COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

June 9, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
Connecticut State Police/T-Mobile equipment upgrade
Site ID CT11040D
46 Fenwood Lane, Wilton

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the Connecticut State Police ("State Police") owns the 180 foot self supporting lattice tower and related facility at 46 Fenwood Lane, Wilton, Connecticut (latitude 41.17266879 / longitude -73.4339652). T-Mobile intends to add three (3) antennas and replace three (3) antennas and related equipment at this existing telecommunications facility in Wilton ("Wilton Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman William F. Brennan, and the property owner, the State of Connecticut.

The existing Wilton Facility consists of a 180 foot self supporting lattice tower.[1] The Facility currently supports the equipment of T-Mobile at a centerline of 122 feet.

T-Mobile plans to add three (3) antennas, three (3) TMAs (tower mounted amplifiers), three (3) RRUs (remote radio units), and replace three (3) antennas at an elevation of 122 feet. (See the plans revised to June 3, 2015 attached hereto as Exhibit A). T-Mobile will also install coax cable and reuse existing coax cable. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated

[1] The online Connecticut Siting Council database indicates that this Facility was approved in Docket No. 128. The Decision and Order dated April 30, 1990 provides that the tower, including appurtenances shall be no taller than 193 feet. T-Mobile's equipment is located at a height of 122 feet and is therefore in compliance.

May 5, 2015 and attached hereto as Exhibit B.[2]

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

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement and additional antennas and equipment will be installed at the 122 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. T-Mobile does not propose any changes to the compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement and additional antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated May 13, 2015 T-Mobile's operations would add 8.66% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 18.26% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement and additional antennas and equipment at the Wilton Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: Town of Wilton, First Selectman William F. Brennan
Connecticut State Police
State of Connecticut
Sheldon Freincle, NSS

[2] Modifications to the structure are necessary for the Facility to support T-Mobile's proposed equipment upgrades. Those structural modifications will be implemented as set forth in SK-1 and SK-2 of the Structural Analysis, prior to the installation of new equipment.

EXHIBIT A

T-MOBILE NORTHEAST LLC

SITE #: CT11040D

SITE NAME: WILTON/ STATE POLICE

SITE ADDRESS:

46 FENWOOD LANE

WILTON ,CT 06897

WIRELESS BROADBAND FACILITY

CONSTRUCTION DRAWINGS

(702CC 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. ATLANTIS GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE ADEQUACY OF THE STRUCTURE AND COMPONENTS.
18. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT " PREPARED BY AECOM, "T–MOBILE SITE ID CT11040D", DATED MAY 05, 2015.

SITE INFORMATION

SITE NUMBER:	CT11040D
SITE NAME:	WILTON/ STATE POLICE
SITE ADDRESS:	46 FENWOOD LANE WILTON ,CT 06897
LAT./LONG.:	N 41.17266879 / W –73.4339652
JURISDICTION:	FAIRFIELD COUNTY
PROPERTY OWNER:	PAUL ZITO PUBLIC SAFETY DIRECTOR OF TELECOMMUNICATIONS CT DEPARTMENT OF EMERGENCY SERVICES AND PUBLIC PROTECTION DIVISION OF STATE POLICE 1111 COUNTRY CLUB ROAD MIDDLETOWN, CT 06457 860–685–8280 – OFFICE 860–685–8345 – FAX 860–305–5275 – CELL

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

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
02/19/15	ISSUED FOR REVIEW	A
02/25/15	REVISION	0
05/07/15	FINAL CD	1
05/25/15	REVISION	2
06/03/15	REVISION	3

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

PROJECT NO:	CT11040D
DRAWN BY:	MB
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11040D
SITE NAME
WILTON/ STATE POLICE
SITE ADDRESS
46 FENWOOD LANE
WILTON ,CT 06897

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.
5. 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

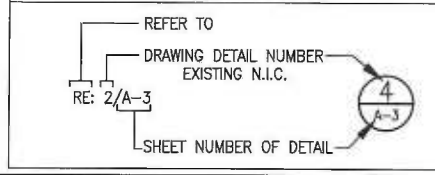
1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT 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

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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PROFESSIONAL SEAL

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/19/15	ISSUED FOR REVIEW	A
02/26/15	REVISION	0
05/07/15	FINAL CD	1
06/25/15	REVISION	2
08/03/15	REVISION	3

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

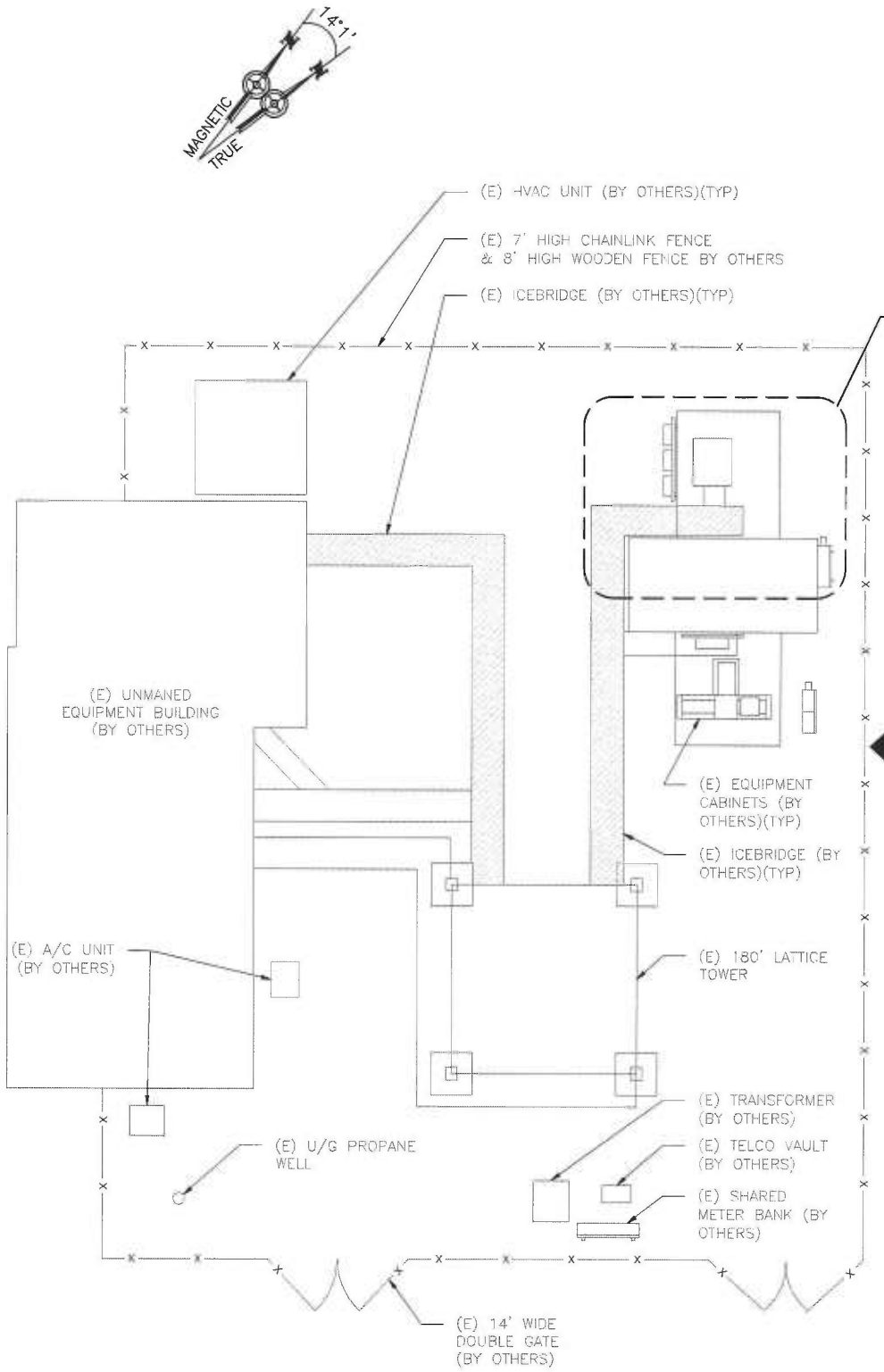
PROJECT NO:	CT11040D
DRAWN BY:	MB
CHECKED BY:	SM

SITE NAME
CT11040D
SITE NAME
WILTON/ STATE POLICE
SITE ADDRESS
46 FENWOOD LANE
WILTON ,CT 06897

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

SHEET NUMBER
N-1

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT " PREPARED BY AECOM, "T-MOBILE SITE ID CT11040D", DATED MAY 05, 2015.

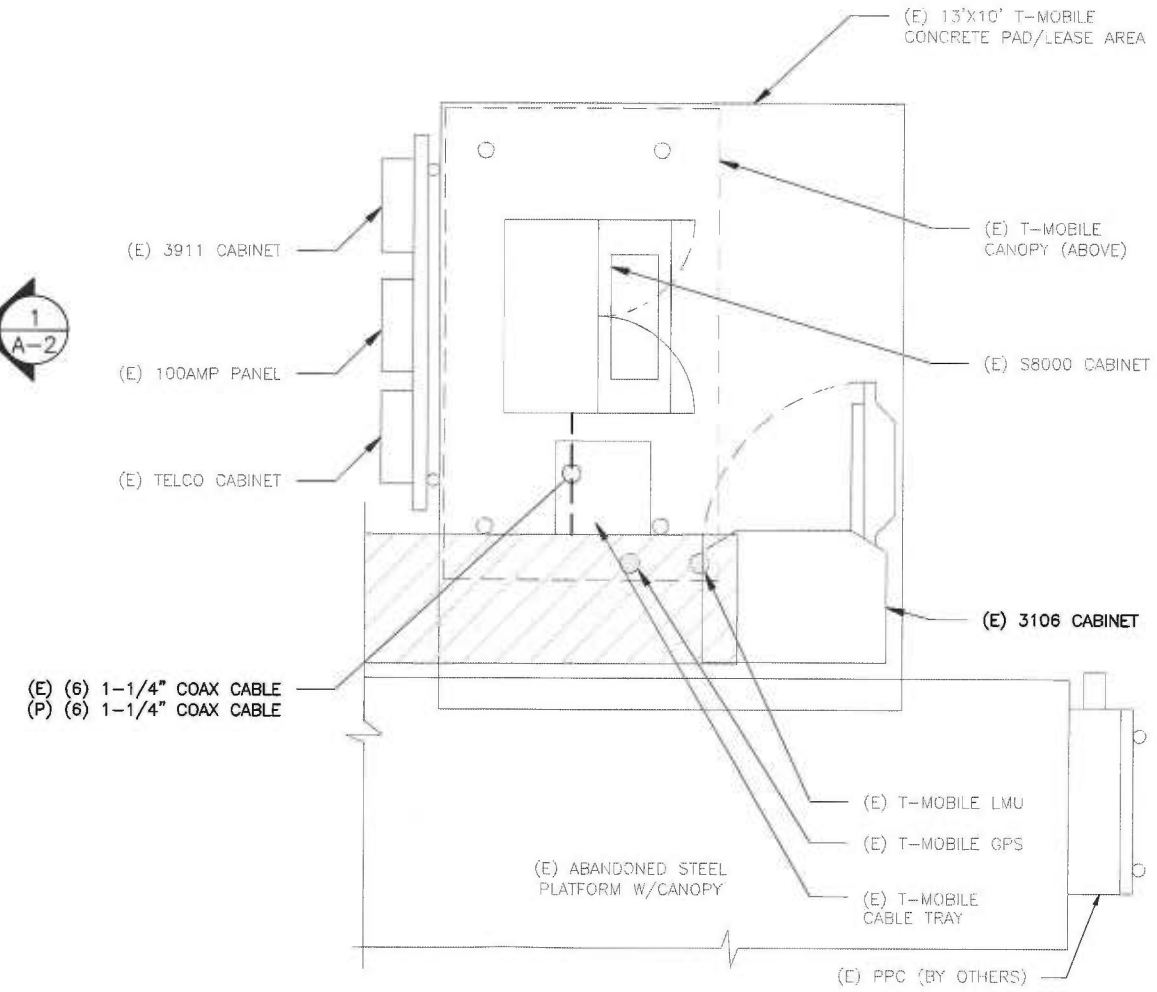


SITE PLAN 1 A-1

SCALE: 16" = 1'-0" (11x17)
8" = 1'-0" (24x36)

0 16 32 48

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



EQUIPMENT PLAN 2 A-1

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

0 4 8 12

SCALE 1"=4' (11x17)
1"=2' (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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DEPT.	DATE	APP'D	REVISIONS
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RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

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CHECKED BY:	SM

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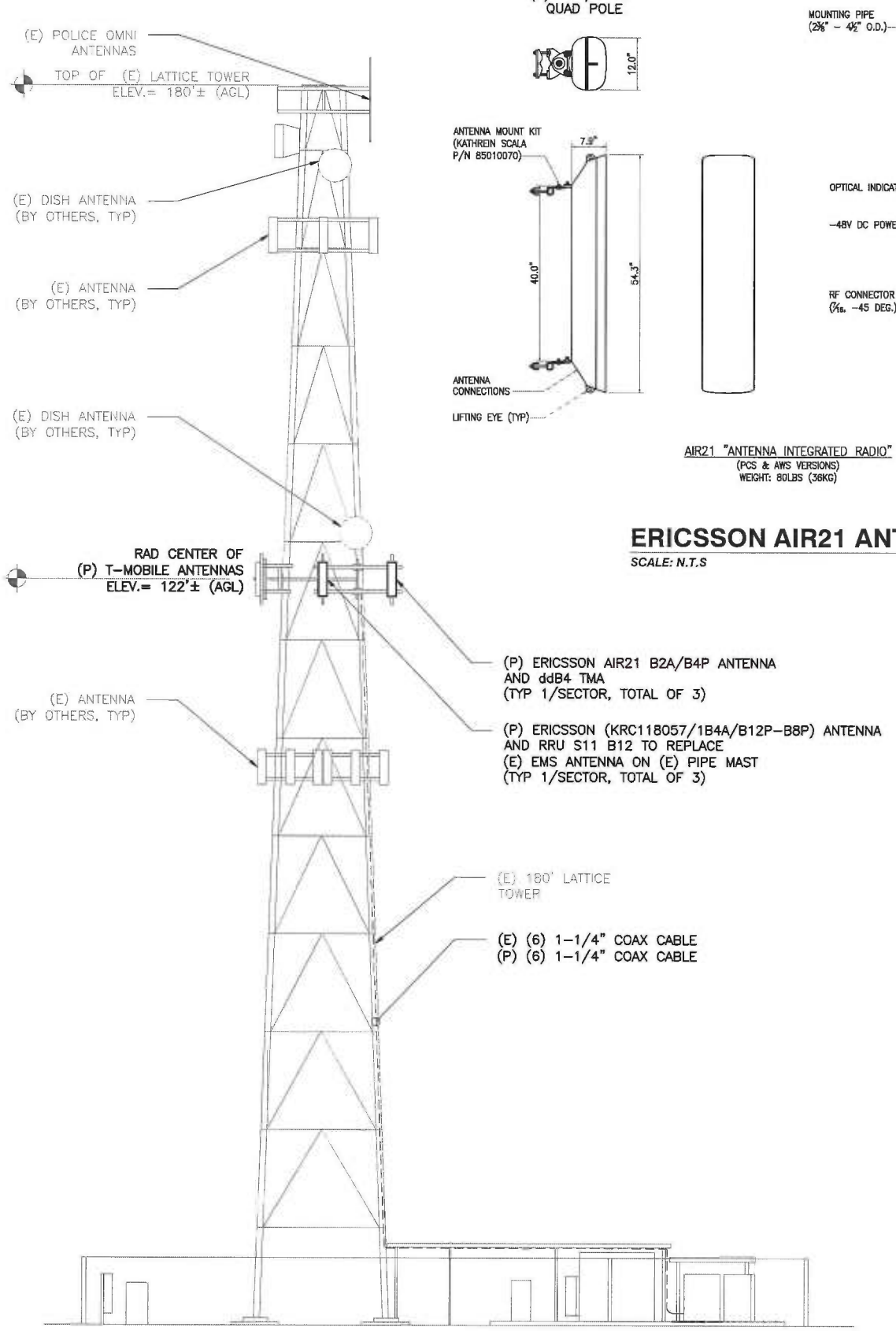
SITE NAME
CT11040D
SITE NAME
WILTON/ STATE POLICE
SITE ADDRESS
46 FENWOOD LANE
WILTON ,CT 06897

SHEET TITLE
SITE PLAN AND EQUIPMENT PLAN

SHEET NUMBER
A-1



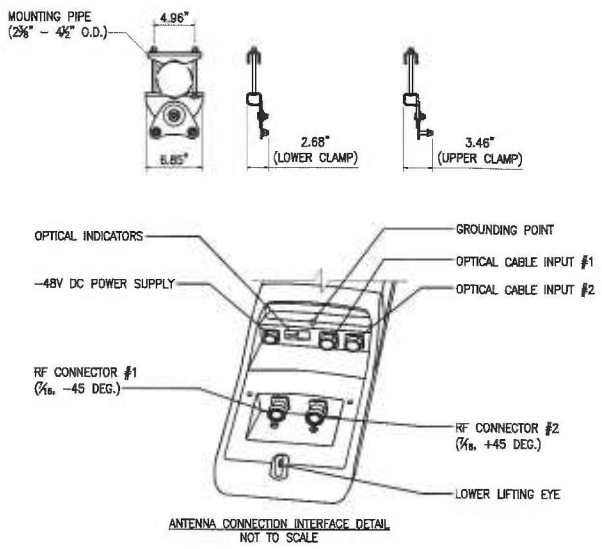
ELEVATION VIEW (1 / A-2)

SCALE: 1" = 30'-0" (11x17)
1" = 15'-0" (24x36)

0 30 60 90

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

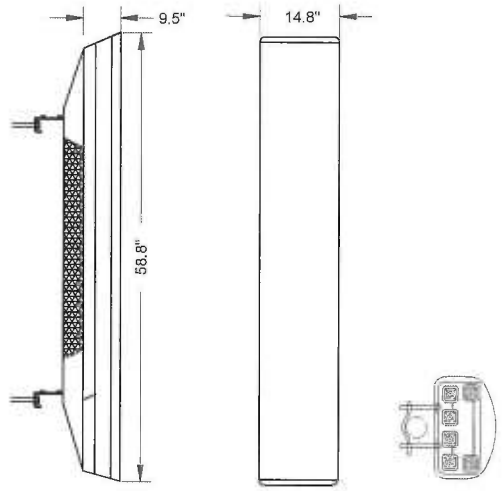
AIR21 "ANTENNA INTEGRATED RADIO"
(PCS & AWS VERSIONS)
WEIGHT: 80LBS (36KG)



ANTENNA CONNECTION INTERFACE DETAIL
NOT TO SCALE

ERICSSON AIR21 ANTENNA DETAIL (5 / A-2)

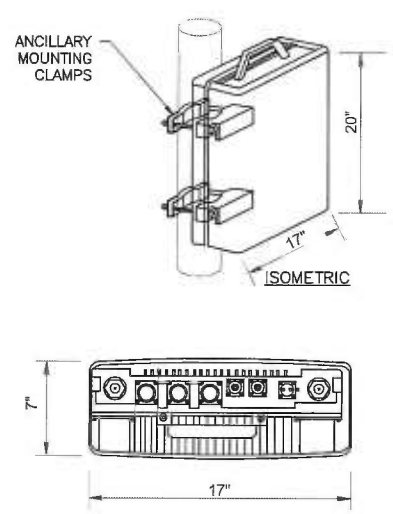
SCALE: N.T.S



MANUFACTURER: ERICSSON
MODEL NO.:KRC118057/1B4A/B12P-B8p
DIMENSIONS - HxWxD, (IN) 4.9'x14.8"x9.5"

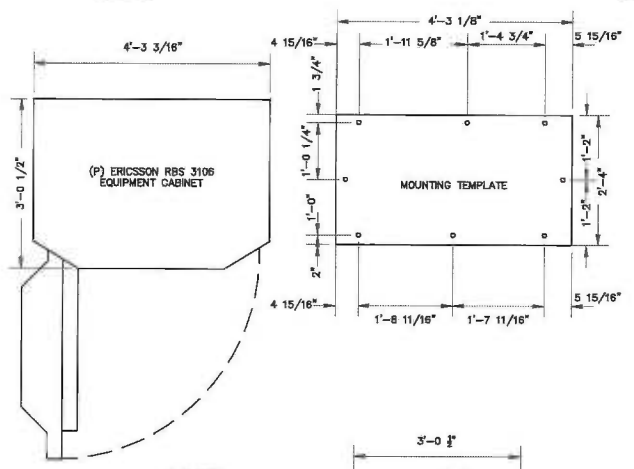
COMMSCOPE ANTENNA DETAIL (2 / A-2)

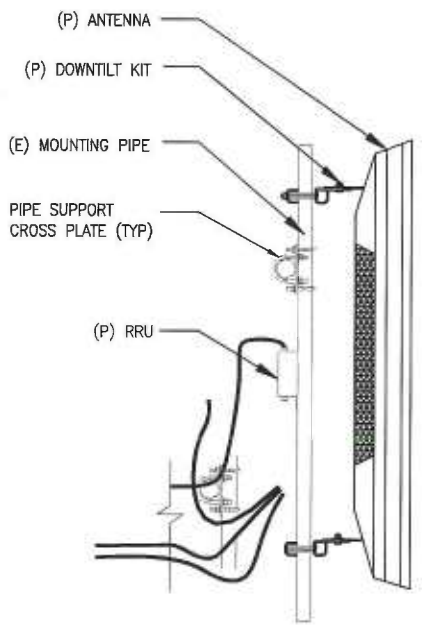
SCALE: N.T.S



RRUS 11 B12 DETAILS (4 / A-2)

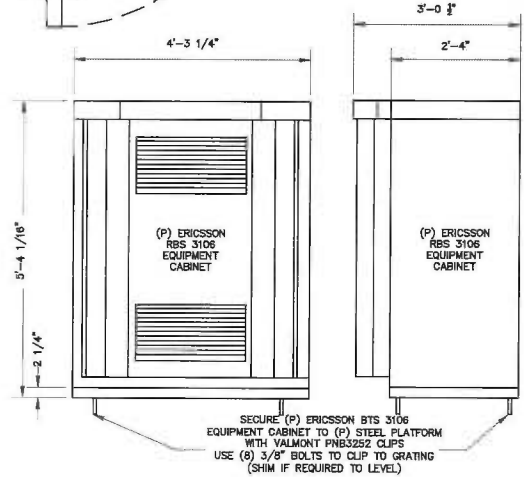
SCALE: N.T.S





ANTENNA MOUNT DETAIL (3 / A-2)

SCALE: N.T.S



ERICSSON RBS 3106 EQUIPMENT CABINET (5 / A-2)

SCALE: N.T.S

REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT " PREPARED BY AECOM, "T-MOBILE SITE ID CT11040D", DATED MAY 05, 2015.

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PROFESSIONAL SEAL

SITE NAME
CT11040D
SITE NAME
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SITE ADDRESS
46 FENWOOD LANE
WILTON ,CT 06897

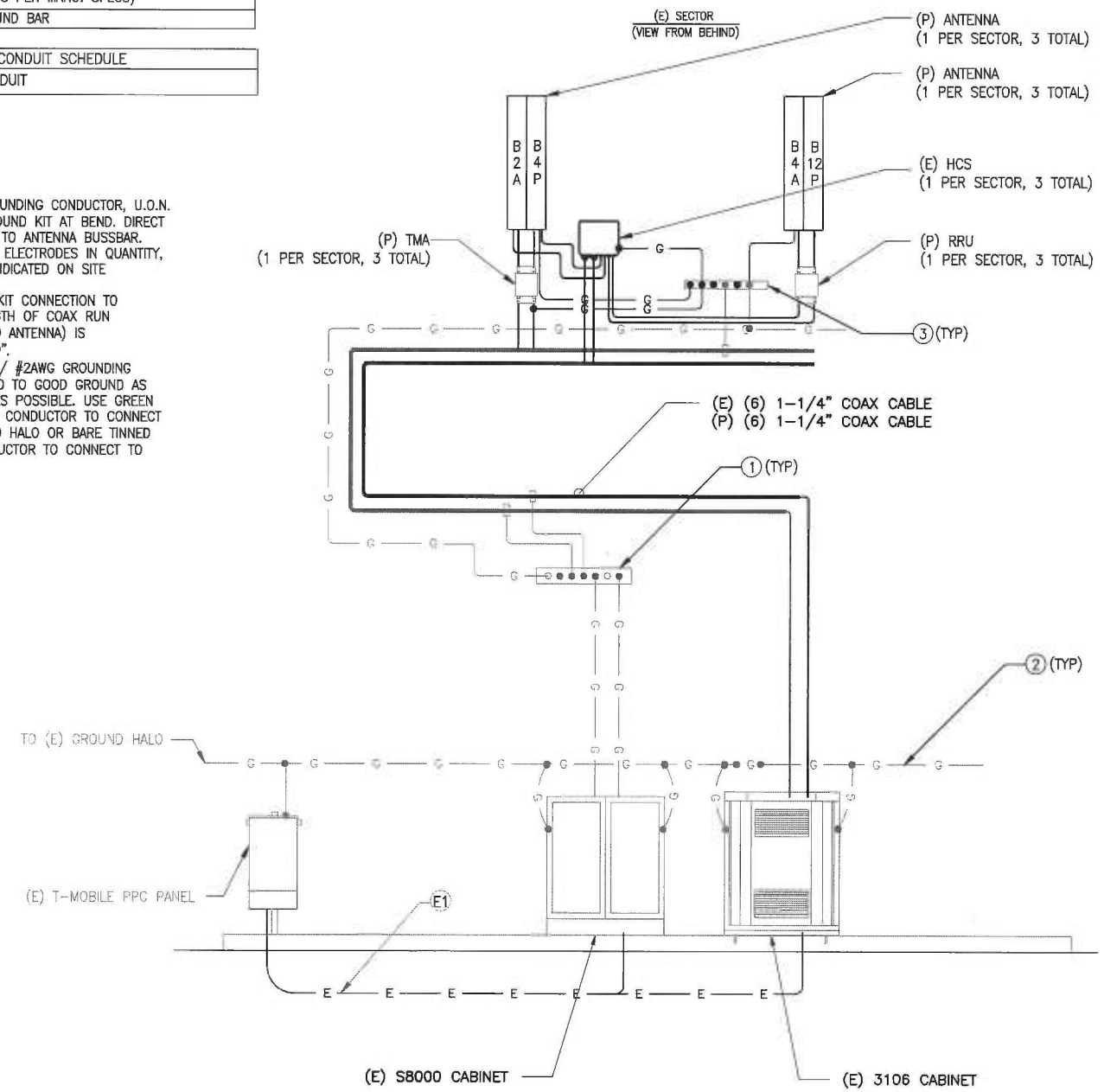
SHEET TITLE
ELEVATION AND DETAILS

SHEET NUMBER
A-2

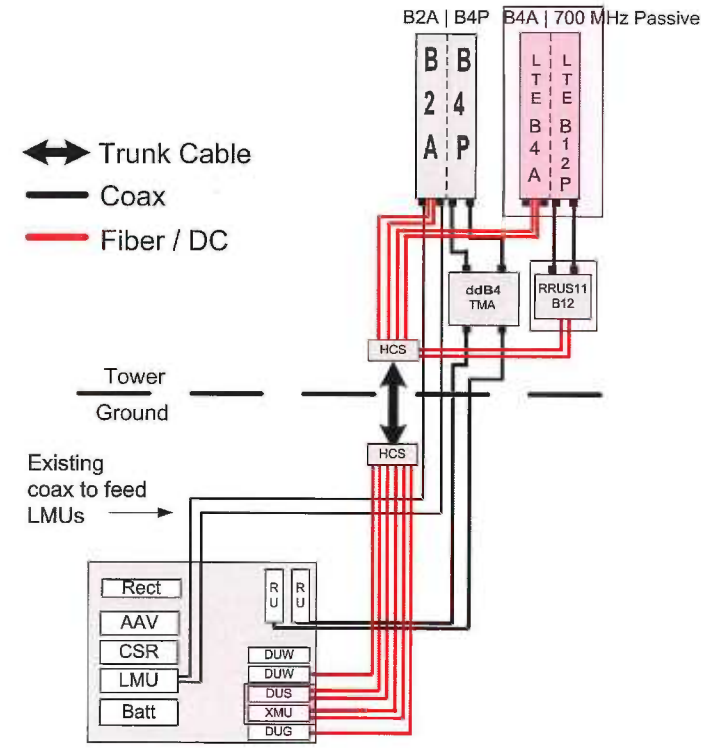
GROUNDING SCHEDULE	
①	(E) MGB (BUSSBAR #1)
②	(E) #2AWG BARE TINNED SOLID COPPER CONDUCTOR BONDED TO GROUND RING (GROUND CABINETS PER MANU. SPECS)
③	(E) SECTOR GROUND BAR

CONDUIT SCHEDULE	
E1	(E) POWER CONDUIT

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
SCALE: N.T.S
1 / E-1



TRUNK FIBER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO ⅞" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN ¾" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
11. MAXIMUM HANGER SPACING 3FT (0.9 M).

