NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

September 18, 2015

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

RE: Notice of Exempt Modification
57 Cook Road, Montville CT 06382
Longitude: -72.1055295
Latitude: 41.47488747
T-Mobile Site#: CTNL023C_L700

Members of the Siting Council:

On behalf of T-Mobile, Northeast Site Solutions (NSS) is submitting an exempt modification application to the Connecticut Siting Council for modification of existing equipment at a tower facility located at 57 Cook Road, Montville CT 06382.

The 57 Cook Road, Montville CT facility consists of an 190' Guyed Tower owned and operated by Wireless Solutions II, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

As part of T-Mobile's L700 Project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of $625.

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The changes to the facility do not constitute modifications as defined in Connecticut General Statutes significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, Northeast Site Solutions (NSS) on behalf of T-Mobile, respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 860.209.4690 with any questions you may have concerning this matter.

Sincerely,

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

cc: Montville Town Hall, Rm. 101, 310 Norwich-New London Tpke., Uncasville, CT 06382, Attn: Marcia Vlaun, Town Planner, AICP
Property Owner-Robert W. and Karen A. Kingsborough, 57 Cook Rd, Montville, CT 06382
Structure Owner-Wireless Solutions Limited Liability Company, 99 Sill Lane, Old Lyme, CT 06371, ATTN: Ken Thomas

T-MOBILE USA, INC.
12920 SE 38TH STREET
BELLEVUE, WA 98006
(425) 378-4000

3176735
9/2/2015
2000011160

Invoice Number	Inv. Date	Description	Deductions	Voucher	Amount Paid
CKSEE0105	8/31/2015	SR CTNL023C SITING COUNCIL FIL	0.00	1101588440	625.00

DO NOT ACCEPT THIS CHECK UNLESS THE FACE FADES FROM BLACK TO RED WITH LOGO IN BACKGROUND. THE BACK OF THIS DOCUMENT HAS HEAT-SENSITIVE INK THAT CHANGES FROM ORANGE TO YELLOW.
COPYBAN CAPTURE™ ANTI-FRAUD PROTECTION

T-MOBILE USA, INC.
12920 SE 38th Street
Bellevue, WA 98006
(425) 378-4000

The Bank of New York Mellon
Pittsburgh, PA
60-160/433

3176735
9/2/2015
VID 2000011160

PAY $625 00 CTS CTS
SIX TWO FIVE

*$625.00

Six Hundred Twenty Five Dollars Only*******

To The Order Of
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN, CT 06051

VOID AFTER 180 DAYS
THIS CHECK CLEARS THROUGH POSITIVE PAY

⑈0003176735⑈ ⑆043301601⑆ 013⑈8430⑈

Exhibit A

T-MOBILE NORTHEAST LLC

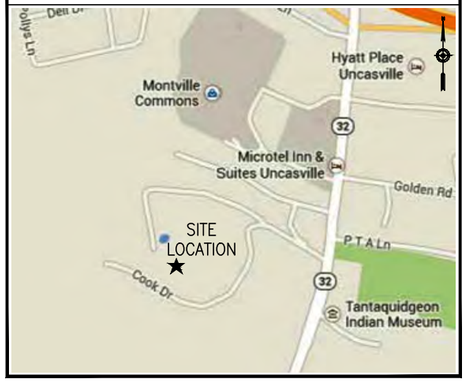
SITE #: CTNL023C

SITE NAME: CT023/MONTVILLE COOKST MP

SITE ADDRESS:
57 COOK ST, MONTVILLE,
CT 06382

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(704BU 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 T–MOBILE 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 T–MOBILE 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 T–MOBILE 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 – GUYED TOWER " PREPARED BY ATLANTIS GROUP, INC., "T–MOBILE SITE ID CTNL023C", DATED SEPTEMBER 4, 2015.

SITE INFORMATION

SITE NUMBER:	CTNL023C
SITE NAME:	CT023/MONTVILLE COOKST MP
SITE ADDRESS:	57 COOK ST, MONTVILLE, CT 06382
LAT./LONG.:	N 41.47488747 / W –72.1055295
JURISDICTION:	MONTVILLE, CT
PROPERTY OWNER:	WIRELESS SOLUTIONS LIMITED LIABILITY COMPANY P. O. BOX 284 OLD LYME, CT 06371 (860) 434–6363

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
ARCHITECT/ENGINEER:	ATLANTIS GROUP INC. 1340 CENTRE STREET SUITE 212 NEWTON CENTER, MA 02459 (617) 965–0789

SHEET INDEX

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A–3	ANTENNA PLAN AND DETAILS
E–1	GROUNDING AND POWER ONE LINE DIAGRAM
E–2	GROUNDING DETAILS

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

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617–965–0789
Fax: 617–213–5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
09/03/15	ISSUED FOR REVIEW	A

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

DRAWN BY: FG
CHECKED BY: SM

PROFESSIONAL SEAL

SITE NAME
CTNL023C
SITE NAME
CT023/MONTVILLE COOKST MP
SITE ADDRESS
57 COOK ST, MONTVILLE, CT 06382

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 T-MOBILE 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 "T-MOBILE". 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.

RACEWAYS CONT'D

   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

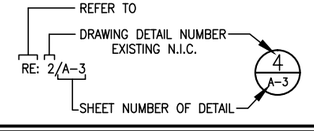
1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT 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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SUBMITTALS

DATE	DESCRIPTION	REVISION
09/03/15	ISSUED FOR REVIEW	A

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

DRAWN BY: FG
CHECKED BY: SM

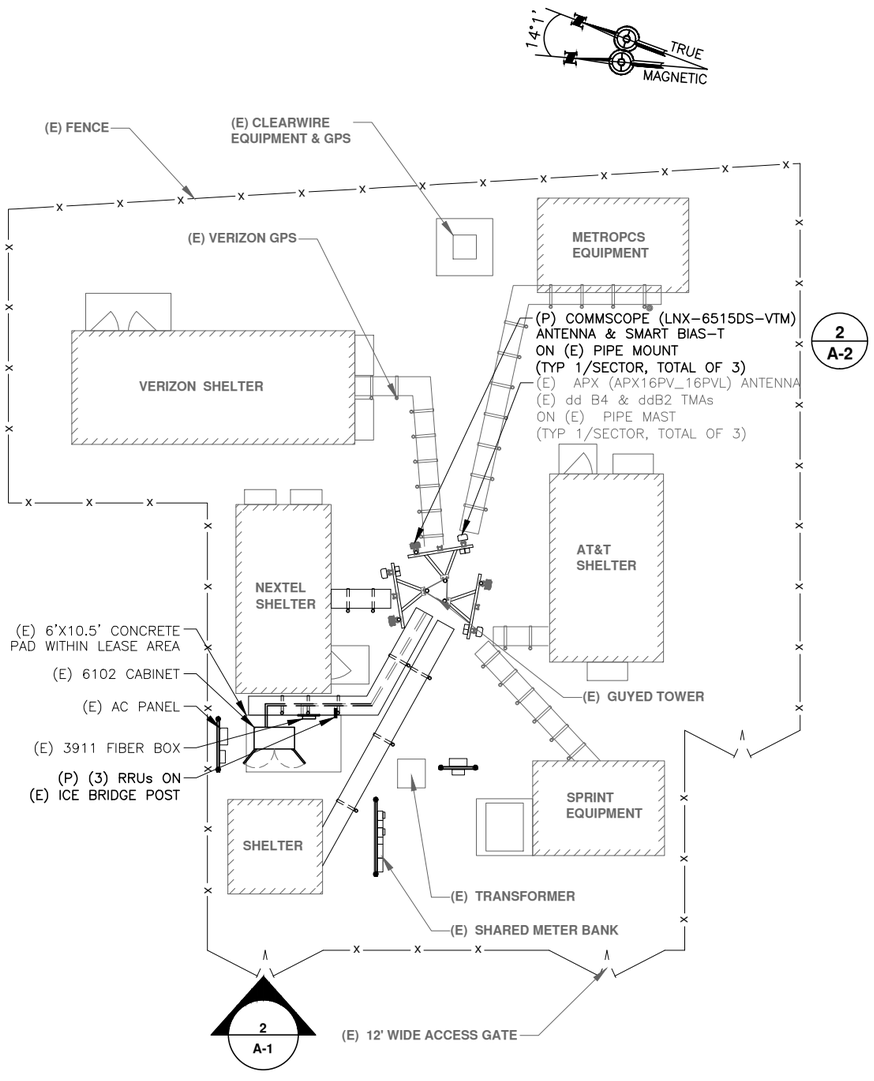
PROFESSIONAL SEAL

SITE NAME
CTNL023C
SITE NAME
CT023/MONTVILLE
COOKST MP
SITE ADDRESS
57 COOK ST, MONTVILLE,
CT 06382

SHEET TITLE
GENERAL
AND ELECTRICAL
NOTES

SHEET NUMBER
N-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT – GUYED TOWER " PREPARED BY ATLANTIS GROUP, INC., "T–MOBILE SITE ID CTNL023C", DATED SEPTEMBER 4, 2015.



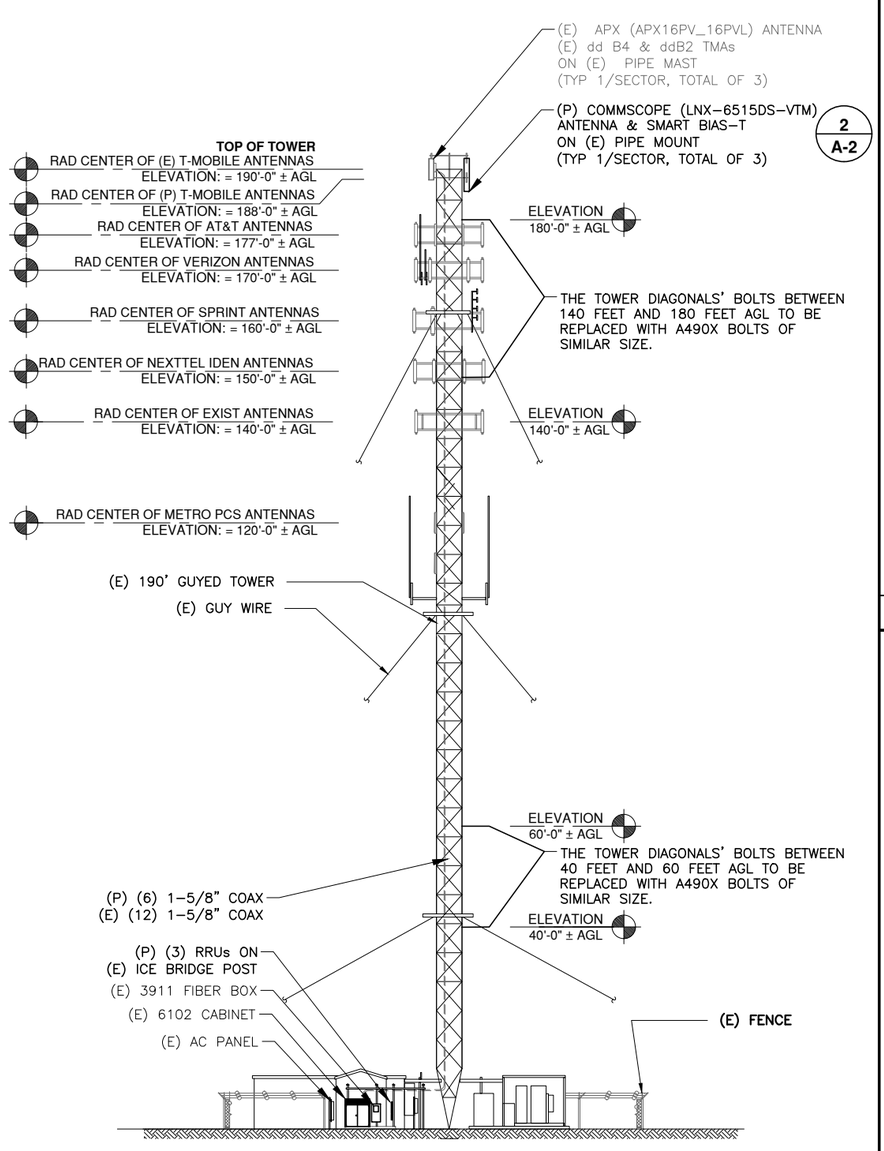
SITE PLAN

1 A-1

SCALE: 1/16" = 1'–0" (11x17)
1/8" = 1'–0" (24X36)

0 16 32 48

SCALE 1"=16' (11x17)
1"=8' (24x36)



ELEVATION

2 A-1

SCALE: 1" = 30'–0" (11x17)
1" = 15'–0" (24X36)

0 30 60 90

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

GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS 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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RFE.			
RF MAN.			
ZONING			
OPS.			
CONSTR.			
SITE AC.			

DRAWN BY: FG
CHECKED BY: SM

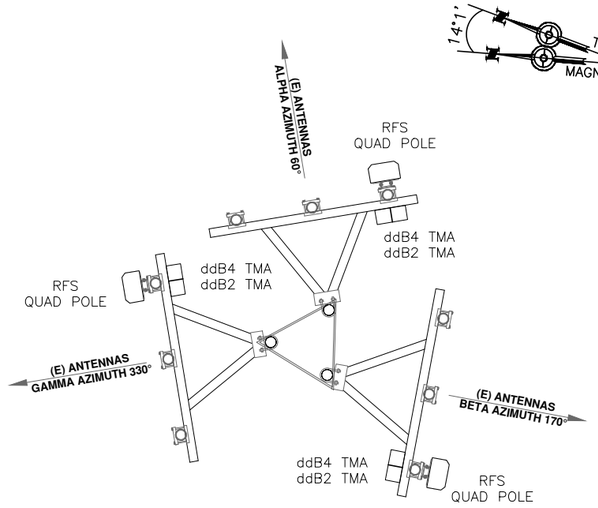
PROFESSIONAL SEAL

SITE NAME
CTNL023C
SITE NAME
CT023/MONTVILLE COOKST MP
SITE ADDRESS
57 COOK ST, MONTVILLE, CT 06382

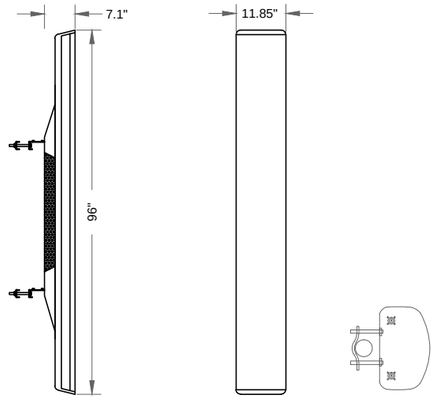
SHEET TITLE
SITE PLAN AND ELEVATION

SHEET NUMBER
A-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT – GUYED TOWER " PREPARED BY ATLANTIS GROUP, INC., "T–MOBILE SITE ID CTNL023C", DATED SEPTEMBER 4, 2015.



EXISTING ANTENNA CONFIGURATION

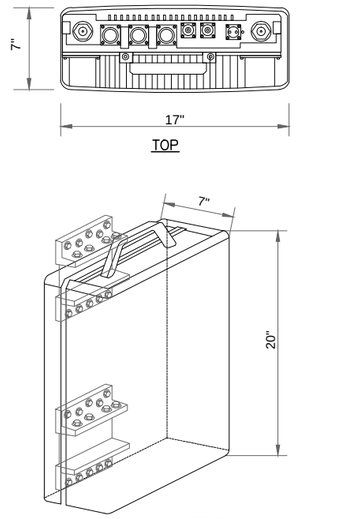


MANUFACTURE: COMMSCOPE DUAL POLE
MODEL NO. LNX–6515DS–VTM

DIMENSIONS – HxWxD, (IN) 96x11.85x7.1

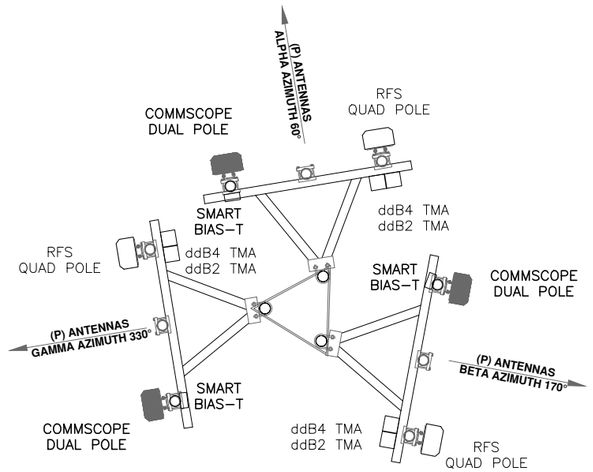
COMMSCOPE ANTENNA DETAIL 2 A-2

SCALE: N.T.S



RRUS 11 B12 DETAILS 3 A-2

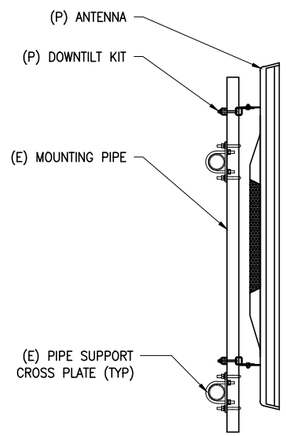
SCALE: N.T.S



PROPOSED ANTENNA CONFIGURATION

ANTENNA PLAN 1 A-2

SCALE: N.T.S



ANTENNA MOUNT DETAIL 4 A-2

SCALE: N.T.S

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SUBMITTALS		
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09/03/15	ISSUED FOR REVIEW	A

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

DRAWN BY:	FG
CHECKED BY:	SM

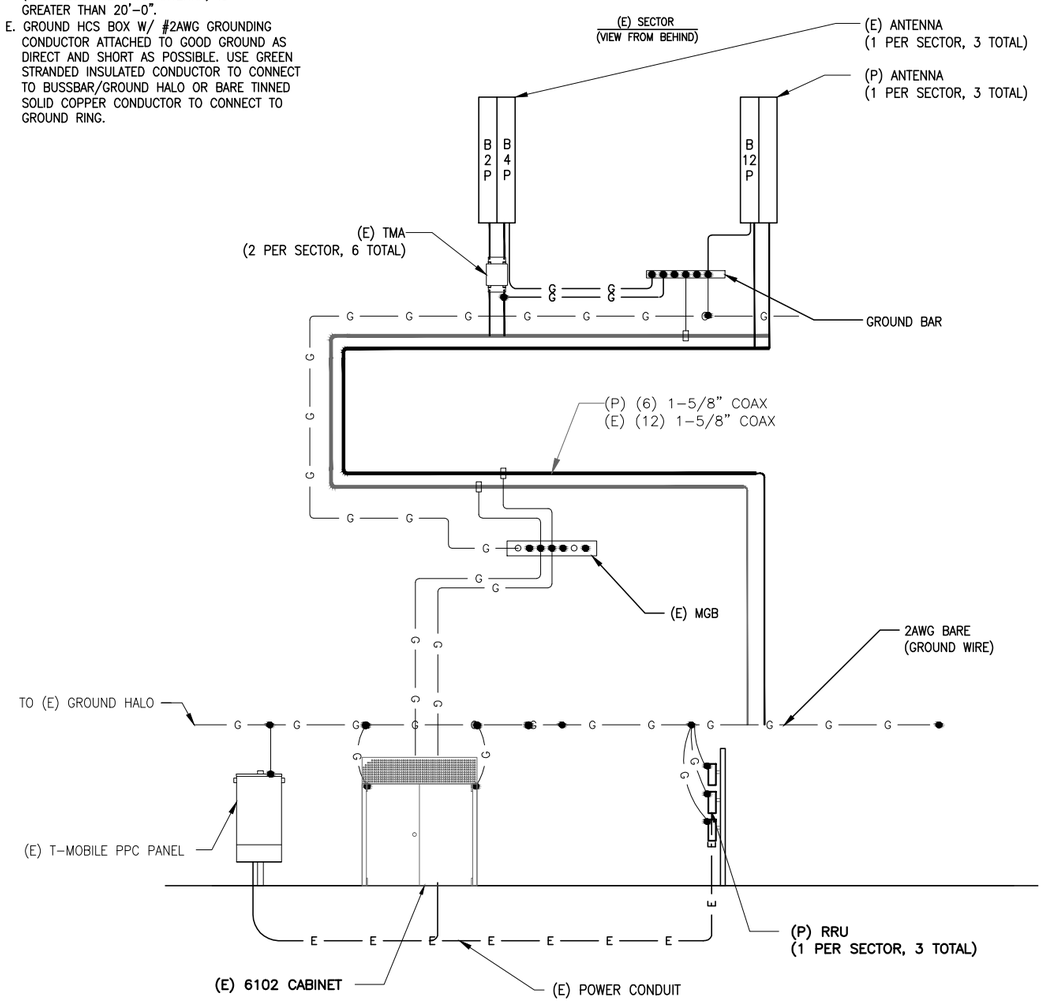
PROFESSIONAL SEAL

SITE NAME
CTNL023C
SITE NAME
CT023/MONTVILLE
COOKST MP
SITE ADDRESS
57 COOK ST, MONTVILLE,
CT 06382

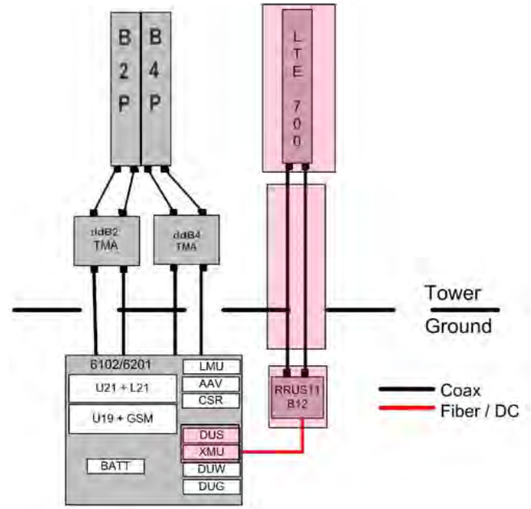
SHEET TITLE
ANTENNA PLAN
AND
DETAILS

SHEET NUMBER
A-2

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 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 3/4" (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 3/4" (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

