Crown Castle
3530 Toringdon Way Suite 300
Charlotte NC 28277

Tel (704) 405-6600

March 30, 2015

Melanie A. Bachman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **T-Mobile-Exempt Modification - Crown Site BU: 876345**
T-Mobile Site ID: CT11353C
Located at: 33 Janowski Road, Ashford, CT 06278

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of T-Mobile. T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement their 700MHz technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Honorable Michael J. Zambo, First Selectman for the Town of Ashford, and Global Site Acquisition IV LLC, Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **33 Janowski Road, Ashford, CT 06278**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to T-Mobile's operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. T-Mobile's replacement antennas will be located at the same elevation on the existing tower.

2. There will be no proposed modifications to the ground and no extension of boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for T-Mobile's modified facility is included as Exhibit-3.

5. A Structural Modification Report confirming that the tower and foundation can support T-Mobile's proposed modifications is included as Exhibit-2.

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

Sincerely,

Jerry Feathers
Real Estate Specialist

Enclosure

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

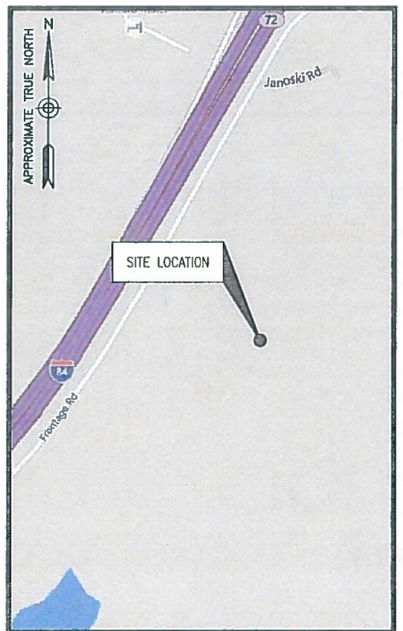
cc: The Honorable Michael J. Zambo, First Selectman
Ashford Municipal Offices
5 Town Hall Road
Ashford, CT 06278

Global Site Acquisition IV LLC
P.O. Box 277455
Atlanta, GA 30384

T-Mobile®

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11353C
CROWN CASTLE BU #: 876345
SITE NAME: SKY HILL
33 JANOWSKI ROAD
ASHFORD, CT 06278
WINDHAM COUNTY



VICINITY MAP

FROM PARSIPPANY, NJ:

DEPART SYLVAN WAY TOWARD CENTURY DR. TURN RIGHT ONTO US-202/LITTLETON RD. KEEP RIGHT ONTO LITTLETON RD. TAKE RAMP LEFT AND FOLLOW SIGN FOR I-80 EAST. TAKE RAMP LEFT FOR I-95 NORTH TOWARD G WASHINGTON B/NEW YORK. AT EXIT 1C, TAKE RAMP RIGHT FOR I-87 NORTH TOWARD ALBANY. AT EXIT 4, TAKE RAMP RIGHT FOR CENTRAL PARK TOWARD CROSS COUNTY PKWY. TAKE RAMP RIGHT FOR CROSS COUNTY PKWY EAST TOWARD HUTCHINSON PKWY. KEEP STRAIGHT ONTO HUTCHINSON RIVER PKWY. ROAD NAME CHANGES TO CT-15 N/MERRITT PKWY. AT EXIT 68N-E, TAKE RAMP RIGHT FOR I-91 NORTH TOWARD HARTFORD/MIDDLETOWN. AT EXIT 29, TAKE RAMP RIGHT FOR US-5 NORTH,CT-15 N. KEEP STRAIGHT ONTO I-84 E/US-6 E. AT EXIT 72, TAKE RAMP RIGHT FOR CT-89 TOWARD ASHFORD/WESTFORD. TURN RIGHT ONTO CT-89/FERENCE RD. TURN RIGHT ONTO FRONTAGE ROAD. TURN LEFT ONTO JANOWSKI ROAD. SITE WILL BE ON THE FRONT.

ENGINEER
DEWBERRY ENGINEERS INC.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054

CONTACT: BRYAN HUFF
PHONE #: (973) 576-0147

CONSTRUCTION
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CONTACT: WARREN KELLEHER
PHONE #: (781) 970-0055

CONSULTANT TEAM

SITE NAME:
SKY HILL

SITE NUMBER:
CT11353C

TOWER OWNER:
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

APPLICANT/DEVELOPER:
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

COORDINATES:
LATITUDE: 41°-57'-7.7" N (NAD83)
LONGITUDE: 72°-11'-43.9" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
704G

PROJECT SUMMARY

SITE ADDRESS:
33 JANOWSKI ROAD
ASHFORD, CT 06278
WIDHAM COUNTY

PROJECT DIRECTORY

- REMOVE AND REPLACE (3) EXISTING ANTENNAS WITH (4) NEW ANTENNAS.
- INSTALL (2) NEW BIAS TEES.
- INSTALL (2) NEW TMA'S.
- REMOVE AND REPLACE (6) EXISTING COAX CABLES WITH (8) NEW LINES OF COAX.
- INSTALL (1) NEW BBU CABINET AT GRADE.

SCOPE OF WORK

A.D.A. COMPLIANCE:
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	COMPOUND PLAN & EQUIPMENT PLANS
C-2	ANTENNA LAYOUTS & ELEVATIONS
C-3	CONSTRUCTION DETAILS
E-1	GROUNDING NOTES & DETAILS

SHEET INDEX

T-Mobile
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CT11353C
SKY HILL

CONSTRUCTION DRAWINGS

0	03/27/15	ISSUED AS FINAL
A	03/17/15	ISSUED FOR REVIEW

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG JI
No. 23222
LICENSED PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50071490
SITE ADDRESS:	

33 JANOWSKI ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – CROWN CASTLE
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T–MOBILE
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF PROJECT MANAGEMENT.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
9. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
10. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. 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 THE CONTRACT.
14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
16. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
17. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

1. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:
   A) FALL PROTECTION
   B) CONFINED SPACE
   C) ELECTRICAL SAFETY
   D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T–MOBILE SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
11. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
3. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
4. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
5. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
6. CABLES SHALL NOT BE ROUTED THROUGH LADDER–STYLE CABLE TRAY RUNGS.
7. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
8. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
9. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
10. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
11. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
13. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN–2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
14. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
15. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
16. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
17. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
18. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
19. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
20. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
21. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
22. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
23. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
24. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
25. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
26. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
27. WIREWAYS SHALL BE EPOXY–COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
28. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
29. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED, OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
30. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
31. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
32. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
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 (UNO). 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 CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
   FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM–A–36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. 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 CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
   CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T–MOBILE ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
2. COORDINATION OF WORK:
   CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
3. CABLE LADDER RACK:
   CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.
4. GROUNDING OF ALL EQUIPMENT AND ANTENNAS IS NOT CONSIDERED PART OF THE SCOPE OF THIS PROJECT AND IS THE RESPONSIBILITY OF THE OWNER AND CONTRACTOR AT THE TIME OF CONSTRUCTION. ALL EQUIPMENT AND ANTENNAS TO BE INSTALLED AND GROUNDED IN ACCORDANCE WITH GOVERNING BUILDING CODE, MANUFACTURER RECOMMENDATIONS AND OWNER SPECIFICATIONS.

T-Mobile
T–MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CT11353C
SKY HILL

CONSTRUCTION DRAWINGS

0	03/27/15	ISSUED AS FINAL
A	03/17/15	ISSUED FOR REVIEW

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG YU
No. 0023222
LICENSED PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50071490
SITE ADDRESS:	

