		1.152	1.152	14.389			
			D	0.203	2.969		1.152	1.152	14.389			
T2	0.06	0.54	A	0.246	2.792	11	1.184	1.184	11.643	0.39	60.98	D
170.00-163.57			B	0.246	2.792		1.184	1.184	11.643			
			C	0.246	2.792		1.184	1.184	11.643			
			D	0.246	2.792		1.184	1.184	11.643			
T3	0.11	0.39	A	0.246	2.789	11	1.185	1.185	8.438	0.35	78.19	D
163.57-159.05			B	0.246	2.789		1.185	1.185	8.438			
			C	0.246	2.789		1.185	1.185	8.438			
			D	0.246	2.789		1.185	1.185	8.438			
T4	0.14	0.36	A	0.227	2.866	11	1.17	1.17	8.079	0.37	82.71	D
159.05-154.52			B	0.227	2.866		1.17	1.17	8.079			
			C	0.227	2.866		1.17	1.17	8.079			
			D	0.227	2.866		1.17	1.17	8.079			
T5	0.14	0.37	A	0.22	2.895	11	1.165	1.165	8.169	0.38	83.33	D
154.52-150.00			B	0.22	2.895		1.165	1.165	8.169			
			C	0.22	2.895		1.165	1.165	8.169			
			D	0.22	2.895		1.165	1.165	8.169			
T6	0.31	0.97	A	0.222	2.889	11	1.166	1.166	19.555	0.88	87.79	D
150.00-140.00			B	0.222	2.889		1.166	1.166	19.555			
			C	0.222	2.889		1.166	1.166	19.555			
			D	0.222	2.889		1.166	1.166	19.555			
T7	0.31	1.53	A	0.229	2.86	11	1.172	1.172	22.319	0.94	93.56	D
140.00-130.00			B	0.229	2.86		1.172	1.172	22.319			
			C	0.229	2.86		1.172	1.172	22.319			
			D	0.229	2.86		1.172	1.172	22.319			
T8	0.37	1.43	A	0.198	2.99	11	1.148	1.148	20.527	0.99	98.93	D
130.00-120.00			B	0.198	2.99		1.148	1.148	20.527			
			C	0.198	2.99		1.148	1.148	20.527			
			D	0.198	2.99		1.148	1.148	20.527			
T9	0.44	2.05	A	0.205	2.959	11	1.154	1.154	23.105	1.13	112.64	D
120.00-110.00			B	0.205	2.959		1.154	1.154	23.105			
			C	0.205	2.959		1.154	1.154	23.105			
			D	0.205	2.959		1.154	1.154	23.105			
T10	0.45	1.91	A	0.188	3.031	10	1.141	1.141	22.546	1.13	113.31	D
110.00-100.00			B	0.188	3.031		1.141	1.141	22.546			
			C	0.188	3.031		1.141	1.141	22.546			

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
			D	0.188	3.031		1.141	1.141	22.546			
T11	0.47	2.50	A	0.211	2.932	10	1.158	1.158	27.655	1.27	126.64	D
100.00-90.00			B	0.211	2.932		1.158	1.158	27.655			
			C	0.211	2.932		1.158	1.158	27.655			
			D	0.211	2.932		1.158	1.158	27.655			
T12	0.48	2.43	A	0.203	2.968	10	1.152	1.152	28.071	1.28	128.45	D
90.00-80.00			B	0.203	2.968		1.152	1.152	28.071			
			C	0.203	2.968		1.152	1.152	28.071			
			D	0.203	2.968		1.152	1.152	28.071			
T13	0.96	7.96	A	0.167	3.128	10	1.125	1.125	31.097	1.97	98.73	D
80.00-60.00			B	0.167	3.128		1.125	1.125	31.097			
			C	0.167	3.128		1.125	1.125	31.097			
			D	0.167	3.128		1.125	1.125	31.097			
T14	0.48	4.57	A	0.163	3.144	11	1.122	1.122	16.931	1.05	104.71	D
60.00-50.00			B	0.163	3.144		1.122	1.122	16.931			
			C	0.163	3.144		1.122	1.122	16.931			
			D	0.163	3.144		1.122	1.122	16.931			
T15	0.49	5.12	A	0.17	3.114	11	1.127	1.127	19.474	1.14	114.04	D
50.00-40.00			B	0.17	3.114		1.127	1.127	19.474			
			C	0.17	3.114		1.127	1.127	19.474			
			D	0.17	3.114		1.127	1.127	19.474			
T16	0.49	4.78	A	0.175	3.089	11	1.131	1.131	30.964	1.51	150.54	D
40.00-30.00			B	0.175	3.089		1.131	1.131	30.964			
			C	0.175	3.089		1.131	1.131	30.964			
			D	0.175	3.089		1.131	1.131	30.964			
T17	0.49	4.27	A	0.156	3.177	11	1.117	1.117	28.444	1.51	150.98	D
30.00-20.00			B	0.156	3.177		1.117	1.117	28.444			
			C	0.156	3.177		1.117	1.117	28.444			
			D	0.156	3.177		1.117	1.117	28.444			
T18	0.49	5.02	A	0.167	3.125	12	1.125	1.125	32.114	1.66	165.78	D
20.00-10.00			B	0.167	3.125		1.125	1.125	32.114			
			C	0.167	3.125		1.125	1.125	32.114			
			D	0.167	3.125		1.125	1.125	32.114			
T19	0.19	4.70	A	0.16	3.158	14	1.12	1.12	31.847	1.52	151.74	D
10.00-0.00			B	0.16	3.158		1.12	1.12	31.847			
			C	0.16	3.158		1.12	1.12	31.847			
			D	0.16	3.158		1.12	1.12	31.847			
Sum Weight:	6.93	51.64						OTM	1555.03 kip-ft	19.98		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	30.80					
Bracing Weight	20.84					
Total Member Self-Weight	51.64			-15.33	5.17	
Total Weight	71.92			-15.33	5.17	
Wind 0 deg - No Ice		-0.22	-68.24	-6396.94	43.49	-36.99
Wind 30 deg - No Ice		35.92	-62.41	-5808.10	-3319.65	-37.64
Wind 45 deg - No Ice		50.91	-50.89	-4733.66	-4716.67	-32.81
Wind 60 deg - No Ice		62.43	-35.90	-3337.66	-5791.90	-25.75

tnxTower	Job	Page
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	180' Lattice Tower - CSP	50 of 86
	Project Structural Analysis	Date 16:48:32 03/29/18
	Client Empire Telecom / EMP-004	Designed by MCD

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 90 deg - No Ice		68.27	0.22	22.99	-6381.41	-7.57
Wind 120 deg - No Ice		62.65	36.29	3373.38	-5830.23	13.69
Wind 135 deg - No Ice		51.22	51.20	4757.19	-4770.86	22.97
Wind 150 deg - No Ice		36.30	62.63	5815.77	-3386.02	30.68
Wind 180 deg - No Ice		0.22	68.24	6366.28	-33.16	36.99
Wind 210 deg - No Ice		-35.92	62.41	5777.44	3329.98	37.64
Wind 225 deg - No Ice		-50.91	50.89	4703.00	4727.00	32.81
Wind 240 deg - No Ice		-62.43	35.90	3307.00	5802.23	25.75
Wind 270 deg - No Ice		-68.27	-0.22	-53.65	6391.74	7.57
Wind 300 deg - No Ice		-62.65	-36.29	-3404.04	5840.56	-13.69
Wind 315 deg - No Ice		-51.22	-51.20	-4787.86	4781.20	-22.97
Wind 330 deg - No Ice		-36.30	-62.63	-5846.43	3396.36	-30.68
Member Ice	81.88					
Total Weight Ice	249.85			20.60	124.61	
Wind 0 deg - Ice		-0.03	-34.64	-3169.59	130.16	-28.63
Wind 30 deg - Ice		17.92	-31.06	-2798.54	-1500.58	-17.49
Wind 45 deg - Ice		25.36	-25.35	-2279.57	-2176.62	-9.12
Wind 60 deg - Ice		31.07	-17.92	-1603.83	-2695.84	-0.12
Wind 90 deg - Ice		34.65	0.03	26.14	-3067.08	16.06
Wind 120 deg - Ice		31.09	17.96	1654.64	-2701.38	30.04
Wind 135 deg - Ice		25.40	25.39	2328.60	-2184.46	33.54
Wind 150 deg - Ice		17.97	31.09	2845.29	-1510.18	34.75
Wind 180 deg - Ice		0.03	34.64	3210.78	119.07	28.63
Wind 210 deg - Ice		-17.92	31.06	2839.74	1749.80	17.49
Wind 225 deg - Ice		-25.36	25.35	2320.76	2425.84	9.12
Wind 240 deg - Ice		-31.07	17.92	1645.03	2945.06	0.12
Wind 270 deg - Ice		-34.65	-0.03	15.05	3316.30	-16.06
Wind 300 deg - Ice		-31.09	-17.96	-1613.44	2950.61	-30.04
Wind 315 deg - Ice		-25.40	-25.39	-2287.41	2433.68	-33.54
Wind 330 deg - Ice		-17.97	-31.09	-2804.09	1759.40	-34.75
Total Weight	71.92			-15.33	5.17	
Wind 0 deg - Service		-0.08	-24.70	-2324.77	14.93	-13.39
Wind 30 deg - Service		13.00	-22.59	-2111.64	-1202.33	-13.62
Wind 45 deg - Service		18.43	-18.42	-1722.75	-1707.97	-11.88
Wind 60 deg - Service		22.60	-13.00	-1217.48	-2097.14	-9.32
Wind 90 deg - Service		24.71	0.08	-1.12	-2310.51	-2.74
Wind 120 deg - Service		22.68	13.13	1211.52	-2111.01	4.96
Wind 135 deg - Service		18.54	18.53	1712.38	-1727.58	8.31
Wind 150 deg - Service		13.14	22.67	2095.52	-1226.35	11.10
Wind 180 deg - Service		0.08	24.70	2294.78	-12.81	13.39
Wind 210 deg - Service		-13.00	22.59	2081.65	1204.45	13.62
Wind 225 deg - Service		-18.43	18.42	1692.77	1710.09	11.88
Wind 240 deg - Service		-22.60	13.00	1187.50	2099.26	9.32
Wind 270 deg - Service		-24.71	-0.08	-28.86	2312.63	2.74
Wind 300 deg - Service		-22.68	-13.13	-1241.51	2113.13	-4.96
Wind 315 deg - Service		-18.54	-18.53	-1742.37	1729.71	-8.31
Wind 330 deg - Service		-13.14	-22.67	-2125.51	1228.47	-11.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice

Comb. No.	Description
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 170	Leg	Max Tension	31	1.83	0.19	0.08
			Max. Compression	45	-2.94	-0.08	-0.12
			Max. Mx	8	-1.27	-0.67	0.47
			Max. My	26	-1.84	0.17	-0.66
			Max. Vy	18	-0.68	0.37	-0.13
			Max. Vx	2	-0.68	-0.11	0.37
		Diagonal	Max Tension	3	2.84	-0.01	-0.00
			Max. Compression	18	-3.00	0.00	0.00
			Max. Mx	47	0.23	0.04	0.00
			Max. My	8	-0.71	-0.00	0.00
			Max. Vy	47	-0.03	0.04	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	3	0.77	0.00	0.00
			Max. Compression	18	-0.78	0.04	0.00
			Max. Mx	2	-0.44	0.04	-0.00
			Max. My	23	-0.55	0.03	0.00
			Max. Vy	35	-0.04	0.03	-0.00
			Max. Vx	23	-0.00	0.03	0.00
		Top Girt	Max Tension	47	0.25	0.00	0.00
			Max. Compression	3	-0.11	0.00	0.00
			Max. Mx	34	0.17	-0.07	0.00
			Max. My	10	0.04	0.00	0.00
			Max. Vy	34	0.05	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
T2	170 - 163.573	Leg	Max Tension	15	8.58	-0.55	-0.47
			Max. Compression	30	-10.29	-0.76	-0.82
			Max. Mx	12	7.48	0.90	0.62
			Max. My	32	-9.98	-0.61	-0.91
			Max. Vy	2	0.54	-0.75	0.09
			Max. Vx	4	-0.55	-0.45	0.73
		Diagonal	Max Tension	5	3.53	0.00	0.00
			Max. Compression	20	-3.72	0.00	0.00
			Max. Mx	46	0.18	0.03	0.00
			Max. My	6	-3.00	-0.00	0.00
			Max. Vy	46	-0.03	0.03	0.00
			Max. Vx	35	-0.00	0.00	0.00
		Top Girt	Max Tension	47	0.83	0.00	0.00
			Max. Compression	3	-0.46	0.00	0.00
			Max. Mx	34	0.58	-0.07	0.00
			Max. My	10	0.10	0.00	0.00
			Max. Vy	34	-0.05	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
T3	163.573 - 159.049	Leg	Max Tension	31	16.62	-0.24	-0.29
			Max. Compression	6	-20.20	-0.73	-0.78
			Max. Mx	10	9.54	-1.32	-0.07
			Max. My	26	8.37	-0.11	-1.34
			Max. Vy	10	1.35	-0.55	0.20
			Max. Vx	26	1.38	0.22	-0.56
		Diagonal	Max Tension	27	4.76	0.00	0.00
			Max. Compression	26	-4.91	0.00	0.00
			Max. Mx	50	0.78	0.02	-0.00
			Max. My	37	-1.18	0.02	0.01
			Max. Vy	36	0.03	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	48	0.00	0.00	0.00
		Top Girt	Max Tension	26	0.54	0.00	0.00
			Max. Compression	27	-0.46	0.00	0.00
			Max. Mx	34	0.34	-0.07	0.00
			Max. My	43	0.28	0.00	0.00
			Max. Vy	34	-0.05	0.00	0.00
			Max. Vx	43	-0.00	0.00	0.00
T4	159.049 - 154.524	Leg	Max Tension	31	24.90	-0.34	-0.35
			Max. Compression	30	-29.52	-0.51	-0.42
			Max. Mx	16	3.13	1.02	-0.77
			Max. My	28	3.17	-0.78	1.03
			Max. Vy	26	0.36	-0.94	0.31
			Max. Vx	12	0.36	0.79	-1.02
		Diagonal	Max Tension	26	5.37	0.00	0.00
			Max. Compression	27	-5.27	0.00	0.00
			Max. Mx	37	1.45	0.04	-0.00
			Max. My	49	-0.81	0.03	-0.01
			Max. Vy	38	-0.04	0.04	-0.00
			Max. Vx	48	0.00	0.00	0.00
T5	154.524 - 150	Leg	Max Tension	31	32.88	-0.46	-0.58
			Max. Compression	30	-37.54	-0.82	-0.69
			Max. Mx	28	-36.37	-0.89	-0.57
			Max. My	16	-36.04	-0.57	-0.89
			Max. Vy	28	0.40	-0.89	-0.57
			Max. Vx	16	0.41	-0.57	-0.89
		Diagonal	Max Tension	27	5.32	0.00	0.00
			Max. Compression	26	-5.46	0.00	0.00
			Max. Mx	36	0.35	0.05	-0.01
			Max. My	38	1.05	0.04	0.01
			Max. Vy	36	-0.04	0.05	-0.01
			Max. Vx	38	-0.00	0.00	0.00
T6	150 - 140	Leg	Max Tension	31	51.44	-0.55	-0.64
			Max. Compression	30	-56.81	-0.98	-0.83
			Max. Mx	33	-13.77	-1.28	1.00
			Max. My	28	7.31	-0.99	1.28
			Max. Vy	18	-0.60	1.27	-0.09
			Max. Vx	2	-0.60	-0.05	1.26
		Diagonal	Max Tension	26	5.78	0.00	0.00
			Max. Compression	26	-5.83	0.00	0.00
			Max. Mx	36	0.69	0.06	-0.01
			Max. My	10	-5.56	-0.01	0.01
			Max. Vy	36	-0.04	0.06	-0.01
			Max. Vx	50	0.00	0.00	0.00
		Top Girt	Max Tension	2	0.61	0.00	0.00
			Max. Compression	3	-0.54	0.00	0.00
			Max. Mx	34	0.20	-0.12	0.00
			Max. My	50	0.16	0.00	0.00
			Max. Vy	34	0.07	0.00	0.00
			Max. Vx	50	-0.00	0.00	0.00
T7	140 - 130	Leg	Max Tension	31	65.63	-0.84	-0.97
			Max. Compression	30	-72.00	-0.47	-0.32
			Max. Mx	14	-4.65	3.83	-3.67
			Max. My	30	-4.52	-3.69	3.85
			Max. Vy	14	-0.98	3.83	-3.67
			Max. Vx	30	-0.98	-3.69	3.85
		Diagonal	Max Tension	19	8.94	0.03	0.02
			Max. Compression	18	-9.13	0.00	0.00
			Max. Mx	32	4.76	0.09	0.01
			Max. My	16	-8.74	-0.04	0.04
			Max. Vy	38	0.05	0.07	-0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	16	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	1.08	0.00	0.00
			Max. Compression	30	-1.08	-0.03	-0.01
			Max. Mx	32	-0.50	0.05	0.03
			Max. My	32	-0.50	0.05	0.03
			Max. Vy	48	-0.04	0.04	0.01
			Max. Vx	32	0.01	0.00	0.00
		Top Girt	Max Tension	10	0.45	0.00	0.00
			Max. Compression	10	-0.51	-0.06	0.00
			Max. Mx	35	-0.04	-0.43	0.01
			Max. My	35	-0.04	-0.43	0.02
			Max. Vy	35	-0.15	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	22	0.07	0.00	0.00
			Max. Compression	22	-0.07	0.00	0.00
			Max. Mx	34	0.00	-0.12	0.00
			Max. My	47	0.00	0.00	0.00
			Max. Vy	34	0.06	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
T8	130 - 120	Leg	Max Tension	31	85.48	-1.93	-2.05
			Max. Compression	30	-94.58	-1.19	-1.10
			Max. Mx	32	-89.57	2.42	1.77
			Max. My	12	-89.58	1.77	2.43
			Max. Vy	8	-1.26	2.33	-1.63
			Max. Vx	20	-1.26	-1.61	2.32
		Diagonal	Max Tension	11	10.80	0.04	-0.01
			Max. Compression	26	-11.03	0.00	0.00
			Max. Mx	32	4.21	0.14	0.03
			Max. My	11	-9.06	-0.04	0.05
			Max. Vy	36	-0.07	0.13	-0.03
			Max. Vx	10	-0.01	-0.03	0.05
		Secondary Horizontal	Max Tension	30	1.42	0.00	0.00
			Max. Compression	30	-1.42	0.00	-0.02
			Max. Mx	48	0.19	0.06	0.01
			Max. My	13	-1.33	-0.01	-0.02
			Max. Vy	48	0.05	0.06	0.01
			Max. Vx	32	-0.01	-0.00	-0.02
T9	120 - 110	Leg	Max Tension	31	109.70	-1.79	-1.93
			Max. Compression	30	-120.27	-0.50	-0.47
			Max. Mx	6	-6.68	4.55	-4.35
			Max. My	28	22.00	-4.05	4.57
			Max. Vy	30	-1.10	4.48	-4.31
			Max. Vx	14	-1.10	-4.30	4.47
		Diagonal	Max Tension	10	11.75	0.00	0.00
			Max. Compression	26	-11.87	0.00	0.00
			Max. Mx	28	7.01	0.09	-0.01
			Max. My	26	-11.84	-0.01	-0.05
			Max. Vy	48	0.07	0.09	0.01
			Max. Vx	26	-0.01	0.00	0.00
		Horizontal	Max Tension	27	0.77	0.00	0.00
			Max. Compression	3	-0.91	-0.11	0.00
			Max. Mx	43	-0.25	-0.65	0.02
			Max. My	35	-0.24	-0.65	0.02
			Max. Vy	43	-0.19	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	1.81	0.00	0.00
			Max. Compression	30	-1.81	-0.01	-0.01
			Max. Mx	36	0.02	0.05	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	32	-0.59	0.03	0.02
			Max. Vy	42	0.05	0.05	0.01
			Max. Vx	32	0.00	0.00	0.00
		Inner Bracing	Max Tension	14	0.08	0.00	0.00
			Max. Compression	14	-0.08	0.00	0.00
			Max. Mx	34	0.00	-0.18	0.00
			Max. My	47	0.00	0.00	0.00
			Max. Vy	34	0.08	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
T10	110 - 100	Leg	Max Tension	31	134.18	-2.39	-2.44
			Max. Compression	30	-146.57	-1.71	-1.59
			Max. Mx	24	-136.36	2.94	2.11
			Max. My	12	-139.53	2.19	2.94
			Max. Vy	14	1.03	-1.13	-1.01
			Max. Vx	30	1.03	-1.02	-1.15
		Diagonal	Max Tension	11	14.16	0.06	-0.01
			Max. Compression	26	-14.41	0.00	0.00
			Max. Mx	50	1.06	0.18	0.03
			Max. My	11	-11.63	-0.05	0.04
			Max. Vy	50	-0.08	0.18	0.03
			Max. Vx	35	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	2.20	0.00	0.00
			Max. Compression	30	-2.20	0.01	-0.02
			Max. Mx	48	0.24	0.07	0.01
			Max. My	5	-2.05	-0.00	-0.02
			Max. Vy	48	0.06	0.07	0.01
			Max. Vx	49	0.00	0.00	0.00
T11	100 - 90	Leg	Max Tension	31	162.10	-1.94	-2.01
			Max. Compression	30	-176.54	-1.23	-1.31
			Max. Mx	8	34.39	6.31	-5.35
			Max. My	28	33.40	-5.33	6.29
			Max. Vy	8	-1.31	6.31	-5.35
			Max. Vx	20	-1.32	-5.30	6.26
		Diagonal	Max Tension	10	13.75	0.00	0.00
			Max. Compression	26	-13.84	0.00	0.00
			Max. Mx	28	7.85	0.13	0.00
			Max. My	26	-13.81	-0.02	-0.05
			Max. Vy	48	0.08	0.12	0.02
			Max. Vx	26	0.01	0.00	0.00
		Horizontal	Max Tension	2	1.50	0.00	0.00
			Max. Compression	3	-1.59	-0.15	0.01
			Max. Mx	35	-0.16	-0.86	0.03
			Max. My	35	-0.15	-0.86	0.03
			Max. Vy	35	-0.22	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.09	0.00	0.00
			Max. Compression	30	-0.09	0.00	0.00
			Max. Mx	34	0.00	-0.24	0.00
			Max. My	47	0.00	0.00	0.00
			Max. Vy	34	-0.09	0.00	0.00
			Max. Vx	47	0.00	0.00	0.00
T12	90 - 80	Leg	Max Tension	31	189.20	-1.88	-2.02
			Max. Compression	30	-205.17	-1.11	-1.04
			Max. Mx	26	-137.22	3.25	-0.21
			Max. My	10	-140.02	-0.15	3.22
			Max. Vy	24	1.07	-1.93	-1.74
			Max. Vx	4	1.07	-1.78	-1.91
		Diagonal	Max Tension	11	15.36	0.06	-0.00
			Max. Compression	26	-15.69	0.00	0.00
			Max. Mx	50	1.33	0.20	0.03