HYBRID FIBER/POWER JUMPER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A ⅜" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN ¾" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

702CC CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM
SCALE: N.T.S
2 / E-1

T-MOBILE NORTHEAST, LLC
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Newton Center, MA 02459
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Fax: 617-213-5056

SUBMITTALS		
DATE	DESCRIPTION	REVISION
02/19/15	ISSUED FOR REVIEW	A
02/25/15	REVISION	0
05/07/15	FINAL CD	1
05/25/15	REVISION	2
06/03/15	REVISION	3

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

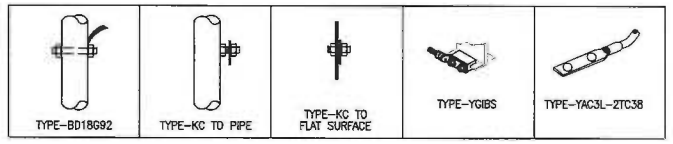
PROJECT NO:	CT11040D
DRAWN BY:	MB
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11040D
SITE NAME
WILTON/ STATE POLICE
SITE ADDRESS
46 FENWOOD LANE
WILTON ,CT 06897

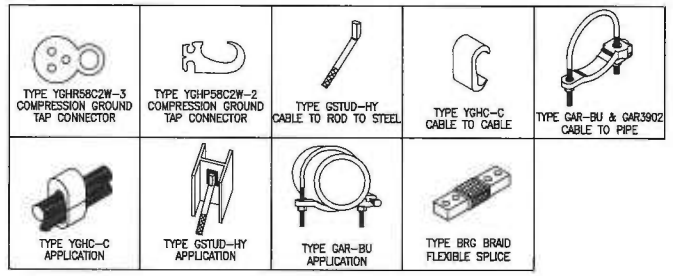
SHEET TITLE
GROUNDING DIAGRAM AND POWER ONE LINE DIAGRAM

SHEET NUMBER
E-1



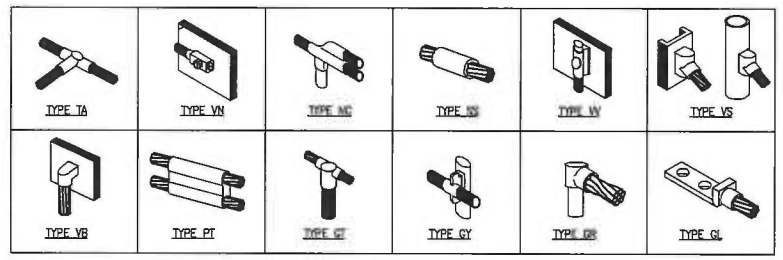
BURNDY GROUNDING DETAILS (1 / E-2)

SCALE: N.T.S



BURNDY GROUNDING PRODUCTS (2 / E-2)

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS (3 / E-2)

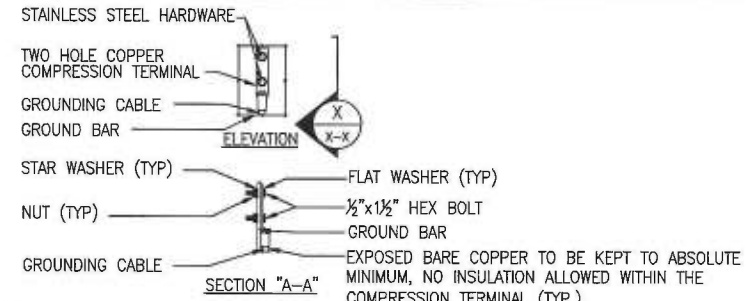
SCALE: N.T.S

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

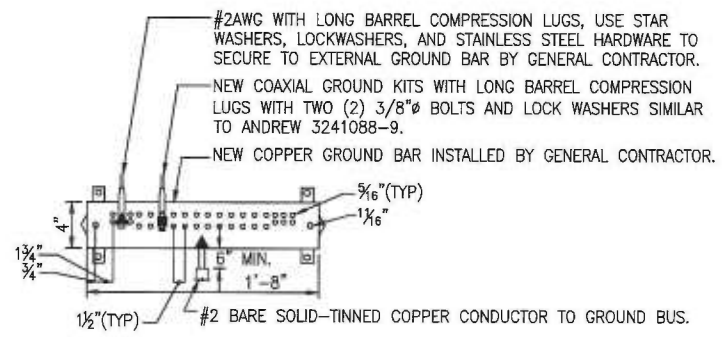
	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A	A, C, OR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

GROUNDING TERMINATION MATRIX (7 / E-2)

SCALE: N.T.S



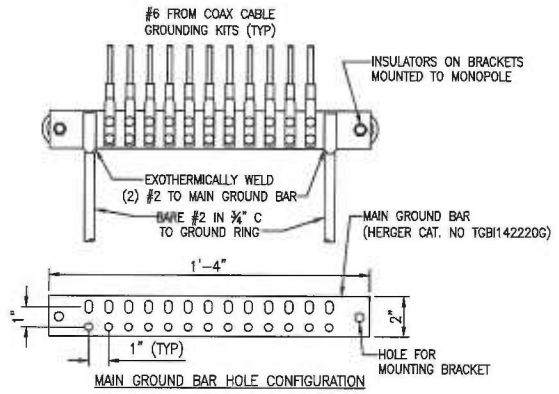
NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.



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

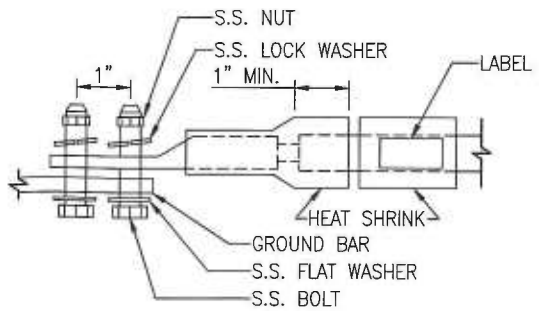
TYPICAL GROUND BAR CONNECTIONS DETAIL (4 / E-2)

SCALE: N.T.S



GROUND BAR DETAIL (5 / E-2)

SCALE: N.T.S



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

GROUND BAR DETAIL (6 / E-2)

SCALE: N.T.S

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

PROJECT NO:	CT11040D
DRAWN BY:	MB
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11040D
SITE NAME
WILTON/ STATE POLICE
SITE ADDRESS
46 FENWOOD LANE
WILTON ,CT 06897

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE CONNECTICUT STATE POLICE AND VARIOUS TELECOMMUNICATION CARRIERS.
8. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
10. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. SUBMIT TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, OBTAIN CONCURRENCE FROM THE CONNECTICUT STATE POLICE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. COORDINATE ALL CIVIL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.
14. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
15. CONTRACTOR SHALL COMPLY WITH OWNER ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
16. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FILED MEASUREMENTS ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REVERENCE ONLY.
17. CONTRACTOR TO VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.
18. THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.
19. STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.
20. COMMENCEMENT OF FOUNDATION WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
21. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM FOUNDATION REINFORCEMENT IN A WIND.

STRUCTURAL NOTES

1. SOIL BEARING CAPACITY OF 3,400 PSF USED FOR FOUNDATION DESIGN. GENERAL CONTRACTOR RESPONSIBLE FOR VERIFYING BEARING CAPACITIES.
2. ALL SURFACES MUST BE FREE OF STANDING WATER PRIOR TO PLACING.
3. COMPACTED GRAVEL FILL PER CONNECTICUT DOT STANDARD SPEC. SECTION M.02.01 AND ASTM D1557.
4. CONTACT THE ENGINEER IF GROUND WATER IS IN ENCOUNTERED AND DEWATERING IS REQUIRED.
5. EXCAVATED SOIL SHALL BE PLACED IN 8" LOOSE DEPTH LAYERS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY OBTAINED IN THE STANDARD COMPACTION TEST. BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL.

CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318 AND THE SPECIFICATION CAST-IN-PLACE CONCRETE.
2. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS AND SHALL CONTAIN 5%-7% AIR ENTRAINMENT. CONCRETE FOR FOUNDATION EXTENSION SHALL BE PORTLAND CEMENT TYPE I OR TYPE II; 28 DAY COMPRESSIVE STRENGTH $F'c$ = 3,000 PSI. PLAIN CONCRETE. PLACE IN ACCORDANCE WITH ACI MANUAL OF CONCRETE PRACTICE.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.

   CONCRETE EXPOSED TO EARTH OR WEATHER:

   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:

   SLAB AND WALL.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING
7. COLD WEATHER CONCRETE PLACING SHALL BE IN ACCORDANCE WITH ACI-306.
8. NO FOOTING SHALL BE PLACED ON FROZEN GROUND. UNCURED CONCRETE SHALL BE PROTECTED AGAINST FROST.
9. APPLY NON-SLIP BROOM FINISH IMMEDIATELY AFTER TROWEL FINISHING.

SITE ID NO: 36931390
Designed by: MCD
Drawn by: KAP
Checked by: ICA
Approved by: RAS

AECOM
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT
860-529-8882

T-Mobile

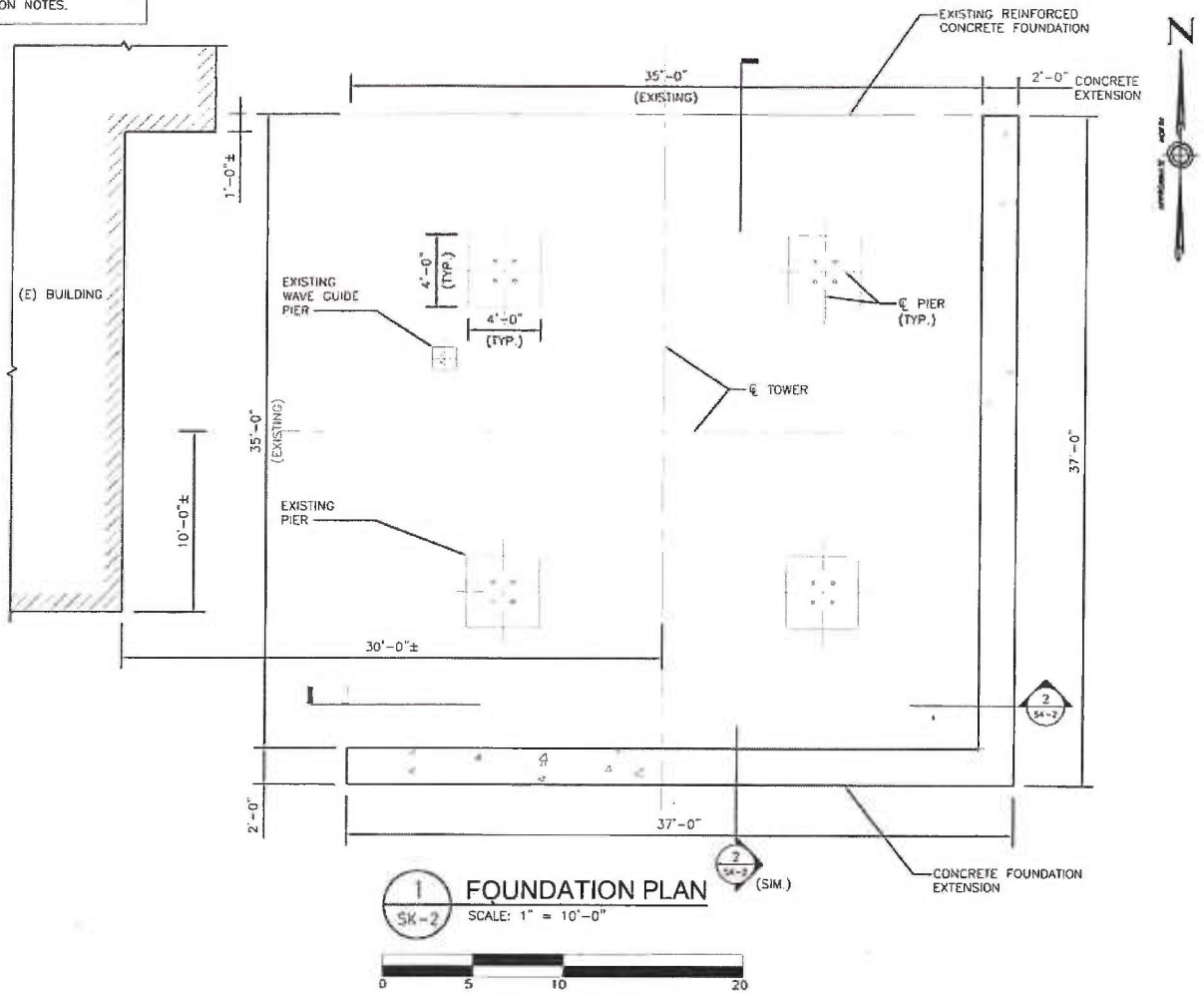
SITE ADDRESS: 180' State Police Tower #31
CT11040D 46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 05/05/15
Job No.NSS 024 | File No. SK-1 | Dwg. 1 of 2

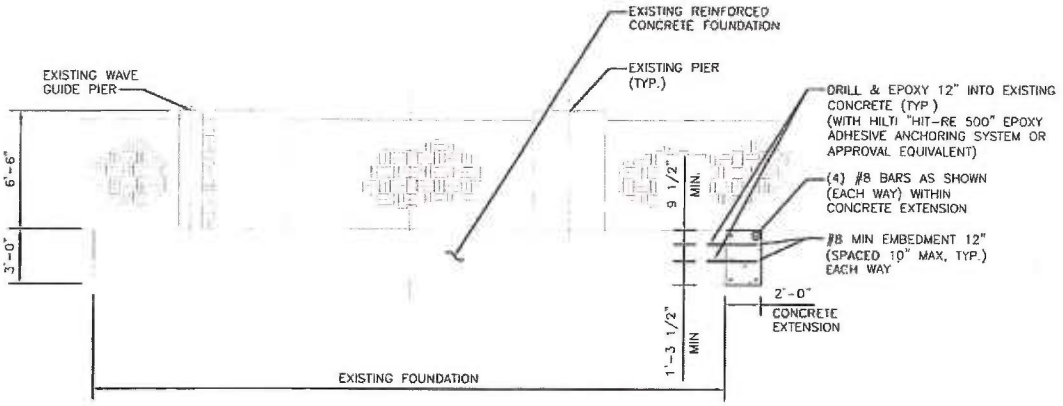
Dwg. No. SK-1

NOTE:
SEE SHEET SK-2 FOR STRUCTURAL AND FOUNDATION NOTES.



1 SK-2 FOUNDATION PLAN
SCALE: 1" = 10'-0"

0 5 10 20



2 SK-2 FOUNDATION SECTION
SCALE: 1" = 10'-0"

0 5 10 20

SITE ID NO: 36931390
Designed by: MCD
Drawn by: KAP
Checked by: ICA
Approved by: RAS

AECOM
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ROCKY HILL, CONNECTICUT
860-529-8882

T-Mobile

SITE ADDRESS:
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WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 05/05/15
Job No.NSS 024 | File No. SK-2

Dwg. No. SK-2
Dwg. 2 of 2

EXHIBIT B

AECOM

Submitted to
Northeast Site Solutions
199 Brickyard Road
Farmington, CT 06032

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
May 5, 2015

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

T-Mobile

Site ID : CT11040D
Site Name: Wilton / State Police
Site Address: 46 Fenwood Lane
Wilton, Connecticut
CSP Tower # 31

36931390
NSS-017 Rev. 1

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis and modification of the 180' self-supporting lattice tower located at 46 Fenwood Lane in Wilton, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code, the TIA/EIA-222-F standard and additional requirements of the Connecticut State Police for wind velocity of 90 mph concurrent with ½" ice design wind load. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report.

The proposed T-Mobile installation is as follows:

Antenna and Mount	Carrier	Antenna Center Elevation
Remove: **(3) EMS RR65-18-04DP Antennas** **(6) (GSM) TMS Units** **(3) Existing Mounts** **Install:** **(3) Ericsson AIR21 B2A|B4P Panel Antennas** **(3) Ericsson AIR21 B4A/B12P Panel Antennas** **(3) (UMTS) TMA Units** **(3) (LTE) TMA Units** **(6) 1-1/4" Coaxial Cables** **(2) Fiber Optic Cables** **(3) Antenna Mounts** **(3) Ericsson RRUS-11 RRH Units**	**T-Mobile (Proposed)**	**@ 122'**

The result of an initial analysis indicated the tower foundation did not have sufficient capacity to support the proposed loadings without modification. The required modifications are shown in SK-1 and SK-2. **Once the modifications are performed, the tower, anchor bolts and foundation are considered structurally adequate with the wind loading classification specified above and all the existing and proposed antenna loading. No installation of new antennas or equipment shall occur until the modifications have been completed.**

The tower deflection (sway) is 0.7096 degrees, and the tower rotation (twist) is 0.0368 degrees with a wind velocity of 90 mph concurrent with 0.5" ice. **The tower deflection and rotation are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).**

1. EXECUTIVE SUMMARY - *continued*

This analysis is based on:

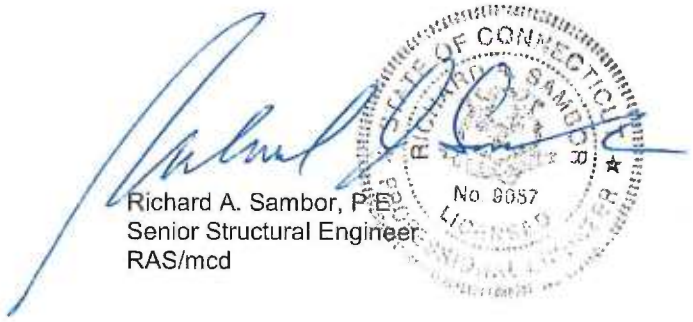
1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes utilized in the preparation of this report obtained from the manufacturers original design documents prepared by Bayar and Associates dated July 1990.
3) Antenna inventory provided by the Connecticut State Police via email on February 1, 2015.
4) Proposed antennas via T-Mobile Radio Frequency Data Sheet dated February 5, 2015.
5) Previous structural analysis performed by URS Corporation on behalf of T-Mobile, project number 36931390.00000 / NSS-017, signed and sealed March 3, 2015
6) Antenna and mount configuration as specified on the following page of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

AECOM, legacy URS Corporation AES,



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

2. INTRODUCTION

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

The inventory is summarized in the table below:

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(3) 6' Dishes (Wind Load)	CSP 69 to 71 (reserved)	Leg Mounted	180'	N/A
(2) Scala OGT9-806 (2) TX/RX 101-83B-09 (1) 7' Omni	CSP 1 to 4,6 (existing)	(3) 4' Stand-Off	180'	(4) 1-5/8" (1) 7/8"
(1) 10' Dipole (1) TX/RX TMA	CSP 7 & 67 (existing)	Pipe Mounted	180'	(1) 7/8" (1) 1/2"
(1) 6' Dishes	CSP – 59 (existing)	(1) Pipe Mounts	180'	(1) WEP65
(2) 6' Dishes	CSP 5 & 36 (existing)	(2) Pipe Mounts	176'	(2) WEP65
(1) 8-Bay Dipole	FCP – 12 (existing)	6' Standoff	170'	(1) 7/8"
(1) 5' Omni	CSP – 10 (existing)	6' Standoff	170'	(1) 7/8"
(1) 3' Omni	CAP – 25 (existing)	Leg Mounted	169'	(1) 7/8"
(6) Powerwave 7770 (6) LGP21401 TMAs	AT&T (existing)	(3) T-Frames	163'	(12) 1-5/8"
(3) Powerwave P-65-16-XLH-RR (6) Ericsson RRU (12) LGP21901 Diplexers (3) Powerwave TT19-08BP111-001 TMAs (1) RAYCAP Surge Protector	AT&T (existing)	Shared with Above	163'	(1) 3" Flex Conduit with Fiber & DC Cables
(3) TX/RX 101-83B-08-T5 (1) TX/RX TMA	CSP 63 to 66 (existing)	Leg Mounted	160'	(3) 1-5/8" (1) 1/2"
(1) DB636	NEU – 57 (existing)	4' Standoff	150'	(1) 7/8"
(1) 3' Yagi	WTR – 28 (existing)	6' Standoff	145'	(1) 7/8"
(1) 6' Dish	CSP – 35 (existing)	Pipe Mounted	130'	(1) WEP65
(3) Ericsson AIR21 B2A|B4P Panel Antennas (3) Ericsson AIR21 B4A/B12P Panel Antennas (3) (UMTS) TMA Units (3) (LTE) TMA Units (3) Antenna Mounts (3) Ericsson RRUS-11 RRH Units	**T-Mobile (Proposed)**	*See Below Mount*	**122'**	**(6) 1-1/4" Coaxial Cables (2) Fiber Optic Cables**

Antenna Type	Carrier	Mount	Mount Elevation	Cable
(3) Ericsson AIR21 B2A|B4P Panel Antennas (3) (UMTS) TMA Units	T-Mobile (existing)	(3) Antenna Mounts	122'	(6) 1 1/4"
(2) DB586-Y (one inverted and one upright)	NEU 30 & 31 (existing)	6' Standoff	120'	(2) 7/8"
(1) Celwave PD-128 (1) 17' Omni	WPD 33 & 55 (existing)	6' Standoff	120'	(2) 7/8"
(1) Celwave PD-128	CSP – 8 (existing)	Leg Mounted	120'	(1) 7/8"
(1) ASP-711	WTR – 29 (existing)	Leg Mounted	116'	(1) 7/8"
(1) Decibel DB-222	DHS – 9 (existing)	Leg Mounted	112'	(1) 7/8"
(3) APXVSPP18-C (6) ALU RRH	Sprint (existing)	(3) 10' Frame (existing)	106'	(3) RFS Hybriflex Cables
(1) BCD806-09NE	CSP – 62 (existing)	Leg Mounted	101'	(1) 1-5/8"
(1) 4' Grid Dish	CSP – 11 (existing)	Pipe Mounted	100'	(1) 7/8"
(1) 15' Omni	DEA – 32 (existing)	4' Standoff	100'	(1) 7/8"
(1) 20' 4-Bay Dipole	USS – 26 (existing)	3' Standoff	85'	(1) 7/8"
(1) Ice Shield for 6' Grid Dish Below	CSP (existing)	4' Standoff	80'	N/A
(1) 6' Grid Dish	CSP – 13 (existing)	Pipe Mounted	75'	(1) 1/2"
(1) GPS	Sprint (existing)	3' Standoff	56'	(1) 1/2"
(1) DB-803 Omni	CSP – 68 (existing)	3' Stand-Off	47'	(1) 1/2"

This structural analysis of the communications tower was performed by AECOM, for T-Mobile. The purpose of this analysis was to analyze the modified tower for its existing and proposed antenna loads. This analysis was conducted to evaluate rotation (twist), deflection (sway) and stress on the tower, and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F - Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction - Allowable Stress Design (ASD).

The analysis was conducted using TNX Tower 6.1.3.1. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 90 mph (fastest mile) Wind Load + Tower Dead Load
Load Condition 2 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

The TIA/EIA standard permits a one-third increase in allowable stresses for towers and monopoles less than 700 feet tall. For the purposes of this analysis, in computing the load capacity the allowable stresses of the tower members were increased by one-third.

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the allowable stress in accordance with AISC. The results of an initial analysis indicated that the tower foundation required modification. The required modifications are shown in SK-1 and SK-2, located in Section 6 of this report. Once the modifications indicated on SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load classification specified with the existing and proposed antenna loading noted herein.

The tower deflection (sway) is 0.7096 degrees and the tower rotation (twist) is 0.0368 degrees. These figures are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).

Tower Base Reactions:

Description	Current
Pier Compression (kips)	449
Pier Uplift (kips)	400
Overall Overturning (kip-ft)	10658
Overall Shear (kips)	98
Shear per Leg (kips)	42

Controlling Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Critical Component Size	Controlling Elevation	Stress (% capacity)	Pass/Fail
Leg (T19)	L8x8x1 1/8"	0' – 10'	99.0	Pass
Diagonal (T12)	L3 1/2X3X1/4	80'-90'	84.7	Pass
Horizontal (T19)	2L2 1/2x2 1/2x1/4	0'-10'	53.5	Pass
Secondary Horizontal (T18)	L3 1/2x3 1/2x1/4	10'-20'	87.0	Pass
Top Girt (T3)	L2x2x3/16	159.049'-163.573'	13.0	Pass
Redund Horz 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	44.2	Pass
Redund Diag 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	73.3	Pass
Redund Hip 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	0.3	Pass
Redund Sub Horz Bracing (T19)	L3x3x5/16	0'-10'	6	Pass
Inner Bracing (T19)	2L2x2 1/2x3/16	0'-10'	3.5	Pass
(Foundation) Anchor Bolts	(4) 2-1/2" dia. A36 bolts	N/A	88	Pass

Foundation Summary:

Component	Required / Allowable	Computed	% Capacity	Pass/Fail
Overturning Moment Factor of Safety	2.0 min	2.30	87	Pass
Foundation Bearing Pressure	3.4 ksf max	2.4627 ksf	72.4	Pass

Tower Twist & Sway at Top:

Description	Current	Total Allowable
Tower Twist (degrees)	0.0368	---
Tower Sway (degrees)	0.7096	
Total Deflection (degrees)	0.7464	0.75

5. CONCLUSIONS

The result of an initial analysis indicated the tower foundation did not have sufficient capacity to support the proposed loadings without modification. The required modifications are shown in SK-1 and SK-2. **Once the modifications are performed, the tower, anchor bolts and foundation are considered structurally adequate with the wind loading classification specified above and all the existing and proposed antenna loading. No installation of new antennas or equipment shall occur until the modifications have been completed.**

The tower deflection (sway) is 0.7096 degrees, and the tower rotation (twist) is 0.0368 degrees with a wind velocity of 90 mph concurrent with 0.5" ice. **The tower deflection and rotation are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place and all previous modifications have been performed.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations are in good condition without defects and were properly constructed to support original design loads as specified in the original design documents.

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

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

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

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

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading condition.

6.) DRAWINGS AND DATA

TOWER REINFORCEMENT DRAWINGS SK-1 AND SK-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB–CONTRACTORS AND ALL RELATED PARTIES. THE SUB–CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD–OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. SUB–CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB–CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS–BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE CONNECTICUT STATE POLICE AND VARIOUS TELECOMMUNICATION CARRIERS.
8. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB–CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON–SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
10. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. SUBMIT TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, OBTAIN CONCURRENCE FROM THE CONNECTICUT STATE POLICE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. COORDINATE ALL CIVIL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT–IN WORK, ETC.
14. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1–800–922–4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
15. CONTRACTOR SHALL COMPLY WITH OWNER ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
16. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FILED MEASUREMENTS ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REVERENCE ONLY.
17. CONTRACTOR TO VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.
18. THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.
19. STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF–SUPPORTING AND STABLE AFTER WORK IS COMPLETED.
20. COMMENCEMENT OF FOUNDATION WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
21. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM FOUNDATION REINFORCEMENT IN A WIND.

STRUCTURAL NOTES

1. SOIL BEARING CAPACITY OF 3,400 PSF USED FOR FOUNDATION DESIGN. GENERAL CONTRACTOR RESPONSIBLE FOR VERIFYING BEARING CAPACITIES.
2. ALL SURFACES MUST BE FREE OF STANDING WATER PRIOR TO PLACING.
3. COMPACTED GRAVEL FILL PER CONNECTICUT DOT STANDARD SPEC. SECTION M.02.01 AND ASTM D1557.
4. CONTACT THE ENGINEER IF GROUND WATER IS IN ENCOUNTERED AND DEWATERING IS REQUIRED.
5. EXCAVATED SOIL SHALL BE PLACED IN 8" LOOSE DEPTH LAYERS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY OBTAINED IN THE STANDARD COMPACTION TEST. BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL.

CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318 AND THE SPECIFICATION CAST–IN–PLACE CONCRETE.
2. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS AND SHALL CONTAIN 5%–7% AIR ENTRAINMENT. CONCRETE FOR FOUNDATION EXTENSION SHALL BE PORTLAND CEMENT TYPE I OR TYPE II; 28 DAY COMPRESSIVE STRENGTH F'c = 3,000 PSI. PLAIN CONCRETE. PLACE IN ACCORDANCE WITH ACI MANUAL OF CONCRETE PRACTICE.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.

   CONCRETE EXPOSED TO EARTH OR WEATHER:

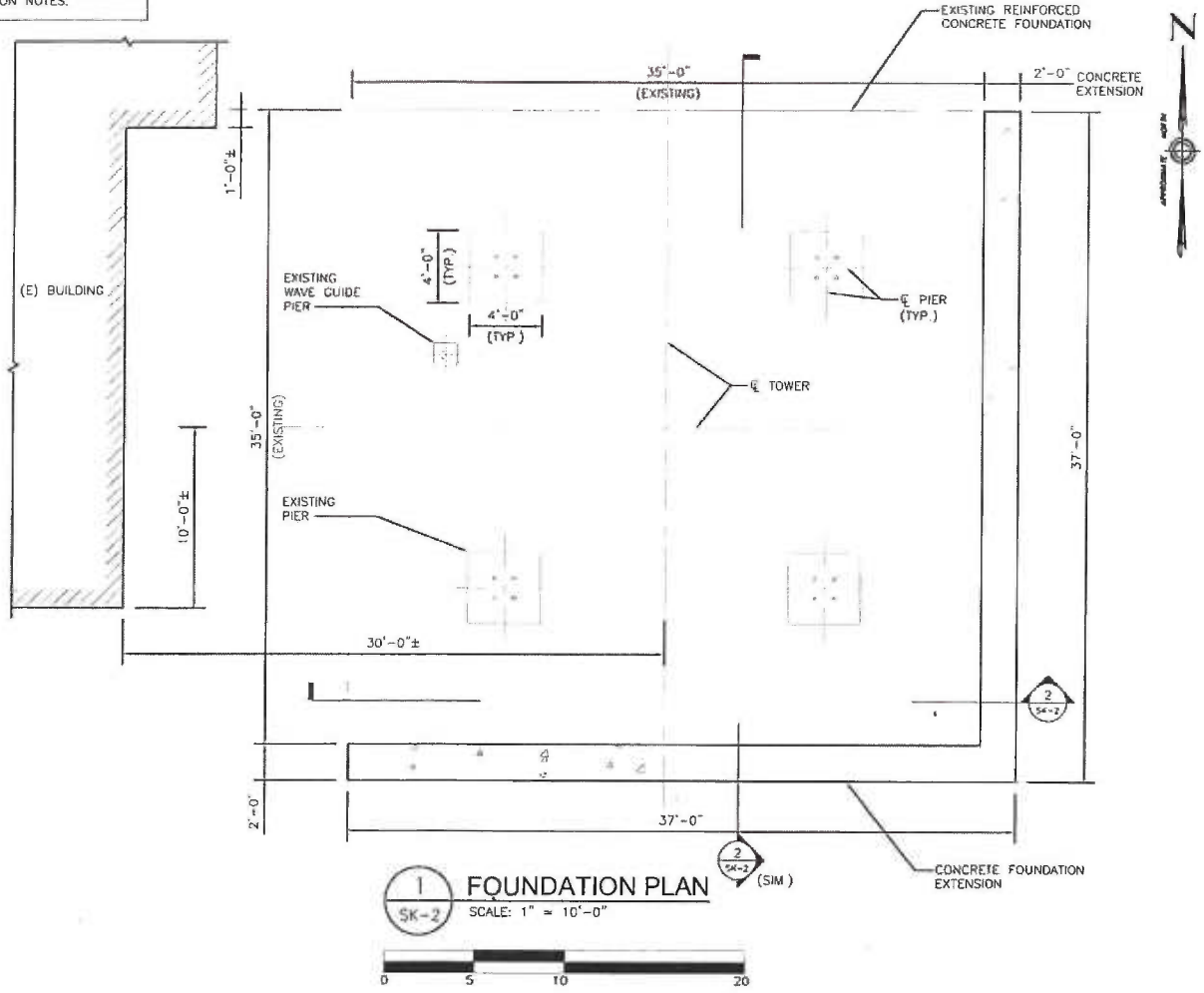
   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:

   SLAB AND WALL.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING
7. COLD WEATHER CONCRETE PLACING SHALL BE IN ACCORDANCE WITH ACI–306.
8. NO FOOTING SHALL BE PLACED ON FROZEN GROUND. UNCURED CONCRETE SHALL BE PROTECTED AGAINST FROST.
9. APPLY NON–SLIP BROOM FINISH IMMEDIATELY AFTER TROWEL FINISHING.

