NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

August 16, 2016

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
115 Briar Hill Road, Groton CT 06340
Latitude: 41.3851388
Longitude: -72.0698611
T-Mobile Site#: CTNL223A_L1900

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 177-foot level of the existing 250-foot lattice tower at 115 Briar Hill Road, Groton CT 06340. The tower is owned by Citadel Broadcasting Co. The property is owned by Citadel Broadcasting Co. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 1900/2100 MHz antenna and add (1) hybrid cable. The new antennas would be installed at the 177-foot level of the tower.

Planned Modifications:

Remove: (6) 1-5/8" Coax

Remove and Replace:
(3)AIR21 B4A /B2P Antenna(REMOVE) - (3)AIR32 B66Aa/B2a Antenna **(REPLACE)**

Install New: (1) 1-5/8" Hybrid Cable

Existing to Remain:
(3)AIR21 B2A /B4P Antenna
(1) 1-5/8" Hybrid Cable

This facility was approved by the Town of Groton PZC. File No. 262 – Special permit was approved by the Town of Groton to install new tower, not to exceed 250 feet in height. Please see attached documentation.

NORTHEAST SITE SOLUTIONS

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Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Town Manager Mark R. Oefinger, Elected Official for the Town of Groton, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Mark R. Oefinger- Town Manager - as elected official
Citadel Broadcasting Co - as tower owner
Citadel Broadcasting Co - as property owner

Exhibit A

KQ

TOWN OF GROTON

ZONING COMMISSION

NOTICE OF GRANT OF SPECIAL PERMIT #262

This is to certify that on November 6, 2002 the Zoning Commission of the Town of Groton granted a Special Permit under Section 7.1-41 of the Zoning Regulations as follows:

1. Owner of Record: Citadel Communications (Miguel Nobre, Applicant)

2. Description of the premises: 99 Briar Hill Road

3. Description of the special permit: To allow for a new tower structure for FM radio stations with the following conditions:

    1. Tower height shall not exceed 250 feet (10 feet less than the existing installation).

    2. A subdued, non-reflective grey color will be required for the new tower and tower to remain at the site. Lighting for both towers if required by FAA, shall incorporate white strobe lights during the day and red lighting at night. Any modification to this lighting scheme shall require commission approval.

    3. Technical study information provided shall be endorsed by a State of Connecticut Registered Professional Engineer and address any potential interference problems.

    4. Existing towers slated for removal shall be removed no later than 6 months from the completion of new tower construction.

    5. Repainting of the tower to remain shall be accomplished within 6 months of completion of new tower construction.

ZONING COMMISSION

by Michael J. Murphy

Michael J. Murphy, AICP
Assistant Director of Planning
and Development

Date: November 7, 2002

NOTE: This notice is to be recorded on the Land Records of the Town of Groton, indexed in the grantor's index under the name of the record owner.

Town of Groton

Building Inspection

BUILDING/ZONING PERMIT APPLICATION

Please Print

(office use only)

Permit No. 03-611 Date Permit Issued 11/19/03

Bldg. Zon. C.O. State

Estimated Cost $ 128,378.00 Fee 1300 10 26 20.64 $ 1356.64

Address of Building 99 BRIAR HILL ROAD, GROTON, CT

Zone RU-20 Pin # 1780.19-61-6743

Owner CITADEL COMMUNICATIONS Address 7 GOVERNOR WINTHROP BLVD NEW LONDON, CT. 06320 Ph. # 860.443.1980

Contractor ..... Address .....

Nature of Proposed Work and Use REPLACE EXISTING 250' GUYED TOWER WITH NEW STRUCTURALLY SOUND TOWER

Plans: Yes ☑ No ☐ Type of Construction ..... Residential ☐ Commercial ☑ Size .....

No. of Stories Ø No. of Rooms Ø No. of Baths Ø

Garage Ø Breezeway Ø Fireplace Ø Heat Ø

ZONING PERMIT

(To be filled out in conjunction with a building permit involving any new structure, addition to an existing structure, or change of use.)

Flood Hazard District ..... HDC # ..... ZBA # .....

Site Plan Approval # ..... Special Zoning Permit # .....

Wetlands ..... Coastal Area Management .....

Site Suitability # ..... Sewer # ..... A2 Survey .....

Zoning Official Signature .....

CERTIFICATION: I hereby certify that: ☒ I am the owner of record of the named property or ☐ that the proposed work is authorized by the owner of record and/or I have been authorized to make this application as an authorized agent, and we agree to conform to all applicable laws, codes, regulations and ordinances. All information contained within is true and accurate to the best of my knowledge and belief.

BOB COX	8604431980	
Print Name in Ink	Phone #	Lic. #
Signature (in INK) of Owner/Authorized Agent		10-20-2003 Date
Building Official		11/19/03 Completed Application Received Date

Exhibit B

Back

Parcel Detail

99 BRIAR HILL RD

Property Information

PIN: 178019616743
PROPERTY TYPE: COMMERCIAL
DISTRICT: CENTER GROTON FIRE DISTRICT
OWNER: CITADEL BROADCASTING CO
ACREAGE: 6.1AC.
ZONING: RU-20
USE CODE: MANUFACTURING WAREHOUSE FACILITIES
CT GRAND LIST CODE: INDUSTRIAL
LIVING UNITS: 1
NEIGHBORHOOD: 3100
DEED BOOK/PAGE: 709/691
LAND VALUE: $226,500
BUILDING VALUE: $47,500
TOTAL VALUE: $274,000
GROSS ASSESSED VALUE: $191,800

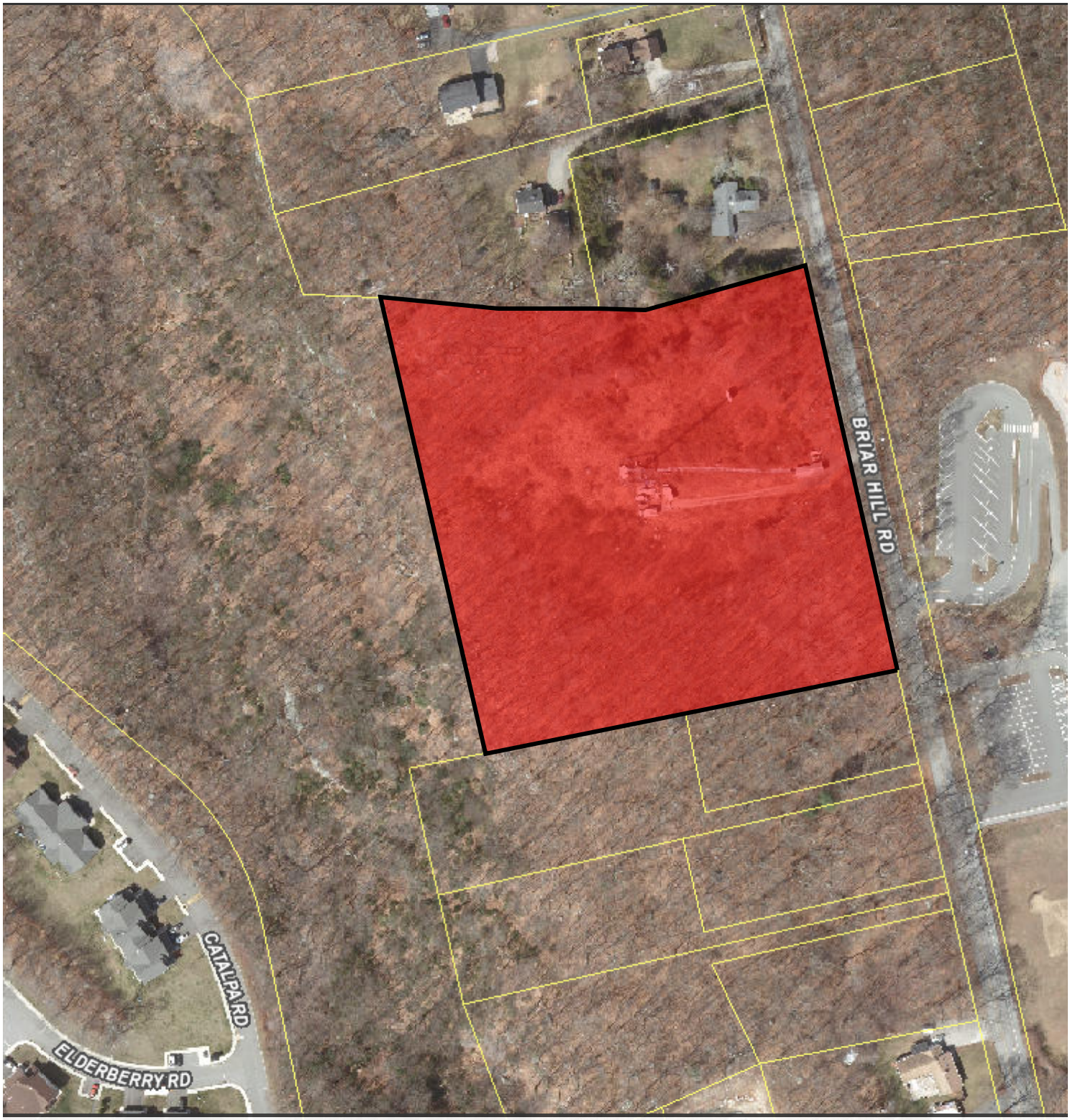
Sales Information

SALE DATE: 4/20/2000
SALE PRICE: $10,000
DEED BOOK/PAGE: 709/691

SALE DATE: 6/3/1997
SALE PRICE: $100,000
DEED BOOK/PAGE: 644/197

Tools

GrotonGIS Lite



99 BRIAR HILL RD

PIN: **178019616743**
TYPE: **COMMERCIAL**
DISTRICT: **CENTER GROTON FIRE DISTRICT**
ACREAGE: **6.1 AC.**
ZONING: **RU-20**

Get More Info | Zoom To Extent | Clear Selection

Exhibit C

T-MOBILE NORTHEAST LLC

SITE #: CTNL223A

SITE NAME: CITADEL GROTON GUYED

SITE ADDRESS:
99 BRIAR HILL RD,
GROTON, CT

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(95FDB CONFIGURATION)

VICINITY MAP

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

WWW.CBYD.COM

CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING

SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC	– RED	SEWER	– GREEN
GAS/OIL	– YELLOW	SURVEY	– PINK
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE metroPCS REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE metroPCS REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE metroPCS REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
17. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT – REV.2 –GUYED TOWER" PREPARED BY ATLANTIS DESIGN GROUP "T–MOBILE SITE ID CTNL223", DATED JULY 20, 2016.

SITE INFORMATION

SITE NUMBER:	CTNL223A
SITE NAME:	CITADEL GROTON GUYED
SITE ADDRESS:	99 BRIAR HILL RD, GROTON, CT
LAT./LONG.:	N 41.3851388 / W –72.0698611
JURISDICTION:	TOWN OF GROTON , CT
PROPERTY OWNER:	CITADEL BROADCASTING CO FRANK DOREMUS CHIEF ENGINEER FOR CUMULUS AND TOWNSQUARE MOBILE – 508–965–7751 OFFICE – 508–999–6690 EXT 3022 EMAIL – FRANK.DOREMUS@TOWNSQUAREMEDIA.COM

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT
2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B USE GROUP: N/A

PROJECT SUB–CONTRACTORS

APPLICANT:	T–MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692–7100
PROJECT MANAGER	LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434–5237
A&E:	ATLANTIS DESIGN GROUP INC. 54 JACQUELINE ROAD, SUITE #7 WALTHAM, MA 02452 (617)–852–3611

SHEET INDEX

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS DESIGN GROUP, INC.
54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617–852–3611
Fax Number : 781–742–2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/20/16	ISSUED FOR REVIEW	A
07/07/16	REVISION	0
07/26/16	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CTNL223A
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT
PROFESSIONAL SEAL

SITE NUMBER
CTNL223A
SITE NAME
CITADEL GROTON GUYED
SITE ADDRESS
99 BRIAR HILL RD,
GROTON, CT

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
   B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
   C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
   D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
   E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
   F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
   A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
   B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
   A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
   B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
   C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
   D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
   E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:
   A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
   A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT metroPCS AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
   B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
   A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
   B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
   C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
   D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
   E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "metroPCS". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
   F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
   G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
   H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
   J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
   K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.
   L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
   M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
   N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
   O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
   P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
   A. GENERAL ELECTRIC COMPANY
   B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
   A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
   B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
   A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
   A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

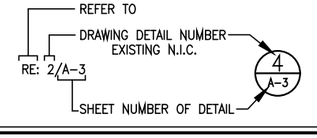
1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ARCHITECTURAL SYMBOLS

STORAGE
38

3

DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

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54 Jacqueline Road, Suite #7
Waltham, MA 02452
Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
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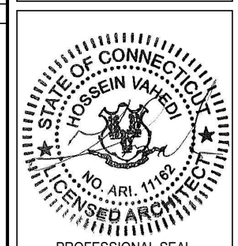
07/07/16	REVISION	0
07/26/16	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO: CTNL223A
DRAWN BY: FG
CHECKED BY: KM

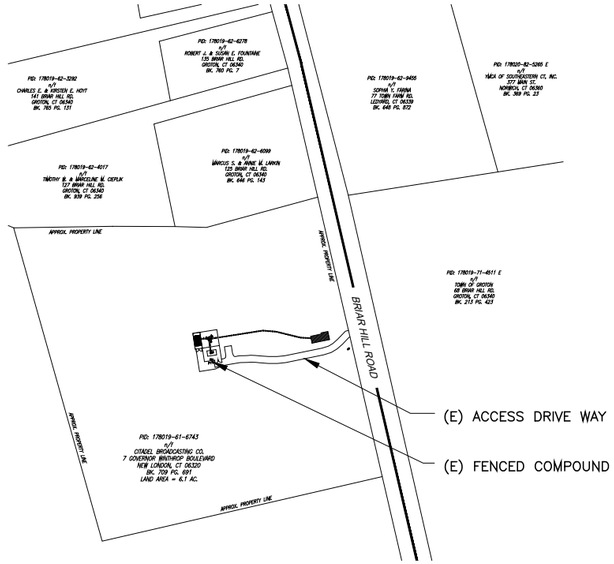


PROFESSIONAL SEAL

SITE NUMBER
CTNL223A
SITE NAME
CITADEL GROTON GUYED
SITE ADDRESS
99 BRIAR HILL RD,
GROTON, CT

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

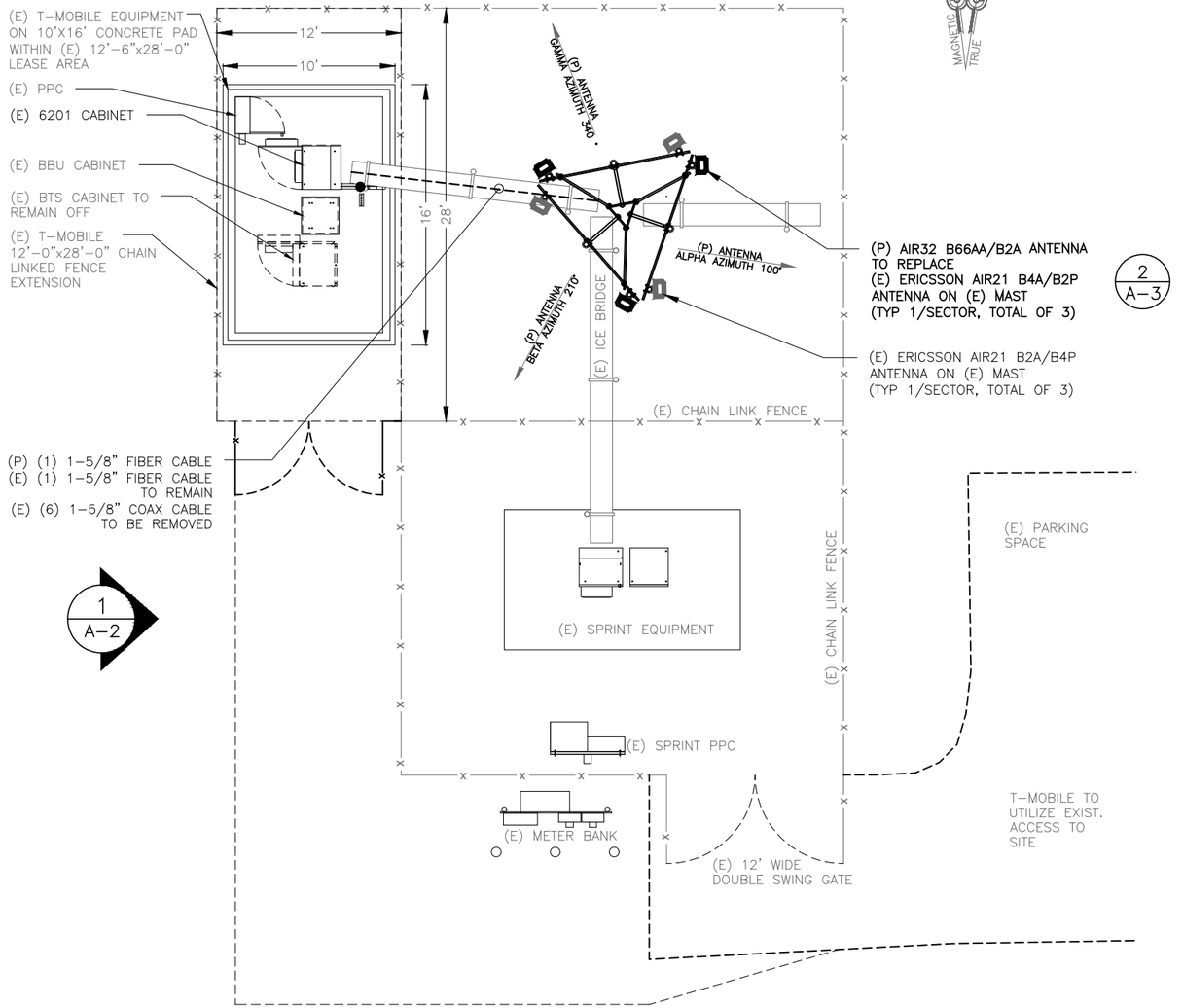
SHEET NUMBER
N-1



KEY PLAN (1 / A–1)

SCALE: N.T.S.

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT – REV.2 –GUYED TOWER" PREPARED BY ATLANTIS DESIGN GROUP "T–MOBILE SITE ID CTNL223", DATED JULY 20, 2016.



2 / A–3

1 / A–2

SITE PLAN (2 / A–1)

SCALE: 1" = 10' (11x17)
1" = 5' (24x36)

0 10 20 30
SCALE 1"=10' (11x17)
1"=5' (24x36)

GENERAL SITE NOTES:

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS DESIGN GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.

2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.

3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.

4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.

5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.

6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.