704BU CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM 2 E-1
SCALE: N.T.S

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09/03/15	ISSUED FOR REVIEW	A

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

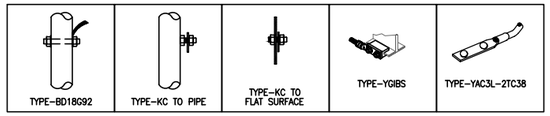
DRAWN BY: FG
CHECKED BY: SM

PROFESSIONAL SEAL

SITE NAME
CTNL023C
SITE NAME
CT023/MONTVILLE COOKST MP
SITE ADDRESS
57 COOK ST, MONTVILLE, CT 06382

SHEET TITLE
GROUNDING AND ONE LINE DIAGRAM

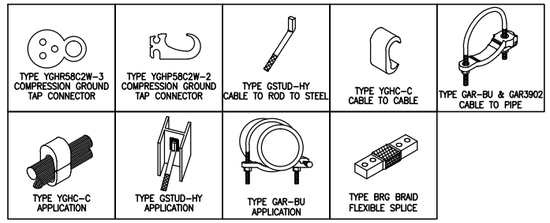
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 E-3

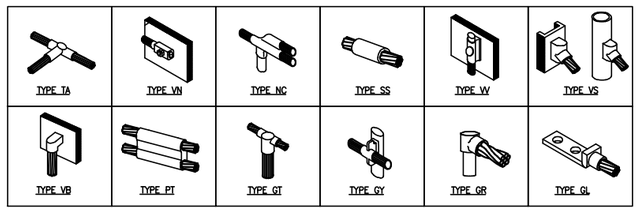
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 E-3

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 E-3

SCALE: N.T.S

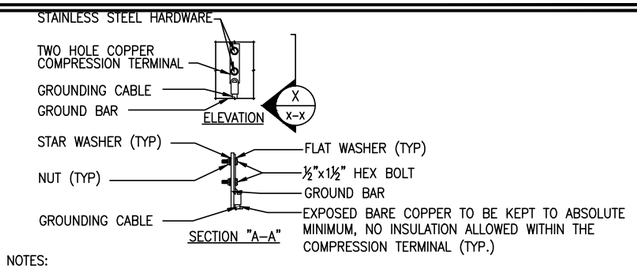
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	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

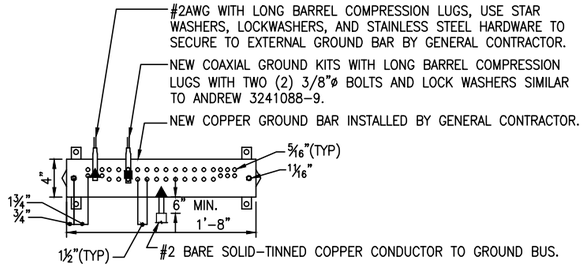
GROUNDING TERMINATION MATRIX

7 E-3

SCALE: N.T.S



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

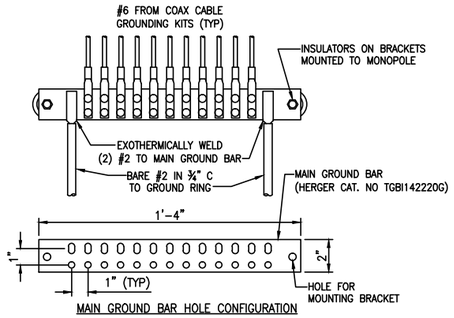


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 E-3

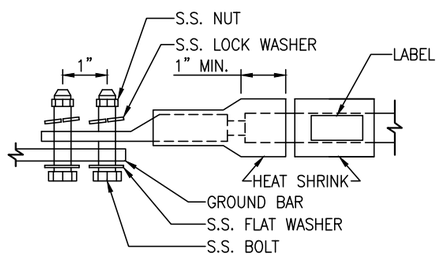
SCALE: N.T.S



GROUND BAR DETAIL

5 E-3

SCALE: N.T.S



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. 3/8"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-3

SCALE: N.T.S

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

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

SUBMITTALS		
DATE	DESCRIPTION	REVISION
09/03/15	ISSUED FOR REVIEW	A

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

DRAWN BY: FG
CHECKED BY: SM

PROFESSIONAL SEAL

SITE NAME
CTNL023C
SITE NAME
CT023/MONTVILLE COOKST MP
SITE ADDRESS
57 COOK ST, MONTVILLE, CT 06382

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

Exhibit B

STRUCTURAL ANALYSIS REPORT
GUYED TOWER

Prepared For:

T-Mobile

35 Griffin Road South
Bloomfield, CT 06002

Site ID: CTNL023C
Site Name: CT023/Montville Cook St MP
57 Cook Street
Montville, CT 06382

September 4, 2015

Submitted By:

Atlantis Group, Inc.
1340 Centre Street, Suite 212
Newton, Massachusetts 02459
Phone: 617-965-0789, Fax: 617-213-5056

STRUCTURAL ANALYSIS REPORT
GUYED TOWER

Prepared For:

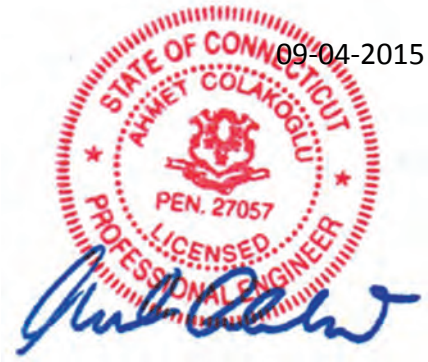
35 Griffin Road South
Bloomfield, CT 06002

RESULT: PASS w/ MODS (98.0%)

Site ID: CTNL023C
Site Name: CT023/Montville Cook St MP
57 Cook Street
Montville, CT 06382

Prepared By:
Destek Engineering, LLC
Professional Engineering Corporation
License # PEC 001429

09-04-2015



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

Destek Job No: 1517028

September 4, 2015

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 190 feet high guyed tower, located at 57 Cook Street, Montville, CT 06382, for the alteration and addition of wireless telecommunication appurtenances proposed by T-Mobile.

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

- Structural Analysis Report prepared by Hudson Design Group LLC, dated 02/21/2013.
- Structural Analysis Report prepared by URS Corporation, dated 12/21/2006.
- Existing and proposed antenna information provided by T-Mobile.

1.1 STRUCTURE

The guyed tower is a 190 feet high, triangular based tower manufactured by Rohn. Round pipe legs are K-braced with round pipe diagonals from the base to 40 feet AGL, while the remaining tower height they are X-braced with round pipe and single angle diagonals. The tower is guyed at three (3) elevations above the grade line; 162.5 feet, 102.5 feet and 42.5 feet AGL. The top level guy wires are terminated at anchors 140 feet away from the tower base, while the other two levels are terminated at anchors 89 feet away from the tower base. This analysis assumes that the modifications recommended by Hudson Design Group LLC have been installed, as mentioned in their Structural Analysis Report. Please refer to the tower elevation drawing in Appendix A, for details about the tower geometry, member sizes, etc.

2.0 PROPOSED CONFIGURATION

The analysis is based on the following existing and proposed appurtenances:

Existing Configuration of T-MOBILE Appurtenances:

Sector	RAD Center (ft.)	Antenna & TMA		Mount	Feed Lines
Alpha	190	GSM Antenna TMA TMA	(1) APX16PV-16PVL (1) dd B2 (1) dd B4	(1) Sector Mount	(12) 1 5/8”
Beta	190	GSM Antenna TMA TMA	(1) APX16PV-16PVL (1) dd B2 (1) dd B4	(1) Sector Mount	
Gamma	190	GSM Antenna TMA TMA	(1) APX16PV-16PVL (1) dd B2 (1) dd B4	(1) Sector Mount	

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Proposed Configuration of T-MOBILE Appurtenances:

Sector	RAD Center (ft.)	Antenna & TMA		Mount	**Feed Lines
Alpha	190	GSM Antenna TMA TMA	(1) APX16PV-16PVL (1) dd B2 (1) dd B4	(1) Sector Mount	(18) 1 5/8”
	188	LTE Antenna Diplexer	(1) LNX-6515DS-VTM (1) Smart Bias-T		
	-	RRU	(1) S11B12*	-	
Beta	190	GSM Antenna TMA TMA	(1) APX16PV-16PVL (1) dd B2 (1) dd B4	(1) Sector Mount	
	188	LTE Antenna Diplexer	(1) LNX-6515DS-VTM (1) Smart Bias-T		
	-	RRU	(1) S11B12*	-	
Gamma	190	GSM Antenna TMA TMA	(1) APX16PV-16PVL (1) dd B2 (1) dd B4	(1) Sector Mount	
	188	LTE Antenna Diplexer	(1) LNX-6515DS-VTM (1) Smart Bias-T		
	-	RRU	(1) S11B12*	-	

***Proposed RRUs will be installed at ground level**

**** (6) Proposed coax are to be stacked on (12) existing coax. Final configuration has (3) rows each with (6) coax.**

Existing and Remaining Appurtenances by Others:

RAD Center (ft.) Carrier	Antenna & TMA	Mount	Feed Lines
188	(1) 20’ Omni	(1) Sector Mount	(1) 7/8”
181	(1) 5’ Omni	(1) Sector Mount	(1) 7/8”
180 AT&T	(6) Powerwave 7770 Antennas (1) SBNH-1D6565C (1) P65-17-XLH-RR (1) AM-X-CD-16-65-00T (6) RRUS (6) TT19-08BP111-001 TMAs (1) DC6 Surge Arrestor	(3) Sector Mounts	(12) 1 1/4” + (1) Fiber + (2) DC Power Cables
168 Verizon	(6) LPA-80080-4CF (3) BXA-171085-8BF-EDIN (3) BXA-70063-6CF-EDIN-X	(3) Sector Mounts	(18) 1 5/8”

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	(6) TT19-08BP111-001 TMAs (1) DC6 Surge Arrestor		
168 Verizon	(6) LPA-80080-4CF (3) BXA-171085-8BF-EDIN (3) BXA-70063-6CF-EDIN-X	(3) Sector Mounts	(18) 1 5/8”
154.5	(1) 8’ Dipole	(1) Standoff	-
151 Sprint	(3) APXVSPP18-C-A20 (3) RRH 1900 MHz (3) RRH 800MHz	(3) Sector Mounts	(7) 1 5/8”
142	(12) DB844H90E-XY	(3) Sector Mounts	(12) 1 1/4”
130	(3) 800-10504	(3) Sector Mounts	(6) 1 5/8”
124	(1) 10’ Dipole	(1) Standoff	(1) 1 1/4”
116.3	(3) LLPX310R (1) Junction Box	(3) Sector Mounts	(1) 3” Conduit
117	(2) 20’ Omni	(2) Standoffs	(2) 7/8”
113	(1) Yagi	Leg Mounted	-
105	(1) GPS	(1) Standoff	(1) 7/8”

3.0 CODES AND LOADING

The tower was analyzed per TIA/EIA-222-F as referenced by 2005 State Building Code with all of the adopted Supplements and Amendments. The following wind loading was used in compliance with the standard for New London County, CT.

- Basic wind speed 93 mph without ice (W)
- Basic wind speed 82.27 mph with 1/2” radial 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
- D + W_i + I

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

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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. Contractor should inspect the condition of the existing structure, mounts and connections and notify Destek for any discrepancies and deficiencies before proceeding with the construction.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The evaluation 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 evaluation.

5.0 ANALYSIS AND ASSUMPTIONS

The tower was analyzed by utilizing tnx-Tower, a non-linear 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix-A of this report.

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6.0 RESULTS AND CONCLUSION

Based on an analysis per TIA/EIA-222-F, the existing tower **will have adequate** structural capacity for the proposed changes by T-Mobile, **once the tower diagonals bolts between 40 feet and 60 feet AGL and 140 and 180 feet AGL are replaced with A490X bolts of similar size**. Maximum usage of tower bracing and legs is **98.0%** and **92.3%**, respectively.

Based on a load comparison, the existing foundation is considered to have **adequate** capacity for the proposed loading.

Reactions:

Maximums	**Destek Analysis**	**Hudson Group**	**URS Corp.**
Base Shear (kips)	1.2	1.1	6
Base Compression (kips)	201	208	116
Inner Anchor Shear (kips)	39	41.6	-
Inner Anchor Uplift (kips)	36	36.4	-
Outer Anchor Shear (kips)	45	48.4	47
Outer Anchor Uplift (kips)	52	55.9	44

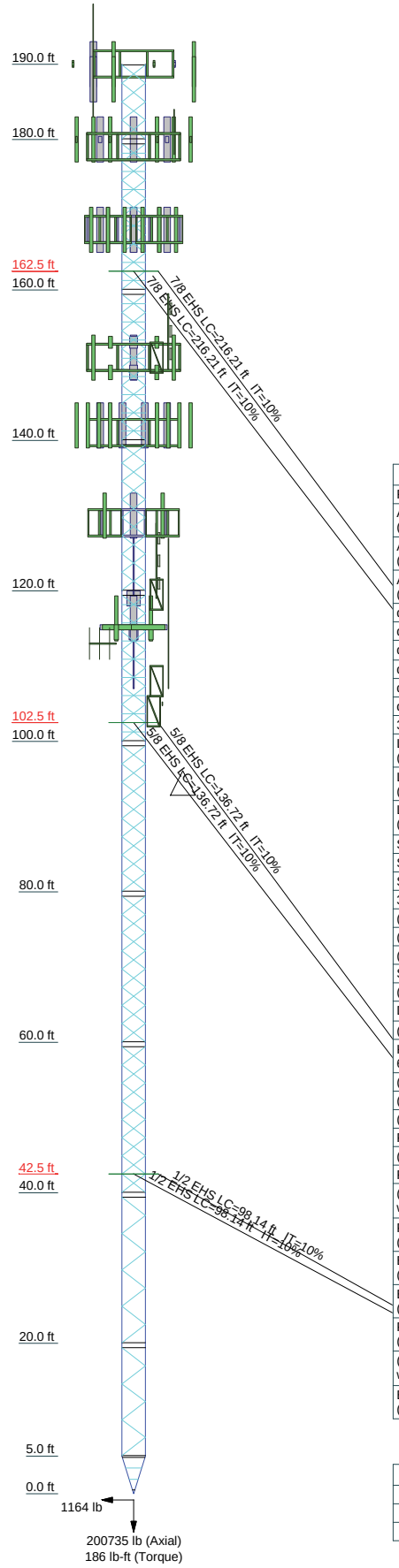
Therefore, the proposed additions and alterations by T-Mobile **can** be implemented as intended with the conditions outlined in this report.

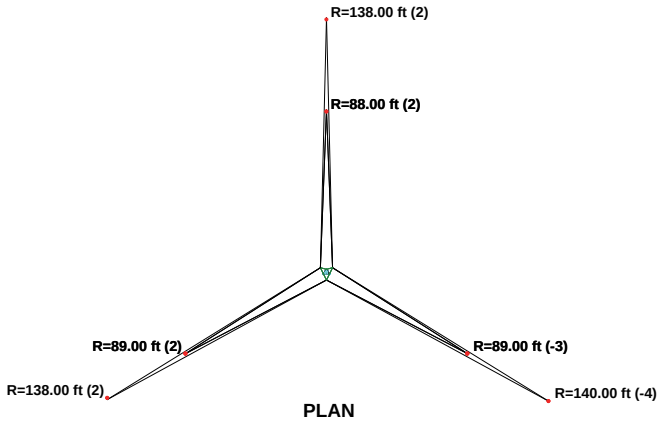
Should you have any questions about this report, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

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

APPENDIX A
CALCULATIONS

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs				ROHN 3 EH				ROHN 2.5 EH	ROHN 2.5 EH - Upgrade - DestekBoston		A
Leg Grade							A572-50				
Diagonals	N.A.	B	ROHN TS1.5x16 ga	ROHN TS1.5x11 ga	L1 3/4x1 3/4x3/16	ROHN TS1.5x16 ga	L2x2x1/4	ROHN TS1.5x11 ga	L2x2x1/4		617.9
Diagonal Grade	N.A.		42 ksi modified for bearing on pipes		A36	C	A36	C	A36		2674.1
Top Girts	D	B	ROHN TS1.5x16 ga	ROHN TS1.5x11 ga		ROHN TS1.5x16 ga	L2x2x1/4	ROHN TS1.5x11 ga		L2x2x1/4	1543.6
Bottom Girts	D	B	ROHN TS1.5x16 ga	ROHN TS1.5x11 ga		ROHN TS1.5x16 ga	L2x2x1/4	ROHN TS1.5x11 ga		L2x2x1/4	851.8
Horizontals	D					N.A.					2467.8
Sec. Horizontals				N.A.			L2x2x1/4	N.A.		N.A.	813.6
Face Width (ft)						64 @ 2.41276				3.41667	1076.4
# Panels @ (ft)	E	6 @ 2.38368								4 @ 2.45833	1558.1
Weight (lb) 13267.8	309.8	630.9	723.8								