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	-14.12	-0.04	-0.04
			Max. Vy	50	-0.09	0.20	0.03
			Max. Vx	48	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	3.08	0.00	0.00
			Max. Compression	30	-3.08	0.02	-0.02
			Max. Mx	48	0.25	0.11	0.02
			Max. My	5	-2.88	0.00	-0.02
			Max. Vy	48	0.08	0.11	0.02
			Max. Vx	42	-0.01	0.00	0.00
T13	80 - 60	Leg	Max Tension	31	245.24	1.78	0.16
			Max. Compression	30	-265.36	6.45	-0.07
			Max. Mx	49	-115.71	7.63	-0.85
			Max. My	6	-11.46	-0.71	6.23
			Max. Vy	37	-1.27	7.63	0.99
			Max. Vx	6	-1.16	-0.71	6.23
		Diagonal	Max Tension	19	15.42	0.00	0.00
			Max. Compression	10	-15.88	0.00	0.00
			Max. Mx	48	2.51	-0.19	0.04
			Max. My	42	0.65	-0.17	0.04
			Max. Vy	48	-0.10	-0.19	0.04
			Max. Vx	42	0.01	0.00	0.00
		Top Girt	Max Tension	35	1.52	0.00	0.00
			Max. Compression	27	-0.93	-0.20	0.01
			Max. Mx	35	1.07	-1.18	0.04
			Max. My	35	1.07	-1.18	0.04
			Max. Vy	35	-0.25	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.12	0.00	0.00
			Max. Compression	30	-0.12	0.00	0.00
			Max. Mx	34	0.00	0.39	0.00
			Max. My	47	0.00	0.00	-0.00
			Max. Vy	34	0.13	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
T14	60 - 50	Leg	Max Tension	31	270.42	-0.22	-0.13
			Max. Compression	30	-293.77	0.56	0.32
			Max. Mx	41	36.92	-8.15	0.86
			Max. My	7	-10.57	-0.89	8.63
			Max. Vy	37	1.47	-8.15	-0.97
			Max. Vx	7	-1.46	-0.89	8.63
		Diagonal	Max Tension	18	15.53	0.00	0.00
			Max. Compression	18	-15.62	0.00	0.00
			Max. Mx	49	2.86	-0.17	-0.03
			Max. My	48	-5.04	-0.15	-0.04
			Max. Vy	49	-0.10	-0.17	-0.03
			Max. Vx	48	-0.01	0.00	0.00
		Horizontal	Max Tension	35	3.89	0.00	0.00
			Max. Compression	27	-1.61	0.32	-0.02
			Max. Mx	35	3.21	1.12	-0.05
			Max. My	35	3.22	1.12	-0.05
			Max. Vy	35	-0.24	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.14	0.00	0.00
			Max. Compression	31	-0.14	0.00	0.00
			Max. Mx	34	0.00	0.49	0.00
			Max. My	49	0.01	0.00	0.00
			Max. Vy	34	-0.15	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00
T15	50 - 40	Leg	Max Tension	31	296.31	1.92	0.25
			Max. Compression	30	-321.27	2.12	-0.16
			Max. Mx	45	-136.48	-7.94	-0.98

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	20	63.98	0.55	-4.69
			Max. Vy	30	-2.16	6.13	0.01
			Max. Vx	32	-1.20	0.57	4.67
		Diagonal	Max Tension	19	16.33	-0.09	-0.01
			Max. Compression	18	-17.51	0.00	0.00
			Max. Mx	44	0.34	-0.30	-0.03
			Max. My	48	1.77	-0.29	-0.03
			Max. Vy	44	-0.15	-0.30	-0.03
			Max. Vx	48	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	4.82	0.00	0.00
			Max. Compression	30	-4.82	0.05	0.00
			Max. Mx	40	0.73	0.23	0.05
			Max. My	36	-0.13	0.23	0.06
			Max. Vy	40	0.12	0.23	0.05
			Max. Vx	42	-0.01	0.00	0.00
T16	40 - 30	Leg	Max Tension	31	320.18	-2.65	-2.15
			Max. Compression	30	-349.24	1.56	1.07
			Max. Mx	6	-17.07	7.23	-6.06
			Max. My	16	-100.54	-5.78	7.23
			Max. Vy	4	-1.67	7.23	-5.74
			Max. Vx	16	-1.68	-5.78	7.23
		Diagonal	Max Tension	5	17.00	-0.13	-0.01
			Max. Compression	20	-17.38	0.00	0.00
			Max. Mx	48	1.37	-0.24	-0.03
			Max. My	40	-7.88	-0.19	0.04
			Max. Vy	48	-0.14	-0.24	-0.03
			Max. Vx	40	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	5.24	0.00	0.00
			Max. Compression	30	-5.24	0.01	0.00
			Max. Mx	42	-0.39	0.14	0.06
			Max. My	45	-0.69	0.12	0.06
			Max. Vy	42	0.11	0.14	0.06
			Max. Vx	49	-0.01	0.00	0.00
		Top Girt	Max Tension	35	5.19	0.00	0.00
			Max. Compression	27	-1.70	0.43	-0.03
			Max. Mx	35	4.52	1.10	-0.05
			Max. My	43	4.52	1.10	-0.05
			Max. Vy	35	-0.23	0.00	0.00
			Max. Vx	43	-0.01	0.00	0.00
		Inner Bracing	Max Tension	31	0.19	0.00	0.00
			Max. Compression	31	-0.19	0.00	0.00
			Max. Mx	34	0.00	0.60	0.00
			Max. My	49	0.02	0.00	0.00
			Max. Vy	34	-0.16	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00
T17	30 - 20	Leg	Max Tension	31	348.47	-3.58	-3.97
			Max. Compression	30	-379.69	0.02	0.15
			Max. Mx	18	-259.49	5.99	1.07
			Max. My	2	-257.36	0.99	6.03
			Max. Vy	16	1.98	-3.40	-3.06
			Max. Vx	4	1.98	-3.02	-3.37
		Diagonal	Max Tension	19	17.91	-0.12	-0.00
			Max. Compression	18	-18.52	0.00	0.00
			Max. Mx	49	3.84	-0.35	-0.04
			Max. My	49	3.84	-0.35	-0.04
			Max. Vy	45	-0.16	-0.34	-0.03
			Max. Vx	48	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	5.70	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. Compression	30	-5.70	0.07	-0.01
			Max. Mx	40	0.91	0.27	0.05
			Max. My	44	-0.20	0.26	0.05
			Max. Vy	40	0.13	0.27	0.05
			Max. Vx	50	-0.01	0.00	0.00
T18	20 - 10	Leg	Max Tension	31	372.70	-3.90	-3.29
			Max. Compression	30	-403.85	1.00	0.83
			Max. Mx	32	355.88	-4.39	-2.97
			Max. My	20	350.20	-2.91	-4.39
			Max. Vy	30	-1.56	2.87	2.65
			Max. Vx	22	-1.54	2.60	2.84
		Diagonal	Max Tension	5	19.66	-0.13	0.00
			Max. Compression	8	-22.27	0.00	0.00
			Max. Mx	49	-1.76	-0.30	-0.05
			Max. My	43	-9.24	-0.28	0.07
			Max. Vy	49	-0.16	-0.30	-0.05
			Max. Vx	43	-0.01	0.00	0.00
		Horizontal	Max Tension	44	7.93	0.00	0.00
			Max. Compression	27	-1.68	0.60	-0.04
			Max. Mx	43	6.72	0.96	-0.04
			Max. My	43	6.72	0.96	-0.05
			Max. Vy	43	-0.21	0.00	0.00
			Max. Vx	43	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	6.06	0.00	0.00
			Max. Compression	30	-6.06	0.04	0.01
			Max. Mx	50	-0.45	0.20	0.09
			Max. My	42	1.32	0.19	0.09
			Max. Vy	50	-0.13	0.20	0.09
			Max. Vx	42	0.02	0.00	0.00
		Inner Bracing	Max Tension	33	0.05	0.00	0.00
			Max. Compression	33	-0.03	0.00	0.00
			Max. Mx	34	0.00	0.75	0.00
			Max. My	49	0.01	0.00	0.00
			Max. Vy	34	-0.18	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00
T19	10 - 0	Leg	Max Tension	31	379.88	-2.66	-2.76
			Max. Compression	30	-415.36	0.00	-0.00
			Max. Mx	16	-399.86	4.00	2.72
			Max. My	4	-396.37	2.65	4.03
			Max. Vy	32	1.42	-2.86	-2.20
			Max. Vx	20	1.41	-2.10	-2.86
		Diagonal	Max Tension	5	28.15	-0.04	-0.02
			Max. Compression	20	-29.19	0.00	0.00
			Max. Mx	48	2.95	-0.08	-0.03
			Max. My	43	-9.02	-0.07	0.05
			Max. Vy	48	-0.07	-0.08	-0.03
			Max. Vx	43	0.01	0.00	0.00
		Horizontal	Max Tension	20	21.07	0.00	0.00
			Max. Compression	5	-18.77	-0.04	0.02
			Max. Mx	47	6.28	-0.25	-0.02
			Max. My	10	-4.25	-0.14	-0.04
			Max. Vy	47	0.15	-0.25	-0.02
			Max. Vx	10	-0.01	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	30	6.23	0.00	0.00
			Max. Compression	30	-6.23	0.00	0.00
			Max. Mx	40	2.70	-0.04	0.00
			Max. My	42	0.35	0.00	0.00
			Max. Vy	40	-0.04	0.00	0.00
			Max. Vx	42	-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
		Redund Diag 1 Bracing	Max Tension	3	7.47	0.00	0.00
			Max. Compression	2	-7.90	0.00	0.00
			Max. Mx	40	2.05	-0.06	0.00
			Max. My	42	4.81	0.00	0.00
			Max. Vy	40	-0.04	0.00	0.00
			Max. Vx	42	-0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-0.03	0.00	0.00
			Max. Mx	34	-0.01	-0.08	0.00
			Max. Vy	34	-0.05	0.00	0.00
		Redund Sub Horz Bracing	Max Tension	3	8.33	0.00	0.00
			Max. Compression	26	-9.07	0.00	0.00
			Max. Mx	34	3.74	-0.22	0.00
			Max. My	34	3.74	0.00	0.01
			Max. Vy	34	0.10	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
		Inner Bracing	Max Tension	30	0.17	0.00	0.00
			Max. Compression	30	-0.17	0.00	0.00
			Max. Mx	34	-0.01	0.78	0.00
			Max. My	47	-0.01	0.00	-0.00
			Max. Vy	34	0.18	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	22	447.09	31.52	-33.03
	Max. H_x	24	432.64	32.98	-29.48
	Max. H_z	5	-395.64	-26.48	33.07
	Min. Vert	7	-410.24	-30.14	31.60
	Min. H_x	9	-395.72	-31.67	27.87
	Min. H_z	20	432.55	28.02	-34.43
Leg C	Max. Vert	14	451.63	-33.01	-32.02
	Max. H_x	29	-400.74	32.82	27.24
	Max. H_z	33	-400.65	28.28	31.77
	Min. Vert	31	-415.41	31.68	30.60
	Min. H_x	12	437.02	-34.10	-28.82
	Min. H_z	16	436.93	-29.79	-33.14
Leg B	Max. Vert	6	447.78	-33.04	31.54
	Max. H_x	25	-395.21	32.81	-26.72
	Max. H_z	4	433.24	-29.76	32.74
	Min. Vert	23	-409.72	31.60	-30.11
	Min. H_x	8	433.33	-34.18	28.31
	Min. H_z	21	-395.12	28.15	-31.36
Leg A	Max. Vert	30	453.01	32.05	33.06
	Max. H_x	28	438.41	33.55	29.45
	Max. H_z	32	438.32	28.48	34.52
	Min. Vert	15	-414.37	-30.59	-31.63
	Min. H_x	13	-399.69	-32.16	-27.85
	Min. H_z	17	-399.60	-26.84	-33.16

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	71.92	0.00	0.00	-15.34	5.17	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	86.30	-0.35	-109.19	-10234.13	67.80	-59.19
0.9 Dead+1.6 Wind 0 deg - No Ice	64.73	-0.35	-109.19	-10223.31	66.20	-59.19
1.2 Dead+1.6 Wind 30 deg - No Ice	86.30	57.47	-99.85	-9291.01	-5315.63	-60.29
0.9 Dead+1.6 Wind 30 deg - No Ice	64.73	57.47	-99.85	-9280.77	-5313.97	-60.27
1.2 Dead+1.6 Wind 45 deg - No Ice	86.30	81.46	-81.42	-7571.13	-7551.91	-52.60
0.9 Dead+1.6 Wind 45 deg - No Ice	64.73	81.46	-81.43	-7561.93	-7548.89	-52.58
1.2 Dead+1.6 Wind 60 deg - No Ice	86.30	99.90	-57.45	-5336.53	-9273.11	-41.33
0.9 Dead+1.6 Wind 60 deg - No Ice	64.73	99.90	-57.45	-5328.69	-9269.05	-41.30
1.2 Dead+1.6 Wind 90 deg - No Ice	86.30	109.24	0.35	42.96	-10217.42	-12.25
0.9 Dead+1.6 Wind 90 deg - No Ice	64.73	109.24	0.35	47.55	-10212.77	-12.21
1.2 Dead+1.6 Wind 120 deg - No Ice	86.30	100.25	58.06	5406.00	-9334.68	21.80
0.9 Dead+1.6 Wind 120 deg - No Ice	64.73	100.25	58.06	5407.34	-9330.57	21.83
1.2 Dead+1.6 Wind 135 deg - No Ice	86.30	81.96	81.92	7621.08	-7638.97	36.65
0.9 Dead+1.6 Wind 135 deg - No Ice	64.73	81.96	81.92	7621.08	-7635.88	36.68
1.2 Dead+1.6 Wind 150 deg - No Ice	86.30	58.08	100.21	9315.53	-5422.23	49.02
0.9 Dead+1.6 Wind 150 deg - No Ice	64.73	58.08	100.21	9314.51	-5420.49	49.03
1.2 Dead+1.6 Wind 180 deg - No Ice	86.30	0.35	109.19	10197.19	-55.22	59.18
0.9 Dead+1.6 Wind 180 deg - No Ice	64.73	0.35	109.19	10195.63	-56.73	59.18
1.2 Dead+1.6 Wind 210 deg - No Ice	86.30	-57.47	99.85	9253.94	5328.25	60.30
0.9 Dead+1.6 Wind 210 deg - No Ice	64.73	-57.47	99.85	9252.97	5323.48	60.28
1.2 Dead+1.6 Wind 225 deg - No Ice	86.30	-81.46	81.42	7534.01	7564.49	52.60
0.9 Dead+1.6 Wind 225 deg - No Ice	64.73	-81.46	81.43	7534.08	7558.37	52.57
1.2 Dead+1.6 Wind 240 deg - No Ice	86.30	-99.90	57.45	5299.38	9285.63	41.32
0.9 Dead+1.6 Wind 240 deg - No Ice	64.73	-99.90	57.45	5300.80	9278.47	41.29
1.2 Dead+1.6 Wind 270 deg - No Ice	86.30	-109.24	-0.35	-80.07	10229.82	12.26
0.9 Dead+1.6 Wind 270 deg - No Ice	64.73	-109.24	-0.35	-75.38	10222.07	12.22
1.2 Dead+1.6 Wind 300 deg - No Ice	86.30	-100.25	-58.06	-5442.99	9347.07	-21.78