7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- BOARD ON BOARD FENCE
- DECIDUOUS TREES/SHRUBS
- EVERGREEN TREES/SHRUBS
- TREE LINE
- UTILITY POLE
- (E) EXISTING
- (N) NEW
- (P) PROPOSED
- (F) FUTURE
- PROP. LTE ANTENNA
- PROP. UMTS/GSM ANTENNA
- EX. GSM ANTENNA
- EX. UMTS ANTENNA

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DEPT.	DATE	APP'D	REVISIONS
RFE.			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CTNL223A
DRAWN BY:	FG
CHECKED BY:	KM

STATE OF CONNECTICUT · HOSSEIN VAHEDI · NO. ARI. 11162 · LICENSED ARCHITECT

PROFESSIONAL SEAL

SITE NUMBER
CTNL223A
SITE NAME
CITADEL GROTON GUYED
SITE ADDRESS
99 BRIAR HILL RD,
GROTON, CT

SHEET TITLE
KEY PLAN
AND
SITE PLAN

SHEET NUMBER
A-1

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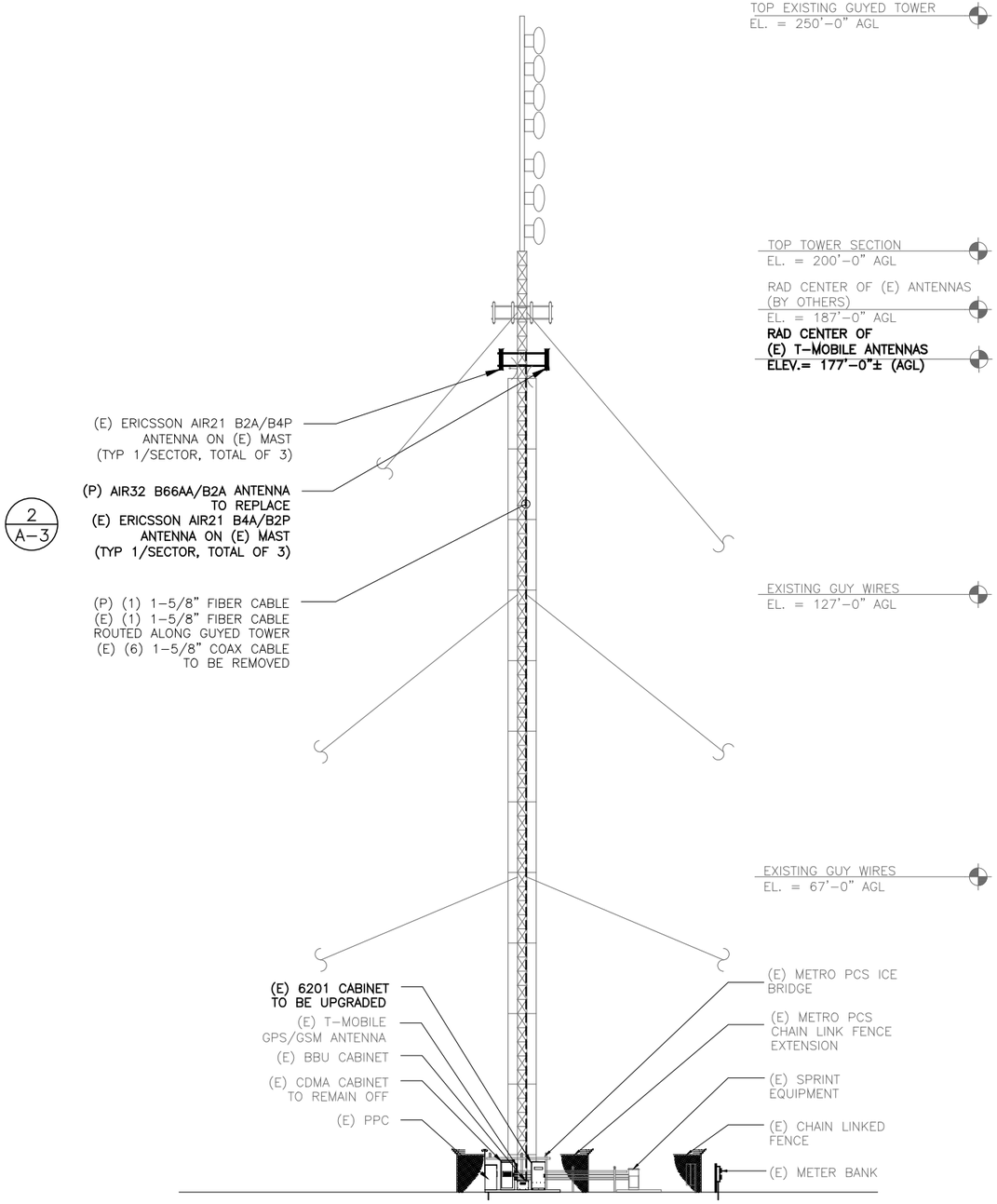

ELEVATION

SCALE: 1" = 30'-0" (11x17)

2
A-2

0 30 60 90

SCALE 1"=30' (11x17)
1"=15' (24x36)

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ZONING			
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SHEET TITLE
ELEVATION

SHEET NUMBER
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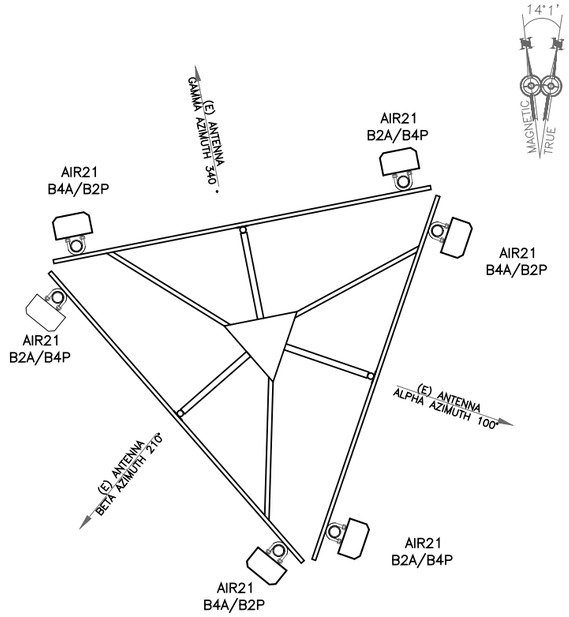
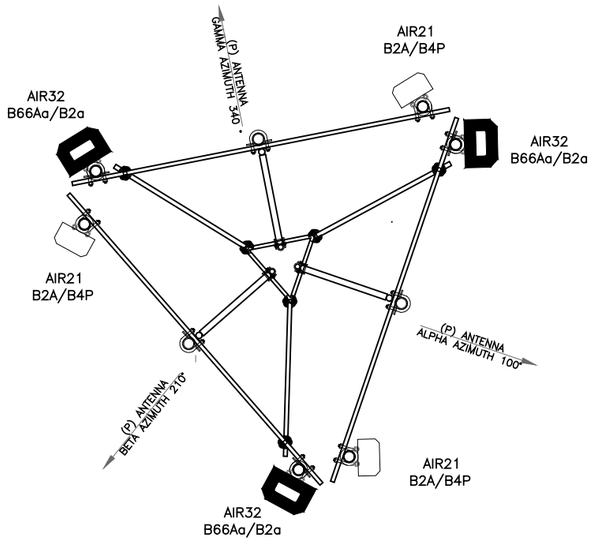


EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

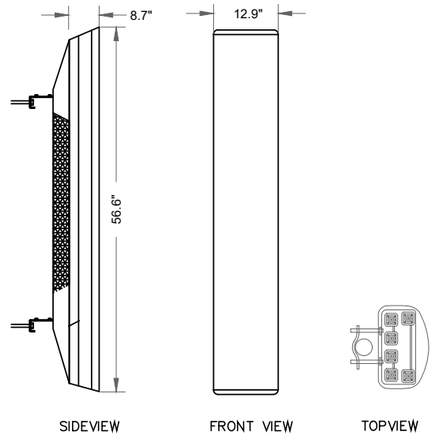
ANTENNA PLAN

1 / A-3

SCALE: 1" = 4'-0" (11x17)
1" = 2'-0" (24x36)

0 4 8 12

SCALE 1"=4' (11x17)
1"=2' (24x36)



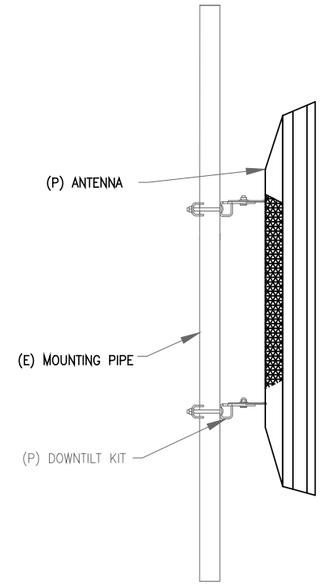
MANUFACTURER: ERICSSON
MODEL NO.:ERICSSON AIR32 AIR32 B66Aa/B2a
DIMENSIONS – HxWxD, (IN) 56.6"x12.9"x8.7"

ERICSSON AIR32 B66Aa/B2a ANTENNA DETAILS

SCALE: N.T.S

2 / A-3

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT – REV.2 –GUYED TOWER" PREPARED BY ATLANTIS DESIGN GROUP "T–MOBILE SITE ID CTNL223", DATED JULY 20, 2016.



ANTENNA MOUNT DETAILS

SCALE: N.T.S

3 / A-3

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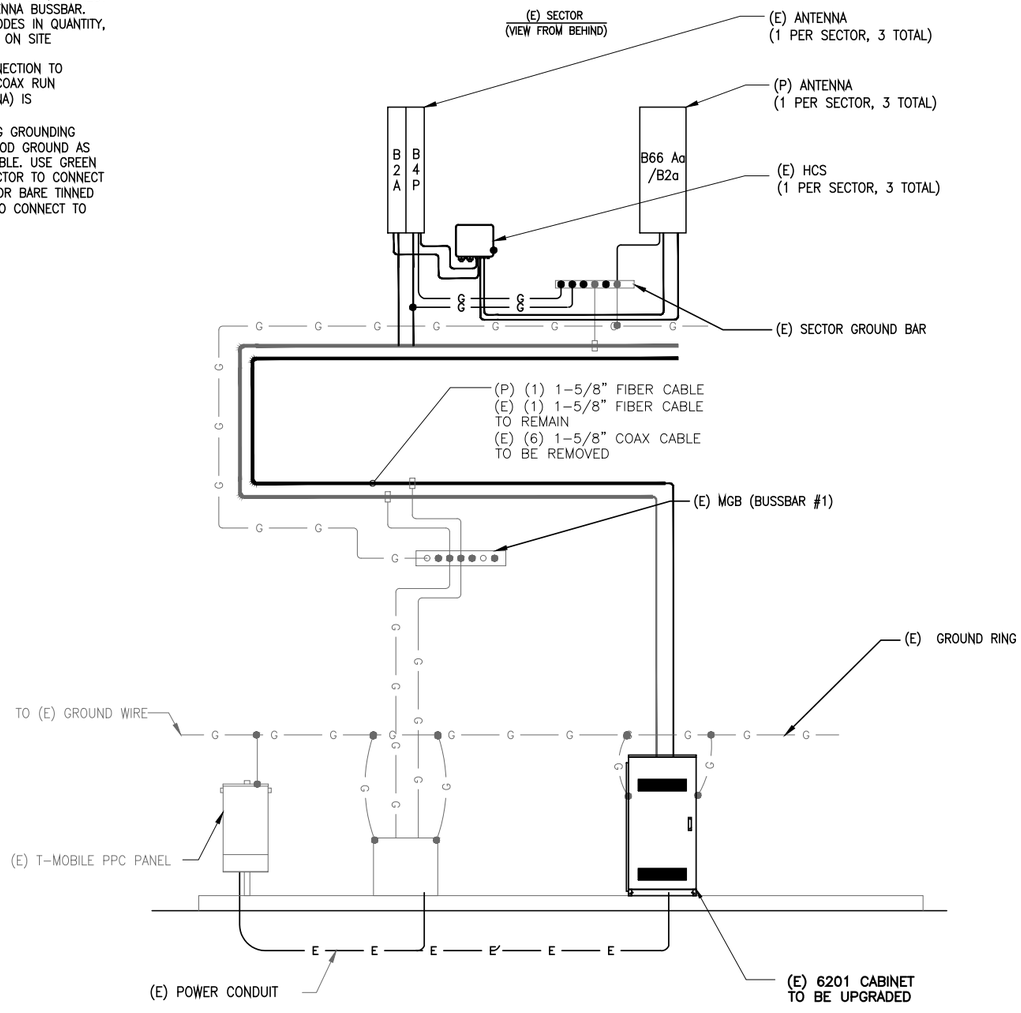
SHEET TITLE
ANTENNA PLAN
AND
DETAILS

SHEET NUMBER
A-3

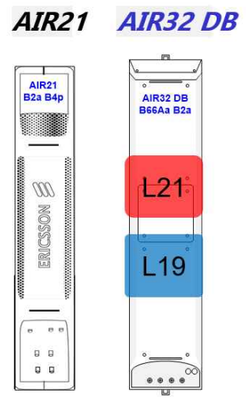
NOTES:
A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".
E. GROUND HCS BOX W/ #2AWG GROUNDING CONDUCTOR ATTACHED TO GOOD GROUND AS DIRECT AND SHORT AS POSSIBLE. USE GREEN STRANDED INSULATED CONDUCTOR TO CONNECT TO BUSSBAR/GROUND HALO OR BARE TINNED SOLID COPPER CONDUCTOR TO CONNECT TO GROUND RING.



GROUNDING AND ONE LINE DIAGRAM

1
E-1

SCALE: N.T.S



TRUNK FIBER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO 7/8" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN ¾" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
11. MAXIMUM HANGER SPACING 3FT (0.9 M).

HYBRID FIBER/POWER JUMPER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A 3/8" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN ¾" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

95FDB CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM

2
E-1

SCALE: N.T.S

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Phone number: 617-852-3611
Fax Number : 781-742-2247

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/20/16	ISSUED FOR REVIEW	A
07/07/16	REVISION	0
07/26/16	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

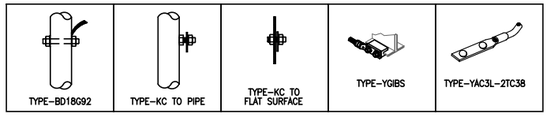
PROJECT NO: CTNL223A
DRAWN BY: FG
CHECKED BY: KM

STATE OF CONNECTICUT
HOSSEIN VAHEDI
NO. ARI. 11162
LICENSED ARCHITECT
PROFESSIONAL SEAL

SITE NUMBER
CTNL223A
SITE NAME
CITADEL GROTON GUYED
SITE ADDRESS
99 BRIAR HILL RD,
GROTON, CT

SHEET TITLE
GROUNDING AND ONE LINE DIAGRAM

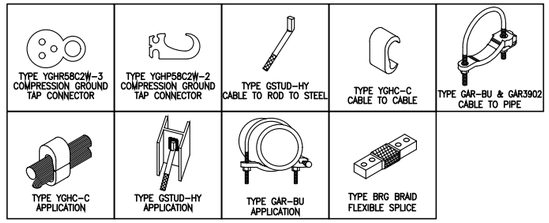
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 E-2

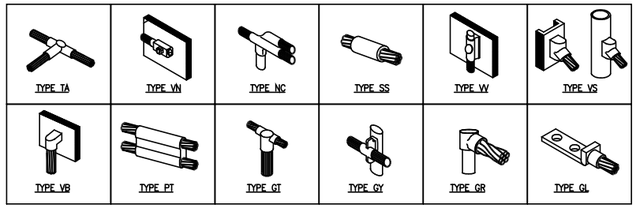
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 E-2

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 E-2

SCALE: N.T.S

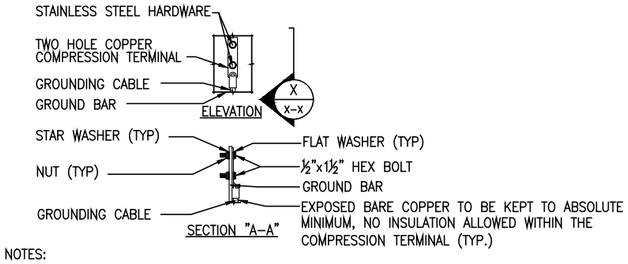
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A	A, C, OR D	A	
MASTER GROUND BAR	C	A	A				
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D				
GROUND RING	C		C				C

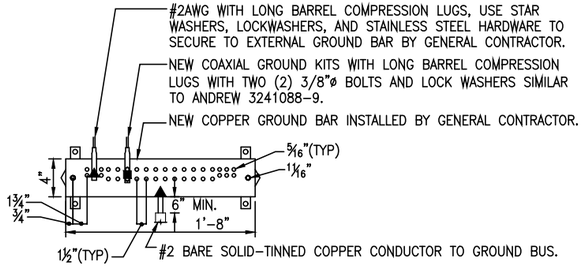
GROUNDING TERMINATION MATRIX

7 E-2

SCALE: N.T.S



NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

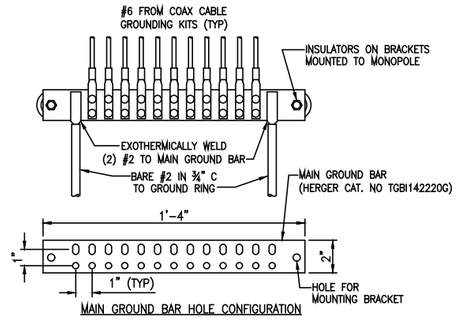


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 E-2

SCALE: N.T.S

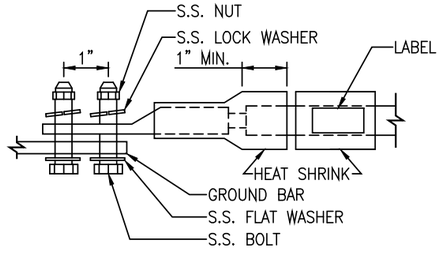


MAIN GROUND BAR HOLE CONFIGURATION

GROUND BAR DETAIL

5 E-2

SCALE: N.T.S



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. ⅜"ø OR LARGER.
3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

GROUND BAR DETAIL

6 E-2

SCALE: N.T.S

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Phone number: 617-852-3611
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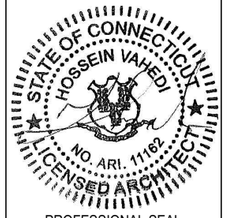
07/26/16	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CTNL223A
DRAWN BY:	FG
CHECKED BY:	KM



PROFESSIONAL SEAL

SITE NUMBER
CTNL223A
SITE NAME
CITADEL GROTON GUYED
SITE ADDRESS
99 BRIAR HILL RD,
GROTON, CT

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit D

STRUCTURAL ANALYSIS REPORT – REV.2
GUYED TOWER

ATLANTIS DESIGN GROUP, INC.

Prepared For:

T-Mobile

35 Griffin Road South
Bloomfield, CT 06002

Site ID: CTNL223A
Site Name: Citadel Groton Guyed
115 Briar Hill Road
Groton, CT 06340

July 20, 2016

Submitted By:

Atlantis Design Group, Inc.
54 Jacqueline Road, Suite #7
Waltham, Massachusetts 02452
Phone: 617-852-3611

Prepared For:

35 Griffin Road South
Bloomfield, CT 06002

RESULT: PASS (80.4%)

Site ID: CTNL223A
Site Name: Citadel Groton Guyed
115 Briar Hill Road
Groton, CT 06340

Prepared By:

Destek Engineering, LLC
Professional Engineering Corporation
License # PEC 001429

07-20-2016

Ahmet Colakoglu, P.E.
Connecticut Professional Engineer
License No: 27057

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 250 feet tall guyed tower, located at 115 Briar Hill Road, Groton, CT for additions and alterations proposed by T-Mobile.