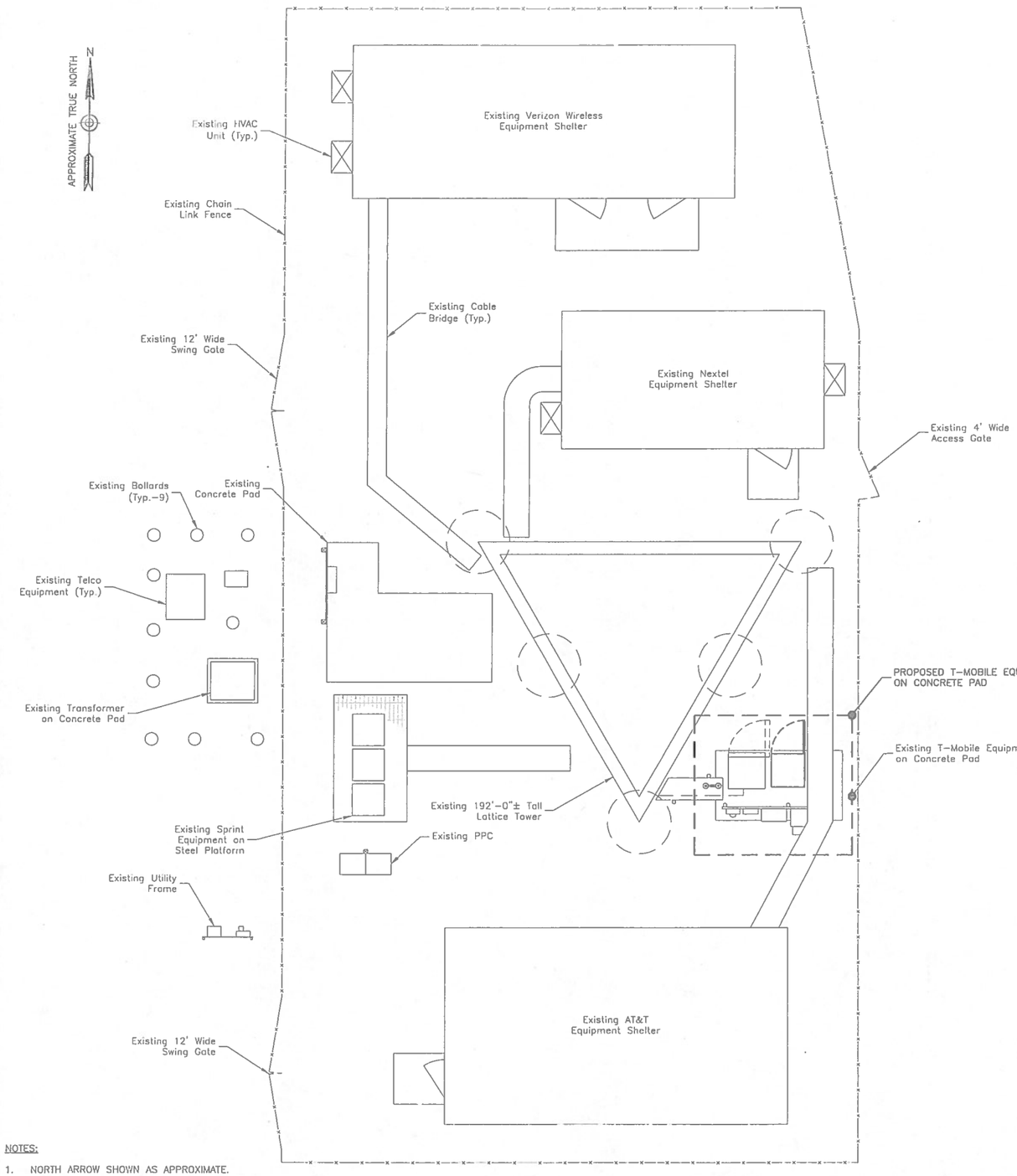
33 JANOWSKI ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G–1



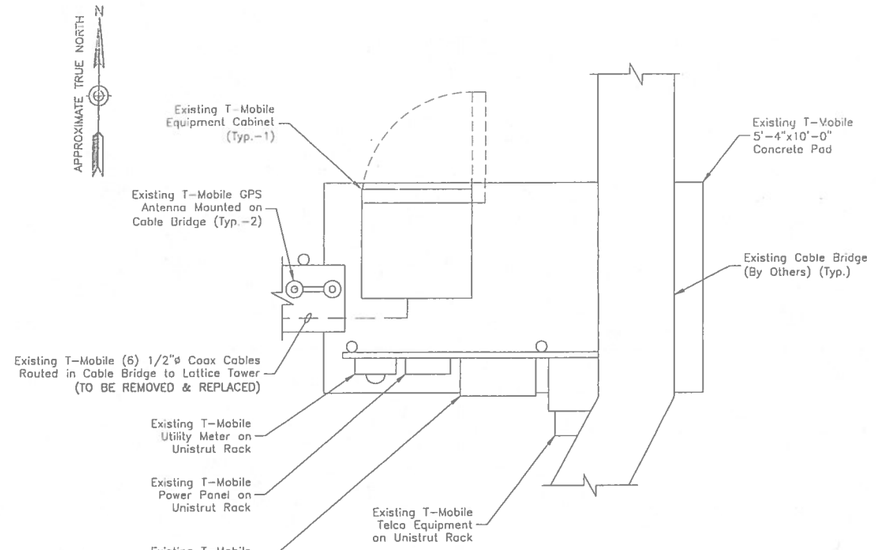
NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS BY B+T GROUP DATED FEBRUARY 26, 2015.

COMPOUND PLAN 1

SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"

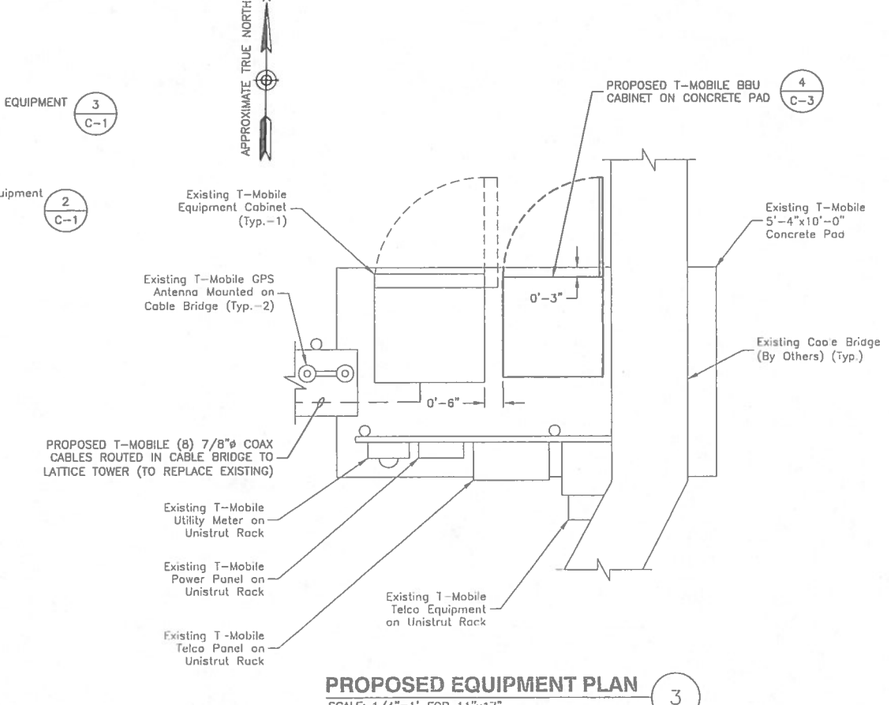
0' 5' 10'



EXISTING EQUIPMENT PLAN 2

SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"

0' 1' 2' 4'



PROPOSED EQUIPMENT PLAN 3

SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"

0' 1' 2' 4'

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4 SYLVAN WAY
PARSIPPANY, NJ 07054

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CT11353C
SKY HILL

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600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG YU
13222
LICENSED
PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
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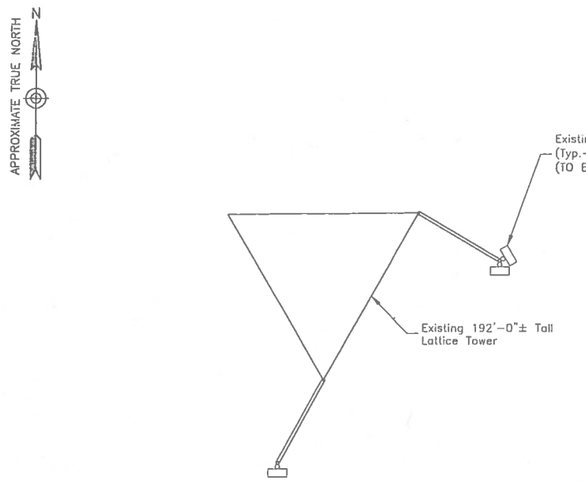
33 JANOWSKI ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE