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
Rohn 6'x12' Boom Gate (3) (T-Mobile)	190
APX16PV-16PVL w/ Mount Pipe (T-Mobile)	190
APX16PV-16PVL w/ Mount Pipe (T-Mobile)	190
APX16PV-16PVL w/ Mount Pipe (T-Mobile)	190
dd B2 TMA (T-Mobile)	190
dd B2 TMA (T-Mobile)	190
dd B2 TMA (T-Mobile)	190
dd B4 TMA (T-Mobile)	190
dd B4 TMA (T-Mobile)	190
dd B4 TMA (T-Mobile)	190
3" Dia 20' Omni	188
LNX-6515DS-VTM w/ Mount Pipe (T-Mobile)	188
LNX-6515DS-VTM w/ Mount Pipe (T-Mobile)	188
LNX-6515DS-VTM w/ Mount Pipe (T-Mobile)	188
Smart Bias-T (T-Mobile)	188
Smart Bias-T (T-Mobile)	188
Smart Bias-T (T-Mobile)	188
3" Dia. 5' Omni	181
(2) TT19-08BP111-001 TMA (ATI)	180
(2) Powerwave 7770.00 w/pipe (ATI)	180
(2) TT19-08BP111-001 TMA (ATI)	180
SBNH-1D6565C with pipe (ATI)	180
(2) RRUS 11 incl sunshield (ATI)	180
DC6-48-06-18-8F RayCap (ATI)	180
(2) Powerwave 7770.00 w/pipe (ATI)	180
KMW AM-X-CD-16-65-00T w/2.5"D x 66"L pipe (ATI)	180
(2) RRUS 11 incl sunshield (ATI)	180
(2) Powerwave 7770.00 w/pipe (ATI)	180
(2) TT19-08BP111-001 TMA (ATI)	180
P65-17-XLH-RR with Pipe (ATI)	180
(2) RRUS 11 incl sunshield (ATI)	180
Rohn 6'x15' Boom Gate (3) (ATI)	179
(2) AmpenolAntel LPA-80080-4CF w/pipe (Verizon)	168
Pirod 15' T-Frame Sector Mount (1) (Verizon)	168
BXA-171085-8BF-EDIN with pipe (Verizon)	168
BXA-70063-6CF-EDIN-X with pipe (Verizon)	168
Pirod 15' T-Frame Sector Mount (1) (Verizon)	168
(2) AmpenolAntel LPA-80080-4CF w/pipe (Verizon)	168
BXA-171085-8BF-EDIN with pipe (Verizon)	168

TYPE	ELEVATION
BXA-70063-6CF-EDIN-X with pipe (Verizon)	168
Pirod 15' T-Frame Sector Mount (1) (Verizon)	168
(2) AmpenolAntel LPA-80080-4CF w/pipe (Verizon)	168
BXA-171085-8BF-EDIN with pipe (Verizon)	168
BXA-70063-6CF-EDIN-X with pipe (Verizon)	168
8' Dipole	154.5
RRH800MHz (Sprint)	153
RRH800MHz (Sprint)	153
RRH800MHz (Sprint)	153
APXVSPP18-C-A20 with pipe (Sprint)	151
APXVSPP18-C-A20 with pipe (Sprint)	151
Pirod 4' Side Mount Standoff (1)	151
Rohn 6'x15' Boom Gate (3) (Sprint)	151
APXVSPP18-C-A20 with pipe (Sprint)	151
RRH1900MHz (Sprint)	149
RRH1900MHz (Sprint)	149
RRH1900MHz (Sprint)	149
(4) DB844H90E-XY w/Mount Pipe	142
(4) DB844H90E-XY w/Mount Pipe	142
(4) DB844H90E-XY w/Mount Pipe	142
Rohn 6'x15' Boom Gate (3)	141
Kathrein 800 10504 with pipe	130
Kathrein 800 10504 with pipe	130
Kathrein 800 10504 with pipe	130
PiROD 10' Lightweight T-Frame	129
PiROD 10' Lightweight T-Frame	129
PiROD 10' Lightweight T-Frame	129
10' Dipole AF	124
Pirod 4' Side Mount Standoff (1)	119.5
24"x24"x9" Junction box	119
3" Dia 20' Omni	117
3" Dia 20' Omni	117
LLPX310R	116.3
LLPX310R	116.3
LLPX310R	116.3
2' Standoff T-Arm (5' face width)	115.5
2' Standoff T-Arm (5' face width)	115.5
2' Standoff T-Arm (5' face width)	115.5
23.68"x15.74"x6.73" RRH	114.5
23.68"x15.74"x6.73" RRH	114.5
23.68"x15.74"x6.73" RRH	114.5
7' Yagi	113
Pirod 4' Side Mount Standoff (1)	108
Pirod 4' Side Mount Standoff (1)	108
GPS	105
Pirod 4' Side Mount Standoff (1)	104

SYMBOL LIST

MARK	SIZE
A	ROHN 2.5 EH
B	ROHN TS1.5x11 ga
C	42 ksi modified for bearing on pipes

MARK	SIZE
D	L4x4x1/4
E	3 @ 1.44444

MATERIAL STRENGTH

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

GRADE	Fy	Fu
42 ksi modified for bearing on pipes	42 ksi	116 ksi

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693 0835
FAX:

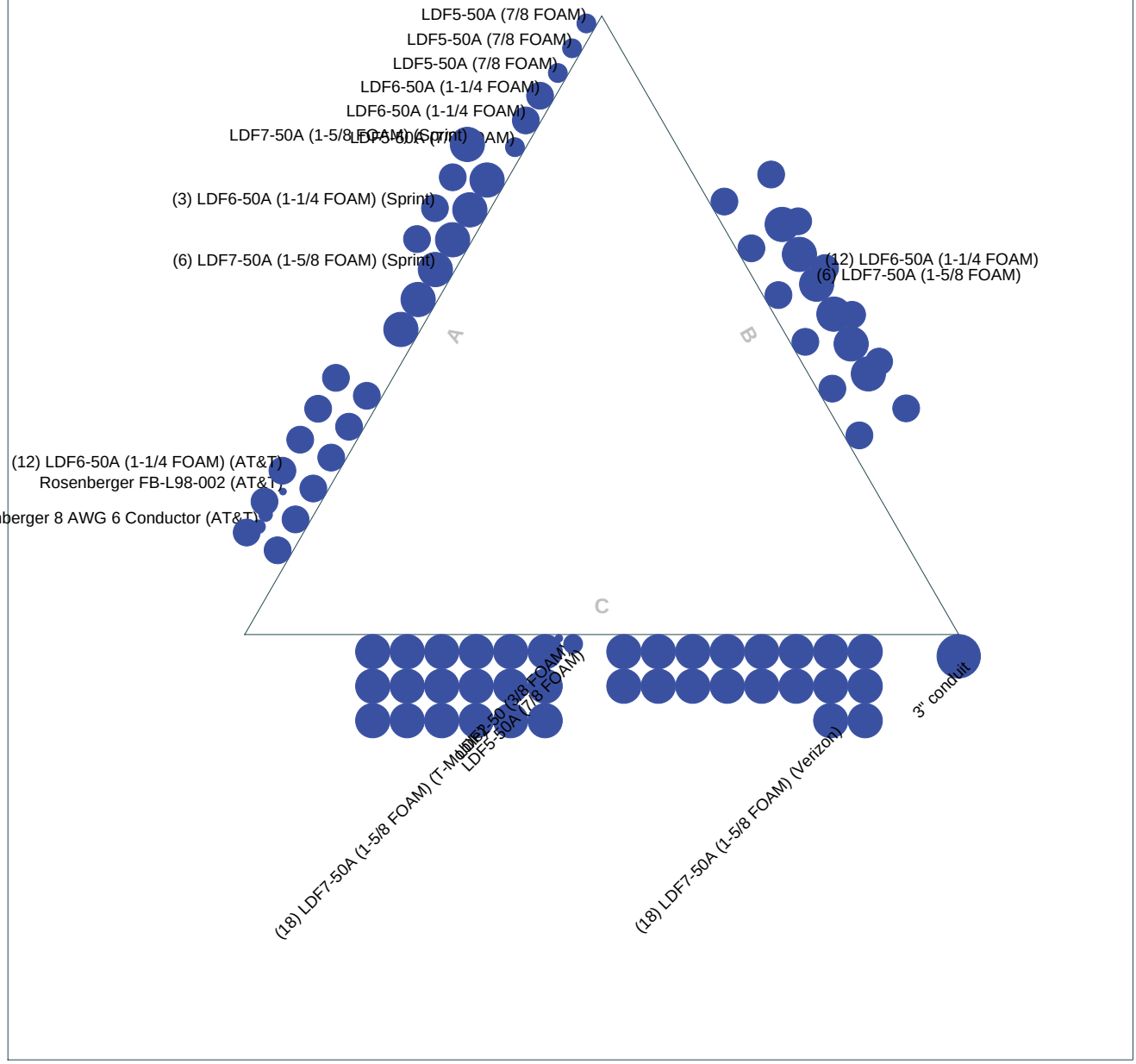
TOWER DESIGN NOTES

Project: ***CTNL023C***			
Client:	Drawn by: Ahmet Colakoglu		App'd:
Code: TIA/EIA-222-F	Date: 09/04/15		Scale: NTS
Path: Y:\2015\17 - Atlantis\1517028 - CTNL023C\Tnx\CTNL023C Guyed Tower-2015.eri			Dwg No. E-1

Feed Line Plan
20'

Round Flat App In Face App Out Face

Section @ 20'



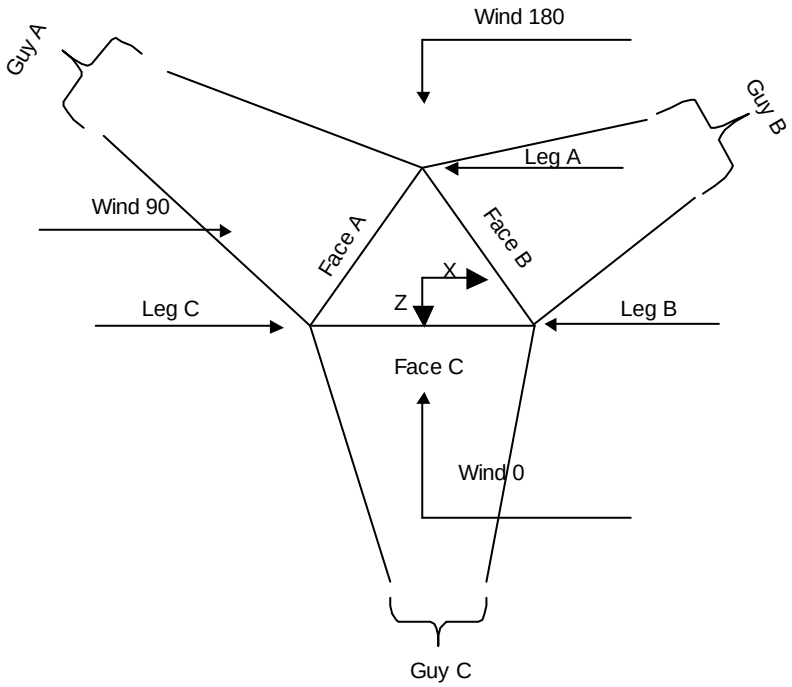
Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693 0835
FAX:

Job: ***1517028***			
Project: ***CTNL023C***			
Client:	Drawn by: Ahmet Colakoglu		App'd:
Code: TIA/EIA-222-F	Date: 09/04/15		Scale: NTS
Path: Y:\2015\17 - Atlantis\1517028 - CTNL023C\Tnx\CTNL023C Guyed Tower-2015.eri			Dwg No. E-7

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 190.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Basic wind speed of 93 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 81 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.
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.



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	190.00-180.00			3.42	1	10.00
T2	180.00-160.00			3.42	1	20.00
T3	160.00-140.00			3.42	1	20.00
T4	140.00-120.00			3.42	1	20.00
T5	120.00-100.00			3.42	1	20.00
T6	100.00-80.00			3.42	1	20.00
T7	80.00-60.00			3.42	1	20.00
T8	60.00-40.00			3.42	1	20.00
T9	40.00-20.00			3.42	1	20.00
T10	20.00-5.00			3.42	1	15.00
T11	5.00-0.00			3.42	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	190.00-180.00	2.46	X Brace	No	No	1.0000	1.0000
T2	180.00-160.00	2.41	X Brace	No	Yes	7.3750	1.0000
T3	160.00-140.00	2.41	X Brace	No	Yes	7.3750	1.0000
T4	140.00-120.00	2.41	X Brace	No	No	7.3750	1.0000
T5	120.00-100.00	2.41	X Brace	No	Yes	7.3750	1.0000
T6	100.00-80.00	2.41	X Brace	No	No	7.3750	1.0000
T7	80.00-60.00	2.41	X Brace	No	No	7.3750	1.0000
T8	60.00-40.00	2.41	X Brace	No	No	7.3750	1.0000
T9	40.00-20.00	2.41	K Brace Left	No	No	7.3750	1.0000
T10	20.00-5.00	2.38	K Brace Left	No	No	7.3750	1.0000
T11	5.00-0.00	1.44	X Brace	No	Yes	2.0000	6.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 190.00-180.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T2 180.00-160.00	Pipe	ROHN 2.5 EH - Upgrade - DestekBoston	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T3 160.00-140.00	Pipe	ROHN 2.5 EH - Upgrade - DestekBoston	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T4 140.00-120.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x11 ga	42 ksi modified for bearing on pipes (42 ksi)
T5 120.00-100.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T6 100.00-80.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	42 ksi modified for bearing on pipes (42 ksi)
T7 80.00-60.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T8 60.00-40.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x11 ga	42 ksi modified for bearing on pipes (42 ksi)
T9 40.00-20.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	42 ksi modified for bearing on pipes (42 ksi)
T10 20.00-5.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x11 ga	42 ksi modified for bearing on pipes (42 ksi)
T11 5.00-0.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe		A53-B-42 (42 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 190.00-180.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T2 180.00-160.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T3 160.00-140.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T4 140.00-120.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T5 120.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T6 100.00-80.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T7 80.00-60.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T8 60.00-40.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T9 40.00-20.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T10 20.00-5.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T11 5.00-0.00	Single Angle	L4x4x1/4	A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T11 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 180.00-160.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 160.00-140.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 120.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A36 (36 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
T1 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 20.00-5.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T11 5.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	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	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1	Yes	Yes	1	1		1		1		1		1		1		1	
190.00-180.00				1		1		1		1		1		1		1	
T2	Yes	Yes	1	1		1		1		1		1		1		1	
180.00-160.00				1		1		1		1		1		1		1	
T3	Yes	Yes	1	1		1		1		1		1		1		1	
160.00-140.00				1		1		1		1		1		1		1	
T4	Yes	Yes	1	1		1		1		1		1		1		1	
140.00-120.00				1		1		1		1		1		1		1	
T5	Yes	Yes	1	1		1		1		1		1		1		1	
120.00-100.00				1		1		1		1		1		1		1	
T6	Yes	Yes	1	1		1		1		1		1		1		1	
100.00-80.00				1		1		1		1		1		1		1	
T7	Yes	Yes	1	1		1		1		1		1		1		1	
80.00-60.00				1		1		1		1		1		1		1	
T8	Yes	Yes	1	1		1		1		1		1		1		1	
60.00-40.00				1		1		1		1		1		1		1	
T9	Yes	Yes	1	1		1		1		1		1		1		1	
40.00-20.00				1		1		1		1		1		1		1	
T10	Yes	Yes	1	1		1		1		1		1		1		1	
20.00-5.00				1		1		1		1		1		1		1	
T11 5.00-0.00	Yes	Yes	0.2	1		1		1		1		1		1		1	

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 190.00-180.00	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 20.00-5.00	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
T11 5.00-0.00	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 Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 190.00-180.00	Flange	0.7500 A325N	4	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A490X	2	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	4	0.5000 A490X	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	0.7500 A325N	4	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T7 80.00-60.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	0.7500 A325N	4	0.5000 A490X	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-5.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 5.00-0.00	Flange	0.7500 A325N	4	0.5000 A325N	0	0.5000 A325N	0	0.5000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 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 %
162.496	EHS	A	7/8	7970.00	10%	19000	1.581	210.14	138.00	0.0000	2.00	100%
		B	7/8	7970.00	10%	19000	1.581	216.01	140.00	0.0000	-4.00	100%
		C	7/8	7970.00	10%	19000	1.581	210.14	138.00	0.0000	2.00	100%
102.496	EHS	A	5/8	4240.00	10%	21000	0.813	132.13	88.00	0.0000	2.00	100%
		B	5/8	4240.00	10%	21000	0.813	136.60	89.00	0.0000	-3.00	100%
		C	5/8	4240.00	10%	21000	0.813	132.78	89.00	0.0000	2.00	100%
42.4961	EHS	A	1/2	2690.00	10%	21000	0.517	94.94	88.00	0.0000	2.00	100%
		B	1/2	2690.00	10%	21000	0.517	98.06	89.00	0.0000	-3.00	100%
		C	1/2	2690.00	10%	21000	0.517	95.85	89.00	0.0000	2.00	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
162.496	Torque Arm	7.33	0.0000	Channel	A36 (36 ksi)	Channel	C15x50
102.496	Torque Arm	7.33	0.0000	Channel	A36 (36 ksi)	Channel	C15x40
42.4961	Torque Arm	7.33	0.0000	Channel	A36 (36 ksi)	Channel	C12x25

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

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
162.50	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
102.50	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
42.50	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

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
162.496	332.23	341.52	332.23		4.32 3.6 sec/pulse	4.56 3.7 sec/pulse	4.32 3.6 sec/pulse	
102.496	107.42	111.06	107.95		1.66 2.2 sec/pulse	1.77 2.3 sec/pulse	1.68 2.2 sec/pulse	
42.4961	49.09	50.70	49.55		0.86 1.6 sec/pulse	0.92 1.7 sec/pulse	0.88 1.6 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
162.496	No	No	1	1	1	1	1	1
102.496	No	No	1	1	1	1	1	1
42.4961	No	No	1	1	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
162.496	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
102.496	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
42.4961	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
162.496	A	82.25	29	22	0.5000
	B	79.25	28	21	0.5000
	C	82.25	29	22	0.5000
102.496	A	52.25	25	19	0.5000
	B	49.75	25	19	0.5000
	C	52.25	25	19	0.5000
42.4961	A	22.25	22	17	0.5000
	B	19.75	22	17	0.5000
	C	22.25	22	17	0.5000

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
LDF7-50A (1-5/8 FOAM) (T-Mobile)	C	Yes	Ar (CaAa)	190.00 - 8.00	0.0000	0.2	18	6	0.0000	1.9800		0.82
LDF2-50 (3/8 FOAM)	C	Yes	Ar (CaAa)	190.00 - 8.00	0.0000	0.06	1	1	0.4400	0.4400		0.08
Rosenberger FB-L98-002 (AT&T)	A	Yes	Ar (CaAa)	180.00 - 8.00	2.0000	-0.3	1	1	0.0000	0.3900		0.10
Rosenberger 8 AWG 6 Conductor (AT&T)	A	Yes	Ar (CaAa)	180.00 - 8.00	2.0000	-0.35	2	2	0.0000	0.7950		0.58
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CaAa)	178.00 - 8.00	0.0000	0.28	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	Yes	Ar (CaAa)	178.00 - 8.00	0.0000	0.04	1	1	0.0000	1.0900		0.33
LDF6-50A (1-1/4 FOAM) (AT&T)	A	Yes	Ar (CaAa)	180.00 - 8.00	0.0000	-0.25	12	6	0.5000	1.5500		0.66
LDF7-50A (1-5/8 FOAM) (Verizon)	C	Yes	Ar (CaAa)	168.00 - 8.00	0.0000	-0.2	18	8	0.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (Sprint)	A	Yes	Ar (CaAa)	151.00 - 8.00	0.0000	0.1	6	6	0.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (Sprint)	A	Yes	Ar (CaAa)	151.00 - 8.00	2.0000	0.25	1	1	0.0000	1.9800		0.82
LDF6-50A (1-1/4 FOAM) (Sprint)	A	Yes	Ar (CaAa)	151.00 - 8.00	2.0000	0.15	3	3	0.5000	1.5500		0.66
LDF6-50A (1-1/4 FOAM)	B	Yes	Ar (CaAa)	141.00 - 8.00	0.0000	0	12	6	1.5500	1.5500		0.66
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CaAa)	129.00 - 8.00	2.0000	0	6	6	0.0000	1.9800		0.82
LDF6-50A (1-1/4 FOAM)	A	Yes	Ar (CaAa)	120.00 - 8.00	0.0000	0.32	1	1	1.5500	1.5500		0.66
3" conduit	C	Yes	Ar (CaAa)	115.00 - 8.00	0.0000	-0.5	1	1	2.5000	2.5000		3.00
LDF6-50A (1-1/4 FOAM)	A	Yes	Ar (CaAa)	107.00 - 8.00	0.0000	0.36	1	1	1.5500	1.5500		0.66
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CaAa)	108.00 - 8.00	0.0000	0.4	1	1	1.0900	1.0900		0.33
LDF5-50A	A	Yes	Ar (CaAa)	108.00 - 8.00	0.0000	0.44	1	1	1.0900	1.0900		0.33