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
0.9 Dead+1.6 Wind 300 deg - No Ice	64.73	-100.25	-58.06	-5435.06	9339.85	-21.81
1.2 Dead+1.6 Wind 315 deg - No Ice	86.30	-81.96	-81.92	-7658.01	7651.38	-36.65
0.9 Dead+1.6 Wind 315 deg - No Ice	64.73	-81.96	-81.92	-7648.75	7645.20	-36.67
1.2 Dead+1.6 Wind 330 deg - No Ice	86.30	-58.08	-100.21	-9352.43	5434.71	-49.02
0.9 Dead+1.6 Wind 330 deg - No Ice	64.73	-58.08	-100.21	-9342.15	5429.87	-49.04
1.2 Dead+1.0 Ice+1.0 Temp	264.23	-0.00	0.00	17.34	126.36	0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	264.23	-0.03	-34.64	-3191.69	131.98	-28.72
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	264.23	17.92	-31.06	-2817.94	-1508.11	-17.58
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	264.23	25.36	-25.35	-2295.98	-2188.04	-9.20
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	264.23	31.07	-17.92	-1616.37	-2710.24	-0.19
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	264.23	34.65	0.03	22.97	-3084.20	16.04
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	264.23	31.09	17.96	1660.79	-2715.84	30.07
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	264.23	25.40	25.39	2338.59	-2196.00	33.59
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	264.23	17.97	31.09	2858.26	-1517.82	34.84
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	264.23	0.03	34.64	3226.39	120.76	28.74
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	264.23	-17.92	31.06	2852.63	1760.84	17.61
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	264.23	-25.36	25.35	2330.67	2440.76	9.23
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	264.23	-31.07	17.92	1651.06	2962.95	0.22
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	264.23	-34.65	-0.03	11.74	3336.91	-16.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	264.23	-31.09	-17.96	-1626.08	2968.57	-30.04
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	264.23	-25.40	-25.39	-2303.91	2448.69	-33.58
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	264.23	-17.97	-31.09	-2823.55	1770.56	-34.81
Dead+Wind 0 deg - Service	71.92	-0.08	-24.70	-2325.40	19.08	-13.39
Dead+Wind 30 deg - Service	71.92	13.00	-22.59	-2112.13	-1198.25	-13.64
Dead+Wind 45 deg - Service	71.92	18.43	-18.42	-1723.21	-1703.93	-11.90
Dead+Wind 60 deg - Service	71.92	22.60	-13.00	-1217.91	-2093.13	-9.34
Dead+Wind 90 deg - Service	71.92	24.71	0.08	-1.48	-2306.64	-2.77
Dead+Wind 120 deg - Service	71.92	22.68	13.13	1211.23	-2107.04	4.94
Dead+Wind 135 deg - Service	71.92	18.54	18.53	1712.11	-1723.60	8.29
Dead+Wind 150 deg - Service	71.92	13.14	22.67	2095.26	-1222.34	11.09
Dead+Wind 180 deg - Service	71.92	0.08	24.70	2294.63	-8.74	13.39
Dead+Wind 210 deg - Service	71.92	-13.00	22.59	2081.35	1208.60	13.64
Dead+Wind 225 deg - Service	71.92	-18.43	18.42	1692.44	1714.27	11.90
Dead+Wind 240 deg - Service	71.92	-22.60	13.00	1187.14	2103.47	9.35
Dead+Wind 270 deg - Service	71.92	-24.71	-0.08	-29.29	2316.98	2.76
Dead+Wind 300 deg - Service	71.92	-22.68	-13.13	-1242.00	2117.37	-4.93
Dead+Wind 315 deg - Service	71.92	-18.54	-18.53	-1742.88	1733.93	-8.29
Dead+Wind 330 deg - Service	71.92	-13.14	-22.67	-2126.03	1232.68	-11.09

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-71.92	0.00	-0.00	71.92	0.00	0.000%
2	-0.35	-86.30	-109.19	0.35	86.30	109.19	0.000%
3	-0.35	-64.73	-109.19	0.35	64.73	109.19	0.000%
4	57.47	-86.30	-99.85	-57.47	86.30	99.85	0.000%
5	57.47	-64.73	-99.85	-57.47	64.73	99.85	0.000%
6	81.46	-86.30	-81.42	-81.46	86.30	81.42	0.001%
7	81.46	-64.73	-81.42	-81.46	64.73	81.43	0.000%
8	99.90	-86.30	-57.45	-99.90	86.30	57.45	0.000%
9	99.90	-64.73	-57.45	-99.90	64.73	57.45	0.000%
10	109.24	-86.30	0.35	-109.24	86.30	-0.35	0.000%
11	109.24	-64.73	0.35	-109.24	64.73	-0.35	0.000%
12	100.25	-86.30	58.06	-100.25	86.30	-58.06	0.000%
13	100.25	-64.73	58.06	-100.25	64.73	-58.06	0.000%
14	81.96	-86.30	81.92	-81.96	86.30	-81.92	0.001%
15	81.96	-64.73	81.92	-81.96	64.73	-81.92	0.000%
16	58.08	-86.30	100.21	-58.08	86.30	-100.21	0.000%
17	58.08	-64.73	100.21	-58.08	64.73	-100.21	0.000%
18	0.35	-86.30	109.19	-0.35	86.30	-109.19	0.000%
19	0.35	-64.73	109.19	-0.35	64.73	-109.19	0.000%
20	-57.47	-86.30	99.85	57.47	86.30	-99.85	0.000%
21	-57.47	-64.73	99.85	57.47	64.73	-99.85	0.000%
22	-81.46	-86.30	81.42	81.46	86.30	-81.42	0.001%
23	-81.46	-64.73	81.42	81.46	64.73	-81.43	0.000%
24	-99.90	-86.30	57.45	99.90	86.30	-57.45	0.000%
25	-99.90	-64.73	57.45	99.90	64.73	-57.45	0.000%
26	-109.24	-86.30	-0.35	109.24	86.30	0.35	0.000%
27	-109.24	-64.73	-0.35	109.24	64.73	0.35	0.000%
28	-100.25	-86.30	-58.06	100.25	86.30	58.06	0.000%
29	-100.25	-64.73	-58.06	100.25	64.73	58.06	0.000%
30	-81.96	-86.30	-81.92	81.96	86.30	81.92	0.000%
31	-81.96	-64.73	-81.92	81.96	64.73	81.92	0.000%
32	-58.08	-86.30	-100.21	58.08	86.30	100.21	0.000%
33	-58.08	-64.73	-100.21	58.08	64.73	100.21	0.000%
34	0.00	-264.23	0.00	0.00	264.23	-0.00	0.000%
35	-0.03	-264.23	-34.64	0.03	264.23	34.64	0.000%
36	17.92	-264.23	-31.06	-17.92	264.23	31.06	0.000%
37	25.36	-264.23	-25.35	-25.36	264.23	25.35	0.000%
38	31.07	-264.23	-17.92	-31.07	264.23	17.92	0.000%
39	34.65	-264.23	0.03	-34.65	264.23	-0.03	0.000%
40	31.09	-264.23	17.96	-31.09	264.23	-17.96	0.000%
41	25.40	-264.23	25.39	-25.40	264.23	-25.39	0.000%
42	17.97	-264.23	31.09	-17.97	264.23	-31.09	0.000%
43	0.03	-264.23	34.64	-0.03	264.23	-34.64	0.000%
44	-17.92	-264.23	31.06	17.92	264.23	-31.06	0.000%
45	-25.36	-264.23	25.35	25.36	264.23	-25.35	0.000%
46	-31.07	-264.23	17.92	31.07	264.23	-17.92	0.000%
47	-34.65	-264.23	-0.03	34.65	264.23	0.03	0.000%
48	-31.09	-264.23	-17.96	31.09	264.23	17.96	0.000%
49	-25.40	-264.23	-25.39	25.40	264.23	25.39	0.000%
50	-17.97	-264.23	-31.09	17.97	264.23	31.09	0.000%
51	-0.08	-71.92	-24.70	0.08	71.92	24.70	0.000%
52	13.00	-71.92	-22.59	-13.00	71.92	22.59	0.000%
53	18.43	-71.92	-18.42	-18.43	71.92	18.42	0.000%
54	22.60	-71.92	-13.00	-22.60	71.92	13.00	0.000%
55	24.71	-71.92	0.08	-24.71	71.92	-0.08	0.000%
56	22.68	-71.92	13.13	-22.68	71.92	-13.13	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
57	18.54	-71.92	18.53	-18.54	71.92	-18.53	0.001%
58	13.14	-71.92	22.67	-13.14	71.92	-22.67	0.000%
59	0.08	-71.92	24.70	-0.08	71.92	-24.70	0.000%
60	-13.00	-71.92	22.59	13.00	71.92	-22.59	0.001%
61	-18.43	-71.92	18.42	18.43	71.92	-18.42	0.000%
62	-22.60	-71.92	13.00	22.60	71.92	-13.00	0.000%
63	-24.71	-71.92	-0.08	24.71	71.92	0.08	0.001%
64	-22.68	-71.92	-13.13	22.68	71.92	13.13	0.000%
65	-18.54	-71.92	-18.53	18.54	71.92	18.53	0.000%
66	-13.14	-71.92	-22.67	13.14	71.92	22.67	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00076264
2	Yes	8	0.00091004	0.00029665
3	Yes	10	0.00086413	0.00020835
4	Yes	6	0.00094341	0.00035440
5	Yes	7	0.00092076	0.00025378
6	Yes	5	0.00097176	0.00040071
7	Yes	6	0.00062528	0.00020632
8	Yes	7	0.00088132	0.00023950
9	Yes	7	0.00099887	0.00020413
10	Yes	10	0.00081559	0.00019132
11	Yes	11	0.00087756	0.00015050
12	Yes	7	0.00090781	0.00024498
13	Yes	8	0.00075887	0.00015362
14	Yes	5	0.00099677	0.00040655
15	Yes	6	0.00064768	0.00021129
16	Yes	6	0.00094624	0.00035518
17	Yes	7	0.00092977	0.00025565
18	Yes	8	0.00089233	0.00029192
19	Yes	10	0.00084671	0.00020474
20	Yes	6	0.00092963	0.00035050
21	Yes	7	0.00090726	0.00025084
22	Yes	5	0.00097278	0.00040000
23	Yes	6	0.00062370	0.00020529
24	Yes	7	0.00089206	0.00024150
25	Yes	8	0.00073964	0.00015030
26	Yes	10	0.00082432	0.00019289
27	Yes	11	0.00088554	0.00015158
28	Yes	7	0.00091109	0.00024557
29	Yes	8	0.00076153	0.00015403
30	Yes	6	0.00058536	0.00023899
31	Yes	6	0.00065336	0.00021295
32	Yes	6	0.00096105	0.00035913
33	Yes	7	0.00094442	0.00025868
34	Yes	7	0.00000001	0.00056552
35	Yes	7	0.00034516	0.00043255
36	Yes	7	0.00032947	0.00041868
37	Yes	6	0.00076048	0.00098540
38	Yes	6	0.00073933	0.00096555
39	Yes	6	0.00073158	0.00095611
40	Yes	6	0.00074449	0.00096709
41	Yes	6	0.00076648	0.00098811

42	Yes	7	0.00033454	0.00042097
43	Yes	7	0.00035233	0.00043607
44	Yes	6	0.00078542	0.00099192
45	Yes	6	0.00075578	0.00096451
46	Yes	6	0.00073111	0.00093957
47	Yes	6	0.00071565	0.00092324
48	Yes	6	0.00072225	0.00093454
49	Yes	6	0.00074325	0.00095762
50	Yes	6	0.00077022	0.00098395
51	Yes	4	0.00000001	0.00040235
52	Yes	4	0.00000001	0.00036908
53	Yes	4	0.00000001	0.00033856
54	Yes	4	0.00000001	0.00031368
55	Yes	4	0.00000001	0.00029822
56	Yes	4	0.00000001	0.00031296
57	Yes	4	0.00000001	0.00033756
58	Yes	4	0.00000001	0.00036822
59	Yes	4	0.00000001	0.00040404
60	Yes	4	0.00000001	0.00036908
61	Yes	4	0.00000001	0.00033787
62	Yes	4	0.00000001	0.00031274
63	Yes	4	0.00000001	0.00029757
64	Yes	4	0.00000001	0.00031261
65	Yes	4	0.00000001	0.00033696
66	Yes	4	0.00000001	0.00036720

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	2.944	66	0.1297	0.0081
T2	170 - 163.573	2.643	66	0.1288	0.0080
T3	163.573 - 159.049	2.451	66	0.1267	0.0078
T4	159.049 - 154.524	2.316	66	0.1246	0.0072
T5	154.524 - 150	2.184	66	0.1213	0.0068
T6	150 - 140	2.056	66	0.1171	0.0064
T7	140 - 130	1.791	66	0.1066	0.0061
T8	130 - 120	1.549	66	0.0979	0.0061
T9	120 - 110	1.329	66	0.0880	0.0060
T10	110 - 100	1.129	65	0.0793	0.0054
T11	100 - 90	0.948	65	0.0700	0.0049
T12	90 - 80	0.787	65	0.0618	0.0045
T13	80 - 60	0.642	65	0.0533	0.0040
T14	60 - 50	0.394	65	0.0436	0.0027
T15	50 - 40	0.286	65	0.0386	0.0021
T16	40 - 30	0.198	65	0.0333	0.0018
T17	30 - 20	0.124	65	0.0251	0.0014
T18	20 - 10	0.067	65	0.0168	0.0011
T19	10 - 0	0.027	58	0.0083	0.0007

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

tnxTower	Job	Page
	180' Lattice Tower - CSP	65 of 86
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project Structural Analysis	Date 16:48:32 03/29/18
	Client Empire Telecom / EMP-004	Designed by MCD

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
185.00	Lightning Rod 2"x15'	66	2.944	0.1297	0.0081	715171
183.00	SC479-HF1LDF (D00-E5764)	66	2.944	0.1297	0.0081	715171
181.00	TMA 432-83H-01T - Future Decom.	66	2.944	0.1297	0.0081	715171
180.00	SC479-HF1LDF (D00I-E5764)	66	2.944	0.1297	0.0081	715171
175.00	6' PAD w/ Radome	66	2.794	0.1295	0.0080	715171
174.00	SC479-HF1LDF (D00I-E5764)	66	2.764	0.1295	0.0080	598978
173.00	6' PAD w/ Radome	66	2.733	0.1294	0.0080	528991
170.00	6' PAD w/ Radome	66	2.643	0.1288	0.0080	558923
169.00	BA1010-2	66	2.613	0.1286	0.0080	721932
168.00	SC479-HF1LDF (D00I-E5764)	66	2.583	0.1283	0.0080	Inf
163.00	T-Frame	66	2.434	0.1265	0.0077	266391
161.00	DB408-B	66	2.374	0.1256	0.0075	110328
152.00	12' Omni Antenna	66	2.112	0.1190	0.0066	55043
146.25	12' Omni Antenna	66	1.954	0.1131	0.0063	50748
140.50	12' Omni Antenna	66	1.804	0.1071	0.0061	49984
139.00	Yagi ASP-816	66	1.766	0.1057	0.0060	50273
137.00	BA1010	66	1.716	0.1039	0.0060	51149
136.50	DB222-A	66	1.704	0.1035	0.0060	51431
134.50	BA1010	66	1.655	0.1018	0.0061	52689
132.00	BA1010	66	1.596	0.0997	0.0061	54332
130.00	Dish Ice Shield	66	1.549	0.0979	0.0061	55581
129.50	BA1010	66	1.538	0.0974	0.0061	55872
128.00	PD128-1	66	1.503	0.0960	0.0061	56691
127.00	3" Dia 20' Omni	66	1.481	0.0950	0.0061	57204
125.00	6' PAD w/ Radome	66	1.436	0.0930	0.0061	58197
124.50	PD128-1	66	1.425	0.0924	0.0061	58447
122.00	3" Dia 20' Omni	66	1.371	0.0899	0.0061	59652
121.00	PD128-1	66	1.350	0.0889	0.0060	60072
117.00	3" Dia 20' Omni	66	1.267	0.0853	0.0058	61069
116.00	12' Omni Antenna	66	1.246	0.0844	0.0058	61190
112.00	3" Dia 20' Omni	65	1.167	0.0811	0.0055	61533
111.00	12' Omni Antenna	65	1.148	0.0802	0.0054	61549
107.00	3" Dia 20' Omni	65	1.072	0.0766	0.0052	61054
106.00	4' Grid Dish	65	1.054	0.0756	0.0052	60832
105.00	12' Wireless Frame	65	1.036	0.0747	0.0051	60598
101.00	DB264-A	65	0.965	0.0709	0.0050	60337
96.00	DB264-A	65	0.881	0.0667	0.0048	65179
91.00	SC479-HF1LDF	65	0.802	0.0627	0.0045	73147
86.00	DB264-A	65	0.727	0.0583	0.0043	75339
85.00	SC479-HF1LDF	65	0.713	0.0574	0.0042	75154
79.00	SC479-HF1LDF	65	0.629	0.0526	0.0039	77648
75.00	Dish Ice Shield	65	0.576	0.0501	0.0037	87584
71.00	2'6"x4" Pipe Mount	65	0.525	0.0482	0.0034	102404
61.00	GPS	65	0.406	0.0440	0.0028	154383
50.00	DB803M-Y	65	0.286	0.0386	0.0021	53849