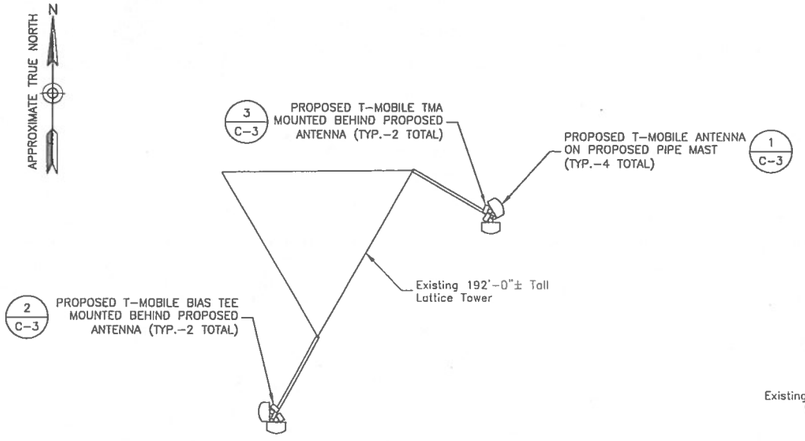
COMPOUND PLAN & EQUIPMENT PLANS

SHEET NUMBER

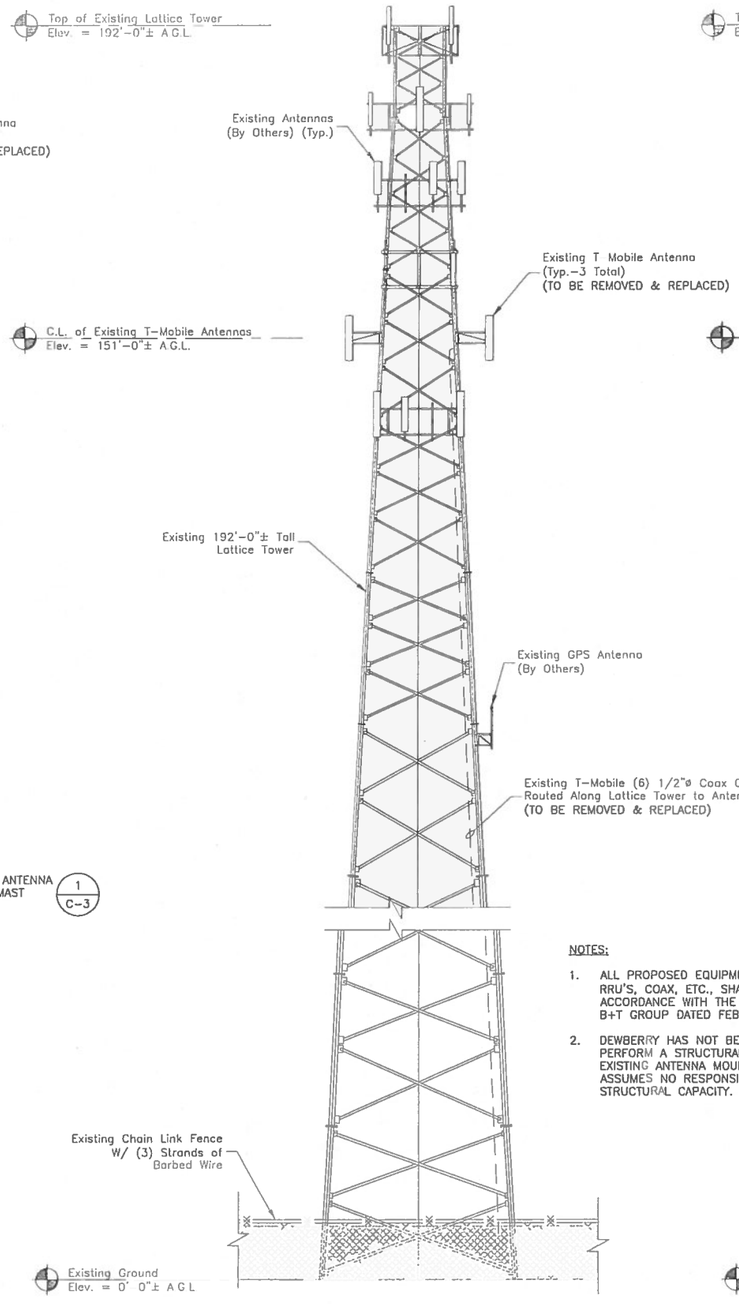
C-1



EXISTING ANTENNA LAYOUT (1)
SCALE: N.T.S.



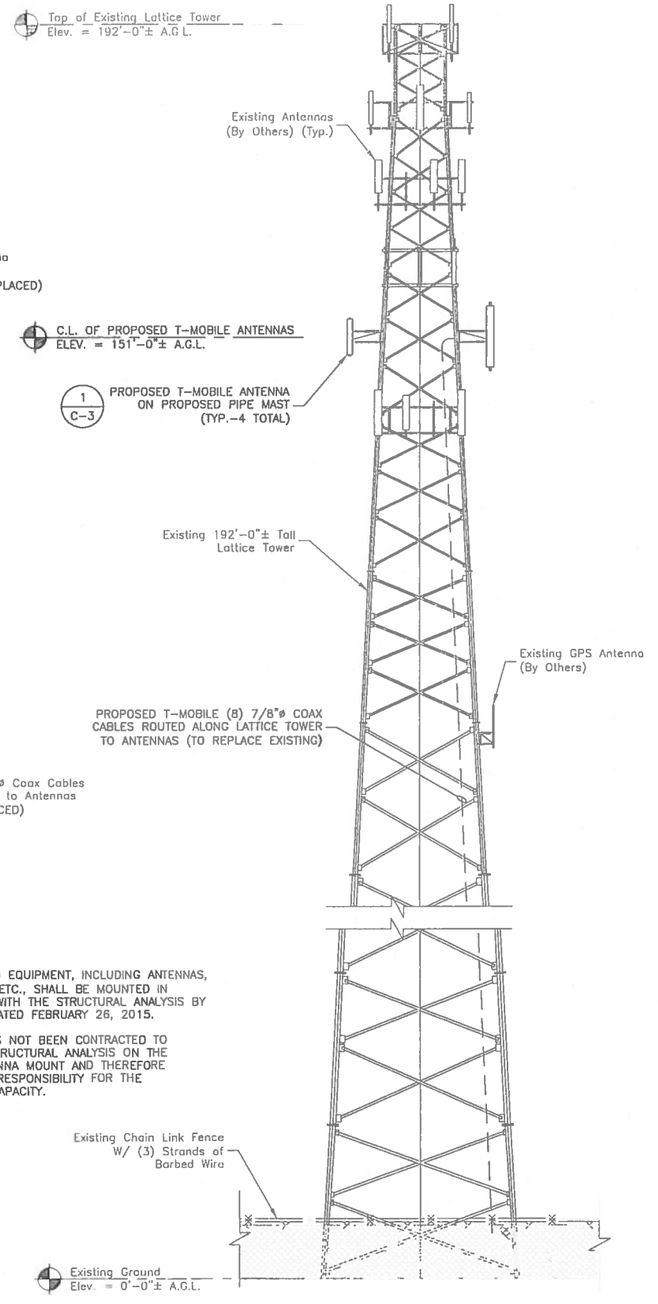
PROPOSED ANTENNA LAYOUT (2)
SCALE: N.T.S.



EXISTING ELEVATION (3)
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"
0' 10' 20'

NOTES:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS BY B+T GROUP DATED FEBRUARY 26, 2015.
2. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.



PROPOSED ELEVATION (4)
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"
0' 10' 20'

T-Mobile
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

CT11353C
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Dewberry
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
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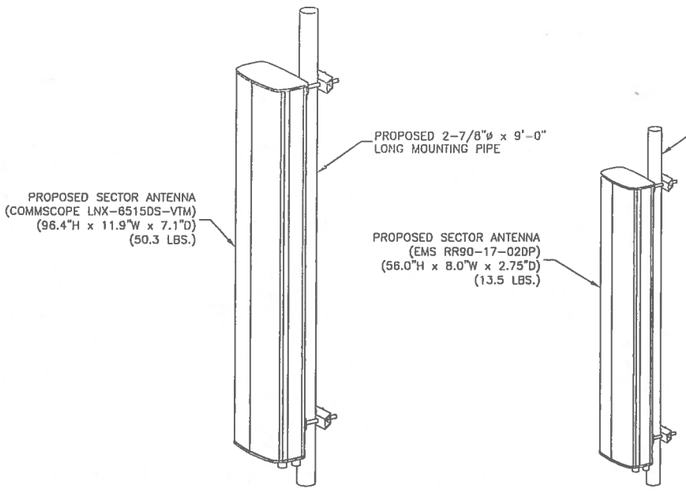
33 JANOWSKI ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

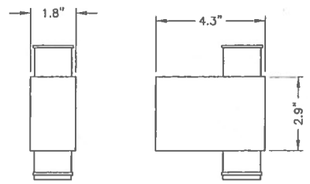
C-2



NOTES:

1. MOUNT ANTENNAS PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND ANTENNAS AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED ANTENNAS WITH THE LATEST RFDS.

ISOMETRIC ANTENNA DETAILS (1)
SCALE: N.T.S.

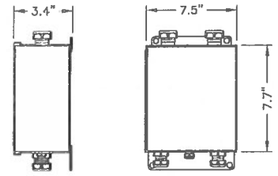


ANDREW ATBT-BOTTOM-24V

NOTES:

1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

BIAS TEE DETAIL (2)
SCALE: N.T.S.

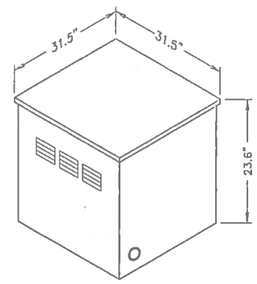


ERICSSON KRY 112 144/1

NOTES:

1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

DUAL-PORT TMA DETAIL (3)
SCALE: N.T.S.



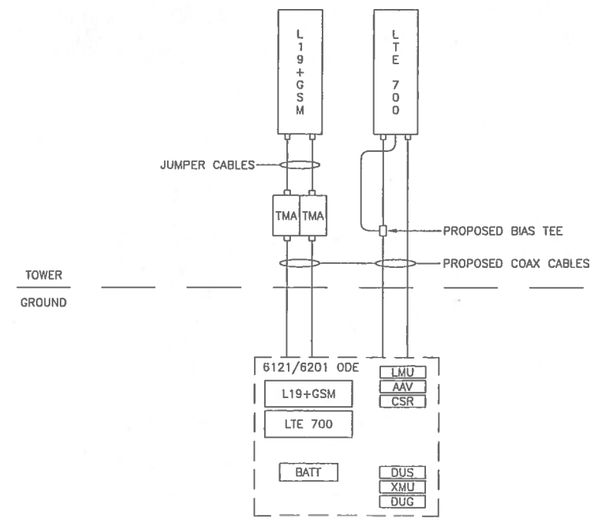
ALCATEL-LUCENT EZBFo BATTERY BACKUP SYSTEM

MATERIAL:	ANCHOR:
CONCRETE	3/8"ø HILTI KWIK BOLT 3 W/2-1/2" MIN. EMBED.
STRUCTURAL STEEL	1/2"ø STRUCTURAL BOLTS

NOTE:

1. CONTRACTOR SHALL ANCHOR CABINET IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

BBU CABINET DETAIL (4)
SCALE: N.T.S.