The structural analysis is based on the following documentation provided to Destek Engineering, LLC (Destek):

- Loading Email by Atlantis Design Group, Inc., dated 07/19/2016.
- CDs prepared by Atlantis Design Group, Inc., dated 07/07/2016.
- Structural Analysis Report by Destek Engineering, LLC, dated 07/10/2015.

1.1 STRUCTURE

The structure is a 200'-0" tall guyed, structural steel lattice tower with a 50'-0" long, 12" diameter pipe extension, bringing the total height of the structure to approximately 250'-0", with a width of 3' for the height of the lattice portion. Solid round legs are "K"-braced throughout the height of the lattice portion. The lattice portion is guyed at (3) elevations above grade; 66.75', 126.75', and 186.75', terminated approximately 160' away from the centerline of the structure. Please refer to the software output in Appendix A, for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of T-Mobile Appurtenances:

Sector	Rad Center (ft)	Antenna & TMA	Mount Type	Feedlines
Alpha, Beta & Gamma	177.0	(3) Ericsson AIR21 B2A/B4P (3) Ericsson AIR21 B4A/B2P	(3) Sector Mount	(1) 1-5/8'' Fiber Cable (6) 1-5/8'' Coax Cable

Proposed and Final Configuration of T-Mobile Appurtenances:

Sector	Rad Center (ft)	Antenna & TMA	Mount Type	Feedlines
Alpha, Beta & Gamma	177.0	(3) Ericsson AIR21 B2A/B4P (3) Ericsson AIR32 B66AA/B2A	(3) Sector Mount	(2) 1-5/8'' Fiber Cable

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Proposed and Final Configuration of T-Mobile Appurtenances:

Rad Center (ft)	Antenna & TMA	Mount Type	Feedlines
250.0	(1) 4' Lightning Rod (1) Beacon	Pole Mounted	(1) 3/4" Conduit
237.5	(1) 6810	(1) Pole Mount	(1) 1-5/8"
215.0	(1) 6810-2	(1) Pole Mount	(1) 1-5/8"
199.0	(1) PR-950 Grid Dish	Leg Mounted	(1) 1-5/8"
187.0	(2) DB844G65ZAXY (1) DB980H90E-M (2) APXVSPP18-C (1) KMW – ET-XU-42-15-37-18 (3) 1900 MHz RRH (3) 800 MHz RRH (3) APXV9TM14-ALU-120	(1) Delta Mount	(6)1-5/8" + (3) 1-1/4" Hybrid + (1) 5/8" Hybrid
172.0	(1) PR-950 Grid Dish	Leg Mounted	(1) 7/8"
150.0	(1) 4' Grid Dish	Leg Mounted	(1) 1/2"
130.0	(1) 8' Omni	(1) Standoff Mount	(1) 7/8"
123.0	(3) Beacon Spurs	Leg Mounted	(1)
170.0-10.0	(3) Tuning Wires	Leg Mounted	-

3.0 CODES AND LOADING

The tower was analyzed per *TIA/EIA-222-F* as referenced by *2005 Connecticut State Building Code with all of the adopted Amendments and Supplements*. The following wind loading was used in compliance with the standard:

- Basic wind speed 85 mph without ice (W_o)
- Basic wind speed 38 mph with 3/4" radial escalating ice (W_i)

The following load combinations were used with wind blowing at 0^o, 60^o and 90^o, measured from a line normal to the face of the tower.

- $D + W_o$
- $D + W_i + I$

D: Dead Load
W_o: Wind Load, without ice
W_i: Wind Load with ice
I: Ice Gravity Load

DESTEK ENGINEERING, LLC
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4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure and the foundation system are assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed additions and alterations. Any deviation of the proposed equipment and placement, etc., will require Destek to generate an additional structural analysis.

5.0 ANALYSIS AND ASSUMPTIONS

The tower was analyzed by utilizing tnxTower, a non-linear, three-dimensional, finite element-analysis software package, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix A of this report.

6.0 RESULTS AND CONCLUSION

Based on an analysis per *TIA/EIA-222-F*, the existing tower has **adequate** structural capacity for the proposed changes by T-Mobile. For the aforementioned load combinations, tower diagonals between 180 and 200 feet are stressed to a maximum of **80.4%** of their allowable capacity. Tower legs, horizontals, guys, and the pole extension were found stressed to maximums of **65.4%**, **14.0%**, **78.5%**, and **66.5%** of their respective allowable capacities.

By comparing the reactions with the design reactions, the foundation is found to have **adequate** capacity for the proposed changes by T-Mobile.

Reaction Comparison:

Maximums	Destek Analysis	Design Analysis	Comparison
Base Compression (kips)	82.5	101.0	81.6%
Anchor Shear (kips)	29.1	42.6	68.3%
Anchor Uplift (kips)	27.5	39.1	70.3%

Therefore, the proposed additions and alterations by T-Mobile **can** be implemented as intended with the conditions outlined in this report.

Should you have any questions about this report, please contact us at (617) 852-3611.

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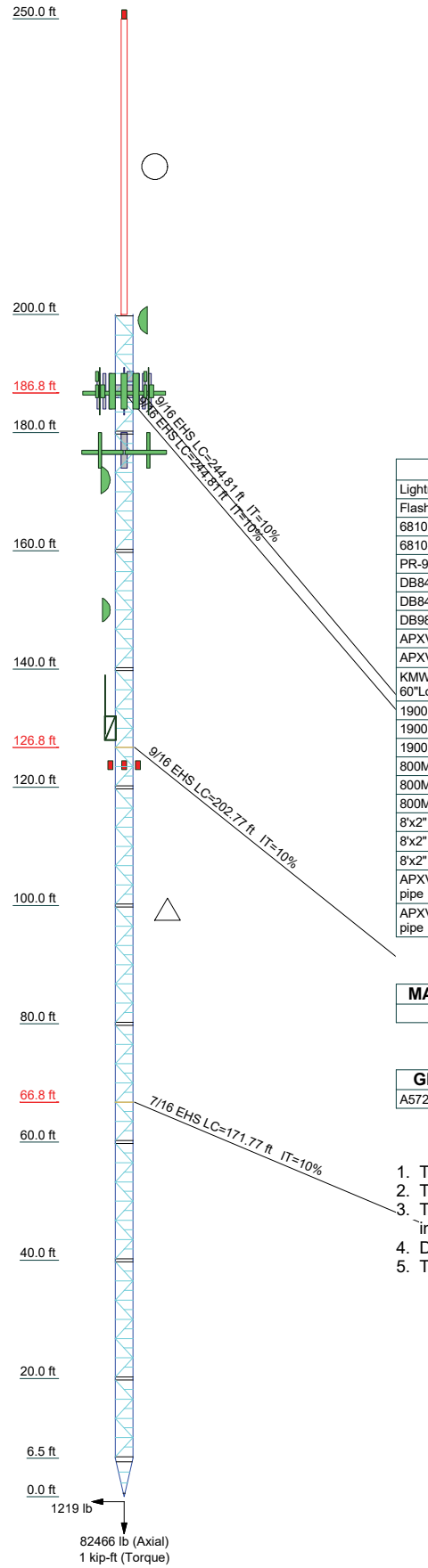
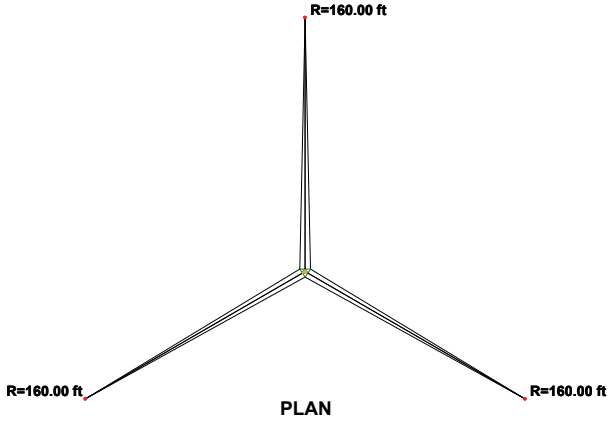
APPENDIX A
SOFTWARE OUTPUT

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	L1
Legs		SR 2 1/4					SR 2					P12x.5
Leg Grade						A572-50						A53-B-35
Diagonals	N.A.	SR 1 1/4					SR 1					N.A.
Diagonal Grade	N.A.					A36						N.A.
Top Girts	8x3/8					SR 7/8					L3x3x3/8	N.A.
Bottom Girts	8x3/8					SR 7/8						N.A.
Horizontals	8x3/8					SR 7/8						N.A.
Sec. Horizontals	N.A.					SR 7/8						N.A.
Top Guy Pull-Offs			N.A.		3 1/2x1 3/8		N.A.	3 1/2x1 3/8	N.A.		SR 1	N.A.
Face Width (ft)											3	1.0625
# Panels @ (ft)	A						58 @ 3.25					N.A.
Weight (lb)	479.6	917.6	1051.6	1061.6	1206.3	1061.6	1051.6	1206.3	1051.6	1051.6	1497.7	3437.6





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	252	APXV9TM14-ALU-120 with mount pipe	187
Flash Beacon Lighting	250	TD-RRH8x20	187
6810	237.5	TD-RRH8x20	187
6810-2	215	TD-RRH8x20	187
PR-950	199	Pirod Delta Mount (3)	187
DB844G65ZAXY w/Mount Pipe	187	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	177
DB844G65ZAXY w/Mount Pipe	187	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	177
DB980H90E-M w/Mount Pipe	187	AIR -32 B2A/B66AA w/ Mount Pipe	177
APXVSPP18-C w/ Mount Pipe	187	AIR -32 B2A/B66AA w/ Mount Pipe	177
APXVSPP18-C w/ Mount Pipe	187	AIR -32 B2A/B66AA w/ Mount Pipe	177
KMW - ET-XU-42-15-37-18 w/ 2"MP 60"Long	187	Sabre 12' T-Boom (1)	177
1900MHz 4X40W RRH	187	Sabre 12' T-Boom (1)	177
1900MHz 4X40W RRH	187	Sabre 12' T-Boom (1)	177
1900MHz 4X40W RRH	187	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	177
800MHZ 2X50W RRH	187	PR-950	172
800MHZ 2X50W RRH	187	4' Grid Dish	150
800MHZ 2X50W RRH	187	2' standoff	130
8'x2" Antenna Mount Pipe	187	8' Omni	130
8'x2" Antenna Mount Pipe	187	Small Beacon	123
8'x2" Antenna Mount Pipe	187	Small Beacon	123
APXV9TM14-ALU-120 with mount pipe	187	Small Beacon	123
APXV9TM14-ALU-120 with mount pipe	187		

SYMBOL LIST

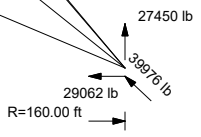
MARK	SIZE	MARK	SIZE
A	4 @ 1.77778		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 80.4%



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Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: ***CTNL223A***			
Project: ***1664053***			
Client: Atlantis Design Group	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 07/19/16	Scale: NTS	
Path: Z:\Projects\2016\64 - Atlantis Design Group\053 - CTNL223A\Revision 2\tnxTower\CTNL223A Rev. 2.eri		Dwg No. E-1	

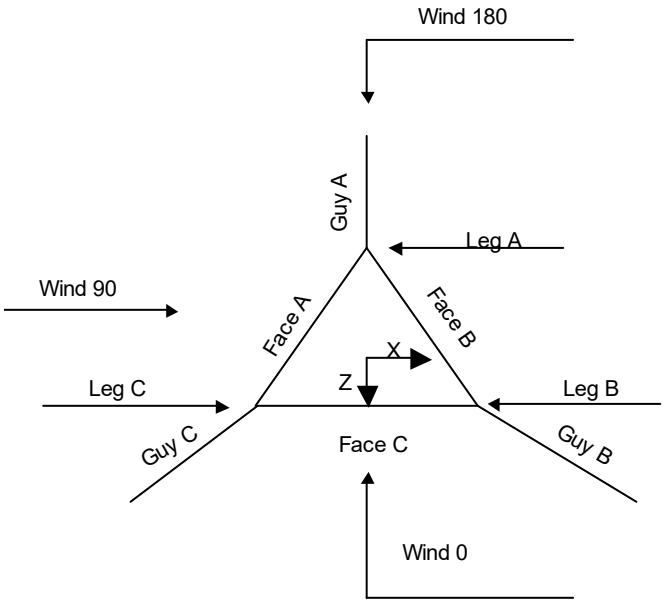
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 250.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.00 ft at the top and tapered at the base.
An index plate is provided at the 3x guyed -tower connection.
There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

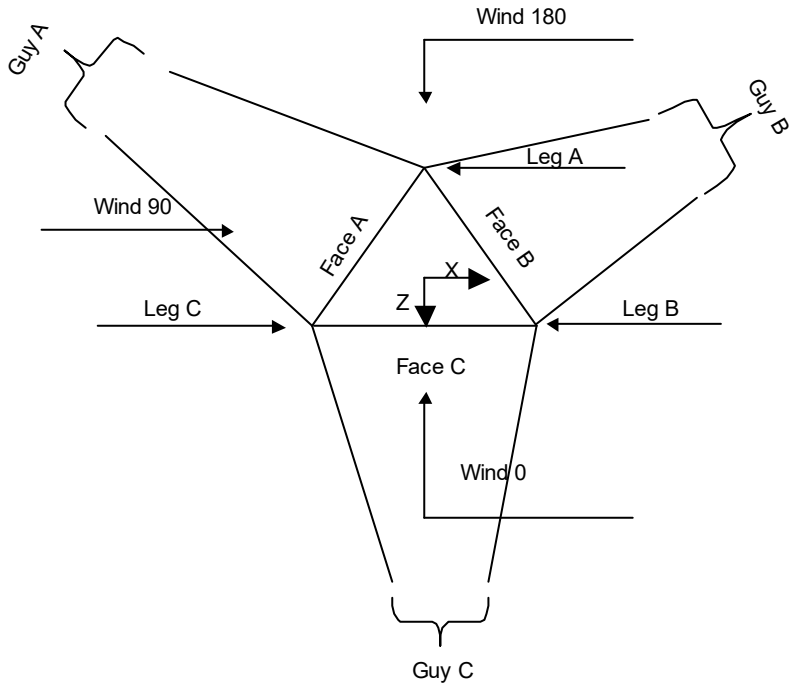
Tower is located in New London County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.0664.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	250.00-200.00	50.00	P12x.5	A53-B-35 (35 ksi)	

Tower Elevation *ft*	*Gusset Area (per face)* ft^2	*Gusset Thickness* *in*	*Gusset Grade*	*Adjust. Factor* A_f	*Adjust. Factor* A_r	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals* *in*	*Double Angle Stitch Bolt Spacing Horizontals* *in*	*Double Angle Stitch Bolt Spacing Redundants* *in*
L1 250.00-200.00				1	1	1.05			

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	200.00-180.00			3.00	1	20.00
T2	180.00-160.00			3.00	1	20.00
T3	160.00-140.00			3.00	1	20.00
T4	140.00-120.00			3.00	1	20.00
T5	120.00-100.00			3.00	1	20.00
T6	100.00-80.00			3.00	1	20.00
T7	80.00-60.00			3.00	1	20.00
T8	60.00-40.00			3.00	1	20.00
T9	40.00-20.00			3.00	1	20.00
T10	20.00-6.50			3.00	1	13.50
T11	6.50-0.00			3.00	1	6.50

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	200.00-180.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T2	180.00-160.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T3	160.00-140.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T4	140.00-120.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T5	120.00-100.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T6	100.00-80.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T7	80.00-60.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T8	60.00-40.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T9	40.00-20.00	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T10	20.00-6.50	3.25	K Brace Left	No	Yes+Steps	3.0000	3.0000
T11	6.50-0.00	1.78	K Brace Left	No	Yes	7.0000	7.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 200.00-180.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T2 180.00-160.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T3 160.00-140.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T4 140.00-120.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T5 120.00-100.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T6 100.00-80.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T7 80.00-60.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T8 60.00-40.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T9 40.00-20.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T10 20.00-6.50	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T11 6.50-0.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round		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 200.00-180.00	Equal Angle	L3x3x3/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 180.00-160.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 160.00-140.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T5 120.00-100.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 20.00-6.50	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 6.50-0.00	Flat Bar	8x3/8	A36 (36 ksi)	Flat Bar	8x3/8	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 200.00-180.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T5 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 20.00-6.50	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 6.50-0.00	None	Flat Bar		A36 (36 ksi)	Flat Bar	8x3/8	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 200.00-180.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 180.00-160.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 160.00-140.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T4 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 120.00-100.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T8 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 20.00-6.50	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 6.50-0.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in

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 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 20.00-6.50	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 6.50-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 200.00-180.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 160.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 140.00-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 120.00-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 100.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 60.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 40.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 20.00-6.50	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 6.50-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		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
T1 200.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.00-6.50	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 6.50-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		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 200.00-180.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T5 120.00-100.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T6 100.00-80.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T7 80.00-60.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T8 60.00-40.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T9 40.00-20.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T10 20.00-6.50	Flange	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	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.
T11 6.50-0.00	Flange	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
186.75	EHS	A	9/16	3500.00	10%	21000	0.671	244.61	160.00	0.0000	0.00	100%
		B	9/16	3500.00	10%	21000	0.671	244.61	160.00	0.0000	0.00	100%
		C	9/16	3500.00	10%	21000	0.671	244.61	160.00	0.0000	0.00	100%
126.75	EHS	A	9/16	3500.00	10%	21000	0.671	202.60	160.00	0.0000	0.00	100%
		B	9/16	3500.00	10%	21000	0.671	202.60	160.00	0.0000	0.00	100%
		C	9/16	3500.00	10%	21000	0.671	202.60	160.00	0.0000	0.00	100%
66.75	EHS	A	7/16	2080.00	10%	21000	0.399	171.63	160.00	0.0000	0.00	100%
		B	7/16	2080.00	10%	21000	0.399	171.63	160.00	0.0000	0.00	100%
		C	7/16	2080.00	10%	21000	0.399	171.63	160.00	0.0000	0.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
186.75	Torque Arm	6.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
126.75	Corner						
66.75	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
186.75	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Solid Round	1
126.75	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3 1/2x1 3/8
66.75	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3 1/2x1 3/8

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
186.75	164.13	164.13	164.13		5.64 4.1 sec/pulse	5.64 4.1 sec/pulse	5.64 4.1 sec/pulse	
126.75	135.94	135.94	135.94		3.89 3.4 sec/pulse	3.89 3.4 sec/pulse	3.89 3.4 sec/pulse	
66.75	68.48	68.48	68.48		2.81 2.9 sec/pulse	2.81 2.9 sec/pulse	2.81 2.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
186.75	Yes	Yes	1	1	1	1	1	1
126.75	No	No			1	1	1	1
66.75	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
186.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1
126.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1
66.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
186.75	A	93.38	25	5	0.8497
	B	93.38	25	5	0.8497
	C	93.38	25	5	0.8497
126.75	A	63.38	22	4	0.8111
	B	63.38	22	4	0.8111
	C	63.38	22	4	0.8111
66.75	A	33.38	19	4	0.7510
	B	33.38	19	4	0.7510
	C	33.38	19	4	0.7510