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
(7/8 FOAM) LDF5-50A (7/8 FOAM) ***Proposed***	A	Yes	Ar (CaAa)	104.00 - 8.00	0.0000	0.48	1	1	1.0900	1.0900		0.33

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
T1	190.00-180.00	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	13.083	0.000	148.40
T2	180.00-160.00	A	0.000	0.000	29.928	0.000	189.70
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	41.243	0.000	420.82
T3	160.00-140.00	A	0.000	0.000	50.507	0.000	275.28
		B	0.000	0.000	1.736	0.000	7.92
		C	0.000	0.000	61.134	0.000	598.60
T4	140.00-120.00	A	0.000	0.000	67.166	0.000	344.76
		B	0.000	0.000	45.406	0.000	202.68
		C	0.000	0.000	61.134	0.000	598.60
T5	120.00-100.00	A	0.000	0.000	73.531	0.000	369.18
		B	0.000	0.000	58.474	0.000	256.80
		C	0.000	0.000	64.884	0.000	643.60
T6	100.00-80.00	A	0.000	0.000	79.906	0.000	390.96
		B	0.000	0.000	58.474	0.000	256.80
		C	0.000	0.000	66.134	0.000	658.60
T7	80.00-60.00	A	0.000	0.000	79.906	0.000	390.96
		B	0.000	0.000	58.474	0.000	256.80
		C	0.000	0.000	66.134	0.000	658.60
T8	60.00-40.00	A	0.000	0.000	79.906	0.000	390.96
		B	0.000	0.000	58.474	0.000	256.80
		C	0.000	0.000	66.134	0.000	658.60
T9	40.00-20.00	A	0.000	0.000	79.906	0.000	390.96
		B	0.000	0.000	58.474	0.000	256.80
		C	0.000	0.000	66.134	0.000	658.60
T10	20.00-5.00	A	0.000	0.000	47.944	0.000	234.58
		B	0.000	0.000	35.084	0.000	154.08
		C	0.000	0.000	39.681	0.000	395.16
T11	5.00-0.00	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
T1	190.00-180.00	A	0.500	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	22.191	0.000	278.81
T2	180.00-160.00	A	0.500	0.000	0.000	52.725	0.000	512.11

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	69.748	0.000	809.70
T3	160.00-140.00	A	0.500	0.000	0.000	88.171	0.000	735.66
		B		0.000	0.000	1.836	0.000	22.95
		C		0.000	0.000	102.571	0.000	1155.29
T4	140.00-120.00	A	0.500	0.000	0.000	116.830	0.000	916.43
		B		0.000	0.000	54.246	0.000	566.23
		C		0.000	0.000	102.571	0.000	1155.29
T5	120.00-100.00	A	0.500	0.000	0.000	127.895	0.000	994.09
		B		0.000	0.000	75.674	0.000	697.36
		C		0.000	0.000	107.821	0.000	1227.77
T6	100.00-80.00	A	0.500	0.000	0.000	139.570	0.000	1071.00
		B		0.000	0.000	75.674	0.000	697.36
		C		0.000	0.000	109.571	0.000	1251.94
T7	80.00-60.00	A	0.500	0.000	0.000	139.570	0.000	1071.00
		B		0.000	0.000	75.674	0.000	697.36
		C		0.000	0.000	109.571	0.000	1251.94
T8	60.00-40.00	A	0.500	0.000	0.000	139.570	0.000	1071.00
		B		0.000	0.000	75.674	0.000	697.36
		C		0.000	0.000	109.571	0.000	1251.94
T9	40.00-20.00	A	0.500	0.000	0.000	139.570	0.000	1071.00
		B		0.000	0.000	75.674	0.000	697.36
		C		0.000	0.000	109.571	0.000	1251.94
T10	20.00-5.00	A	0.500	0.000	0.000	83.742	0.000	642.60
		B		0.000	0.000	45.404	0.000	418.42
		C		0.000	0.000	65.742	0.000	751.16
T11	5.00-0.00	A	0.500	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
T1	190.00-180.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	1.179	2.029	2.358
T2	180.00-160.00	A	0.000	3.834	5.038	7.668
		B	0.000	0.000	0.000	0.000
		C	0.000	4.713	8.070	9.426
T3	160.00-140.00	A	0.470	7.072	8.640	11.974
		B	0.010	0.173	0.178	0.293
		C	0.609	7.524	11.207	12.740
T4	140.00-120.00	A	6.944	15.508	0.000	0.000
		B	3.293	7.906	0.000	0.000
		C	6.577	12.461	0.000	0.000
T5	120.00-100.00	A	0.000	9.639	13.997	19.278
		B	0.000	5.790	8.704	11.580
		C	0.000	7.371	12.790	14.742
T6	100.00-80.00	A	8.376	19.770	0.000	0.000
		B	4.763	10.561	0.000	0.000
		C	7.140	13.773	0.000	0.000
T7	80.00-60.00	A	0.776	9.007	8.867	12.557
		B	0.441	4.812	5.042	6.708
		C	0.661	6.275	7.558	8.748
T8	60.00-40.00	A	8.376	19.770	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	4.763	10.561	0.000	0.000
		C	7.140	13.773	0.000	0.000
T9	40.00-20.00	A	4.576	10.801	0.000	0.000
		B	2.602	5.770	0.000	0.000
		C	3.901	7.525	0.000	0.000
T10	20.00-5.00	A	2.892	6.825	0.000	0.000
		B	1.644	3.646	0.000	0.000
		C	2.465	4.755	0.000	0.000
T11	5.00-0.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	190.00-180.00	-1.0601	1.9477	-0.9206	1.7244
T2	180.00-160.00	-1.4268	1.4901	-1.1109	1.2452
T3	160.00-140.00	-0.9788	1.1011	-0.7537	0.9531
T4	140.00-120.00	-0.2383	0.2176	-0.3312	0.3097
T5	120.00-100.00	0.0382	0.0009	-0.0760	0.1006
T6	100.00-80.00	0.0393	-0.1122	-0.0836	-0.0461
T7	80.00-60.00	0.0408	-0.1114	-0.0811	-0.0421
T8	60.00-40.00	0.0393	-0.1122	-0.0836	-0.0461
T9	40.00-20.00	0.0347	-0.1147	-0.0945	-0.0657
T10	20.00-5.00	0.0345	-0.1129	-0.0926	-0.0636
T11	5.00-0.00	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
Rohn 6'x12' Boom Gate (3) (T-Mobile) *****	A	None		0.0000	190.00	No Ice 1/2" Ice	49.80 59.30	30.00 35.00	1680.00 2100.00
3" Dia 20' Omni	C	From Leg	5.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice	4.00 6.00	4.00 6.00	55.00 100.00
3" Dia. 5' Omni *****	B	From Leg	5.00 0.00 0.00	0.0000	181.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	12.00 25.00
Rohn 6'x15' Boom Gate (3) (AT&T)	B	None		0.0000	179.00	No Ice 1/2" Ice	53.20 63.30	30.00 35.00	1790.00 2230.00
(2) Powerwave 7770.00 w/pipe	A	From Leg	5.00 0.00	0.0000	180.00	No Ice 1/2" Ice	6.16 6.65	4.48 5.17	67.33 115.62

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
(AT&T)			0.00						
(2) TT19-08BP111-001 TMA	A	From Leg	5.00	0.0000	180.00	No Ice	0.64	0.52	16.00
(AT&T)			0.00			1/2" Ice	0.76	0.62	21.80
			0.00						
SBNH-1D6565C with pipe	A	From Leg	5.00	0.0000	180.00	No Ice	11.67	9.83	112.85
(AT&T)			0.00			1/2" Ice	12.39	11.35	202.42
			0.00						
(2) RRUS 11 incl sunshield	A	From Leg	4.00	0.0000	180.00	No Ice	2.99	1.25	50.00
(AT&T)			0.00			1/2" Ice	3.23	1.41	69.57
			0.00						
DC6-48-06-18-8F RayCap	A	From Leg	0.50	0.0000	180.00	No Ice	1.47	1.47	32.80
(AT&T)			0.00			1/2" Ice	1.67	1.67	50.52
			0.00						
(2) Powerwave 7770.00	B	From Leg	5.00	0.0000	180.00	No Ice	6.16	4.48	67.33
w/pipe			0.00			1/2" Ice	6.65	5.17	115.62
(AT&T)			0.00						
(2) TT19-08BP111-001 TMA	B	From Leg	5.00	0.0000	180.00	No Ice	0.64	0.52	16.00
(AT&T)			0.00			1/2" Ice	0.76	0.62	21.80
			0.00						
KMW AM-X-CD-16-65-00T	B	From Leg	5.00	0.0000	180.00	No Ice	6.89	5.65	84.85
w/2.5"D x 66"L pipe			0.00			1/2" Ice	7.39	6.39	143.52
(AT&T)			0.00						
(2) RRUS 11 incl sunshield	B	From Leg	4.00	0.0000	180.00	No Ice	2.99	1.25	50.00
(AT&T)			0.00			1/2" Ice	3.23	1.41	69.57
			0.00						
(2) Powerwave 7770.00	C	From Leg	5.00	0.0000	180.00	No Ice	6.16	4.48	67.33
w/pipe			0.00			1/2" Ice	6.65	5.17	115.62
(AT&T)			0.00						
(2) TT19-08BP111-001 TMA	C	From Leg	5.00	0.0000	180.00	No Ice	0.64	0.52	16.00
(AT&T)			0.00			1/2" Ice	0.76	0.62	21.80
			0.00						
P65-17-XLH-RR with Pipe	C	From Leg	5.00	0.0000	180.00	No Ice	11.70	8.94	102.85
(AT&T)			0.00			1/2" Ice	12.42	10.45	188.61
			0.00						
(2) RRUS 11 incl sunshield	C	From Leg	4.00	0.0000	180.00	No Ice	2.99	1.25	50.00
(AT&T)			0.00			1/2" Ice	3.23	1.41	69.57
			0.00						
*****									
Pirod 15' T-Frame Sector	A	From Leg	2.50	0.0000	168.00	No Ice	15.00	7.00	500.00
Mount (1)			0.00			1/2" Ice	20.60	9.00	650.00
(Verizon)			0.00						
(2) AmpenolAntel	A	From Leg	2.50	0.0000	168.00	No Ice	2.90	7.38	60.95
LPA-80080-4CF w/pipe			0.00			1/2" Ice	3.27	8.09	108.13
(Verizon)			0.00						
BXA-171085-8BF-EDIN	A	From Leg	2.50	0.0000	168.00	No Ice	3.41	3.58	32.40
with pipe			0.00			1/2" Ice	3.88	4.38	67.06
(Verizon)			0.00						
BXA-70063-6CF-EDIN-X	A	From Leg	2.50	0.0000	168.00	No Ice	7.99	5.82	75.55
with pipe			0.00			1/2" Ice	8.64	6.99	136.53
(Verizon)			0.00						
Pirod 15' T-Frame Sector	B	From Leg	2.50	0.0000	168.00	No Ice	15.00	7.00	500.00
Mount (1)			0.00			1/2" Ice	20.60	9.00	650.00
(Verizon)			0.00						
(2) AmpenolAntel	B	From Leg	2.50	0.0000	168.00	No Ice	2.90	7.38	60.95
LPA-80080-4CF w/pipe			0.00			1/2" Ice	3.27	8.09	108.13
(Verizon)			0.00						
BXA-171085-8BF-EDIN	B	From Leg	2.50	0.0000	168.00	No Ice	3.41	3.58	32.40

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
with pipe			0.00			1/2" Ice	3.88	4.38	67.06
(Verizon)			0.00						
BXA-70063-6CF-EDIN-X	B	From Leg	2.50	0.0000	168.00	No Ice	7.99	5.82	75.55
with pipe			0.00			1/2" Ice	8.64	6.99	136.53
(Verizon)			0.00						
Pirod 15' T-Frame Sector Mount (1)	C	From Leg	2.50	0.0000	168.00	No Ice	15.00	7.00	500.00
			0.00			1/2" Ice	20.60	9.00	650.00
(Verizon)			0.00						
(2) AmpenolAntel LPA-80080-4CF w/pipe	C	From Leg	2.50	0.0000	168.00	No Ice	2.90	7.38	60.95
			0.00			1/2" Ice	3.27	8.09	108.13
(Verizon)			0.00						
BXA-171085-8BF-EDIN	C	From Leg	2.50	0.0000	168.00	No Ice	3.41	3.58	32.40
with pipe			0.00			1/2" Ice	3.88	4.38	67.06
(Verizon)			0.00						
BXA-70063-6CF-EDIN-X	C	From Leg	2.50	0.0000	168.00	No Ice	7.99	5.82	75.55
with pipe			0.00			1/2" Ice	8.64	6.99	136.53
(Verizon)			0.00						
*****									
Rohn 6'x15' Boom Gate (3)	C	None		0.0000	151.00	No Ice	53.20	53.20	1790.00
(Sprint)						1/2" Ice	63.30	63.30	2230.00
APXVSPP18-C-A20 with pipe	A	From Leg	5.00	0.0000	151.00	No Ice	8.50	6.95	90.55
			0.00			1/2" Ice	9.15	8.13	158.56
(Sprint)			0.00						
RRH1900MHz	A	From Leg	2.00	0.0000	149.00	No Ice	3.01	4.26	59.13
(Sprint)			0.00			1/2" Ice	3.29	4.68	97.16
			0.00						
RRH800MHz	A	From Leg	2.00	0.0000	153.00	No Ice	2.59	2.73	49.43
(Sprint)			0.00			1/2" Ice	2.86	3.10	78.53
			0.00						
APXVSPP18-C-A20 with pipe	B	From Leg	5.00	0.0000	151.00	No Ice	8.50	6.95	90.55
			0.00			1/2" Ice	9.15	8.13	158.56
(Sprint)			0.00						
RRH1900MHz	B	From Leg	2.00	0.0000	149.00	No Ice	3.01	4.26	59.13
(Sprint)			0.00			1/2" Ice	3.29	4.68	97.16
			0.00						
RRH800MHz	B	From Leg	2.00	0.0000	153.00	No Ice	2.59	2.73	49.43
(Sprint)			0.00			1/2" Ice	2.86	3.10	78.53
			0.00						
APXVSPP18-C-A20 with pipe	C	From Leg	5.00	0.0000	151.00	No Ice	8.50	6.95	90.55
			0.00			1/2" Ice	9.15	8.13	158.56
(Sprint)			0.00						
RRH1900MHz	C	From Leg	2.00	0.0000	149.00	No Ice	3.01	4.26	59.13
(Sprint)			0.00			1/2" Ice	3.29	4.68	97.16
			0.00						
RRH800MHz	C	From Leg	2.00	0.0000	153.00	No Ice	2.59	2.73	49.43
(Sprint)			0.00			1/2" Ice	2.86	3.10	78.53
			0.00						
*****									
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00	0.0000	151.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00						
8' Dipole	B	From Leg	4.00	0.0000	154.50	No Ice	2.40	2.40	25.00
			0.00			1/2" Ice	3.19	3.19	42.51
			0.00						
*****									
Rohn 6'x15' Boom Gate (3)	A	None		0.0000	141.00	No Ice	53.20	53.20	1790.00
						1/2" Ice	63.30	63.30	2230.00

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
(4) DB844H90E-XY w/Mount Pipe	A	From Leg	5.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice	3.58 4.20	5.40 6.49	35.55 79.42
(4) DB844H90E-XY w/Mount Pipe	B	From Leg	5.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice	3.58 4.20	5.40 6.49	35.55 79.42
(4) DB844H90E-XY w/Mount Pipe	C	From Leg	5.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice	3.58 4.20	5.40 6.49	35.55 79.42
*****									
PiROD 10' Lightweight T-Frame	A	From Leg	3.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice	9.30 14.50	5.00 5.50	251.00 344.00
Kathrein 800 10504 with pipe	A	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice	3.71 4.18	3.29 4.11	46.90 80.82
PiROD 10' Lightweight T-Frame	B	From Leg	3.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice	9.30 14.50	5.00 5.00	251.00 344.00
Kathrein 800 10504 with pipe	B	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice	3.71 4.18	3.29 4.11	46.90 80.82
PiROD 10' Lightweight T-Frame	C	From Leg	3.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice	9.30 14.50	5.00 5.50	251.00 344.00
Kathrein 800 10504 with pipe	C	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice	3.71 4.18	3.29 4.11	46.90 80.82
*****									
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00 0.00 0.00	0.0000	119.50	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00
10' Dipole AF	B	From Leg	2.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	2.00 3.02	2.00 3.02	20.00 35.50
*****									
2' Standoff T-Arm (5' face width)	A	From Leg	0.50 0.00 0.00	0.0000	115.50	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	91.00 120.00
LLPX310R	A	From Leg	1.00 0.00 0.00	0.0000	116.30	No Ice 1/2" Ice	4.94 5.33	3.09 3.61	60.23 101.63
23.68"x15.74"x6.73" RRH	A	From Leg	1.00 0.00 0.00	0.0000	114.50	No Ice 1/2" Ice	3.62 3.88	1.55 1.75	55.10 77.30
2' Standoff T-Arm (5' face width)	B	From Leg	0.50 0.00 0.00	0.0000	115.50	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	91.00 120.00
LLPX310R	B	From Leg	1.00 0.00 0.00	0.0000	116.30	No Ice 1/2" Ice	4.94 5.33	3.09 3.61	60.23 101.63
23.68"x15.74"x6.73" RRH	B	From Leg	1.00 0.00 0.00	0.0000	114.50	No Ice 1/2" Ice	3.62 3.88	1.55 1.75	55.10 77.30
2' Standoff T-Arm (5' face width)	C	From Leg	0.50 0.00 0.00	0.0000	115.50	No Ice 1/2" Ice	3.50 4.20	3.50 4.20	91.00 120.00

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
LLPX310R	C	From Leg	1.00 0.00 0.00	0.0000	116.30	No Ice 1/2" Ice	4.94 5.33	3.09 3.61	60.23 101.63
23.68"x15.74"x6.73" RRH	C	From Leg	1.00 0.00 0.00	0.0000	114.50	No Ice 1/2" Ice	3.62 3.88	1.55 1.75	55.10 77.30
24"x24"x9" Junction box	A	From Leg	0.50 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	5.60 5.92	2.10 2.32	50.00 84.55
*****									
7' Yagi	C	From Leg	1.00 0.00 0.00	0.0000	113.00	No Ice 1/2" Ice	5.16 9.41	5.16 9.41	72.55 123.22
Pirod 4' Side Mount Standoff (1)	B	From Leg	1.50 0.00 0.00	0.0000	104.00	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00
GPS	B	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice	0.34 0.51	0.34 0.51	6.08 11.71
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00
3" Dia 20' Omni	B	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	4.00 6.00	4.00 6.00	55.00 100.00
Pirod 4' Side Mount Standoff (1)	A	From Leg	2.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00
3" Dia 20' Omni	A	From Leg	4.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	4.00 6.00	4.00 6.00	55.00 100.00
Proposed									
APX16PV-16PVL w/ Mount Pipe (T-Mobile)	A	From Leg	5.00 -6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	6.88 7.39	3.27 3.97	59.37 104.78
APX16PV-16PVL w/ Mount Pipe (T-Mobile)	B	From Leg	5.00 -6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	6.88 7.39	3.27 3.97	59.37 104.78
APX16PV-16PVL w/ Mount Pipe (T-Mobile)	C	From Leg	5.00 -6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	6.88 7.39	3.27 3.97	59.37 104.78
dd B2 TMA (T-Mobile)	A	From Leg	5.00 6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.88 1.07	0.88 1.13	29.93 42.51
dd B2 TMA (T-Mobile)	B	From Leg	5.00 6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.88 1.07	0.88 1.13	29.93 42.51
dd B2 TMA (T-Mobile)	C	From Leg	5.00 6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.88 1.07	0.88 1.13	29.93 42.51
dd B4 TMA (T-Mobile)	A	From Leg	5.00 6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.64 0.82	0.52 0.71	22.43 31.53
dd B4 TMA (T-Mobile)	B	From Leg	5.00 6.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.64 0.82	0.52 0.71	22.43 31.53
dd B4 TMA	C	From Leg	5.00	0.0000	190.00	No Ice	0.64	0.52	22.43