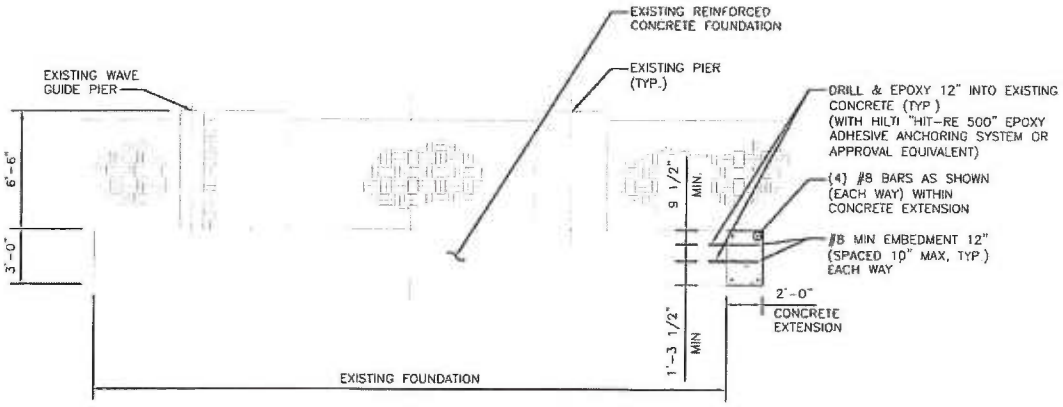
SITE ID NO: 36931390	AECOM	T-Mobile	Dwg. No. SK-1
Designed by: MCD	500 ENTERPRISE DRIVE, SUITE 3B		
Drawn by: KAP	ROCKY HILL, CONNECTICUT		REV. / DATE: / DESCRIPTION
Checked by: ICA	860-529-8882	SITE ADDRESS: 180' State Police Tower #31	Scale: AS NOTED / Date: 05/05/15
Approved by: RAS		CT11040D 46 Fenwood Lane	Job No.NSS 024 / File No. SK–1 / Dwg. 1 of 2
		WILTON, CONNECTICUT 06897	

NOTE:
SEE SHEET SK-2 FOR STRUCTURAL AND FOUNDATION NOTES.



1 SK-2 FOUNDATION PLAN
SCALE: 1" = 10'-0"

0 5 10 20



2 SK-2 FOUNDATION SECTION
SCALE: 1" = 10'-0"

0 5 10 20

SITE ID NO: 36931390
Designed by: MCD
Drawn by: KAP
Checked by: ICA
Approved by: RAS

AECOM
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT
860-529-8882

T-Mobile

SITE ADDRESS:
180' State Police Tower #31
CT11040D 46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

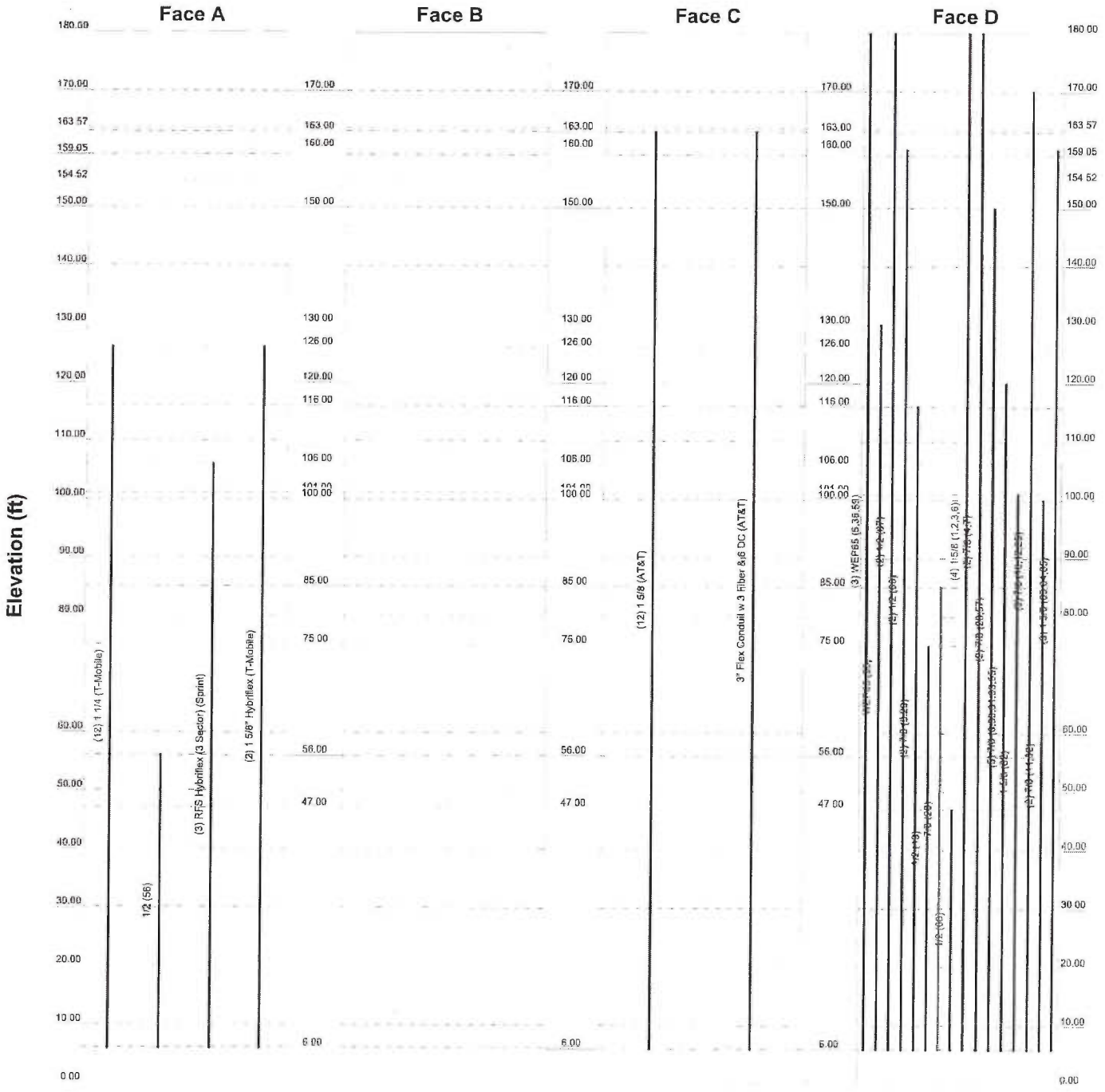
Scale: AS NOTED | Date: 05/05/15
Job No.NSS 024 | File No. SK-2

Dwg. No. SK-2
Dwg. 2 of 2

TNX TOWER FEEDLINE DISTRIBUTION

Feed Line Distribution Chart
0' - 180'

Round Flat App In Face App Out Face Truss Leg

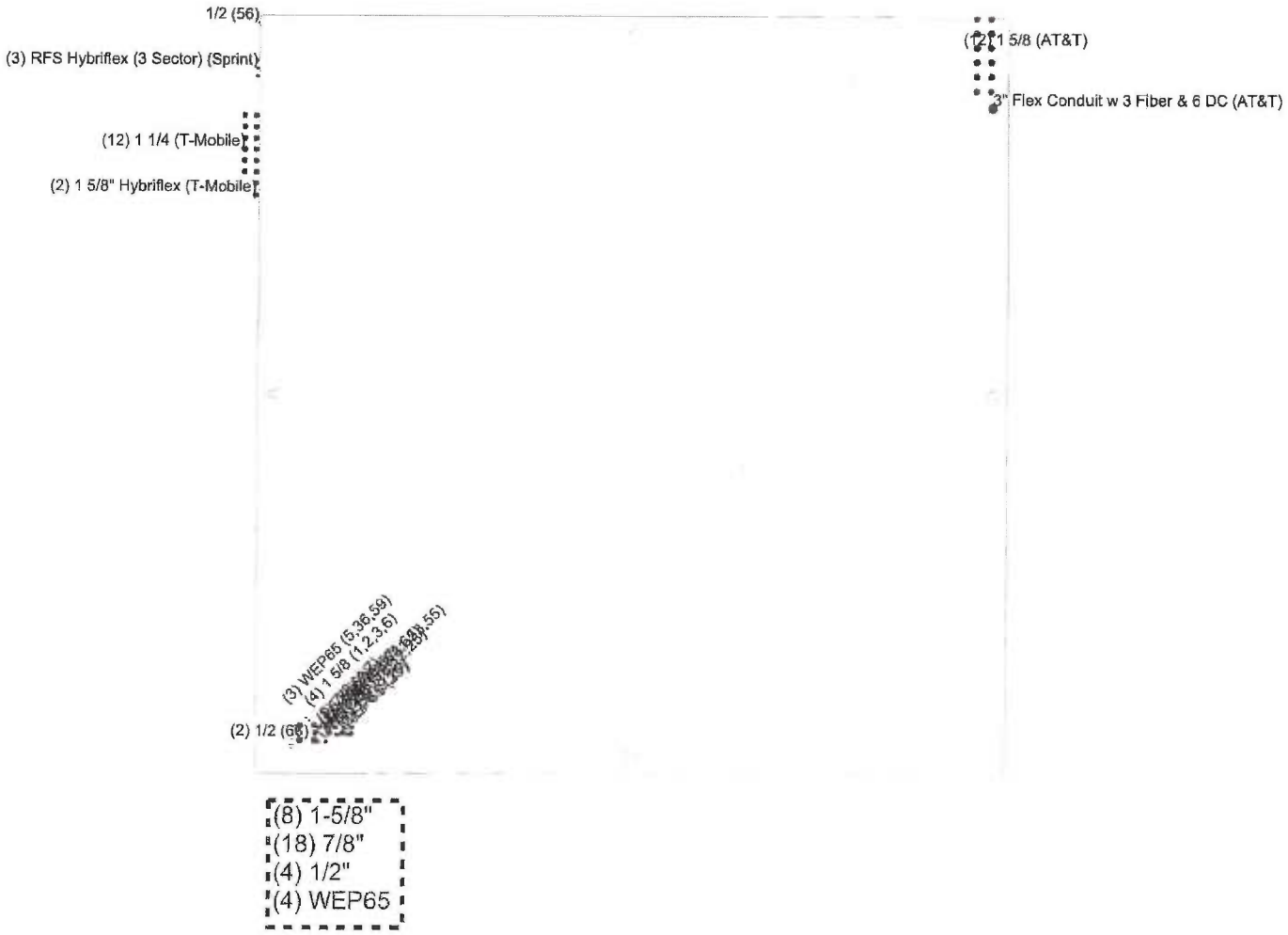


AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Job: ***180' Lattice Tower - CSP*** Project: ***Wilton, Connecticut (NSS-017 MODification)*** Client: Northeast Site Solutions / T-Mobile Drawn by: MCD App'd: Code: TIA/EIA-222-F Date: 05/05/15 Scale: NTS Path: Dwg No. E-7

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round _____ Flat _____ App In Face App Out Face



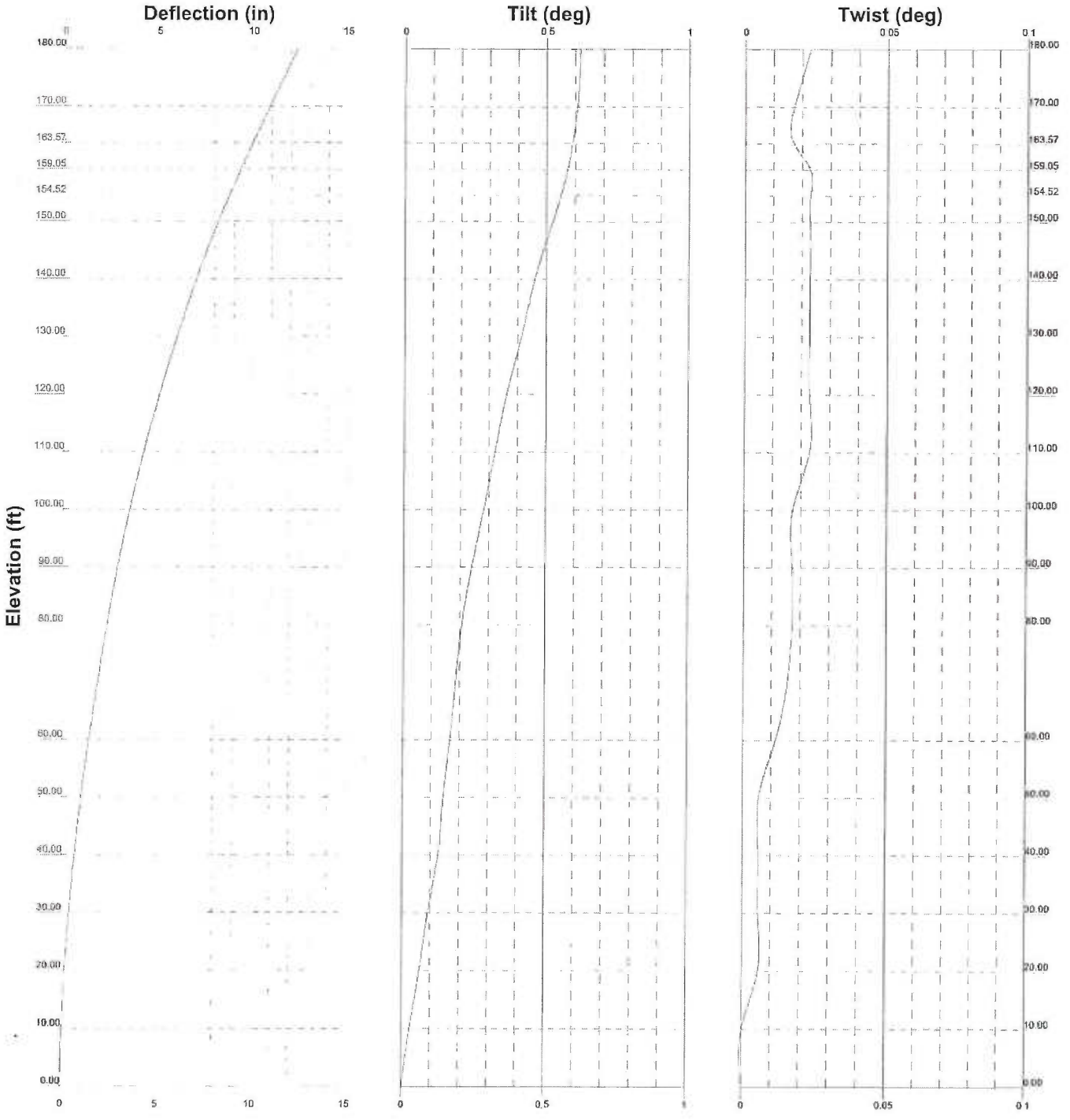
AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job:	180' Lattice Tower - CSP
Project:	Wilton, Connecticut (NSS-017 MODification)
Client:	Northeast Site Solutions / T-Mobile
Drawn by:	MCD
App'd:	
Code:	TIA/EIA-222-F
Date:	05/05/15
Scale:	NTS
Path:	
Dwg No.	E-7

TNX TOWER DEFLECTION, TILT, AND TWIST

TIA/EIA-222-F - Service - 90 mph

Maximum Values



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

Job:	*180' Lattice Tower - CSP*
Project:	*Wilton, Connecticut (NSS-017 MODification)*
Client:	Northeast Site Solutions / T-Mobile
Drawn by:	MCD
App'd:	
Code:	TIA/EIA-222-F
Date:	05/05/15
Scale:	NTS
Path:	
Dwg No.	E-5

TNX TOWER DETAILED OUTPUT

tnxTower	Job	Page
	180' Lattice Tower - CSP	1 of 63
AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Project Wilton, Connecticut (NSS-017 MODification)	Date 18:41:09 05/05/15
	Client Northeast Site Solutions / T-Mobile	Designed by MCD

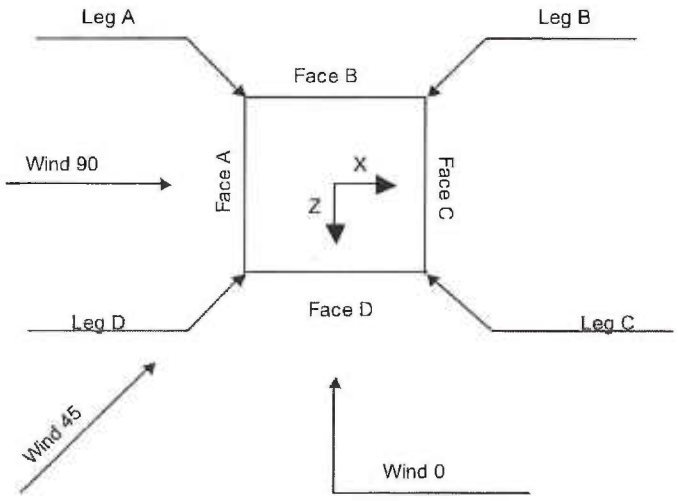
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.00 ft at the top and 17.73 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 90 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 90 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Square Tower

Tower Section Geometry

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

Tower Section Geometry *(cont'd)*

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

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-170.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	170.00-163.57	6.43	X Brace	No	No	0.0000	0.0000
T3	163.57-159.05	4.52	X Brace	No	No	0.0000	0.0000
T4	159.05-154.52	4.52	X Brace	No	No	0.0000	0.0000
T5	154.52-150.00	4.52	X Brace	No	No	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T7	140.00-130.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	130.00-120.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	80.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T15	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	30.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	20.00-10.00	10.00	X Brace	No	Yes	0.0000	0.0000
T19	10.00-0.00	10.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

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

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 30.00-20.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T18 20.00-10.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T19 10.00-0.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 170.00-163.57	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 163.57-159.05	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 150.00-140.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Double Angle	2L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 120.00-110.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 100.00-90.00	None	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T14 60.00-50.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T18 20.00-10.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T19 10.00-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 120.00-110.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 100.00-90.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T17 30.00-20.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 20.00-10.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)
T19 10.00-0.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_l	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 180.00-170.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T2 170.00-163.57	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
T3 163.57-159.05	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T4 159.05-154.52	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T5 154.52-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T6 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T7 140.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T8 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T9 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T10 110.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T11 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T12 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T14 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T15 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T16 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T17 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T18 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T19 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000

Tower Section Geometry *(cont'd)*

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

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T9 120.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T12 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T15 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T16 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T17 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T19 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

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

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

Tower Section Geometry *(cont'd)*

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

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

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4 (T-Mobile)	A	Yes	Ar (CfAe)	126.00 - 6.00	0.0000	0.33	12	6	1.5500	1.5500		0.66
WEP65 (5,36,59)	D	Yes	Af (CfAe)	180.00 - 6.00	-12.0000	0.45	3	1	1.5836	1.5836	5.1284	0.53
WEP65 (35)	D	Yes	Ar (CfAe)	130.00 - 6.00	-10.0000	0.37	1	1	1.5836	1.5836		0.53
1/2 (67)	D	No	Ar (Leg)	180.00 - 6.00	0.0000	0.1	2	1	0.5800	0.5800		0.25
1/2 (66)	D	No	Ar (Leg)	160.00 - 6.00	0.0000	0.1	2	1	0.5800	0.5800		0.25
7/8 (9,29)	D	Yes	Ar (CfAe)	116.00 - 6.00	-10.0000	0.38	2	2	1.1100	1.1100		0.54
1/2 (13)	D	Yes	Ar (CfAe)	75.00 - 6.00	-10.0000	0.39	1	1	0.5800	0.5800		0.25
7/8 (26)	D	Yes	Ar (CfAe)	85.00 - 6.00	-10.0000	0.39	1	1	1.1100	1.1100		0.54
1/2 (68)	D	Yes	Ar (CfAe)	47.00 - 6.00	-10.0000	0.4	1	1	0.5800	0.5800		0.25
1/2 (56)	A	Yes	Ar (CfAe)	56.00 - 6.00	0.0000	0.49	1	1	0.5800	0.5800		0.25
1 5/8 (1,2,3,6)	D	Yes	Ar (CfAe)	180.00 - 6.00	-12.0000	0.43	4	2	1.9800	1.9800		1.04
7/8 (4,7)	D	Yes	Ar (CfAe)	180.00 - 6.00	-12.0000	0.41	2	2	1.1100	1.1100		0.54
7/8 (28,57)	D	Yes	Ar (CfAe)	150.00 - 6.00	-12.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (8,30,31,33,55)	D	Yes	Ar (CfAe)	120.00 - 6.00	-12.0000	0.39	5	5	1.1100	1.1100		0.54
1 5/8 (62)	D	Yes	Ar (CfAe)	101.00 - 6.00	-12.0000	0.4	1	1	1.9800	1.9800		1.04
7/8 (10,12,25)	D	Yes	Ar (CfAe)	170.00 - 6.00	-12.0000	0.38	3	3	1.1100	1.1100		0.54
7/8 (11,32)	D	Yes	Ar (CfAe)	100.00 - 6.00	-8.0000	0.41	2	2	1.1100	1.1100		0.54
1 5/8	D	Yes	Ar (CfAe)	160.00 - 6.00	-10.0000	0.4	3	3	1.9800	1.9800		1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(63,64,65) 1 5/8 (AT&T)	C	Yes	Ar (CfAe)	163.00 - 6.00	-8.0000	-0.45	12	6	1.9800	1.9800		1.04
3" Flex Conduit w 3 Fiber & 6 DC (AT&T)	C	Yes	Ar (CfAe)	163.00 - 6.00	-3.0000	-0.38	1	1	3.0000	3.0000		3.00
RFS Hybriflex (3 Sector) (Sprint)	A	Yes	Ar (CfAe)	106.00 - 6.00	0.0000	0.43	3	3	1.0900	1.0900		0.37
1 5/8" Hybriflex (T-Mobile)	A	Yes	Ar (CfAe)	126.00 - 6.00	0.0000	0.27	2	2	1.6250	1.6250		0.21

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.483	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	5.633	1.320	0.000	0.000	0.07
T2	170.00-163.57	A	0.311	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	5.404	0.848	0.000	0.000	0.06
T3	163.57-159.05	A	0.265	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	4.900	0.000	0.000	0.000	0.06
		D	4.321	0.597	0.000	0.000	0.04
T4	159.05-154.52	A	0.437	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	5.610	0.000	0.000	0.000	0.07
		D	6.262	0.597	0.000	0.000	0.06
T5	154.52-150.00	A	0.437	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	5.610	0.000	0.000	0.000	0.07
		D	6.262	0.597	0.000	0.000	0.06
T6	150.00-140.00	A	0.967	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	15.692	1.320	0.000	0.000	0.14
T7	140.00-130.00	A	0.967	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	15.692	1.320	0.000	0.000	0.14
T8	130.00-120.00	A	7.242	0.000	0.000	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	17.011	1.320	0.000	0.000	0.14
T9	120.00-110.00	A	11.425	0.000	0.000	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	22.746	1.320	0.000	0.000	0.18
T10	110.00-100.00	A	13.060	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	12.400	0.000	0.000	0.000	0.15
		D	23.651	1.320	0.000	0.000	0.18
T11	100.00-90.00	A	14.150	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	26.986	1.320	0.000	0.000	0.20
T12	90.00-80.00	A	14.150	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	27.449	1.320	0.000	0.000	0.20
T13	80.00-60.00	A	28.300	0.000	0.000	0.000	0.19
		B	0.000	0.000	0.000	0.000	0.00
		C	24.800	0.000	0.000	0.000	0.31
		D	56.548	2.639	0.000	0.000	0.42
T14	60.00-50.00	A	14.440	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.395	1.320	0.000	0.000	0.21
T15	50.00-40.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.733	1.320	0.000	0.000	0.21
T16	40.00-30.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.878	1.320	0.000	0.000	0.21
T17	30.00-20.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.878	1.320	0.000	0.000	0.21
T18	20.00-10.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.878	1.320	0.000	0.000	0.21
T19	10.00-0.00	A	5.853	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	4.960	0.000	0.000	0.000	0.06
		D	11.551	0.528	0.000	0.000	0.08

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.500	1.317	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		9.800	1.875	0.000	0.000	0.21
T2	170.00-163.57	A	0.500	0.846	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		9.689	1.205	0.000	0.000	0.16
T3	163.57-159.05	A	0.500	0.721	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		7.205	0.000	0.000	0.000	0.14
		D		7.654	0.848	0.000	0.000	0.12
T4	159.05-154.52	A	0.500	1.191	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		8.249	0.000	0.000	0.000	0.16
		D		10.787	0.848	0.000	0.000	0.16
T5	154.52-150.00	A	0.500	1.191	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		8.249	0.000	0.000	0.000	0.16
		D		10.787	0.848	0.000	0.000	0.16
T6	150.00-140.00	A	0.500	2.633	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		27.358	1.875	0.000	0.000	0.38
T7	140.00-130.00	A	0.500	2.633	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		27.358	1.875	0.000	0.000	0.38
T8	130.00-120.00	A	0.500	12.908	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		29.511	1.875	0.000	0.000	0.40
T9	120.00-110.00	A	0.500	19.758	0.000	0.000	0.000	0.26
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		40.413	1.875	0.000	0.000	0.49
T10	110.00-100.00	A	0.500	22.893	0.000	0.000	0.000	0.28
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		42.068	1.875	0.000	0.000	0.51
T11	100.00-90.00	A	0.500	24.983	0.000	0.000	0.000	0.30
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		47.820	1.875	0.000	0.000	0.56
T12	90.00-80.00	A	0.500	24.983	0.000	0.000	0.000	0.30
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		48.699	1.875	0.000	0.000	0.57
T13	80.00-60.00	A	0.500	49.967	0.000	0.000	0.000	0.60
		B		0.000	0.000	0.000	0.000	0.00
		C		36.467	0.000	0.000	0.000	0.72
		D		101.131	3.750	0.000	0.000	1.16
T14	60.00-50.00	A	0.500	25.773	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		50.895	1.875	0.000	0.000	0.58
T15	50.00-40.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		51.816	1.875	0.000	0.000	0.59
T16	40.00-30.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		52.211	1.875	0.000	0.000	0.59
T17	30.00-20.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		52.211	1.875	0.000	0.000	0.59
T18	20.00-10.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		52.211	1.875	0.000	0.000	0.59
T19	10.00-0.00	A	0.500	10.520	0.000	0.000	0.000	0.12
		B		0.000	0.000	0.000	0.000	0.00
		C		7.293	0.000	0.000	0.000	0.14

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		D		20.885	0.750	0.000	0.000	0.24

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	180.00-170.00	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
		D	0.000	0.522	0.740	1.216
T2	170.00-163.57	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
		D	0.000	0.521	0.719	1.237
T3	163.57-159.05	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.462	0.628	0.924
		D	0.000	0.507	0.597	1.014
T4	159.05-154.52	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.370	0.630	0.926
		D	0.000	0.475	0.721	1.187
T5	154.52-150.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.365	0.620	0.912
		D	0.000	0.467	0.710	1.168
T6	150.00-140.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.888	1.509	2.219
		D	0.000	1.309	1.953	3.271
T7	140.00-130.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.788	1.453	2.137
		D	0.000	1.162	1.880	3.150
T8	130.00-120.00	A	0.000	0.345	0.580	0.950
		B	0.000	0.000	0.000	0.000
		C	0.000	0.613	1.147	1.686
		D	0.000	0.976	1.606	2.685
T9	120.00-110.00	A	0.000	0.700	1.152	1.886
		B	0.000	0.000	0.000	0.000
		C	0.000	0.745	1.366	2.008
		D	0.000	1.632	2.544	4.398
T10	110.00-100.00	A	0.000	0.642	1.189	1.992
		B	0.000	0.000	0.000	0.000
		C	0.000	0.577	1.219	1.793
		D	0.000	1.317	2.360	4.089
T11	100.00-90.00	A	0.000	0.691	1.317	2.233
		B	0.000	0.000	0.000	0.000
		C	0.000	0.564	1.239	1.822
		D	0.000	1.464	2.732	4.730
T12	90.00-80.00	A	0.000	0.677	1.289	2.184
		B	0.000	0.000	0.000	0.000
		C	0.000	0.553	1.212	1.782
		D	0.000	1.461	2.717	4.713
T13	80.00-60.00	A	0.000	1.134	1.673	2.836
		B	0.000	0.000	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		C	0.000	0.925	1.573	2.314
		D	0.000	2.542	3.633	6.356
T14	60.00-50.00	A	0.000	0.669	0.918	1.577
		B	0.000	0.000	0.000	0.000
		C	0.000	0.527	0.845	1.242
		D	0.000	1.458	1.959	3.435
T15	50.00-40.00	A	0.000	0.676	1.090	1.888
		B	0.000	0.000	0.000	0.000
		C	0.000	0.521	0.989	1.455
		D	0.000	1.467	2.320	4.095
T16	40.00-30.00	A	0.000	0.866	1.308	2.265
		B	0.000	0.000	0.000	0.000
		C	0.000	0.667	1.186	1.745
		D	0.000	1.894	2.797	4.950
T17	30.00-20.00	A	0.000	0.663	1.071	1.854
		B	0.000	0.000	0.000	0.000
		C	0.000	0.511	0.972	1.429
		D	0.000	1.449	2.290	4.053
T18	20.00-10.00	A	0.000	0.855	1.291	2.235
		B	0.000	0.000	0.000	0.000
		C	0.000	0.658	1.171	1.722
		D	0.000	1.868	2.760	4.885
T19	10.00-0.00	A	0.000	0.401	0.580	1.004
		B	0.000	0.000	0.000	0.000
		C	0.000	0.309	0.526	0.773
		D	0.000	0.878	1.240	2.194

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180.00-170.00	-3.3826	2.7685	-3.8531	3.1934
T2	170.00-163.57	-3.6578	3.0306	-4.4392	3.7152
T3	163.57-159.05	-0.0465	-0.7044	-0.6833	-0.1357
T4	159.05-154.52	-0.8855	0.0638	-1.7348	0.8176
T5	154.52-150.00	-0.8792	0.1478	-1.7609	0.9417
T6	150.00-140.00	-1.4265	0.8104	-2.4720	1.7730
T7	140.00-130.00	-1.3634	0.9668	-2.4818	2.0106
T8	130.00-120.00	-4.8223	-0.1497	-6.5454	0.7812
T9	120.00-110.00	-7.9466	0.7952	-10.1685	2.0977
T10	110.00-100.00	-9.5226	0.6886	-12.3523	2.0092
T11	100.00-90.00	-10.2370	1.5174	-13.5188	2.9332
T12	90.00-80.00	-10.8644	1.8893	-14.3556	3.4628
T13	80.00-60.00	-13.1875	2.7910	-17.2882	4.8489
T14	60.00-50.00	-13.8651	2.9837	-18.1516	5.0328
T15	50.00-40.00	-13.8323	3.0977	-18.4455	5.2426
T16	40.00-30.00	-13.6655	3.2166	-17.9772	5.3361
T17	30.00-20.00	-15.1710	3.6639	-20.1656	6.0913
T18	20.00-10.00	-14.4942	3.5950	-19.0894	5.8906
T19	10.00-0.00	-7.0275	1.7732	-9.6028	3.0049