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	180 - 170	12.904	30	0.5648	0.0359
T2	170 - 163.573	11.593	30	0.5609	0.0354
T3	163.573 - 159.049	10.755	30	0.5519	0.0346
T4	159.049 - 154.524	10.165	30	0.5436	0.0317
T5	154.524 - 150	9.589	30	0.5296	0.0300

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T6	150 - 140	9.031	30	0.5117	0.0286
T7	140 - 130	7.869	30	0.4663	0.0269
T8	130 - 120	6.809	30	0.4284	0.0271
T9	120 - 110	5.845	30	0.3850	0.0265
T10	110 - 100	4.967	30	0.3477	0.0238
T11	100 - 90	4.174	30	0.3071	0.0218
T12	90 - 80	3.465	30	0.2715	0.0199
T13	80 - 60	2.829	30	0.2342	0.0175
T14	60 - 50	1.738	30	0.1915	0.0121
T15	50 - 40	1.262	30	0.1696	0.0094
T16	40 - 30	0.873	30	0.1463	0.0079
T17	30 - 20	0.546	30	0.1105	0.0064
T18	20 - 10	0.294	30	0.0739	0.0048
T19	10 - 0	0.119	14	0.0363	0.0032

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	30	12.904	0.5648	0.0359	169104
183.00	SC479-HF1LDF (D00-E5764)	30	12.904	0.5648	0.0359	169104
181.00	TMA 432-83H-01T - Future Decom.	30	12.904	0.5648	0.0359	169104
180.00	SC479-HF1LDF (D00I-E5764)	30	12.904	0.5648	0.0359	169104
175.00	6' PAD w/ Radome	30	12.247	0.5641	0.0355	169104
174.00	SC479-HF1LDF (D00I-E5764)	30	12.116	0.5637	0.0354	141654
173.00	6' PAD w/ Radome	30	11.985	0.5632	0.0354	125235
170.00	6' PAD w/ Radome	30	11.593	0.5609	0.0354	138219
169.00	BA1010-2	30	11.463	0.5598	0.0354	192337
168.00	SC479-HF1LDF (D00I-E5764)	30	11.332	0.5586	0.0354	252929
163.00	T-Frame	30	10.680	0.5510	0.0343	88407
161.00	DB408-B	30	10.418	0.5476	0.0330	29338
152.00	12' Omni Antenna	30	9.275	0.5200	0.0292	13121
146.25	12' Omni Antenna	30	8.583	0.4947	0.0277	11806
140.50	12' Omni Antenna	30	7.924	0.4684	0.0269	11449
139.00	Yagi ASP-816	30	7.758	0.4622	0.0268	11504
137.00	BA1010	30	7.540	0.4545	0.0267	11699
136.50	DB222-A	30	7.486	0.4526	0.0268	11764
134.50	BA1010	30	7.274	0.4453	0.0269	12053
132.00	BA1010	30	7.013	0.4361	0.0270	12434
130.00	Dish Ice Shield	30	6.809	0.4284	0.0271	12731
129.50	BA1010	30	6.759	0.4263	0.0271	12802
128.00	PD128-1	30	6.609	0.4200	0.0271	13006
127.00	3" Dia 20' Omni	30	6.511	0.4156	0.0271	13137
125.00	6' PAD w/ Radome	30	6.316	0.4067	0.0271	13398
124.50	PD128-1	30	6.268	0.4045	0.0270	13463
122.00	3" Dia 20' Omni	30	6.031	0.3934	0.0268	13780
121.00	PD128-1	30	5.937	0.3892	0.0267	13888
117.00	3" Dia 20' Omni	30	5.573	0.3734	0.0258	14118
116.00	12' Omni Antenna	30	5.484	0.3697	0.0255	14137
112.00	3" Dia 20' Omni	30	5.136	0.3552	0.0244	14176
111.00	12' Omni Antenna	30	5.051	0.3515	0.0241	14172
107.00	3" Dia 20' Omni	30	4.720	0.3356	0.0231	14039
106.00	4' Grid Dish	30	4.639	0.3315	0.0229	13986
105.00	12' Wireless Frame	30	4.560	0.3273	0.0227	13930
101.00	DB264-A	30	4.249	0.3110	0.0220	13863
96.00	DB264-A	30	3.881	0.2926	0.0211	14965

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
91.00	SC479-HF1LDF	30	3.533	0.2751	0.0201	16777
86.00	DB264-A	30	3.202	0.2561	0.0190	17250
85.00	SC479-HF1LDF	30	3.138	0.2522	0.0187	17202
79.00	SC479-HF1LDF	30	2.769	0.2311	0.0173	17745
75.00	Dish Ice Shield	30	2.536	0.2203	0.0162	20019
71.00	2'6"x4" Pipe Mount	30	2.313	0.2117	0.0152	23418
61.00	GPS	30	1.789	0.1934	0.0124	35325
50.00	DB803M-Y	30	1.262	0.1696	0.0094	12200

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	180	Diagonal	A325X	0.6250	2	1.42	7.19	0.198 ✓	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.39	6.17	0.063 ✓	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.12	6.17	0.020 ✓	1	Member Block Shear
T2	170	Diagonal	A325X	0.6250	2	1.76	7.19	0.246 ✓	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.42	6.17	0.068 ✓	1	Member Block Shear
T3	163.573	Diagonal	A325X	0.6250	2	2.38	6.17	0.386 ✓	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.27	6.17	0.043 ✓	1	Member Block Shear
T4	159.049	Diagonal	A325X	0.6250	2	2.68	7.19	0.373 ✓	1	Member Block Shear
T5	154.524	Diagonal	A325X	0.6250	2	2.66	7.19	0.370 ✓	1	Member Block Shear
T6	150	Diagonal	A325X	0.6250	2	2.89	7.19	0.402 ✓	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.30	7.19	0.042 ✓	1	Member Block Shear
T7	140	Diagonal	A325X	0.6250	2	4.47	10.26	0.436 ✓	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.23	7.19	0.031 ✓	1	Member Block Shear
T8	130	Diagonal	A325X	0.6250	2	5.40	10.26	0.526 ✓	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.71	8.22	0.086 ✓	1	Member Block Shear
T9	120	Diagonal	A325X	0.6250	2	5.87	10.26	0.572 ✓	1	Member Block Shear
		Horizontal	A325X	0.6250	2	0.38	9.58	0.040 ✓	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.90	6.17	0.146 ✓	1	Member Block Shear
T10	110	Diagonal	A325X	0.6250	2	7.08	11.62	0.609 ✓	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	1.10	8.22	0.134 ✓	1	Member Block Shear
T11	100	Diagonal	A325X	0.6250	2	6.87	11.62	0.591 ✓	1	Member Block

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
		Horizontal	A325X	0.6250	2	0.75	9.58	0.078 ✔	1	Shear Member Block Shear
T12	90	Diagonal	A325X	0.6250	2	7.68	11.62	0.661 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	1.54	9.58	0.161 ✔	1	Member Block Shear
T13	80	Diagonal	A325X	0.6250	2	7.71	14.38	0.536 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.76	9.58	0.079 ✔	1	Member Block Shear
T14	60	Diagonal	A325X	0.6250	2	7.76	14.38	0.540 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	1.94	12.34	0.158 ✔	1	Member Block Shear
T15	50	Diagonal	A325X	0.6250	2	8.75	30.37	0.288 ✔	1	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.41	11.62	0.207 ✔	1	Member Block Shear
T16	40	Diagonal	A325X	0.6250	2	8.50	28.75	0.296 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	2.62	11.62	0.226 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	2.59	12.34	0.210 ✔	1	Member Block Shear
T17	30	Diagonal	A325X	0.6250	2	8.96	28.75	0.312 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	2.85	11.62	0.245 ✔	1	Member Block Shear
T18	20	Diagonal	A325X	0.6250	2	11.14	30.37	0.367 ✔	1	Bolt Shear
		Horizontal	A325X	0.6250	2	3.97	12.34	0.321 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	3.03	11.62	0.261 ✔	1	Member Block Shear
T19	10	Diagonal	A325X	0.6250	2	14.08	19.17	0.734 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	10.53	19.17	0.550 ✔	1	Member Block Shear

Compression Checks

Leg 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 $\frac{P_u}{\phi P_n}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	87.3 K=1.00	2.4800	-2.94	53.78	0.055 [1] ✔
T2	170 - 163.573	L5x5x5/16	6.43	6.43	77.6 K=1.00	3.0300	-10.29	69.83	0.147 [1] ✔
T3	163.573 -	L5x5x5/16	4.53	4.53	54.7	3.0300	-20.20	81.46	0.248 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	159.049				K=1.00				✓
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-29.52	81.46	0.362 [1] ✓
T5	154.524 - 150	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-37.54	81.46	0.461 [1] ✓
T6	150 - 140	L5x5x3/8	10.01	5.01	60.7 K=1.00	3.6100	-56.81	96.35	0.590 [1] ✓
T7	140 - 130	L6x6x1/2	10.01	5.23	53.2 K=1.00	5.7500	-72.00	160.53	0.449 [1] ✓
T8	130 - 120	L6x6x1/2	10.01	5.21	53.0 K=1.00	5.7500	-94.58	160.69	0.589 [1] ✓
T9	120 - 110	L6x6x3/4	10.01	5.20	53.3 K=1.00	8.4400	-120.28	235.48	0.511 [1] ✓
T10	110 - 100	L6x6x3/4	10.01	5.18	53.2 K=1.00	8.4400	-146.57	235.66	0.622 [1] ✓
T11	100 - 90	L8x8x3/4	10.01	10.01	76.0 K=1.00	11.4000	-176.54	272.41	0.648 [1] ✓
T12	90 - 80	L8x8x3/4	10.01	5.16	39.2 K=1.00	11.4000	-205.17	340.66	0.602 [1] ✓
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3 K=1.00	22.0000	-265.36	630.40	0.421 [1] ✓
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6 K=1.00	23.7340	-293.77	679.24	0.433 [1] ✓
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9 K=1.00	23.7340	-321.27	744.33	0.432 [1] ✓
T16	40 - 30	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	16.7000	-349.24	498.58	0.700 [1] ✓
T17	30 - 20	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	16.7000	-379.69	498.67	0.761 [1] ✓
T18	20 - 10	L8x8x1 1/8	10.01	5.11	39.3 K=1.00	16.7000	-403.85	498.74	0.810 [1] ✓
T19	10 - 0	L8x8x1 1/8	10.01	5.01	38.5 K=1.00	16.7000	-415.36	500.44	0.830 [1] ✓

[1] P_u / ϕP_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 $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	130.4 K=0.98	0.9020	-3.00	11.95	0.252 [1] ✓
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	103.3 K=1.06	0.9020	-3.72	16.66	0.223 [1] ✓
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	110.5 K=1.03	0.7150	-4.91	12.19	0.403 [1] ✓
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	106.9 K=1.04	0.8090	-5.27	14.36	0.367 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	109.6 K=1.03	0.8090	-5.46	13.92	0.392 [1] ✓
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	118.8 K=1.00	0.8090	-5.83	12.47	0.467 [1] ✓
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	138.5 K=0.96	1.3100	-9.13	15.42	0.592 [1] ✓
T8	130 - 120	L3x3x1/4	12.98	6.56	129.9 K=0.98	1.4400	-11.03	19.20	0.574 [1] ✓
T9	120 - 110	L3x3x1/4	13.45	6.78	133.3 K=0.97	1.4400	-11.87	18.30	0.649 [1] ✓
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	130.3 K=0.98	1.5600	-14.41	20.69	0.696 [1] ✓
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	133.8 K=0.97	1.5600	-13.84	19.68	0.703 [1] ✓
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	137.5 K=0.96	1.5600	-15.69	18.63	0.842 [1] ✓
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	122.4 K=1.00	1.6200	-15.88	23.87	0.665 [1] ✓
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	126.6 K=1.00	1.6200	-15.62	22.57	0.692 [1] ✓
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	131.2 K=0.97	3.0900	-17.51	40.44	0.433 [1] ✓
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	134.7 K=0.97	3.0900	-17.38	38.48	0.452 [1] ✓
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	138.2 K=0.96	3.0900	-18.52	36.54	0.507 [1] ✓
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	141.8 K=0.95	3.0900	-22.27	34.72	0.642 [1] ✓
T19	10 - 0	2L2 1/2x2 1/2x1/4 4.8.1 (1.10 CR) - 386	13.37	12.47	142.5 K=1.00	2.3800	-29.19	26.47	1.103 [1] ✗

[1] P_u / ϕP_n controls

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 $\frac{P_u}{\phi P_n}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	110.3 K=1.10	1.1900	-0.91	20.33	0.045 [1] ✓
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	119.0 K=1.01	1.1900	-1.59	18.29	0.087 [1] ✓
T14	60 - 50	2L2x2x3/16	13.43	6.16	119.8 K=1.00	1.4300	-1.61	21.76	0.074 [1] ✓
T18	20 - 10	2L2x2x3/16	16.29	7.62	141.5 K=0.96	1.4300	-1.68	16.14	0.104 [1] ✓
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	123.4 K=0.99	2.3800	-18.77	34.58	0.543 [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 $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.7 K=1.08	0.7150	-0.78	12.02	0.065 [1] ✓
T7	140 - 130	L2x2x1/4	8.03	7.53	137.5 K=0.93	0.9380	-1.08	11.21	0.096 [1] ✓
T8	130 - 120	L2x2x1/4	8.75	7.86	141.4 K=0.91	0.9380	-1.42	10.60	0.134 [1] ✓
T9	120 - 110	L2x2x3/16	9.47	8.57	148.7 K=0.89	0.7150	-1.81	7.30	0.247 [1] ✓
T10	110 - 100	L2x2x1/4	10.19	9.29	158.8 K=0.87	0.9380	-2.20	8.40	0.262 [1] ✓
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	147.5 K=0.90	1.1900	-3.08	12.35	0.249 [1] ✓
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	136.9 K=0.93	1.6900	-4.82	20.39	0.237 [1] ✓
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	142.0 K=0.91	1.6900	-5.24	18.94	0.277 [1] ✓
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	146.9 K=0.90	1.6900	-5.70	17.70	0.322 [1] ✓
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	151.7 K=0.88	1.6900	-6.06	16.59	0.365 [1] ✓

[1] P_u / ϕP_n controls

Top Girt 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 $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	145.7 K=0.90	0.7150	-0.11	7.61	0.014 [1] ✓
T2	170 - 163.573	L2x2x3/16	6.00	5.31	145.7 K=0.90	0.7150	-0.46	7.61	0.061 [1] ✓
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	143.4 K=0.91	0.7150	-0.46	7.86	0.059 [1] ✓
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	138.1 K=0.92	0.9020	-0.54	10.69	0.050 [1] ✓
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	101.7 K=1.22	0.9020	-0.51	16.96	0.030 [1] ✓
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	130.4 K=0.98	1.1900	-0.93	15.76	0.059 [1] ✓
T16	40 - 30	2L2x2x3/16	14.86	6.88	130.5 K=0.98	1.4300	-1.70	18.89	0.090 [1] ✓

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	

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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	
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	107.5 K=1.13	0.9020	-6.23	15.90	0.392 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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	
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	143.6 K=1.00	0.9020	-7.90	9.88	0.800 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip (1) 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	
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	145.8 K=1.00	0.9020	-0.03	9.58	0.003 [1] ✔

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal 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	
T19	10 - 0	L3x3x5/16	8.86	8.86	180.6 K=1.00	1.7800	-9.07	12.33	0.735 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing 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 $\frac{P_u}{\phi P_n}$
T7	140 - 130	L2x2x3/16	5.44	5.44	165.6 K=1.00	0.7150	-0.07	5.89	0.011 [1] ✓
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	181.3 K=1.00	0.8090	-0.08	5.56	0.014 [1] ✓
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	209.8 K=1.00	0.8090	-0.09	4.15	0.022 [1] ✓
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9 K=1.00	1.4300	-0.12	11.88	0.010 [1] ✓
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6 K=1.00	1.4300	-0.14	9.47	0.015 [1] ✓
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4 K=1.00	1.4300	-0.19	7.73	0.024 [1] ✓
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4 K=1.00	1.6200	-0.03	6.89	0.005 [1] ✓
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6 K=1.00	1.6200	-0.17	6.32	0.027 [1] ✓

[1] P_u / ϕP_n controls

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	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	56.1	2.4800	1.82	80.35	0.023 [1] ✓
T2	170 - 163.573	L5x5x5/16	6.43	6.43	49.1	3.0300	8.58	98.17	0.087 [1] ✓
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	34.6	3.0300	16.62	98.17	0.169 [1] ✓
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	34.6	3.0300	24.90	98.17	0.254 [1] ✓
T5	154.524 - 150	L5x5x5/16	4.53	4.53	34.6	3.0300	32.88	98.17	0.335 [1] ✓
T6	150 - 140	L5x5x3/8	10.01	5.01	38.5	3.6100	51.44	116.96	0.440 [1] ✓
T7	140 - 130	L6x6x1/2	10.01	5.23	33.7	5.7500	65.63	186.30	0.352 [1] ✓
T8	130 - 120	L6x6x1/2	10.01	5.21	33.6	5.7500	85.48	186.30	0.459 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	120 - 110	L6x6x3/4	10.01	5.20	34.1	8.4400	109.70	273.46	0.401 [1]
T10	110 - 100	L6x6x3/4	10.01	5.18	34.0	8.4400	134.18	273.46	0.491 [1]
T11	100 - 90	L8x8x3/4	10.01	10.01	48.6	11.4000	162.10	369.36	0.439 [1]
T12	90 - 80	L8x8x3/4	10.01	5.16	25.1	11.4000	189.20	369.36	0.512 [1]
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3	22.0000	245.24	712.80	0.344 [1]
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6	23.7340	270.42	768.98	0.352 [1]
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9	23.7340	296.31	768.98	0.385 [1]
T16	40 - 30	L8x8x1 1/8	10.01	5.12	25.4	16.7000	320.18	541.08	0.592 [1]
T17	30 - 20	L8x8x1 1/8	10.01	5.12	25.4	16.7000	348.47	541.08	0.644 [1]
T18	20 - 10	L8x8x1 1/8	10.01	5.11	25.4	16.7000	372.70	541.08	0.689 [1]
T19	10 - 0	L8x8x1 1/8	10.01	5.01	24.8	16.7000	379.88	541.08	0.702 [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	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	88.0	0.5710	2.84	24.84	0.114 [1]
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	65.2	0.5710	3.53	24.84	0.142 [1]
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	72.4	0.4308	4.76	18.74	0.254 [1]
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	77.0	0.5013	5.37	21.81	0.246 [1]
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	79.6	0.5013	5.32	21.81	0.244 [1]
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	88.2	0.5013	5.78	21.81	0.265 [1]
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	104.5	0.8419	8.94	36.62	0.244 [1]
T8	130 - 120	L3x3x1/4	12.98	6.56	87.2	0.9394	10.80	40.86	0.264 [1]
T9	120 - 110	L3x3x1/4	13.45	6.78	90.0	0.9394	11.75	40.86	0.287 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	94.8	1.0294	14.16	44.78	0.316 [1] ✔
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	98.1	1.0294	13.75	44.78	0.307 [1] ✔
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	101.4	1.0294	15.36	44.78	0.343 [1] ✔
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	125.4	1.0041	15.42	43.68	0.353 [1] ✔
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	129.6	1.0041	15.53	43.68	0.356 [1] ✔
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	137.8	1.8956	16.33	82.46	0.198 [1] ✔
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	142.3	1.8956	17.00	82.46	0.206 [1] ✔
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	147.0	1.8956	17.91	82.46	0.217 [1] ✔
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	151.6	1.8956	19.66	82.46	0.238 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x1/4	13.37	12.47	147.0	1.5037	28.15	65.41	0.430 [1] ✔
		4.8.1 (1.10 CR) - 386							