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)
(T-Mobile)			6.00 0.00			1/2" Ice	0.82	0.71	31.53
LNX-6515DS-VTM w/ Mount Pipe (T-Mobile)	A	From Leg	5.00 -6.00 0.00	0.0000	188.00	No Ice 1/2" Ice	11.68 12.40	9.84 11.37	83.27 172.93
LNX-6515DS-VTM w/ Mount Pipe (T-Mobile)	B	From Leg	5.00 -6.00 0.00	0.0000	188.00	No Ice 1/2" Ice	11.68 12.40	9.84 11.37	83.27 172.93
LNX-6515DS-VTM w/ Mount Pipe (T-Mobile)	C	From Leg	5.00 -6.00 0.00	0.0000	188.00	No Ice 1/2" Ice	11.68 12.40	9.84 11.37	83.27 172.93
Smart Bias-T (T-Mobile)	A	From Leg	5.00 6.00 0.00	0.0000	188.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	5.00 0.00
Smart Bias-T (T-Mobile)	B	From Leg	5.00 6.00 0.00	0.0000	188.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	5.00 0.00
Smart Bias-T (T-Mobile)	C	From Leg	5.00 6.00 0.00	0.0000	188.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	5.00 0.00

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
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

Comb. No.	Description
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 lb-ft	Minor Axis Moment lb-ft
T1	190 - 180	Leg	Max Tension	8	15688.20	-97.33	1054.58
			Max. Compression	10	-17981.47	-692.88	460.98
			Max. Mx	5	10562.20	970.24	-130.80
			Max. My	8	12634.81	-97.32	1054.61
			Max. Vy	6	2446.43	733.55	381.72
			Max. Vx	2	-2697.51	89.22	-828.41
		Diagonal	Max Tension	5	2999.17	0.00	0.00
			Max. Compression	11	-3028.53	0.00	0.00
			Max. Mx	9	1596.96	18.71	-1.91
			Max. My	20	-2249.58	-7.39	-3.50
			Max. Vy	22	13.21	18.54	-1.97
			Max. Vx	20	1.66	-7.39	-3.50
		Top Girt	Max Tension	10	441.25	0.00	0.00
			Max. Compression	8	-461.29	0.00	0.00
			Max. Mx	14	-7.67	-7.48	0.00
			Max. My	20	-4.02	0.00	0.00
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	581.31	0.00	0.00
			Max. Compression	10	-717.87	0.00	0.00
			Max. Mx	14	28.71	-7.48	0.00
			Max. My	20	87.25	0.00	0.00
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
T2	180 - 160	Leg	Max Tension	8	87628.46	0.00	0.00
			Max. Compression	10	-100730.28	2475.19	-1356.21
			Max. Mx	10	43632.73	8464.96	-1310.16
			Max. My	2	43301.37	-2967.01	7923.20
			Max. Vy	4	-7655.15	-2749.82	1512.14
			Max. Vx	8	-8781.46	-85.97	-3154.91
		Diagonal	Max Tension	9	16351.35	0.00	0.00
			Max. Compression	9	-20116.73	-209.20	-78.24
			Max. Mx	8	4640.30	-369.58	0.51
			Max. My	9	-5297.95	-56.94	-198.30
			Max. Vy	8	-179.45	0.00	0.00
			Max. Vx	9	-94.82	0.00	0.00
		Secondary Horizontal	Max Tension	9	5232.88	0.00	0.00
			Max. Compression	10	-1744.70	0.00	0.00
			Max. Mx	14	343.20	-7.48	0.00
			Max. My	20	1423.37	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Top Girt	Max Tension	10	2659.49	0.00	0.00
			Max. Compression	8	-3146.55	0.00	0.00
			Max. Mx	14	-35.68	-7.48	0.00
			Max. My	20	73.38	0.00	0.00
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Bottom Girt	Max Tension	10	14497.09	0.00	0.00
			Max. Compression	8	-12393.98	0.00	0.00
			Max. Mx	14	829.23	-7.48	0.00
			Max. My	19	-4081.01	0.00	-0.00
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Guy A	Bottom Tension	7	34200.91		
			Top Tension	7	34451.09		
			Top Cable Vert	7	26379.04		
			Top Cable Norm	7	22159.01		
			Top Cable Tan	7	41.31		
			Bot Cable Vert	7	-25839.79		
			Bot Cable Norm	7	22403.52		
			Bot Cable Tan	7	299.09		
		Guy B	Bottom Tension	13	34526.41		
			Top Tension	13	34785.91		
			Top Cable Vert	13	26877.11		
			Top Cable Norm	13	22083.45		
			Top Cable Tan	13	40.89		
			Bot Cable Vert	13	-26324.64		
			Bot Cable Norm	13	22338.17		
			Bot Cable Tan	13	304.35		
		Guy C	Bottom Tension	3	34015.06		
			Top Tension	3	34265.22		
			Top Cable Vert	3	26238.15		
			Top Cable Norm	3	22037.75		
			Top Cable Tan	3	45.01		
			Bot Cable Vert	3	-25698.90		
			Bot Cable Norm	3	22282.27		
			Bot Cable Tan	3	302.79		
		Torque Arm Top	Max Tension	11	26084.42	0.00	0.00
			Max. Compression	11	-13794.70	0.00	0.00
			Max. Mx	11	-987.76	-96209.60	0.00
			Max. My	20	-11772.80	-86226.33	0.00
			Max. Vy	11	26310.51	-96209.60	0.00
			Max. Vx	20	0.00	-86226.33	0.00
T3	160 - 140	Leg	Max Tension	8	28391.60	91.46	2954.05
			Max. Compression	10	-87316.87	-2630.17	1440.93
			Max. Mx	10	-79163.16	-2630.18	1440.93
			Max. My	2	-78438.51	-86.70	-2994.19
			Max. Vy	4	-7636.01	-2112.04	1161.50
			Max. Vx	8	-8760.52	-64.87	-2423.24
		Diagonal	Max Tension	7	7074.19	0.00	0.00
			Max. Compression	7	-7663.36	38.91	8.36
			Max. Mx	10	5484.70	-91.44	4.58
			Max. My	22	-5888.36	37.55	-13.59
			Max. Vy	23	-46.49	0.00	0.00
			Max. Vx	22	6.50	0.00	0.00
		Secondary Horizontal	Max Tension	8	1757.19	0.00	0.00
			Max. Compression	10	-1512.37	0.00	0.00
			Max. Mx	14	405.71	-7.48	0.00
			Max. My	20	1255.22	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Top Girt	Max Tension	15	903.36	0.00	0.00
			Max. Compression	4	-740.30	0.00	0.00
			Max. Mx	14	126.83	4.37	0.00
			Max. My	20	424.52	0.00	-0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	10	215.51	0.00	0.00
			Max. Compression	8	-319.29	0.00	0.00
			Max. Mx	14	-11.94	4.37	0.00
			Max. My	23	-186.61	0.00	0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
T4	140 - 120	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	13	-50864.77	-0.05	0.05
			Max. Mx	11	-42296.51	-691.36	-188.40
			Max. My	8	-33730.49	-31.96	705.75
			Max. Vy	5	2357.90	491.34	-138.57
			Max. Vx	8	2502.97	-17.91	497.43
		Diagonal	Max Tension	5	2114.74	0.00	0.00
			Max. Compression	5	-2550.85	0.00	0.00
			Max. Mx	13	115.91	-33.08	-2.17
			Max. My	13	-1029.44	29.72	-3.68
			Max. Vy	26	17.53	-31.33	-1.78
			Max. Vx	13	-1.76	29.72	-3.68
		Top Girt	Max Tension	23	301.77	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	180.04	4.37	0.00
			Max. My	23	301.77	0.00	0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Bottom Girt	Max Tension	24	640.74	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	339.90	4.37	0.00
			Max. My	22	523.04	0.00	-0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T5	120 - 100	Leg	Max Tension	4	11198.58	0.00	0.00
			Max. Compression	6	-81980.37	-1275.87	-750.09
			Max. Mx	10	-19192.38	5102.95	-2093.49
			Max. My	2	-19481.56	741.30	5482.99
			Max. Vy	9	-3801.18	4286.08	-3275.24
			Max. Vx	8	-4187.00	8.82	-1791.98
		Diagonal	Max Tension	4	6764.69	0.00	0.00
			Max. Compression	5	-9675.59	-46.05	-32.93
			Max. Mx	3	-227.99	-207.75	-41.53
			Max. My	5	-3245.94	-72.42	-88.49
			Max. Vy	3	-102.06	0.00	0.00
			Max. Vx	5	-42.31	-72.42	-88.49
		Secondary Horizontal	Max Tension	3	4257.69	0.00	0.00
			Max. Compression	6	-1419.94	0.00	0.00
			Max. Mx	14	617.53	-7.48	0.00
			Max. My	22	1276.74	0.00	0.00
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Top Girt	Max Tension	2	1176.17	0.00	0.00
			Max. Compression	4	-1419.07	0.00	0.00
			Max. Mx	14	-88.96	-7.48	0.00
			Max. My	22	-92.44	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Bottom Girt	Max Tension	2	6834.21	0.00	0.00
			Max. Compression	4	-5872.79	0.00	0.00
			Max. Mx	14	340.37	-7.48	0.00
			Max. My	23	-1759.06	0.00	-0.00
			Max. Vy	14	8.76	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
		Guy A	Bottom Tension	9	18059.66		
			Top Tension	9	18140.14		
			Top Cable Vert	9	13809.12		
			Top Cable Norm	9	11763.15		
			Top Cable Tan	9	33.16		
			Bot Cable Vert	9	-13620.54		
			Bot Cable Norm	9	11858.05		
			Bot Cable Tan	9	137.63		
		Guy B	Bottom Tension	13	18341.26		
			Top Tension	13	18425.73		
			Top Cable Vert	13	14240.85		
			Top Cable Norm	13	11692.08		
			Top Cable Tan	13	31.50		
			Bot Cable Vert	13	-14046.83		
			Bot Cable Norm	13	11792.76		
			Bot Cable Tan	13	138.87		
		Guy C	Bottom Tension	3	18005.06		
			Top Tension	3	18085.54		
			Top Cable Vert	3	13701.26		
			Top Cable Norm	3	11805.13		
			Top Cable Tan	3	32.63		
			Bot Cable Vert	3	-13511.84		
			Bot Cable Norm	3	11899.31		
			Bot Cable Tan	3	137.22		
		Torque Arm Top	Max Tension	5	13832.87	0.00	0.00
			Max. Compression	5	-7568.55	0.00	0.00
			Max. Mx	13	-914.53	-50162.61	-0.00
			Max. My	22	-5769.17	-40183.97	-0.00
			Max. Vy	13	13743.82	-50162.61	-0.00
			Max. Vx	22	-0.00	-40183.97	-0.00
T6	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-77493.61	310.81	183.28
			Max. Mx	4	-17521.79	-1244.72	739.46
			Max. My	8	-18223.58	7.41	-1443.30
			Max. Vy	4	-3605.28	-1244.72	739.46
			Max. Vx	8	-4187.00	7.41	-1443.30
		Diagonal	Max Tension	3	2706.78	15.78	-1.11
			Max. Compression	3	-2872.00	-4.74	-1.99
			Max. Mx	15	-1231.35	-20.53	-1.44
			Max. My	3	-2213.06	0.45	3.03
			Max. Vy	15	11.64	-20.53	-1.44
			Max. Vx	3	1.45	0.45	3.03
		Top Girt	Max Tension	2	973.19	0.00	0.00
			Max. Compression	12	-256.01	0.00	0.00
			Max. Mx	14	268.71	3.09	0.00
			Max. My	22	424.20	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	10	442.26	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	236.82	3.09	0.00
			Max. My	22	365.11	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	22	0.00	0.00	0.00
T7	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-69645.81	-15.37	92.58
			Max. Mx	11	-52736.75	-821.06	-290.21
			Max. My	7	-52137.24	149.61	831.05
			Max. Vy	10	-1555.20	-56.32	11.97
			Max. Vx	2	-1788.31	-14.58	-60.26
		Diagonal	Max Tension	13	1151.38	0.00	0.00
			Max. Compression	13	-2041.20	0.00	0.00
			Max. Mx	15	638.69	47.36	-0.34
			Max. My	4	-761.12	-0.12	-1.70
			Max. Vy	15	-25.96	47.36	-0.34
			Max. Vx	4	0.82	0.00	0.00
		Top Girt	Max Tension	22	351.22	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	216.13	4.37	0.00
			Max. My	22	277.14	0.00	-0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	15	658.45	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	402.69	4.37	0.00
			Max. My	22	621.75	0.00	-0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T8	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-93559.66	3.83	2310.37
			Max. Mx	11	-48309.52	3363.93	-700.18
			Max. My	13	-48303.39	1017.58	3294.46
			Max. Vy	10	3565.01	2297.29	-1319.16
			Max. Vx	2	3837.56	-27.98	2646.39
		Diagonal	Max Tension	11	5345.88	0.00	0.00
			Max. Compression	11	-5802.79	8.60	-12.06
			Max. Mx	11	668.16	80.43	14.50
			Max. My	11	-1801.67	32.16	-32.51
			Max. Vy	11	39.97	0.00	0.00
			Max. Vx	11	-15.54	0.00	0.00
		Top Girt	Max Tension	2	776.11	0.00	0.00
			Max. Compression	12	-402.93	0.00	0.00
			Max. Mx	14	148.70	4.37	0.00
			Max. My	22	175.70	0.00	-0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	13	2232.27	0.00	0.00
			Max. Compression	11	-1351.14	0.00	0.00
			Max. Mx	14	383.62	4.37	0.00
			Max. My	22	-62.40	0.00	-0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Guy A	Bottom Tension	9	8571.71		
			Top Tension	9	8592.48		
			Top Cable Vert	9	3687.82		
			Top Cable Norm	9	7760.85		
			Top Cable Tan	9	2.09		
			Bot Cable Vert	9	-3614.06		
			Bot Cable Norm	9	7772.47		
			Bot Cable Tan	9	38.59		
		Guy B	Bottom Tension	13	8802.36		
			Top Tension	13	8825.70		
			Top Cable Vert	13	4117.72		
			Top Cable Norm	13	7806.24		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Tan	13	3.05		
			Bot Cable Vert	13	-4039.11		
			Bot Cable Norm	13	7820.84		
			Bot Cable Tan	13	40.10		
		Guy C	Bottom Tension	3	8515.60		
			Top Tension	3	8536.37		
			Top Cable Vert	3	3630.02		
			Top Cable Norm	3	7726.09		
			Top Cable Tan	3	2.44		
			Bot Cable Vert	3	-3555.82		
			Bot Cable Norm	3	7737.57		
			Bot Cable Tan	3	38.47		
		Torque Arm Top	Max Tension	13	9189.69	0.00	0.00
			Max. Compression	13	-5072.22	0.00	0.00
			Max. Mx	13	-353.64	-14696.45	-0.00
			Max. My	9	-5003.27	-12350.24	-0.00
			Max. Vy	13	4050.92	-14696.45	-0.00
			Max. Vx	9	-0.00	-12350.24	-0.00
T9	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-89826.83	316.53	41.37
			Max. Mx	6	-85131.35	-2022.67	-1149.57
			Max. My	2	-85972.19	15.36	2326.80
			Max. Vy	10	3612.87	2000.38	-1194.26
			Max. Vx	2	3895.31	15.36	2326.80
		Diagonal	Max Tension	9	4155.91	0.00	0.00
			Max. Compression	7	-4611.71	0.00	0.00
			Max. Mx	23	-3583.63	3.79	0.00
			Max. My	15	140.35	0.00	-0.01
			Max. Vy	23	-3.63	0.00	0.00
			Max. Vx	15	0.01	0.00	0.00
		Top Girt	Max Tension	12	1672.46	0.00	0.00
			Max. Compression	10	-1566.97	0.00	0.00
			Max. Mx	14	110.11	3.09	0.00
			Max. My	22	-48.01	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	494.19	0.00	0.00
			Max. Compression	19	-257.90	0.00	0.00
			Max. Mx	17	36.22	3.09	0.00
			Max. My	22	494.17	0.00	-0.00
			Max. Vy	17	-3.61	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T10	20 - 5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-69309.26	-207.36	-233.79
			Max. Mx	15	-67013.08	1374.44	757.51
			Max. My	23	-67100.45	-27.65	-1570.98
			Max. Vy	16	7484.15	-1236.03	826.29
			Max. Vx	23	8630.87	-27.65	-1570.98
		Diagonal	Max Tension	4	1121.11	0.00	0.00
			Max. Compression	19	-1779.02	0.00	0.00
			Max. Mx	26	506.20	5.34	0.00
			Max. My	2	158.24	0.00	-0.01
			Max. Vy	26	-5.13	0.00	0.00
			Max. Vx	2	0.01	0.00	0.00
		Top Girt	Max Tension	19	681.32	0.00	0.00
			Max. Compression	9	-46.00	0.00	0.00
			Max. Mx	17	268.27	4.37	0.00
			Max. My	22	-38.13	0.00	-0.00
			Max. Vy	17	-5.11	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	23	4751.83	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	3173.85	4.37	0.00
			Max. My	13	3926.63	0.00	0.00
			Max. Vy	14	-5.11	0.00	0.00
			Max. Vx	13	-0.00	0.00	0.00
T11	5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-72436.03	-20.29	-27.32
			Max. Mx	23	-69555.97	-1769.43	29.09
			Max. My	13	-55969.26	-1349.24	-208.50
			Max. Vy	23	16601.00	-1476.72	-150.01
			Max. Vx	4	289.87	-1101.41	-192.28
		Horizontal	Max Tension	10	36.44	161.39	-68.01
			Max. Compression	23	-492.74	102.39	-43.80
			Max. Mx	2	-46.88	241.56	-107.62
			Max. My	2	-34.58	180.93	-116.56
			Max. Vy	13	96.37	232.87	-86.54
			Max. Vx	2	43.16	187.17	-60.36
		Top Girt	Max Tension	23	10733.05	389.67	-159.49
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	22	10263.43	397.89	-148.97
			Max. My	10	9808.64	350.37	-189.63
			Max. Vy	11	-65.59	394.11	-163.05
			Max. Vx	10	-36.33	264.78	-76.79
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-3093.73	748.49	-359.56
			Max. Mx	2	-3067.05	836.07	-392.79
			Max. My	2	-3030.46	756.07	-399.74
			Max. Vy	13	898.80	804.13	-336.70
			Max. Vx	2	415.72	629.54	-257.78

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	23	200735.01	-421.01	219.20
	Max. H_x	12	136797.50	927.14	533.40
	Max. H_z	4	135359.64	-999.52	595.68
	Max. M_x	1	0.00	2.03	19.69
	Max. M_z	1	0.00	2.03	19.69
	Max. Torsion	8	-44.18	19.35	-1106.37
	Min. Vert	1	102771.10	2.03	19.69
	Min. H_x	4	135359.64	-999.52	595.68
	Min. H_z	8	135760.41	19.35	-1106.37
	Min. M_x	1	0.00	2.03	19.69
	Min. M_z	1	0.00	2.03	19.69
	Min. Torsion	13	-185.77	569.52	-116.71
Guy C @ 138 ft Elev 2 ft Azimuth 240 deg	Max. Vert	10	-496.08	-227.44	131.46
	Max. H_x	10	-496.08	-227.44	131.46
	Max. H_z	3	-51239.57	-38190.60	22718.16
	Min. Vert	5	-51262.48	-38784.34	21728.56
	Min. H_x	5	-51262.48	-38784.34	21728.56
	Min. H_z	10	-496.08	-227.44	131.46
Guy B @ 140 ft Elev -4 ft	Max. Vert	6	-565.13	259.68	149.96