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
186.75	A	49.7141	3625.20 3500.00	-43.65	2799.59	-2302.71	-4.85	6.98	-8.40
	A	49.7141	3625.20 3500.00	43.65	2799.59	-2302.71	-4.85	-6.98	8.40
	B	49.7141	3625.20 3500.00	2016.03	2799.59	1113.55	9.70	6.98	0.00
	B	49.7141	3625.20 3500.00	1972.38	2799.59	1189.15	-4.85	-6.98	-8.40
	C	49.7141	3625.20 3500.00	-1972.38	2799.59	1189.15	-4.85	6.98	8.40
	C	49.7141	3625.20 3500.00	-2016.03	2799.59	1113.55	9.70	-6.98	0.00
			Sum:	0.00	16797.55	0.00	-0.00	0.00	0.00
126.75	A	38.6897	3584.98 3500.00	0.00	2282.31	-2764.62	-3.95	0.00	0.00
	B	38.6897	3584.98 3500.00	2394.23	2282.31	1382.31	1.98	0.00	-3.42
	C	38.6897	3584.98 3500.00	-2394.23	2282.31	1382.31	1.98	0.00	3.42
			Sum:	0.00	6846.92	-0.00	0.00	0.00	0.00
66.75	A	22.8677	2106.61 2080.00	0.00	847.68	-1928.54	-1.47	0.00	0.00
	B	22.8677	2106.61 2080.00	1670.16	847.68	964.27	0.73	0.00	-1.27
	C	22.8677	2106.61 2080.00	-1670.16	847.68	964.27	0.73	0.00	1.27
			Sum:	0.00	2543.03	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
186.75	A	49.7141	5607.27 5208.58	-66.21	4386.01	-3492.86	-7.60	10.59	-13.16
	A	49.7141	5607.27 5208.58	66.21	4386.01	-3492.86	-7.60	-10.59	13.16
	B	49.7141	5607.27 5208.58	3058.01	4386.01	1689.09	15.19	10.59	0.00
	B	49.7141	5607.27 5208.58	2991.80	4386.01	1803.77	-7.60	-10.59	-13.16
	C	49.7141	5607.27 5208.58	-2991.80	4386.01	1803.77	-7.60	10.59	13.16
	C	49.7141	5607.27 5208.58	-3058.01	4386.01	1689.09	15.19	-10.59	0.00
			Sum:	0.00	26316.05	0.00	-0.00	0.00	0.00
126.75	A	38.6897	5464.92 5207.60	0.00	3541.05	-4162.49	-6.13	0.00	0.00

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		lb	lb	lb	kip-ft	kip-ft	kip-ft
	B	38.6897	5464.92 5207.60	3604.82	3541.05	2081.24	3.07	0.00	-5.31
	C	38.6897	5464.92 5207.60	-3604.82	3541.05	2081.24	3.07	-0.00	5.31
			Sum:	0.00	10623.16	-0.00	0.00	0.00	0.00
66.75	A	22.8677	3355.36 3256.04	0.00	1412.15	-3043.73	-2.45	0.00	0.00
	B	22.8677	3355.36 3256.04	2635.94	1412.15	1521.86	1.22	0.00	-2.12
	C	22.8677	3355.36 3256.04	-2635.94	1412.15	1521.86	1.22	-0.00	2.12
			Sum:	0.00	4236.46	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		lb	lb	lb	kip-ft	kip-ft	kip-ft
186.75	A	49.7141	3625.20 3500.00	-43.65	2799.59	-2302.71	-4.85	6.98	-8.40
	A	49.7141	3625.20 3500.00	43.65	2799.59	-2302.71	-4.85	-6.98	8.40
	B	49.7141	3625.20 3500.00	2016.03	2799.59	1113.55	9.70	6.98	0.00
	B	49.7141	3625.20 3500.00	1972.38	2799.59	1189.15	-4.85	-6.98	-8.40
	C	49.7141	3625.20 3500.00	-1972.38	2799.59	1189.15	-4.85	6.98	8.40
	C	49.7141	3625.20 3500.00	-2016.03	2799.59	1113.55	9.70	-6.98	0.00
			Sum:	0.00	16797.55	0.00	-0.00	0.00	0.00
126.75	A	38.6897	3584.98 3500.00	0.00	2282.31	-2764.62	-3.95	0.00	0.00
	B	38.6897	3584.98 3500.00	2394.23	2282.31	1382.31	1.98	0.00	-3.42
	C	38.6897	3584.98 3500.00	-2394.23	2282.31	1382.31	1.98	0.00	3.42
			Sum:	0.00	6846.92	-0.00	0.00	0.00	0.00
66.75	A	22.8677	2106.61 2080.00	0.00	847.68	-1928.54	-1.47	0.00	0.00
	B	22.8677	2106.61 2080.00	1670.16	847.68	964.27	0.73	0.00	-1.27
	C	22.8677	2106.61 2080.00	-1670.16	847.68	964.27	0.73	0.00	1.27
			Sum:	0.00	2543.03	0.00	0.00	0.00	0.00

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
186.75	A	158.30	186.75	4125	4.80	3915	5.05	3706	5.33	3500	5.64	3297	5.98	3097	6.36	2901	6.78
	B	158.30	186.75	4125	4.80	3915	5.05	3706	5.33	3500	5.64	3297	5.98	3097	6.36	2901	6.78
	C	158.30	186.75	4125	4.80	3915	5.05	3706	5.33	3500	5.64	3297	5.98	3097	6.36	2901	6.78
126.75	A	158.27	126.75	4415	3.09	4106	3.32	3801	3.59	3500	3.89	3206	4.24	2919	4.66	2643	5.13
	B	158.27	126.75	4415	3.09	4106	3.32	3801	3.59	3500	3.89	3206	4.24	2919	4.66	2643	5.13
	C	158.27	126.75	4415	3.09	4106	3.32	3801	3.59	3500	3.89	3206	4.24	2919	4.66	2643	5.13
66.75	A	158.27	66.75	2842	2.06	2584	2.26	2330	2.51	2080	2.81	1837	3.18	1605	3.64	1388	4.20
	B	158.27	66.75	2842	2.06	2584	2.26	2330	2.51	2080	2.81	1837	3.18	1605	3.64	1388	4.20
	C	158.27	66.75	2842	2.06	2584	2.26	2330	2.51	2080	2.81	1837	3.18	1605	3.64	1388	4.20

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
Safety Line 3/8	B	Yes	Ar (CfAe)	200.00 - 6.50	0.0000	-0.1	1	1	0.3750	0.3750		0.22
3/4" Rigid Conduit	C	Yes	Ar (CfAe)	200.00 - 6.50	0.0000	-0.1	1	1	1.0500	1.0500		1.05
3/4" Rigid Conduit ***	C	Yes	Ar (CfAe)	123.00 - 6.50	0.0000	-0.2	1	1	1.0500	1.0500		1.05
LDF7-50A(1-5/8")	C	Yes	Ar (CfAe)	200.00 - 6.50	0.0000	-0.3	1	1	1.9800	1.9800		1.04
LDF7-50A(1-5/8")	B	Yes	Ar (CfAe)	200.00 - 6.50	0.0000	0.4	2	2	1.9800	1.9800		1.04
LDF7-50A(1-5/8")	A	No	Ar (Leg)	187.00 - 6.50	0.0000	-0.25	6	3	1.9800	1.9800		1.04
LDF6-50A(1-1/4")	A	Yes	Ar (CfAe)	187.00 - 6.50	0.0000	0.25	3	3	1.5500	1.5500		0.66
RFFT-36SM-001-xxM(3/8")	A	Yes	Ar (CfAe)	187.00 - 6.50	0.0000	0.4	1	1	0.4000	0.4000		0.30
LDF7-50A(1-5/8")	A	Yes	Ar (CfAe)	177.00 - 6.50	0.0000	-0.35	2	2	1.9800	1.9800		0.82
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	172.00 - 6.50	0.0000	-0.25	1	1	1.1100	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	130.00 - 6.50	0.0000	0.4	1	1	1.1100	1.1100		0.54
1/2 ***	C	Yes	Ar (CfAe)	150.00 - 6.50	0.0000	-0.4	1	1	0.5800	0.5800		0.25
3/8	A	No	Ar (Leg)	170.00 - 6.50	0.0000	-0.5	1	1	0.3750	0.3750		0.26
3/8	B	No	Ar (Leg)	170.00 - 6.50	0.0000	-0.5	1	1	0.3750	0.3750		0.26
3/8	C	No	Ar (Leg)	170.00 - 6.50	0.0000	-0.5	1	1	0.3750	0.3750		0.26

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	250.00-200.00	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
T1	200.00-180.00	A	6.411	0.000	0.000	0.000	59.64

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	10.690	0.000	0.000	0.000	46.00
		C	5.050	0.000	0.000	0.000	41.80
T2	180.00-160.00	A	24.552	0.000	0.000	0.000	200.88
		B	17.750	0.000	0.000	0.000	48.60
		C	6.785	0.000	0.000	0.000	50.88
T3	160.00-140.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	8.633	0.000	0.000	0.000	60.30
T4	140.00-120.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	10.304	0.000	0.000	0.000	71.35
T5	120.00-100.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	12.717	0.000	0.000	0.000	94.60
T6	100.00-80.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	12.717	0.000	0.000	0.000	94.60
T7	80.00-60.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	12.717	0.000	0.000	0.000	94.60
T8	60.00-40.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	12.717	0.000	0.000	0.000	94.60
T9	40.00-20.00	A	26.167	0.000	0.000	0.000	208.40
		B	18.375	0.000	0.000	0.000	51.20
		C	12.717	0.000	0.000	0.000	94.60
T10	20.00-6.50	A	17.663	0.000	0.000	0.000	140.67
		B	12.403	0.000	0.000	0.000	34.56
		C	8.584	0.000	0.000	0.000	63.85
T11	6.50-0.00	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

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	250.00-200.00	A	0.944	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
T1	200.00-180.00	A	0.925	10.000	3.617	0.000	0.000	274.78
		B		23.182	0.000	0.000	0.000	206.78
		C		11.219	0.000	0.000	0.000	152.15
T2	180.00-160.00	A	0.913	42.820	10.333	0.000	0.000	929.93
		B		39.054	0.000	0.000	0.000	220.79
		C		17.742	0.000	0.000	0.000	200.67
T3	160.00-140.00	A	0.899	47.983	10.333	0.000	0.000	957.20
		B		42.360	0.000	0.000	0.000	233.78
		C		25.123	0.000	0.000	0.000	254.85
T4	140.00-120.00	A	0.884	47.524	10.333	0.000	0.000	941.58
		B		41.952	0.000	0.000	0.000	229.35
		C		29.902	0.000	0.000	0.000	304.73
T5	120.00-100.00	A	0.867	46.997	10.333	0.000	0.000	923.84
		B		41.484	0.000	0.000	0.000	224.33
		C		35.825	0.000	0.000	0.000	376.67
T6	100.00-80.00	A	0.846	46.379	10.333	0.000	0.000	903.21
		B		40.934	0.000	0.000	0.000	218.50

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C		35.276	0.000	0.000	0.000	366.97
T7	80.00-60.00	A	0.821	45.625	10.333	0.000	0.000	878.38
		B		40.264	0.000	0.000	0.000	211.52
		C		34.605	0.000	0.000	0.000	355.35
T8	60.00-40.00	A	0.788	44.650	10.333	0.000	0.000	846.78
		B		39.398	0.000	0.000	0.000	202.67
		C		33.739	0.000	0.000	0.000	340.65
T9	40.00-20.00	A	0.750	53.667	0.000	0.000	0.000	776.78
		B		38.375	0.000	0.000	0.000	192.49
		C		32.717	0.000	0.000	0.000	323.77
T10	20.00-6.50	A	0.750	36.225	0.000	0.000	0.000	524.33
		B		25.903	0.000	0.000	0.000	129.93
		C		22.084	0.000	0.000	0.000	218.54
T11	6.50-0.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
L1	250.00-200.00		0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000
T1	200.00-180.00	A	0.175	1.254	0.037	0.086
		B	0.428	2.990	0.090	0.206
		C	0.354	2.418	0.063	0.140
T2	180.00-160.00	A	0.875	5.571	0.000	0.000
		B	0.451	2.992	0.000	0.000
		C	0.452	3.050	0.000	0.000
T3	160.00-140.00	A	0.937	5.829	0.000	0.000
		B	0.451	2.938	0.000	0.000
		C	0.541	3.836	0.000	0.000
T4	140.00-120.00	A	0.937	5.963	0.219	0.466
		B	0.451	2.996	0.105	0.234
		C	0.664	4.996	0.132	0.332
T5	120.00-100.00	A	0.937	5.612	0.000	0.000
		B	0.451	2.810	0.000	0.000
		C	0.841	6.031	0.000	0.000
T6	100.00-80.00	A	0.937	5.477	0.000	0.000
		B	0.451	2.730	0.000	0.000
		C	0.841	5.852	0.000	0.000
T7	80.00-60.00	A	0.937	5.529	0.219	0.454
		B	0.451	2.741	0.105	0.225
		C	0.841	5.829	0.167	0.407
T8	60.00-40.00	A	0.937	5.110	0.000	0.000
		B	0.451	2.515	0.000	0.000
		C	0.841	5.368	0.000	0.000
T9	40.00-20.00	A	0.937	4.845	0.000	0.000
		B	0.451	2.377	0.000	0.000
		C	0.841	5.058	0.000	0.000
T10	20.00-6.50	A	0.735	3.514	0.000	0.000
		B	0.354	1.724	0.000	0.000
		C	0.645	3.622	0.000	0.000
T11	6.50-0.00	A	0.000	0.000	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	250.00-200.00	0.0000	0.0000	0.0000	0.0000
T1	200.00-180.00	2.4859	-0.9680	2.1785	-0.9694
T2	180.00-160.00	0.4354	-3.5007	0.5901	-2.9836
T3	160.00-140.00	0.3858	-3.1258	0.5994	-2.5103
T4	140.00-120.00	0.3165	-2.8105	0.5606	-2.2142
T5	120.00-100.00	0.2928	-2.5103	0.5375	-1.8875
T6	100.00-80.00	0.2928	-2.5103	0.5342	-1.8933
T7	80.00-60.00	0.2817	-2.4679	0.5139	-1.8976
T8	60.00-40.00	0.2928	-2.5103	0.5244	-1.9114
T9	40.00-20.00	0.2928	-2.5103	0.3729	-2.3010
T10	20.00-6.50	0.2775	-2.4143	0.3605	-2.2659
T11	6.50-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Lightning Rod 5/8x4'	C	None		0.0000	252.00	No Ice	0.25	0.25	31.00
						1/2" Ice	0.66	0.66	33.82
						1" Ice	0.97	0.97	39.29
						2" Ice	1.49	1.49	58.83
						4" Ice	2.68	2.68	136.56
Flash Beacon Lighting	B	None		0.0000	250.00	No Ice	2.70	2.70	50.00
						1/2" Ice	3.10	3.10	70.00
						1" Ice	3.50	3.50	90.00
						2" Ice	4.30	4.30	130.00
						4" Ice	5.90	5.90	210.00
***									
6810	B	From Face	3.00 0.00 0.00	0.0000	237.50	No Ice	22.30	22.30	354.00
						1/2" Ice	40.14	40.14	460.20
						1" Ice	57.98	57.98	566.40
						2" Ice	93.66	93.66	778.80
						4" Ice	165.02	165.02	1203.60
6810-2	B	From Face	3.00 0.00 0.00	0.0000	215.00	No Ice	10.80	10.80	247.00
						1/2" Ice	19.44	19.44	321.10
						1" Ice	28.08	28.08	395.20
						2" Ice	45.36	45.36	543.40
						4" Ice	79.92	79.92	839.80
***									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod Delta Mount (3)	C	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	32.94 47.60 62.26 91.58 150.22	32.94 47.60 62.26 91.58 150.22	740.00 1000.00 1260.00 1780.00 2820.00
DB844G65ZAXY w/Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.38 6.07 6.65 7.83 10.34	5.40 6.49 7.30 8.96 12.49	41.55 92.81 150.42 288.32 688.90
DB844G65ZAXY w/Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.38 6.07 6.65 7.83 10.34	5.40 6.49 7.30 8.96 12.49	41.55 92.81 150.42 288.32 688.90
DB980H90E-M w/Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.27 4.86 5.37 6.42 8.86	3.86 4.95 5.75 7.39 10.87	34.05 72.67 117.82 231.39 585.55
APXVSPP18-C w/ Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
APXVSPP18-C w/ Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	82.55 150.56 226.53 405.98 908.95
KMW - ET-XU-42-15-37-18 w/ 2"MP 60"Long	C	From Face	3.00 -2.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.68 9.18 9.68 10.72 12.93	4.50 5.17 5.85 7.27 10.37	78.25 137.30 202.77 355.85 777.80
1900MHz 4X40W RRH	A	From Leg	3.00 1.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	59.50 82.63 109.00 172.22 346.02
1900MHz 4X40W RRH	B	From Leg	3.00 1.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	59.50 82.63 109.00 172.22 346.02
1900MHz 4X40W RRH	C	From Leg	3.00 1.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	59.50 82.63 109.00 172.22 346.02
800MHZ 2X50W RRH	A	From Leg	3.00 1.00 2.50	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.71 2.93 3.41 4.46	2.07 2.27 2.48 2.93 3.93	53.00 74.19 98.39 156.61 317.77
800MHZ 2X50W RRH	B	From Leg	3.00 1.00	0.0000	187.00	No Ice 1/2" Ice	2.49 2.71	2.07 2.27	53.00 74.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			2.50				1" Ice	2.93	2.48	98.39
							2" Ice	3.41	2.93	156.61
							4" Ice	4.46	3.93	317.77
800MHZ 2X50W RRH	C	From Leg	3.00		0.0000	187.00	No Ice	2.49	2.07	53.00
			1.00				1/2" Ice	2.71	2.27	74.19
			2.50				1" Ice	2.93	2.48	98.39
							2" Ice	3.41	2.93	156.61
							4" Ice	4.46	3.93	317.77
8'x2" Antenna Mount Pipe	A	From Leg	3.00		0.0000	187.00	No Ice	1.90	1.90	30.00
			0.00				1/2" Ice	2.73	2.73	44.34
			0.00				1" Ice	3.40	3.40	63.96
							2" Ice	4.40	4.40	119.66
							4" Ice	6.50	6.50	301.15
8'x2" Antenna Mount Pipe	B	From Leg	3.00		0.0000	187.00	No Ice	1.90	1.90	30.00
			0.00				1/2" Ice	2.73	2.73	44.34
			0.00				1" Ice	3.40	3.40	63.96
							2" Ice	4.40	4.40	119.66
							4" Ice	6.50	6.50	301.15
8'x2" Antenna Mount Pipe	C	From Leg	3.00		0.0000	187.00	No Ice	1.90	1.90	30.00
			0.00				1/2" Ice	2.73	2.73	44.34
			0.00				1" Ice	3.40	3.40	63.96
							2" Ice	4.40	4.40	119.66
							4" Ice	6.50	6.50	301.15
***										
APXV9TM14-ALU-120 with mount pipe	A	From Face	3.00		0.0000	187.00	No Ice	8.20	6.75	128.00
			2.00				1/2" Ice	8.85	7.59	201.91
			0.00				1" Ice	9.50	8.43	275.82
							2" Ice	10.80	10.11	423.64
							4" Ice	13.40	13.47	719.28
APXV9TM14-ALU-120 with mount pipe	B	From Face	3.00		0.0000	187.00	No Ice	8.20	6.75	128.00
			2.00				1/2" Ice	8.85	7.59	201.91
			0.00				1" Ice	9.50	8.43	275.82
							2" Ice	10.80	10.11	423.64
							4" Ice	13.40	13.47	719.28
APXV9TM14-ALU-120 with mount pipe	C	From Face	3.00		0.0000	187.00	No Ice	8.20	6.75	128.00
			2.00				1/2" Ice	8.85	7.59	201.91
			0.00				1" Ice	9.50	8.43	275.82
							2" Ice	10.80	10.11	423.64
							4" Ice	13.40	13.47	719.28
TD-RRH8x20	A	From Leg	3.00		0.0000	187.00	No Ice	4.32	1.41	66.14
			-1.00				1/2" Ice	4.60	1.61	90.08
			0.00				1" Ice	4.89	1.83	117.36
							2" Ice	5.50	2.28	182.73
							4" Ice	6.82	3.30	362.17
TD-RRH8x20	B	From Leg	3.00		0.0000	187.00	No Ice	4.32	1.41	66.14
			-1.00				1/2" Ice	4.60	1.61	90.08
			0.00				1" Ice	4.89	1.83	117.36
							2" Ice	5.50	2.28	182.73
							4" Ice	6.82	3.30	362.17
TD-RRH8x20	C	From Leg	3.00		0.0000	187.00	No Ice	4.32	1.41	66.14
			-1.00				1/2" Ice	4.60	1.61	90.08
			0.00				1" Ice	4.89	1.83	117.36
							2" Ice	5.50	2.28	182.73
							4" Ice	6.82	3.30	362.17
***										
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	3.00		0.0000	177.00	No Ice	6.83	5.64	112.18
			0.00				1/2" Ice	7.35	6.48	169.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	7.86	7.26	232.59
						2" Ice	8.93	8.86	383.07
						4" Ice	11.18	12.29	806.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	112.18 169.02 232.59 383.07 806.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	112.18 169.02 232.59 383.07 806.82
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.34 7.87 8.39 9.47 11.76	6.15 7.01 7.80 9.43 12.91	153.07 214.04 281.89 441.43 885.38
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.34 7.87 8.39 9.47 11.76	6.15 7.01 7.80 9.43 12.91	153.07 214.04 281.89 441.43 885.38
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.34 7.87 8.39 9.47 11.76	6.15 7.01 7.80 9.43 12.91	153.07 214.04 281.89 441.43 885.38
Sabre 12' T-Boom (1)	A	From Leg	2.50 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	22.00 29.10 36.20 50.40 78.80	11.00 14.60 18.20 25.40 39.80	471.00 690.00 909.00 1347.00 2223.00
Sabre 12' T-Boom (1)	B	From Leg	2.50 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	22.00 29.10 36.20 50.40 78.80	11.00 14.60 18.20 25.40 39.80	471.00 690.00 909.00 1347.00 2223.00
Sabre 12' T-Boom (1)	C	From Leg	2.50 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	22.00 29.10 36.20 50.40 78.80	11.00 14.60 18.20 25.40 39.80	471.00 690.00 909.00 1347.00 2223.00
***									
2' standoff	C	From Leg	1.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.80 3.30 4.80 7.80 13.80	1.80 3.30 4.80 7.80 13.80	33.00 59.00 85.00 137.00 241.00
8' Omni	C	From Leg	2.00 0.00 4.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 3.19 3.98 5.56 8.72	2.40 3.19 3.98 5.56 8.72	30.00 47.51 65.02 100.04 170.08
***									
Small Beacon	A	From Leg	1.00 0.00	0.0000	123.00	No Ice 1/2" Ice	0.31 0.40	0.31 0.40	7.00 11.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	0.49	0.49	15.00
						2" Ice	0.67	0.67	23.00
						4" Ice	1.03	1.03	39.00
Small Beacon	B	From Leg	1.00	0.0000	123.00	No Ice	0.31	0.31	7.00
			0.00			1/2" Ice	0.40	0.40	11.00
			0.00			1" Ice	0.49	0.49	15.00
						2" Ice	0.67	0.67	23.00
						4" Ice	1.03	1.03	39.00
Small Beacon	C	From Leg	1.00	0.0000	123.00	No Ice	0.31	0.31	7.00
			0.00			1/2" Ice	0.40	0.40	11.00
			0.00			1" Ice	0.49	0.49	15.00
						2" Ice	0.67	0.67	23.00
						4" Ice	1.03	1.03	39.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
PR-950	B	Grid	From Leg	1.00	0.0000		199.00	4.65	No Ice	17.00	38.00
				0.00					1/2" Ice	17.61	91.75
				0.00					1" Ice	18.22	145.50
									2" Ice	19.44	253.00
									4" Ice	21.88	468.00
PR-950	C	Grid	From Leg	1.00	0.0000		172.00	4.65	No Ice	17.00	38.00
				0.00					1/2" Ice	17.61	91.75
				0.00					1" Ice	18.22	145.50
									2" Ice	19.44	253.00
									4" Ice	21.88	468.00
4' Grid Dish	C	Grid	From Leg	1.00	0.0000		150.00	4.00	No Ice	12.57	100.00
				0.00					1/2" Ice	13.10	167.00
				0.00					1" Ice	13.62	234.00
									2" Ice	14.68	368.00
									4" Ice	25.36	636.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy

Comb. No.	Description
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	250 - 200	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-5296.70	-3.00	1.69
			Max. Mx	5	-4071.69	-74.47	0.57
			Max. My	2	-4066.91	-2.78	73.86
			Max. Vy	5	2492.15	-74.47	0.57
			Max. Vx	2	-2500.20	-2.78	73.86
			Max. Torque	7			4.26
T1	200 - 180	Leg	Max Tension	8	41274.33	-0.15	-0.29
			Max. Compression	6	-45120.55	0.19	0.01
			Max. Mx	22	-10100.63	-2.58	1.42
			Max. My	17	-7964.14	0.07	-2.90
			Max. Vy	22	-11462.46	0.28	-0.17
			Max. Vx	17	-13009.75	-0.00	0.35
		Diagonal	Max Tension	3	6186.09	0.00	0.00
			Max. Compression	9	-6380.63	0.00	0.00
			Max. Mx	20	2379.61	0.01	0.00
			Max. My	2	2525.75	0.00	-0.00
			Max. Vy	20	-7.51	0.00	0.00
			Max. Vx	2	0.10	0.00	0.00
		Horizontal	Max Tension	6	781.51	0.00	0.00
			Max. Compression	6	-781.51	0.00	0.00
			Max. Mx	14	192.24	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	780.17	0.00	-0.00
			Max. Vy	14	6.28	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.04	-0.00	-0.00
			Max. Compression	11	-0.04	-0.00	-0.00
			Max. Mx	2	0.00	0.00	0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	18	3.93	-0.00	-0.00
			Max. Vx	2	-0.03	0.00	0.00
		Top Girt	Max Tension	26	7825.69	0.00	0.00
			Max. Compression	7	-975.63	0.00	0.00
			Max. Mx	23	7504.46	-0.01	0.00
			Max. My	2	11.54	0.00	0.00
			Max. Vy	23	-19.75	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	1871.40	0.00	0.00
			Max. Compression	2	-1686.60	0.00	0.00
			Max. Mx	14	35.42	0.00	0.00
			Max. My	2	-1686.51	0.00	-0.00
			Max. Vy	14	6.28	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Guy A	Bottom Tension	9	13619.81		
			Top Tension	9	13743.56		
			Top Cable Vert	9	10560.24		
			Top Cable Norm	9	8795.77		
			Top Cable Tan	9	36.12		
			Bot Cable Vert	9	-10261.92		
			Bot Cable Norm	9	8954.09		
			Bot Cable Tan	9	127.91		
		Guy B	Bottom Tension	11	13269.29		
			Top Tension	11	13393.06		
			Top Cable Vert	11	10294.42		
			Top Cable Norm	11	8567.24		
			Top Cable Tan	11	35.29		
			Bot Cable Vert	11	-9996.11		
			Bot Cable Norm	11	8725.55		
			Bot Cable Tan	11	128.74		
		Guy C	Bottom Tension	3	13609.03		
			Top Tension	3	13732.79		
			Top Cable Vert	3	10552.07		
			Top Cable Norm	3	8788.75		
			Top Cable Tan	3	36.03		
			Bot Cable Vert	3	-10253.75		
			Bot Cable Norm	3	8947.06		
			Bot Cable Tan	3	127.99		
		Top Guy Pull-Off	Max Tension	5	7527.31	0.00	0.00
			Max. Compression	11	-7446.99	0.00	0.00
			Max. Mx	14	33.81	0.01	0.00
			Max. My	9	-2679.75	0.00	-0.00
			Max. Vy	14	-7.47	0.00	0.00
			Max. Vx	9	0.00	0.00	0.00
		Torque Arm Top	Max Tension	7	9394.64	0.00	0.00
			Max. Compression	7	-4327.12	0.00	0.00
			Max. Mx	7	336.48	-31.71	0.00
			Max. My	9	-1785.94	-16.70	-0.00
			Max. Vy	7	10602.82	-31.71	0.00
			Max. Vx	9	-0.00	-16.70	-0.00
T2	180 - 160	Leg	Max Tension	8	8937.07	0.04	-0.10
			Max. Compression	6	-36838.54	0.15	0.29
			Max. Mx	4	-20039.62	0.42	-0.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	8	8932.90	-0.11	0.37
			Max. Vy	5	-1767.26	-0.14	-0.03
			Max. Vx	8	-1888.55	0.04	-0.10
		Diagonal	Max Tension	9	5452.73	0.00	0.00
			Max. Compression	3	-5714.96	0.00	0.00
			Max. Mx	21	-1368.51	0.01	0.00
			Max. My	2	742.39	0.00	-0.00
			Max. Vy	21	-7.43	0.00	0.00
			Max. Vx	2	0.08	0.00	0.00
		Horizontal	Max Tension	4	1522.76	0.00	0.00
			Max. Compression	10	-1327.46	0.00	0.00
			Max. Mx	14	235.21	0.00	0.00
			Max. My	2	873.63	0.00	-0.00
			Max. Vy	14	-6.21	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.03	-0.00	-0.00
			Max. Compression	10	-0.03	-0.00	-0.00
			Max. Mx	2	0.00	0.00	0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	18	3.89	-0.00	-0.00
			Max. Vx	2	-0.02	0.00	0.00
		Top Girt	Max Tension	2	1514.38	0.00	0.00
			Max. Compression	8	-1551.66	0.00	0.00
			Max. Mx	14	37.68	0.00	0.00
			Max. My	2	1514.38	0.00	-0.00
			Max. Vy	14	-6.21	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
		Bottom Girt	Max Tension	10	431.51	0.00	0.00
			Max. Compression	3	-318.07	0.00	0.00
			Max. Mx	14	33.38	0.00	0.00
			Max. My	2	-217.62	0.00	0.00
			Max. Vy	14	-6.21	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
T3	160 - 140	Leg	Max Tension	8	4007.42	0.06	0.13
			Max. Compression	6	-41940.62	-0.08	0.09
			Max. Mx	10	-38054.91	-0.28	-0.09
			Max. My	7	-35228.33	0.02	0.24
			Max. Vy	10	-980.45	-0.03	-0.11
			Max. Vx	2	-934.15	-0.01	0.10
		Diagonal	Max Tension	5	2429.22	0.00	0.00
			Max. Compression	10	-2822.80	0.00	0.00
			Max. Mx	21	61.01	0.01	0.00
			Max. My	2	461.38	0.00	-0.00
			Max. Vy	21	-7.36	0.00	0.00
			Max. Vx	2	0.07	0.00	0.00
		Horizontal	Max Tension	6	704.83	0.00	0.00
			Max. Compression	6	-704.83	0.00	0.00
			Max. Mx	14	271.19	0.00	0.00
			Max. My	2	683.07	0.00	0.00
			Max. Vy	14	6.15	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.03	-0.00	-0.00
			Max. Compression	10	-0.03	-0.00	-0.00
			Max. Mx	2	0.00	0.00	0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	18	3.85	-0.00	-0.00
			Max. Vx	2	-0.01	0.00	0.00
		Top Girt	Max Tension	3	413.26	0.00	0.00
			Max. Compression	10	-414.45	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	14	53.34	0.00	0.00
			Max. My	2	367.96	0.00	0.00
			Max. Vy	14	6.15	0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Bottom Girt	Max Tension	10	915.82	0.00	0.00
			Max. Compression	4	-665.90	0.00	0.00
			Max. Mx	14	34.81	0.00	0.00
			Max. My	2	532.70	0.00	-0.00
			Max. Vy	14	6.15	0.00	0.00
			Max. Vx	2	0.00	0.00	0.00
T4	140 - 120	Leg	Max Tension	8	13206.90	0.05	-0.09
			Max. Compression	6	-53181.35	-0.16	0.09
			Max. Mx	11	-13985.05	0.34	-0.09
			Max. My	2	-4671.08	0.03	0.34
			Max. Vy	10	-983.27	0.21	-0.14
			Max. Vx	2	983.65	0.07	0.28
		Diagonal	Max Tension	5	3090.11	0.00	0.00
			Max. Compression	11	-3465.34	0.00	0.00
			Max. Mx	25	711.22	0.01	0.00
			Max. My	2	324.37	0.00	-0.00
			Max. Vy	25	-7.27	0.00	0.00
			Max. Vx	2	0.06	0.00	0.00
		Horizontal	Max Tension	6	921.13	0.00	0.00
			Max. Compression	6	-921.13	0.00	0.00
			Max. Mx	14	338.22	0.00	0.00
			Max. My	13	806.15	0.00	0.00
			Max. Vy	14	-6.07	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.02	-0.00	-0.00
			Max. Compression	10	-0.02	-0.00	-0.00
			Max. Mx	19	0.00	-0.00	-0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	19	3.81	-0.00	-0.00
			Max. Vx	2	-0.01	0.00	0.00
		Top Girt	Max Tension	4	821.29	0.00	0.00
			Max. Compression	10	-895.86	0.00	0.00
			Max. Mx	14	57.51	0.00	0.00
			Max. My	13	613.02	0.00	0.00
			Max. Vy	14	-6.07	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	928.00	0.00	0.00
			Max. Compression	6	-950.68	0.00	0.00
			Max. Mx	14	60.71	0.00	0.00
			Max. My	13	742.16	0.00	0.00
			Max. Vy	14	-6.07	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Guy A	Bottom Tension	8	9519.31		
			Top Tension	8	9604.01		
			Top Cable Vert	8	6078.53		
			Top Cable Norm	8	7435.62		
			Top Cable Tan	8	0.20		
			Bot Cable Vert	8	-5856.32		
			Bot Cable Norm	8	7504.72		
			Bot Cable Tan	8	0.20		
		Guy B	Bottom Tension	11	9571.23		
			Top Tension	11	9655.75		
			Top Cable Vert	11	6111.53		
			Top Cable Norm	11	7475.39		
			Top Cable Tan	11	36.45		
			Bot Cable Vert	11	-5887.51		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Norm	11	7545.93		
			Bot Cable Tan	11	67.78		
		Guy C	Bottom Tension	4	9595.29		
			Top Tension	4	9679.98		
			Top Cable Vert	4	6125.84		
			Top Cable Norm	4	7495.08		
			Top Cable Tan	4	0.05		
			Bot Cable Vert	4	-5903.63		
			Bot Cable Norm	4	7564.17		
			Bot Cable Tan	4	0.05		
		Top Guy Pull-Off	Max Tension	9	3943.61	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	2019.95	0.02	0.00
			Max. My	13	502.11	0.00	0.00
			Max. Vy	14	-32.25	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T5	120 - 100	Leg	Max Tension	8	1360.67	0.06	-0.02
			Max. Compression	6	-48165.13	0.07	0.29
			Max. Mx	4	-25292.67	0.30	-0.13
			Max. My	7	-42254.58	0.04	0.30
			Max. Vy	5	-925.53	-0.08	-0.05
			Max. Vx	2	984.97	0.14	0.04
		Diagonal	Max Tension	9	2692.67	0.00	0.00
			Max. Compression	3	-3028.25	0.00	0.00
			Max. Mx	17	-1442.96	0.01	0.00
			Max. My	2	15.63	0.00	-0.00
			Max. Vy	17	-7.18	0.00	0.00
			Max. Vx	2	0.04	0.00	0.00
		Horizontal	Max Tension	6	800.40	0.00	0.00
			Max. Compression	6	-800.40	0.00	0.00
			Max. Mx	14	354.38	0.00	0.00
			Max. My	13	707.06	0.00	0.00
			Max. Vy	14	5.99	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.01	-0.00	-0.00
			Max. Compression	10	-0.01	-0.00	-0.00
			Max. Mx	19	0.00	-0.00	0.00
			Max. My	2	0.00	0.00	0.00
			Max. Vy	19	3.76	-0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	6	971.22	0.00	0.00
			Max. Compression	8	-743.27	0.00	0.00
			Max. Mx	14	52.65	0.00	0.00
			Max. My	13	-551.74	0.00	0.00
			Max. Vy	14	5.99	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	516.85	0.00	0.00
			Max. Compression	6	-447.87	0.00	0.00
			Max. Mx	14	64.46	0.00	0.00
			Max. My	13	377.14	0.00	0.00
			Max. Vy	14	5.99	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T6	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-34210.55	0.01	0.19
			Max. Mx	4	-19364.24	0.19	-0.06
			Max. My	6	-34210.55	0.01	0.19
			Max. Vy	10	471.16	0.11	-0.02
			Max. Vx	2	495.89	0.12	0.02
		Diagonal	Max Tension	9	1232.34	0.00	0.00
			Max. Compression	3	-1580.95	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	26	202.02	0.01	0.00
			Max. My	13	235.29	0.00	-0.00
			Max. Vy	26	-7.08	0.00	0.00
			Max. Vx	13	0.03	0.00	0.00
		Horizontal	Max Tension	6	575.65	0.00	0.00
			Max. Compression	6	-575.65	0.00	0.00
			Max. Mx	14	373.14	0.00	0.00
			Max. My	13	514.49	0.00	0.00
			Max. Vy	14	-5.89	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	6	0.01	-0.00	-0.00
			Max. Compression	10	-0.01	-0.00	-0.00
			Max. Mx	18	0.00	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	18	3.69	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	6	481.89	0.00	0.00
			Max. Compression	8	-333.94	0.00	0.00
			Max. Mx	14	55.54	0.00	0.00
			Max. My	13	-181.29	0.00	0.00
			Max. Vy	14	-5.89	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	192.39	0.00	0.00
			Max. Compression	4	-69.44	0.00	0.00
			Max. Mx	14	50.55	0.00	0.00
			Max. My	13	-6.74	0.00	0.00
			Max. Vy	14	-5.89	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T7	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	10	-31441.55	-0.03	-0.15
			Max. Mx	10	-20210.45	0.26	-0.13
			Max. My	2	-20134.43	-0.01	0.26
			Max. Vy	11	777.75	0.14	-0.11
			Max. Vx	2	740.81	0.07	0.19
		Diagonal	Max Tension	3	2063.51	0.00	0.00
			Max. Compression	9	-2422.47	0.00	0.00
			Max. Mx	16	236.48	0.01	0.00
			Max. My	13	-295.55	0.00	-0.00
			Max. Vy	16	-6.96	0.00	0.00
			Max. Vx	13	0.03	0.00	0.00
		Horizontal	Max Tension	10	544.58	0.00	0.00
			Max. Compression	10	-544.58	0.00	0.00
			Max. Mx	14	415.77	0.00	0.00
			Max. My	13	507.22	0.00	0.00
			Max. Vy	14	-5.77	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.01	-0.00	-0.00
			Max. Compression	10	-0.01	-0.00	-0.00
			Max. Mx	18	0.01	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	18	3.62	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	4	248.88	0.00	0.00
			Max. Compression	19	-115.64	0.00	0.00
			Max. Mx	14	58.09	0.00	0.00
			Max. My	13	202.54	0.00	0.00
			Max. Vy	14	-5.77	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Bottom Girt	Max Tension	8	701.72	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-629.61	0.00	0.00
			Max. Mx	14	75.78	0.00	0.00
			Max. My	13	524.13	0.00	0.00
			Max. Vy	14	-5.77	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Guy A	Bottom Tension	8	4825.26		
			Top Tension	8	4851.83		
			Top Cable Vert	8	1922.87		
			Top Cable Norm	8	4454.53		
			Top Cable Tan	8	0.12		
			Bot Cable Vert	8	-1832.80		
			Bot Cable Norm	8	4463.63		
			Bot Cable Tan	8	0.12		
		Guy B	Bottom Tension	12	4836.08		
			Top Tension	12	4862.65		
			Top Cable Vert	12	1927.06		
			Top Cable Norm	12	4464.50		
			Top Cable Tan	12	0.22		
			Bot Cable Vert	12	-1836.99		
			Bot Cable Norm	12	4473.61		
			Bot Cable Tan	12	0.22		
		Guy C	Bottom Tension	4	4842.92		
			Top Tension	4	4869.48		
			Top Cable Vert	4	1929.71		
			Top Cable Norm	4	4470.80		
			Top Cable Tan	4	0.12		
			Bot Cable Vert	4	-1839.64		
			Bot Cable Norm	4	4479.91		
			Bot Cable Tan	4	0.12		
		Top Guy Pull-Off	Max Tension	8	2361.41	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1641.21	0.02	0.00
			Max. My	13	481.12	0.00	0.00
			Max. Vy	14	-31.70	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T8	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-32230.14	0.14	0.01
			Max. Mx	11	-25855.12	-0.25	-0.10
			Max. My	7	-24094.52	0.04	0.23
			Max. Vy	5	-776.57	-0.06	-0.09
			Max. Vx	2	740.18	0.12	0.01
		Diagonal	Max Tension	9	1839.53	0.00	0.00
			Max. Compression	3	-2224.61	0.00	0.00
			Max. Mx	26	-331.99	0.01	0.00
			Max. My	25	-384.62	0.00	-0.00
			Max. Vy	26	-6.81	0.00	0.00
			Max. Vx	25	0.02	0.00	0.00
		Horizontal	Max Tension	21	549.95	0.00	0.00
			Max. Compression	21	-549.95	0.00	0.00
			Max. Mx	14	432.52	0.00	0.00
			Max. My	13	481.96	0.00	0.00
			Max. Vy	14	5.63	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.01	-0.00	-0.00
			Max. Compression	24	-0.01	-0.00	-0.00
			Max. Mx	18	0.01	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	18	3.53	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	2	684.51	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	8	-510.46	0.00	0.00
			Max. Mx	14	60.03	0.00	0.00
			Max. My	6	-238.98	0.00	-0.00
			Max. Vy	14	5.63	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Bottom Girt	Max Tension	8	338.15	0.00	0.00
			Max. Compression	2	-268.86	0.00	0.00
			Max. Mx	14	79.07	0.00	0.00
			Max. My	13	174.63	0.00	0.00
			Max. Vy	14	5.63	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T9	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-32745.36	-0.17	0.01
			Max. Mx	18	-26317.34	0.19	-0.01
			Max. My	21	-23105.93	-0.06	0.18
			Max. Vy	6	-325.17	-0.05	-0.10
			Max. Vx	8	343.85	-0.04	0.08
		Diagonal	Max Tension	6	661.95	0.00	0.00
			Max. Compression	2	-1025.41	0.00	0.00
			Max. Mx	22	154.60	0.01	0.00
			Max. My	12	-498.20	0.00	-0.00
			Max. Vy	22	6.64	0.00	0.00
			Max. Vx	12	0.03	0.00	0.00
		Horizontal	Max Tension	21	567.17	0.00	0.00
			Max. Compression	21	-567.17	0.00	0.00
			Max. Mx	14	447.74	0.00	0.00
			Max. My	13	512.75	0.00	0.00
			Max. Vy	14	-5.46	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.01	-0.00	-0.00
			Max. Compression	24	-0.01	-0.00	-0.00
			Max. Mx	18	0.01	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	18	3.42	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	2	327.33	0.00	0.00
			Max. Compression	8	-148.91	0.00	0.00
			Max. Mx	14	61.90	0.00	0.00
			Max. My	7	143.56	0.00	0.00
			Max. Vy	14	-5.46	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
		Bottom Girt	Max Tension	19	277.20	0.00	0.00
			Max. Compression	12	-182.76	0.00	0.00
			Max. Mx	14	85.73	0.00	0.00
			Max. My	7	224.68	0.00	0.00
			Max. Vy	14	-5.46	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
T10	20 - 6.5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-32159.46	0.15	-0.05
			Max. Mx	17	-29389.67	-0.96	0.45
			Max. My	21	-29578.33	0.09	-1.06
			Max. Vy	17	3998.74	-0.96	0.45
			Max. Vx	21	4640.62	0.09	-1.06
		Diagonal	Max Tension	12	1397.55	0.00	0.00
			Max. Compression	7	-1665.32	0.00	0.00
			Max. Mx	22	593.12	0.01	0.00
			Max. My	12	-589.07	0.00	-0.00
			Max. Vy	22	-9.36	0.00	0.00
			Max. Vx	12	0.04	0.00	0.00
		Horizontal	Max Tension	21	552.47	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	21	-552.47	0.00	0.00
			Max. Mx	14	459.84	0.00	0.00
			Max. My	13	488.81	0.00	0.00
			Max. Vy	14	-5.46	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.01	-0.00	-0.00
			Max. Compression	24	-0.01	-0.00	-0.00
			Max. Mx	17	0.01	-0.00	-0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	17	3.42	-0.00	-0.00
			Max. Vx	2	-0.00	0.00	0.00
		Top Girt	Max Tension	12	406.47	0.00	0.00
			Max. Compression	6	-169.76	0.00	0.00
			Max. Mx	14	79.67	0.00	0.00
			Max. My	7	-149.78	0.00	0.00
			Max. Vy	14	-5.46	0.00	0.00
			Max. Vx	7	-0.00	0.00	0.00
		Bottom Girt	Max Tension	20	2789.02	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	2448.25	0.00	0.00
			Max. My	13	1627.69	0.00	0.00
			Max. Vy	17	-5.46	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T11	6.5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-30728.15	-0.06	-0.13
			Max. Mx	21	-29774.32	1.06	0.08
			Max. My	12	-19591.55	-0.03	0.36
			Max. Vy	21	3154.77	-0.84	0.07
			Max. Vx	12	-917.92	-0.11	0.32
		Horizontal	Max Tension	21	545.97	0.11	0.01
			Max. Compression	21	-545.97	-0.23	-0.01
			Max. Mx	12	444.55	-0.50	-0.03
			Max. My	12	444.55	-0.50	-0.03
			Max. Vy	12	-836.29	-0.50	-0.03
			Max. Vx	12	-56.32	-0.50	-0.03
		Top Girt	Max Tension	22	1961.44	-0.53	-0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	1853.78	-0.70	-0.01
			Max. My	12	1410.63	-0.67	-0.02
			Max. Vy	12	-249.50	-0.67	-0.02
			Max. Vx	12	-13.34	-0.67	-0.02
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-328.04	0.16	0.02
			Max. Mx	12	-254.97	-0.68	-0.03
			Max. My	12	-254.97	-0.68	-0.03
			Max. Vy	12	-4194.08	-0.68	-0.03
			Max. Vx	12	-225.55	-0.68	-0.03