[1] P_u / ϕP_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 $\frac{P_u}{\phi P_n}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	67.3	0.7519	0.77	32.71	0.023 [1] ✔
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	78.5	0.7519	1.50	32.71	0.046 [1] ✔
T14	60 - 50	2L2x2x3/16	13.43	6.16	123.7	0.8616	3.89	37.48	0.104 [1] ✔
T18	20 - 10	2L2x2x3/16	16.29	7.62	152.0	0.8616	7.93	37.48	0.212 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	127.5	1.5037	21.07	65.41	0.322 [1] ✔

[1] P_u / ϕP_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 $\frac{P_u}{\phi P_n}$

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	180 - 170	L2x2x3/16	6.00	5.31	111.0	0.4308	0.77	18.74	0.041 [1] ✓
T7	140 - 130	L2x2x1/4	8.03	7.53	148.4	0.9380	1.08	30.39	0.036 [1] ✓
T8	130 - 120	L2x2x1/4	8.75	7.86	162.6	0.5629	1.42	24.49	0.058 [1] ✓
T9	120 - 110	L2x2x3/16	9.47	8.57	174.4	0.4308	1.81	18.74	0.096 [1] ✓
T10	110 - 100	L2x2x1/4	10.19	9.29	190.9	0.5629	2.20	24.49	0.090 [1] ✓
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	171.0	0.7519	3.08	32.71	0.094 [1] ✓
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	151.8	1.1269	4.82	49.02	0.098 [1] ✓
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	160.1	1.1269	5.24	49.02	0.107 [1] ✓
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	168.0	1.1269	5.70	49.02	0.116 [1] ✓
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	175.9	1.1269	6.06	49.02	0.124 [1] ✓

[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	180 - 170	L2x2x3/16	6.00	5.31	111.0	0.4308	0.25	18.74	0.013 [1] ✓
T2	170 - 163.573	L2x2x3/16	6.00	5.31	111.0	0.4308	0.83	18.74	0.044 [1] ✓
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	108.6	0.4308	0.54	18.74	0.029 [1] ✓
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	101.1	0.5710	0.61	24.84	0.024 [1] ✓
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	56.1	0.5710	0.45	24.84	0.018 [1] ✓
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	88.4	0.7519	1.52	32.71	0.047 [1] ✓
T16	40 - 30	2L2x2x3/16	14.86	6.88	137.6	0.8616	5.19	37.48	0.138 [1] ✓

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

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	
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	60.5	0.9020	6.23	29.22	0.213 [1] ✓

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

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	
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	91.4	0.9020	7.47	29.22	0.256 [1] ✓

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Tension)

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	
T19	10 - 0	L3x3x5/16	8.86	8.86	115.4	1.7800	8.33	57.67	0.144 [1] ✓