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Azimuth 120 deg					
	Max. H_x	11	-52370.11	38785.33	21714.63
	Max. H_z	13	-52323.28	38168.77	22703.46
	Min. Vert	11	-52370.11	38785.33	21714.63
	Min. H_x	6	-565.13	259.68	149.96
	Min. H_z	6	-565.13	259.68	149.96
Guy A @ 138 ft Elev 2 ft	Max. Vert	2	-497.05	0.10	-263.50
Azimuth 0 deg					
	Max. H_x	24	-25070.16	1130.36	-21720.94
	Max. H_z	2	-497.05	0.10	-263.50
	Min. Vert	9	-51358.06	580.84	-44535.34
	Min. H_x	18	-25136.50	-1122.33	-21777.39
	Min. H_z	9	-51358.06	580.84	-44535.34
Guy C @ 89 ft Elev 2 ft	Max. Vert	10	-331.11	-283.15	163.63
Azimuth 240 deg					
	Max. H_x	10	-331.11	-283.15	163.63
	Max. H_z	3	-33769.82	-33490.30	19696.26
	Min. Vert	3	-33769.82	-33490.30	19696.26
	Min. H_x	5	-33738.11	-33764.73	19134.64
	Min. H_z	10	-331.11	-283.15	163.63
Guy B @ 89 ft Elev -3 ft	Max. Vert	6	-388.46	280.24	161.79
Azimuth 120 deg					
	Max. H_x	11	-35804.34	33775.39	19125.38
	Max. H_z	13	-35903.42	33541.84	19738.81
	Min. Vert	13	-35903.42	33541.84	19738.81
	Min. H_x	6	-388.46	280.24	161.79
	Min. H_z	6	-388.46	280.24	161.79
Guy A @ 88 ft Elev 2 ft	Max. Vert	2	-337.91	0.13	-322.89
Azimuth 0 deg					
	Max. H_x	24	-15369.81	791.26	-18056.74
	Max. H_z	2	-337.91	0.13	-322.89
	Min. Vert	7	-34149.24	-312.79	-38872.80
	Min. H_x	18	-15608.51	-788.40	-18316.77
	Min. H_z	7	-34149.24	-312.79	-38872.80

Tower Mast Reaction Summary

Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M_x*	*Overturning Moment, M_z*	*Torque*
	lb	*lb*	*lb*	*lb-ft*	*lb-ft*	*lb-ft*
Dead Only	102771.10	-2.03	-19.69	0.00	0.00	61.69
Dead+Wind 0 deg - No Ice+Guy	190692.22	61.49	284.76	0.00	0.00	177.54
Dead+Wind 30 deg - No Ice+Guy	172623.22	669.00	46.02	0.00	0.00	127.97
Dead+Wind 60 deg - No Ice+Guy	135359.64	999.52	-595.68	0.00	0.00	100.14
Dead+Wind 90 deg - No Ice+Guy	171290.78	315.28	-583.74	0.00	0.00	110.03
Dead+Wind 120 deg - No Ice+Guy	188184.57	-165.47	-131.34	0.00	0.00	88.79
Dead+Wind 150 deg - No Ice+Guy	171550.84	-337.25	504.61	0.00	0.00	51.38

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 180 deg - No Ice+Guy	135760.41	-19.35	1106.37	0.00	0.00	44.18
Dead+Wind 210 deg - No Ice+Guy	172982.59	381.26	502.33	0.00	0.00	77.78
Dead+Wind 240 deg - No Ice+Guy	190928.77	279.33	-131.19	0.00	0.00	73.20
Dead+Wind 270 deg - No Ice+Guy	174198.50	-182.83	-576.55	0.00	0.00	60.01
Dead+Wind 300 deg - No Ice+Guy	136797.50	-927.14	-533.40	0.00	0.00	87.66
Dead+Wind 330 deg - No Ice+Guy	174099.86	-569.52	116.71	0.00	0.00	185.77
Dead+Ice+Temp+Guy	136703.77	-3.48	-24.09	0.00	0.00	81.83
Dead+Wind 0 deg+Ice+Temp+Guy	200485.42	53.83	456.96	0.00	0.00	141.39
Dead+Wind 30 deg+Ice+Temp+Guy	189087.34	479.70	269.77	0.00	0.00	151.69
Dead+Wind 60 deg+Ice+Temp+Guy	169449.38	587.25	-365.44	0.00	0.00	126.49
Dead+Wind 90 deg+Ice+Temp+Guy	188522.50	14.48	-540.65	0.00	0.00	108.37
Dead+Wind 120 deg+Ice+Temp+Guy	198743.23	-349.77	-235.95	0.00	0.00	126.98
Dead+Wind 150 deg+Ice+Temp+Guy	188724.60	-448.55	225.69	0.00	0.00	130.58
Dead+Wind 180 deg+Ice+Temp+Guy	169786.70	-22.91	636.33	0.00	0.00	88.57
Dead+Wind 210 deg+Ice+Temp+Guy	189453.41	476.06	231.76	0.00	0.00	72.00
Dead+Wind 240 deg+Ice+Temp+Guy	200735.01	421.01	-219.20	0.00	0.00	83.55
Dead+Wind 270 deg+Ice+Temp+Guy	190350.07	94.58	-529.31	0.00	0.00	90.69
Dead+Wind 300 deg+Ice+Temp+Guy	170146.76	-523.61	-303.31	0.00	0.00	78.53
Dead+Wind 330 deg+Ice+Temp+Guy	190189.16	-390.72	336.30	0.00	0.00	109.61
Dead+Wind 0 deg - Service+Guy	103445.54	3.68	-470.64	0.00	0.00	70.54
Dead+Wind 30 deg - Service+Guy	103534.38	223.48	-404.09	0.00	0.00	69.93
Dead+Wind 60 deg - Service+Guy	103694.16	380.38	-242.33	0.00	0.00	62.43
Dead+Wind 90 deg - Service+Guy	103765.82	440.20	-23.69	0.00	0.00	54.19
Dead+Wind 120 deg - Service+Guy	103821.52	387.43	202.20	0.00	0.00	53.65
Dead+Wind 150 deg - Service+Guy	103801.48	215.02	359.71	0.00	0.00	54.51
Dead+Wind 180 deg - Service+Guy	103756.20	-7.11	417.62	0.00	0.00	52.49
Dead+Wind 210 deg - Service+Guy	103611.14	-227.55	364.54	0.00	0.00	52.33
Dead+Wind 240 deg - Service+Guy	103522.50	-395.51	210.34	0.00	0.00	59.90
Dead+Wind 270 deg - Service+Guy	103359.85	-443.15	-14.00	0.00	0.00	67.60
Dead+Wind 300 deg - Service+Guy	103311.91	-378.24	-233.55	0.00	0.00	69.08
Dead+Wind 330 deg - Service+Guy	103318.31	-217.53	-398.77	0.00	0.00	67.78

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-40406.57	0.00	-2.22	40406.52	-1.13	0.006%
2	20.70	-40608.05	-73261.13	-20.74	40607.95	73259.31	0.002%
3	36434.53	-40407.25	-63185.65	-36434.59	40407.11	63182.94	0.003%
4	63003.20	-40206.08	-36445.44	-63000.18	40205.91	36442.30	0.005%
5	72832.92	-40388.90	-24.56	-72831.10	40388.79	25.60	0.003%
6	63331.50	-40575.47	36611.09	-63328.96	40575.31	-36609.62	0.004%
7	36396.66	-40388.37	63169.18	-36394.84	40388.27	-63168.11	0.003%
8	-20.70	-40205.35	72855.56	17.53	40205.18	-72851.28	0.006%
9	-36434.53	-40406.20	63185.65	36432.13	40406.06	-63184.33	0.003%
10	-63354.43	-40607.32	36648.23	63352.82	40607.22	-36647.35	0.002%
11	-72832.92	-40424.54	24.56	72830.43	40424.40	-23.21	0.003%
12	-62980.27	-40237.93	-36408.31	62977.54	40237.84	36408.58	0.003%
13	-36396.66	-40425.07	-63169.17	36396.58	40424.93	63166.37	0.003%
14	0.00	-66637.00	0.00	-5.35	66636.89	-1.52	0.008%
15	-4.52	-67005.64	-64581.59	4.44	67005.48	64578.48	0.003%
16	32209.20	-66638.12	-55853.55	-32209.33	66638.02	55851.32	0.002%
17	55783.43	-66269.92	-32241.15	-55779.55	66269.78	32240.28	0.004%
18	64425.00	-66603.11	-3.25	-64421.92	66602.94	5.16	0.004%
19	55861.38	-66943.38	32291.37	-55859.32	66943.25	-32290.18	0.003%
20	32212.75	-66602.10	55866.20	-32209.54	66601.93	-55864.48	0.004%
21	4.52	-66268.57	64491.13	-5.47	66268.43	-64487.27	0.004%
22	-32209.20	-66636.11	55853.55	32207.18	66636.00	-55852.53	0.002%
23	-55861.77	-67004.29	32286.38	55859.02	67004.13	-32284.88	0.003%
24	-64425.00	-66671.13	3.25	64422.99	66671.02	-2.07	0.003%
25	-55783.04	-66330.84	-32246.14	55780.61	66330.77	32246.59	0.003%
26	-32212.75	-66672.13	-55866.20	32212.77	66672.03	55863.89	0.002%
27	5.98	-40464.75	-21176.18	-6.04	40464.74	21174.98	0.003%
28	10531.43	-40406.72	-18263.86	-10531.66	40406.70	18261.59	0.005%
29	18211.12	-40348.60	-10534.58	-18209.30	40348.58	10533.55	0.005%
30	21052.43	-40401.42	-7.10	-21050.58	40401.40	8.28	0.005%
31	18306.02	-40455.34	10582.46	-18303.20	40455.30	-10580.84	0.007%
32	10520.48	-40401.27	18259.10	-10518.53	40401.25	-18258.09	0.005%
33	-5.98	-40348.39	21058.96	5.94	40348.37	-21056.82	0.005%
34	-10531.43	-40406.42	18263.86	10529.28	40406.40	-18262.89	0.005%
35	-18312.65	-40464.54	10593.20	18311.52	40464.53	-10592.62	0.003%
36	-21052.43	-40411.72	7.10	21050.24	40411.70	-5.87	0.006%
37	-18204.49	-40357.80	-10523.85	18202.13	40357.78	10522.56	0.006%
38	-10520.48	-40411.87	-18259.10	10520.45	40411.85	18256.68	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	9	0.00000001	0.00006741
2	Yes	21	0.00000001	0.00007750
3	Yes	20	0.00004305	0.00009468
4	Yes	13	0.00006822	0.00012942
5	Yes	20	0.00003386	0.00008006
6	Yes	20	0.00004118	0.00012802
7	Yes	20	0.00003389	0.00007897
8	Yes	13	0.00010905	0.00011346

9	Yes	20	0.00004330	0.00009626
10	Yes	21	0.00000001	0.00007855
11	Yes	20	0.00004328	0.00010011
12	Yes	14	0.00008408	0.00009809
13	Yes	20	0.00004306	0.00009786
14	Yes	6	0.00000001	0.00007963
15	Yes	20	0.00005523	0.00012712
16	Yes	20	0.00004606	0.00008103
17	Yes	13	0.00008124	0.00013011
18	Yes	19	0.00007388	0.00013612
19	Yes	20	0.00004367	0.00010641
20	Yes	19	0.00007418	0.00013466
21	Yes	13	0.00006528	0.00011661
22	Yes	20	0.00004639	0.00008354
23	Yes	20	0.00005560	0.00013047
24	Yes	20	0.00004600	0.00008637
25	Yes	14	0.00006483	0.00007414
26	Yes	20	0.00004586	0.00008362
27	Yes	12	0.00000001	0.00005284
28	Yes	11	0.00000001	0.00008370
29	Yes	10	0.00000001	0.00006489
30	Yes	11	0.00000001	0.00008234
31	Yes	11	0.00000001	0.00012697
32	Yes	11	0.00000001	0.00008154
33	Yes	10	0.00000001	0.00006528
34	Yes	11	0.00000001	0.00008757
35	Yes	12	0.00000001	0.00005588
36	Yes	11	0.00000001	0.00009286
37	Yes	10	0.00000001	0.00007543
38	Yes	11	0.00000001	0.00008779

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	3.769	35	0.2200	0.0330
T2	180 - 160	3.309	35	0.2102	0.0302
T3	160 - 140	2.619	37	0.1015	0.0200
T4	140 - 120	2.366	37	0.0755	0.0151
T5	120 - 100	1.979	37	0.1120	0.0135
T6	100 - 80	1.541	37	0.0784	0.0119
T7	80 - 60	1.277	37	0.0735	0.0079
T8	60 - 40	0.928	37	0.0913	0.0062
T9	40 - 20	0.549	37	0.0736	0.0036
T10	20 - 5	0.313	37	0.0689	0.0067
T11	5 - 0	0.082	37	0.0767	0.0039

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Rohn 6'x12' Boom Gate (3)	35	3.769	0.2200	0.0330	59476
188.00	3" Dia 20' Omni	35	3.676	0.2199	0.0326	59476
181.00	3" Dia. 5' Omni	35	3.354	0.2128	0.0305	32065

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	(2) Powerwave 7770.00 w/pipe	35	3.309	0.2102	0.0302	28226
179.00	Rohn 6'x15' Boom Gate (3)	35	3.264	0.2070	0.0297	24954
168.00	Pirod 15' T-Frame Sector Mount (1)	37	2.834	0.1477	0.0239	10008
162.50	Guy	37	2.676	0.1143	0.0211	7773
154.50	8' Dipole	37	2.526	0.0815	0.0184	11661
153.00	RRH800MHz	37	2.506	0.0779	0.0180	14318
151.00	Rohn 6'x15' Boom Gate (3)	37	2.483	0.0744	0.0176	20569
149.00	RRH1900MHz	37	2.462	0.0721	0.0171	36506
142.00	(4) DB844H90E-XY w/Mount Pipe	37	2.390	0.0730	0.0157	19968
141.00	Rohn 6'x15' Boom Gate (3)	37	2.378	0.0741	0.0154	17426
130.00	Kathrein 800 10504 with pipe	37	2.199	0.0966	0.0124	22541
129.00	PiROD 10' Lightweight T-Frame	37	2.178	0.0989	0.0124	24146
124.00	10' Dipole AF	37	2.071	0.1085	0.0130	37330
119.50	Pirod 4' Side Mount Standoff (1)	37	1.967	0.1120	0.0136	82594
119.00	24"x24"x9" Junction box	37	1.955	0.1120	0.0136	98151
117.00	3" Dia 20' Omni	37	1.908	0.1111	0.0137	457748
116.30	LLPX310R	37	1.891	0.1105	0.0137	229422
115.50	2' Standoff T-Arm (5' face width)	37	1.872	0.1096	0.0137	131270
114.50	23.68"x15.74"x6.73" RRH	37	1.848	0.1083	0.0137	85382
113.00	7' Yagi	37	1.813	0.1060	0.0137	56007
108.00	Pirod 4' Side Mount Standoff (1)	37	1.699	0.0959	0.0132	26089
105.00	GPS	37	1.635	0.0889	0.0128	19530
104.00	Pirod 4' Side Mount Standoff (1)	37	1.615	0.0867	0.0126	18040
102.50	Guy	37	1.586	0.0834	0.0124	16413
42.50	Guy	37	0.588	0.0761	0.0035	20389

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	27.050	10	1.1369	0.1376
T2	180 - 160	24.669	10	1.1043	0.1288
T3	160 - 140	20.576	10	0.7470	0.1056
T4	140 - 120	17.957	2	0.6530	0.0889
T5	120 - 100	14.914	2	0.7889	0.0840
T6	100 - 80	11.690	2	0.6762	0.0747
T7	80 - 60	9.113	2	0.6358	0.0518
T8	60 - 40	6.384	2	0.6544	0.0423
T9	40 - 20	3.781	2	0.5312	0.0314
T10	20 - 5	1.967	2	0.4649	0.0208
T11	5 - 0	0.503	2	0.4768	0.0121

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Rohn 6'x12' Boom Gate (3)	10	27.050	1.1369	0.1376	17649
188.00	3" Dia 20' Omni	10	26.569	1.1368	0.1360	17649
181.00	3" Dia. 5' Omni	10	24.903	1.1132	0.1298	9499
180.00	(2) Powerwave 7770.00 w/pipe	10	24.669	1.1043	0.1288	8352

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
179.00	Rohn 6'x15' Boom Gate (3)	10	24.436	1.0934	0.1277	7373
168.00	Pirod 15' T-Frame Sector Mount (1)	10	22.031	0.8912	0.1141	2927
162.50	Guy	10	20.994	0.7873	0.1079	2270
154.50	8' Dipole	10	19.769	0.6831	0.1020	3458
153.00	RRH800MHz	10	19.571	0.6713	0.1012	4286
151.00	Rohn 6'x15' Boom Gate (3)	10	19.316	0.6590	0.1000	6103
149.00	RRH1900MHz	10	19.068	0.6505	0.0988	9879
142.00	(4) DB844H90E-XY w/Mount Pipe	10	18.210	0.6461	0.0920	5723
141.00	Rohn 6'x15' Boom Gate (3)	2	18.085	0.6483	0.0905	4996
130.00	Kathrein 800 10504 with pipe	2	16.529	0.7331	0.0782	6398
129.00	PiROD 10' Lightweight T-Frame	2	16.373	0.7414	0.0790	6828
124.00	10' Dipole AF	2	15.574	0.7760	0.0824	10285
119.50	Pirod 4' Side Mount Standoff (1)	2	14.831	0.7892	0.0841	20821
119.00	24"x24"x9" Junction box	2	14.747	0.7892	0.0842	23991
117.00	3" Dia 20' Omni	2	14.412	0.7865	0.0843	38507
116.30	LLPX310R	2	14.295	0.7846	0.0843	29672
115.50	2' Standoff T-Arm (5' face width)	2	14.160	0.7819	0.0843	23464
114.50	23.68"x15.74"x6.73" RRH	2	13.993	0.7777	0.0841	18586
113.00	7' Yagi	2	13.742	0.7699	0.0838	14167
108.00	Pirod 4' Side Mount Standoff (1)	2	12.920	0.7360	0.0815	7659
105.00	GPS	2	12.443	0.7126	0.0793	5725
104.00	Pirod 4' Side Mount Standoff (1)	2	12.287	0.7048	0.0785	5287
102.50	Guy	2	12.058	0.6934	0.0771	4805
42.50	Guy	2	4.060	0.5478	0.0323	4147

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	190	Leg	A325N	0.7500	4	0.00	19433.70	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	2	1514.27	6442.72	0.235 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.6250	2	230.65	6442.72	0.036 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.6250	2	358.93	6442.72	0.056 ✔	1.333	Bolt Shear
T2	180	Leg	A325N	0.7500	4	3922.12	19338.80	0.203 ✔	1.333	Bolt Tension
		Diagonal	A490X	0.6250	2	10058.40	10875.00	0.925 ✔	1.333	Member Bearing
		Top Girt	A325N	0.6250	2	1573.28	6442.72	0.244 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.6250	2	7248.55	6442.72	1.125 ✔	1.333	Bolt Shear
T3	160	Leg	A325N	0.7500	4	7097.90	18888.70	0.376 ✔	1.333	Bolt Tension
		Diagonal	A490X	0.5000	1	7074.19	5437.50	1.301 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	903.36	4123.34	0.219 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	319.29	4123.34	0.077 ✔	1.333	Bolt Shear
T4	140	Leg	A325N	0.7500	4	0.00	19438.00	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2550.85	4123.34	0.619 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	301.77	4123.34	0.073 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	640.74	4123.34	0.155 ✔	1.333	Bolt Shear
T5	120	Leg	A325N	0.7500	4	0.00	19429.30	0.000 ✔	1.333	Bolt Tension