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 K
6' Standoff	B	From Leg	3.00	0.0000	180.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
OGT9-806	B	From Leg	6.00	0.0000	180.00	No Ice	2.15	2.15	0.02
(CSP - 1)			0.00			1/2" Ice	3.25	3.25	0.03
			0.00						
101-83B-09-0-03N Omni	D	From Leg	6.00	0.0000	180.00	No Ice	4.50	4.50	0.04
(CSP - 2)			0.00			1/2" Ice	6.00	6.00	0.07
			6.00						
6' Standoff	D	From Leg	3.00	0.0000	180.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
OGT9-806	B	From Leg	6.00	0.0000	180.00	No Ice	2.15	2.15	0.02
(CSP - 6)			0.00			1/2" Ice	3.25	3.25	0.03
			0.00						
101-83B-09-0-03N Omni	D	From Leg	6.00	0.0000	180.00	No Ice	4.50	4.50	0.04
(CSP - 3)			0.00			1/2" Ice	6.00	6.00	0.07
			6.00						
6' Standoff	C	From Leg	3.00	0.0000	180.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
HMD-8HO	C	From Leg	3.00	0.0000	180.00	No Ice	2.08	2.08	0.07
(CSP - 4)			0.00			1/2" Ice	2.52	2.52	0.10
			0.00						
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	180.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
VHF150	A	From Leg	6.00	0.0000	180.00	No Ice	4.00	4.00	0.05
(CSP - 7)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
TMA 432-83H-01T	C	From Leg	2.00	0.0000	180.00	No Ice	1.63	0.95	0.03
(CSP - 67)			0.00			1/2" Ice	1.81	1.09	0.04
			0.00						
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	176.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
10'6"x4" Pipe Mount	B	From Leg	0.50	0.0000	176.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
10'6"x4" Pipe Mount	C	From Leg	0.50	0.0000	176.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
10'6"x4" Pipe Mount	D	From Leg	0.50	0.0000	176.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
6' Standoff	D	From Leg	3.00	0.0000	172.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
6' Standoff	C	From Leg	3.00	0.0000	172.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
ANT150D	B	From Leg	6.00	0.0000	170.00	No Ice	7.00	2.02	0.08
(FCP - 12)			0.00			1/2" Ice	7.47	2.90	0.12
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BA1010-2	C	From Leg	6.00	0.0000	170.00	No Ice	1.40	1.40	0.02
(CSP - 10)			0.00			1/2" Ice	1.77	1.77	0.03
			0.00						
BA1312	D	From Leg	0.50	0.0000	169.00	No Ice	1.25	1.25	0.01
(CAP - 25)			0.00			1/2" Ice	2.23	2.23	0.02
			0.00						
T-Frame	A	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
T-Frame	B	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
T-Frame	C	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
7770	A	From Face	2.00	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	A	From Face	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
(2) LPG21401 TMA	A	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
7770	A	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			-4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	A	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			-4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
TT19-08BP111-001 TMA	A	From Face	0.50	0.0000	163.00	No Ice	0.64	0.52	0.02
(AT&T)			-4.00			1/2" Ice	0.76	0.62	0.02
			0.00						
P65-16-XLH-RR	A	From Face	1.50	0.0000	163.00	No Ice	8.40	4.70	0.06
(AT&T)			0.00			1/2" Ice	8.95	5.15	0.11
			0.00						
(2) RRU	A	From Leg	1.50	0.0000	163.00	No Ice	3.79	1.02	0.06
(AT&T)			0.00			1/2" Ice	4.16	1.23	0.08
			0.00						
Raycap DC6-48-60-18-8F	A	From Leg	0.50	0.0000	163.00	No Ice	1.27	1.27	0.05
DC Power Surge Protection			0.00			1/2" Ice	1.46	1.46	0.07
(AT&T)			0.00						
7770	B	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	B	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
(2) LPG21401 TMA	B	From Face	0.50	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
7770	B	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			-4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	B	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			-4.00			1/2" Ice	0.30	0.17	0.01
			0.00						

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 K
TT19-08BP111-001 TMA	B	From Face	0.50	0.0000	163.00	No Ice	0.64	0.52	0.02
(AT&T)			-4.00			1/2" Ice	0.76	0.62	0.02
			0.00						
P65-16-XLH-RR	B	From Face	0.50	0.0000	163.00	No Ice	8.40	4.70	0.06
(AT&T)			0.00			1/2" Ice	8.95	5.15	0.11
			0.00						
(2) RRU	B	From Leg	0.50	0.0000	163.00	No Ice	3.79	1.02	0.06
(AT&T)			0.00			1/2" Ice	4.16	1.23	0.08
			0.00						
7770	C	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	C	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
(2) LPG21401 TMA	C	From Face	0.50	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
7770	C	From Face	4.00	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			-4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	C	From Face	4.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			-4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
TT19-08BP111-001 TMA	C	From Face	4.00	0.0000	163.00	No Ice	0.64	0.52	0.02
(AT&T)			-4.00			1/2" Ice	0.76	0.62	0.02
			0.00						
P65-16-XLH-RR	C	From Face	2.00	0.0000	163.00	No Ice	8.40	4.70	0.06
(AT&T)			0.00			1/2" Ice	8.95	5.15	0.11
			0.00						
(2) RRU	C	From Leg	2.00	0.0000	163.00	No Ice	3.79	1.02	0.06
(AT&T)			0.00			1/2" Ice	4.16	1.23	0.08
			0.00						
101-83B-09-0-03N Omni	C	From Leg	2.00	0.0000	160.00	No Ice	4.50	4.50	0.04
(CSP - 63)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
101-83B-09-0-03N Omni	C	From Leg	2.00	0.0000	160.00	No Ice	4.50	4.50	0.04
(CSP - 64)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
101-83B-09-0-03N Omni	C	From Leg	2.00	0.0000	160.00	No Ice	4.50	4.50	0.04
(CSP - 65)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
TMA 432-83H-01T	C	From Leg	2.00	0.0000	160.00	No Ice	1.63	0.95	0.03
(CSP - 66)			0.00			1/2" Ice	1.81	1.09	0.04
			0.00						
DB636-A	D	From Leg	6.00	0.0000	150.00	No Ice	2.78	2.78	0.03
(NEU - 57)			0.00			1/2" Ice	3.96	3.96	0.05
			0.00						
6' Standoff	A	From Leg	3.00	0.0000	145.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
Yagi ASP-816	A	From Leg	6.00	0.0000	145.00	No Ice	0.92	0.02	0.01
(WTR - 28)			0.00			1/2" Ice	1.21	0.05	0.01
			0.00						
6' Standoff	C	From Leg	3.00	0.0000	145.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' Standoff (CSP)	D	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
6' Standoff (CSP)	A	From Leg	3.00 0.00 0.00	0.0000	143.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
10'6"x4" Pipe Mount (CSP)	A	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
3' Stand-off (CSP)	C	From Leg	1.50 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	0.05 0.07
LeBlanc 10' Standoff (1) (CSP)	C	From Leg	5.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice	17.00 22.00	17.00 22.00	0.55 0.75
3" Dia x 15' Omni (WPD - 55)	D	From Leg	6.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	4.50 6.00	4.50 6.00	0.04 0.07
PD128-1 (CSP - 8)	C	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.00 1.80	1.00 1.80	0.01 0.02
PD128-1 (WPD - 33)	D	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.00 1.80	1.00 1.80	0.01 0.02
(2) DB586-Y (NU - 30&31)	C	From Leg	6.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.01 1.28	1.01 1.28	0.01 0.02
Rohn 6' Side-Arm(1) (NU - 30&31)	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	10.60 15.40	10.60 15.40	0.14 0.21
ASP711 (WTR - 29)	A	From Leg	2.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	2.34 3.64	2.34 3.64	0.01 0.02
6' Standoff (CSP)	D	From Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
3' Stand-off (CSP)	C	From Leg	1.50 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	0.05 0.07
6' Stand-off (CSP)	B	From Leg	3.00 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	0.07 0.13
10'6"x4" Pipe Mount (CSP)	C	From Leg	0.50 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
DB222 (DHS - 9)	B	From Leg	2.00 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	1.60 2.88	1.60 2.88	0.02 0.02
12' Wireless Frame (Sprint)	A	From Leg	1.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice	11.07 15.53	11.07 15.53	0.24 0.35
12' Wireless Frame (Sprint)	B	From Leg	1.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice	11.07 15.53	11.07 15.53	0.24 0.35
12' Wireless Frame (Sprint)	C	From Leg	1.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice	11.07 15.53	11.07 15.53	0.24 0.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert (ft / ft / ft)	Azimuth Adjustment (°)	Placement (ft)		C_AA_A Front (ft^2)	C_AA_A Side (ft^2)	Weight (K)
APXVSPP18-C	A	From Leg	1.50	0.0000	106.00	No Ice	8.26	5.28	0.06
(Sprint)			-5.00			1/2" Ice	8.81	5.74	0.11
			0.00						
APXVSPP18-C	B	From Leg	1.50	0.0000	106.00	No Ice	8.26	5.28	0.06
(Sprint)			-5.00			1/2" Ice	8.81	5.74	0.11
			0.00						
APXVSPP18-C	C	From Leg	1.50	0.0000	106.00	No Ice	8.26	5.28	0.06
(Sprint)			-5.00			1/2" Ice	8.81	5.74	0.11
			0.00						
(2) ALU RRH	A	From Leg	1.50	0.0000	106.00	No Ice	2.25	1.23	0.05
(Sprint)			0.00			1/2" Ice	2.45	1.39	0.07
			0.00						
(2) ALU RRH	B	From Leg	1.50	0.0000	106.00	No Ice	2.25	1.23	0.05
(Sprint)			0.00			1/2" Ice	2.45	1.39	0.07
			0.00						
(2) ALU RRH	C	From Leg	1.50	0.0000	106.00	No Ice	2.25	1.23	0.05
(Sprint)			0.00			1/2" Ice	2.45	1.39	0.07
			0.00						
LeBlanc 10' Standoff (1)	A	From Leg	5.00	0.0000	101.00	No Ice	17.00	17.00	0.55
(CSP)			0.00			1/2" Ice	22.00	22.00	0.75
			0.00						
SC479-HF1LDF	C	From Leg	2.00	0.0000	101.00	No Ice	5.06	5.06	0.03
(CSP - 62)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00						
PD458	D	From Leg	6.00	0.0000	100.00	No Ice	2.20	2.20	0.02
(DEA - 32)			0.00			1/2" Ice	3.80	3.80	0.04
			0.00						
3' Stand-off	D	From Leg	1.50	0.0000	88.00	No Ice	1.00	2.00	0.05
(CSP)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
3' Stand-off	D	From Leg	1.50	0.0000	85.00	No Ice	1.00	2.00	0.05
(CSP)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
DB264-A	C	From Leg	3.00	0.0000	85.00	No Ice	3.58	3.98	0.05
(USS - 26)			0.00			1/2" Ice	5.99	6.53	0.08
			0.00						
6' Ice Shield	A	From Leg	4.00	0.0000	80.00	No Ice	2.60	2.60	0.13
(CSP)			0.00			1/2" Ice	3.00	3.00	0.15
			0.00						
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	76.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
3' Stand-off	B	From Leg	1.50	0.0000	56.00	No Ice	1.00	2.00	0.05
(Sprint)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
GPS	B	From Leg	3.00	0.0000	56.00	No Ice	1.00	1.00	0.01
(Sprint)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00						
3' Stand-off	B	From Leg	1.50	0.0000	47.00	No Ice	1.00	2.00	0.05
(CSP)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
DB803M-Y	B	From Leg	3.00	0.0000	47.00	No Ice	0.50	0.50	0.00
(CSP - 68)			0.00			1/2" Ice	0.68	0.68	0.01
			0.00						
EUSF10-U	A	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
EUSF10-U (T-Mobile)	D	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	8.91 12.66	3.67 5.24	0.41 0.51
EUSF10-U (T-Mobile)	B	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	8.91 12.66	3.67 5.24	0.41 0.51
AIR B2A/B4P (T-Mobile)	A	From Leg	1.00 -2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	B	From Leg	1.00 -2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
AIR B2A/B4P (T-Mobile)	D	From Leg	1.00 -2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
(2) TMA (T-Mobile)	A	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
(2) TMA (T-Mobile)	B	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
(2) TMA (T-Mobile)	D	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
AIR21 B4A|B12P (T-Mobile)	A	From Leg	1.00 2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	11.54 12.16	11.20 12.63	0.17 0.27
AIR21 B4A|B12P (T-Mobile)	B	From Leg	1.00 2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	11.54 12.16	11.20 12.63	0.17 0.27
AIR21 B4A|B12P (T-Mobile)	D	From Leg	1.00 2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	11.54 12.16	11.20 12.63	0.17 0.27
RRUS-11 (T-Mobile)	A	From Leg	1.00 2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	2.99 3.23	1.25 1.41	0.05 0.07
RRUS-11 (T-Mobile)	B	From Leg	1.00 2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	2.99 3.23	1.25 1.41	0.05 0.07
RRUS-11 (T-Mobile)	D	From Leg	1.00 2.00 0.00	0.0000	122.00	No Ice 1/2" Ice	2.99 3.23	1.25 1.41	0.05 0.07

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PA6-65AC	A	Paraboloid w/o	From	1.00	Worst		180.00	6.00	No Ice	28.27	0.09

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft²	K
(CSP - 69)		Radome	Leg	0.00 0.00					1/2" Ice	29.05	0.24
PA6-65AC (CSP - 70)	B	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 71)	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
4' Grid Dish (CSP - 11)	A	Grid	From Leg	1.00 0.00 0.00	Worst		100.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.08 0.15
6' Grid Dish (CSP - 13)	A	Grid	From Leg	1.00 0.00 0.00	Worst		75.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.13 0.28
PA6-65AC (CSP - 5)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		176.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 36)	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		176.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 59)	D	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 35)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		130.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24

Tower Pressures - No Ice

$G_H = 1.121$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft²		ft²	ft²	ft²		ft²	ft²
T1	175.00	1.611	33	61.674	A	12.491	0.483	5.833	44.96	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	13.071	5.633		31.19	0.000	0.000
T2	166.79	1.589	33	40.022	A	9.832	0.311	5.356	52.81	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.961	5.404		34.86	0.000	0.000
T3	161.31	1.574	33	28.908	A	7.122	0.265	3.775	51.11	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	6.494	4.900		33.13	0.000	0.000
					D	7.123	4.321		32.99	0.000	0.000
T4	156.79	1.561	32	30.376	A	6.903	0.437	3.775	51.43	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.273	5.610		31.77	0.000	0.000
					D	6.779	6.262		28.95	0.000	0.000
T5	152.26	1.548	32	31.844	A	7.011	0.437	3.775	50.68	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	6.391	5.610		31.46	0.000	0.000
					D	6.898	6.262		28.68	0.000	0.000