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

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	
T7	140 - 130	L2x2x3/16	5.44	5.44	105.8	0.7150	0.07	23.17	0.003 [1] ✓
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	129.1	0.8090	0.08	26.21	0.003 [1] ✓
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	149.4	0.8090	0.09	26.21	0.004 [1] ✓
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9	1.4300	0.12	46.33	0.003 [1] ✓
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6	1.4300	0.14	46.33	0.003 [1] ✓
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4	1.4300	0.19	46.33	0.004 [1] ✓
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4	1.6200	0.05	52.49	0.001 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6	1.6200	0.17	52.49	0.003 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 170	Leg	L3 1/2x3 1/2x3/8	1	-2.94	53.78	5.5	Pass
		Leg	L3 1/2x3 1/2x3/8	2	-2.81	53.78	5.2	Pass
		Leg	L3 1/2x3 1/2x3/8	3	-2.59	53.78	4.8	Pass
		Leg	L3 1/2x3 1/2x3/8	4	-2.61	53.78	4.9	Pass
T2	170 - 163.573	Leg	L5x5x5/16	21	-9.71	69.83	13.9	Pass
		Leg	L5x5x5/16	22	-9.99	69.83	14.3	Pass
		Leg	L5x5x5/16	23	-9.80	69.83	14.0	Pass
		Leg	L5x5x5/16	24	-10.29	69.83	14.7	Pass
T3	163.573 - 159.049	Leg	L5x5x5/16	37	-18.38	81.46	22.6	Pass
		Leg	L5x5x5/16	38	-19.75	81.46	24.2	Pass
		Leg	L5x5x5/16	39	-20.20	81.46	24.8	Pass
		Leg	L5x5x5/16	40	-20.15	81.46	24.7	Pass
T4	159.049 - 154.524	Leg	L5x5x5/16	53	-27.38	81.46	33.6	Pass
		Leg	L5x5x5/16	54	-29.14	81.46	35.8	Pass
		Leg	L5x5x5/16	55	-29.21	81.46	35.9	Pass
		Leg	L5x5x5/16	56	-29.52	81.46	36.2	Pass
T5	154.524 - 150	Leg	L5x5x5/16	65	-35.15	81.46	43.2	Pass
		Leg	L5x5x5/16	66	-37.23	81.46	45.7	Pass
		Leg	L5x5x5/16	67	-36.91	81.46	45.3	Pass
		Leg	L5x5x5/16	68	-37.54	81.46	46.1	Pass
T6	150 - 140	Leg	L5x5x3/8	77	-53.89	96.35	55.9	Pass
		Leg	L5x5x3/8	78	-56.63	96.35	58.8	Pass
		Leg	L5x5x3/8	79	-55.59	96.35	57.7	Pass
		Leg	L5x5x3/8	80	-56.81	96.35	59.0	Pass
T7	140 - 130	Leg	L6x6x1/2	101	-68.78	160.53	42.8	Pass
		Leg	L6x6x1/2	102	-71.91	160.53	44.8	Pass
		Leg	L6x6x1/2	103	-70.39	160.53	43.8	Pass
		Leg	L6x6x1/2	104	-72.00	160.53	44.9	Pass
T8	130 - 120	Leg	L6x6x1/2	126	-90.15	160.69	56.1	Pass
		Leg	L6x6x1/2	127	-93.05	160.69	57.9	Pass
		Leg	L6x6x1/2	128	-91.68	160.69	57.1	Pass
		Leg	L6x6x1/2	129	-94.58	160.69	58.9	Pass
T9	120 - 110	Leg	L6x6x3/4	142	-115.72	235.48	49.1	Pass
		Leg	L6x6x3/4	143	-118.81	235.48	50.5	Pass
		Leg	L6x6x3/4	144	-117.01	235.48	49.7	Pass
		Leg	L6x6x3/4	145	-120.28	235.48	51.1	Pass
T10	110 - 100	Leg	L6x6x3/4	167	-141.62	235.66	60.1	Pass
		Leg	L6x6x3/4	168	-145.16	235.66	61.6	Pass
		Leg	L6x6x3/4	169	-143.37	235.66	60.8	Pass
		Leg	L6x6x3/4	170	-146.57	235.66	62.2	Pass
T11	100 - 90	Leg	L8x8x3/4	183	-171.45	272.41	62.9	Pass
		Leg	L8x8x3/4	184	-175.15	272.41	64.3	Pass
		Leg	L8x8x3/4	185	-173.05	272.41	63.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Leg	L8x8x3/4	186	-176.54	272.41	64.8	Pass
T12	90 - 80	Leg	L8x8x3/4	204	-199.91	340.66	58.7	Pass
		Leg	L8x8x3/4	205	-203.74	340.66	59.8	Pass
		Leg	L8x8x3/4	206	-201.38	340.66	59.1	Pass
		Leg	L8x8x3/4	207	-205.17	340.66	60.2	Pass
T13	80 - 60	Leg	L8x8x1 w/ 1/2x7 Plates	220	-259.76	630.40	41.2	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	221	-263.75	630.40	41.8	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	222	-261.01	630.40	41.4	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	223	-265.36	630.40	42.1	Pass
T14	60 - 50	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	249	-288.13	679.24	42.4	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	250	-292.21	679.24	43.0	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	251	-289.26	679.24	42.6	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	252	-293.77	679.24	43.3	Pass
T15	50 - 40	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	270	-315.55	744.33	42.4	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	271	-319.72	744.33	43.0	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	272	-316.58	744.33	42.5	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	273	-321.27	744.33	43.2	Pass
T16	40 - 30	Leg	L8x8x1 1/8	286	-343.51	498.58	68.9	Pass
		Leg	L8x8x1 1/8	287	-347.76	498.58	69.7	Pass
		Leg	L8x8x1 1/8	288	-344.44	498.58	69.1	Pass
		Leg	L8x8x1 1/8	289	-349.24	498.58	70.0	Pass
T17	30 - 20	Leg	L8x8x1 1/8	311	-373.79	498.67	75.0	Pass
		Leg	L8x8x1 1/8	312	-378.14	498.67	75.8	Pass
		Leg	L8x8x1 1/8	313	-374.64	498.67	75.1	Pass
		Leg	L8x8x1 1/8	314	-379.69	498.67	76.1	Pass
T18	20 - 10	Leg	L8x8x1 1/8	327	-397.95	498.74	79.8	Pass
		Leg	L8x8x1 1/8	328	-402.31	498.74	80.7	Pass
		Leg	L8x8x1 1/8	329	-398.70	498.74	79.9	Pass
		Leg	L8x8x1 1/8	330	-403.85	498.74	81.0	Pass
T19	10 - 0	Leg	L8x8x1 1/8	352	-409.61	500.44	81.9	Pass
		Leg	L8x8x1 1/8	353	-413.97	500.44	82.7	Pass
		Leg	L8x8x1 1/8	354	-410.32	500.44	82.0	Pass
		Leg	L8x8x1 1/8	355	-415.36	500.44	83.0	Pass
T1	180 - 170	Diagonal	L2 1/2x2 1/2x3/16	9	-2.81	11.95	23.5	Pass
		Diagonal	L2 1/2x2 1/2x3/16	10	-2.84	11.95	23.8	Pass
		Diagonal	L2 1/2x2 1/2x3/16	11	-3.00	11.95	25.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	12	-2.98	11.95	24.9	Pass
		Diagonal	L2 1/2x2 1/2x3/16	13	-2.90	11.95	24.3	Pass
		Diagonal	L2 1/2x2 1/2x3/16	14	-2.93	11.95	24.5	Pass
		Diagonal	L2 1/2x2 1/2x3/16	15	-2.76	11.95	23.1	Pass
		Diagonal	L2 1/2x2 1/2x3/16	16	-2.74	11.95	22.9	Pass
T2	170 - 163.573	Diagonal	L2 1/2x2 1/2x3/16	29	-3.45	16.66	20.7 23.0 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	30	-3.61	16.66	21.7 24.1 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	31	-3.55	16.66	21.3 23.4 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	32	-3.43	16.66	20.6 22.7 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	33	-3.71	16.66	22.2 24.3 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	34	-3.68	16.66	22.1 24.2 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	35	-3.71	16.66	22.2 24.5 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	36	-3.72	16.66	22.3 24.6 (b)	Pass
T3	163.573 - 159.049	Diagonal	L2x2x3/16	45	-4.11	12.19	33.7	Pass
		Diagonal	L2x2x3/16	46	-4.09	12.19	33.6	Pass
		Diagonal	L2x2x3/16	47	-4.65	12.19	38.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L2x2x3/16	48	-4.59	12.19	37.6	Pass
		Diagonal	L2x2x3/16	49	-4.87	12.19	39.9	Pass
		Diagonal	L2x2x3/16	50	-4.91	12.19	40.3	Pass
		Diagonal	L2x2x3/16	51	-4.33	12.19	35.5	Pass
		Diagonal	L2x2x3/16	52	-4.36	12.19	35.8	Pass
T4	159.049 - 154.524	Diagonal	L2 1/2x2x3/16	57	-4.48	14.36	31.2 31.2 (b)	Pass
		Diagonal	L2 1/2x2x3/16	58	-4.45	14.36	31.0 31.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	59	-5.03	14.36	35.0 35.2 (b)	Pass
		Diagonal	L2 1/2x2x3/16	60	-5.00	14.36	34.8 35.6 (b)	Pass
		Diagonal	L2 1/2x2x3/16	61	-5.26	14.36	36.6 37.3 (b)	Pass
		Diagonal	L2 1/2x2x3/16	62	-5.27	14.36	36.7 37.0 (b)	Pass
		Diagonal	L2 1/2x2x3/16	63	-4.66	14.36	32.5 33.0 (b)	Pass
		Diagonal	L2 1/2x2x3/16	64	-4.71	14.36	32.8	Pass
T5	154.524 - 150	Diagonal	L2 1/2x2x3/16	69	-4.69	13.92	33.7	Pass
		Diagonal	L2 1/2x2x3/16	70	-4.68	13.92	33.6	Pass
		Diagonal	L2 1/2x2x3/16	71	-5.25	13.92	37.7	Pass
		Diagonal	L2 1/2x2x3/16	72	-5.20	13.92	37.3	Pass
		Diagonal	L2 1/2x2x3/16	73	-5.41	13.92	38.9	Pass
		Diagonal	L2 1/2x2x3/16	74	-5.46	13.92	39.2	Pass
		Diagonal	L2 1/2x2x3/16	75	-4.86	13.92	34.9	Pass
		Diagonal	L2 1/2x2x3/16	76	-4.88	13.92	35.1	Pass
T6	150 - 140	Diagonal	L2 1/2x2x3/16	85	-5.31	12.47	42.6	Pass
		Diagonal	L2 1/2x2x3/16	86	-5.29	12.47	42.4	Pass
		Diagonal	L2 1/2x2x3/16	87	-5.80	12.47	46.5	Pass
		Diagonal	L2 1/2x2x3/16	88	-5.76	12.47	46.2	Pass
		Diagonal	L2 1/2x2x3/16	89	-5.80	12.47	46.5	Pass
		Diagonal	L2 1/2x2x3/16	90	-5.83	12.47	46.7	Pass
		Diagonal	L2 1/2x2x3/16	91	-5.30	12.47	42.5	Pass
		Diagonal	L2 1/2x2x3/16	92	-5.32	12.47	42.7	Pass
		Diagonal	L2 1/2x2x3/16	93	-4.96	12.95	38.3	Pass
		Diagonal	L2 1/2x2x3/16	94	-4.93	12.95	38.1	Pass
		Diagonal	L2 1/2x2x3/16	95	-5.50	12.95	42.5	Pass
		Diagonal	L2 1/2x2x3/16	96	-5.45	12.95	42.1	Pass
		Diagonal	L2 1/2x2x3/16	97	-5.59	12.95	43.2	Pass
		Diagonal	L2 1/2x2x3/16	98	-5.62	12.95	43.4	Pass
		Diagonal	L2 1/2x2x3/16	99	-5.03	12.95	38.9	Pass
		Diagonal	L2 1/2x2x3/16	100	-5.08	12.95	39.2	Pass
T7	140 - 130	Diagonal	L3x2 1/2x1/4	114	-8.46	15.42	54.9	Pass
		Diagonal	L3x2 1/2x1/4	115	-8.45	15.42	54.8	Pass
		Diagonal	L3x2 1/2x1/4	116	-9.13	15.42	59.2	Pass
		Diagonal	L3x2 1/2x1/4	117	-9.06	15.42	58.7	Pass
		Diagonal	L3x2 1/2x1/4	118	-9.00	15.42	58.4	Pass
		Diagonal	L3x2 1/2x1/4	119	-9.06	15.42	58.8	Pass
		Diagonal	L3x2 1/2x1/4	120	-8.35	15.42	54.2	Pass
		Diagonal	L3x2 1/2x1/4	121	-8.38	15.42	54.3	Pass
T8	130 - 120	Diagonal	L3x3x1/4	130	-10.05	19.20	52.4	Pass
		Diagonal	L3x3x1/4	131	-10.07	19.20	52.5	Pass
		Diagonal	L3x3x1/4	132	-10.63	19.20	55.4	Pass
		Diagonal	L3x3x1/4	133	-10.53	19.20	54.9	Pass
		Diagonal	L3x3x1/4	134	-10.98	19.20	57.2	Pass
		Diagonal	L3x3x1/4	135	-11.03	19.20	57.4	Pass
		Diagonal	L3x3x1/4	136	-10.44	19.20	54.4	Pass
		Diagonal	L3x3x1/4	137	-10.47	19.20	54.5	Pass
T9	120 - 110	Diagonal	L3x3x1/4	155	-10.82	18.30	59.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L3x3x1/4	156	-10.86	18.30	59.3	Pass
		Diagonal	L3x3x1/4	157	-11.21	18.30	61.3	Pass
		Diagonal	L3x3x1/4	158	-11.10	18.30	60.7	Pass
		Diagonal	L3x3x1/4	159	-11.84	18.30	64.7	Pass
		Diagonal	L3x3x1/4	160	-11.87	18.30	64.9	Pass
		Diagonal	L3x3x1/4	161	-11.50	18.30	62.9	Pass
		Diagonal	L3x3x1/4	162	-11.54	18.30	63.0	Pass
T10	110 - 100	Diagonal	L3 1/2x3x1/4	171	-13.28	20.69	64.2	Pass
		Diagonal	L3 1/2x3x1/4	172	-13.29	20.69	64.2	Pass
		Diagonal	L3 1/2x3x1/4	173	-13.75	20.69	66.5	Pass
		Diagonal	L3 1/2x3x1/4	174	-13.66	20.69	66.0	Pass
		Diagonal	L3 1/2x3x1/4	175	-14.38	20.69	69.5	Pass
		Diagonal	L3 1/2x3x1/4	176	-14.41	20.69	69.6	Pass
		Diagonal	L3 1/2x3x1/4	177	-13.92	20.69	67.3	Pass
		Diagonal	L3 1/2x3x1/4	178	-13.97	20.69	67.5	Pass
T11	100 - 90	Diagonal	L3 1/2x3x1/4	196	-12.75	19.68	64.8	Pass
		Diagonal	L3 1/2x3x1/4	197	-12.76	19.68	64.9	Pass
		Diagonal	L3 1/2x3x1/4	198	-13.17	19.68	67.0	Pass
		Diagonal	L3 1/2x3x1/4	199	-13.08	19.68	66.5	Pass
		Diagonal	L3 1/2x3x1/4	200	-13.81	19.68	70.2	Pass
		Diagonal	L3 1/2x3x1/4	201	-13.84	19.68	70.3	Pass
		Diagonal	L3 1/2x3x1/4	202	-13.45	19.68	68.4	Pass
		Diagonal	L3 1/2x3x1/4	203	-13.50	19.68	68.6	Pass
T12	90 - 80	Diagonal	L3 1/2x3x1/4	208	-14.62	18.63	78.5	Pass
		Diagonal	L3 1/2x3x1/4	209	-14.64	18.63	78.6	Pass
		Diagonal	L3 1/2x3x1/4	210	-14.82	18.63	79.5	Pass
		Diagonal	L3 1/2x3x1/4	211	-14.74	18.63	79.1	Pass
		Diagonal	L3 1/2x3x1/4	212	-15.67	18.63	84.1	Pass
		Diagonal	L3 1/2x3x1/4	213	-15.69	18.63	84.2	Pass
		Diagonal	L3 1/2x3x1/4	214	-15.43	18.63	82.8	Pass
		Diagonal	L3 1/2x3x1/4	215	-15.48	18.63	83.1	Pass
T13	80 - 60	Diagonal	2L2 1/2x2x3/16	233	-14.94	23.87	62.6	Pass
		Diagonal	2L2 1/2x2x3/16	234	-14.95	23.87	62.6	Pass
		Diagonal	2L2 1/2x2x3/16	235	-14.77	23.87	61.9	Pass
		Diagonal	2L2 1/2x2x3/16	236	-14.71	23.87	61.6	Pass
		Diagonal	2L2 1/2x2x3/16	237	-15.88	23.87	66.5	Pass
		Diagonal	2L2 1/2x2x3/16	238	-15.87	23.87	66.5	Pass
		Diagonal	2L2 1/2x2x3/16	239	-15.78	23.87	66.1	Pass
		Diagonal	2L2 1/2x2x3/16	240	-15.84	23.87	66.4	Pass
		Diagonal	2L2 1/2x2x3/16	241	-13.91	25.15	55.3	Pass
		Diagonal	2L2 1/2x2x3/16	242	-13.92	25.15	55.4	Pass
		Diagonal	2L2 1/2x2x3/16	243	-14.04	25.15	55.8	Pass
		Diagonal	2L2 1/2x2x3/16	244	-13.96	25.15	55.5	Pass
		Diagonal	2L2 1/2x2x3/16	245	-14.93	25.15	59.4	Pass
		Diagonal	2L2 1/2x2x3/16	246	-14.94	25.15	59.4	Pass
		Diagonal	2L2 1/2x2x3/16	247	-14.87	25.15	59.1	Pass
		Diagonal	2L2 1/2x2x3/16	248	-14.92	25.15	59.3	Pass
T14	60 - 50	Diagonal	2L2 1/2x2x3/16	262	-14.59	22.57	64.6	Pass
		Diagonal	2L2 1/2x2x3/16	263	-14.62	22.57	64.7	Pass
		Diagonal	2L2 1/2x2x3/16	264	-14.46	22.57	64.0	Pass
		Diagonal	2L2 1/2x2x3/16	265	-14.38	22.57	63.7	Pass
		Diagonal	2L2 1/2x2x3/16	266	-15.43	22.57	68.4	Pass
		Diagonal	2L2 1/2x2x3/16	267	-15.44	22.57	68.4	Pass
		Diagonal	2L2 1/2x2x3/16	268	-15.58	22.57	69.0	Pass
		Diagonal	2L2 1/2x2x3/16	269	-15.62	22.57	69.2	Pass
T15	50 - 40	Diagonal	2L2 1/2x2x3/8	274	-16.56	40.44	41.0	Pass
		Diagonal	2L2 1/2x2x3/8	275	-16.59	40.44	41.0	Pass
		Diagonal	2L2 1/2x2x3/8	276	-16.14	40.44	39.9	Pass
		Diagonal	2L2 1/2x2x3/8	277	-16.07	40.44	39.7	Pass
		Diagonal	2L2 1/2x2x3/8	278	-17.32	40.44	42.8	Pass
		Diagonal	2L2 1/2x2x3/8	279	-17.33	40.44	42.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2x3/8	280	-17.47	40.44	43.2	Pass
		Diagonal	2L2 1/2x2x3/8	281	-17.51	40.44	43.3	Pass
T16	40 - 30	Diagonal	2L2 1/2x2x3/8	299	-16.24	38.48	42.2	Pass
		Diagonal	2L2 1/2x2x3/8	300	-16.77	38.48	43.6	Pass
		Diagonal	2L2 1/2x2x3/8	301	-16.04	38.48	41.7	Pass
		Diagonal	2L2 1/2x2x3/8	302	-15.70	38.48	40.8	Pass
		Diagonal	2L2 1/2x2x3/8	303	-17.25	38.48	44.8	Pass
		Diagonal	2L2 1/2x2x3/8	304	-16.94	38.48	44.0	Pass
		Diagonal	2L2 1/2x2x3/8	305	-17.27	38.48	44.9	Pass
		Diagonal	2L2 1/2x2x3/8	306	-17.38	38.48	45.2	Pass
T17	30 - 20	Diagonal	2L2 1/2x2x3/8	315	-17.50	36.54	47.9	Pass
		Diagonal	2L2 1/2x2x3/8	316	-17.52	36.54	47.9	Pass
		Diagonal	2L2 1/2x2x3/8	317	-16.86	36.54	46.1	Pass
		Diagonal	2L2 1/2x2x3/8	318	-16.81	36.54	46.0	Pass
		Diagonal	2L2 1/2x2x3/8	319	-18.07	36.54	49.4	Pass
		Diagonal	2L2 1/2x2x3/8	320	-18.06	36.54	49.4	Pass
		Diagonal	2L2 1/2x2x3/8	321	-18.48	36.54	50.6	Pass
		Diagonal	2L2 1/2x2x3/8	322	-18.52	36.54	50.7	Pass
T18	20 - 10	Diagonal	2L2 1/2x2x3/8	340	-20.85	34.72	60.1	Pass
		Diagonal	2L2 1/2x2x3/8	341	-21.95	34.72	63.2	Pass
		Diagonal	2L2 1/2x2x3/8	342	-20.56	34.72	59.2	Pass
		Diagonal	2L2 1/2x2x3/8	343	-20.20	34.72	58.2	Pass
		Diagonal	2L2 1/2x2x3/8	344	-22.27	34.72	64.2	Pass
		Diagonal	2L2 1/2x2x3/8	345	-21.35	34.72	61.5	Pass
		Diagonal	2L2 1/2x2x3/8	346	-22.03	34.72	63.4	Pass
		Diagonal	2L2 1/2x2x3/8	347	-22.20	34.72	64.0	Pass
T19	10 - 0	Diagonal	2L2 1/2x2 1/2x1/4	357	-27.01	26.47	102.0	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	360	-28.47	26.47	107.5	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	365	-27.03	26.47	102.1	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	368	-26.61	26.47	100.5	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	374	-28.79	26.47	108.8	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	377	-27.59	26.47	104.2	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	383	-29.02	26.47	109.6	Fail ✗
		Diagonal	2L2 1/2x2 1/2x1/4	386	-29.19	26.47	110.3	Fail ✗
T9	120 - 110	Horizontal	L2 1/2x2 1/2x1/4	146	-0.91	20.33	4.5	Pass
		Horizontal	L2 1/2x2 1/2x1/4	147	-0.91	20.33	4.5	Pass
		Horizontal	L2 1/2x2 1/2x1/4	148	-0.90	20.33	4.4	Pass
		Horizontal	L2 1/2x2 1/2x1/4	149	-0.90	20.33	4.4	Pass
T11	100 - 90	Horizontal	L2 1/2x2 1/2x1/4	187	-1.59	18.29	8.7	Pass
		Horizontal	L2 1/2x2 1/2x1/4	188	-1.59	18.29	8.7	Pass
		Horizontal	L2 1/2x2 1/2x1/4	189	-1.58	18.29	8.6	Pass
		Horizontal	L2 1/2x2 1/2x1/4	190	-1.59	18.29	8.7	Pass
T14	60 - 50	Horizontal	2L2x2x3/16	253	3.88	37.48	10.3	Pass
		Horizontal	2L2x2x3/16	254	-1.61	21.76	15.7 (b) 7.4 11.2 (b)	Pass
		Horizontal	2L2x2x3/16	255	3.89	37.48	10.4 15.8 (b)	Pass
		Horizontal	2L2x2x3/16	256	2.80	37.48	7.5 11.3 (b)	Pass
T18	20 - 10	Horizontal	2L2x2x3/16	331	7.93	37.48	21.2 32.1 (b)	Pass
		Horizontal	2L2x2x3/16	332	6.08	37.48	16.2 24.6 (b)	Pass
		Horizontal	2L2x2x3/16	333	7.93	37.48	21.2 32.1 (b)	Pass
		Horizontal	2L2x2x3/16	334	6.14	37.48	16.4 24.9 (b)	Pass
T19	10 - 0	Horizontal	2L2 1/2x2 1/2x1/4	356	-18.06	34.58	52.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Horizontal	2L2 1/2x2 1/2x1/4	364	-17.36	34.58	54.4 (b) 50.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	373	-18.22	34.58	51.1 (b) 52.7	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	382	-18.77	34.58	54.9 (b) 54.3	Pass
T1	180 - 170	Secondary Horizontal	L2x2x3/16	17	-0.62	12.02	55.0 (b) 5.2	Pass
		Secondary Horizontal	L2x2x3/16	18	-0.78	12.02	6.5	Pass
		Secondary Horizontal	L2x2x3/16	19	-0.64	12.02	5.3	Pass
		Secondary Horizontal	L2x2x3/16	20	-0.44	12.02	3.7	Pass
T7	140 - 130	Secondary Horizontal	L2x2x1/4	122	-1.08	11.21	9.6	Pass
		Secondary Horizontal	L2x2x1/4	123	-1.08	11.21	9.6	Pass
		Secondary Horizontal	L2x2x1/4	124	-1.08	11.21	9.6	Pass
		Secondary Horizontal	L2x2x1/4	125	-1.08	11.21	9.6	Pass
T8	130 - 120	Secondary Horizontal	L2x2x1/4	138	-1.40	10.60	13.2	Pass
		Secondary Horizontal	L2x2x1/4	139	-1.40	10.60	13.2	Pass
		Secondary Horizontal	L2x2x1/4	140	-1.42	10.60	13.4	Pass
		Secondary Horizontal	L2x2x1/4	141	-1.42	10.60	13.4	Pass
T9	120 - 110	Secondary Horizontal	L2x2x3/16	163	-1.78	7.30	24.4	Pass
		Secondary Horizontal	L2x2x3/16	164	-1.78	7.30	24.4	Pass
		Secondary Horizontal	L2x2x3/16	165	-1.81	7.30	24.7	Pass
		Secondary Horizontal	L2x2x3/16	166	-1.81	7.30	24.7	Pass
T10	110 - 100	Secondary Horizontal	L2x2x1/4	179	-2.18	8.40	25.9	Pass
		Secondary Horizontal	L2x2x1/4	180	-2.18	8.40	25.9	Pass
		Secondary Horizontal	L2x2x1/4	181	-2.20	8.40	26.2	Pass
		Secondary Horizontal	L2x2x1/4	182	-2.20	8.40	26.2	Pass
T12	90 - 80	Secondary Horizontal	L2 1/2x2 1/2x1/4	216	-3.06	12.35	24.8	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	217	-3.06	12.35	24.8	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	218	-3.08	12.35	24.9	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	219	-3.08	12.35	24.9	Pass
T15	50 - 40	Secondary Horizontal	L3 1/2x3 1/2x1/4	282	-4.80	20.39	23.5	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	283	-4.80	20.39	23.5	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	284	-4.82	20.39	23.7	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	285	-4.82	20.39	23.7	Pass
T16	40 - 30	Secondary Horizontal	L3 1/2x3 1/2x1/4	307	-5.22	18.94	27.6	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	308	-5.22	18.94	27.6	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	309	-5.24	18.94	27.7	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	310	-5.24	18.94	27.7	Pass
T17	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	323	-5.68	17.70	32.1	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	324	-5.68	17.70	32.1	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	325	-5.70	17.70	32.2	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	326	-5.70	17.70	32.2	Pass
T18	20 - 10	Secondary Horizontal	L3 1/2x3 1/2x1/4	348	-6.04	16.59	36.4	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	349	-6.04	16.59	36.4	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	350	-6.06	16.59	36.5	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	351	-6.06	16.59	36.5	Pass
T1	180 - 170	Top Girt	L2x2x3/16	5	-0.11	7.61	1.4	Pass
		Top Girt	L2x2x3/16	6	-0.11	7.61	1.8 (b) 1.4	Pass
		Top Girt	L2x2x3/16	7	-0.10	7.61	1.5 (b) 1.4	Pass
		Top Girt	L2x2x3/16	8	-0.11	7.61	1.7 (b) 1.4	Pass
T2	170 - 163.573	Top Girt	L2x2x3/16	25	-0.46	7.61	2.0 (b) 6.1	Pass
		Top Girt	L2x2x3/16	26	-0.46	7.61	6.3 (b) 6.0	Pass
		Top Girt	L2x2x3/16	27	-0.45	7.61	5.9	Pass
		Top Girt	L2x2x3/16	28	-0.45	7.61	6.1 (b) 6.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							6.8 (b)	
T3	163.573 - 159.049	Top Girt	L2x2x3/16	41	-0.46	7.86	5.8	Pass
		Top Girt	L2x2x3/16	42	-0.46	7.86	5.9	Pass
		Top Girt	L2x2x3/16	43	-0.45	7.86	5.8	Pass
		Top Girt	L2x2x3/16	44	-0.45	7.86	5.7	Pass
T6	150 - 140	Top Girt	L2 1/2x2 1/2x3/16	81	-0.54	10.69	5.0	Pass
		Top Girt	L2 1/2x2 1/2x3/16	82	-0.52	10.69	4.9	Pass
		Top Girt	L2 1/2x2 1/2x3/16	83	-0.52	10.69	4.8	Pass
		Top Girt	L2 1/2x2 1/2x3/16	84	-0.53	10.69	5.0	Pass
T7	140 - 130	Top Girt	L2 1/2x2 1/2x3/16	105	-0.50	16.96	2.9	Pass
							3.0 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	106	-0.49	16.96	2.9	Pass
							3.1 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	107	-0.49	16.96	2.9	Pass
							3.1 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	108	-0.51	16.96	3.0	Pass
T13	80 - 60	Top Girt	L2 1/2x2 1/2x1/4	224	-0.90	15.76	5.7	Pass
							7.9 (b)	
		Top Girt	L2 1/2x2 1/2x1/4	225	-0.93	15.76	5.9	Pass
		Top Girt	L2 1/2x2 1/2x1/4	226	-0.89	15.76	5.7	Pass
							7.9 (b)	
		Top Girt	L2 1/2x2 1/2x1/4	227	-0.93	15.76	5.9	Pass
T16	40 - 30	Top Girt	2L2x2x3/16	290	5.18	37.48	13.8	Pass
							21.0 (b)	
		Top Girt	2L2x2x3/16	291	3.65	37.48	9.7	Pass
							14.8 (b)	
		Top Girt	2L2x2x3/16	292	5.19	37.48	13.8	Pass
							21.0 (b)	
		Top Girt	2L2x2x3/16	293	3.67	37.48	9.8	Pass
							14.9 (b)	
T19	10 - 0	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	358	-6.15	15.90	38.7	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	361	-6.21	15.90	39.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	366	-6.21	15.90	39.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	369	-6.16	15.90	38.7	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	375	-6.16	15.90	38.7	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	378	-6.23	15.90	39.2	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	384	-6.23	15.90	39.2	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	387	-6.15	15.90	38.7	Pass
T19	10 - 0	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	359	-7.86	9.88	79.6	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	362	-7.78	9.88	78.8	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	367	-7.85	9.88	79.5	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	370	-7.87	9.88	79.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	376	-7.80	9.88	78.9	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	379	-7.90	9.88	80.0	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	385	-7.89	9.88	79.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	388	-7.85	9.88	79.5	Pass
T19	10 - 0	Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	372	-0.03	9.58	0.6	Pass
		Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	381	-0.02	9.58	0.6	Pass
		Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	390	-0.02	9.58	0.6	Pass
		Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	391	-0.02	9.58	0.6	Pass
T19	10 - 0	Redund Sub Horz Bracing	L3x3x5/16	363	-8.97	12.33	72.7	Pass
		Redund Sub Horz Bracing	L3x3x5/16	371	-9.05	12.33	73.4	Pass
		Redund Sub Horz Bracing	L3x3x5/16	380	-9.00	12.33	73.0	Pass
		Redund Sub Horz Bracing	L3x3x5/16	389	-9.07	12.33	73.5	Pass
T7	140 - 130	Inner Bracing	L2x2x3/16	109	-0.07	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	110	-0.06	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	111	-0.07	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	112	-0.06	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	113	-0.01	2.94	0.9	Pass
T9	120 - 110	Inner Bracing	L2 1/2x2x3/16	150	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	151	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	152	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	153	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	154	-0.00	2.78	1.1	Pass
T11	100 - 90	Inner Bracing	L2 1/2x2x3/16	191	-0.09	4.15	2.1	Pass
		Inner Bracing	L2 1/2x2x3/16	192	-0.09	4.15	2.2	Pass
		Inner Bracing	L2 1/2x2x3/16	193	-0.09	4.15	2.1	Pass
		Inner Bracing	L2 1/2x2x3/16	194	-0.09	4.15	2.2	Pass
		Inner Bracing	L2 1/2x2x3/16	195	-0.00	2.08	1.2	Pass
T13	80 - 60	Inner Bracing	2L2x2x3/16	228	-0.12	11.88	1.0	Pass
		Inner Bracing	2L2x2x3/16	229	-0.12	11.88	1.0	Pass
		Inner Bracing	2L2x2x3/16	230	-0.12	11.88	1.0	Pass
		Inner Bracing	2L2x2x3/16	231	-0.12	11.88	1.0	Pass
		Inner Bracing	2L2x2x3/16	232	-0.01	5.94	0.9	Pass
T14	60 - 50	Inner Bracing	2L2x2x3/16	257	-0.13	9.47	1.4	Pass
		Inner Bracing	2L2x2x3/16	258	-0.14	9.47	1.5	Pass
		Inner Bracing	2L2x2x3/16	259	-0.13	9.47	1.4	Pass
		Inner Bracing	2L2x2x3/16	260	-0.14	9.47	1.5	Pass
		Inner Bracing	2L2x2x3/16	261	0.00	46.33	1.0	Pass
T16	40 - 30	Inner Bracing	2L2x2x3/16	294	-0.18	7.73	2.3	Pass
		Inner Bracing	2L2x2x3/16	295	-0.19	7.73	2.4	Pass
		Inner Bracing	2L2x2x3/16	296	-0.18	7.73	2.3	Pass
		Inner Bracing	2L2x2x3/16	297	-0.18	7.73	2.4	Pass
		Inner Bracing	2L2x2x3/16	298	-0.02	3.87	1.1	Pass
T18	20 - 10	Inner Bracing	2L2x2 1/2x3/16	335	-0.03	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	336	-0.03	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	337	-0.03	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	338	-0.03	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	339	0.01	52.49	1.0	Pass
T19	10 - 0	Inner Bracing	2L2x2 1/2x3/16	392	-0.16	6.32	2.5	Pass
		Inner Bracing	2L2x2 1/2x3/16	393	-0.17	6.32	2.6	Pass
		Inner Bracing	2L2x2 1/2x3/16	394	-0.16	6.32	2.5	Pass
		Inner Bracing	2L2x2 1/2x3/16	395	-0.17	6.32	2.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	396	-0.01	3.16	1.0	Pass
							Summary	
						Leg (T19)	83.0	Pass
						Diagonal	110.3	Fail ✗