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
		Diagonal	A325N	0.6250	2	4837.80	6442.72	0.751 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.6250	2	709.53	6442.72	0.110 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.6250	2	3417.11	6442.72	0.530 ✔	1.333	Bolt Shear
T6	100	Leg	A325N	0.7500	4	0.00	19436.60	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2872.00	4123.34	0.697 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	973.19	2740.50	0.355 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	442.26	2740.50	0.161 ✔	1.333	Member Bearing
T7	80	Leg	A325N	0.7500	4	0.00	19438.30	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2041.20	4123.34	0.495 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	351.22	4123.34	0.085 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	658.45	4123.34	0.160 ✔	1.333	Bolt Shear
T8	60	Leg	A325N	0.7500	4	0.00	19437.10	0.000 ✔	1.333	Bolt Tension
		Diagonal	A490X	0.5000	1	5802.79	7853.98	0.739 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	776.11	4123.34	0.188 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	2232.27	4123.34	0.541 ✔	1.333	Bolt Shear
T9	40	Leg	A325N	0.7500	4	0.00	19437.70	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4611.71	4123.34	1.118 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	1672.46	2740.50	0.610 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	494.19	2740.50	0.180 ✔	1.333	Member Bearing
T10	20	Leg	A325N	0.7500	4	0.00	19437.80	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1779.02	4123.34	0.431 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	681.32	4123.34	0.165 ✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	4751.83	4123.34	1.152 ✔	1.333	Bolt Shear
T11	5	Leg	A325N	0.7500	4	0.00	17619.60	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.
T2	162.50 (A) (588)	7/8 EHS	7970.00	79699.84	34354.20	39850.00	2.000	2.320 ✔
	162.50 (A) (589)	7/8 EHS	7970.00	79699.84	34451.10	39850.00	2.000	2.313 ✔
	162.50 (B) (584)	7/8 EHS	7970.00	79699.84	34785.90	39850.00	2.000	2.291 ✔
	162.50 (B) (585)	7/8 EHS	7970.00	79699.84	34620.10	39850.00	2.000	2.302 ✔
	162.50 (C) (580)	7/8 EHS	7970.00	79699.84	34195.70	39850.00	2.000	2.331 ✔
	162.50 (C) (581)	7/8 EHS	7970.00	79699.84	34265.20	39850.00	2.000	2.326 ✔

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T5	102.50 (A) (600)	5/8 EHS	4240.00	42399.99	18140.10	21200.00	2.000	2.337 ✔
	102.50 (A) (601)	5/8 EHS	4240.00	42399.99	18106.20	21200.00	2.000	2.342 ✔
	102.50 (B) (596)	5/8 EHS	4240.00	42399.99	18425.70	21200.00	2.000	2.301 ✔
	102.50 (B) (597)	5/8 EHS	4240.00	42399.99	18342.80	21200.00	2.000	2.312 ✔
	102.50 (C) (592)	5/8 EHS	4240.00	42399.99	17973.70	21200.00	2.000	2.359 ✔
	102.50 (C) (593)	5/8 EHS	4240.00	42399.99	18085.50	21200.00	2.000	2.344 ✔
T8	42.50 (A) (612)	1/2 EHS	2690.00	26900.04	8592.48	13450.00	2.000	3.131 ✔
	42.50 (A) (613)	1/2 EHS	2690.00	26900.04	8549.82	13450.00	2.000	3.146 ✔
	42.50 (B) (608)	1/2 EHS	2690.00	26900.04	8825.70	13450.00	2.000	3.048 ✔
	42.50 (B) (609)	1/2 EHS	2690.00	26900.04	8792.75	13450.00	2.000	3.059 ✔
	42.50 (C) (604)	1/2 EHS	2690.00	26900.04	8501.34	13450.00	2.000	3.164 ✔
	42.50 (C) (605)	1/2 EHS	2690.00	26900.04	8536.37	13450.00	2.000	3.151 ✔

Compression Checks

Leg 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	190 - 180	ROHN 2.5 EH	10.00	2.46	31.9 K=1.00	26.912	2.2535	-17981.50	60646.50	0.296 ✔
T2	180 - 160	ROHN 2.5 EH - Upgrade - DestekBoston	20.00	1.21	16.2 K=1.00	28.685	2.9621	-100730.00	84969.60	1.185 ✔
T3	160 - 140	ROHN 2.5 EH - Upgrade - DestekBoston	20.00	1.21	16.2 K=1.00	28.685	2.9621	-87304.40	84969.60	1.027 ✔
T4	140 - 120	ROHN 2.5 EH	20.00	2.41	31.3 K=1.00	26.986	2.2535	-50864.80	60815.10	0.836 ✔
T5	120 - 100	ROHN 3 EH	20.00	1.21	12.7 K=1.00	29.014	3.0159	-81980.40	87503.50	0.937 ✔
T6	100 - 80	ROHN 3 EH	20.00	2.41	25.5 K=1.00	27.694	3.0159	-77484.80	83522.10	0.928 ✔
T7	80 - 60	ROHN 3 EH	20.00	2.41	25.5 K=1.00	27.694	3.0159	-69645.80	83522.10	0.834 ✔
T8	60 - 40	ROHN 3 EH	20.00	2.41	25.5 K=1.00	27.694	3.0159	-93559.70	83522.10	1.120 ✔
T9	40 - 20	ROHN 3 EH	20.00	2.41	51.0 K=2.00	24.201	3.0159	-89824.60	72986.90	1.231 ✔
T10	20 - 5	ROHN 3 EH	15.00	2.38	50.3 K=2.00	24.297	3.0159	-69298.30	73277.50	0.946 ✔
T11	5 - 0	ROHN 3 EH	5.38	1.55	3.3	29.781	3.0159	-72436.00	89816.20	0.806

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=0.20					✔

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	190 - 180	L2x2x1/4	4.21	1.76	70.5 K=1.31	16.380	0.9380	-3028.53	15364.00	0.197 ✔
T2	180 - 160	L2x2x1/4	4.18	1.75	70.2 K=1.31	16.409	0.9380	-20116.70	15391.60	1.307 ✔
T3	160 - 140	L2x2x1/4	4.18	1.84	72.4 K=1.28	16.183	0.9380	-7663.36	15179.70	0.505 ✔
T4	140 - 120	ROHN TS1.5x11 ga	4.18	1.94	47.7 K=1.00	21.257	0.5202	-2550.85	11059.00	0.231 ✔
T5	120 - 100	L2x2x1/4	4.18	1.71	69.5 K=1.32	16.485	0.9380	-9675.59	15463.00	0.626 ✔
T6	100 - 80	ROHN TS1.5x16 ga	4.18	1.91	45.0 K=1.00	21.553	0.2627	-2872.00	5663.02	0.507 ✔
T7	80 - 60	L1 3/4x1 3/4x3/16	4.18	1.81	77.4 K=1.22	15.643	0.6211	-2041.20	9715.52	0.210 ✔
T8	60 - 40	ROHN TS1.5x11 ga	4.18	1.91	46.9 K=1.00	21.345	0.5202	-5802.79	11104.60	0.523 ✔
T9	40 - 20	ROHN TS1.5x16 ga	4.18	3.83	90.0 K=1.00	15.553	0.2627	-4611.71	4086.60	1.128 ✔
T10	20 - 5	ROHN TS1.5x11 ga	4.17	3.81	93.4 K=1.00	15.016	0.5202	-1779.02	7811.90	0.228 ✔

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 $\frac{P}{P_a}$
T11	5 - 0	L4x4x1/4	2.32	2.02	75.3 K=2.46	15.469	1.9400	-492.74	30008.90	0.016 ✔

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 $\frac{P}{P_a}$
T2	180 - 160	L2x2x1/4	3.42	3.18	91.6 K=0.94	14.008	0.9380	-1744.70	13139.70	0.133 ✔
T3	160 - 140	L2x2x1/4	3.42	3.18	91.6	14.008	0.9380	-1512.37	13139.70	0.115

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 $\frac{P}{P_a}$
T5	120 - 100	L2x2x1/4	3.42	3.13	K=0.94 90.8 K=1.47	14.111	0.9380	-1419.94	13235.90	✔ 0.107 ✔

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	190 - 180	L2x2x1/4	3.42	2.78	102.7 K=1.20	12.636	0.9380	-461.29	11852.40	0.039 ✔
T2	180 - 160	L2x2x1/4	3.42	2.78	102.7 K=1.20	12.636	0.9380	-3146.55	11852.40	0.265 ✔
T3	160 - 140	ROHN TS1.5x11 ga	3.42	3.18	77.8 K=1.00	17.377	0.5202	-740.30	9040.31	0.082 ✔
T5	120 - 100	L2x2x1/4	3.42	2.73	101.9 K=1.22	12.738	0.9380	-1419.07	11948.60	0.119 ✔
T6	100 - 80	ROHN TS1.5x16 ga	3.42	3.13	73.5 K=1.00	17.994	0.2627	-256.01	4728.01	0.054 ✔
T8	60 - 40	ROHN TS1.5x11 ga	3.42	3.13	76.6 K=1.00	17.560	0.5202	-402.93	9135.56	0.044 ✔
T9	40 - 20	ROHN TS1.5x16 ga	3.42	3.13	73.5 K=1.00	17.994	0.2627	-1566.97	4728.01	0.331 ✔
T10	20 - 5	ROHN TS1.5x11 ga	3.42	3.13	76.6 K=1.00	17.560	0.5202	-46.00	9135.56	0.005 ✔

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	190 - 180	L2x2x1/4	3.42	2.78	102.7 K=1.20	12.636	0.9380	-717.87	11852.40	0.061 ✔
T2	180 - 160	L2x2x1/4	3.42	2.78	102.7 K=1.20	12.636	0.9380	-12394.00	11852.40	1.046 ✔
T3	160 - 140	ROHN TS1.5x11 ga	3.42	3.18	77.8 K=1.00	17.377	0.5202	-319.29	9040.31	0.035 ✔
T5	120 - 100	L2x2x1/4	3.42	2.73	101.9 K=1.22	12.738	0.9380	-5872.79	11948.60	0.492 ✔
T8	60 - 40	ROHN TS1.5x11 ga	3.42	3.13	76.6 K=1.00	17.560	0.5202	-1351.14	9135.56	0.148 ✔
T9	40 - 20	ROHN TS1.5x16 ga	3.42	3.13	73.5 K=1.00	17.994	0.2627	-257.90	4728.01	0.055 ✔
T11	5 - 0	L4x4x1/4	0.34	0.05	60.4 K=80.00	16.900	1.9400	-3093.73	32786.30	0.094 ✔

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 $\frac{P}{P_a}$
T2	180 - 160 (582)	C15x50	3.67	3.55	131.9 K=1.00	8.579	14.7000	-13742.40	126117.00	0.109
T2	180 - 160 (583)	C15x50	3.67	3.55	131.9 K=1.00	8.579	14.7000	-13769.70	126117.00	0.109
T2	180 - 160 (586)	C15x50	3.67	3.55	131.9 K=1.00	8.579	14.7000	-13793.90	126117.00	0.109
T2	180 - 160 (587)	C15x50	3.67	3.55	131.9 K=1.00	8.579	14.7000	-13761.40	126117.00	0.109
T2	180 - 160 (590)	C15x50	3.67	3.55	131.9 K=1.00	8.579	14.7000	-13649.80	126117.00	0.108
T2	180 - 160 (591)	C15x50	3.67	3.55	131.9 K=1.00	8.579	14.7000	-13643.50	126117.00	0.108
T5	120 - 100 (594)	C15x40	3.67	3.52	126.2 K=1.00	9.375	11.8000	-7541.89	110621.00	0.068
T5	120 - 100 (595)	C15x40	3.67	3.52	126.2 K=1.00	9.375	11.8000	-7516.05	110621.00	0.068
T5	120 - 100 (598)	C15x40	3.67	3.52	126.2 K=1.00	9.375	11.8000	-7534.37	110621.00	0.068
T5	120 - 100 (599)	C15x40	3.67	3.52	126.2 K=1.00	9.375	11.8000	-7568.00	110621.00	0.068
T5	120 - 100 (602)	C15x40	3.67	3.52	126.2 K=1.00	9.375	11.8000	-7539.11	110621.00	0.068
T5	120 - 100 (603)	C15x40	3.67	3.52	126.2 K=1.00	9.375	11.8000	-7551.70	110621.00	0.068
T8	60 - 40 (606)	C12x25	3.67	3.52	113.5 K=1.00	11.190	7.3500	-4997.93	82247.40	0.061
T8	60 - 40 (607)	C12x25	3.67	3.52	113.5 K=1.00	11.190	7.3500	-5003.54	82247.40	0.061
T8	60 - 40 (610)	C12x25	3.67	3.52	113.5 K=1.00	11.190	7.3500	-5063.07	82247.40	0.062
T8	60 - 40 (611)	C12x25	3.67	3.52	113.5 K=1.00	11.190	7.3500	-4991.77	82247.40	0.061
T8	60 - 40 (614)	C12x25	3.67	3.52	113.5 K=1.00	11.190	7.3500	-5071.95	82247.40	0.062
T8	60 - 40 (615)	C12x25	3.67	3.52	113.5 K=1.00	11.190	7.3500	-5034.18	82247.40	0.061

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	180 - 160 (582)	C15x50	-90924.17	-20.280	21.600	0.939	0.00	-0.000	21.600	0.000
T2	180 - 160 (583)	C15x50	-91131.67	-20.327	21.600	0.941	-0.00	-0.000	21.600	0.000
T2	180 - 160 (586)	C15x50	-93240.83	-20.797	21.600	0.963	0.00	-0.000	21.600	0.000
T2	180 - 160 (587)	C15x50	-91200.83	-20.342	21.600	0.942	-0.00	-0.000	21.600	0.000
T2	180 - 160 (590)	C15x50	-92549.17	-20.643	21.600	0.956	-0.00	-0.000	21.600	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	180 - 160 (591)	C15x50	-90735.83	-20.238	21.600	0.937	0.00	-0.000	21.600	0.000
T5	120 - 100 (594)	C15x40	-45438.00	-11.726	21.600	0.543	0.00	-0.000	21.600	0.000
T5	120 - 100 (595)	C15x40	-45835.92	-11.829	21.600	0.548	-0.00	-0.000	21.600	0.000
T5	120 - 100 (598)	C15x40	-47654.67	-12.298	21.600	0.569	0.00	-0.000	21.600	0.000
T5	120 - 100 (599)	C15x40	-45563.58	-11.758	21.600	0.544	-0.00	-0.000	21.600	0.000
T5	120 - 100 (602)	C15x40	-47695.08	-12.308	21.600	0.570	-0.00	-0.000	21.600	0.000
T5	120 - 100 (603)	C15x40	-46024.92	-11.877	21.600	0.550	0.00	-0.000	21.600	0.000
T8	60 - 40 (606)	C12x25	-12222.25	-6.086	21.600	0.282	0.00	-0.000	21.600	0.000
T8	60 - 40 (607)	C12x25	-12350.25	-6.149	21.600	0.285	-0.00	-0.000	21.600	0.000
T8	60 - 40 (610)	C12x25	-13857.75	-6.900	21.600	0.319	0.00	-0.000	21.600	0.000
T8	60 - 40 (611)	C12x25	-12134.00	-6.042	21.600	0.280	-0.00	-0.000	21.600	0.000
T8	60 - 40 (614)	C12x25	-13844.67	-6.894	21.600	0.319	-0.00	-0.000	21.600	0.000
T8	60 - 40 (615)	C12x25	-12392.83	-6.171	21.600	0.286	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
T2	180 - 160 (582)	C15x50	0.109	0.939	0.000	1.048 ✔	1.333	H1-3 ✔
T2	180 - 160 (583)	C15x50	0.109	0.941	0.000	1.050 ✔	1.333	H1-3 ✔
T2	180 - 160 (586)	C15x50	0.109	0.963	0.000	1.072 ✔	1.333	H1-3 ✔
T2	180 - 160 (587)	C15x50	0.109	0.942	0.000	1.051 ✔	1.333	H1-3 ✔
T2	180 - 160 (590)	C15x50	0.108	0.956	0.000	1.064 ✔	1.333	H1-3 ✔
T2	180 - 160 (591)	C15x50	0.108	0.937	0.000	1.045 ✔	1.333	H1-3 ✔
T5	120 - 100 (594)	C15x40	0.068	0.543	0.000	0.611 ✔	1.333	H1-3 ✔
T5	120 - 100 (595)	C15x40	0.068	0.548	0.000	0.616 ✔	1.333	H1-3 ✔
T5	120 - 100 (598)	C15x40	0.068	0.569	0.000	0.637 ✔	1.333	H1-3 ✔
T5	120 - 100 (599)	C15x40	0.068	0.544	0.000	0.613 ✔	1.333	H1-3 ✔
T5	120 - 100 (602)	C15x40	0.068	0.570	0.000	0.638	1.333	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
T5	120 - 100 (603)	C15x40	0.068	0.550	0.000	0.618	1.333	H1-3
T8	60 - 40 (606)	C12x25	0.061	0.282	0.000	0.343	1.333	H1-3
T8	60 - 40 (607)	C12x25	0.061	0.285	0.000	0.346	1.333	H1-3
T8	60 - 40 (610)	C12x25	0.062	0.319	0.000	0.381	1.333	H1-3
T8	60 - 40 (611)	C12x25	0.061	0.280	0.000	0.340	1.333	H1-3
T8	60 - 40 (614)	C12x25	0.062	0.319	0.000	0.381	1.333	H1-3
T8	60 - 40 (615)	C12x25	0.061	0.286	0.000	0.347	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	190 - 180	ROHN 2.5 EH	10.00	0.08	1.1	30.000	2.2535	15688.20	67606.20	0.232
T2	180 - 160	ROHN 2.5 EH - Upgrade - DestekBoston	20.00	1.21	16.2	30.000	2.9621	87628.50	88863.80	0.986
T3	160 - 140	ROHN 2.5 EH - Upgrade - DestekBoston	20.00	0.61	8.3	30.000	2.9621	28391.60	88863.80	0.319
T5	120 - 100	ROHN 3 EH	20.00	1.21	12.7	30.000	3.0159	11198.60	90477.90	0.124

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	190 - 180	L2x2x1/4	4.21	1.76	38.6	29.000	0.5629	2999.17	16323.40	0.184
T2	180 - 160	L2x2x1/4	4.18	1.75	38.3	29.000	0.5629	16351.30	16323.40	1.002
T3	160 - 140	L2x2x1/4	4.18	1.84	38.3	29.000	0.5863	7074.19	17003.10	0.416
T4	140 - 120	ROHN TS1.5x11 ga	4.18	1.94	47.7	25.200	0.5202	2114.74	13110.20	0.161

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 $\frac{P}{P_a}$
T5	120 - 100	L2x2x1/4	4.18	1.71	37.7	29.000	0.5629	6764.69	16323.40	0.414 ✔
T6	100 - 80	ROHN TS1.5x16 ga	4.18	1.91	45.0	25.200	0.2627	2706.78	6621.31	0.409 ✔
T7	80 - 60	L1 3/4x1 3/4x3/16	4.18	1.81	42.7	29.000	0.3779	1151.38	10960.00	0.105 ✔
T8	60 - 40	ROHN TS1.5x11 ga	4.18	1.91	46.9	25.200	0.5202	5345.88	13110.20	0.408 ✔
T9	40 - 20	ROHN TS1.5x16 ga	4.18	3.83	90.0	25.200	0.2627	4155.91	6621.31	0.628 ✔
T10	20 - 5	ROHN TS1.5x11 ga	4.17	3.81	93.4	25.200	0.5202	1121.11	13110.20	0.086 ✔

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 $\frac{P}{P_a}$
T11	5 - 0	L4x4x1/4	1.33	1.04	10.0	21.600	1.9400	36.44	41904.00	0.001 ✔

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 $\frac{P}{P_a}$
T2	180 - 160	L2x2x1/4	3.42	3.18	62.6	21.600	0.9380	5232.88	20260.80	0.258 ✔
T3	160 - 140	L2x2x1/4	3.42	3.18	62.6	21.600	0.9380	1757.19	20260.80	0.087 ✔
T5	120 - 100	L2x2x1/4	3.42	3.13	61.6	21.600	0.9380	4257.69	20260.80	0.210 ✔

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	190 - 180	L2x2x1/4	3.42	2.78	62.6	29.000	0.5629	441.25	16323.40	0.027 ✔
T2	180 - 160	L2x2x1/4	3.42	2.78	62.6	29.000	0.5629	2659.49	16323.40	0.163 ✔
T3	160 - 140	ROHN TS1.5x11 ga	3.42	3.18	77.8	25.200	0.5202	903.36	13110.20	0.069 ✔