Section Elevation	z	K_z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T6	145.00	1.526	32	75.634	A	16.767	0.967	8.344	47.05	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	15.258	12.400		30.17	0.000	0.000
					D	16.134	15.692		26.22	0.000	0.000
T7	135.00	1.496	31	83.296	A	19.051	0.967	10.013	50.02	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	17.598	12.400		33.38	0.000	0.000
					D	18.490	15.692		29.29	0.000	0.000
T8	125.00	1.463	30	90.466	A	17.297	7.242	10.013	40.80	0.000	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	16.731	12.400		34.37	0.000	0.000
					D	17.591	17.011		28.94	0.000	0.000
T9	115.00	1.429	30	97.774	A	18.876	11.425	10.013	33.04	0.000	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	18.662	12.400		32.23	0.000	0.000
					D	18.804	22.746		24.10	0.000	0.000
T10	105.00	1.392	29	104.945	A	18.568	13.060	10.013	31.66	0.000	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	18.538	12.400		32.36	0.000	0.000
					D	18.716	23.651		23.63	0.000	0.000
T11	95.00	1.353	28	112.984	A	22.555	14.150	13.350	36.37	0.000	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	22.633	12.400		38.11	0.000	0.000
					D	22.460	26.986		27.00	0.000	0.000
T12	85.00	1.31	27	120.155	A	23.077	14.150	13.350	35.86	0.000	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	23.153	12.400		37.55	0.000	0.000
					D	22.968	27.449		26.48	0.000	0.000
T13	70.00	1.24	26	263.233	A	13.843	56.670	28.370	40.23	0.000	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	13.943	53.170		42.27	0.000	0.000
					D	14.523	84.917		28.53	0.000	0.000
T14	55.00	1.157	24	142.444	A	8.132	28.625	14.185	38.59	0.000	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	8.205	26.585		40.77	0.000	0.000
					D	8.411	42.580		27.82	0.000	0.000
T15	45.00	1.093	23	149.614	A	10.101	28.818	14.185	36.45	0.000	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	10.202	26.585		38.56	0.000	0.000
					D	10.191	42.918		26.71	0.000	0.000
T16	35.00	1.017	21	156.196	A	26.060	14.633	13.350	32.81	0.000	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	26.181	12.400		34.60	0.000	0.000
					D	25.890	28.878		24.38	0.000	0.000
T17	25.00	1	21	163.366	A	24.396	14.633	13.350	34.21	0.000	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	24.495	12.400		36.18	0.000	0.000
					D	24.496	28.878		25.01	0.000	0.000
T18	15.00	1	21	170.539	A	27.243	14.633	13.350	31.88	0.000	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	27.362	12.400		33.58	0.000	0.000
					D	27.093	28.878		23.85	0.000	0.000
T19 10.00-0.00	5.00	1	21	177.715	A	29.108	5.853	13.350	38.19	0.000	0.000
					B	29.688	0.000		44.97	0.000	0.000
					C	29.162	4.960		39.13	0.000	0.000
					D	28.976	11.551		32.94	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 180.00-170.00	175.00	1.611	33	0.5000	62.507	A	12.491	5.837	7.500	40.92	0.000	0.000
						B	12.491	4.520		44.09	0.000	0.000
						C	12.491	4.520		44.09	0.000	0.000
						D	13.151	13.798		27.83	0.000	0.000
T2 170.00-163.57	166.79	1.589	33	0.5000	40.557	A	9.832	3.803	6.427	47.14	0.000	0.000
						B	9.832	2.957		50.26	0.000	0.000
						C	9.832	2.957		50.26	0.000	0.000
						D	9.800	12.124		29.31	0.000	0.000
T3 163.57-159.05	161.31	1.574	33	0.5000	29.285	A	7.122	3.150	4.530	44.10	0.000	0.000
						B	7.122	2.429		47.43	0.000	0.000
						C	6.198	9.171		29.47	0.000	0.000
						D	6.957	9.576		27.40	0.000	0.000
T4 159.05-154.52	156.79	1.561	32	0.5000	30.753	A	6.903	3.197	4.530	44.85	0.000	0.000
						B	6.903	2.006		50.85	0.000	0.000
						C	5.976	9.885		28.56	0.000	0.000
						D	6.564	12.318		23.99	0.000	0.000
T5 154.52-150.00	152.26	1.548	32	0.5000	32.221	A	7.011	3.241	4.530	44.19	0.000	0.000
						B	7.011	2.050		50.00	0.000	0.000
						C	6.099	9.934		28.25	0.000	0.000
						D	6.691	12.369		23.77	0.000	0.000
T6 150.00-140.00	145.00	1.526	32	0.5000	76.467	A	16.767	7.671	10.013	40.97	0.000	0.000
						B	16.767	5.038		45.92	0.000	0.000
						C	14.548	22.384		27.11	0.000	0.000
						D	15.371	31.088		21.55	0.000	0.000
T7 140.00-130.00	135.00	1.496	31	0.5000	84.129	A	19.051	7.625	11.682	43.79	0.000	0.000
						B	19.051	4.992		48.59	0.000	0.000
						C	16.914	22.437		29.69	0.000	0.000
						D	17.776	31.188		23.86	0.000	0.000
T8 130.00-120.00	125.00	1.463	30	0.5000	91.300	A	16.927	17.083	11.682	34.35	0.000	0.000
						B	17.878	4.520		52.16	0.000	0.000
						C	16.191	22.140		30.48	0.000	0.000
						D	17.068	33.055		23.31	0.000	0.000
T9 120.00-110.00	115.00	1.429	30	0.5000	98.608	A	18.142	24.434	11.682	27.44	0.000	0.000
						B	20.028	5.376		45.98	0.000	0.000
						C	18.020	22.864		28.57	0.000	0.000
						D	17.505	44.157		18.94	0.000	0.000
T10 110.00-100.00	105.00	1.392	29	0.5000	105.778	A	17.765	27.051	11.682	26.07	0.000	0.000
						B	19.757	4.799		47.57	0.000	0.000
						C	17.964	22.455		28.90	0.000	0.000
						D	17.543	45.550		18.52	0.000	0.000
T11 100.00-90.00	95.00	1.353	28	0.5000	113.818	A	21.639	29.206	15.019	29.54	0.000	0.000
						B	23.872	4.914		52.17	0.000	0.000
						C	22.050	22.584		33.65	0.000	0.000
						D	21.017	51.270		20.78	0.000	0.000
T12 90.00-80.00	85.00	1.31	27	0.5000	120.989	A	22.181	29.383	15.019	29.13	0.000	0.000
						B	24.365	5.077		51.01	0.000	0.000
						C	22.583	22.758		33.13	0.000	0.000
						D	21.528	52.314		20.34	0.000	0.000
T13 80.00-60.00	70.00	1.24	26	0.5000	264.901	A	12.680	86.746	31.707	31.89	0.000	0.000
						B	15.516	37.914		59.34	0.000	0.000
						C	13.202	73.455		36.59	0.000	0.000
						D	12.911	136.503		21.22	0.000	0.000
T14 60.00-50.00	55.00	1.157	24	0.5000	143.277	A	7.473	44.790	15.854	30.33	0.000	0.000
						B	9.050	19.686		55.17	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
						C	7.807	37.392		35.08	0.000	0.000
						D	7.490	69.122		20.69	0.000	0.000
T15 50.00-40.00	45.00	1.093	23	0.5000	150.448	A	9.304	45.494	15.854	28.93	0.000	0.000
						B	11.192	19.871		51.04	0.000	0.000
						C	9.737	37.583		33.50	0.000	0.000
						D	8.972	70.220		20.02	0.000	0.000
T16 40.00-30.00	35.00	1.017	21	0.5000	157.030	A	25.103	32.460	15.019	26.09	0.000	0.000
						B	27.367	7.027		43.67	0.000	0.000
						C	25.623	24.592		29.91	0.000	0.000
						D	24.293	57.344		18.40	0.000	0.000
T17 30.00-20.00	25.00	1	21	0.5000	164.200	A	23.612	31.644	15.019	27.18	0.000	0.000
						B	25.467	6.007		47.72	0.000	0.000
						C	24.038	23.729		31.44	0.000	0.000
						D	23.289	56.769		18.76	0.000	0.000
T18 20.00-10.00	15.00	1	21	0.5000	171.373	A	26.298	32.915	15.019	25.36	0.000	0.000
						B	28.533	7.470		41.72	0.000	0.000
						C	26.811	25.045		28.96	0.000	0.000
						D	25.523	57.813		18.02	0.000	0.000
T19 10.00-0.00	5.00	1	21	0.5000	178.549	A	28.684	18.175	15.019	32.05	0.000	0.000
						B	29.688	8.056		39.79	0.000	0.000
						C	28.915	15.040		34.17	0.000	0.000
						D	28.244	28.063		26.67	0.000	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T1	175.00	1.611	33	61.674	A	12.491	0.483	5.833	44.96	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	13.071	5.633		31.19	0.000	0.000
T2	166.79	1.589	33	40.022	A	9.832	0.311	5.356	52.81	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.961	5.404		34.86	0.000	0.000
T3	161.31	1.574	33	28.908	A	7.122	0.265	3.775	51.11	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	6.494	4.900		33.13	0.000	0.000
					D	7.123	4.321		32.99	0.000	0.000
T4	156.79	1.561	32	30.376	A	6.903	0.437	3.775	51.43	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.273	5.610		31.77	0.000	0.000
					D	6.779	6.262		28.95	0.000	0.000
T5	152.26	1.548	32	31.844	A	7.011	0.437	3.775	50.68	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	6.391	5.610		31.46	0.000	0.000
					D	6.898	6.262		28.68	0.000	0.000
T6	145.00	1.526	32	75.634	A	16.767	0.967	8.344	47.05	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	15.258	12.400		30.17	0.000	0.000
					D	16.134	15.692		26.22	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T7	135.00	1.496	31	83.296	A	19.051	0.967	10.013	50.02	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	17.598	12.400		33.38	0.000	0.000
					D	18.490	15.692		29.29	0.000	0.000
T8	125.00	1.463	30	90.466	A	17.297	7.242	10.013	40.80	0.000	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	16.731	12.400		34.37	0.000	0.000
					D	17.591	17.011		28.94	0.000	0.000
T9	115.00	1.429	30	97.774	A	18.876	11.425	10.013	33.04	0.000	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	18.662	12.400		32.23	0.000	0.000
					D	18.804	22.746		24.10	0.000	0.000
T10	105.00	1.392	29	104.945	A	18.568	13.060	10.013	31.66	0.000	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	18.538	12.400		32.36	0.000	0.000
					D	18.716	23.651		23.63	0.000	0.000
T11	95.00	1.353	28	112.984	A	22.555	14.150	13.350	36.37	0.000	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	22.633	12.400		38.11	0.000	0.000
					D	22.460	26.986		27.00	0.000	0.000
T12	85.00	1.31	27	120.155	A	23.077	14.150	13.350	35.86	0.000	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	23.153	12.400		37.55	0.000	0.000
					D	22.968	27.449		26.48	0.000	0.000
T13	70.00	1.24	26	263.233	A	13.843	56.670	28.370	40.23	0.000	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	13.943	53.170		42.27	0.000	0.000
					D	14.523	84.917		28.53	0.000	0.000
T14	55.00	1.157	24	142.444	A	8.132	28.625	14.185	38.59	0.000	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	8.205	26.585		40.77	0.000	0.000
					D	8.411	42.580		27.82	0.000	0.000
T15	45.00	1.093	23	149.614	A	10.101	28.818	14.185	36.45	0.000	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	10.202	26.585		38.56	0.000	0.000
					D	10.191	42.918		26.71	0.000	0.000
T16	35.00	1.017	21	156.196	A	26.060	14.633	13.350	32.81	0.000	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	26.181	12.400		34.60	0.000	0.000
					D	25.890	28.878		24.38	0.000	0.000
T17	25.00	1	21	163.366	A	24.396	14.633	13.350	34.21	0.000	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	24.495	12.400		36.18	0.000	0.000
					D	24.496	28.878		25.01	0.000	0.000
T18	15.00	1	21	170.539	A	27.243	14.633	13.350	31.88	0.000	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	27.362	12.400		33.58	0.000	0.000
					D	27.093	28.878		23.85	0.000	0.000
T19 10.00-0.00	5.00	1	21	177.715	A	29.108	5.853	13.350	38.19	0.000	0.000
					B	29.688	0.000		44.97	0.000	0.000
					C	29.162	4.960		39.13	0.000	0.000
					D	28.976	11.551		32.94	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1	1	12.778	1.60	159.73	D
180.00-170.00			B	0.203	2.969	0.591	1	1	12.491			
			C	0.203	2.969	0.591	1	1	12.491			
			D	0.303	2.579	0.617	1	1	16.547			
T2	0.06	0.54	A	0.253	2.762	0.603	1	1	10.019	1.15	179.59	D
170.00-163.57			B	0.246	2.792	0.601	1	1	9.832			
			C	0.246	2.792	0.601	1	1	9.832			
			D	0.384	2.324	0.645	1	1	13.448			
T3	0.11	0.39	A	0.256	2.754	0.603	1	1	7.282	0.83	183.94	D
163.57-159.05			B	0.246	2.789	0.601	1	1	7.122			
			C	0.394	2.296	0.649	1	1	9.675			
			D	0.396	2.291	0.65	1	1	9.931			
T4	0.13	0.36	A	0.242	2.808	0.6	1	1	7.165	0.87	193.31	D
159.05-154.52			B	0.227	2.866	0.596	1	1	6.903			
			C	0.391	2.304	0.648	1	1	9.908			
			D	0.429	2.204	0.664	1	1	10.937			
T5	0.13	0.37	A	0.234	2.839	0.598	1	1	7.273	0.89	196.59	D
154.52-150.00			B	0.22	2.895	0.595	1	1	7.011			
			C	0.377	2.345	0.642	1	1	9.995			
			D	0.413	2.245	0.657	1	1	11.014			
T6	0.29	0.97	A	0.234	2.837	0.598	1	1	17.345	2.09	209.20	D
150.00-140.00			B	0.222	2.889	0.595	1	1	16.767			
			C	0.366	2.377	0.638	1	1	23.172			
			D	0.421	2.226	0.66	1	1	26.495			
T7	0.29	1.53	A	0.24	2.813	0.599	1	1	19.630	2.25	225.35	D
140.00-130.00			B	0.229	2.86	0.597	1	1	19.051			
			C	0.36	2.394	0.636	1	1	25.486			
			D	0.41	2.252	0.656	1	1	28.782			
T8	0.35	1.43	A	0.271	2.694	0.608	1	1	21.697	2.26	226.11	D
130.00-120.00			B	0.198	2.99	0.59	1	1	17.878			
			C	0.322	2.515	0.623	1	1	24.454			
			D	0.382	2.328	0.645	1	1	28.557			
T9	0.41	2.05	A	0.31	2.556	0.619	1	1	25.948	2.49	249.07	D
120.00-110.00			B	0.205	2.959	0.591	1	1	20.028			
			C	0.318	2.529	0.621	1	1	26.369			
			D	0.425	2.215	0.662	1	1	33.864			
T10	0.43	1.91	A	0.301	2.585	0.616	1	1	26.617	2.51	250.90	D
110.00-100.00			B	0.188	3.031	0.588	1	1	19.757			
			C	0.295	2.608	0.614	1	1	26.155			
			D	0.404	2.27	0.653	1	1	34.163			
T11	0.45	2.50	A	0.325	2.505	0.624	1	1	31.382	2.78	277.95	D
100.00-90.00			B	0.211	2.932	0.593	1	1	23.872			
			C	0.31	2.555	0.619	1	1	30.309			
			D	0.438	2.184	0.668	1	1	40.478			
T12	0.45	2.43	A	0.31	2.556	0.619	1	1	31.835	2.79	278.82	D
90.00-80.00			B	0.203	2.968	0.591	1	1	24.365			
			C	0.296	2.604	0.615	1	1	30.775			
			D	0.42	2.229	0.66	1	1	41.078			
T13	0.91	7.96	A	0.268	2.707	0.607	1	1	48.219	4.66	233.17	D
80.00-60.00			B	0.167	3.128	0.584	1	1	32.089			
			C	0.255	2.756	0.603	1	1	46.012			
			D	0.378	2.342	0.643	1	1	69.106			
T14	0.46	4.57	A	0.258	2.744	0.604	1	1	25.420	2.29	228.96	D
60.00-50.00			B	0.163	3.144	0.584	1	1	17.328			
			C	0.244	2.798	0.6	1	1	24.167			
			D	0.358	2.401	0.635	1	1	35.464			
T15	0.46	5.12	A	0.26	2.736	0.605	1	1	27.522	2.29	228.95	D
50.00-40.00			B	0.17	3.114	0.585	1	1	19.485			
			C	0.246	2.791	0.601	1	1	26.175			
			D	0.355	2.41	0.634	1	1	37.412			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T16	0.46	4.78	A	0.261	2.734	0.605	1	1	34.907	2.53	252.92	D
40.00-30.00			B	0.175	3.089	0.586	1	1	27.367			
			C	0.247	2.787	0.601	1	1	33.635			
			D	0.351	2.423	0.633	1	1	44.161			
T17	0.46	4.27	A	0.239	2.819	0.599	1	1	33.163	2.47	247.05	D
30.00-20.00			B	0.156	3.177	0.582	1	1	25.467			
			C	0.226	2.872	0.596	1	1	31.886			
			D	0.327	2.499	0.624	1	1	42.529			
T18	0.46	5.02	A	0.246	2.792	0.601	1	1	36.034	2.62	261.71	D
20.00-10.00			B	0.167	3.125	0.584	1	1	28.533			
			C	0.233	2.842	0.598	1	1	34.774			
			D	0.328	2.494	0.625	1	1	45.139			
T19	0.19	4.70	A	0.197	2.994	0.59	1	1	32.560	2.39	238.63	D
10.00-0.00			B	0.167	3.126	0.584	1	1	29.688			
			C	0.192	3.015	0.589	1	1	32.083			
			D	0.228	2.863	0.597	1	1	35.867			
Sum Weight:	6.57	51.64						OTM	3576.82 kip-ft	41.77		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1.158	1.158	14.794	1.92	191.67	D
180.00-170.00			B	0.203	2.969	0.591	1.152	1.152	14.389			
			C	0.203	2.969	0.591	1.152	1.152	14.389			
			D	0.303	2.579	0.617	1.2	1.2	19.856			
T2	0.06	0.54	A	0.253	2.762	0.603	1.19	1.19	11.923	1.39	215.51	D
170.00-163.57			B	0.246	2.792	0.601	1.184	1.184	11.643			
			C	0.246	2.792	0.601	1.184	1.184	11.643			
			D	0.384	2.324	0.645	1.2	1.2	16.138			
T3	0.11	0.39	A	0.256	2.754	0.603	1.192	1.192	8.677	1.00	220.73	D
163.57-159.05			B	0.246	2.789	0.601	1.185	1.185	8.438			
			C	0.394	2.296	0.649	1.2	1.2	11.610			
			D	0.396	2.291	0.65	1.2	1.2	11.917			
T4	0.13	0.36	A	0.242	2.808	0.6	1.181	1.181	8.463	1.05	231.97	D
159.05-154.52			B	0.227	2.866	0.596	1.17	1.17	8.079			
			C	0.391	2.304	0.648	1.2	1.2	11.890			
			D	0.429	2.204	0.664	1.2	1.2	13.124			
T5	0.13	0.37	A	0.234	2.839	0.598	1.175	1.175	8.549	1.07	235.91	D
154.52-150.00			B	0.22	2.895	0.595	1.165	1.165	8.169			
			C	0.377	2.345	0.642	1.2	1.2	11.994			
			D	0.413	2.245	0.657	1.2	1.2	13.216			
T6	0.29	0.97	A	0.234	2.837	0.598	1.176	1.176	20.395	2.51	251.04	D
150.00-140.00			B	0.222	2.889	0.595	1.166	1.166	19.555			
			C	0.366	2.377	0.638	1.2	1.2	27.806			
			D	0.421	2.226	0.66	1.2	1.2	31.794			
T7	0.29	1.53	A	0.24	2.813	0.599	1.18	1.18	23.169	2.70	270.42	D
140.00-130.00			B	0.229	2.86	0.597	1.172	1.172	22.319			
			C	0.36	2.394	0.636	1.2	1.2	30.583			
			D	0.41	2.252	0.656	1.2	1.2	34.539			
T8	0.35	1.43	A	0.271	2.694	0.608	1.2	1.2	26.036	2.71	271.33	D
130.00-120.00			B	0.198	2.99	0.59	1.148	1.148	20.527			
			C	0.322	2.515	0.623	1.2	1.2	29.345			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.382	2.328	0.645	1.2	1.2	34.268			
T9	0.41	2.05	A	0.31	2.556	0.619	1.2	1.2	31.138	2.99	298.88	D
120.00-110.00			B	0.205	2.959	0.591	1.154	1.154	23.105			
			C	0.318	2.529	0.621	1.2	1.2	31.642			
			D	0.425	2.215	0.662	1.2	1.2	40.637			
T10	0.43	1.91	A	0.301	2.585	0.616	1.2	1.2	31.940	3.01	301.07	D
110.00-100.00			B	0.188	3.031	0.588	1.141	1.141	22.546			
			C	0.295	2.608	0.614	1.2	1.2	31.386			
			D	0.404	2.27	0.653	1.2	1.2	40.996			
T11	0.45	2.50	A	0.325	2.505	0.624	1.2	1.2	37.658	3.34	333.54	D
100.00-90.00			B	0.211	2.932	0.593	1.158	1.158	27.655			
			C	0.31	2.555	0.619	1.2	1.2	36.371			
			D	0.438	2.184	0.668	1.2	1.2	48.574			
T12	0.45	2.43	A	0.31	2.556	0.619	1.2	1.2	38.202	3.35	334.59	D
90.00-80.00			B	0.203	2.968	0.591	1.152	1.152	28.071			
			C	0.296	2.604	0.615	1.2	1.2	36.930			
			D	0.42	2.229	0.66	1.2	1.2	49.294			
T13	0.91	7.96	A	0.268	2.707	0.607	1.2	1.2	57.863	5.60	279.80	D
80.00-60.00			B	0.167	3.128	0.584	1.125	1.125	36.101			
			C	0.255	2.756	0.603	1.191	1.191	54.810			
			D	0.378	2.342	0.643	1.2	1.2	82.927			
T14	0.46	4.57	A	0.258	2.744	0.604	1.194	1.194	30.340	2.75	274.75	D
60.00-50.00			B	0.163	3.144	0.584	1.122	1.122	19.447			
			C	0.244	2.798	0.6	1.183	1.183	28.594			
			D	0.358	2.401	0.635	1.2	1.2	42.556			
T15	0.46	5.12	A	0.26	2.736	0.605	1.195	1.195	32.892	2.75	274.74	D
50.00-40.00			B	0.17	3.114	0.585	1.127	1.127	21.964			
			C	0.246	2.791	0.601	1.184	1.184	31.002			
			D	0.355	2.41	0.634	1.2	1.2	44.895			
T16	0.46	4.78	A	0.261	2.734	0.605	1.195	1.195	41.728	3.04	303.50	D
40.00-30.00			B	0.175	3.089	0.586	1.131	1.131	30.964			
			C	0.247	2.787	0.601	1.185	1.185	39.866			
			D	0.351	2.423	0.633	1.2	1.2	52.993			
T17	0.46	4.27	A	0.239	2.819	0.599	1.179	1.179	39.105	2.96	296.46	D
30.00-20.00			B	0.156	3.177	0.582	1.117	1.117	28.444			
			C	0.226	2.872	0.596	1.169	1.169	37.287			
			D	0.327	2.499	0.624	1.2	1.2	51.034			
T18	0.46	5.02	A	0.246	2.792	0.601	1.184	1.184	42.670	3.14	314.05	D
20.00-10.00			B	0.167	3.125	0.584	1.125	1.125	32.114			
			C	0.233	2.842	0.598	1.175	1.175	40.855			
			D	0.328	2.494	0.625	1.2	1.2	54.167			
T19	0.19	4.70	A	0.197	2.994	0.59	1.148	1.148	37.364	2.79	279.44	D
10.00-0.00			B	0.167	3.126	0.584	1.125	1.125	33.408			
			C	0.192	3.015	0.589	1.144	1.144	36.702			
			D	0.228	2.863	0.597	1.171	1.171	42.001			
Sum Weight:	6.57	51.64						OTM	4291.84 kip-ft	50.05		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.21	1.18	A	0.293	2.614	0.614	1	1	16.074	1.84	183.84	D
180.00-170.00			B	0.272	2.691	0.608	1	1	15.239			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl Face
			C	0.272	2.691	0.608	1	1	15.239			
			D	0.431	2.2	0.665	1	1	22.324			
T2	0.16	0.86	A	0.336	2.469	0.628	1	1	12.219	1.35	210.60	D
170.00-163.57			B	0.315	2.537	0.621	1	1	11.667			
			C	0.315	2.537	0.621	1	1	11.667			
			D	0.541	1.979	0.719	1	1	18.518			
T3	0.27	0.63	A	0.351	2.423	0.633	1	1	9.115	0.99	219.57	D
163.57-159.05			B	0.326	2.501	0.624	1	1	8.638			
			C	0.525	2.005	0.71	1	1	12.714			
			D	0.565	1.944	0.733	1	1	13.971			
T4	0.32	0.56	A	0.328	2.494	0.625	1	1	8.901	1.09	241.19	D
159.05-154.52			B	0.29	2.627	0.613	1	1	8.132			
			C	0.516	2.021	0.706	1	1	12.952			
			D	0.614	1.885	0.762	1	1	15.954			
T5	0.32	0.57	A	0.318	2.528	0.622	1	1	9.026	1.10	242.18	D
154.52-150.00			B	0.281	2.657	0.61	1	1	8.262			
			C	0.498	2.055	0.696	1	1	13.016			
			D	0.592	1.91	0.748	1	1	15.949			
T6	0.74	1.49	A	0.32	2.523	0.622	1	1	21.539	2.61	261.39	D
150.00-140.00			B	0.285	2.643	0.611	1	1	19.848			
			C	0.483	2.084	0.689	1	1	29.969			
			D	0.608	1.892	0.758	1	1	38.943			
T7	0.74	2.18	A	0.317	2.531	0.621	1	1	23.788	2.73	273.40	D
140.00-130.00			B	0.286	2.641	0.612	1	1	22.104			
			C	0.468	2.115	0.682	1	1	32.207			
			D	0.582	1.921	0.743	1	1	40.941			
T8	0.91	1.98	A	0.373	2.357	0.641	1	1	27.873	2.74	274.10	D
130.00-120.00			B	0.245	2.793	0.601	1	1	20.592			
			C	0.42	2.228	0.66	1	1	30.801			
			D	0.549	1.967	0.724	1	1	40.990			
T9	1.11	2.78	A	0.432	2.198	0.665	1	1	34.393	3.20	320.45	D
120.00-110.00			B	0.258	2.745	0.604	1	1	23.274			
			C	0.415	2.241	0.658	1	1	33.057			
			D	0.625	1.875	0.769	1	1	51.480			
T10	1.15	2.52	A	0.424	2.218	0.662	1	1	35.660	3.19	318.89	D
110.00-100.00			B	0.232	2.846	0.597	1	1	22.624			
			C	0.382	2.33	0.644	1	1	32.435			
			D	0.596	1.904	0.751	1	1	51.771			
T11	1.22	3.28	A	0.447	2.163	0.672	1	1	41.259	3.57	356.68	D
100.00-90.00			B	0.253	2.764	0.603	1	1	26.833			
			C	0.392	2.301	0.648	1	1	36.694			
			D	0.635	1.866	0.776	1	1	60.788			
T12	1.22	3.15	A	0.426	2.212	0.663	1	1	41.651	3.53	352.60	D
90.00-80.00			B	0.243	2.801	0.6	1	1	27.413			
			C	0.375	2.351	0.642	1	1	37.185			
			D	0.61	1.889	0.76	1	1	61.285			
T13	2.48	9.49	A	0.375	2.349	0.642	1	1	68.358	6.32	316.21	D
80.00-60.00			B	0.202	2.973	0.591	1	1	37.914			
			C	0.327	2.498	0.625	1	1	59.081			
			D	0.564	1.945	0.732	1	1	112.865			
T14	1.25	5.52	A	0.365	2.38	0.638	1	1	36.043	3.05	304.72	D
60.00-50.00			B	0.201	2.978	0.591	1	1	20.674			
			C	0.315	2.537	0.621	1	1	31.018			
			D	0.535	1.989	0.716	1	1	56.969			
T15	1.26	5.97	A	0.364	2.382	0.638	1	1	38.314	3.00	299.66	D
50.00-40.00			B	0.206	2.952	0.592	1	1	22.950			
			C	0.315	2.54	0.62	1	1	33.056			
			D	0.526	2.003	0.711	1	1	58.919			
T16	1.26	5.99	A	0.367	2.375	0.639	1	1	45.830	3.09	308.84	D
40.00-30.00			B	0.219	2.9	0.594	1	1	31.544			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl Face
			C	0.32	2.522	0.622	1	1	40.923			
			D	0.52	2.014	0.708	1	1	64.883			
T17	1.26	5.18	A	0.337	2.468	0.628	1	1	43.477	3.01	301.46	D
30.00-20.00			B	0.192	3.016	0.589	1	1	29.003			
			C	0.291	2.622	0.613	1	1	38.588			
			D	0.488	2.074	0.691	1	1	62.529			
T18	1.26	6.32	A	0.346	2.439	0.631	1	1	47.064	3.16	315.92	D
20.00-10.00			B	0.21	2.937	0.593	1	1	32.959			
			C	0.303	2.581	0.617	1	1	42.256			
			D	0.486	2.077	0.691	1	1	65.449			
T19	0.50	6.11	A	0.262	2.727	0.605	1	1	39.682	2.69	269.28	D
10.00-0.00			B	0.211	2.932	0.593	1	1	34.463			
			C	0.246	2.79	0.601	1	1	37.952			
			D	0.315	2.537	0.621	1	1	45.663			
Sum Weight:	17.62	65.76						OTM	4467.74 kip-ft	52.27		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl Face
T1	0.21	1.18	A	0.293	2.614	0.614	1.2	1.2	19.289	2.21	220.61	D
180.00-170.00			B	0.272	2.691	0.608	1.2	1.2	18.286			
			C	0.272	2.691	0.608	1.2	1.2	18.286			
			D	0.431	2.2	0.665	1.2	1.2	26.789			
T2	0.16	0.86	A	0.336	2.469	0.628	1.2	1.2	14.662	1.62	252.72	D
170.00-163.57			B	0.315	2.537	0.621	1.2	1.2	14.001			
			C	0.315	2.537	0.621	1.2	1.2	14.001			
			D	0.541	1.979	0.719	1.2	1.2	22.222			
T3	0.27	0.63	A	0.351	2.423	0.633	1.2	1.2	10.938	1.19	263.48	D
163.57-159.05			B	0.326	2.501	0.624	1.2	1.2	10.366			
			C	0.525	2.005	0.71	1.2	1.2	15.257			
			D	0.565	1.944	0.733	1.2	1.2	16.766			
T4	0.32	0.56	A	0.328	2.494	0.625	1.2	1.2	10.681	1.31	289.43	D
159.05-154.52			B	0.29	2.627	0.613	1.2	1.2	9.758			
			C	0.516	2.021	0.706	1.2	1.2	15.542			
			D	0.614	1.885	0.762	1.2	1.2	19.145			
T5	0.32	0.57	A	0.318	2.528	0.622	1.2	1.2	10.831	1.31	290.61	D
154.52-150.00			B	0.281	2.657	0.61	1.2	1.2	9.915			
			C	0.498	2.055	0.696	1.2	1.2	15.620			
			D	0.592	1.91	0.748	1.2	1.2	19.139			
T6	0.74	1.49	A	0.32	2.523	0.622	1.2	1.2	25.847	3.14	313.67	D
150.00-140.00			B	0.285	2.643	0.611	1.2	1.2	23.817			
			C	0.483	2.084	0.689	1.2	1.2	35.963			
			D	0.608	1.892	0.758	1.2	1.2	46.732			
T7	0.74	2.18	A	0.317	2.531	0.621	1.2	1.2	28.546	3.28	328.08	D
140.00-130.00			B	0.286	2.641	0.612	1.2	1.2	26.525			
			C	0.468	2.115	0.682	1.2	1.2	38.648			
			D	0.582	1.921	0.743	1.2	1.2	49.130			
T8	0.91	1.98	A	0.373	2.357	0.641	1.2	1.2	33.448	3.29	328.92	D
130.00-120.00			B	0.245	2.793	0.601	1.184	1.184	24.381			
			C	0.42	2.228	0.66	1.2	1.2	36.962			
			D	0.549	1.967	0.724	1.2	1.2	49.188			
T9	1.11	2.78	A	0.432	2.198	0.665	1.2	1.2	41.271	3.85	384.54	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl Face
120.00-110.00			B	0.258	2.745	0.604	1.193	1.193	27.771			
			C	0.415	2.241	0.658	1.2	1.2	39.668			
			D	0.625	1.875	0.769	1.2	1.2	61.776			
T10	1.15	2.52	A	0.424	2.218	0.662	1.2	1.2	42.792	3.83	382.67	D
110.00-100.00			B	0.232	2.846	0.597	1.174	1.174	26.563			
			C	0.382	2.33	0.644	1.2	1.2	38.922			
			D	0.596	1.904	0.751	1.2	1.2	62.125			
T11	1.22	3.28	A	0.447	2.163	0.672	1.2	1.2	49.511	4.28	428.02	D
100.00-90.00			B	0.253	2.764	0.603	1.19	1.19	31.923			
			C	0.392	2.301	0.648	1.2	1.2	44.033			
			D	0.635	1.866	0.776	1.2	1.2	72.945			
T12	1.22	3.15	A	0.426	2.212	0.663	1.2	1.2	49.981	4.23	423.12	D
90.00-80.00			B	0.243	2.801	0.6	1.183	1.183	32.416			
			C	0.375	2.351	0.642	1.2	1.2	44.622			
			D	0.61	1.889	0.76	1.2	1.2	73.542			
T13	2.48	9.49	A	0.375	2.349	0.642	1.2	1.2	82.029	7.59	379.45	D
80.00-60.00			B	0.202	2.973	0.591	1.151	1.151	43.649			
			C	0.327	2.498	0.625	1.2	1.2	70.897			
			D	0.564	1.945	0.732	1.2	1.2	135.438			
T14	1.25	5.52	A	0.365	2.38	0.638	1.2	1.2	43.251	3.66	365.67	D
60.00-50.00			B	0.201	2.978	0.591	1.15	1.15	23.784			
			C	0.315	2.537	0.621	1.2	1.2	37.222			
			D	0.535	1.989	0.716	1.2	1.2	68.363			
T15	1.26	5.97	A	0.364	2.382	0.638	1.2	1.2	45.976	3.60	359.60	D
50.00-40.00			B	0.206	2.952	0.592	1.155	1.155	26.504			
			C	0.315	2.54	0.62	1.2	1.2	39.667			
			D	0.526	2.003	0.711	1.2	1.2	70.703			
T16	1.26	5.99	A	0.367	2.375	0.639	1.2	1.2	54.996	3.71	370.61	D
40.00-30.00			B	0.219	2.9	0.594	1.164	1.164	36.726			
			C	0.32	2.522	0.622	1.2	1.2	49.108			
			D	0.52	2.014	0.708	1.2	1.2	77.860			
T17	1.26	5.18	A	0.337	2.468	0.628	1.2	1.2	52.172	3.62	361.75	D
30.00-20.00			B	0.192	3.016	0.589	1.144	1.144	33.172			
			C	0.291	2.622	0.613	1.2	1.2	46.306			
			D	0.488	2.074	0.691	1.2	1.2	75.035			
T18	1.26	6.32	A	0.346	2.439	0.631	1.2	1.2	56.477	3.79	379.11	D
20.00-10.00			B	0.21	2.937	0.593	1.158	1.158	38.152			
			C	0.303	2.581	0.617	1.2	1.2	50.708			
			D	0.486	2.077	0.691	1.2	1.2	78.539			
T19	0.50	6.11	A	0.262	2.727	0.605	1.197	1.197	47.493	3.23	323.13	D
10.00-0.00			B	0.211	2.932	0.593	1.159	1.159	39.927			
			C	0.246	2.79	0.601	1.185	1.185	44.960			
			D	0.315	2.537	0.621	1.2	1.2	54.796			
Sum Weight:	17.62	65.76						OTM	5361.29 kip-ft	62.72		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl Face
T1	0.07	0.75	A	0.21	2.936	0.593	1	1	12.778	1.60	159.73	D
180.00-170.00			B	0.203	2.969	0.591	1	1	12.491			
			C	0.203	2.969	0.591	1	1	12.491			
			D	0.303	2.579	0.617	1	1	16.547			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl Face
T2	0.06	0.54	A	0.253	2.762	0.603	1	1	10.019	1.15	179.59	D
170.00-163.57			B	0.246	2.792	0.601	1	1	9.832			
			C	0.246	2.792	0.601	1	1	9.832			
			D	0.384	2.324	0.645	1	1	13.448			
T3	0.11	0.39	A	0.256	2.754	0.603	1	1	7.282	0.83	183.94	D
163.57-159.05			B	0.246	2.789	0.601	1	1	7.122			
			C	0.394	2.296	0.649	1	1	9.675			
			D	0.396	2.291	0.65	1	1	9.931			
T4	0.13	0.36	A	0.242	2.808	0.6	1	1	7.165	0.87	193.31	D
159.05-154.52			B	0.227	2.866	0.596	1	1	6.903			
			C	0.391	2.304	0.648	1	1	9.908			
			D	0.429	2.204	0.664	1	1	10.937			
T5	0.13	0.37	A	0.234	2.839	0.598	1	1	7.273	0.89	196.59	D
154.52-150.00			B	0.22	2.895	0.595	1	1	7.011			
			C	0.377	2.345	0.642	1	1	9.995			
			D	0.413	2.245	0.657	1	1	11.014			
T6	0.29	0.97	A	0.234	2.837	0.598	1	1	17.345	2.09	209.20	D
150.00-140.00			B	0.222	2.889	0.595	1	1	16.767			
			C	0.366	2.377	0.638	1	1	23.172			
			D	0.421	2.226	0.66	1	1	26.495			
T7	0.29	1.53	A	0.24	2.813	0.599	1	1	19.630	2.25	225.35	D
140.00-130.00			B	0.229	2.86	0.597	1	1	19.051			
			C	0.36	2.394	0.636	1	1	25.486			
			D	0.41	2.252	0.656	1	1	28.782			
T8	0.35	1.43	A	0.271	2.694	0.608	1	1	21.697	2.26	226.11	D
130.00-120.00			B	0.198	2.99	0.59	1	1	17.878			
			C	0.322	2.515	0.623	1	1	24.454			
			D	0.382	2.328	0.645	1	1	28.557			
T9	0.41	2.05	A	0.31	2.556	0.619	1	1	25.948	2.49	249.07	D
120.00-110.00			B	0.205	2.959	0.591	1	1	20.028			
			C	0.318	2.529	0.621	1	1	26.369			
			D	0.425	2.215	0.662	1	1	33.864			
T10	0.43	1.91	A	0.301	2.585	0.616	1	1	26.617	2.51	250.90	D
110.00-100.00			B	0.188	3.031	0.588	1	1	19.757			
			C	0.295	2.608	0.614	1	1	26.155			
			D	0.404	2.27	0.653	1	1	34.163			
T11	0.45	2.50	A	0.325	2.505	0.624	1	1	31.382	2.78	277.95	D
100.00-90.00			B	0.211	2.932	0.593	1	1	23.872			
			C	0.31	2.555	0.619	1	1	30.309			
			D	0.438	2.184	0.668	1	1	40.478			
T12	0.45	2.43	A	0.31	2.556	0.619	1	1	31.835	2.79	278.82	D
90.00-80.00			B	0.203	2.968	0.591	1	1	24.365			
			C	0.296	2.604	0.615	1	1	30.775			
			D	0.42	2.229	0.66	1	1	41.078			
T13	0.91	7.96	A	0.268	2.707	0.607	1	1	48.219	4.66	233.17	D
80.00-60.00			B	0.167	3.128	0.584	1	1	32.089			
			C	0.255	2.756	0.603	1	1	46.012			
			D	0.378	2.342	0.643	1	1	69.106			
T14	0.46	4.57	A	0.258	2.744	0.604	1	1	25.420	2.29	228.96	D
60.00-50.00			B	0.163	3.144	0.584	1	1	17.328			
			C	0.244	2.798	0.6	1	1	24.167			
			D	0.358	2.401	0.635	1	1	35.464			
T15	0.46	5.12	A	0.26	2.736	0.605	1	1	27.522	2.29	228.95	D
50.00-40.00			B	0.17	3.114	0.585	1	1	19.485			
			C	0.246	2.791	0.601	1	1	26.175			
			D	0.355	2.41	0.634	1	1	37.412			
T16	0.46	4.78	A	0.261	2.734	0.605	1	1	34.907	2.53	252.92	D
40.00-30.00			B	0.175	3.089	0.586	1	1	27.367			
			C	0.247	2.787	0.601	1	1	33.635			
			D	0.351	2.423	0.633	1	1	44.161			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl Face
T17	0.46	4.27	A	0.239	2.819	0.599	1	1	33.163	2.47	247.05	D
30.00-20.00			B	0.156	3.177	0.582	1	1	25.467			
			C	0.226	2.872	0.596	1	1	31.886			
			D	0.327	2.499	0.624	1	1	42.529			
T18	0.46	5.02	A	0.246	2.792	0.601	1	1	36.034	2.62	261.71	D
20.00-10.00			B	0.167	3.125	0.584	1	1	28.533			
			C	0.233	2.842	0.598	1	1	34.774			
			D	0.328	2.494	0.625	1	1	45.139			
T19	0.19	4.70	A	0.197	2.994	0.59	1	1	32.560	2.39	238.63	D
10.00-0.00			B	0.167	3.126	0.584	1	1	29.688			
			C	0.192	3.015	0.589	1	1	32.083			
			D	0.228	2.863	0.597	1	1	35.867			
Sum Weight:	6.57	51.64						OTM	3576.82 kip-ft	41.77		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1.158	1.158	14.794	1.92	191.67	D
180.00-170.00			B	0.203	2.969	0.591	1.152	1.152	14.389			
			C	0.203	2.969	0.591	1.152	1.152	14.389			
			D	0.303	2.579	0.617	1.2	1.2	19.856			
T2	0.06	0.54	A	0.253	2.762	0.603	1.19	1.19	11.923	1.39	215.51	D
170.00-163.57			B	0.246	2.792	0.601	1.184	1.184	11.643			
			C	0.246	2.792	0.601	1.184	1.184	11.643			
			D	0.384	2.324	0.645	1.2	1.2	16.138			
T3	0.11	0.39	A	0.256	2.754	0.603	1.192	1.192	8.677	1.00	220.73	D
163.57-159.05			B	0.246	2.789	0.601	1.185	1.185	8.438			
			C	0.394	2.296	0.649	1.2	1.2	11.610			
			D	0.396	2.291	0.65	1.2	1.2	11.917			
T4	0.13	0.36	A	0.242	2.808	0.6	1.181	1.181	8.463	1.05	231.97	D
159.05-154.52			B	0.227	2.866	0.596	1.17	1.17	8.079			
			C	0.391	2.304	0.648	1.2	1.2	11.890			
			D	0.429	2.204	0.664	1.2	1.2	13.124			
T5	0.13	0.37	A	0.234	2.839	0.598	1.175	1.175	8.549	1.07	235.91	D
154.52-150.00			B	0.22	2.895	0.595	1.165	1.165	8.169			
			C	0.377	2.345	0.642	1.2	1.2	11.994			
			D	0.413	2.245	0.657	1.2	1.2	13.216			
T6	0.29	0.97	A	0.234	2.837	0.598	1.176	1.176	20.395	2.51	251.04	D
150.00-140.00			B	0.222	2.889	0.595	1.166	1.166	19.555			
			C	0.366	2.377	0.638	1.2	1.2	27.806			
			D	0.421	2.226	0.66	1.2	1.2	31.794			
T7	0.29	1.53	A	0.24	2.813	0.599	1.18	1.18	23.169	2.70	270.42	D
140.00-130.00			B	0.229	2.86	0.597	1.172	1.172	22.319			
			C	0.36	2.394	0.636	1.2	1.2	30.583			
			D	0.41	2.252	0.656	1.2	1.2	34.539			
T8	0.35	1.43	A	0.271	2.694	0.608	1.2	1.2	26.036	2.71	271.33	D
130.00-120.00			B	0.198	2.99	0.59	1.148	1.148	20.527			
			C	0.322	2.515	0.623	1.2	1.2	29.345			
			D	0.382	2.328	0.645	1.2	1.2	34.268			
T9	0.41	2.05	A	0.31	2.556	0.619	1.2	1.2	31.138	2.99	298.88	D
120.00-110.00			B	0.205	2.959	0.591	1.154	1.154	23.105			
			C	0.318	2.529	0.621	1.2	1.2	31.642			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.425	2.215	0.662	1.2	1.2	40.637			
T10	0.43	1.91	A	0.301	2.585	0.616	1.2	1.2	31.940	3.01	301.07	D
110.00-100.00			B	0.188	3.031	0.588	1.141	1.141	22.546			
			C	0.295	2.608	0.614	1.2	1.2	31.386			
			D	0.404	2.27	0.653	1.2	1.2	40.996			
T11	0.45	2.50	A	0.325	2.505	0.624	1.2	1.2	37.658	3.34	333.54	D
100.00-90.00			B	0.211	2.932	0.593	1.158	1.158	27.655			
			C	0.31	2.555	0.619	1.2	1.2	36.371			
			D	0.438	2.184	0.668	1.2	1.2	48.574			
T12	0.45	2.43	A	0.31	2.556	0.619	1.2	1.2	38.202	3.35	334.59	D
90.00-80.00			B	0.203	2.968	0.591	1.152	1.152	28.071			
			C	0.296	2.604	0.615	1.2	1.2	36.930			
			D	0.42	2.229	0.66	1.2	1.2	49.294			
T13	0.91	7.96	A	0.268	2.707	0.607	1.2	1.2	57.863	5.60	279.80	D
80.00-60.00			B	0.167	3.128	0.584	1.125	1.125	36.101			
			C	0.255	2.756	0.603	1.191	1.191	54.810			
			D	0.378	2.342	0.643	1.2	1.2	82.927			
T14	0.46	4.57	A	0.258	2.744	0.604	1.194	1.194	30.340	2.75	274.75	D
60.00-50.00			B	0.163	3.144	0.584	1.122	1.122	19.447			
			C	0.244	2.798	0.6	1.183	1.183	28.594			
			D	0.358	2.401	0.635	1.2	1.2	42.556			
T15	0.46	5.12	A	0.26	2.736	0.605	1.195	1.195	32.892	2.75	274.74	D
50.00-40.00			B	0.17	3.114	0.585	1.127	1.127	21.964			
			C	0.246	2.791	0.601	1.184	1.184	31.002			
			D	0.355	2.41	0.634	1.2	1.2	44.895			
T16	0.46	4.78	A	0.261	2.734	0.605	1.195	1.195	41.728	3.04	303.50	D
40.00-30.00			B	0.175	3.089	0.586	1.131	1.131	30.964			
			C	0.247	2.787	0.601	1.185	1.185	39.866			
			D	0.351	2.423	0.633	1.2	1.2	52.993			
T17	0.46	4.27	A	0.239	2.819	0.599	1.179	1.179	39.105	2.96	296.46	D
30.00-20.00			B	0.156	3.177	0.582	1.117	1.117	28.444			
			C	0.226	2.872	0.596	1.169	1.169	37.287			
			D	0.327	2.499	0.624	1.2	1.2	51.034			
T18	0.46	5.02	A	0.246	2.792	0.601	1.184	1.184	42.670	3.14	314.05	D
20.00-10.00			B	0.167	3.125	0.584	1.125	1.125	32.114			
			C	0.233	2.842	0.598	1.175	1.175	40.855			
			D	0.328	2.494	0.625	1.2	1.2	54.167			
T19	0.19	4.70	A	0.197	2.994	0.59	1.148	1.148	37.364	2.79	279.44	D
10.00-0.00			B	0.167	3.126	0.584	1.125	1.125	33.408			
			C	0.192	3.015	0.589	1.144	1.144	36.702			
			D	0.228	2.863	0.597	1.171	1.171	42.001			
Sum Weight:	6.57	51.64						OTM	4291.84 kip-ft	50.05		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	30.80					
Bracing Weight	20.84					
Total Member Self-Weight	51.64			-11.38	10.83	
Total Weight	68.67			-11.38	10.83	
Wind 0 deg - No Ice		-0.04	-71.31	-8072.80	12.69	-42.30
Wind 30 deg - No Ice		40.02	-68.91	-7611.07	-4418.56	-45.00