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						(T19) Horizontal	55.0	Pass
						(T19) Secondary Horizontal	36.5	Pass
						(T18) Top Girt	21.0	Pass
						(T16) Redund Horz 1 Bracing	39.2	Pass
						(T19) Redund Diag 1 Bracing	80.0	Pass
						(T19) Redund Hip 1 Bracing	0.6	Pass
						(T19) Redund Sub Horz Bracing	73.5	Pass
						(T19) Inner Bracing	2.7	Pass
						(T19) Bolt Checks	73.4	Pass
						RATING =	**110.3**	**Fail** ✗

ANCHOR BOLT EVALUATION

AECOM

Job	180' Self Supporting Lattice Tower - Wilton, CT	Project No.	EMP-004	Page / Sheet	of / 1 of 4
Description	Anchor Bolt Analysis (TIA-222-G)	Computed by	MCD	Date	03/29/18
	Evaluation Report	Checked by		Date	

ANCHOR BOLT ANALYSIS

Input Data

Tower Reactions:

Uplift:	Uplift := 415 kips	*user input*
Shear:	Shear := 46 kips	*user input*
Compression:	Compression := 453 kips	*user input*

Anchor Bolt Data:

Use ASTM A36	Use ASTM A36 per page 4.1 of structural analysis dated November 23, 1993		
Number of Anchor Bolts = N	N := 4	*user input*	
Bolt Ultimate Strength:	F_u := 58 ksi	*user input*	
Bolt Yield Strength:	Fy := 36 ksi	*user input*	
Bolt Modulus:	E := 29000 ksi	*user input*	
Thickness of Anchor Bolts	D := 2.5in	*user input*	
Threads per Inch:	n := 4	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-15)
Length from top of pier to bottom of leveling nut:	L_{ar} := 2.5in	*user input*	(assumed single level nut to plate pt.)
Bolt Modulus:	E := 29000·ksi	*user input*	

Anchor Bolt Section Properties:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4} \cdot D^2 \qquad A_g = 4.91 \cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 \qquad A_n = 4 \cdot in^2$$

Net Diameter:

$$D_n := D - \frac{0.9743 in}{n} \qquad D_n = 2.26 \cdot in$$

Radius of Gyration of Bolt:

$$r := \frac{D_n}{4} \qquad r = 0.56 \cdot in$$

Plastic Section Modulus of Bolt:

$$Z_x := \frac{D_n^3}{6} \qquad Z_x = 1.91 \cdot in^3$$

Forces:

Tension Force:

$$T_u := \frac{Uplift}{N}$$

$$T_u = 103.75 \cdot kip \qquad T_{ub} := T_u$$

Shear Force:

$$V_u := \frac{Shear}{N}$$

$$V_u = 11.5 \cdot kip \qquad V_{ub} := V_u$$

Resistance Factor for Flexure (ANSI/TIA-222-G 4.7):

$$\phi_f := 0.9$$

Resistance Factor for Anchor Bolt (ANSI/TIA-222-G 4.5.4.2):

$$\phi_b := 0.80$$

Resistance Factor for Tension (ANSI/TIA-222-G 4.9.6.1):

$$\phi_t := 0.75$$

Resistance Factor for Shear (ANSI/TIA-222-G 4.9.6.3):

$$\phi_v := 0.75$$

ANSI/TIA-222-G 4.7.1 Flexural Members:

Nominal Flexure Strength, Mn:

$M_n := Fy \cdot Z_x$

$M_n = 5.74 \cdot ft \cdot kip$

$\phi_f \cdot M_n = 5.17 \cdot ft \cdot kip$

Applied Moment due to Shear (worst case lever arm), Mu:

$M_u := L_{ar} \cdot V_u$

$M_u = 2.4 \cdot ft \cdot kip$

Flexure Check:

$FlexureCheck := if(M_u \le \phi_f \cdot M_n, "OK", "NO GOOD")$

FlexureCheck = "OK"

$\frac{M_u}{\phi_f \cdot M_n} = 46.34 \cdot \%$

ANSI/TIA-222-G 4.9.6.1 Tensile Strength:

Design Tensile Strength, Rnt:

$R_{nt} := F_u \cdot A_n$

$R_{nt} = 231.93 \cdot ft \cdot kip$

$\phi_t \cdot R_{nt} = 173.95 \cdot ft \cdot kip$

Tension Check:

$TensionCheck := if(T_u \le \phi_t \cdot R_{nt}, "OK", "NO GOOD")$

TensionCheck = "OK"

$\frac{T_u}{\phi_t \cdot R_{nt}} = 59.64 \cdot \%$

ANSI/TIA-222-G 4.9.6.3 Design Shear Strength:

Design Shear Strength, Rnv:

$R_{nv} := 0.45 \cdot F_u \cdot A_g$

$R_{nv} = 128.12 \cdot ft \cdot kip$

$\phi_v \cdot R_{nv} = 96.09 \cdot ft \cdot kip$

Shear Check:

$ShearCheck := if(V_u \le \phi_v \cdot R_{nv}, "OK", "NO GOOD")$

ShearCheck = "OK"

$\frac{V_u}{\phi_v \cdot R_{nv}} = 11.97 \cdot \%$

ANSI/TIA-222-G 4.9.6.4 Combined Shear and Tension:

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 \le 1$$

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 = 0.37$$

Combined Shear and Tension Check:

$$\text{ShearAndTensionCheck} := \text{if}\left[\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

ShearAndTensionCheck = "OK"

ANSI/TIA-222-G 4.9.9 Anchor Rods (Capacity):

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot P_n} \le 1$$

$\eta := 0.55$ *user input from ANSI/TIA-222-G 4.9.9*

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot F_u \cdot A_n} = 0.672$$

Capacity Check:

$$\text{CapacityCheck} := \text{if}\left[\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot F_u \cdot A_n} \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

CapacityCheck = "OK"

FOUNDATION ANALYSIS

AECOM

				Page	of
Job	180' Self-Supporting Lattice Tower - Wilton, CT	Project No.	EMP-004	Sheet 1	of 10
Description	Foundation Analysis	Computed by	MCD	Date	03/29/18
	Evaluation Report	Checked by		Date	

FOOTING WITH FOUR CONCRETE PIERS

INPUT DATA

TOWER FORCES:

Moment Caused by Tower	$M_t := 10825 \cdot kip \cdot ft$
Shear at Base of Tower	$S_t := 116kip$
Max Compressive Force	$C_t := 453kip$
Max Uplift	$U_t := 415kip$
Max Pier Shear	$S_p := 46kip$
Height of Tower	$H_t := 180 \cdot ft$
Width of Tower at Base	$W_t := 17.729 \cdot ft$
Weight of Tower	$WT_t := 1 \cdot kip$

NOTE: Weight of Tower is incorporated into the other loads listed above and is therefore set equal to one for programming.

FOOTING DIMENSIONS:

Width of Footing	$W_f := 37 \cdot ft + 0ft$
Overall Depth of Footing	$D_f := 9.5ft$
Length of Pier	$L_p := 6.5 \cdot ft - 0ft$
Extension of Pier Above Grade	$L_{pag} := 1.0 \cdot ft$
Square Dimension of Pier	$d_p := 4.0 \cdot ft$
Thickness of Footing	$T_f := 3.0 \cdot ft + 0ft$
Reinforement Cover:	$Cvr := 3in$
Ftg. Edge To Pier CL:	$X_t := 8.635ft$

MATERIAL PROPERTIES:

Compressive Strength of Concrete	$fc := 3000 \cdot psi$	Unit Weight of Soil	$\gamma_s := 100 \cdot pcf$
Yield Strength of Steel Reinforcement	$fy := 60000 \cdot psi$	Unit Weight of Concrete	$\gamma_c := 150 \cdot pcf$
Internal Friction Angle of Soil	$\phi_s := 30 \cdot deg$	Depth to Neglect	$n := 1.5 \cdot ft$
Allowable Bearing Capacity	$q_s := 3400 \cdot psf$	Cohesion of Clay Type Soil	$c := 0 \cdot ksf$
Ultimate Bearing Capacity	$R_s := 2 \cdot q_s$	Note: Use 0 for Sandy Soil	

Coefficient of Lateral Soil Pressure $K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)}$ $K_p = 3$

What is Position of Center of Tower with respect to Center of Pad? 1=Offset 2=Not Offset $Pos_{tower} := 2$

PIER REINFORCEMENT:

Bar Size	$BSpier := 9$	Bar Diameter	$d_{bpier} := 1.128 \cdot in$
Number of Bars	$NBpier := 24$	Bar Area	$A_{bpier} := 1.00 \cdot in^2$

PAD REINFORCEMENT:

Bar Size	$BS_{pad} := 9$	Bar Diameter	$d_{bpad} := 1.128 \cdot in$
Number of Bars	$NB_{pad} := 42$	Bar Area	$A_{bpad} := 1.00 \cdot in^2$

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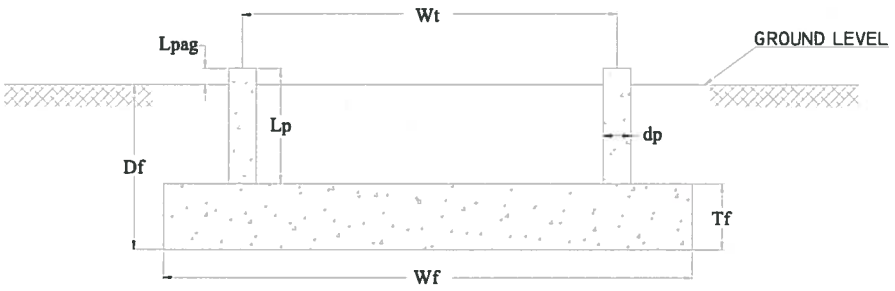
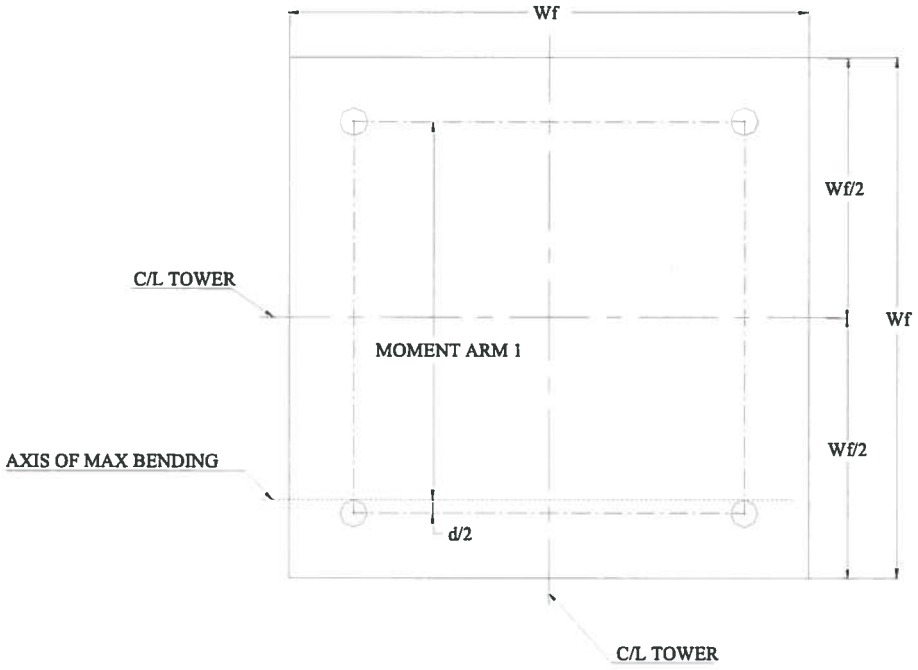
Typical Footing Plan and Elevation:



ELEVATION



PLAN

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STABILITY OF FOOTING

NOTE: Reduction factor is implemented as 0.75 for pull-out/uplift of foundation. Reduction factor shall be applied to Overturning Moment in this case

Passive Pressure:

Pressure at Neglect: $P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pn} = 0.45 \cdot ksf$

Pressure at Footing Top: $P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pt} = 1.95 \cdot ksf$

Pressure at Top: $P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}]$ $P_{top} = 1.95 \cdot ksf$

Pressure at Bottom: $P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p}$ $P_{bot} = 2.85 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_{top} + P_{bot}}{2}$ $P_{ave} = 2.4 \cdot ksf$

Soil Shear:

Effective Soil Depth: $T_{pp} := if[n < (D_f - T_f), T_f, (D_f - n)]$ $T_{pp} = 3 \cdot ft$

Area of Resistance: $A_{pp} := W_f \cdot T_{pp}$ $A_{pp} = 111 \cdot ft^2$

Shear Resistance: $S_u := P_{ave} \cdot A_{pp}$ $S_u = 266.4 \cdot kip$

Stabilizing Dead Load:

Weight of Concrete Pad: $WT_c := \left(W_f^2 \cdot T_f\right) \cdot \gamma_c$ $WT_c = 616.05 \cdot kip$

Weight of Soil: above Footing:

$$Depth := \begin{cases} D_f - n - T_f & \text{if } n < (D_f - T_f) \\ 0 & \text{otherwise} \end{cases}$$

$Depth = 5 \cdot ft$

$WT_{s1} := W_f^2 \cdot Depth \cdot \gamma_s$ $WT_{s1} = 684.5 \cdot kip$

Weight of Soil Wedge at Back Face: $WT_{s2} := \left[\frac{(D_f - n)^2 \cdot \tan(\phi_s)}{2} \cdot W_f\right] \cdot \gamma_s$ $WT_{s2} = 68.3583 \cdot kip$

Distance to center of Tower Leg from Edge of Footing: $X_{t1} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_{t2} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_t := if(Pos_{tower} = 1, X_{t1}, X_{t2})$

Additional Offset of Footing: $X_{off1} := \frac{W_f}{2} - \left(\frac{W_f \cdot \cos(30 \cdot deg)}{3} + X_t\right)$ $X_{off1} = 3.7466 \cdot ft$ $X_{off2} := X_{off1}$

$X_{off} := if(Pos_{tower} = 1, X_{off1}, X_{off2})$ $X_{off} = 3.7466 \cdot ft$

Stability Analysis:

Resisting Moment:

$$M_r := \left(WT_c \cdot 0.9 + WT_{s1} \cdot 0.9\right) \cdot \frac{W_f}{2} + WT_t \cdot \left(\frac{W_f}{2} - X_{off}\right) \ldots + 0.9 S_u \cdot \frac{T_{pp}}{3} + 0.9 \cdot WT_{s2} \cdot \left(W_f + \frac{T_{pp} \cdot \tan(\phi_s)}{3}\right)$$

$M_r = 24220.5214 \cdot kip \cdot ft$

$\phi_{OT} := 0.75$

ANSI/TIA-222-G REDUCTION FACTOR

(Factored) Overturning Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t \cdot X_{off}$ $M_{ot} = 11930.7466 \cdot kip \cdot ft$

$StabilityCheck := if(M_r \cdot \phi_{OT} > M_{ot}, "Okay", "No Good")$

Overturn Ratio (%): $Ratio_{Stability} := \frac{M_{ot}}{M_r \cdot \phi_{OT}}$ $Ratio_{Stability} = 65.68 \cdot \%$

$StabilityCheck = "Okay"$

BEARING PRESSURES

Loading Eccentricity:

Total Axial Load: $LOAD_{tot} := \left(WT_c + WT_{s1} + WT_t\right) \cdot 1.2$ $\quad LOAD_{tot} = 1561.86 \cdot kip$

Total Moment: $M_{ot} := M_t + S_t \cdot \left(L_p + T_f\right) + WT_t$ $\quad M_{ot} = 11928 \cdot kip \cdot ft$

Eccentricity: $e := \dfrac{M_{ot}}{LOAD_{tot}}$ $\quad e = 7.637 \cdot ft$

Dist. From Ftg. CL to Kern Edge: $X_k := \dfrac{W_f}{6}$ $\quad X_k = 6.1667 \cdot ft$

Calculate Soil Pressures:

Maximum Contact Pressure:

$$P_{max} := \begin{cases} \dfrac{LOAD_{tot}}{W_f^{\,2}} \cdot \left(1 + \dfrac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ \dfrac{2 \cdot LOAD_{tot}}{3 \cdot W_f \cdot \left(\dfrac{W_f}{2} - e\right)} & \text{otherwise} \end{cases}$$

$P_{max} = 2.5906 \cdot ksf$

Minimum Contact Pressure:

$$P_{min} := \begin{cases} \dfrac{LOAD_{tot}}{W_f^{\,2}} \cdot \left(1 - \dfrac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ 0ksf & \text{otherwise} \end{cases}$$