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	17	82465.83	-547.90	269.45
	Max. H_x	12	62123.84	1042.02	596.63
	Max. H_z	2	71815.00	-1.33	933.48

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. M_x	1	0.00	0.32	-12.69
	Max. M_z	1	0.00	0.32	-12.69
	Max. Torsion	6	0.71	-815.28	-486.86
	Min. Vert	1	49608.96	0.32	-12.69
	Min. H_x	4	62173.50	-1040.26	584.76
	Min. H_z	8	62139.71	-4.84	-1218.82
	Min. M_x	1	0.00	0.32	-12.69
	Min. M_z	1	0.00	0.32	-12.69
	Min. Torsion	12	-0.75	1042.02	596.63
Guy C @ 160 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-736.07	-586.74	338.91
	Max. H_x	10	-736.07	-586.74	338.91
	Max. H_z	3	-27321.62	-24922.17	14765.85
	Min. Vert	5	-27450.43	-25338.24	14235.95
	Min. H_x	5	-27450.43	-25338.24	14235.95
	Min. H_z	10	-736.07	-586.74	338.91
Guy B @ 160 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-738.27	594.34	343.07
	Max. H_x	11	-27417.61	25329.50	14231.21
	Max. H_z	13	-27241.08	24824.78	14728.88
	Min. Vert	11	-27417.61	25329.50	14231.21
	Min. H_x	6	-738.27	594.34	343.07
	Min. H_z	6	-738.27	594.34	343.07
Guy A @ 160 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-740.39	0.20	-683.46
	Max. H_x	11	-14603.96	675.20	-15475.13
	Max. H_z	2	-740.39	0.20	-683.46
	Min. Vert	9	-27307.90	326.10	-28941.85
	Min. H_x	5	-14598.87	-675.26	-15443.01
	Min. H_z	8	-27194.78	-12.33	-29022.99

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear$_x$ lb	Shear$_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	49608.96	-0.32	12.69	0.00	0.00	-0.00
Dead+Wind 0 deg - No Ice+Guy	71815.00	1.33	-933.48	0.00	0.00	0.44
Dead+Wind 30 deg - No Ice+Guy	68512.38	635.39	-791.27	0.00	0.00	0.13
Dead+Wind 60 deg - No Ice+Guy	62173.50	1040.26	-584.76	0.00	0.00	-0.17
Dead+Wind 90 deg - No Ice+Guy	68740.44	1009.72	-132.10	0.00	0.00	-0.59
Dead+Wind 120 deg - No Ice+Guy	71989.85	815.28	486.86	0.00	0.00	-0.71
Dead+Wind 150 deg - No Ice+Guy	68420.99	391.10	973.09	0.00	0.00	-0.67
Dead+Wind 180 deg - No Ice+Guy	62139.71	4.84	1218.82	0.00	0.00	-0.58
Dead+Wind 210 deg - No Ice+Guy	68480.83	-379.98	965.40	0.00	0.00	-0.15
Dead+Wind 240 deg - No	72055.37	-807.27	478.16	0.00	0.00	0.27

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Ice+Guy						
Dead+Wind 270 deg - No Ice+Guy	68709.57	-1010.21	-138.78	0.00	0.00	0.60
Dead+Wind 300 deg - No Ice+Guy	62123.84	-1042.02	-596.63	0.00	0.00	0.75
Dead+Wind 330 deg - No Ice+Guy	68423.77	-634.21	-806.35	0.00	0.00	0.68
Dead+Ice+Temp+Guy	80458.51	-1.12	45.71	0.00	0.00	-0.01
Dead+Wind 0 deg+Ice+Temp+Guy	82093.38	-12.38	-626.88	0.00	0.00	0.33
Dead+Wind 30 deg+Ice+Temp+Guy	82233.02	308.08	-527.08	0.00	0.00	0.20
Dead+Wind 60 deg+Ice+Temp+Guy	82465.83	547.90	-269.45	0.00	0.00	-0.13
Dead+Wind 90 deg+Ice+Temp+Guy	82230.30	650.10	67.02	0.00	0.00	-0.43
Dead+Wind 120 deg+Ice+Temp+Guy	82067.92	575.90	394.27	0.00	0.00	-0.50
Dead+Wind 150 deg+Ice+Temp+Guy	82178.49	340.02	611.77	0.00	0.00	-0.40
Dead+Wind 180 deg+Ice+Temp+Guy	82411.47	0.23	687.65	0.00	0.00	-0.30
Dead+Wind 210 deg+Ice+Temp+Guy	82185.44	-339.79	607.04	0.00	0.00	-0.13
Dead+Wind 240 deg+Ice+Temp+Guy	82059.62	-584.99	382.00	0.00	0.00	0.16
Dead+Wind 270 deg+Ice+Temp+Guy	82215.17	-656.76	56.85	0.00	0.00	0.38
Dead+Wind 300 deg+Ice+Temp+Guy	82443.10	-555.86	-277.49	0.00	0.00	0.42
Dead+Wind 330 deg+Ice+Temp+Guy	82206.21	-319.43	-533.12	0.00	0.00	0.36
Dead+Wind 0 deg - Service+Guy	50026.68	-0.51	-453.82	0.00	0.00	0.13
Dead+Wind 30 deg - Service+Guy	50312.16	224.40	-378.70	0.00	0.00	0.02
Dead+Wind 60 deg - Service+Guy	50519.50	386.24	-209.46	0.00	0.00	-0.11
Dead+Wind 90 deg - Service+Guy	50318.85	451.26	15.23	0.00	0.00	-0.21
Dead+Wind 120 deg - Service+Guy	50025.56	403.40	247.09	0.00	0.00	-0.25
Dead+Wind 150 deg - Service+Guy	50311.49	229.08	405.67	0.00	0.00	-0.22
Dead+Wind 180 deg - Service+Guy	50517.45	0.60	460.36	0.00	0.00	-0.14
Dead+Wind 210 deg - Service+Guy	50310.97	-227.17	402.85	0.00	0.00	-0.03
Dead+Wind 240 deg - Service+Guy	50027.04	-402.18	243.91	0.00	0.00	0.11
Dead+Wind 270 deg - Service+Guy	50310.78	-451.92	12.91	0.00	0.00	0.21
Dead+Wind 300 deg - Service+Guy	50511.64	-387.50	-212.76	0.00	0.00	0.25
Dead+Wind 330 deg - Service+Guy	50305.00	-225.39	-382.81	0.00	0.00	0.22

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-25022.49	0.00	0.44	25022.49	0.19	0.002%
2	23.40	-25159.93	-25543.49	-23.40	25159.90	25543.02	0.001%
3	12789.66	-25022.47	-22123.37	-12789.67	25022.45	22123.00	0.001%
4	22167.66	-24885.01	-12788.59	-22167.34	24885.00	12789.00	0.001%
5	25635.72	-25022.47	6.84	-25635.09	25022.43	-6.48	0.002%
6	22179.57	-25159.93	12788.06	-22179.16	25159.90	-12787.82	0.001%
7	12676.50	-25022.47	22070.65	-12676.18	25022.45	-22070.47	0.001%
8	-34.28	-24885.01	25514.04	34.45	24885.01	-25513.98	0.000%
9	-12764.32	-25022.47	22137.84	12764.00	25022.45	-22137.67	0.001%
10	-22243.59	-25159.93	12852.03	22243.17	25159.90	-12851.80	0.001%
11	-25635.67	-25022.47	41.83	25635.03	25022.44	-41.46	0.002%
12	-22132.10	-24885.01	-12728.47	22131.77	24885.01	12728.85	0.001%
13	-12745.06	-25022.47	-22031.16	12745.06	25022.45	22030.79	0.001%
14	0.00	-48882.99	0.00	0.23	48882.98	-0.10	0.001%
15	105.24	-48994.63	-12066.71	-105.23	48994.62	12065.80	0.002%
16	6149.13	-48882.98	-10337.01	-6149.20	48882.98	10336.41	0.001%
17	10483.03	-48771.34	-6039.61	-10482.69	48771.34	6039.42	0.001%
18	12074.72	-48882.99	-159.12	-12074.25	48882.98	159.48	0.001%
19	10566.81	-48994.63	5802.34	-10566.07	48994.61	-5801.90	0.002%
20	5939.18	-48882.99	10299.33	-5938.66	48882.98	-10299.10	0.001%
21	-13.47	-48771.34	11925.16	13.48	48771.34	-11925.01	0.000%
22	-5964.38	-48882.98	10333.28	5963.85	48882.98	-10333.04	0.001%
23	-10515.63	-48994.63	5894.31	10514.89	48994.62	-5893.87	0.002%
24	-12037.22	-48882.98	-90.42	12036.75	48882.98	90.79	0.001%
25	-10425.14	-48771.34	-5990.63	10424.82	48771.34	5990.44	0.001%
26	-6054.09	-48882.98	-10300.08	6054.16	48882.98	10299.49	0.001%
27	8.10	-25070.06	-8838.58	-8.10	25070.06	8838.30	0.001%
28	4425.49	-25022.49	-7655.14	-4425.52	25022.49	7654.97	0.001%
29	7670.47	-24974.93	-4425.12	-7670.37	24974.92	4425.07	0.000%
30	8870.49	-25022.49	2.37	-8870.34	25022.49	-2.24	0.001%
31	7674.59	-25070.06	4424.93	-7674.34	25070.05	-4424.79	0.001%
32	4386.33	-25022.49	7636.90	-4386.16	25022.49	-7636.84	0.001%
33	-11.86	-24974.93	8828.39	11.87	24974.92	-8828.29	0.000%
34	-4416.72	-25022.49	7660.15	4416.56	25022.49	-7660.10	0.001%
35	-7696.74	-25070.06	4447.07	7696.51	25070.06	-4446.93	0.001%
36	-8870.47	-25022.49	14.48	8870.34	25022.49	-14.36	0.001%
37	-7658.17	-24974.93	-4404.32	7658.08	24974.93	4404.27	0.000%
38	-4410.05	-25022.49	-7623.24	4410.09	25022.49	7623.07	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	9	0.00000001	0.00014469
2	Yes	22	0.00004822	0.00014245
3	Yes	22	0.00000001	0.00010697
4	Yes	15	0.00007119	0.00012324
5	Yes	21	0.00007313	0.00014492
6	Yes	22	0.00004930	0.00011343
7	Yes	22	0.00000001	0.00010430
8	Yes	15	0.00000001	0.00012095
9	Yes	22	0.00000001	0.00010915
10	Yes	22	0.00004846	0.00011328
11	Yes	21	0.00007288	0.00012841
12	Yes	14	0.00000001	0.00010319

13	Yes	22	0.00000001	0.00010082
14	Yes	10	0.00000001	0.00010417
15	Yes	15	0.00000001	0.00011153
16	Yes	15	0.00000001	0.00009413
17	Yes	14	0.00000001	0.00013073
18	Yes	15	0.00000001	0.00010790
19	Yes	15	0.00000001	0.00012454
20	Yes	15	0.00000001	0.00012542
21	Yes	15	0.00000001	0.00007571
22	Yes	15	0.00000001	0.00008337
23	Yes	15	0.00000001	0.00007962
24	Yes	15	0.00000001	0.00007990
25	Yes	14	0.00000001	0.00014268
26	Yes	15	0.00000001	0.00009872
27	Yes	13	0.00000001	0.00011840
28	Yes	14	0.00000001	0.00008724
29	Yes	13	0.00000001	0.00008772
30	Yes	14	0.00000001	0.00010129
31	Yes	13	0.00000001	0.00013754
32	Yes	14	0.00000001	0.00010601
33	Yes	13	0.00000001	0.00009219
34	Yes	14	0.00000001	0.00008561
35	Yes	13	0.00000001	0.00010510
36	Yes	14	0.00000001	0.00007944
37	Yes	13	0.00000001	0.00008940
38	Yes	14	0.00000001	0.00008814