SITE CONFIGURATION 704G (5)
SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX LENGTH
	EXISTING	PROPOSED	EXISTING	PROPOSED	
ALPHA	EMS RR65-19-02DP	EMS RR90-17-02DP	(2) 1/2"ø	(2) 7/8"ø	201'-0"
BETA	DAPA 79210	COMMSCOPE LNX-6515DS-VTM	(4) 1/2"ø	(4) 7/8"ø	201'-0"
	DAPA 79210	EMS RR90-17-02DP			
GAMMA	–	COMMSCOPE LNX-6515DS-VTM	–	(2) 7/8"ø	201'-0"

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800 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

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WINDHAM COUNTY

SHEET TITLE

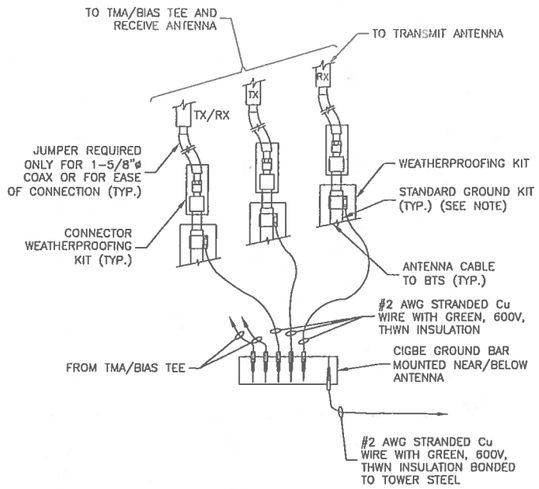
CONSTRUCTION DETAILS

SHEET NUMBER

C-3

GROUNDING NOTES:

1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE ENGINEER FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
3. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY THE ENGINEER IN WRITING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
6. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
7. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO TRANSMISSION EQUIPMENT.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
11. EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
12. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM T-MOBILE MARKET REPRESENTATIVE.
14. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
15. ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
16. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT AND STRUCTURAL STEEL.
17. COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
18. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
19. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
20. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
21. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
22. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.

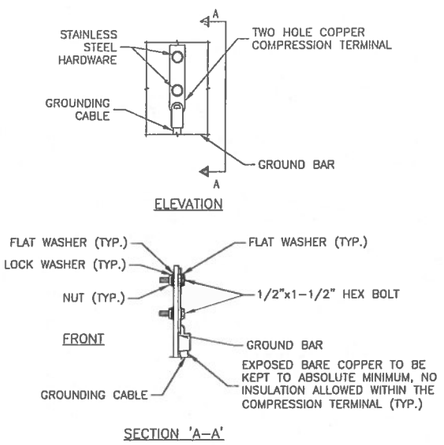


NOTE:

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

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) 1

SCALE: N.T.S.

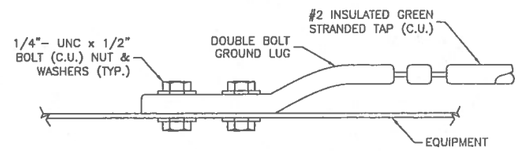


NOTES:

1. DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

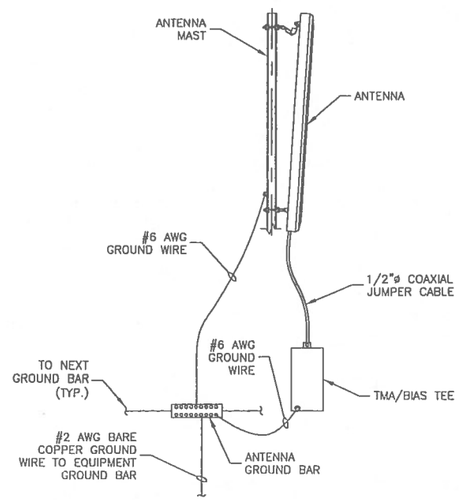
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL 2

SCALE: N.T.S.



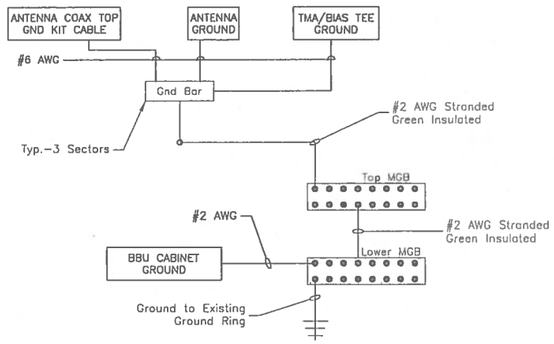
CONNECTION TO EQUIPMENT DETAIL 3

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL 4

SCALE: N.T.S



NOTES:

1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.
3. SCHEMATIC GROUNDING DIAGRAM IS TYPICAL FOR EACH SECTOR.
4. VERIFY EXISTING GROUND SYSTEM IS INSTALLED PER T-MOBILE STANDARDS.

SCHEMATIC GROUNDING DIAGRAM 5

SCALE: N.T.S.

T-Mobile
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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STATE OF CONNECTICUT
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PROFESSIONAL ENGINEER
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33 JANOWSKI ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

February 26, 2015

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6607

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11353C
	Carrier Site Name:	Ashford/ I-84_1
Crown Castle Designation:	**Crown Castle BU Number:**	876345
	Crown Castle Site Name:	SKY HILL
	Crown Castle JDE Job Number:	323532
	Crown Castle Work Order Number:	1012239
	Crown Castle Application Number:	282529 Rev. 2
Engineering Firm Designation:	**B+T Group Project Number:**	77921.002.01
Site Data:	**33 Janowski Road, Ashford, Windham County, CT** **Latitude *41° 57' 7.7"*, Longitude *-72° 11' 43.9"*** **192 Foot - Self Support Tower**	

Dear Charles McGuirt,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 758906, in accordance with application 282529, revision 2.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:
B+T Engineering, Inc.

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

2/26/15

Maher (Mack) Eltarhoni, E.I.
Project Engineer

Chad E. Tuttle, P.E.
President

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 192 ft. Self Support tower designed by Rohn in December of 1996. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	151.0	2	Commscope	ATBT-BOTTOM-24V	8	7/8	--
		2	Commscope	LNX-6515DS-VTM			
		2	Ems Wireless	RR90-17-02DP			
		2	Ericsson	KRY 112 144/1			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
190.0	192.0	6	Decibel	DB980H90E-M	6	1-5/8	1
	190.0	1	--	Sector Mount [SM 505-3]			
180.0	184.0	1	Symmetricom	58532A	12 1	1-5/8 1/2	1
	181.0	3	Antel	BXA-70063/6CF			
		6	Antel	LPA-80080/4CF			
		6	Rfs Celwave	FD9R6004/2C-3L			
		3	Rymsa Wireless	MG D5-800Tx			
	180.0	1	--	Sector Mount [SM 304-3]			
170.0	172.0	9	Allgon	7130.16.33.00	9	1-5/8	2
	170.0	1	--	Sector Mount [SM 502-3]			
160.0	160.0	3	Andrew	HBX-6516DS-VTM	6	1-5/8	1
		1	--	Sector Mount [SM 104-3]			
150.0	151.0	**2**	**Dapa**	**79210**	**6**	**1/2**	**3**
		1	**Ems Wireless**	**RR65-19-02DP**			
	150.0	2	--	Side Arm Mount [SO 301-1]	--	--	1
140.0	141.0	3	Communication Components Inc.	DTMABP7819VG12A	12 2 1	7/8 3/4 3/8	1
		6	Ericsson	RRUS-11			
		3	Kathrein	800 10121			
		4	Kmw Comm.	AM-X-CD-14-65-00T-RET			
		2	Kmw Comm.	AM-X-CD-16-65-00T-RET			
		3	Powerwave Tech.	7020.00			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
140.0	141.0	3	Powerwave Tech.	LGP13519			1
		1	Raycap	DC6-48-60-18-8F			
	140.0	1	--	Sector Mount [SM 504-3]			
98.0	102.0	1	Symmetricom	58532A	--	--	1
	98.0	1	--	Side Arm Mount [SO 301-1]			

Notes:
1) Existing Equipment
2) Abandoned Equipment considered in this analysis
3) Equipment To Be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
189	189	12	Decibel	DB980H90E-M	12	2-1/4
		3	Generic	Mounting Frame		
170	170	12	Swedcom	ALP9212	12	1-5/8
		3	Generic	Mounting Frame		
150	150	12	Swedcom	ALP9212	12	1-5/8
		3	Generic	Mounting Frame		
80	80		Generic	12' Gate Boom	1	7/8
		1	Generic	GPS Antenna		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	T-Mobile Co-locate, Rev# 2	282529	CCI Sites
Tower Manufacturer Drawing	Rohn, File No. 34589PH	1631630	CCI Sites
Foundation Drawing	Rohn, File No. 34589PH	1631622	CCI Sites
Geotech Report	FDH, Project No. 07-11436G	2189896	CCI Sites
Antenna Configuration	Crown CAD Package	Date : 02/19/2015	CCI Sites