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 45 deg - No Ice		56.62	-56.25	-6215.95	-6254.24	-38.47
Wind 60 deg - No Ice		69.36	-39.76	-4398.00	-7662.96	-29.32
Wind 90 deg - No Ice		71.84	0.04	-9.53	-8136.15	-7.14
Wind 120 deg - No Ice		69.41	39.83	4378.44	-7664.81	19.30
Wind 135 deg - No Ice		56.68	56.31	6195.81	-6256.86	30.29
Wind 150 deg - No Ice		40.10	68.95	7590.16	-4421.78	39.22
Wind 180 deg - No Ice		0.04	71.31	8050.03	8.97	42.30
Wind 210 deg - No Ice		-40.02	68.91	7588.31	4440.22	45.00
Wind 225 deg - No Ice		-56.62	56.25	6193.18	6275.90	38.47
Wind 240 deg - No Ice		-69.36	39.76	4375.23	7684.62	29.32
Wind 270 deg - No Ice		-71.84	-0.04	-13.24	8157.81	7.14
Wind 300 deg - No Ice		-69.41	-39.83	-4401.21	7686.48	-19.30
Wind 315 deg - No Ice		-56.68	-56.31	-6218.57	6278.52	-30.29
Wind 330 deg - No Ice		-40.10	-68.95	-7612.93	4443.44	-39.22
Member Ice	14.12					
Total Weight Ice	99.91			-14.98	38.41	
Wind 0 deg - Ice		-0.06	-87.83	-9734.86	41.92	-71.34
Wind 30 deg - Ice		49.35	-85.08	-9204.72	-5308.97	-72.92
Wind 45 deg - Ice		69.83	-69.45	-7517.32	-7525.74	-60.66
Wind 60 deg - Ice		85.55	-49.09	-5318.65	-9227.03	-44.27
Wind 90 deg - Ice		88.36	0.06	-11.47	-9768.88	-6.82
Wind 120 deg - Ice		85.61	49.20	5294.77	-9230.54	37.77
Wind 135 deg - Ice		69.92	69.54	7492.33	-7530.70	55.35
Wind 150 deg - Ice		49.46	85.15	9178.27	-5315.05	69.17
Wind 180 deg - Ice		0.06	87.83	9704.90	34.90	71.34
Wind 210 deg - Ice		-49.35	85.08	9174.76	5385.79	72.92
Wind 225 deg - Ice		-69.83	69.45	7487.37	7602.56	60.66
Wind 240 deg - Ice		-85.55	49.09	5288.70	9303.85	44.27
Wind 270 deg - Ice		-88.36	-0.06	-18.49	9845.69	6.82
Wind 300 deg - Ice		-85.61	-49.20	-5324.73	9307.36	-37.77
Wind 315 deg - Ice		-69.92	-69.54	-7522.29	7607.52	-55.35
Wind 330 deg - Ice		-49.46	-85.15	-9208.23	5391.86	-69.17
Total Weight	68.67			-11.38	10.83	
Wind 0 deg - Service		-0.04	-71.31	-8070.58	3.28	-42.30
Wind 30 deg - Service		40.02	-68.91	-7608.86	-4427.97	-45.00
Wind 45 deg - Service		56.62	-56.25	-6213.73	-6263.65	-38.47
Wind 60 deg - Service		69.36	-39.76	-4395.78	-7672.37	-29.32
Wind 90 deg - Service		71.84	0.04	-7.31	-8145.56	-7.14
Wind 120 deg - Service		69.41	39.83	4380.66	-7674.22	19.30
Wind 135 deg - Service		56.68	56.31	6198.02	-6266.27	30.29
Wind 150 deg - Service		40.10	68.95	7592.38	-4431.19	39.22
Wind 180 deg - Service		0.04	71.31	8052.25	-0.44	42.30
Wind 210 deg - Service		-40.02	68.91	7590.52	4430.81	45.00
Wind 225 deg - Service		-56.62	56.25	6195.40	6266.49	38.47
Wind 240 deg - Service		-69.36	39.76	4377.45	7675.21	29.32
Wind 270 deg - Service		-71.84	-0.04	-11.02	8148.40	7.14
Wind 300 deg - Service		-69.41	-39.83	-4398.99	7677.07	-19.30
Wind 315 deg - Service		-56.68	-56.31	-6216.36	6269.11	-30.29
Wind 330 deg - Service		-40.10	-68.95	-7610.71	4434.03	-39.22

Load Combinations

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

Comb. No.	Description
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 170	Leg	Max Tension	21	6.71	-0.86	-0.84
			Max. Compression	29	-6.94	-1.00	-1.14
			Max. Mx	34	1.13	3.30	-2.59
			Max. My	24	1.15	-2.63	3.34
			Max. Vy	27	-2.81	1.25	-0.33

Section No.	Elevation ft	Component Type	Condition	Gov Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	19	-2.81	-0.32	1.25
		Diagonal	Max Tension	27	5.71	0.00	0.00
			Max. Compression	19	-6.55	0.00	0.00
			Max. Mx	29	4.56	0.02	-0.00
			Max. My	17	4.23	0.01	0.00
			Max. Vy	29	0.01	0.02	-0.00
			Max. Vx	7	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	19	0.78	0.00	0.00
			Max. Compression	23	-0.80	0.00	0.00
			Max. Mx	18	0.01	-0.02	0.00
			Max. My	26	0.39	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Top Girt	Max Tension	27	0.51	0.00	0.00
			Max. Compression	10	-0.13	0.00	0.00
			Max. Mx	18	0.12	-0.02	0.00
			Max. My	34	0.03	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
T2	170 - 163.573	Leg	Max Tension	29	19.72	-0.69	-0.82
			Max. Compression	29	-21.36	-1.00	-1.06
			Max. Mx	31	-15.11	1.43	-0.39
			Max. My	23	-14.97	-0.38	1.42
			Max. Vy	26	0.36	-1.01	-0.98
			Max. Vx	32	0.36	-0.96	-1.03
		Diagonal	Max Tension	32	6.61	0.00	0.00
			Max. Compression	24	-7.21	0.00	0.00
			Max. Mx	25	5.92	0.03	-0.00
			Max. My	15	4.16	0.00	0.00
			Max. Vy	25	0.01	0.03	-0.00
			Max. Vx	15	-0.00	0.00	0.00
		Top Girt	Max Tension	27	1.25	0.00	0.00
			Max. Compression	10	-0.73	0.00	0.00
			Max. Mx	18	0.34	-0.02	0.00
			Max. My	34	-0.09	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
T3	163.573 - 159.049	Leg	Max Tension	29	32.88	-0.69	-0.62
			Max. Compression	21	-36.65	-1.11	-1.02
			Max. Mx	31	-25.53	1.73	-0.07
			Max. My	23	-26.17	-0.06	1.74
			Max. Vy	23	1.07	-0.68	-0.24
			Max. Vx	31	1.09	-0.24	-0.68
		Diagonal	Max Tension	31	5.69	0.00	0.00
			Max. Compression	31	-5.88	0.00	0.00
			Max. Mx	20	3.32	0.02	0.00
			Max. My	19	-5.73	-0.00	-0.01
			Max. Vy	20	0.01	0.02	0.00
			Max. Vx	19	0.00	0.00	0.00
		Top Girt	Max Tension	27	1.52	0.00	0.00
			Max. Compression	6	-0.90	0.00	0.00
			Max. Mx	19	-0.75	-0.02	0.00
			Max. My	34	-0.45	0.00	0.00
			Max. Vy	19	0.01	0.00	0.00
			Max. Vx	34	0.00	0.00	0.00
T4	159.049 - 154.524	Leg	Max Tension	21	43.32	-0.43	-0.38
			Max. Compression	21	-48.81	-0.53	-0.51
			Max. Mx	30	8.94	1.34	-0.97

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	24	9.51	-0.97	1.34
			Max. Vy	34	-0.41	1.31	-0.96
			Max. Vx	24	-0.41	-0.97	1.34
		Diagonal	Max Tension	31	6.53	0.00	0.00
			Max. Compression	31	-6.23	0.00	0.00
			Max. Mx	22	2.50	0.04	-0.00
			Max. My	27	-6.10	-0.01	0.01
			Max. Vy	22	0.02	0.04	-0.00
			Max. Vx	27	-0.00	0.00	0.00
T5	154.524 - 150	Leg	Max Tension	21	52.90	-0.59	-0.68
			Max. Compression	21	-58.13	-0.94	-0.88
			Max. Mx	20	-56.18	-1.02	-0.74
			Max. My	30	-55.67	-0.73	-1.03
			Max. Vy	20	0.41	-1.02	-0.74
			Max. Vx	30	0.42	-0.73	-1.03
		Diagonal	Max Tension	31	6.10	0.00	0.00
			Max. Compression	31	-6.48	0.00	0.00
			Max. Mx	22	2.46	0.05	0.00
			Max. My	23	-6.21	-0.01	-0.01
			Max. Vy	22	-0.02	0.05	0.00
			Max. Vx	23	0.00	-0.01	-0.01
T6	150 - 140	Leg	Max Tension	25	74.74	-0.67	-0.71
			Max. Compression	25	-81.00	-0.87	-0.78
			Max. Mx	30	14.15	1.67	-1.24
			Max. My	24	14.56	-1.24	1.67
			Max. Vy	30	-0.56	1.67	-1.24
			Max. Vx	24	-0.57	-1.24	1.67
		Diagonal	Max Tension	31	6.78	0.00	0.00
			Max. Compression	31	-6.87	0.00	0.00
			Max. Mx	24	3.02	0.07	-0.00
			Max. My	23	-6.32	-0.02	-0.01
			Max. Vy	24	-0.02	0.07	-0.00
			Max. Vx	23	0.00	0.00	0.00
		Top Girt	Max Tension	23	1.06	0.00	0.00
			Max. Compression	6	-0.91	0.00	0.00
			Max. Mx	27	-0.89	-0.03	0.00
			Max. My	28	-0.38	0.00	0.00
			Max. Vy	27	0.02	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
T7	140 - 130	Leg	Max Tension	25	89.43	-1.00	-1.02
			Max. Compression	25	-97.05	-0.24	-0.08
			Max. Mx	29	-3.76	4.95	-4.79
			Max. My	21	-5.05	-4.80	4.95
			Max. Vy	33	-1.03	4.84	-4.71
			Max. Vx	21	-1.03	-4.80	4.95
		Diagonal	Max Tension	31	8.98	0.00	0.00
			Max. Compression	31	-9.15	0.00	0.00
			Max. Mx	24	5.79	0.13	-0.00
			Max. My	23	-9.05	-0.03	-0.05
			Max. Vy	24	0.03	0.13	-0.00
			Max. Vx	23	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	25	1.46	0.00	0.00
			Max. Compression	25	-1.46	0.00	0.00
			Max. Mx	27	-0.82	-0.04	0.00
			Max. My	28	0.42	0.00	0.00
			Max. Vy	27	0.02	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
		Top Girt	Max Tension	30	0.91	0.00	0.00
			Max. Compression	31	-0.93	-0.09	0.00
			Max. Mx	19	-0.92	-0.12	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	19	-0.92	-0.12	0.01
			Max. Vy	19	-0.04	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Inner Bracing	Max Tension	29	0.17	0.00	0.00
			Max. Compression	29	-0.17	0.00	0.00
			Max. Mx	18	0.00	-0.03	0.00
			Max. My	31	-0.00	0.00	0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T8	130 - 120	Leg	Max Tension	25	110.60	0.90	0.90
			Max. Compression	33	-120.70	-0.91	-1.11
			Max. Mx	27	-81.45	3.15	0.27
			Max. My	23	-82.63	0.32	3.15
			Max. Vy	20	1.38	2.30	-0.99
			Max. Vx	28	-1.39	-2.10	2.70
		Diagonal	Max Tension	30	10.47	0.00	0.00
			Max. Compression	28	-10.71	0.00	0.00
			Max. Mx	24	3.78	0.17	-0.02
			Max. My	23	-10.16	-0.03	0.06
			Max. Vy	24	-0.04	0.17	-0.02
			Max. Vx	23	-0.01	-0.03	0.06
		Secondary Horizontal	Max Tension	33	1.81	0.00	0.00
			Max. Compression	33	-1.81	0.00	0.00
			Max. Mx	18	0.09	-0.05	0.00
			Max. My	28	0.52	0.00	0.00
			Max. Vy	18	-0.02	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T9	120 - 110	Leg	Max Tension	33	133.25	-1.82	-1.77
			Max. Compression	25	-146.69	-0.37	-0.28
			Max. Mx	21	-6.05	5.63	-5.46
			Max. My	29	-7.96	-5.45	5.63
			Max. Vy	33	-1.24	5.58	-5.41
			Max. Vx	25	-1.24	-5.43	5.59
		Diagonal	Max Tension	32	11.27	0.00	0.00
			Max. Compression	24	-11.48	0.00	0.00
			Max. Mx	32	6.59	0.12	-0.00
			Max. My	19	-11.33	-0.02	0.06
			Max. Vy	32	0.04	0.12	-0.00
			Max. Vx	19	-0.01	0.00	0.00
		Horizontal	Max Tension	23	0.92	0.00	0.00
			Max. Compression	23	-1.12	-0.15	0.01
			Max. Mx	27	-1.10	-0.20	0.01
			Max. My	19	-1.08	-0.20	0.01
			Max. Vy	27	-0.06	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	25	2.20	0.00	0.00
			Max. Compression	25	-2.20	0.00	0.00
			Max. Mx	18	0.11	-0.05	0.00
			Max. My	28	0.63	0.00	0.00
			Max. Vy	18	-0.02	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
		Inner Bracing	Max Tension	25	0.11	0.00	0.00
			Max. Compression	25	-0.11	0.00	0.00
			Max. Mx	18	0.00	-0.05	0.00
			Max. My	31	-0.00	0.00	0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T10	110 - 100	Leg	Max Tension	25	157.73	-2.15	-2.39
			Max. Compression	33	-174.35	-1.88	-1.71

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	23	-118.70	3.64	0.24
			Max. My	31	-118.59	0.26	3.57
			Max. Vy	34	1.33	-1.27	-0.66
			Max. Vx	24	1.35	-0.71	-1.23
		Diagonal	Max Tension	26	12.35	0.00	0.00
			Max. Compression	34	-12.56	0.00	0.00
			Max. Mx	22	5.07	0.21	0.01
			Max. My	31	-12.19	-0.03	0.04
			Max. Vy	22	-0.05	0.21	0.01
			Max. Vx	31	-0.01	-0.03	0.04
		Secondary Horizontal	Max Tension	33	2.62	0.00	0.00
			Max. Compression	33	-2.62	0.00	0.00
			Max. Mx	18	0.13	-0.07	0.00
			Max. My	28	0.75	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T11	100 - 90	Leg	Max Tension	33	183.51	-1.79	-1.46
			Max. Compression	33	-202.86	-0.53	-0.89
			Max. Mx	34	38.89	6.57	-5.71
			Max. My	24	41.21	-5.72	6.58
			Max. Vy	34	-1.03	6.57	-5.71
			Max. Vx	24	-1.02	-5.72	6.58
		Diagonal	Max Tension	27	12.85	0.00	0.00
			Max. Compression	27	-13.05	0.00	0.00
			Max. Mx	32	7.25	0.15	0.00
			Max. My	19	-12.95	-0.02	0.05
			Max. Vy	32	0.04	0.15	0.00
			Max. Vx	19	-0.01	0.00	0.00
		Horizontal	Max Tension	23	1.59	0.00	0.00
			Max. Compression	23	-1.69	-0.21	0.01
			Max. Mx	19	-1.65	-0.29	0.01
			Max. My	19	-1.65	-0.29	0.01
			Max. Vy	19	-0.07	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Inner Bracing	Max Tension	25	0.12	0.00	0.00
			Max. Compression	25	-0.12	0.00	0.00
			Max. Mx	18	0.00	-0.07	0.00
			Max. My	31	-0.00	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T12	90 - 80	Leg	Max Tension	33	209.20	-1.93	-2.12
			Max. Compression	33	-230.33	-1.06	-1.19
			Max. Mx	31	-156.19	3.89	-0.37
			Max. My	23	-155.52	-0.36	3.86
			Max. Vy	31	1.27	3.89	-0.37
			Max. Vx	20	1.26	-1.84	-2.45
		Diagonal	Max Tension	27	13.63	0.00	0.00
			Max. Compression	27	-13.90	0.00	0.00
			Max. Mx	34	5.52	0.18	0.01
			Max. My	19	-12.40	-0.01	0.03
			Max. Vy	34	-0.05	0.18	0.01
			Max. Vx	19	-0.01	-0.01	0.03
		Secondary Horizontal	Max Tension	33	3.46	0.00	0.00
			Max. Compression	33	-3.46	0.00	0.00
			Max. Mx	18	0.16	-0.11	0.00
			Max. My	28	0.98	0.00	0.00
			Max. Vy	18	0.04	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
T13	80 - 60	Leg	Max Tension	33	260.41	0.75	0.21

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	33	-286.90	7.01	-0.03
			Max. Mx	33	-286.90	7.01	-0.03
			Max. My	21	-12.59	-1.27	6.84
			Max. Vy	25	-1.09	7.00	-0.42
			Max. Vx	21	-1.45	-1.27	6.84
		Diagonal	Max Tension	27	14.18	0.00	0.00
			Max. Compression	27	-14.86	0.00	0.00
			Max. Mx	34	6.08	-0.09	-0.01
			Max. My	19	-13.64	-0.03	-0.03
			Max. Vy	34	0.04	-0.09	-0.01
			Max. Vx	19	0.01	0.00	0.00
		Top Girt	Max Tension	20	1.09	0.00	0.00
			Max. Compression	30	-0.88	-0.34	0.01
			Max. Mx	19	-0.73	-0.48	0.02
			Max. My	19	-0.73	-0.48	0.02
			Max. Vy	19	-0.10	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Inner Bracing	Max Tension	21	0.16	0.00	0.00
			Max. Compression	21	-0.16	0.00	0.00
			Max. Mx	18	0.00	0.14	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T14	60 - 50	Leg	Max Tension	33	282.87	0.66	-0.44
			Max. Compression	33	-313.57	-0.35	0.52
			Max. Mx	25	279.39	-4.32	0.15
			Max. My	21	-15.57	-2.25	9.10
			Max. Vy	25	0.63	-4.32	0.15
			Max. Vx	21	-1.47	-2.25	9.10
		Diagonal	Max Tension	20	14.06	0.00	0.00
			Max. Compression	28	-14.42	0.00	0.00
			Max. Mx	32	7.59	-0.08	-0.01
			Max. My	28	-14.37	-0.03	0.03
			Max. Vy	33	-0.04	-0.08	-0.01
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	19	2.53	0.00	0.00
			Max. Compression	14	-1.35	0.34	-0.02
			Max. Mx	19	-0.64	0.66	-0.04
			Max. My	27	-0.63	0.66	-0.04
			Max. Vy	19	0.12	0.00	0.00
			Max. Vx	27	0.01	0.00	0.00
		Inner Bracing	Max Tension	33	0.15	0.00	0.00
			Max. Compression	33	-0.15	0.00	0.00
			Max. Mx	18	0.00	0.17	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	-0.05	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
T15	50 - 40	Leg	Max Tension	33	306.71	0.12	0.43
			Max. Compression	33	-339.10	2.15	-0.20
			Max. Mx	33	-338.58	5.90	0.07
			Max. My	33	-18.46	1.22	5.76
			Max. Vy	33	-2.20	5.90	0.07
			Max. Vx	33	-1.58	1.22	5.76
		Diagonal	Max Tension	20	14.24	0.00	0.00
			Max. Compression	28	-15.83	0.00	0.00
			Max. Mx	34	4.68	-0.16	-0.02
			Max. My	20	6.53	-0.15	-0.02
			Max. Vy	32	-0.07	-0.16	0.02
			Max. Vx	20	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	33	5.09	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	33	-5.09	0.00	0.00
			Max. Mx	18	0.26	-0.24	0.00
			Max. My	28	1.45	0.00	0.01
			Max. Vy	18	0.06	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T16	40 - 30	Leg	Max Tension	33	327.16	-2.82	-1.90
			Max. Compression	33	-364.29	2.28	1.56
			Max. Mx	20	-107.71	7.69	-5.86
			Max. My	26	-106.68	-5.86	7.68
			Max. Vy	20	-1.81	7.69	-5.86
			Max. Vx	26	-1.82	-5.86	7.68
		Diagonal	Max Tension	20	15.21	0.00	0.00
			Max. Compression	28	-16.17	0.00	0.00
			Max. Mx	33	11.39	-0.17	-0.02
			Max. My	22	-15.88	-0.04	-0.05
			Max. Vy	33	-0.07	-0.17	-0.02
			Max. Vx	22	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	33	5.47	0.00	0.00
			Max. Compression	33	-5.47	0.00	0.00
			Max. Mx	18	0.29	-0.26	0.00
			Max. My	28	1.57	0.00	0.01
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
		Top Girt	Max Tension	34	3.04	0.00	0.00
			Max. Compression	14	-1.25	0.43	-0.03
			Max. Mx	19	-0.01	0.73	-0.04
			Max. My	19	-0.01	0.73	-0.04
			Max. Vy	19	0.13	0.00	0.00
			Max. Vx	19	0.01	0.00	0.00
		Inner Bracing	Max Tension	33	0.20	0.00	0.00
			Max. Compression	33	-0.20	0.00	0.00
			Max. Mx	18	0.00	0.21	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	-0.06	0.00	0.00
			Max. Vx	33	-0.00	0.00	0.00
T17	30 - 20	Leg	Max Tension	33	350.60	-2.56	-3.22
			Max. Compression	33	-391.87	0.22	0.39
			Max. Mx	27	-258.36	6.54	0.54
			Max. My	19	-259.14	0.53	6.56
			Max. Vy	26	2.09	-3.69	-3.33
			Max. Vx	20	2.10	-3.32	-3.72
		Diagonal	Max Tension	20	14.81	0.00	0.00
			Max. Compression	28	-14.88	0.00	0.00
			Max. Mx	34	5.98	-0.20	-0.02
			Max. My	20	6.90	-0.19	-0.02
			Max. Vy	33	-0.07	-0.19	0.02
			Max. Vx	20	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	33	5.88	0.00	0.00
			Max. Compression	33	-5.88	0.00	0.00
			Max. Mx	18	0.32	-0.28	0.00
			Max. My	28	1.70	0.00	0.01
			Max. Vy	18	0.07	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T18	20 - 10	Leg	Max Tension	33	371.78	-3.57	-2.71
			Max. Compression	33	-410.26	0.72	0.50
			Max. Mx	25	-18.85	-4.49	4.09
			Max. My	21	-19.75	4.08	-4.47
			Max. Vy	34	-1.40	2.47	1.79
			Max. Vx	28	-1.39	1.77	2.48

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	20	14.84	0.00	0.00
			Max. Compression	22	-20.22	0.00	0.00
			Max. Mx	33	11.18	-0.18	-0.02
			Max. My	19	-9.71	-0.10	-0.06
			Max. Vy	34	-0.08	-0.18	-0.02
			Max. Vx	19	0.01	0.00	0.00
		Horizontal	Max Tension	19	6.07	0.00	0.00
			Max. Compression	14	-1.12	0.57	-0.03
			Max. Mx	19	0.98	0.79	-0.05
			Max. My	19	0.98	0.79	-0.05
			Max. Vy	19	-0.13	0.00	0.00
			Max. Vx	19	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	33	6.16	0.00	0.00
			Max. Compression	33	-6.16	0.00	0.00
			Max. Mx	18	0.31	-0.31	0.00
			Max. My	28	1.76	0.00	0.01
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
		Inner Bracing	Max Tension	32	0.08	0.00	0.00
			Max. Compression	32	-0.06	0.00	0.00
			Max. Mx	18	0.00	0.29	0.00
			Max. My	33	0.06	0.00	0.00
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	33	-0.00	0.00	0.00
T19	10 - 0	Leg	Max Tension	33	368.70	-2.08	-2.31
			Max. Compression	33	-425.51	0.00	-0.00
			Max. Mx	27	-282.14	4.25	-0.34
			Max. My	19	-282.80	-0.35	4.26
			Max. Vy	34	1.52	-3.80	-3.41
			Max. Vx	28	1.52	-3.37	-3.82
		Diagonal	Max Tension	20	26.76	-0.04	-0.00
			Max. Compression	28	-21.30	0.00	0.00
			Max. Mx	3	13.18	-0.06	0.03
			Max. My	28	-21.24	0.01	0.09
			Max. Vy	20	0.03	-0.06	-0.00
			Max. Vx	28	0.02	0.00	0.00
		Horizontal	Max Tension	28	16.85	0.00	0.00
			Max. Compression	20	-16.61	-0.06	0.02
			Max. Mx	31	7.51	-0.14	-0.03
			Max. My	27	-5.15	-0.04	0.03
			Max. Vy	31	-0.07	-0.14	-0.03
			Max. Vx	27	-0.01	-0.04	0.03
		Redund Horz 1 Bracing	Max Tension	33	6.39	0.00	0.00
			Max. Compression	33	-6.39	0.00	0.00
			Max. Mx	28	6.16	-0.01	0.00
			Max. My	28	-1.17	0.00	0.00
			Max. Vy	28	0.01	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	19	10.47	0.00	0.00
			Max. Compression	14	-6.38	0.00	0.00
			Max. Mx	28	4.67	-0.02	0.00
			Max. My	20	10.42	0.00	-0.00
			Max. Vy	28	-0.01	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	19	0.01	0.00	0.00
			Max. Compression	16	-0.03	0.00	0.00
			Max. Mx	18	0.01	-0.02	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	0.02	0.00	0.00
		Redund Sub Horz Bracing	Max Tension	19	12.83	0.00	0.00
			Max. Compression	14	-7.43	0.00	0.00
			Max. Mx	18	4.30	-0.09	0.00
			Max. My	18	4.30	0.00	0.00
			Max. Vy	18	0.04	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Inner Bracing	Max Tension	33	0.17	0.00	0.00
			Max. Compression	33	-0.20	0.00	0.00
			Max. Mx	18	-0.00	0.32	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	29	450.98	26.57	-28.36
	Max. H_x	30	436.98	27.43	-25.64
	Max. H_z	20	-385.26	-26.28	31.51
	Min. Vert	21	-400.26	-29.10	30.73
	Min. H_x	22	-386.16	-29.99	27.89
	Min. H_z	28	436.07	23.87	-29.10
Leg C	Max. Vert	25	449.16	-28.22	-26.66
	Max. H_x	32	-388.67	31.19	26.87
	Max. H_z	34	-387.77	28.34	29.62
	Min. Vert	33	-402.78	30.80	29.22
	Min. H_x	24	435.14	-28.59	-24.41
	Min. H_z	26	434.23	-25.89	-27.04
Leg B	Max. Vert	21	449.66	-28.31	26.55
	Max. H_x	30	-387.48	31.21	-26.74
	Max. H_z	20	434.75	-25.96	26.96
	Min. Vert	29	-401.58	30.80	-29.11
	Min. H_x	22	435.66	-28.71	24.28
	Min. H_z	28	-386.59	28.31	-29.54
Leg A	Max. Vert	33	452.18	26.73	28.32
	Max. H_x	32	438.16	27.59	25.58
	Max. H_z	34	437.25	24.01	29.08
	Min. Vert	25	-399.75	-29.17	-30.69
	Min. H_x	24	-385.64	-30.07	-27.83
	Min. H_z	26	-384.74	-26.32	-31.49

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	68.70	0.00	0.00	-11.45	10.87	0.00
Dead+Wind 0 deg - No Ice	68.70	-0.05	-71.32	-8082.16	13.38	-42.36
Dead+Wind 30 deg - No Ice	68.70	40.03	-68.92	-7618.78	-4422.58	-45.11