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	250 - 200	9.194	29	0.6407	0.2747
T1	200 - 180	3.575	33	0.2516	0.2440
T2	180 - 160	2.717	29	0.1686	0.1598
T3	160 - 140	2.125	37	0.1356	0.1274
T4	140 - 120	1.616	37	0.1068	0.1052
T5	120 - 100	1.261	37	0.0599	0.1029
T6	100 - 80	1.077	37	0.0400	0.1040
T7	80 - 60	0.918	37	0.0386	0.1014
T8	60 - 40	0.766	37	0.0349	0.0991
T9	40 - 20	0.604	37	0.0501	0.0914
T10	20 - 6.5	0.343	35	0.0741	0.0774
T11	6.5 - 0	0.116	35	0.0828	0.0700

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	°	°	*ft*
252.00	Lightning Rod 5/8x4'	29	9.194	0.6407	0.2832	40323
250.00	Flash Beacon Lighting	29	9.194	0.6407	0.2832	40323
237.50	6810	29	7.497	0.5299	0.2912	16129
215.00	6810-2	29	4.813	0.3475	0.2829	5760
199.00	PR-950	33	3.516	0.2464	0.2401	4364
187.00	Pirod Delta Mount (3)	33	2.953	0.1918	0.1868	10337

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
186.75	Guy	33	2.944	0.1909	0.1857	10650
177.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	29	2.623	0.1612	0.1514	42914
172.00	PR-950	29	2.470	0.1514	0.1414	46575
150.00	4' Grid Dish	37	1.858	0.1236	0.1156	35910
130.00	2' standoff	37	1.414	0.0832	0.1029	23959
126.75	Guy	37	1.359	0.0750	0.1027	23103
123.00	Small Beacon	37	1.302	0.0662	0.1028	22269
66.75	Guy	37	0.816	0.0351	0.1006	350533

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	250 - 200	40.663	6	2.2353	0.8767
T1	200 - 180	20.037	6	1.2031	0.9080
T2	180 - 160	15.518	6	0.9605	0.6573
T3	160 - 140	11.909	10	0.8373	0.5385
T4	140 - 120	8.715	10	0.6910	0.4483
T5	120 - 100	6.285	10	0.4625	0.3896
T6	100 - 80	4.725	10	0.3214	0.3509
T7	80 - 60	3.560	10	0.2474	0.3095
T8	60 - 40	2.676	10	0.1838	0.2974
T9	40 - 20	1.951	10	0.1901	0.2699
T10	20 - 6.5	1.065	10	0.2369	0.2270
T11	6.5 - 0	0.357	10	0.2564	0.2069

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
252.00	Lightning Rod 5/8x4'	6	40.663	2.2353	1.0213	15031
250.00	Flash Beacon Lighting	6	40.663	2.2353	1.0213	15031
237.50	6810	6	34.736	1.9471	1.0450	6012
215.00	6810-2	6	25.051	1.4668	1.0213	2146
199.00	PR-950	6	19.760	1.1878	0.8966	1623
187.00	Pirod Delta Mount (3)	6	16.920	1.0293	0.7397	3706
186.75	Guy	6	16.868	1.0265	0.7364	3811
177.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	10	14.942	0.9367	0.6301	14958
172.00	PR-950	10	14.028	0.9031	0.5951	13950
150.00	4' Grid Dish	10	10.241	0.7759	0.4924	7526
130.00	2' standoff	10	7.384	0.5765	0.4145	4996
126.75	Guy	10	7.000	0.5372	0.4057	4826
123.00	Small Beacon	10	6.588	0.4940	0.3964	4656
66.75	Guy	10	2.946	0.2005	0.3031	19183

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	200	Leg	A325N	0.7500	3	2979.96	19389.20	0.154 ✔	1.333	Bolt Tension
T2	180	Leg	A325N	0.7500	3	0.00	19438.50	0.000 ✔	1.333	Bolt Tension
T3	160	Leg	A325N	0.7500	3	1335.81	19434.20	0.069 ✔	1.333	Bolt Tension
T4	140	Leg	A325N	0.7500	3	454.90	19426.70	0.023 ✔	1.333	Bolt Tension
T5	120	Leg	A325N	0.7500	3	0.00	19438.30	0.000 ✔	1.333	Bolt Tension
T6	100	Leg	A325N	0.7500	3	0.00	19438.60	0.000 ✔	1.333	Bolt Tension
T7	80	Leg	A325N	0.7500	3	0.00	19437.40	0.000 ✔	1.333	Bolt Tension
T8	60	Leg	A325N	0.7500	3	0.00	19438.40	0.000 ✔	1.333	Bolt Tension
T9	40	Leg	A325N	0.7500	3	0.00	19438.60	0.000 ✔	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T1	186.75 (A) (491)	9/16 EHS	3500.00	35000.04	13743.60	17500.00	2.000	2.547 ✔
	186.75 (A) (492)	9/16 EHS	3500.00	35000.04	13231.20	17500.00	2.000	2.645 ✔
	186.75 (B) (487)	9/16 EHS	3500.00	35000.04	13176.40	17500.00	2.000	2.656 ✔
	186.75 (B) (488)	9/16 EHS	3500.00	35000.04	13393.10	17500.00	2.000	2.613 ✔
	186.75 (C) (483)	9/16 EHS	3500.00	35000.04	13438.00	17500.00	2.000	2.605 ✔
	186.75 (C) (484)	9/16 EHS	3500.00	35000.04	13732.80	17500.00	2.000	2.549 ✔
T4	126.75 (A) (500)	9/16 EHS	3500.00	35000.04	9604.01	17500.00	2.000	3.644 ✔
	126.75 (B) (499)	9/16 EHS	3500.00	35000.04	9655.75	17500.00	2.000	3.625 ✔
	126.75 (C) (495)	9/16 EHS	3500.00	35000.04	9679.99	17500.00	2.000	3.616 ✔
T7	66.75 (A) (506)	7/16 EHS	2080.00	20800.02	4851.83	10400.00	2.000	4.287 ✔
	66.75 (B) (505)	7/16 EHS	2080.00	20800.02	4862.65	10400.00	2.000	4.278 ✔
	66.75 (C) (501)	7/16 EHS	2080.00	20800.02	4869.48	10400.00	2.000	4.271 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	250 - 200 (1)	P12x.5	50.00	50.00	138.4	7.794	19.2423	-4071.69	149972.00	0.027

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	250 - 200 (1)	P12x.5	74.47	-15.758	23.100	0.682	0.00	0.000	23.100	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	250 - 200 (1)	P12x.5	0.027	0.682	0.000	0.709 ✔	1.066	H1-3 ✔

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-45120.50	60975.90	0.740
T2	180 - 160	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-34903.90	60975.90	0.572
T3	160 - 140	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-40693.30	60975.90	0.667
T4	140 - 120	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-53181.30	60975.90	0.872
T5	120 - 100	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-46211.30	60975.90	0.758
T6	100 - 80	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-33235.10	60975.90	0.545
T7	80 - 60	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-31441.50	60975.90	0.516
T8	60 - 40	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-24971.50	60975.90	0.410*
T9	40 - 20	2	20.00	3.25	78.0 K=1.00	1.00	19.409	3.1416	-25850.40	60975.90	0.424*
T10	20 - 6.5	2 1/4	13.50	3.25	69.3 K=1.00	1.00	21.061	3.9761	-26548.60	83740.00	0.317*
T11	6.5 - 0	2 1/4	6.73	1.84	39.2 K=1.00	0.90	23.409	3.9761	-27841.10	93075.80	0.299*

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

* DL controls

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	200 - 180	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T2	180 - 160	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T3	160 - 140	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T4	140 - 120	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T5	120 - 100	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T6	100 - 80	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T7	80 - 60	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T8	60 - 40	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T9	40 - 20	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T10	20 - 6.5	2 1/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T11	6.5 - 0	2 1/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	2	0.740	0.000	0.000	0.740 ✔	1.333	H1-3 ✔
T2	180 - 160	2	0.572	0.000	0.000	0.572 ✔	1.333	H1-3 ✔
T3	160 - 140	2	0.667	0.000	0.000	0.667 ✔	1.333	H1-3 ✔
T4	140 - 120	2	0.872	0.000	0.000	0.872 ✔	1.333	H1-3 ✔
T5	120 - 100	2	0.758	0.000	0.000	0.758 ✔	1.333	H1-3 ✔
T6	100 - 80	2	0.545	0.000	0.000	0.545 ✔	1.333	H1-3 ✔
T7	80 - 60	2	0.516	0.000	0.000	0.516 ✔	1.333	H1-3 ✔
T8	60 - 40	2	0.410	0.000	0.000	0.410* ✔	1.000	H1-3 ✔
T9	40 - 20	2	0.424	0.000	0.000	0.424* ✔	1.000	H1-3 ✔
T10	20 - 6.5	2 1/4	0.317	0.000	0.000	0.317* ✔	1.000	H1-3 ✔
T11	6.5 - 0	2 1/4	0.299	0.000	0.000	0.299*	1.000	H1-3 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
						✔		

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-6380.63	5953.68	1.072 ✔
T2	180 - 160	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-5714.96	5953.68	0.960 ✔
T3	160 - 140	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-2822.80	5953.68	0.474 ✔
T4	140 - 120	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-3465.34	5953.68	0.582 ✔
T5	120 - 100	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-3028.25	5953.68	0.509 ✔
T6	100 - 80	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-1580.95	5953.68	0.266 ✔
T7	80 - 60	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-2422.47	5953.68	0.407 ✔
T8	60 - 40	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-2224.61	5953.68	0.374 ✔
T9	40 - 20	1	4.42	4.18	140.4 K=0.70	7.580	0.7854	-1025.41	5953.68	0.172 ✔
T10	20 - 6.5	1 1/4	4.42	4.15	111.5 K=0.70	11.475	1.2272	-1665.32	14081.40	0.118 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-781.51	7115.35	0.110 ✔
T2	180 - 160	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-1327.46	7115.35	0.187 ✔
T3	160 - 140	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-704.83	7115.35	0.099 ✔
T4	140 - 120	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-921.13	7115.35	0.129 ✔
T5	120 - 100	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-800.40	7115.35	0.112 ✔
T6	100 - 80	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-575.65	7115.35	0.081 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T7	80 - 60	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-415.77	7115.35	0.058* ✔
T8	60 - 40	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-432.52	7115.35	0.061* ✔
T9	40 - 20	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-447.74	7115.35	0.063* ✔
T10	20 - 6.5	7/8	3.00	2.81	108.0 K=0.70	11.940	0.6013	-459.83	7179.50	0.064* ✔
T11	6.5 - 0	8x3/8	1.91	1.72	191.0 K=1.00	4.095	3.0000	-494.68	12284.10	0.040* ✔

* DL controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.04	9384.48	0.000 ✔
T2	180 - 160	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.03	9384.48	0.000 ✔
T3	160 - 140	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.03	9384.48	0.000 ✔
T4	140 - 120	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.02	9384.48	0.000 ✔
T5	120 - 100	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.01	9384.48	0.000 ✔
T6	100 - 80	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.01	9384.48	0.000 ✔
T7	80 - 60	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.01	9384.48	0.000 ✔
T8	60 - 40	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.01	9384.48	0.000 ✔
T9	40 - 20	7/8	1.50	1.42	77.7 K=1.00	15.607	0.6013	-0.01	9384.48	0.000 ✔
T10	20 - 6.5	7/8	1.50	1.41	77.2 K=1.00	15.669	0.6013	-0.01	9422.06	0.000 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	L3x3x3/8	3.00	2.83	89.0 K=1.54	14.328	2.1100	-975.63	30231.60	0.032 ✔
T2	180 - 160	7/8	3.00	2.83	108.8	11.833	0.6013	-1551.66	7115.35	0.218

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
					K=0.70					✔
T3	160 - 140	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-414.45	7115.35	0.058 ✔
T4	140 - 120	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-895.86	7115.35	0.126 ✔
T5	120 - 100	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-743.27	7115.35	0.104 ✔
T6	100 - 80	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-333.94	7115.35	0.047 ✔
T7	80 - 60	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-115.64	7115.35	0.016 ✔
T8	60 - 40	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-510.46	7115.35	0.072 ✔
T9	40 - 20	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-148.91	7115.35	0.021 ✔
T10	20 - 6.5	7/8	3.00	2.81	108.0 K=0.70	11.940	0.6013	-169.76	7179.50	0.024 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-1686.60	7115.35	0.237 ✔
T2	180 - 160	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-318.07	7115.35	0.045 ✔
T3	160 - 140	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-665.90	7115.35	0.094 ✔
T4	140 - 120	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-950.68	7115.35	0.134 ✔
T5	120 - 100	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-447.87	7115.35	0.063 ✔
T6	100 - 80	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-69.44	7115.35	0.010 ✔
T7	80 - 60	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-629.61	7115.35	0.088 ✔
T8	60 - 40	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-268.86	7115.35	0.038 ✔
T9	40 - 20	7/8	3.00	2.83	108.8 K=0.70	11.833	0.6013	-182.76	7115.35	0.026 ✔
T11	6.5 - 0	8x3/8	0.27	0.08	9.1 K=1.00	21.202	3.0000	-267.56	63606.30	0.004* ✔

* DL controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	1	3.00	2.83	95.2 K=0.70	13.576	0.7854	-7446.98	10662.80	0.698
T4	140 - 120	3 1/2x1 3/8	3.00	2.83	85.7 K=1.00	21.600	4.8125	0.00	70809.20	0.000*
T7	80 - 60	3 1/2x1 3/8	3.00	2.83	85.7 K=1.00	21.600	4.8125	0.00	70809.20	0.000*

* DL controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	200 - 180	1	0.00	-0.386	27.000	0.014	0.00	0.000	27.000	0.000
T4	140 - 120	3 1/2x1 3/8	0.02	-0.103	27.000	0.004	0.00	0.000	27.000	0.000
T7	80 - 60	3 1/2x1 3/8	0.02	-0.102	27.000	0.004	0.00	0.000	27.000	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	1	0.698	0.014	0.000	0.713 ✔	1.333	H1-3 ✔
T4	140 - 120	3 1/2x1 3/8	0.000	0.004	0.000	0.004* ✔	1.000	H1-3 ✔
T7	80 - 60	3 1/2x1 3/8	0.000	0.004	0.000	0.004* ✔	1.000	H1-3 ✔

* DL controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180 (485)	C12x20.7	3.00	2.92	92.5 K=1.00	13.910	6.0900	-3965.01	84711.90	0.047
T1	200 - 180 (486)	C12x20.7	3.00	2.92	92.5 K=1.00	13.910	6.0900	-3964.29	84711.90	0.047
T1	200 - 180 (489)	C12x20.7	3.00	2.92	92.5 K=1.00	13.910	6.0900	-4260.84	84711.90	0.050
T1	200 - 180 (490)	C12x20.7	3.00	2.92	92.5 K=1.00	13.910	6.0900	-4248.05	84711.90	0.050

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180 (493)	C12x20.7	3.00	2.92	92.5 K=1.00	13.910	6.0900	-4317.15	84711.90	0.051
T1	200 - 180 (494)	C12x20.7	3.00	2.92	92.5 K=1.00	13.910	6.0900	-4326.74	84711.90	0.051

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	200 - 180 (485)	C12x20.7	-30.16	-16.834	21.600	0.779	0.00	-0.000	21.600	0.000
T1	200 - 180 (486)	C12x20.7	-30.23	-16.874	21.600	0.781	-0.00	-0.000	21.600	0.000
T1	200 - 180 (489)	C12x20.7	-31.09	-17.355	21.600	0.803	0.00	-0.000	21.600	0.000
T1	200 - 180 (490)	C12x20.7	-30.90	-17.245	21.600	0.798	-0.00	-0.000	21.600	0.000
T1	200 - 180 (493)	C12x20.7	-31.18	-17.402	21.600	0.806	0.00	-0.000	21.600	0.000
T1	200 - 180 (494)	C12x20.7	-31.25	-17.441	21.600	0.807	-0.00	-0.000	21.600	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180 (485)	C12x20.7	0.047	0.779	0.000	0.826 ✔	1.333	H1-3 ✔
T1	200 - 180 (486)	C12x20.7	0.047	0.781	0.000	0.828 ✔	1.333	H1-3 ✔
T1	200 - 180 (489)	C12x20.7	0.050	0.803	0.000	0.854 ✔	1.333	H1-3 ✔
T1	200 - 180 (490)	C12x20.7	0.050	0.798	0.000	0.849 ✔	1.333	H1-3 ✔
T1	200 - 180 (493)	C12x20.7	0.051	0.806	0.000	0.857 ✔	1.333	H1-3 ✔
T1	200 - 180 (494)	C12x20.7	0.051	0.807	0.000	0.859 ✔	1.333	H1-3 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	2	20.00	3.25	78.0	30.000	3.1416	41274.30	94247.80	0.438
T2	180 - 160	2	20.00	0.25	6.0	30.000	3.1416	8937.07	94247.80	0.095

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T3	160 - 140	2	20.00	0.25	6.0	30.000	3.1416	4007.42	94247.80	0.043
T4	140 - 120	2	20.00	3.25	78.0	30.000	3.1416	13260.00	94247.80	0.141
T5	120 - 100	2	20.00	0.25	6.0	30.000	3.1416	1360.67	94247.80	0.014

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	200 - 180	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T2	180 - 160	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T3	160 - 140	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T4	140 - 120	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T5	120 - 100	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	2	0.438	0.000	0.000	0.438 ✔	1.333	H2-1 ✔
T2	180 - 160	2	0.095	0.000	0.000	0.095 ✔	1.333	H2-1 ✔
T3	160 - 140	2	0.043	0.000	0.000	0.043 ✔	1.333	H2-1 ✔
T4	140 - 120	2	0.141	0.000	0.000	0.141 ✔	1.333	H2-1 ✔
T5	120 - 100	2	0.014	0.000	0.000	0.014 ✔	1.333	H2-1 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	1	4.42	4.18	200.5	21.600	0.7854	6186.09	16964.60	0.365 ✔
T2	180 - 160	1	4.42	4.18	200.5	21.600	0.7854	5452.73	16964.60	0.321 ✔
T3	160 - 140	1	4.42	4.18	200.5	21.600	0.7854	2429.22	16964.60	0.143 ✔
T4	140 - 120	1	4.42	4.18	200.5	21.600	0.7854	3090.11	16964.60	0.182 ✔
T5	120 - 100	1	4.42	4.18	200.5	21.600	0.7854	2692.67	16964.60	0.159 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T6	100 - 80	1	4.42	4.18	200.5	21.600	0.7854	1232.34	16964.60	0.073
T7	80 - 60	1	4.42	4.18	200.5	21.600	0.7854	2063.51	16964.60	0.122
T8	60 - 40	1	4.42	4.18	200.5	21.600	0.7854	1839.53	16964.60	0.108
T9	40 - 20	1	4.42	4.18	200.5	21.600	0.7854	661.95	16964.60	0.039
T10	20 - 6.5	1 1/4	4.42	4.15	159.2	21.600	1.2272	1397.55	26507.20	0.053