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	192 - 180	Leg	ROHN 2.5 STD	1	-5.114	55.077	9.3	Pass
T2	180 - 160	Leg	ROHN 2.5 STD	27	-32.691	50.253	65.1	Pass
T3	160 - 140	Leg	ROHN 3 EH	57	-65.838	83.781	78.6	Pass
T4	140 - 120	Leg	ROHN 4 EH	78	-105.401	139.064	75.8	Pass
T5	120 - 100	Leg	ROHN 5 EH	99	-141.877	206.284	68.8	Pass
T6	100 - 80	Leg	ROHN 6 EHS	120	-173.490	212.190	81.8	Pass
T7	80 - 60	Leg	ROHN 6 EH	135	-208.002	264.317	78.7	Pass
T8	60 - 40	Leg	ROHN 8 EHS	150	-240.515	332.508	72.3	Pass
T9	40 - 20	Leg	ROHN 8 EHS	165	-273.388	332.551	82.2	Pass
T10	20 - 0	Leg	ROHN 8 EHS	180	-316.273	332.857	95.0	Pass
T1	192 - 180	Diagonal	L1 3/4x1 3/4x3/16	11	-1.307	7.856	16.6 24.6 (b)	Pass
T2	180 - 160	Diagonal	L2x2x3/16	36	-4.668	6.868	68.0 77.6 (b)	Pass
T3	160 - 140	Diagonal	L2 1/2x2 1/2x1/4	63	-6.839	10.897	62.8 79.6 (b)	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x1/4	84	-7.981	8.324	95.9	Pass
T5	120 - 100	Diagonal	L3x3x1/4	105	-8.303	11.546	71.9	Pass
T6	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	126	-9.601	12.595	76.2 78.4 (b)	Pass
T7	80 - 60	Diagonal	L4x4x1/4	141	-10.430	15.987	65.2 84.7 (b)	Pass
T8	60 - 40	Diagonal	L4x4x5/16	156	-10.042	16.507	60.8 65.9 (b)	Pass
T9	40 - 20	Diagonal	L4x4x5/16	171	-11.859	14.230	83.3	Pass
T10	20 - 0	Diagonal	L4x4x3/8	186	-12.511	14.549	86.0	Pass
T1	192 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-0.076	2.721	2.8	Pass
T2	180 - 160	Top Girt	L2x2x3/16	29	-0.834	4.122	20.2	Pass
							Summary	
						Leg (T10)	95.0	Pass
						Diagonal (T4)	95.9	Pass
						Top Girt (T2)	20.2	Pass
						Bolt Checks	92.9	Pass
						RATING =	95.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
--	Anchor Rods	Base	61.7	Pass
1	Base Foundation Soil Interaction	Base	64.8	Pass

Structure Rating (max from all components) =	95.9%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

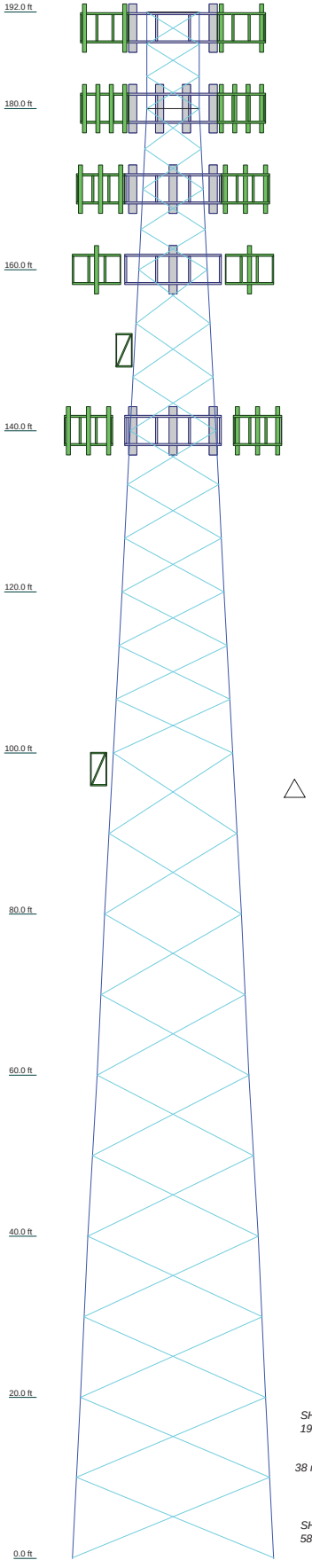
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10		
Legs		ROHN 2.5 STD		ROHN 3 EH	ROHN 4 EH	ROHN 5 EH	ROHN 6 EHS	ROHN 6 EH		ROHN 8 EHS			
Leg Grade		A572-50											
Diagonals		L1 3/4x4 3/4x3/16	L2x2x3/16	L2 1/2x2 1/2x1/4		L3x3x1/4	L3 1/2x3 1/2x1/4	L4x4x1/4		L4x4x5/16	L4x4x3/8		
Diagonal Grade		A36						A572-50					
Top Girts		L1 3/4x4 3/4x3/16	L2x2x3/16				N.A.						
Face Width (ft)	25.05	6.58		8.54	10.61	12.74	14.83	16.92	18.88	21.13	23.05		
# Panels @ (ft)		3 @ 4	4 @ 5		9 @ 6.66667				8 @ 10		2 @ 9.95833		
Weight (K)	28.4	0.6	1.0	1.5	2.0	2.7	2.8	3.5	4.4	4.6	5.3		



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980H90E-M w/ Mount Pipe (E)	190	RR90-17-02DP w/ Mount Pipe (P)	150
(2) DB980H90E-M w/ Mount Pipe (E)	190	LNX-6515DS-VTM w/ Mount Pipe (P)	150
(2) DB980H90E-M w/ Mount Pipe (E)	190	LNX-6515DS-VTM w/ Mount Pipe (P)	150
Sector Mount [SM 505-3] (E)	190	KRY 112 144/1 (P)	150
(2) LPA-80080/4CF (E)	180	KRY 112 144/1 (P)	150
(2) LPA-80080/4CF (E)	180	ATBT-BOTTOM-24V (P)	150
(2) LPA-80080/4CF (E)	180	ATBT-BOTTOM-24V (P)	150
BXA-70063/6CF (E)	180	Side Arm Mount [SO 301-1] (E)	150
BXA-70063/6CF (E)	180	Side Arm Mount [SO 301-1] (E)	150
BXA-70063/6CF (E)	180	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	140
MG D5-800Tx (E)	180	(2) AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	140
MG D5-800Tx (E)	180	(2) AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	140
MG D5-800Tx (E)	180	800 10121 w/ Mount Pipe (E)	140
(2) FD9R6004/2C-3L (E)	180	800 10121 w/ Mount Pipe (E)	140
(2) FD9R6004/2C-3L (E)	180	800 10121 w/ Mount Pipe (E)	140
(2) FD9R6004/2C-3L (E)	180	(2) RRUS-11 (E)	140
58532A (E)	180	(2) RRUS-11 (E)	140
Sector Mount [SM 304-3] (E-4Mount Pipes included)	180	(2) RRUS-11 (E)	140
(3) 7130.16.33.00 w/ Mount Pipe (AB)	170	7020.00 (E)	140
(3) 7130.16.33.00 w/ Mount Pipe (AB)	170	7020.00 (E)	140
(3) 7130.16.33.00 w/ Mount Pipe (AB)	170	7020.00 (E)	140
Sector Mount [SM 502-3] (AB)	170	LGP13519 (E)	140
HBX-6516DS-VTM w/ Mount Pipe (E)	160	LGP13519 (E)	140
HBX-6516DS-VTM w/ Mount Pipe (E)	160	LGP13519 (E)	140
HBX-6516DS-VTM w/ Mount Pipe (E)	160	DTMABP7819VG12A (E)	140
6' x 2" Mount Pipe (E-Per photo)	160	DTMABP7819VG12A (E)	140
6' x 2" Mount Pipe (E-Per photo)	160	DTMABP7819VG12A (E)	140
6' x 2" Mount Pipe (E-Per photo)	160	DC6-48-60-18-8F (E)	140
Sector Mount [SM 104-3] (E)	160	Sector Mount [SM 504-3] (E)	140
RR90-17-02DP w/ Mount Pipe (P)	150	58532A (E)	98
		Side Arm Mount [SO 301-1] (E)	98