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 45 deg - No Ice	68.70	56.63	-56.26	-6222.09	-6260.29	-38.59
Dead+Wind 60 deg - No Ice	68.70	69.37	-39.76	-4402.16	-7670.62	-29.44
Dead+Wind 90 deg - No Ice	68.70	71.85	0.05	-9.04	-8145.55	-7.24
Dead+Wind 120 deg - No Ice	68.70	69.42	39.85	4383.44	-7673.06	19.25
Dead+Wind 135 deg - No Ice	68.70	56.70	56.33	6202.59	-6263.75	30.27
Dead+Wind 150 deg - No Ice	68.70	40.11	68.97	7598.28	-4426.82	39.23
Dead+Wind 180 deg - No Ice	68.70	0.05	71.32	8059.22	8.50	42.36
Dead+Wind 210 deg - No Ice	68.70	-40.03	68.92	7595.75	4444.48	45.11
Dead+Wind 225 deg - No Ice	68.70	-56.63	56.26	6199.06	6282.13	38.59
Dead+Wind 240 deg - No Ice	68.70	-69.37	39.76	4379.14	7692.43	29.45
Dead+Wind 270 deg - No Ice	68.70	-71.85	-0.05	-13.93	8167.31	7.24
Dead+Wind 300 deg - No Ice	68.70	-69.42	-39.85	-4406.32	7694.87	-19.25
Dead+Wind 315 deg - No Ice	68.70	-56.70	-56.33	-6225.46	6285.58	-30.27
Dead+Wind 330 deg - No Ice	68.70	-40.11	-68.97	-7621.14	4448.70	-39.22
Dead+Ice+Temp	99.95	0.00	0.00	-15.10	38.51	0.00
Dead+Wind 0 deg+Ice+Temp	99.95	-0.07	-87.85	-9753.99	43.00	-71.49
Dead+Wind 30 deg+Ice+Temp	99.95	49.36	-85.10	-9221.01	-5317.69	-73.14
Dead+Wind 45 deg+Ice+Temp	99.95	69.84	-69.46	-7530.42	-7538.63	-60.89
Dead+Wind 60 deg+Ice+Temp	99.95	85.56	-49.09	-5327.66	-9243.20	-44.48
Dead+Wind 90 deg+Ice+Temp	99.95	88.38	0.07	-10.75	-9788.02	-6.96
Dead+Wind 120 deg+Ice+Temp	99.95	85.63	49.21	5305.00	-9247.53	37.73
Dead+Wind 135 deg+Ice+Temp	99.95	69.94	69.56	7506.36	-7544.76	55.37
Dead+Wind 150 deg+Ice+Temp	99.95	49.48	85.17	9195.15	-5325.20	69.25
Dead+Wind 180 deg+Ice+Temp	99.95	0.07	87.85	9723.77	34.31	71.50
Dead+Wind 210 deg+Ice+Temp	99.95	-49.36	85.10	9190.65	5394.98	73.14
Dead+Wind 225 deg+Ice+Temp	99.95	-69.84	69.46	7500.05	7615.84	60.89
Dead+Wind 240 deg+Ice+Temp	99.95	-85.56	49.09	5297.32	9320.33	44.48
Dead+Wind 270 deg+Ice+Temp	99.95	-88.38	-0.07	-19.45	9865.08	6.97
Dead+Wind 300 deg+Ice+Temp	99.95	-85.63	-49.21	-5335.04	9324.69	-37.71
Dead+Wind 315 deg+Ice+Temp	99.95	-69.94	-69.56	-7536.40	7622.00	-55.36
Dead+Wind 330 deg+Ice+Temp	99.95	-49.48	-85.17	-9225.22	5402.52	-69.23
Dead+Wind 0 deg - Service	68.70	-0.05	-71.32	-8082.16	13.38	-42.36
Dead+Wind 30 deg - Service	68.70	40.03	-68.92	-7618.78	-4422.58	-45.11
Dead+Wind 45 deg - Service	68.70	56.63	-56.26	-6222.09	-6260.29	-38.59
Dead+Wind 60 deg - Service	68.70	69.37	-39.76	-4402.16	-7670.62	-29.44
Dead+Wind 90 deg - Service	68.70	71.85	0.05	-9.04	-8145.55	-7.24
Dead+Wind 120 deg - Service	68.70	69.42	39.85	4383.44	-7673.06	19.25
Dead+Wind 135 deg - Service	68.70	56.70	56.33	6202.59	-6263.75	30.27
Dead+Wind 150 deg - Service	68.70	40.11	68.97	7598.28	-4426.82	39.23
Dead+Wind 180 deg - Service	68.70	0.05	71.32	8059.22	8.50	42.36
Dead+Wind 210 deg - Service	68.70	-40.03	68.92	7595.75	4444.48	45.11
Dead+Wind 225 deg - Service	68.70	-56.63	56.26	6199.06	6282.13	38.59
Dead+Wind 240 deg - Service	68.70	-69.37	39.76	4379.14	7692.43	29.45
Dead+Wind 270 deg - Service	68.70	-71.85	-0.05	-13.93	8167.31	7.24
Dead+Wind 300 deg - Service	68.70	-69.42	-39.85	-4406.32	7694.87	-19.25
Dead+Wind 315 deg - Service	68.70	-56.70	-56.33	-6225.46	6285.58	-30.27
Dead+Wind 330 deg - Service	68.70	-40.11	-68.97	-7621.14	4448.70	-39.22

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-68.70	0.00	-0.00	68.70	0.00	0.000%
2	-0.05	-68.70	-71.32	0.05	68.70	71.32	0.000%
3	40.03	-68.70	-68.92	-40.03	68.70	68.92	0.000%
4	56.63	-68.70	-56.26	-56.63	68.70	56.26	0.000%
5	69.37	-68.70	-39.76	-69.37	68.70	39.76	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
6	71.85	-68.70	0.05	-71.85	68.70	-0.05	0.000%
7	69.42	-68.70	39.85	-69.42	68.70	-39.85	0.000%
8	56.70	-68.70	56.33	-56.70	68.70	-56.33	0.000%
9	40.11	-68.70	68.97	-40.11	68.70	-68.97	0.000%
10	0.05	-68.70	71.32	-0.05	68.70	-71.32	0.000%
11	-40.03	-68.70	68.92	40.03	68.70	-68.92	0.000%
12	-56.63	-68.70	56.26	56.63	68.70	-56.26	0.000%
13	-69.37	-68.70	39.76	69.37	68.70	-39.76	0.000%
14	-71.85	-68.70	-0.05	71.85	68.70	0.05	0.000%
15	-69.42	-68.70	-39.85	69.42	68.70	39.85	0.000%
16	-56.70	-68.70	-56.33	56.70	68.70	56.33	0.000%
17	-40.11	-68.70	-68.97	40.11	68.70	68.97	0.000%
18	0.00	-99.95	0.00	-0.00	99.95	-0.00	0.000%
19	-0.07	-99.95	-87.85	0.07	99.95	87.85	0.000%
20	49.36	-99.95	-85.10	-49.36	99.95	85.10	0.000%
21	69.84	-99.95	-69.46	-69.84	99.95	69.46	0.001%
22	85.56	-99.95	-49.09	-85.56	99.95	49.09	0.000%
23	88.38	-99.95	0.07	-88.38	99.95	-0.07	0.000%
24	85.63	-99.95	49.21	-85.63	99.95	-49.21	0.000%
25	69.94	-99.95	69.56	-69.94	99.95	-69.56	0.001%
26	49.48	-99.95	85.17	-49.48	99.95	-85.17	0.000%
27	0.07	-99.95	87.85	-0.07	99.95	-87.85	0.000%
28	-49.36	-99.95	85.10	49.36	99.95	-85.10	0.001%
29	-69.84	-99.95	69.46	69.84	99.95	-69.46	0.001%
30	-85.56	-99.95	49.09	85.56	99.95	-49.09	0.000%
31	-88.38	-99.95	-0.07	88.38	99.95	0.07	0.000%
32	-85.63	-99.95	-49.21	85.63	99.95	49.21	0.000%
33	-69.94	-99.95	-69.56	69.94	99.95	69.56	0.001%
34	-49.48	-99.95	-85.17	49.48	99.95	85.17	0.001%
35	-0.05	-68.70	-71.32	0.05	68.70	71.32	0.000%
36	40.03	-68.70	-68.92	-40.03	68.70	68.92	0.000%
37	56.63	-68.70	-56.26	-56.63	68.70	56.26	0.000%
38	69.37	-68.70	-39.76	-69.37	68.70	39.76	0.000%
39	71.85	-68.70	0.05	-71.85	68.70	-0.05	0.000%
40	69.42	-68.70	39.85	-69.42	68.70	-39.85	0.000%
41	56.70	-68.70	56.33	-56.70	68.70	-56.33	0.000%
42	40.11	-68.70	68.97	-40.11	68.70	-68.97	0.000%
43	0.05	-68.70	71.32	-0.05	68.70	-71.32	0.000%
44	-40.03	-68.70	68.92	40.03	68.70	-68.92	0.000%
45	-56.63	-68.70	56.26	56.63	68.70	-56.26	0.000%
46	-69.37	-68.70	39.76	69.37	68.70	-39.76	0.000%
47	-71.85	-68.70	-0.05	71.85	68.70	0.05	0.000%
48	-69.42	-68.70	-39.85	69.42	68.70	39.85	0.000%
49	-56.70	-68.70	-56.33	56.70	68.70	56.33	0.000%
50	-40.11	-68.70	-68.97	40.11	68.70	68.97	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00080107
2	Yes	6	0.00070655	0.00026663
3	Yes	5	0.00082437	0.00034621
4	Yes	5	0.00052773	0.00026131
5	Yes	5	0.00086965	0.00029310
6	Yes	6	0.00078747	0.00021850

7	Yes	5	0.00087163	0.00029331
8	Yes	5	0.00052582	0.00026160
9	Yes	5	0.00081671	0.00034542
10	Yes	6	0.00069825	0.00026455
11	Yes	5	0.00081581	0.00034528
12	Yes	5	0.00052826	0.00026219
13	Yes	5	0.00088053	0.00029496
14	Yes	6	0.00079775	0.00022034
15	Yes	5	0.00088004	0.00029513
16	Yes	5	0.00053165	0.00026250
17	Yes	5	0.00082491	0.00034647
18	Yes	5	0.00000001	0.00055052
19	Yes	7	0.00098868	0.00038240
20	Yes	6	0.00092666	0.00040119
21	Yes	6	0.00083405	0.00035574
22	Yes	9	0.00079442	0.00024194
23	Yes	11	0.00086789	0.00024414
24	Yes	9	0.00079764	0.00024283
25	Yes	6	0.00083483	0.00035572
26	Yes	6	0.00091661	0.00039849
27	Yes	7	0.00097422	0.00037838
28	Yes	6	0.00091504	0.00039783
29	Yes	6	0.00085734	0.00036111
30	Yes	9	0.00083805	0.00025243
31	Yes	11	0.00092166	0.00025646
32	Yes	9	0.00083801	0.00025232
33	Yes	6	0.00085986	0.00036218
34	Yes	6	0.00092753	0.00040143
35	Yes	6	0.00070655	0.00026663
36	Yes	5	0.00082437	0.00034621
37	Yes	5	0.00052773	0.00026131
38	Yes	5	0.00086965	0.00029310
39	Yes	6	0.00078747	0.00021850
40	Yes	5	0.00087163	0.00029331
41	Yes	5	0.00052582	0.00026160
42	Yes	5	0.00081671	0.00034542
43	Yes	6	0.00069825	0.00026455
44	Yes	5	0.00081581	0.00034528
45	Yes	5	0.00052826	0.00026219
46	Yes	5	0.00088053	0.00029496
47	Yes	6	0.00079775	0.00022034
48	Yes	5	0.00088004	0.00029513
49	Yes	5	0.00053165	0.00026250
50	Yes	5	0.00082491	0.00034647

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
T1	180 - 170	12.333	48	0.6184	0.0230
T2	170 - 163.573	10.876	48	0.6072	0.0199
T3	163.573 - 159.049	9.964	48	0.5889	0.0200
T4	159.049 - 154.524	9.338	48	0.5716	0.0204
T5	154.524 - 150	8.737	48	0.5481	0.0217
T6	150 - 140	8.163	48	0.5212	0.0228
T7	140 - 130	6.998	48	0.4591	0.0244
T8	130 - 120	5.972	48	0.4120	0.0248
T9	120 - 110	5.058	48	0.3616	0.0228
T10	110 - 100	4.246	48	0.3209	0.0213

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T11	100 - 90	3.528	48	0.2784	0.0200
T12	90 - 80	2.898	48	0.2425	0.0176
T13	80 - 60	2.344	48	0.2061	0.0154
T14	60 - 50	1.414	48	0.1658	0.0101
T15	50 - 40	1.014	48	0.1458	0.0075
T16	40 - 30	0.687	48	0.1251	0.0062
T17	30 - 20	0.416	48	0.0939	0.0049
T18	20 - 10	0.212	48	0.0625	0.0037
T19	10 - 0	0.075	40	0.0307	0.0024

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	PA6-65AC	48	12.333	0.6184	0.0230	40431
176.00	PA6-65AC	48	11.747	0.6156	0.0218	40431
172.00	6' Standoff	48	11.164	0.6109	0.0206	25857
170.00	ANT150D	48	10.876	0.6072	0.0199	22075
169.00	BA1312	48	10.732	0.6050	0.0197	21150
163.00	T-Frame	48	9.884	0.5869	0.0201	15230
160.00	101-83B-09-0-03N Omni	48	9.468	0.5757	0.0203	10996
150.00	DB636-A	48	8.163	0.5212	0.0228	8521
145.00	6' Standoff	48	7.563	0.4891	0.0237	8305
143.00	6' Standoff	48	7.332	0.4765	0.0240	8236
133.00	10'6"x4" Pipe Mount	48	6.267	0.4258	0.0249	10090
132.00	3' Stand-off	48	6.167	0.4213	0.0249	10415
130.00	PA6-65AC	48	5.972	0.4120	0.0248	10973
126.00	LeBlanc 10' Standoff (1)	48	5.594	0.3917	0.0241	11441
122.00	EUSF10-U	48	5.232	0.3712	0.0232	11596
120.00	3" Dia x 15' Omni	48	5.058	0.3616	0.0228	11715
116.00	ASP711	48	4.721	0.3446	0.0221	12102
115.00	6' Standoff	48	4.640	0.3407	0.0219	12218
112.00	6' Stand-off	48	4.400	0.3289	0.0216	12504
106.00	12' Wireless Frame	48	3.947	0.3038	0.0209	12939
101.00	LeBlanc 10' Standoff (1)	48	3.595	0.2824	0.0202	13308
100.00	4' Grid Dish	48	3.528	0.2784	0.0200	13434
88.00	3' Stand-off	48	2.781	0.2350	0.0171	16297
85.00	3' Stand-off	48	2.612	0.2236	0.0164	17008
80.00	6' Ice Shield	48	2.344	0.2061	0.0154	18492
76.00	10'6"x4" Pipe Mount	48	2.142	0.1951	0.0144	20566
75.00	6' Grid Dish	48	2.093	0.1927	0.0142	21220
56.00	3' Stand-off	48	1.247	0.1580	0.0090	22498
47.00	3' Stand-off	48	0.909	0.1401	0.0071	15948

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	14.485	32	0.7096	0.0368
T2	170 - 163.573	12.813	32	0.6974	0.0330

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T3	163.573 - 159.049	11.765	32	0.6775	0.0307
T4	159.049 - 154.524	11.044	32	0.6592	0.0309
T5	154.524 - 150	10.350	32	0.6340	0.0319
T6	150 - 140	9.685	32	0.6046	0.0330
T7	140 - 130	8.330	32	0.5358	0.0350
T8	130 - 120	7.130	32	0.4826	0.0353
T9	120 - 110	6.058	32	0.4255	0.0335
T10	110 - 100	5.101	32	0.3791	0.0324
T11	100 - 90	4.251	32	0.3302	0.0311
T12	90 - 80	3.501	32	0.2887	0.0278
T13	80 - 60	2.839	32	0.2463	0.0248
T14	60 - 50	1.717	32	0.1991	0.0165
T15	50 - 40	1.234	32	0.1755	0.0123
T16	40 - 30	0.838	32	0.1507	0.0101
T17	30 - 20	0.509	32	0.1133	0.0081
T18	20 - 10	0.261	32	0.0755	0.0060
T19	10 - 0	0.094	24	0.0371	0.0039

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	PA6-65AC	32	14.485	0.7096	0.0368	36790
176.00	PA6-65AC	32	13.813	0.7065	0.0354	36790
172.00	6' Standoff	32	13.145	0.7014	0.0339	23622
170.00	ANT150D	32	12.813	0.6974	0.0330	20406
169.00	BA1312	32	12.648	0.6949	0.0326	19733
163.00	T-Frame	32	11.673	0.6754	0.0307	14801
160.00	101-83B-09-0-03N Omni	32	11.194	0.6635	0.0308	10235
150.00	DB636-A	32	9.685	0.6046	0.0330	7729
145.00	6' Standoff	32	8.987	0.5692	0.0341	7473
143.00	6' Standoff	32	8.719	0.5552	0.0345	7382
133.00	10'6"x4" Pipe Mount	32	7.475	0.4983	0.0355	8908
132.00	3' Stand-off	32	7.359	0.4932	0.0355	9183
130.00	PA6-65AC	32	7.130	0.4826	0.0353	9664
126.00	LeBlanc 10' Standoff (1)	32	6.688	0.4597	0.0347	10123
122.00	EUSF10-U	32	6.264	0.4364	0.0339	10334
120.00	3" Dia x 15' Omni	32	6.058	0.4255	0.0335	10453
116.00	ASP711	32	5.662	0.4062	0.0329	10737
115.00	6' Standoff	32	5.566	0.4017	0.0328	10815
112.00	6' Stand-off	32	5.284	0.3883	0.0325	11002
106.00	12' Wireless Frame	32	4.748	0.3595	0.0321	11398
101.00	LeBlanc 10' Standoff (1)	32	4.331	0.3348	0.0314	11777
100.00	4' Grid Dish	32	4.251	0.3302	0.0311	11875
88.00	3' Stand-off	32	3.362	0.2800	0.0272	14019
85.00	3' Stand-off	32	3.159	0.2667	0.0263	14700
80.00	6' Ice Shield	32	2.839	0.2463	0.0248	16123
76.00	10'6"x4" Pipe Mount	32	2.596	0.2334	0.0234	17959
75.00	6' Grid Dish	32	2.537	0.2307	0.0231	18527
56.00	3' Stand-off	32	1.516	0.1899	0.0147	18742
47.00	3' Stand-off	32	1.106	0.1687	0.0115	13111

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325X	0.6250	2	3.27	8.16	0.401 ✓	1.333	Member Bearing
		Secondary Horizontal	A325X	0.6250	2	0.40	8.16	0.049 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.26	8.16	0.031 ✓	1.333	Member Bearing
T2	170	Diagonal	A325X	0.6250	2	3.61	8.16	0.442 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.63	8.16	0.077 ✓	1.333	Member Bearing
T3	163.573	Diagonal	A325X	0.6250	2	2.94	8.16	0.361 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.76	8.16	0.093 ✓	1.333	Member Bearing
T4	159.049	Diagonal	A325X	0.6250	2	3.27	8.16	0.400 ✓	1.333	Member Bearing
T5	154.524	Diagonal	A325X	0.6250	2	3.24	8.16	0.397 ✓	1.333	Member Bearing
T6	150	Diagonal	A325X	0.6250	2	3.44	8.16	0.421 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.53	8.16	0.065 ✓	1.333	Member Bearing
T7	140	Diagonal	A325X	0.6250	2	4.58	9.20	0.497 ✓	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	0.47	8.16	0.057 ✓	1.333	Member Bearing
T8	130	Diagonal	A325X	0.6250	2	5.36	9.20	0.582 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	0.91	9.20	0.098 ✓	1.333	Bolt Shear
T9	120	Diagonal	A325X	0.6250	2	5.74	9.20	0.624 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	0.56	9.20	0.061 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	1.10	8.16	0.135 ✓	1.333	Member Bearing
T10	110	Diagonal	A325X	0.6250	2	6.28	9.20	0.682 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	1.31	9.20	0.142 ✓	1.333	Bolt Shear
T11	100	Diagonal	A325X	0.6250	2	6.52	9.20	0.709 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	0.84	9.20	0.092 ✓	1.333	Bolt Shear
T12	90	Diagonal	A325X	0.6250	2	6.95	9.20	0.755 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	1.73	9.20	0.188 ✓	1.333	Bolt Shear
T13	80	Diagonal	A325X	0.6250	2	7.43	16.31	0.455 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.55	9.20	0.059 ✓	1.333	Bolt Shear
T14	60	Diagonal	A325X	0.6250	2	7.21	16.31	0.442 ✓	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	1.26	16.31	0.077 ✓	1.333	Member Bearing
T15	50	Diagonal	A325X	0.6250	2	7.92	18.41	0.430 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.54	9.20	0.277 ✓	1.333	Bolt Shear
T16	40	Diagonal	A325X	0.6250	2	8.08	18.41	0.439 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.73	9.20	0.297 ✓	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	1.52	16.31	0.093 ✓	1.333	Member Bearing
T17	30	Diagonal	A325X	0.6250	2	7.44	18.41	0.404 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.94	9.20	0.320 ✓	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T18	20	Diagonal	A325X	0.6250	2	10.11	18.41	0.549 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	3.04	16.31	0.186 ✓	1.333	Member Bearing
		Secondary Horizontal	A325X	0.6250	2	3.08	9.20	0.335 ✓	1.333	Bolt Shear
T19	10	Diagonal	A325X	0.6250	2	13.38	18.41	0.727 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	8.43	18.41	0.458 ✓	1.333	Bolt Shear

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 K	Allow. P_a K	Ratio P / P_a
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	87.3 K=1.00	14.519	2.4800	-6.94	36.01	0.193 ✓
T2	170 - 163.573	L5x5x5/16	6.43	6.43	77.6 K=1.00	15.232	3.0300	-21.36	46.15	0.463 ✓
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	54.7 K=1.00	17.404	3.0300	-36.65	52.74	0.695 ✓
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	54.7 K=1.00	17.404	3.0300	-48.81	52.74	0.926 ✓
T5	154.524 - 150	L5x5x5/16	4.53	4.53	54.7 K=1.00	17.404	3.0300	-58.13	52.74	1.102 ✓
T6	150 - 140	L5x5x3/8	10.01	5.01	60.7 K=1.00	17.364	3.6100	-81.00	62.68	1.292 ✓
T7	140 - 130	L6x6x1/2	10.01	5.23	53.2 K=1.00	18.066	5.7500	-97.05	103.88	0.934 ✓
T8	130 - 120	L6x6x1/2	10.01	5.21	53.0 K=1.00	18.083	5.7500	-120.70	103.98	1.161 ✓
T9	120 - 110	L6x6x3/4	10.01	5.20	53.3 K=1.00	18.057	8.4400	-146.69	152.40	0.963 ✓
T10	110 - 100	L6x6x3/4	10.01	5.18	53.2 K=1.00	18.069	8.4400	-174.35	152.50	1.143 ✓
T11	100 - 90	L8x8x3/4	10.01	10.01	76.0 K=1.00	15.789	11.4000	-202.86	180.00	1.127 ✓
T12	90 - 80	L8x8x3/4	10.01	5.16	39.2 K=1.00	19.253	11.4000	-230.33	219.49	1.049 ✓
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3 K=1.00	18.499	22.0000	-286.90	406.97	0.705 ✓
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6 K=1.00	18.477	23.7340	-313.57	438.54	0.715 ✓
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9 K=1.00	20.291	23.7340	-339.10	481.58	0.704 ✓
T16	40 - 30	L8x8x1 1/8	10.01	5.12	39.4	19.236	16.7000	-364.29	321.24	1.134

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow P_a K	Ratio $\frac{P}{P_a}$
					K=1.00					✓
T17	30 - 20	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	19.239	16.7000	-391.87	321.29	1.220 ✓
T18	20 - 10	L8x8x1 1/8	10.01	5.11	39.3 K=1.00	19.242	16.7000	-410.26	321.34	1.277 ✓
T19	10 - 0	L8x8x1 1/8	10.01	5.01	38.5 K=1.00	19.307	16.7000	-425.51	322.43	1.320 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	130.4 K=0.98	8.788	0.9020	-6.55	7.93	0.826 ✓
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	103.3 K=1.06	12.555	0.9020	-7.21	11.32	0.637 ✓
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	110.5 K=1.03	11.610	0.7150	-5.88	8.30	0.709 ✓
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	106.9 K=1.04	12.085	0.8090	-6.23	9.78	0.637 ✓
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	109.6 K=1.03	11.722	0.8090	-6.48	9.48	0.684 ✓
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	118.8 K=1.00	10.459	0.8090	-6.87	8.46	0.812 ✓
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	138.5 K=0.96	7.780	1.3100	-9.15	10.19	0.898 ✓
T8	130 - 120	L3x3x1/4	12.98	6.56	129.9 K=0.98	8.853	1.4400	-10.71	12.75	0.841 ✓
T9	120 - 110	L3x3x1/4	13.45	6.78	133.3 K=0.97	8.402	1.4400	-11.48	12.10	0.949 ✓
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	130.3 K=0.98	8.801	1.5600	-12.56	13.73	0.915 ✓
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	133.8 K=0.97	8.338	1.5600	-13.05	13.01	1.003 ✓
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	137.5 K=0.96	7.894	1.5600	-13.90	12.31	1.129 ✓
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	122.4 K=1.00	9.943	1.6200	-14.86	16.11	0.922 ✓
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	126.6 K=1.00	9.317	1.6200	-14.42	15.09	0.955 ✓
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	131.2 K=0.97	8.671	3.0900	-15.83	26.79	0.591 ✓
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	134.7 K=0.97	8.231	3.0900	-16.17	25.43	0.636 ✓
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	138.2 K=0.96	7.816	3.0900	-14.88	24.15	0.616 ✓
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	141.8 K=0.95	7.427	3.0900	-20.22	22.95	0.881 ✓
T19	10 - 0	2L2 1/2x2 1/2x1/4	13.37	6.49	110.6	11.590	2.3800	-21.30	27.58	0.772

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
					K=1.09					✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	110.3 K=1.10	11.635	1.1900	-1.12	13.85	0.081 ✓
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	119.0 K=1.01	10.420	1.1900	-1.69	12.40	0.136 ✓
T14	60 - 50	2L2x2x3/16	13.43	6.16	119.9 K=1.00	10.295	1.4300	-1.35	14.72	0.092 ✓
T18	20 - 10	2L2x2x3/16	16.29	7.62	141.5 K=0.96	7.461	1.4300	-1.12	10.67	0.105 ✓
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	123.4 K=0.99	9.786	2.3800	-16.61	23.29	0.713 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.31	142.3 K=0.88	7.379	0.7150	-0.80	5.28	0.152 ✓
T7	140 - 130	L2x2x1/4	8.03	7.53	192.1 K=0.83	4.048	0.9380	-1.46	3.80	0.384 ✓
T8	130 - 120	L2x2x1/4	8.75	7.86	198.8 K=0.82	3.777	0.9380	-1.81	3.54	0.511 ✓
T9	120 - 110	L2x2x3/16	9.47	8.57	212.4 K=0.81	3.311	0.7150	-2.20	2.37	0.930 ✓
T10	110 - 100	L2x2x1/4	10.19	9.29	228.6 K=0.80	2.857	0.9380	-2.62	2.68	0.977 ✓
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	210.3 K=0.81	3.376	1.1900	-3.46	4.02	0.861 ✓
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	192.1 K=0.83	4.045	1.6900	-5.09	6.84	0.745 ✓
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	201.1 K=0.82	3.691	1.6900	-5.47	6.24	0.876 ✓
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	209.6 K=0.82	3.400	1.6900	-5.88	5.75	1.024 ✓
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	218.0 K=0.81	3.143	1.6900	-6.16	5.31	1.159 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.31	145.7 K=0.90	7.034	0.7150	-0.13	5.03	0.025 ✓
T2	170 - 163.573	L2x2x3/16	6.00	5.31	145.7 K=0.90	7.034	0.7150	-0.73	5.03	0.146 ✓
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	143.4 K=0.91	7.265	0.7150	-0.90	5.19	0.174 ✓
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	138.1 K=0.92	7.835	0.9020	-0.91	7.07	0.129 ✓
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	101.7 K=1.22	12.764	0.9020	-0.93	11.51	0.081 ✓
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	130.4 K=0.98	8.785	1.1900	-0.88	10.45	0.084 ✓
T16	40 - 30	2L2x2x3/16	14.86	6.88	130.5 K=0.98	8.764	1.4300	-1.25	12.53	0.100 ✓

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	107.5 K=1.13	12.004	0.9020	-6.39	10.83	0.590 ✓

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	143.6 K=1.00	7.239	0.9020	-6.38	6.53	0.977 ✓

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	145.8 K=1.00	7.024	0.9020	-0.03	6.34	0.005 ✓

Redundant Sub-Horizontal Design Data (Compression)

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L3x3x5/16	8.86	8.86	180.6 K=1.00	4.578	1.7800	-7.43	8.15	0.912 ✓

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	140 - 130	L2x2x3/16	5.44	5.44	165.6 K=1.00	5.444	0.7150	-0.17	3.89	0.044 ✓
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	181.3 K=1.00	4.542	0.8090	-0.11	3.67	0.031 ✓
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	209.8 K=1.00	3.392	0.8090	-0.12	2.74	0.044 ✓
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9 K=1.00	5.490	1.4300	-0.16	7.85	0.020 ✓
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6 K=1.00	4.380	1.4300	-0.15	6.26	0.024 ✓
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4 K=1.00	3.575	1.4300	-0.20	5.11	0.038 ✓
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4 K=1.00	2.812	1.6200	-0.06	4.56	0.013 ✓
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6 K=1.00	2.580	1.6200	-0.20	4.18	0.047 ✓

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_u ksi	A in^2	Actual P K	Allow. P_n K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	56.1	21.600	2.4800	6.71	53.57	0.125 ✓
T2	170 - 163.573	L5x5x5/16	6.43	6.43	49.1	21.600	3.0300	19.72	65.45	0.301 ✓
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	34.6	21.600	3.0300	32.88	65.45	0.502 ✓
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	34.6	21.600	3.0300	43.32	65.45	0.662 ✓
T5	154.524 - 150	L5x5x5/16	4.53	4.53	34.6	21.600	3.0300	52.90	65.45	0.808 ✓
T6	150 - 140	L5x5x3/8	10.01	5.01	38.5	21.600	3.6100	74.63	77.98	0.957

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	140 - 130	L6x6x1/2	10.01	5.23	33.7	21.600	5.7500	89.43	124.20	0.720
T8	130 - 120	L6x6x1/2	10.01	5.21	33.6	21.600	5.7500	110.60	124.20	0.890
T9	120 - 110	L6x6x3/4	10.01	5.20	34.1	21.600	8.4400	133.25	182.30	0.731
T10	110 - 100	L6x6x3/4	10.01	5.18	34.0	21.600	8.4400	157.72	182.30	0.865
T11	100 - 90	L8x8x3/4	10.01	10.01	48.6	21.600	11.4000	183.51	246.24	0.745
T12	90 - 80	L8x8x3/4	10.01	5.16	25.1	21.600	11.4000	209.20	246.24	0.850
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3	21.600	22.0000	260.41	475.20	0.548
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6	21.600	23.7340	282.87	512.65	0.552
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9	21.600	23.7340	306.71	512.65	0.598
T16	40 - 30	L8x8x1 1/8	10.01	5.12	25.4	21.600	16.7000	327.16	360.72	0.907
T17	30 - 20	L8x8x1 1/8	10.01	5.12	25.4	21.600	16.7000	350.60	360.72	0.972
T18	20 - 10	L8x8x1 1/8	10.01	5.11	25.4	21.600	16.7000	371.78	360.72	1.031
T19	10 - 0	L8x8x1 1/8	10.01	5.01	24.8	21.600	16.7000	368.70	360.72	1.022