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 $\frac{P}{P_a}$
T4	140 - 120	ROHN TS1.5x11 ga	3.42	3.18	77.8	25.200	0.5202	301.77	13110.20	0.023 ✔
T5	120 - 100	L2x2x1/4	3.42	2.73	61.6	29.000	0.5629	1176.17	16323.40	0.072 ✔
T6	100 - 80	ROHN TS1.5x16 ga	3.42	3.13	73.5	25.200	0.2627	973.19	6621.31	0.147 ✔
T7	80 - 60	ROHN TS1.5x11 ga	3.42	3.13	76.6	25.200	0.5202	351.22	13110.20	0.027 ✔
T8	60 - 40	ROHN TS1.5x11 ga	3.42	3.13	76.6	25.200	0.5202	776.11	13110.20	0.059 ✔
T9	40 - 20	ROHN TS1.5x16 ga	3.42	3.13	73.5	25.200	0.2627	1672.46	6621.31	0.253 ✔
T10	20 - 5	ROHN TS1.5x11 ga	3.42	3.13	76.6	25.200	0.5202	681.32	13110.20	0.052 ✔
T11	5 - 0	L4x4x1/4	3.30	3.01	28.9	21.600	1.9400	10733.10	41904.00	0.256 ✔

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	190 - 180	L2x2x1/4	3.42	2.78	62.6	29.000	0.5629	581.31	16323.40	0.036 ✔
T2	180 - 160	L2x2x1/4	3.42	2.78	62.6	29.000	0.5629	14497.10	16323.40	0.888 ✔
T3	160 - 140	ROHN TS1.5x11 ga	3.42	3.18	77.8	25.200	0.5202	215.51	13110.20	0.016 ✔
T4	140 - 120	ROHN TS1.5x11 ga	3.42	3.18	77.8	25.200	0.5202	640.74	13110.20	0.049 ✔
T5	120 - 100	L2x2x1/4	3.42	2.73	61.6	29.000	0.5629	6834.21	16323.40	0.419 ✔
T6	100 - 80	ROHN TS1.5x16 ga	3.42	3.13	73.5	25.200	0.2627	442.26	6621.31	0.067 ✔
T7	80 - 60	ROHN TS1.5x11 ga	3.42	3.13	76.6	25.200	0.5202	658.45	13110.20	0.050 ✔
T8	60 - 40	ROHN TS1.5x11 ga	3.42	3.13	76.6	25.200	0.5202	2232.27	13110.20	0.170 ✔
T9	40 - 20	ROHN TS1.5x16 ga	3.42	3.13	73.5	25.200	0.2627	494.19	6621.31	0.075 ✔
T10	20 - 5	ROHN TS1.5x11 ga	3.42	3.13	76.6	25.200	0.5202	4751.83	13110.20	0.362 ✔

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 $\frac{P}{P_a}$
T2	180 - 160 (582)	C15x50	3.67	3.55	49.1	21.600	14.7000	10230.90	317520.00	0.032
T2	180 - 160 (583)	C15x50	3.67	3.55	49.1	21.600	14.7000	9814.53	317520.00	0.031
T2	180 - 160 (586)	C15x50	3.67	3.55	49.1	21.600	14.7000	9920.95	317520.00	0.031
T2	180 - 160 (587)	C15x50	3.67	3.55	49.1	21.600	14.7000	10109.40	317520.00	0.032
T2	180 - 160 (590)	C15x50	3.67	3.55	49.1	21.600	14.7000	10154.90	317520.00	0.032
T2	180 - 160 (591)	C15x50	3.67	3.55	49.1	21.600	14.7000	9920.98	317520.00	0.031
T5	120 - 100 (594)	C15x40	3.67	3.52	47.7	21.600	11.8000	5159.40	254880.00	0.020
T5	120 - 100 (595)	C15x40	3.67	3.52	47.7	21.600	11.8000	5137.59	254880.00	0.020
T5	120 - 100 (598)	C15x40	3.67	3.52	47.7	21.600	11.8000	5236.61	254880.00	0.021
T5	120 - 100 (599)	C15x40	3.67	3.52	47.7	21.600	11.8000	5071.31	254880.00	0.020
T5	120 - 100 (602)	C15x40	3.67	3.52	47.7	21.600	11.8000	5217.74	254880.00	0.020
T5	120 - 100 (603)	C15x40	3.67	3.52	47.7	21.600	11.8000	5026.76	254880.00	0.020
T8	60 - 40 (606)	C12x25	3.67	3.52	54.2	21.600	7.3500	3442.81	158760.00	0.022
T8	60 - 40 (607)	C12x25	3.67	3.52	54.2	21.600	7.3500	3425.92	158760.00	0.022
T8	60 - 40 (610)	C12x25	3.67	3.52	54.2	21.600	7.3500	3411.94	158760.00	0.021
T8	60 - 40 (611)	C12x25	3.67	3.52	54.2	21.600	7.3500	3533.49	158760.00	0.022
T8	60 - 40 (614)	C12x25	3.67	3.52	54.2	21.600	7.3500	3457.94	158760.00	0.022
T8	60 - 40 (615)	C12x25	3.67	3.52	54.2	21.600	7.3500	3480.25	158760.00	0.022

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	180 - 160 (582)	C15x50	-84299.17	18.803	21.600	0.871	-0.00	0.000	27.000	0.000
T2	180 - 160 (583)	C15x50	-83650.83	18.658	21.600	0.864	0.00	0.000	27.000	0.000
T2	180 - 160 (586)	C15x50	-85438.33	19.057	21.600	0.882	-0.00	0.000	27.000	0.000
T2	180 - 160 (587)	C15x50	-84155.00	18.771	21.600	0.869	0.00	0.000	27.000	0.000
T2	180 - 160 (590)	C15x50	-85991.67	19.180	21.600	0.888	0.00	0.000	27.000	0.000
T2	180 - 160 (591)	C15x50	-84055.00	18.748	21.600	0.868	-0.00	0.000	27.000	0.000
T5	120 - 100 (594)	C15x40	-43327.50	11.181	21.600	0.518	-0.00	0.000	27.000	0.000
T5	120 - 100 (595)	C15x40	-43651.25	11.265	21.600	0.522	0.00	0.000	27.000	0.000
T5	120 - 100 (598)	C15x40	-45401.25	11.716	21.600	0.542	-0.00	0.000	27.000	0.000
T5	120 - 100 (599)	C15x40	-43274.25	11.168	21.600	0.517	-0.00	0.000	27.000	0.000
T5	120 - 100 (602)	C15x40	-45250.58	11.678	21.600	0.541	0.00	0.000	27.000	0.000
T5	120 - 100 (603)	C15x40	-43427.25	11.207	21.600	0.519	0.00	0.000	27.000	0.000
T8	60 - 40 (606)	C12x25	-11843.00	5.897	21.600	0.273	-0.00	0.000	27.000	0.000
T8	60 - 40 (607)	C12x25	-11812.25	5.882	21.600	0.272	0.00	0.000	27.000	0.000
T8	60 - 40 (610)	C12x25	-13374.50	6.660	21.600	0.308	-0.00	0.000	27.000	0.000
T8	60 - 40 (611)	C12x25	-11845.42	5.898	21.600	0.273	0.00	0.000	27.000	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T8	60 - 40 (614)	C12x25	-13176.50	6.561	21.600	0.304	0.00	0.000	27.000	0.000
T8	60 - 40 (615)	C12x25	-12154.83	6.052	21.600	0.280	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
T2	180 - 160 (582)	C15x50	0.032	0.871	0.000	0.903 ✔	1.333	H2-1 ✔
T2	180 - 160 (583)	C15x50	0.031	0.864	0.000	0.895 ✔	1.333	H2-1 ✔
T2	180 - 160 (586)	C15x50	0.031	0.882	0.000	0.914 ✔	1.333	H2-1 ✔
T2	180 - 160 (587)	C15x50	0.032	0.869	0.000	0.901 ✔	1.333	H2-1 ✔
T2	180 - 160 (590)	C15x50	0.032	0.888	0.000	0.920 ✔	1.333	H2-1 ✔
T2	180 - 160 (591)	C15x50	0.031	0.868	0.000	0.899 ✔	1.333	H2-1 ✔
T5	120 - 100 (594)	C15x40	0.020	0.518	0.000	0.538 ✔	1.333	H2-1 ✔
T5	120 - 100 (595)	C15x40	0.020	0.522	0.000	0.542 ✔	1.333	H2-1 ✔
T5	120 - 100 (598)	C15x40	0.021	0.542	0.000	0.563 ✔	1.333	H2-1 ✔
T5	120 - 100 (599)	C15x40	0.020	0.517	0.000	0.537 ✔	1.333	H2-1 ✔
T5	120 - 100 (602)	C15x40	0.020	0.541	0.000	0.561 ✔	1.333	H2-1 ✔
T5	120 - 100 (603)	C15x40	0.020	0.519	0.000	0.539 ✔	1.333	H2-1 ✔
T8	60 - 40 (606)	C12x25	0.022	0.273	0.000	0.295 ✔	1.333	H2-1 ✔
T8	60 - 40 (607)	C12x25	0.022	0.272	0.000	0.294 ✔	1.333	H2-1 ✔
T8	60 - 40 (610)	C12x25	0.021	0.308	0.000	0.330 ✔	1.333	H2-1 ✔
T8	60 - 40 (611)	C12x25	0.022	0.273	0.000	0.295 ✔	1.333	H2-1 ✔
T8	60 - 40 (614)	C12x25	0.022	0.304	0.000	0.326 ✔	1.333	H2-1 ✔
T8	60 - 40 (615)	C12x25	0.022	0.280	0.000	0.302 ✔	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
T1	190 - 180	Leg	ROHN 2.5 EH	1	-17981.50	80841.78	22.2	Pass
T2	180 - 160	Leg	ROHN 2.5 EH - Upgrade - DestekBoston	34	-100730.00	113264.47	88.9	Pass
T3	160 - 140	Leg	ROHN 2.5 EH - Upgrade - DestekBoston	115	-87304.40	113264.47	77.1	Pass
T4	140 - 120	Leg	ROHN 2.5 EH	197	-50864.80	81066.53	62.7	Pass
T5	120 - 100	Leg	ROHN 3 EH	254	-81980.40	116642.16	70.3	Pass
T6	100 - 80	Leg	ROHN 3 EH	335	-77484.80	111334.96	69.6	Pass
T7	80 - 60	Leg	ROHN 3 EH	393	-69645.80	111334.96	62.6	Pass
T8	60 - 40	Leg	ROHN 3 EH	450	-93559.70	111334.96	84.0	Pass
T9	40 - 20	Leg	ROHN 3 EH	507	-89824.60	97291.53	92.3	Pass
T10	20 - 5	Leg	ROHN 3 EH	538	-69298.30	97678.90	70.9	Pass
T11	5 - 0	Leg	ROHN 3 EH	566	-72436.00	119724.99	60.5	Pass
T1	190 - 180	Diagonal	L2x2x1/4	10	-3028.53	20480.21	14.8 17.6 (b)	Pass
T2	180 - 160	Diagonal	L2x2x1/4	46	-20116.70	20517.00	98.0	Pass
T3	160 - 140	Diagonal	L2x2x1/4	190	-7663.36	20234.54	37.9 97.6 (b)	Pass
T4	140 - 120	Diagonal	ROHN TS1.5x11 ga	206	-2550.85	14741.65	17.3 46.4 (b)	Pass
T5	120 - 100	Diagonal	L2x2x1/4	267	-9675.59	20612.18	46.9 56.3 (b)	Pass
T6	100 - 80	Diagonal	ROHN TS1.5x16 ga	390	-2872.00	7548.81	38.0 52.3 (b)	Pass
T7	80 - 60	Diagonal	L1 3/4x1 3/4x3/16	403	-2041.20	12950.79	15.8 37.1 (b)	Pass
T8	60 - 40	Diagonal	ROHN TS1.5x11 ga	459	-5802.79	14802.43	39.2 55.4 (b)	Pass
T9	40 - 20	Diagonal	ROHN TS1.5x16 ga	536	-4611.71	5447.44	84.7	Pass
T10	20 - 5	Diagonal	ROHN TS1.5x11 ga	563	-1779.02	10413.26	17.1 32.4 (b)	Pass
T11	5 - 0	Horizontal	L4x4x1/4	578	-492.74	40001.86	1.2	Pass
T2	180 - 160	Secondary Horizontal	L2x2x1/4	58	5232.88	27007.65	19.4	Pass
T3	160 - 140	Secondary Horizontal	L2x2x1/4	132	-1512.37	17515.22	8.6	Pass
T5	120 - 100	Secondary Horizontal	L2x2x1/4	278	4257.69	27007.65	15.8	Pass
T1	190 - 180	Top Girt	L2x2x1/4	4	-461.29	15799.25	2.9	Pass
T2	180 - 160	Top Girt	L2x2x1/4	37	-3146.55	15799.25	19.9	Pass
T3	160 - 140	Top Girt	ROHN TS1.5x11 ga	119	-740.30	12050.73	6.1 16.4 (b)	Pass
T4	140 - 120	Top Girt	ROHN TS1.5x11 ga	199	301.77	17475.90	1.7 5.5 (b)	Pass
T5	120 - 100	Top Girt	L2x2x1/4	257	-1419.07	15927.48	8.9	Pass
T6	100 - 80	Top Girt	ROHN TS1.5x16 ga	337	973.19	8826.21	11.0 26.6 (b)	Pass
T7	80 - 60	Top Girt	ROHN TS1.5x11 ga	394	351.22	17475.90	2.0 6.4 (b)	Pass
T8	60 - 40	Top Girt	ROHN TS1.5x11 ga	451	776.11	17475.90	4.4 14.1 (b)	Pass
T9	40 - 20	Top Girt	ROHN TS1.5x16 ga	510	-1566.97	6302.44	24.9 45.8 (b)	Pass
T10	20 - 5	Top Girt	ROHN TS1.5x11 ga	542	681.32	17475.90	3.9 12.4 (b)	Pass
T11	5 - 0	Top Girt	L4x4x1/4	569	10733.10	55858.03	19.2	Pass
T1	190 - 180	Bottom Girt	L2x2x1/4	8	-717.87	15799.25	4.5	Pass
T2	180 - 160	Bottom Girt	L2x2x1/4	40	-12394.00	15799.25	78.4 84.4 (b)	Pass
T3	160 - 140	Bottom Girt	ROHN TS1.5x11 ga	121	-319.29	12050.73	2.6 5.8 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T4	140 - 120	Bottom Girt	ROHN TS1.5x11 ga	204	640.74	17475.90	3.7 11.7 (b)	Pass
T5	120 - 100	Bottom Girt	L2x2x1/4	260	-5872.79	15927.48	36.9 39.8 (b)	Pass
T6	100 - 80	Bottom Girt	ROHN TS1.5x16 ga	341	442.26	8826.21	5.0 12.1 (b)	Pass
T7	80 - 60	Bottom Girt	ROHN TS1.5x11 ga	399	658.45	17475.90	3.8 12.0 (b)	Pass
T8	60 - 40	Bottom Girt	ROHN TS1.5x11 ga	454	2232.27	17475.90	12.8 40.6 (b)	Pass
T9	40 - 20	Bottom Girt	ROHN TS1.5x16 ga	513	494.19	8826.21	5.6 13.5 (b)	Pass
T10	20 - 5	Bottom Girt	ROHN TS1.5x11 ga	545	4751.83	17475.90	27.2 86.5 (b)	Pass
T11	5 - 0	Bottom Girt	L4x4x1/4	571	-3093.73	43704.14	7.1	Pass
T2	180 - 160	Guy A@162.496	7/8	589	34451.10	39850.00	86.5	Pass
T5	120 - 100	Guy A@102.496	5/8	600	18140.10	21200.00	85.6	Pass
T8	60 - 40	Guy A@42.4961	1/2	612	8592.48	13450.00	63.9	Pass
T2	180 - 160	Guy B@162.496	7/8	584	34785.90	39850.00	87.3	Pass
T5	120 - 100	Guy B@102.496	5/8	596	18425.70	21200.00	86.9	Pass
T8	60 - 40	Guy B@42.4961	1/2	608	8825.70	13450.00	65.6	Pass
T2	180 - 160	Guy C@162.496	7/8	581	34265.20	39850.00	86.0	Pass
T5	120 - 100	Guy C@102.496	5/8	593	18085.50	21200.00	85.3	Pass
T8	60 - 40	Guy C@42.4961	1/2	605	8536.37	13450.00	63.5	Pass
T2	180 - 160	Torque Arm Top@162.496	C15x50	586	-13793.90	168113.95	80.4	Pass
T5	120 - 100	Torque Arm Top@102.496	C15x40	602	-7539.11	147457.79	47.9	Pass
T8	60 - 40	Torque Arm Top@42.4961	C12x25	610	-5063.07	109635.78	28.6	Pass
							Summary	
						Leg (T9)	92.3	Pass
						Diagonal (T2)	98.0	Pass
						Horizontal (T11)	1.2	Pass
						Secondary Horizontal (T2)	19.4	Pass
						Top Girt (T9)	45.8	Pass
						Bottom Girt (T10)	86.5	Pass
						Guy A (T2)	86.5	Pass
						Guy B (T2)	87.3	Pass
						Guy C (T2)	86.0	Pass
						Torque Arm Top (T2)	80.4	Pass
						Bolt Checks	97.6	Pass
						RATING =	**98.0**	**Pass**

Exhibit C

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

T-Mobile Existing Facility

Site ID: CTNL023C

Montville Cookst MP
57 Cook Street
Montville, CT 06382

September 10, 2015

EBI Project Number: 6215004687

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	5.06 %

EBI Consulting
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September 10, 2015

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

Emissions Analysis for Site: **CTNL023C – Montville Cookst MP**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **57 Cook Street, Montville, 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 PCS and 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 **57 Cook Street, Montville, 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 / 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

2) 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.

3) 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.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) Since the 1900 MHz and 2100 MHz radios are ground mounted there are additional cabling losses accounted for. For each 1900 MHz and 2100 MHz RF path the following losses were calculated. 2.014 dB of additional cable loss for all 1900 MHz and 2100 MHz. This is based on manufacturers Specifications for 190 feet of 1-5/8" coax cable on each path.

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 six 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 **RFS APX16PV-16PVL-A** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16PV-16PVL-A** has a maximum gain of **16.3 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **188 and 190 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.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APX16PV-16PVL-A	Make / Model:	RFS APX16PV-16PVL-A	Make / Model:	RFS APX16PV-16PVL-A
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	190	Height (AGL):	190	Height (AGL):	190
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	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,438.89	ERP (W):	6,474.57	ERP (W):	6,474.57
Antenna A1 MPE%	0.68	Antenna B1 MPE%	0.69	Antenna C1 MPE%	0.69
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	188	Height (AGL):	188	Height (AGL):	188
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	676.27	ERP (W):	676.27	ERP (W):	676.27
Antenna A2 MPE%	0.16	Antenna B2 MPE%	0.16	Antenna C2 MPE%	0.16

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**0.84 %**
AT&T	1.06 %
Clearwire	0.43 %
Nextel	0.42 %
Site Total MPE %:	**5.06 %**

T-Mobile Sector 1 Total:	0.84 %
T-Mobile Sector 2 Total:	0.84 %
T-Mobile Sector 3 Total:	0.84 %
Site Total:	5.06 %

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 2100 MHz (AWS) LTE	**2**	**1609.73**	**190**	**3.42**	**2100**	**1000**	**0.34 %**
T-Mobile 700 MHz LTE	**1**	**676.27**	**188**	**0.73**	**700**	**467**	**0.16 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**804.86**	**190**	**1.71**	**1900**	**1000**	**0.17%**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**804.86**	**190**	**1.71**	**2100**	**1000**	**0.17 %**
						Total:	**0.84%**

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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 1:	0.84 %
Sector 2:	0.84 %
Sector 3 :	0.84 %
T-Mobile Per Sector Maximum:	0.84 %
Site Total:	5.06 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **5.06%** 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.

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