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 95.9%

MAX. CORNER REACTIONS AT BASE:
DOWN: 315 K
SHEAR: 36 K

UPLIFT: -265 K
SHEAR: 31 K

AXIAL
126 K

SHEAR
19 K

MOMENT
2190 kip-ft

TORQUE 12 kip-ft
38 mph WIND - 1.000 in ICE

AXIAL
53 K

SHEAR
58 K

MOMENT
6446 kip-ft

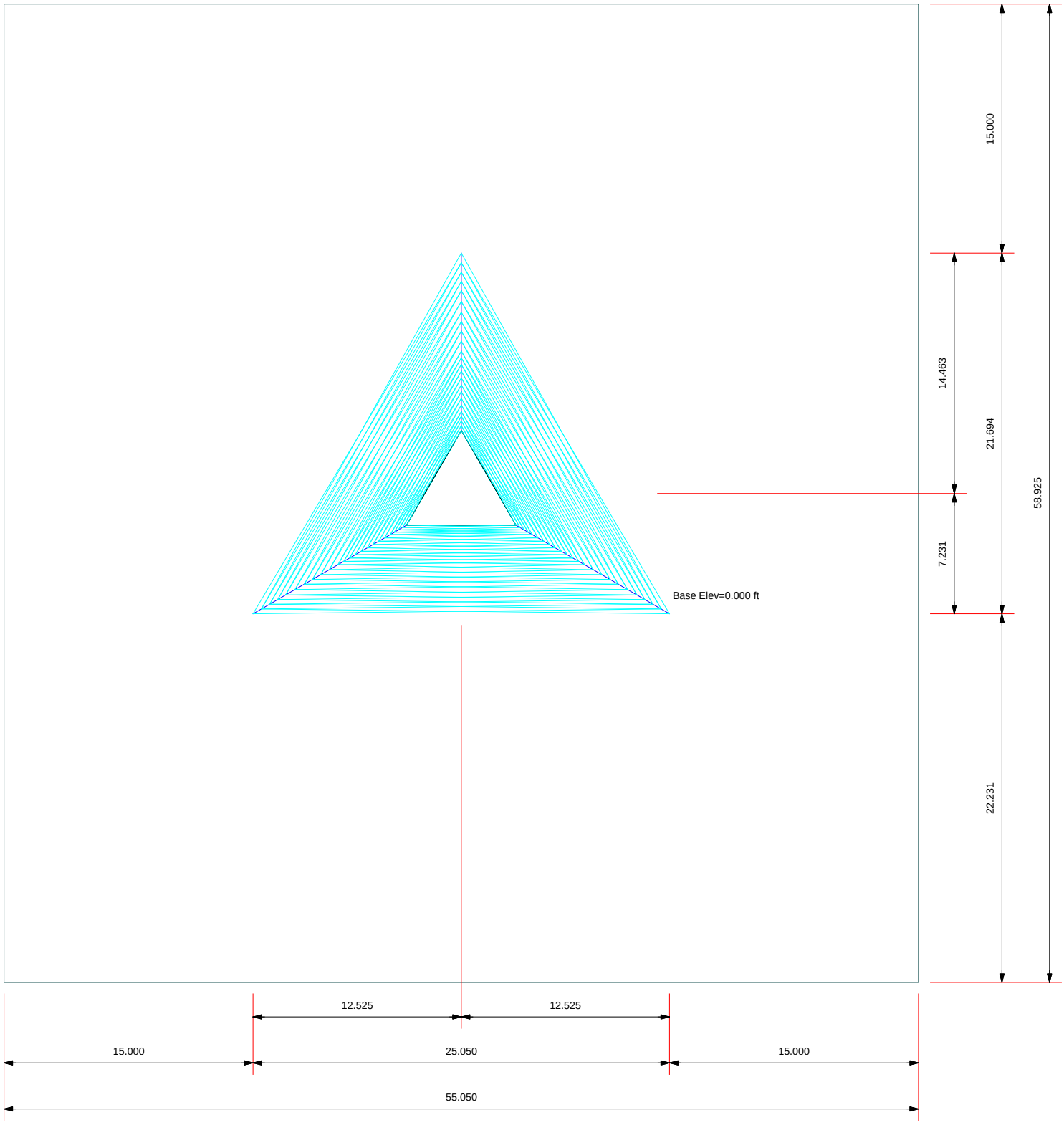
TORQUE 44 kip-ft
REACTIONS - 85 mph WIND

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 77921.002.01 - SKY HILL, CT (BU# 876345)
Project:
Client: Crown Castle | Drawn by: M. Eltarhoni | App'd:
Code: TIA/EIA-222-F | Date: 02/25/15 | Scale: NTS
Path: S:\Projects\Crown Castle\77921_876345_Sky Hill\Engineering\RISA\77921_002_01_SKY HILL_CT.eti | Dwg No. E-1

Plot Plan

Total Area - 0.07 Acres



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1717 S. Boulder, Suite 300
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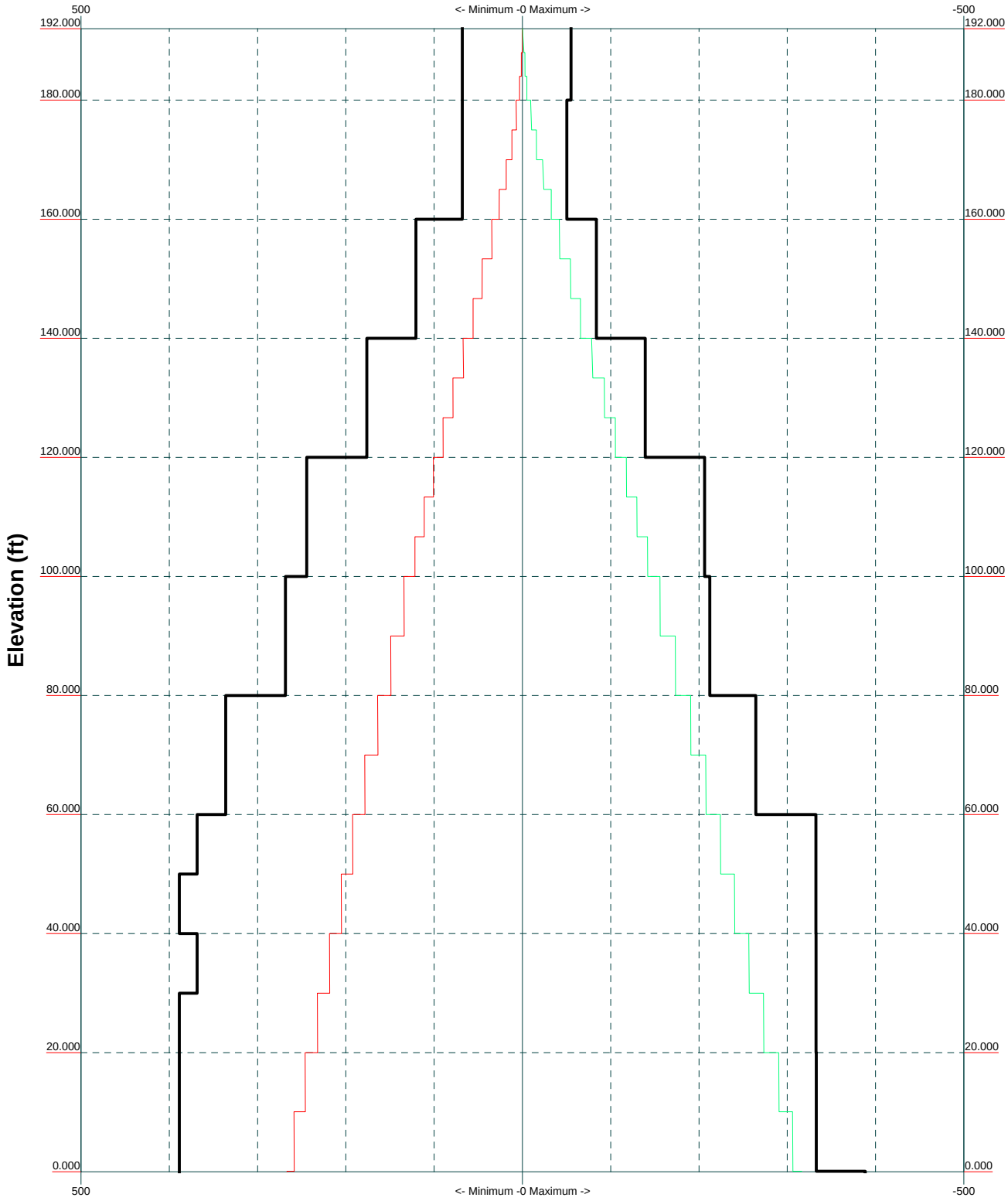
Code: TIA/EIA-222-F	Date: 02/25/15	Scale: NTS
Path: S:\Projects\Crown Castle\77921_876345_Sky Hill\Engineering\RISA\77921_002_01_SKY HILL_CT.en		Dwg No. E-2

TIA/EIA-222-F - 85 mph/38 mph 1.000 in Ice

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



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***77921.002.01 - SKY HILL, CT (BU# 876345)***		
Project:		
Client: Crown Castle	Drawn by: M. Eltarhoni	App'd:
Code: TIA/EIA-222-F	Date: 02/25/15	Scale: NTS
Path: S:\Projects\Crown Castle\77921_876345_Sky Hill\Engineering\RISA\77921_002_01_SKY HILL_CT.en		Dwg No. E-3