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	88.0	29.000	0.5710	5.71	16.56	0.345
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	65.2	29.000	0.5710	6.61	16.56	0.399
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	72.4	29.000	0.4308	5.69	12.49	0.455
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	77.0	29.000	0.5013	6.53	14.54	0.449
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	79.6	29.000	0.5013	6.10	14.54	0.419
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	88.2	29.000	0.5013	6.78	14.54	0.466
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	104.5	29.000	0.8419	8.98	24.41	0.368
T8	130 - 120	L3x3x1/4	12.98	6.56	87.2	29.000	0.9394	10.47	27.24	0.384
T9	120 - 110	L3x3x1/4	13.45	6.78	90.0	29.000	0.9394	11.27	27.24	0.414

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	94.8	29.000	1.0294	12.35	29.85	0.414
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	98.1	29.000	1.0294	12.85	29.85	0.430
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	101.4	29.000	1.0294	13.63	29.85	0.457
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	125.4	29.000	1.0041	14.18	29.12	0.487
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	129.6	29.000	1.0041	14.06	29.12	0.483
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	137.8	29.000	1.8956	14.24	54.97	0.259
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	142.3	29.000	1.8956	15.21	54.97	0.277
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	147.0	29.000	1.8956	14.81	54.97	0.269
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	151.6	29.000	1.8956	14.84	54.97	0.270
T19	10 - 0	2L2 1/2x2 1/2x1/4	13.37	6.49	104.3	29.000	1.5037	26.76	43.61	0.614

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	67.3	29.000	0.7519	0.92	21.80	0.042
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	78.5	29.000	0.7519	1.59	21.80	0.073
T14	60 - 50	2L2x2x3/16	13.43	6.16	123.7	29.000	0.8616	2.53	24.99	0.101
T18	20 - 10	2L2x2x3/16	16.29	7.62	152.0	29.000	0.8616	6.07	24.99	0.243
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	127.5	29.000	1.5037	16.85	43.61	0.386

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 K	Allow. P_a K	Ratio P / P_a
T1	180 - 170	L2x2x3/16	6.00	5.31	111.0	29.000	0.4308	0.78	12.49	0.063
T7	140 - 130	L2x2x1/4	8.03	7.53	148.4	21.600	0.9380	1.46	20.26	0.072

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T8	130 - 120	L2x2x1/4	8.75	7.86	162.6	29.000	0.5629	1.81	16.32	0.111 ✔
T9	120 - 110	L2x2x3/16	9.47	8.57	174.4	29.000	0.4308	2.20	12.49	0.176 ✔
T10	110 - 100	L2x2x1/4	10.19	9.29	190.9	29.000	0.5629	2.62	16.32	0.160 ✔
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	171.0	29.000	0.7519	3.46	21.80	0.159 ✔
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	151.8	29.000	1.1269	5.09	32.68	0.156 ✔
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	160.1	29.000	1.1269	5.47	32.68	0.167 ✔
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	168.0	29.000	1.1269	5.88	32.68	0.180 ✔
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	175.9	29.000	1.1269	6.16	32.68	0.188 ✔

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 K	Allow P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.0	29.000	0.4308	0.51	12.49	0.041 ✔
T2	170 - 163.573	L2x2x3/16	6.00	5.31	111.0	29.000	0.4308	1.25	12.49	0.100 ✔
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	108.6	29.000	0.4308	1.52	12.49	0.122 ✔
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	101.1	29.000	0.5710	1.06	16.56	0.064 ✔
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	56.1	29.000	0.5710	0.91	16.56	0.055 ✔
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	88.4	29.000	0.7519	1.09	21.80	0.050 ✔
T16	40 - 30	2L2x2x3/16	14.86	6.88	137.6	29.000	0.8616	3.04	24.99	0.122 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	60.5	21.600	0.9020	6.39	19.48	0.328 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	91.4	21.600	0.9020	10.47	19.48	0.537 ✓

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	92.8	21.600	0.9020	0.01	19.48	0.000* ✓

* DL controls

Redundant Sub-Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L3x3x5/16	8.86	8.86	115.4	21.600	1.7800	12.83	38.45	0.334 ✓

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	140 - 130	L2x2x3/16	5.44	5.44	105.8	21.600	0.7150	0.17	15.44	0.011 ✓
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	129.1	21.600	0.8090	0.11	17.47	0.006 ✓
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	149.4	21.600	0.8090	0.12	17.47	0.007 ✓
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9	21.600	1.4300	0.16	30.89	0.005 ✓
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6	21.600	1.4300	0.15	30.89	0.005 ✓
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4	21.600	1.4300	0.20	30.89	0.006 ✓
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4	21.600	1.6200	0.08	34.99	0.002 ✓
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6	21.600	1.6200	0.17	34.99	0.005

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

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 170	Leg	L3 1/2x3 1/2x3/8	1	-6.94	48.00	14.5	Pass
T2	170 - 163.573	Leg	L5x5x5/16	21	-21.36	61.52	34.7	Pass
T3	163.573 - 159.049	Leg	L5x5x5/16	39	-36.65	70.30	52.1	Pass
T4	159.049 - 154.524	Leg	L5x5x5/16	55	-48.81	70.30	69.4	Pass
T5	154.524 - 150	Leg	L5x5x5/16	67	-58.13	70.30	82.7	Pass
T6	150 - 140	Leg	L5x5x3/8	78	-81.00	83.56	96.9	Pass
T7	140 - 130	Leg	L6x6x1/2	102	-97.05	138.47	70.1	Pass
T8	130 - 120	Leg	L6x6x1/2	129	-120.70	138.60	87.1	Pass
T9	120 - 110	Leg	L6x6x3/4	143	-146.69	203.15	72.2	Pass
T10	110 - 100	Leg	L6x6x3/4	170	-174.35	203.29	85.8	Pass
T11	100 - 90	Leg	L8x8x3/4	186	-202.86	239.94	84.5	Pass
T12	90 - 80	Leg	L8x8x3/4	207	-230.33	292.58	78.7	Pass
T13	80 - 60	Leg	L8x8x1 w/ 1/2x7 Plates	223	-286.90	542.49	52.9	Pass
T14	60 - 50	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	252	-313.57	584.58	53.6	Pass
T15	50 - 40	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	273	-339.10	641.95	52.8	Pass
T16	40 - 30	Leg	L8x8x1 1/8	289	-364.29	428.21	85.1	Pass
T17	30 - 20	Leg	L8x8x1 1/8	314	-391.87	428.28	91.5	Pass
T18	20 - 10	Leg	L8x8x1 1/8	330	-410.26	428.35	95.8	Pass
T19	10 - 0	Leg	L8x8x1 1/8	355	-425.51	429.80	99.0	Pass
T1	180 - 170	Diagonal	L2 1/2x2 1/2x3/16	15	-6.55	10.57	62.0	Pass
T2	170 - 163.573	Diagonal	L2 1/2x2 1/2x3/16	30	-7.21	15.10	47.8	Pass
T3	163.573 - 159.049	Diagonal	L2x2x3/16	45	-5.88	11.07	53.2	Pass
T4	159.049 - 154.524	Diagonal	L2 1/2x2x3/16	57	-6.23	13.03	47.8	Pass
T5	154.524 - 150	Diagonal	L2 1/2x2x3/16	69	-6.48	12.64	51.3	Pass
T6	150 - 140	Diagonal	L2 1/2x2x3/16	85	-6.87	11.28	60.9	Pass
T7	140 - 130	Diagonal	L3x2 1/2x1/4	114	-9.15	13.59	67.4	Pass
T8	130 - 120	Diagonal	L3x3x1/4	137	-10.71	16.99	63.1	Pass
T9	120 - 110	Diagonal	L3x3x1/4	156	-11.48	16.13	71.2	Pass
T10	110 - 100	Diagonal	L3 1/2x3x1/4	177	-12.56	18.30	68.6	Pass
T11	100 - 90	Diagonal	L3 1/2x3x1/4	203	-13.05	17.34	75.3	Pass
T12	90 - 80	Diagonal	L3 1/2x3x1/4	215	-13.90	16.42	84.7	Pass
T13	80 - 60	Diagonal	2L2 1/2x2x3/16	240	-14.86	21.47	69.2	Pass
T14	60 - 50	Diagonal	2L2 1/2x2x3/16	269	-14.42	20.12	71.7	Pass
T15	50 - 40	Diagonal	2L2 1/2x2x3/8	281	-15.83	35.72	44.3	Pass
T16	40 - 30	Diagonal	2L2 1/2x2x3/8	306	-16.17	33.90	47.7	Pass
T17	30 - 20	Diagonal	2L2 1/2x2x3/8	322	-14.88	32.20	46.2	Pass
T18	20 - 10	Diagonal	2L2 1/2x2x3/8	344	-20.22	30.59	66.1	Pass
T19	10 - 0	Diagonal	2L2 1/2x2 1/2x1/4	386	-21.30	36.77	57.9	Pass
T9	120 - 110	Horizontal	L2 1/2x2 1/2x1/4	149	-1.12	18.46	6.1	Pass
T11	100 - 90	Horizontal	L2 1/2x2 1/2x1/4	190	-1.69	16.53	10.2	Pass
T14	60 - 50	Horizontal	2L2x2x3/16	255	2.53	33.31	7.6	Pass
T18	20 - 10	Horizontal	2L2x2x3/16	333	6.07	33.31	18.2	Pass
T19	10 - 0	Horizontal	2L2 1/2x2 1/2x1/4	382	-16.61	31.05	53.5	Pass
T1	180 - 170	Secondary Horizontal	L2x2x3/16	20	-0.80	7.03	11.4	Pass
T7	140 - 130	Secondary Horizontal	L2x2x1/4	123	-1.46	5.06	28.8	Pass
T8	130 - 120	Secondary Horizontal	L2x2x1/4	140	-1.81	4.72	38.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T9	120 - 110	Secondary Horizontal	L2x2x3/16	163	-2.20	3.16	69.8	Pass
T10	110 - 100	Secondary Horizontal	L2x2x1/4	181	-2.62	3.57	73.3	Pass
T12	90 - 80	Secondary Horizontal	L2 1/2x2 1/2x1/4	218	-3.46	5.35	64.6	Pass
T15	50 - 40	Secondary Horizontal	L3 1/2x3 1/2x1/4	285	-5.09	9.11	55.9	Pass
T16	40 - 30	Secondary Horizontal	L3 1/2x3 1/2x1/4	309	-5.47	8.32	65.8	Pass
T17	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	325	-5.88	7.66	76.8	Pass
T18	20 - 10	Secondary Horizontal	L3 1/2x3 1/2x1/4	350	-6.16	7.08	87.0	Pass
T1	180 - 170	Top Girt	L2x2x3/16	5	0.51	16.65	3.1	Pass
T2	170 - 163.573	Top Girt	L2x2x3/16	27	-0.73	6.70	11.0	Pass
T3	163.573 - 159.049	Top Girt	L2x2x3/16	44	-0.90	6.92	13.0	Pass
T6	150 - 140	Top Girt	L2 1/2x2 1/2x3/16	84	-0.91	9.42	9.7	Pass
T7	140 - 130	Top Girt	L2 1/2x2 1/2x3/16	106	-0.93	15.35	6.1	Pass
T13	80 - 60	Top Girt	L2 1/2x2 1/2x1/4	225	-0.88	13.94	6.3	Pass
T16	40 - 30	Top Girt	2L2x2x3/16	292	3.04	33.31	9.1	Pass
T19	10 - 0	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	378	-6.39	14.43	44.2	Pass
T19	10 - 0	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	385	-6.38	8.70	73.3	Pass
T19	10 - 0	Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	372	-0.03	8.44	0.3	Pass
T19	10 - 0	Redund Sub Horz Bracing	L3x3x5/16	389	-7.43	10.86	68.4	Pass
T7	140 - 130	Inner Bracing	L2x2x3/16	109	-0.17	5.19	3.3	Pass
T9	120 - 110	Inner Bracing	L2 1/2x2x3/16	151	-0.11	4.90	2.3	Pass
T11	100 - 90	Inner Bracing	L2 1/2x2x3/16	192	-0.12	3.66	3.3	Pass
T13	80 - 60	Inner Bracing	2L2x2x3/16	230	-0.16	10.46	1.5	Pass
T14	60 - 50	Inner Bracing	2L2x2x3/16	258	-0.15	8.35	1.8	Pass
T16	40 - 30	Inner Bracing	2L2x2x3/16	297	-0.20	6.82	2.9	Pass
T18	20 - 10	Inner Bracing	2L2x2 1/2x3/16	336	-0.06	6.07	1.0	Pass
T19	10 - 0	Inner Bracing	2L2x2 1/2x3/16	395	-0.20	5.57	3.5	Pass
							Summary	
						Leg (T19)	99.0	Pass
						Diagonal (T12)	84.7	Pass
						Horizontal (T19)	53.5	Pass
						Secondary Horizontal (T18)	87.0	Pass
						Top Girt (T3)	13.0	Pass
						Redund Horz 1 Bracing (T19)	44.2	Pass
						Redund Diag 1 Bracing (T19)	73.3	Pass
						Redund Hip 1 Bracing (T19)	0.3	Pass
						Redund Sub Horz Bracing (T19)	68.4	Pass
						Inner Bracing (T19)	3.5	Pass
						Bolt Checks	56.7	Pass

Section No	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
						RATING =	**99.0**	**Pass**

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ANCHOR BOLT EVALUATION

AECOM

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Job	180' Self-Supporting Lattice Tower - Wilton, CT	Project No.	NSS-017 Rev. 1	Sheet 1	of 3
Description	Anchor Bolt Evaluation	Computed by	MCD	Date	05/05/15
		Checked by		Date	

ANCHOR BOLT ANALYSIS

Input Data

Max Pier Reactions:

Uplift:	Uplift := 403 kips	*user input*	
Shear:	Shear := 42 kips	*user input*	
Compression:	Compression := 452kips	*user input*	

Anchor Bolt Data:

Use ASTM A36

Number of Anchor Bolts = N	N := 4	*user input*	
Bolt Ultimate Strength:	F_u := 58 ksi	*user input*	
Bolt Yield Strength:	Fy := 36 ksi	*user input*	
Bolt Modulus:	E := 29000 ksi	*user input*	
Thickness of Anchor Bolts	D := 2.5in	*user input*	
Threads per Inch:	n := 4	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-97)

Anchor Bolt Area:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4} \cdot D^2 \qquad A_g = 4.909 \cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 \qquad A_n = 3.999 \cdot in^2$$

Check Tensile Forces:

Maximum Tensile Force (Gross Area):

$$AllowableTension := 1.33 \cdot \left(0.33 \cdot A_g \cdot F_u \right) \qquad AllowableTension = 125.0 \cdot kips$$

Note: 1.33 increase allowed per TIA/EIA

Maximum Tensile Force (Net Area):

$$F_{net.area} := 1.33 \cdot \left(0.60 \cdot A_n \cdot Fy \right) \qquad F_{net.area} = 114.9 \cdot kips$$

Note: 1.33 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 100.8 \cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.88$$

$$Condition1 := if\left(\frac{MaxTension}{F_{net.area}} \le 1.00, "OK", "Overstressed" \right)$$

$$Condition1 = "OK"$$

AECOM

				Page	of
Job	180' Self-Supporting Lattice Tower - Wilton, CT	Project No.	NSS-017 Rev. 1	Sheet 3	of 3
Description	Anchor Bolt Evaluation	Computed by	MCD	Date	05/05/15
		Checked by		Date	

Check Anchor Bolt Area:

Based on the ASCE 10-97 Design of Latticed Steel Transmission Structures

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 13.7 \cdot in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 5.6 \cdot in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 16.0 \cdot in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.86$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.35$$

Condition3 = "OK"

FOUNDATION ANALYSIS

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FOOTING WITH FOUR CONCRETE PIERS

INPUT DATA

TOWER FORCES:

Moment Caused by Tower	$M_t := 10743\,kip\cdot ft$
Shear at Base of Tower	$S_t := 99kip$
Max Compressive Force	$C_t := 452kip$
Max Uplift	$U_t := 403kip$
Max Pier Shear	$S_p := 42kip$
Height of Tower	$H_t := 180\,ft$
Width of Tower at Base	$W_t := 17.729\,ft$
Weight of Tower	$WT_t := 1\cdot kip$

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

FOOTING DIMENSIONS:

Width of Footing	$W_f := 35\,ft + 2ft$
Overall Depth of Footing	$D_f := 9.5ft$
Length of Pier	$L_p := 6.5\,ft - 0ft$
Extension of Pier Above Grade	$L_{pag} := 1.0\,ft$
Square Dimension of Pier	$d_p := 4.0\,ft$
Thickness of Footing	$T_f := 3.0\,ft + 0ft$
Reinforement Cover:	$Cvr := 3in$
Ftg. Edge To Pier CL:	$X_t := 8.635ft$

MATERIAL PROPERTIES:

Compressive Strength of Concrete	$f'c := 3000\,psi$	Unit Weight of Soil	$\gamma_s := 100pcf$
Yield Strength of Steel Reinforcement	$fy := 60000\,psi$	Unit Weight of Concrete	$\gamma_c := 150\,pcf$
Internal Friction Angle of Soil	$\phi_s := 30\,deg$	Depth to Neglect	$n := 1.5\,ft$
Allowable Bearing Capacity	$q_s := 3400\,psf$	Cohesion of Clay Type Soil	$c := 0\cdot ksf$
Stability Factor of Safety	$FS_{req} := 2.0$	Note: Use 0 for Sandy Soil	
Coefficient of Lateral Soil Pressure	$K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)}$	$K_p = 3$	

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

PIER REINFORCEMENT:

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

PAD REINFORCEMENT:

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

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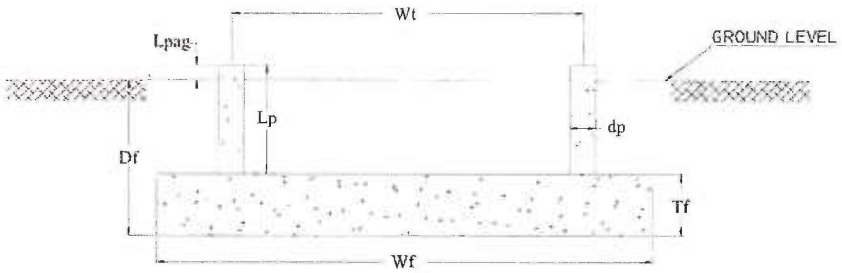
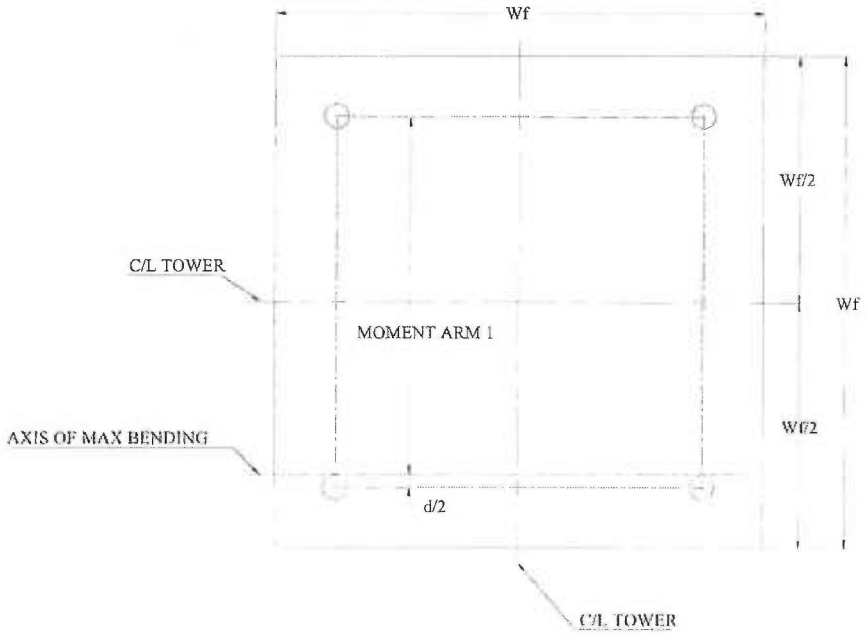
Typical Footing Plan and Elevation:



ELEVATION



PLAN

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STABILITY OF FOOTING

Passive Pressure:

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

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

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

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

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

Soil Shear:

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

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

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

Stabilizing Dead Load:

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

Weight of Soil above Footing:

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

$Depth = 5 \cdot ft$

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

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

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

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

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

Stability Analysis:

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

$M_r = 26910.0511 \cdot kip \cdot ft$

Overturning Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t \cdot X_{off}$ $M_{ot} = 11687.2466 \cdot kip \cdot ft$

Factor of Safety: $FS := \frac{M_r}{M_{ot}}$ $FS = 2.3$

$SafetyCheck := if(FS > FS_{req}, "Okay", "No Good")$ $SafetyCheck = "Okay"$

BEARING PRESSURES

Loading Eccentricity:

Total Axial Load: $LOAD_{tot} := WT_c + WT_{s1} + WT_t$ → $LOAD_{tot} = 1301.55 \cdot kip$

Total Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t$ → $M_{ot} = 11684.5 \cdot kip \cdot ft$

Eccentricity: $e := \frac{M_{ot}}{LOAD_{tot}}$ → $e = 8.9774 \cdot ft$

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

Calculate Soil Pressures:

Maximum Contact Pressure:

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

$P_{max} = 2.4627 \cdot ksf$

Minimum Contact Pressure:

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

$P_{min} = 0 \cdot ksf$

Length of Applied Pressure:

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

$X_p = 28.5679 \cdot ft$

Pressure Slope:

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

$m_p = 0.0862 \cdot ksf$

Soil Bearing Pressure Check:

$BearingStatus := if(P_{max} < q_s, \text{"Okay"}, \text{"No Good"})$ → $BearingStatus = \text{"Okay"}$

Concrete Bearing Capacity (ACI 10.17):

(ACI 9.3.2.2) $\phi_c := 0.75$

$$P_b := \phi_c \cdot 0.85 \cdot f'c \cdot \frac{d_p^{\,2} \cdot \pi}{4} \qquad P_b = 3460.7785 \cdot kip$$

$$BearingCheck := if\left(P_b > C_t, \text{"Okay"}, \text{"No Good"}\right) \qquad BearingCheck = \text{"Okay"}$$

SHEAR STRENGTH OF CONCRETE

Beam (One-Way) Shear Action (ACI 11.3.1.1):

Load Factor: (EIA 3.1.1)

$$LF := if\left[H_t \le 700 \cdot ft, 1.3, if\left[H_t \ge 1200, 1.7, 1.3 + \left(\frac{H_t - 700}{1200 - 700}\right) \cdot 0.4\right]\right] \qquad LF = 1.3$$

"d" Distance:

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

Factored Pressure at "d" Distance:

$$P_d := LF \cdot \left[P_{max} - \left(X_t - \frac{d_p}{2} - d\right) \cdot m_p\right] \qquad P_d = 2.6493 \cdot ksf$$

Factored Pressure at Edge:

$$P_{edge} := LF \cdot P_{max} \qquad P_{edge} = 3.2015 \cdot ksf$$

Average Pressure:

$$P_{aver} := \frac{P_d + P_{edge}}{2} \qquad P_{ave} = 2.9254 \cdot ksf$$

Capacity Reduction Factor: (ACI 9.3.2.3)

$$\phi_{vc} := .85$$

Applied Shear Force:

$$V_{req} := \frac{P_{ave} \cdot \left(X_t - 0.5 \cdot d_p - d\right) \cdot W_f}{\phi_c} \qquad V_{req} = 627.4346 \cdot kip$$

Available Shear: (ACI 11.3.1.1)

$$V_{Avail} := 2 \cdot \sqrt{f'c \cdot psi} \cdot W_f \cdot d \qquad V_{Avail} = 1580.7273 \cdot kip$$

Check Capacity:

$$BeamShearCheck := if\left(V_{req} < V_{Avail}, \text{"Okay"}, \text{"No Good"}\right)$$

$BeamShearCheck = \text{"Okay"}$

Punching (Two-Way) Shear Action (ACI 11.12.2.1):

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

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := .85$ $C_t = 452 \cdot kip$

Factored Maximum Punching Shear Force $FL := \frac{LF \cdot C_t}{\phi_c}$ → $FL = 691.2941 \cdot kip$

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

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

$PunchingShearCheck = "Okay"$

BENDING

Maximim Bending Moment:

Distance From Edge of FTG To Face of Pier: $X_b := \frac{W_f}{2} - e - \frac{d_p}{2}$ → $X_b = 7.5226 \cdot ft$

Moment Due To Overturning:

Factored Pressure at "d" Distance: $P_{face} := LF \cdot (P_{max} - X_b \cdot m_p)$ → $P_{face} = 2.3585 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := LF \cdot P_{max}$ → $P_{edge} = 3.2015 \cdot ksf$

Moment Due To Rectangular Loading: $M_1 := (P_{face} \cdot X_b \cdot W_f) \cdot \left(\frac{1}{2} \cdot X_b\right)$ → $M_1 = 2469.1153 \cdot kip \cdot ft$

Moment Due to Triangular Loading: $M_2 := \left[\frac{1}{2} \cdot X_b \cdot (P_{edge} - P_{face})\right] \cdot \left(\frac{2}{3} \cdot X_b\right)$ → $M_2 = 15.9024 \cdot kip \cdot ft$

Sum Moments: $M_{ot} := M_1 + M_2$ → $M_{ot} = 2485.0177 \cdot kip \cdot ft$

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Moment Due To Uplift:

Pier Forces:

$$M_{nT} := LF\cdot\left[U_t\cdot\left(W_f - 2\cdot X_b - \frac{d}{2} - d\right) + S_t\cdot\left(D_f + L_{pag}\right)\right] \qquad M_{nT} = 10725.0978\cdot kip\cdot ft$$

Concrete Resistance:

$$M_{nS} := \frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_s \qquad M_{nS} = 3602.4858\cdot kip\cdot ft$$

Soil Resistance:

$$M_{nC} := \frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_c \qquad M_{nC} = 5403.7287\cdot kip\cdot ft$$

Sum Moments

$$M_{uplift} := M_{nT} - M_{nS} - M_{nC} \qquad M_{uplift} = 1718.8833\cdot kips\cdot ft$$

Select Controlling Moment:

$$M_u := \begin{cases} M_{ot} & \text{if } M_{ot} \geq M_{uplift} \\ M_{uplift} & \text{otherwise} \end{cases} \qquad M_u = 2485.0177\cdot kips\cdot ft$$

Strength Reduction Factor: (ACI 9.3.2.2)

$$\phi_m := .90$$

Design Moment:

$$M_n := \frac{M_u}{\phi_m} \qquad M_n = 2761.1308\cdot kips\cdot ft$$

Size Reinforcing Steel:

Effective Width:

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

Stress Block:

$$a := d\cdot\left(1 - \sqrt{1 - 2.3529\cdot\frac{M_n}{f'c\cdot b_{eff}\cdot d^2}}\right) \qquad a = 0.9133\cdot in$$

Steel Req'd For Bending:

$$A_s := \frac{M_n}{fy\cdot\left(d - \frac{a}{2}\right)} \qquad A_s = 17.2337\cdot in^2$$

Reinforcement Ratio:

$$\rho := \frac{A_s}{b_{eff}\cdot d} \qquad \rho = 0.0012$$

Steel Req'd For Temperature and Shrinkage: (ACI 7.12.2.1b)

$$\rho_{sh} := \text{if}(fy \geq 60000\cdot psi, 0.0018, 0.0020) \qquad \rho_{sh} = 0.0018$$

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

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

Check Provided Steel:

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

PadReinforcement = "Okay"

DEVELOPMENT LENGTH OF PAD REINFORCEMENT

TENSION (ACI 12.2.3)

Bar Spacing:

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

$B_{sPad} = 9.5274\cdot in$

Development Length Factors:

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

Spacing or Cover Dimension:

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

$c = 3\cdot in$

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

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

$L_{dbt} = 34.8457\cdot in$

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

Minimum Development Length: (ACI 12.2.1)

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

Available Length in Pad:

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

$L_{Pad} = 112.626\cdot in$

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

REINFORCEMENT IN PIER

Pier Area:

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

$A_p = 1809.5574\cdot in^2$

(ACI 10.8.4 and 10.9.1)

$A_{smin} := 0.01\cdot 0.5\cdot A_p$ $A_{smin} = 9.0478\cdot in^2$

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

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

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

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

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

Maximum Moment in Pier: $M_p := (S_p \cdot L_p) \cdot LF$ $M_p = 4259 \cdot kips \cdot in$

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

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

The required input is column diameter in inches, number of reinforcing bars, bar size number, factored axial load in kips and moment in kip inches: $(D \ N \ n \ P_u \ M_{xu}) := (48 \ 24 \ 9 \ 120 \ 9266)$

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

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

The Output is given as useable axial load in kips, moment capacity in kip inches, splicing stress in ksi, and reinforcement ratio: $(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) = (304.2664 \ 23494.4357 \ -60 \ 0.0133)$

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

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

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

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DEVELOPMENT LENGTH OF PIER REINFORCEMENT

TENSION (ACI 12.2.3)

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

Factors for development:

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

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

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

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

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

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

COMPRESSION: (ACI 12.3.2)

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

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

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

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

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

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

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

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

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

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EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11040D

Wilton/ State Police
46 Fenwood Lane
Wilton, CT 06897

May 13, 2015

EBI Project Number: 6215002887

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	18.26 %

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EBI Consulting
environmental | engineering | due diligence

May 13, 2015

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

Emissions Analysis for Site: **CT11040D – Wilton/ State Police**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **46 Fenwood Lane, Wilton, 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 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 **46 Fenwood Lane, Wilton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

2) 2 UMTS channels (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) 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.

6) 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.

7) The antennas used in this modeling are the **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Ericsson AIR21 B4A/B12P** for 2100 MHz (AWS) and 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe. The **Ericsson AIR21 B4A/B12P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz and has a maximum gain of **13.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **122 feet** above ground level (AGL).

9) 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.

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	122	Height (AGL):	122	Height (AGL):	122
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	# PCS Channels:	4
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.25	Antenna B1 MPE%	1.25	Antenna C1 MPE%	1.25
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P
Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd
Height (AGL):	122	Height (AGL):	122	Height (AGL):	122
Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power:	150	Total TX Power:	150	Total TX Power:	150
ERP (W):	5,355.80	ERP (W):	5,355.80	ERP (W):	5,355.80
Antenna A2 MPE%	1.64	Antenna B2 MPE%	1.64	Antenna C2 MPE%	1.64

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**8.66**
Measurements	9.60 %
Site Total MPE %:	**18.26 %**

T-Mobile Sector 1 Total:	2.89 %
T-Mobile Sector 2 Total:	2.89 %
T-Mobile Sector 3 Total:	2.89 %
Site Total:	18.26 %

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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:	2.89 %
Sector 2:	2.89 %
Sector 3 :	2.89 %
T-Mobile Total:	8.66 %
Site Total:	18.26 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **18.26%** 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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