$P_{min} = 0 \cdot ksf$

Length of Applied Pressure:

$$X_p := \begin{cases} W_f & \text{if } e \le X_k \\ 3 \cdot \left(\dfrac{W_f}{2} - e\right) & \text{otherwise} \end{cases}$$

$X_p = 32.5889 \cdot ft$

Pressure Slope:

$$m_p := \frac{P_{max} - P_{min}}{X_p}$$

$m_p = 0.0795 \cdot ksf$

Revised Maximum: $q_{max} := P_{max}$ $\quad q_{max} = 2.5906 \cdot ksf$

$PressureCheck := if\left(q_{max} < 0.75 \cdot R_s, \text{"Okay"}, \text{"No Good"}\right)$ $\quad PressureCheck = \text{"Okay"}$

$\dfrac{q_{max}}{0.75 \cdot R_s} = 0.508$

Concrete Bearing Capacity (ACI 10.14):

(ACI 9.3.2.2) $\phi_c := 0.65$

$$P_b := \phi_c \cdot 0.85 \cdot f'c \cdot \frac{d_p^2 \cdot \pi}{4} \qquad P_b = 2999.3413 \cdot kip$$

$$BearingCheck := if(P_b > C_t, "Okay", "No Good") \qquad BearingCheck = "Okay"$$

SHEAR STRENGTH OF CONCRETE

Beam (One-Way) Shear Action (ACI 11.2.1.1):

"d" Distance: $d := T_f - Cvr - .5 \cdot in$ $\qquad d = 32.5 \cdot in$

Factored Pressure at "d" Distance: $P_d := \left[P_{max} - \left(X_t - \frac{d_p}{2} - d \right) m_p \right]$ $\qquad P_d = 2.1989 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := P_{max}$ $\qquad P_{edge} = 2.5906 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_d + P_{edge}}{2}$ $\qquad P_{ave} = 2.3948 \cdot ksf$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_{ss} := 0.75$

Applied Shear Force: $V_{req} := \frac{P_{ave} \cdot (X_t - 0.5 \cdot d_p - d) \cdot W_f}{\phi_c}$ $\qquad V_{req} = 582.1044 \cdot kip$

Available Shear: (ACI 11.3.1.1) $V_{Avail} := 2 \cdot \sqrt{f'c \cdot psi} \cdot W_f \cdot d$ $\qquad V_{Avail} = 1580.7273 \cdot kip$

Check Capacity: $BeamShearCheck := if(V_{req} < V_{Avail}, "Okay", "No Good")$

$BeamShearCheck = "Okay"$

Punching (Two-Way) Shear Action (ACI 11.11.1.2):

Critical Perimeter: $b_o := 4(d_p + d)$ → $b_o = 26.8333 \cdot ft$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := .85$ $C_t = 453 \cdot kip$

Factored Maximum Punching Shear Force $FL := \frac{C_t}{\phi_c}$ → $FL = 532.9412 \cdot kip$

Available Shear: $V_{Avail} := 4 \cdot \sqrt{f'c \cdot psi} \cdot b_o \cdot d$ → $V_{Avail} = 2292.7666 \cdot kip$

Check Capacity: $PunchingShearCheck := if(V_{req} < V_{Avail}, "Okay", "No Good")$

$PunchingShearCheck = "Okay"$

BENDING

Maximim Bending Moment:

Distance From Edge of FTG To Face of Pier: $X_b := \frac{W_f}{2} - e - \frac{d_p}{2}$ → $X_b = 8.863 \cdot ft$

Moment Due To Overturning:

Factored Pressure at "d" Distance: $P_{face} := 1 \cdot (P_{max} - X_b \cdot m_p)$ → $P_{face} = 1.8861 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := 1 \cdot P_{max}$ → $P_{edge} = 2.5906 \cdot ksf$

Moment Due To Rectangular Loading: $M_1 := (P_{face} \cdot X_b \cdot W_f) \cdot \left(\frac{1}{2} \cdot X_b\right)$ → $M_1 = 2740.8384 \cdot kip \cdot ft$

Moment Due to Triangular Loading: $M_2 := \left[\frac{1}{2} \cdot X_b \cdot (P_{edge} - P_{face})\right] \cdot \left(\frac{2}{3} \cdot X_b\right)$ → $M_2 = 18.4479 \cdot kip \cdot ft$

Sum Moments: $M_{ot} := M_1 + M_2$ → $M_{ot} = 2759.2862 \cdot kip \cdot ft$

Moment Due To Uplift:

Pier Forces: $M_{nT} := 1 \cdot \left[U_t \cdot \left(W_f - 2 \cdot X_b - \frac{d}{2} - d \right) + S_t \cdot \left(D_f + L_{pag} \right) \right]$ $M_{nT} = 7530.8125 \cdot kip \cdot ft$

Concrete Resistance: $M_{nS} := \frac{1}{2} \cdot \left(W_f - X_b - d_p \right)^2 \cdot \left(T_f \cdot W_f \right) \cdot \gamma_s$ $M_{nS} = 3233.4139 \cdot kip \cdot ft$

Soil Resistance: $M_{nC} := \frac{1}{2} \cdot \left(W_f - X_b - d_p \right)^2 \cdot \left(T_f \cdot W_f \right) \cdot \gamma_c$ $M_{nC} = 4850.1208 \cdot kip \cdot ft$

Sum Moments $M_{uplift} := M_{nT} - M_{nS} - M_{nC}$ $M_{uplift} = -552.7222 \cdot kips \cdot ft$

Select Controlling Moment: $M_u := \begin{cases} M_{ot} & \text{if } M_{ot} \geq M_{uplift} \\ M_{uplift} & \text{otherwise} \end{cases}$ $M_u = 2759.2862 \cdot kips \cdot ft$

Strength Reduction Factor: (ACI 9.3.2.2) $\phi_m := .90$

Design Moment: $M_n := \frac{M_u}{\phi_m}$ $M_n = 3065.8736 \cdot kips \cdot ft$

Size Reinforcing Steel:

Effective Width: $b_{eff} := W_f$ $b_{eff} = 444 \cdot in$

Stress Block: $a := d \cdot \left(1 - \sqrt{1 - 2.3529 \cdot \frac{M_n}{f'c \cdot b_{eff} \cdot d^2}} \right)$ $a = 1.0157 \cdot in$

Steel Req'd For Bending: $A_s := \frac{M_n}{fy \cdot \left(d - \frac{a}{2} \right)}$ $A_s = 19.1664 \cdot in^2$

Reinforcement Ratio: $\rho := \frac{A_s}{b_{eff} \cdot d}$ $\rho = 0.0013$

Steel Req'd For Temperature and Shrinkage: (ACI 7.12.2.1b) $\rho_{sh} := \text{if}(fy \geq 60000 \cdot psi, 0.0018, 0.0020)$ $\rho_{sh} = 0.0018$

$As := \text{if}\left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot b_{eff} \cdot d \right)$ $As = 25.974 \cdot in^2$

$As_{prov} := A_{bpad} \cdot NB_{pad}$ $As_{prov} = 42 \cdot in^2$

Check Provided Steel: $PadReinforcement := \text{if}\left(As_{prov} > As, \text{"Okay"}, \text{"No Good"} \right)$

PadReinforcement = "Okay"

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DEVELOPMENT LENGTH OF PAD REINFORCEMENT

TENSION (ACI 12.2.3)

Bar Spacing:

$$B_{sPad} := \frac{W_f - 2\cdot Cvr - NB_{pad}\cdot d_{bpad}}{NB_{pad} - 1}$$

$B_{sPad} = 9.5274\cdot in$

Development Length Factors:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension:

$$c := if\left(Cvr < \frac{B_{sPad}}{2}, Cvr, \frac{B_{sPad}}{2}\right)$$

$c = 3\cdot in$

Transverse Reinforcement Index: As allowed by ACI 12.2.4 $k_{tr} := 0$

$$L_{dbt} := \frac{3}{40}\cdot\frac{fy}{\sqrt{fc\cdot psi}}\cdot\frac{\alpha\cdot\beta\cdot\gamma\cdot\lambda}{\frac{c+k_{tr}}{d_{bpad}}}\cdot d_{bpad}$$

$L_{dbt} = 34.8457\cdot in$

$L_{dbmin} := 12\cdot in$

Minimum Development Length: (ACI 12.2.1)

$L_{dbtCheck} := if\left(L_{dbt} \geq L_{dbmin}, "Use\ L.dbt", "Use\ L.dbmin"\right)$ $L_{dbtCheck} = "Use\ L.dbt"$

Available Length in Pad:

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - Cvr$$

$L_{Pad} = 112.626\cdot in$

$LpadTension := if\left(L_{Pad} > L_{dbt}, "Okay", "No\ Good"\right)$ $LpadTension = "Okay"$

REINFORCEMENT IN PIER

Pier Area:

(ACI 10.8.4 and 10.9.1)

$$A_p := \frac{\pi\cdot d_p^{\,2}}{4}$$

$A_p = 1809.5574\cdot in^2$

$A_{smin} := 0.01\cdot 0.5\cdot A_p$

$A_{smin} = 9.0478\cdot in^2$

$A_{sprov} := NBpier\cdot A_{bpier}$

$A_{sprov} = 24\cdot in^2$

$SteelAreaCheck := if\left(A_{sprov} > A_{smin}, "Okay", "No\ Good"\right)$ $SteelAreaCheck = "Okay"$

NOTE: Anchor Bolts are not accounted for in reinforcement calculation and will provide additional reinforcement to satisfy minimum requirement of steel.

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Bar Spacing In Pier: $B_{sPier} := \frac{d_p \cdot \pi}{NBpier} - d_{bpier}$ $B_{sPier} = 5.1552 \cdot in$

Diameter of Reinforcement Cage: $Diam_{cage} := d_p - 2 \cdot Cvr$ $Diam_{cage} = 42 \cdot in$

Maximum Moment in Pier: $M_p := (S_p \cdot L_p) \cdot 1$ $M_p = 3588 \cdot kips \cdot in$

Pier Check evaluated from outside program and results are listed below;

(defined variables) $(f'_c \ f_y \ cl \ Spiral) = (3 \ 60 \ 4 \ 0)$

The required input is column diameter in inches, number of reinforcing bars, bar size number, factored axial load in kips and moment in kip inches: $(D \ N \ n \ P_u \ M_{xu}) := (48 \ 24 \ 9 \ 543.6 \ 10857.6)$

Clears any previous output: $(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := (0 \ 0 \ 0 \ 0)$

$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := \phi P'_n(D, N, n, P_u, M_{xu})^T$

The Output is given as useable axial load in kips, moment capacity in kip inches, splicing stress in ksi, and reinforcement ratio: $(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) = (1349.3431 \ 26951.1182 \ -60 \ 0.0133)$

Column size and reinforcement may be changed to match capacity to the applied load.

$AxialLoadCheck := if(\phi P_n \geq P_u, "Okay", "No Good")$ $AxialLoadCheck = "Okay"$

$BendingCheck := if(\phi M_{xn} \geq M_{xu}, "Okay", "No Good")$ $BendingCheck = "Okay"$

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DEVELOPMENT LENGTH OF PIER REINFORCEMENT

TENSION (ACI 12.2.3)

Spacing and Cover: $Cvr = 3 \cdot in$ $B_{sPier} = 5.1552 \cdot in$

Factors for development:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension: $c := if\left(Cvr < \frac{B_{sPier}}{2}, Cvr, \frac{B_{sPier}}{2}\right)$ $c = 2.5776 \cdot in$

Transverse Reinforcement: As allowed by ACI 12.2.4 $k_{tr} := 0$

$$L_{dbt} := \frac{3}{40} \cdot \frac{fy}{\sqrt{f'c \cdot psi}} \cdot \frac{\alpha \cdot \beta \cdot \gamma \cdot \lambda}{\frac{c + k_{tr}}{d_{bpier}}} \cdot d_{bpier} \qquad L_{dbt} = 40.5561 \cdot in$$

Minimum Development Length: (ACI 12.2.1) $L_{dbmin} := 12 \cdot in$

$L_{dbtCheck} := if\left(L_{dbt} \geq L_{dbmin}, \text{"Use L.dbt"}, \text{"Use L.dbmin"}\right)$ $L_{dbtCheck} = \text{"Use L.dbt"}$

COMPRESSION: (ACI 12.3.2)

$$L_{dbc1} := \frac{.02 \cdot d_{bpier} \cdot fy}{\sqrt{f'c \cdot psi}} \qquad L_{dbc1} = 24.7132 \cdot in$$

$L_{dbmin} := 0.0003 \cdot \frac{in^2}{lb} \cdot \left(d_{bpier} \cdot fy\right)$ $L_{dbmin} = 20.304 \cdot in$

$L_{dbc} := if\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right)$ $L_{dbc} = 24.7132 \cdot in$

Available Length in Pier: $L_{pier} := L_p - 3 \cdot in$ $L_{pier} = 75 \cdot in$

Available Length in Pad: $L_{pad} := T_f - 3 \cdot in$ $L_{pad} = 33 \cdot in$

Available Length: $L_{total} := L_{pad} + L_{pier}$ $L_{total} = 108 \cdot in$

$L_{tension} := if\left(L_{total} > L_{dbt}, \text{"Okay"}, \text{"No Good"}\right)$ $L_{tension} = \text{"Okay"}$

$L_{compression} := if\left(L_{total} > L_{dbc}, \text{"Okay"}, \text{"No Good"}\right)$ $L_{compression} = \text{"Okay"}$

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2143

FA#: 10035018
USID: 5775

Gilberts Corner
46 Fenwood Lane
Wilton, CT 06897

April 19, 2018

Centerline Communications Project Number: 950006-114

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**15.90 %**

April 19, 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: **CT2143 – Gilberts Corner**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **46 Fenwood Lane, Wilton, 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 **46 Fenwood Lane, Wilton, 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
LTE	700 MHz (Band 14)	4	40
LTE	2100 MHz (AWS)	4	30
LTE	850 MHz	2	40
LTE	700 MHz	2	40
LTE	2300 MHz (WCS)	4	30
LTE	1900 MHz (PCS)	4	40

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	163
A	2	Kathrein 800-10965	163
A	3	Quintel QS66512-2	163
B	1	Powerwave 7770	163
B	2	Kathrein 800-10965	163
B	3	Quintel QS66512-2	163
C	1	Powerwave 7770	163
C	2	Kathrein 800-10965	163
C	3	Quintel QS66512-2	163

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	11.4	2	60	828.23	0.21
Antenna A2	Kathrein 800-10965	700 MHz / 2100 MHz (AWS)	12.65 / 15.95	8	280	7,667.84	1.61
Antenna A3	Quintel QS66512-2	850 MHz / 700 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	11.35 / 10.85 / 14.85 / 13.85	12	440	9,613.10	1.69
						Sector A Composite MPE%	**3.51**
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.21
Antenna B2	Kathrein 800-10965	700 MHz / 2100 MHz (AWS)	12.65 / 15.95	8	280	7,667.84	1.61
Antenna B3	Quintel QS66512-2	850 MHz / 700 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	11.35 / 10.85 / 14.85 / 13.85	12	440	9,613.10	1.69
						Sector B Composite MPE%	**3.51**
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.21
Antenna C2	Kathrein 800-10965	700 MHz / 2100 MHz (AWS)	12.65 / 15.95	8	280	7,667.84	1.61
Antenna C3	Quintel QS66512-2	850 MHz / 700 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	11.35 / 10.85 / 14.85 / 13.85	12	440	9,613.10	1.69
						Sector C Composite MPE%	**3.51**

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	**3.51 %**
CL&P	0.21 %
Sprint	1.49 %
T-Mobile	3.22 %
State Police	3.61 %
NEU	0.49 %
WPD	0.23 %
DEA	1.28 %
WTR	0.11 %
USS	1.15 %
FCP	0.27 %
DHS	0.32 %
DOE	0.01 %
Site Total MPE %:	**15.90 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.51 %
AT&T Sector B Total:	3.51 %
AT&T Sector C Total:	3.51 %
Site Total:	15.90 %

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	163	1.21	850 MHz	567	0.21%
AT&T 700 MHz LTE (Antenna 2)	4	736.31	163	4.30	700 MHz	467	0.92%
AT&T 2100 MHz (AWS) LTE (Antenna 2)	4	1,180.65	163	6.89	2100 MHz (AWS)	1000	0.69%
AT&T 850 MHz LTE (Antenna 3)	2	545.83	163	1.59	850 MHz	567	0.28%
AT&T 700 MHz LTE (Antenna 3)	2	486.47	163	1.42	700 MHz	467	0.30%
AT&T 2300 MHz (WCS) LTE (Antenna 3)	4	916.48	163	5.35	2300 MHz (WCS)	1000	0.53%
AT&T 1900 MHz (PCS) LTE (Antenna 3)	4	970.64	163	5.66	1900 MHz (PCS)	1000	0.57%
						Total:	**3.51%**

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:	3.51 %
Sector B:	3.51 %
Sector C:	3.51 %
AT&T Maximum Total (per sector):	3.51 %
Site Total:	15.90 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.90 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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

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Brian Benito, Planning Specialist
CT Department of Emergency Services
1111 County Club Road
Middletown, CT 06457

9590 9402 1864 6104 9435 52

2. Article Number *(Transfer from service label)*

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X RECEIVED BY STATE OF CT

☐ Agent
☐ Addressee

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C. Date of Delivery 4/28/18

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Robert Root, Chief Building Official
Town of Wilton
238 Danbury Road
Wilton, CT 06897

9590 9402 1864 6104 9435 38

2. Article Number *(Transfer from service label)*

7016 3010 0000 7829 1353

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X Phil Damato

☐ Agent
☐ Addressee

B. Received by *(Printed Name)* PHIL DAMATO

C. Date of Delivery 4-30-18

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1. Article Addressed to:

The Honorable Lynne Vanderslice
First Selectwoman, Town of Wilton
Wilton Town Hall
238 Danbury Road
Wilton, CT 06897

9590 9402 1864 6104 9435 07

2. Article Number *(Transfer from service label)*

7016 3010 0000 7829 1346

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X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* PAUL DAMATO

C. Date of Delivery 4-30-18

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If YES, enter delivery address below: ☐ No

3. Service Type

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1. Article Addressed to:

Timothy Bunting, CAZEO
Zoning Enforcement Officer
Town of Wilton
238 Danbury, Road
Wilton, CT 06897

9590 9402 1864 6104 9435 45

2. Article Number *(Transfer from service label)*

7016 3010 0000 7829 1360

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X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* MIKE DAMATO

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