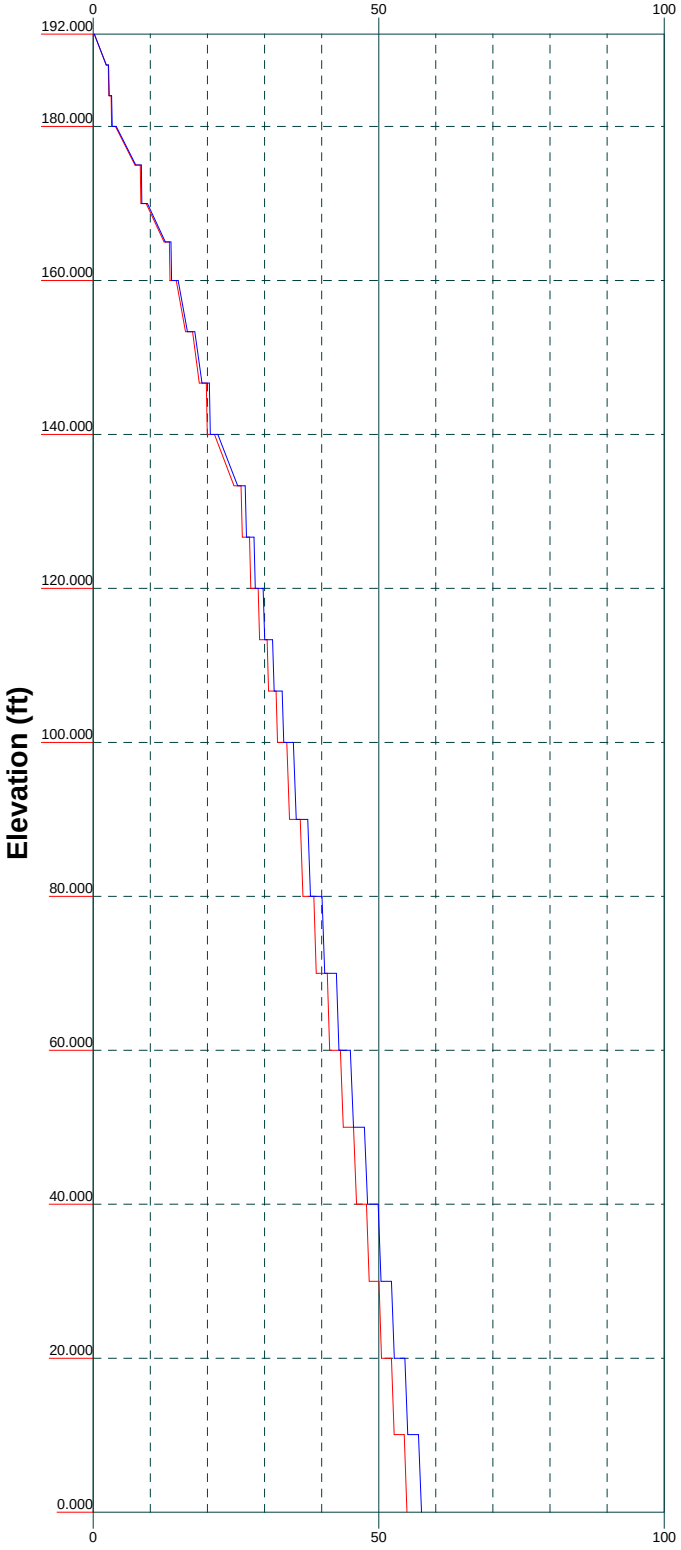
TIA/EIA-222-F - 85 mph/38 mph 1.000 in Ice

Vx Vz

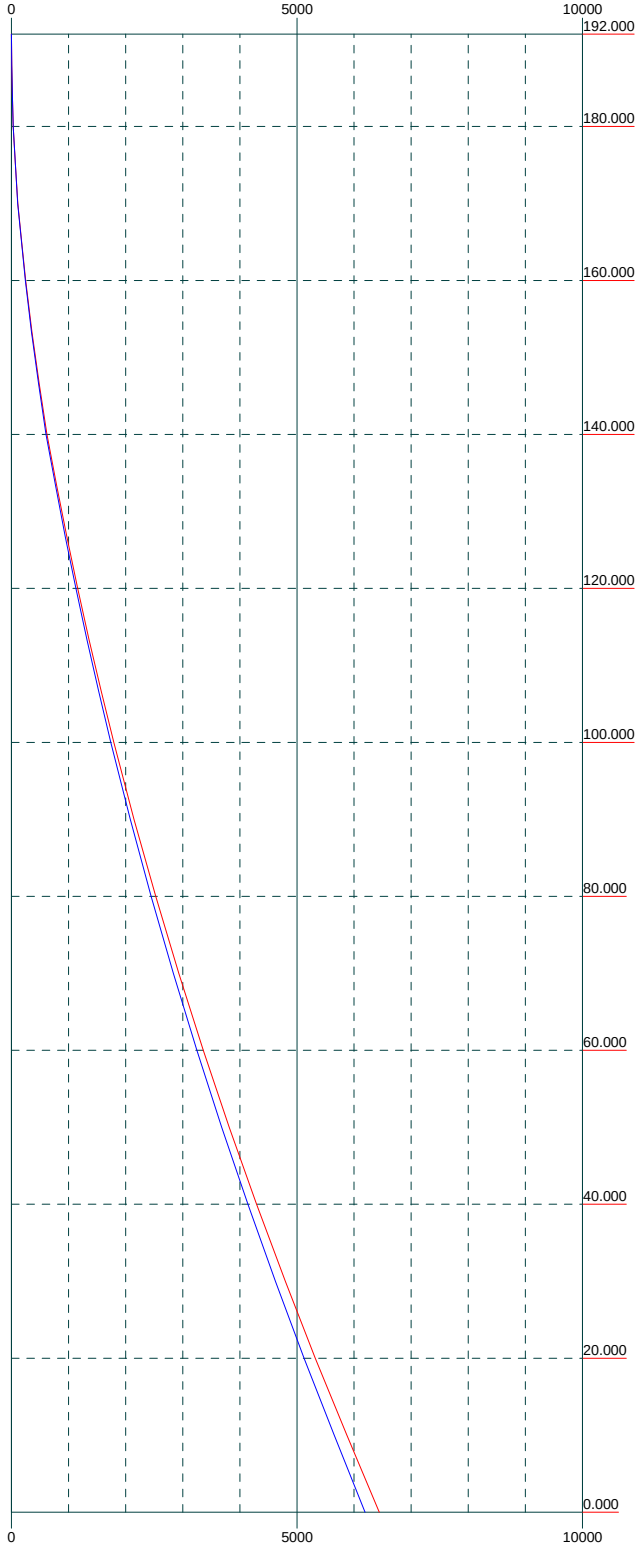
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)

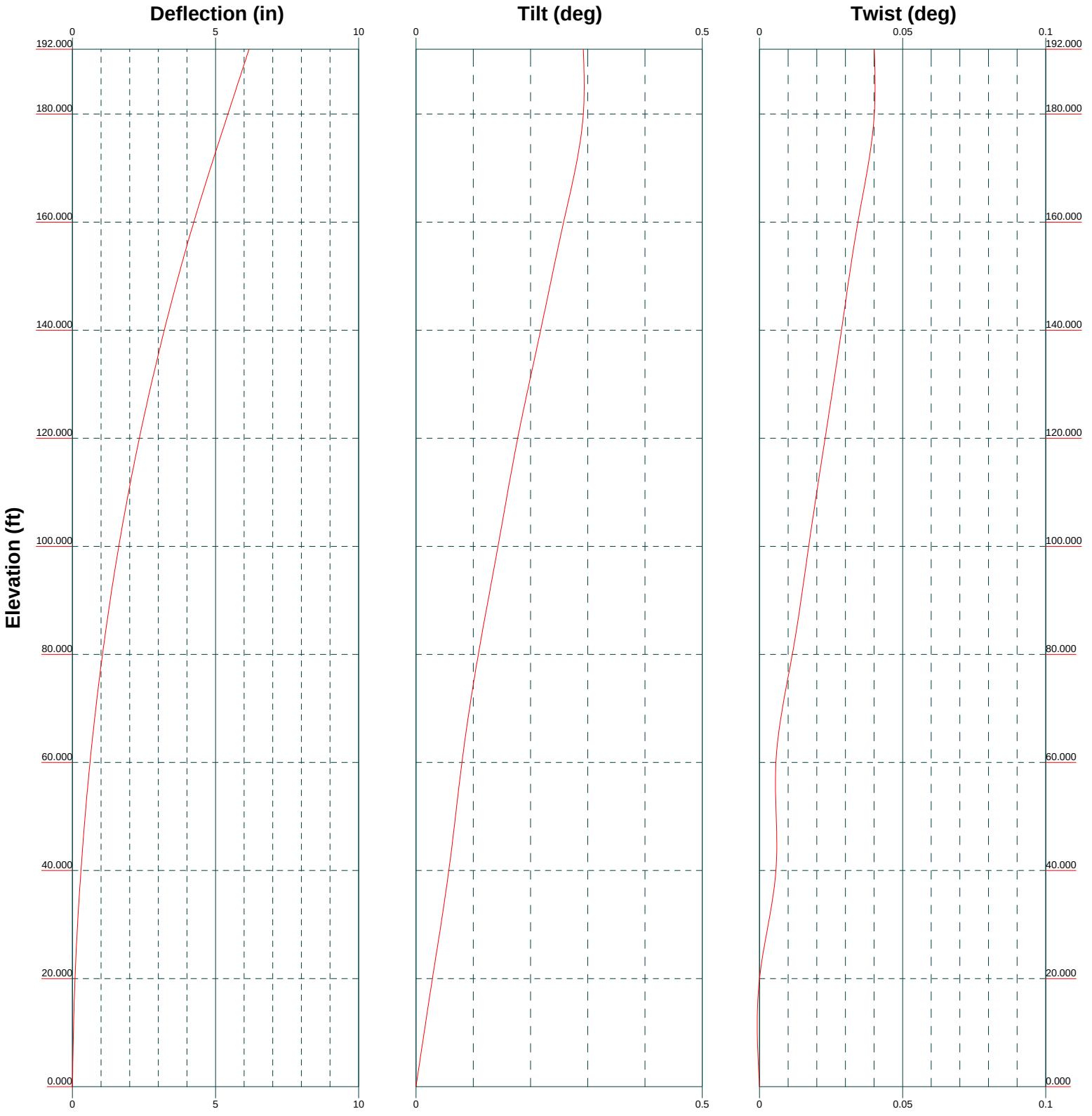


B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: *77921.002.01 - SKY HILL, CT (BU# 876345)*		
Project:		
Client: Crown Castle	Drawn by: M. Eltarhoni	App'd:
Code: TIA/EIA-222-F	Date: 02/25/15	Scale: NTS
Path: S:\Projects\Crown Castle\77921_876345_Sky Hill\Engineering\RISA\77921_002_01_SKY HILL_CT.en		Dwg No. E-4