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	7/8	3.00	2.83	155.4	21.600	0.6013	781.51	12988.50	0.060
T2	180 - 160	7/8	3.00	2.83	155.4	21.600	0.6013	1522.76	12988.50	0.117
T3	160 - 140	7/8	3.00	2.83	155.4	21.600	0.6013	704.83	12988.50	0.054
T4	140 - 120	7/8	3.00	2.83	155.4	21.600	0.6013	921.13	12988.50	0.071
T5	120 - 100	7/8	3.00	2.83	155.4	21.600	0.6013	800.40	12988.50	0.062
T6	100 - 80	7/8	3.00	2.83	155.4	21.600	0.6013	575.65	12988.50	0.044
T7	80 - 60	7/8	3.00	2.83	155.4	21.600	0.6013	415.77	12988.50	0.032*
T8	60 - 40	7/8	3.00	2.83	155.4	21.600	0.6013	432.52	12988.50	0.033*
T9	40 - 20	7/8	3.00	2.83	155.4	21.600	0.6013	447.74	12988.50	0.034*
T10	20 - 6.5	7/8	3.00	2.81	154.3	21.600	0.6013	459.83	12988.50	0.035*
T11	6.5 - 0	8x3/8	1.91	1.72	191.0	21.600	3.0000	494.68	64800.00	0.008*

* DL controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	7/8	1.50	1.42	77.7	21.600	0.6013	0.04	12988.50	0.000 ✔
T2	180 - 160	7/8	1.50	1.42	77.7	21.600	0.6013	0.03	12988.50	0.000 ✔
T3	160 - 140	7/8	1.50	1.42	77.7	21.600	0.6013	0.03	12988.50	0.000 ✔
T4	140 - 120	7/8	1.50	1.42	77.7	21.600	0.6013	0.02	12988.50	0.000 ✔
T5	120 - 100	7/8	1.50	1.42	77.7	21.600	0.6013	0.01	12988.50	0.000 ✔
T6	100 - 80	7/8	1.50	1.42	77.7	21.600	0.6013	0.01	12988.50	0.000 ✔
T7	80 - 60	7/8	1.50	1.42	77.7	21.600	0.6013	0.01	12988.50	0.000 ✔
T8	60 - 40	7/8	1.50	1.42	77.7	21.600	0.6013	0.01	12988.50	0.000 ✔
T9	40 - 20	7/8	1.50	1.42	77.7	21.600	0.6013	0.01	12988.50	0.000 ✔
T10	20 - 6.5	7/8	1.50	1.41	77.2	21.600	0.6013	0.01	12988.50	0.000 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	L3x3x3/8	3.00	2.83	37.2	21.600	2.1100	7387.08	45576.00	0.162* ✔
T2	180 - 160	7/8	3.00	2.83	155.4	21.600	0.6013	1514.38	12988.50	0.117 ✔
T3	160 - 140	7/8	3.00	2.83	155.4	21.600	0.6013	413.26	12988.50	0.032 ✔
T4	140 - 120	7/8	3.00	2.83	155.4	21.600	0.6013	821.29	12988.50	0.063 ✔
T5	120 - 100	7/8	3.00	2.83	155.4	21.600	0.6013	971.22	12988.50	0.075 ✔
T6	100 - 80	7/8	3.00	2.83	155.4	21.600	0.6013	481.89	12988.50	0.037 ✔
T7	80 - 60	7/8	3.00	2.83	155.4	21.600	0.6013	248.88	12988.50	0.019 ✔
T8	60 - 40	7/8	3.00	2.83	155.4	21.600	0.6013	684.51	12988.50	0.053 ✔
T9	40 - 20	7/8	3.00	2.83	155.4	21.600	0.6013	327.33	12988.50	0.025 ✔
T10	20 - 6.5	7/8	3.00	2.81	154.3	21.600	0.6013	406.47	12988.50	0.031 ✔
T11	6.5 - 0	8x3/8	2.73	2.54	281.9	21.600	3.0000	1792.17	64800.00	0.028* ✔

* DL controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	7/8	3.00	2.83	155.4	21.600	0.6013	1871.40	12988.50	0.144 ✔
T2	180 - 160	7/8	3.00	2.83	155.4	21.600	0.6013	431.51	12988.50	0.033 ✔
T3	160 - 140	7/8	3.00	2.83	155.4	21.600	0.6013	915.82	12988.50	0.071 ✔
T4	140 - 120	7/8	3.00	2.83	155.4	21.600	0.6013	928.00	12988.50	0.071 ✔
T5	120 - 100	7/8	3.00	2.83	155.4	21.600	0.6013	516.85	12988.50	0.040 ✔
T6	100 - 80	7/8	3.00	2.83	155.4	21.600	0.6013	192.39	12988.50	0.015 ✔
T7	80 - 60	7/8	3.00	2.83	155.4	21.600	0.6013	701.72	12988.50	0.054 ✔
T8	60 - 40	7/8	3.00	2.83	155.4	21.600	0.6013	338.15	12988.50	0.026 ✔
T9	40 - 20	7/8	3.00	2.83	155.4	21.600	0.6013	277.20	12988.50	0.021 ✔
T10	20 - 6.5	7/8	3.00	2.81	154.3	21.600	0.6013	2427.82	12988.50	0.187* ✔

* DL controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	200 - 180	1	3.00	2.83	136.0	21.600	0.7854	7527.26	16964.60	0.444
T4	140 - 120	3 1/2x1 3/8	3.00	2.83	85.7	21.600	4.8125	3943.56	103950.00	0.038
T7	80 - 60	3 1/2x1 3/8	3.00	2.83	85.7	21.600	4.8125	2348.29	103950.00	0.023

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	200 - 180	1	0.00	0.386	27.000	0.014	0.00	0.000	27.000	0.000
T4	140 - 120	3 1/2x1 3/8	0.02	0.083	27.000	0.003	0.00	0.000	27.000	0.000
T7	80 - 60	3 1/2x1 3/8	0.02	0.102	27.000	0.004	0.00	0.000	27.000	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation (ft)	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180	1	0.444	0.014	0.000	0.458 ✔	1.333	H2-1 ✔
T4	140 - 120	3 1/2x1 3/8	0.038	0.003	0.000	0.041 ✔	1.333	H2-1 ✔
T7	80 - 60	3 1/2x1 3/8	0.023	0.004	0.000	0.026 ✔	1.333	H2-1 ✔

Torque-Arm Top Design Data

Section No.	Elevation (ft)	Size	L (ft)	L_u (ft)	Kl/r	F_a (ksi)	A (in^2)	Actual P (lb)	Allow. P_a (lb)	Ratio $\frac{P}{P_a}$
T1	200 - 180 (485)	C12x20.7	3.00	2.92	43.8	21.600	6.0900	180.96	131544.00	0.001
T1	200 - 180 (486)	C12x20.7	3.00	2.92	43.8	21.600	6.0900	336.78	131544.00	0.003
T1	200 - 180 (489)	C12x20.7	3.00	2.92	43.8	21.600	6.0900	3436.42	131544.00	0.026
T1	200 - 180 (490)	C12x20.7	3.00	2.92	43.8	21.600	6.0900	368.22	131544.00	0.003
T1	200 - 180 (493)	C12x20.7	3.00	2.92	43.8	21.600	6.0900	175.41	131544.00	0.001
T1	200 - 180 (494)	C12x20.7	3.00	2.92	43.8	21.600	6.0900	3557.75	131544.00	0.027

Torque-Arm Top Bending Design Data

Section No.	Elevation (ft)	Size	Actual M_x (kip-ft)	Actual f_{bx} (ksi)	Allow. F_{bx} (ksi)	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y (kip-ft)	Actual f_{by} (ksi)	Allow. F_{by} (ksi)	Ratio $\frac{f_{by}}{F_{by}}$
T1	200 - 180 (485)	C12x20.7	-31.47	17.564	21.600	0.813	-0.00	0.000	27.000	0.000
T1	200 - 180 (486)	C12x20.7	-31.71	17.699	21.600	0.819	0.00	0.000	27.000	0.000
T1	200 - 180 (489)	C12x20.7	-25.89	14.450	21.600	0.669	-0.00	0.000	27.000	0.000
T1	200 - 180 (490)	C12x20.7	-31.48	17.570	21.600	0.813	-0.00	0.000	27.000	0.000
T1	200 - 180 (493)	C12x20.7	-31.47	17.567	21.600	0.813	0.00	0.000	27.000	0.000
T1	200 - 180 (494)	C12x20.7	-26.01	14.519	21.600	0.672	0.00	0.000	27.000	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation (ft)	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180 (485)	C12x20.7	0.001	0.813	0.000	0.815 ✔	1.333	H2-1 ✔
T1	200 - 180 (486)	C12x20.7	0.003	0.819	0.000	0.822 ✔	1.333	H2-1 ✔
T1	200 - 180 (489)	C12x20.7	0.026	0.669	0.000	0.695 ✔	1.333	H2-1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	200 - 180 (490)	C12x20.7	0.003	0.813	0.000	0.816 ✔	1.333	H2-1 ✔
T1	200 - 180 (493)	C12x20.7	0.001	0.813	0.000	0.815 ✔	1.333	H2-1 ✔
T1	200 - 180 (494)	C12x20.7	0.027	0.672	0.000	0.699 ✔	1.333	H2-1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	250 - 200	Pole	P12x.5	1	-4071.69	159930.15	66.5	Pass
T1	200 - 180	Leg	2	3	-45120.50	81280.87	55.5	Pass
T2	180 - 160	Leg	2	51	-34903.90	81280.87	42.9	Pass
T3	160 - 140	Leg	2	99	-40693.30	81280.87	50.1	Pass
T4	140 - 120	Leg	2	147	-53181.30	81280.87	65.4	Pass
T5	120 - 100	Leg	2	195	-46211.30	81280.87	56.9	Pass
T6	100 - 80	Leg	2	243	-33235.10	81280.87	40.9	Pass
T7	80 - 60	Leg	2	290	-31441.50	81280.87	38.7	Pass
T8	60 - 40	Leg	2	340	-24971.50	60975.90	41.0	Pass
T9	40 - 20	Leg	2	388	-25850.40	60975.90	42.4	Pass
T10	20 - 6.5	Leg	2 1/4	436	-26548.60	83740.00	31.7	Pass
T11	6.5 - 0	Leg	2 1/4	470	-27841.10	93075.80	29.9	Pass
T1	200 - 180	Diagonal	1	13	-6380.63	7936.26	80.4	Pass
T2	180 - 160	Diagonal	1	96	-5714.96	7936.26	72.0	Pass
T3	160 - 140	Diagonal	1	107	-2822.80	7936.26	35.6	Pass
T4	140 - 120	Diagonal	1	169	-3465.34	7936.26	43.7	Pass
T5	120 - 100	Diagonal	1	240	-3028.25	7936.26	38.2	Pass
T6	100 - 80	Diagonal	1	288	-1580.95	7936.26	19.9	Pass
T7	80 - 60	Diagonal	1	301	-2422.47	7936.26	30.5	Pass
T8	60 - 40	Diagonal	1	384	-2224.61	7936.26	28.0	Pass
T9	40 - 20	Diagonal	1	432	-1025.41	7936.26	12.9	Pass
T10	20 - 6.5	Diagonal	1 1/4	444	-1665.32	18770.51	8.9	Pass
T1	200 - 180	Horizontal	7/8	29	-781.51	9484.76	8.2	Pass
T2	180 - 160	Horizontal	7/8	93	-1327.46	9484.76	14.0	Pass
T3	160 - 140	Horizontal	7/8	111	-704.83	9484.76	7.4	Pass
T4	140 - 120	Horizontal	7/8	166	-921.13	9484.76	9.7	Pass
T5	120 - 100	Horizontal	7/8	207	-800.40	9484.76	8.4	Pass
T6	100 - 80	Horizontal	7/8	255	-575.65	9484.76	6.1	Pass
T7	80 - 60	Horizontal	7/8	311	-415.77	7115.35	5.8	Pass
T8	60 - 40	Horizontal	7/8	352	-432.52	7115.35	6.1	Pass
T9	40 - 20	Horizontal	7/8	400	-447.74	7115.35	6.3	Pass
T10	20 - 6.5	Horizontal	7/8	448	-459.83	7179.50	6.4	Pass
T11	6.5 - 0	Horizontal	8x3/8	481	-494.68	12284.10	4.0	Pass
T1	200 - 180	Secondary Horizontal	7/8	21	-0.03	12509.51	0.0	Pass
T2	180 - 160	Secondary Horizontal	7/8	97	-0.03	12509.51	0.0	Pass
T3	160 - 140	Secondary Horizontal	7/8	145	-0.03	12509.51	0.0	Pass
T4	140 - 120	Secondary Horizontal	7/8	193	-0.02	12509.51	0.0	Pass
T5	120 - 100	Secondary Horizontal	7/8	241	-0.01	12509.51	0.0	Pass
T6	100 - 80	Secondary Horizontal	7/8	254	-0.01	12509.51	0.0	Pass
T7	80 - 60	Secondary Horizontal	7/8	302	-0.00	12509.51	0.0	Pass
T8	60 - 40	Secondary Horizontal	7/8	350	0.01	17313.67	0.0	Pass
T9	40 - 20	Secondary Horizontal	7/8	398	-0.01	12509.51	0.0	Pass
T10	20 - 6.5	Secondary Horizontal	7/8	460	-0.01	12559.60	0.0	Pass
T1	200 - 180	Top Girt	L3x3x3/8	7	7387.08	45576.00	16.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T2	180 - 160	Top Girt	7/8	55	-1551.66	9484.76	16.4	Pass
T3	160 - 140	Top Girt	7/8	101	-414.45	9484.76	4.4	Pass
T4	140 - 120	Top Girt	7/8	149	-895.86	9484.76	9.4	Pass
T5	120 - 100	Top Girt	7/8	199	-743.27	9484.76	7.8	Pass
T6	100 - 80	Top Girt	7/8	247	-333.94	9484.76	3.5	Pass
T7	80 - 60	Top Girt	7/8	293	248.88	17313.67	1.4	Pass
T8	60 - 40	Top Girt	7/8	343	-510.46	9484.76	5.4	Pass
T9	40 - 20	Top Girt	7/8	391	327.33	17313.67	1.9	Pass
T10	20 - 6.5	Top Girt	7/8	438	406.47	17313.67	2.3	Pass
T11	6.5 - 0	Top Girt	8x3/8	472	1792.17	64800.00	2.8	Pass
T1	200 - 180	Bottom Girt	7/8	10	-1686.60	9484.76	17.8	Pass
T2	180 - 160	Bottom Girt	7/8	57	-318.07	9484.76	3.4	Pass
T3	160 - 140	Bottom Girt	7/8	104	-665.90	9484.76	7.0	Pass
T4	140 - 120	Bottom Girt	7/8	153	-950.68	9484.76	10.0	Pass
T5	120 - 100	Bottom Girt	7/8	201	-447.87	9484.76	4.7	Pass
T6	100 - 80	Bottom Girt	7/8	248	192.39	17313.67	1.1	Pass
T7	80 - 60	Bottom Girt	7/8	298	-629.61	9484.76	6.6	Pass
T8	60 - 40	Bottom Girt	7/8	346	-268.86	9484.76	2.8	Pass
T9	40 - 20	Bottom Girt	7/8	393	-182.76	9484.76	1.9	Pass
T10	20 - 6.5	Bottom Girt	7/8	441	2427.82	12988.50	18.7	Pass
T11	6.5 - 0	Bottom Girt	8x3/8	475	-267.56	63606.30	9.7	Pass
T1	200 - 180	Guy A@186.75	9/16	491	13743.60	17500.00	78.5	Pass
T4	140 - 120	Guy A@126.75	9/16	500	9604.01	17500.00	54.9	Pass
T7	80 - 60	Guy A@66.75	7/16	506	4851.83	10400.00	46.7	Pass
T1	200 - 180	Guy B@186.75	9/16	488	13393.10	17500.00	76.5	Pass
T4	140 - 120	Guy B@126.75	9/16	499	9655.75	17500.00	55.2	Pass
T7	80 - 60	Guy B@66.75	7/16	505	4862.65	10400.00	46.8	Pass
T1	200 - 180	Guy C@186.75	9/16	484	13732.80	17500.00	78.5	Pass
T4	140 - 120	Guy C@126.75	9/16	495	9679.99	17500.00	55.3	Pass
T7	80 - 60	Guy C@66.75	7/16	501	4869.48	10400.00	46.8	Pass
T1	200 - 180	Top Guy Pull-Off@186.75	1	23	-7446.98	14213.51	53.5	Pass
T4	140 - 120	Top Guy Pull-Off@126.75	3 1/2x1 3/8	497	3943.56	138565.34	3.1	Pass
T7	80 - 60	Top Guy Pull-Off@66.75	3 1/2x1 3/8	503	2348.29	138565.34	2.0	Pass
T1	200 - 180	Torque Arm Top@186.75	C12x20.7	494	-4326.74	112920.96	64.4	Pass

Summary		
Pole (L1)	66.5	Pass
Leg (T4)	65.4	Pass
Diagonal (T1)	80.4	Pass
Horizontal (T2)	14.0	Pass
Secondary Horizontal (T1)	0.0	Pass
Top Girt (T2)	16.4	Pass
Bottom Girt (T10)	18.7	Pass
Guy A (T1)	78.5	Pass
Guy B (T1)	76.5	Pass
Guy C (T1)	78.5	Pass
Top Guy Pull-Off (T1)	53.5	Pass
Torque Arm Top (T1)	64.4	Pass
Bolt Checks	11.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						RATING =	**80.4**	**Pass**

Exhibit E

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

T-Mobile Existing Facility

Site ID: CTNL223A

Citadel Groton Guyed
99 Briar Hill Rd
Groton, CT 06340

August 10, 2016

EBI Project Number: 6216003541

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	8.58 %

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

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August 10, 2016

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CTNL223A – Citadel Groton Guyed**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **99 Briar Hill Rd, Groton, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

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

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel

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

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

8) The antennas used in this modeling are the **Ericsson AIR32 B66Aa/B2A** & **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66Aa/B2A** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is **177 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	177	Height (AGL):	177	Height (AGL):	177
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	1.15	Antenna B1 MPE%	1.15	Antenna C1 MPE%	1.15
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	177	Height (AGL):	177	Height (AGL):	177
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	0.86	Antenna B2 MPE%	0.86	Antenna C2 MPE%	0.86

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**2.01 %**
WSUB	2.54 %
WQGN	0.79 %
WNLC	1.76 %
Sprint	1.48 %
Site Total MPE %:	**8.58 %**

T-Mobile Sector A Total:	2.01 %
T-Mobile Sector B Total:	2.01 %
T-Mobile Sector C Total:	2.01 %
Site Total:	8.58 %

T-Mobile _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
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	177	5.74	AWS - 2100 MHz	1000	0.57%
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	177	5.74	PCS - 1900 MHz	1000	0.57%
T-Mobile AWS - 2100 MHz UMTS	2	1,167.14	177	2.87	AWS - 2100 MHz	1000	0.29%
T-Mobile PCS - 1950 MHz UMTS	2	1,167.14	177	2.87	PCS - 1950 MHz	1000	0.29%
T-Mobile PCS - 1950 MHz GSM	2	1,167.14	177	2.87	PCS - 1950 MHz	1000	0.29%
						Total:	**2.01%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	2.01 %
Sector B:	2.01 %
Sector C:	2.01 %
T-Mobile Per Sector Maximum:	2.01 %
Site Total:	8.58 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.58%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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