TIA/EIA-222-F - Service - 50 mph

Maximum Values



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

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Project:			
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Code: TIA/EIA-222-F	Date: 02/25/15	Scale: NTS	
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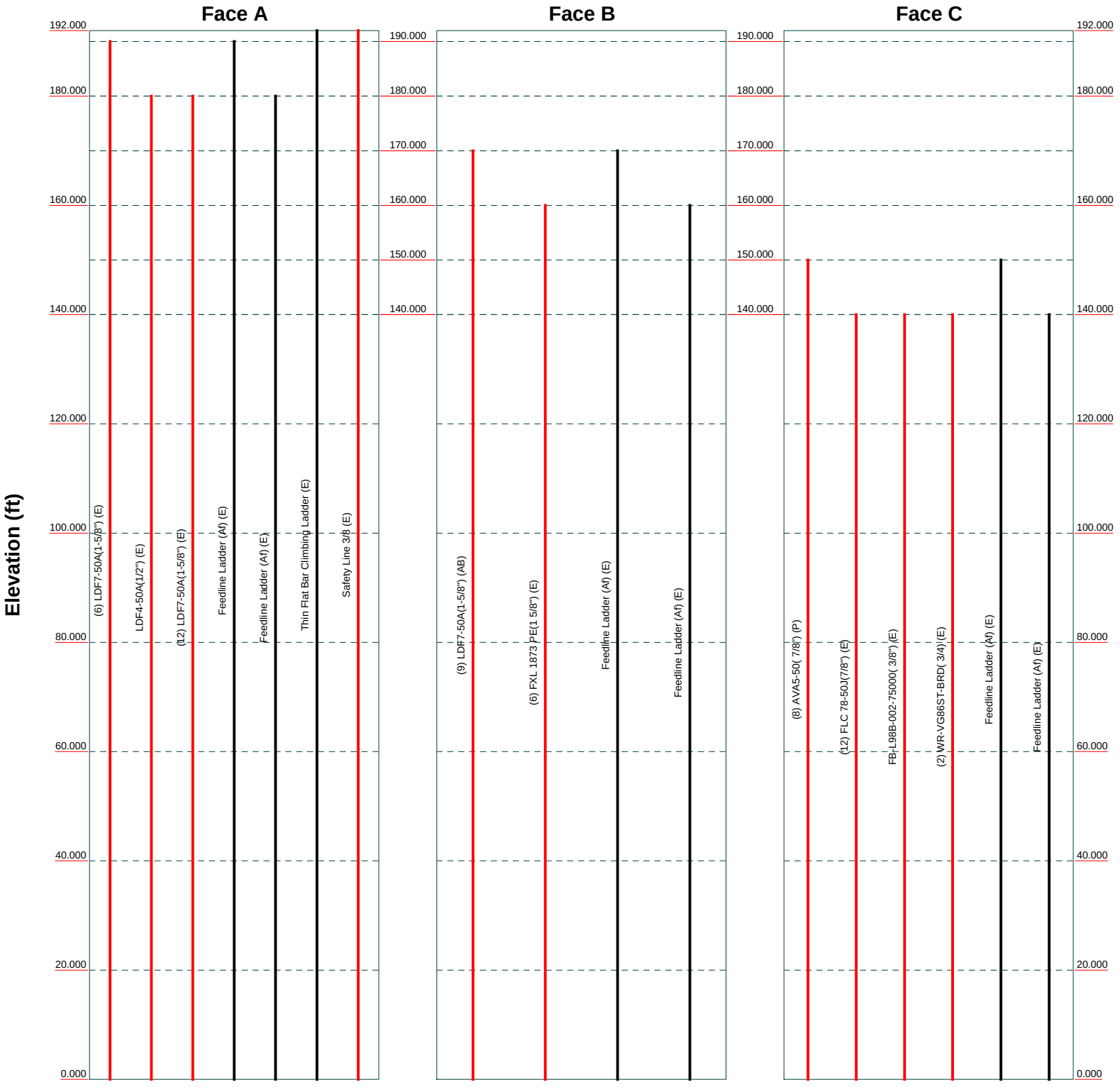
Feed Line Distribution Chart
0' - 192'

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



B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

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Project:		
Client: Crown Castle	Drawn by: M. Eltarhoni	App'd:
Code: TIA/EIA-222-F	Date: 02/25/15	Scale: NTS
Path: S:\Projects\Crown Castle\77921_876345_Sky Hill\Engineering\RISA\77921_002_01_SKY HILL_CT.en		Dwg No. E-7

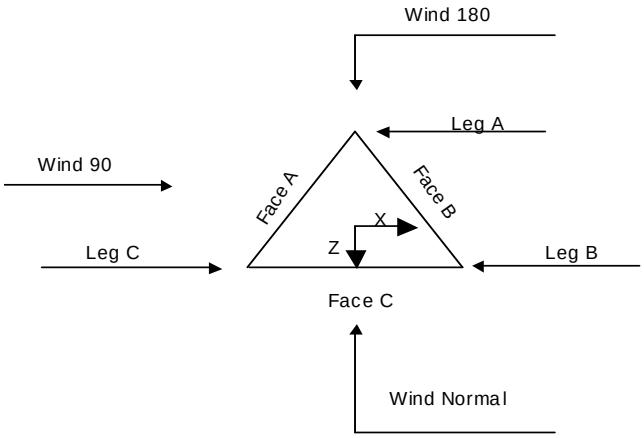
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 192.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 6.580 ft at the top and 25.050 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Windham County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	192.000-180.000			6.580	1	12.000
T2	180.000-160.000			6.580	1	20.000
T3	160.000-140.000			8.540	1	20.000
T4	140.000-120.000			10.610	1	20.000
T5	120.000-100.000			12.740	1	20.000
T6	100.000-80.000			14.830	1	20.000
T7	80.000-60.000			16.920	1	20.000
T8	60.000-40.000			18.880	1	20.000
T9	40.000-20.000			21.130	1	20.000
T10	20.000-0.000			23.050	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	192.000-180.000	4.000	X Brace	No	No	0.000	0.000
T2	180.000-160.000	5.000	X Brace	No	No	0.000	0.000
T3	160.000-140.000	6.667	X Brace	No	No	0.000	0.000
T4	140.000-120.000	6.667	X Brace	No	No	0.000	0.000
T5	120.000-100.000	6.667	X Brace	No	No	0.000	0.000

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
T6	100.000-80.000	10.000	X Brace	No	No	0.000	0.000
T7	80.000-60.000	10.000	X Brace	No	No	0.000	0.000
T8	60.000-40.000	10.000	X Brace	No	No	0.000	0.000
T9	40.000-20.000	10.000	X Brace	No	No	0.000	0.000
T10	20.000-0.000	9.958	X Brace	No	No	0.000	1.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 192.000-180.000	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.000-160.000	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T3 160.000-140.000	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T4 140.000-120.000	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T5 120.000-100.000	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T6 100.000-80.000	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T7 80.000-60.000	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A572-50 (50 ksi)
T8 60.000-40.000	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A572-50 (50 ksi)
T9 40.000-20.000	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A572-50 (50 ksi)
T10 20.000-0.000	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L4x4x3/8	A572-50 (50 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 192.000-180.000	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 180.000-160.000	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 192.000-180.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T2 180.000-160.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T3 160.000-140.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T4 140.000-120.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T5 120.000-100.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T6 100.000-80.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T7 80.000-60.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T8 60.000-40.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T9 40.000-20.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000
T10 20.000-0.000	0.000	0.000	A36 (36 ksi)	1.05	1	1.05	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 192.000-180.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.000-160.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 160.000-140.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 140.000-120.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 120.000-100.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 100.000-80.00	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	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
0															
T7	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
80.000-60.000				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
60.000-40.000				1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
40.000-20.000				1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
20.000-0.000				1	1	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
192.000-180.000														
T2	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
180.000-160.000														
T3	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
160.000-140.000														
T4	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
140.000-120.000														
T5	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
120.000-100.000														
T6	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
100.000-80.000														
T7	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
80.000-60.000														
T8	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
60.000-40.000														
T9	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
40.000-20.000														
T10	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
20.000-0.000														

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 192.000-180.000	Flange	0.625 A325N	4	0.625 A325N	1	0.625 A325N	1	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T2 180.000-160.000	Flange	0.625 A325N	4	0.625 A325N	1	0.625 A325N	1	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T3 160.000-140.000	Flange	0.875 A325N	4	0.625 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T4 140.000-120.000	Flange	1.000 A325N	4	0.625 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T5 120.000-100.000	Flange	1.000 A325N	6	0.750 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T6 100.000-80.000	Flange	1.000 A325N	6	0.750 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T7 80.000-60.000	Flange	1.000 A325N	8	0.750 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T8 60.000-40.000	Flange	1.000 A325N	8	0.750 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T9 40.000-20.000	Flange	1.000 A325N	8	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 A325X	0
T10 20.000-0.000	Flange	1.000 A354-BC	10	0.750 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325X	0	0.625 A325N	0	0.625 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 klf
Face A LDF7-50A(1-5/8") (E) *-*	A	Yes	Ar (CfAe)	190.000 - 0.000	0.000	-0.45	6	6	0.850 0.750	1.980		0.001
LDF4-50A(1/2") (E)	A	Yes	Ar (CfAe)	180.000 - 0.000	0.000	0.47	1	1	0.850 0.750	0.630		0.000
LDF7-50A(1-5/8") (E) *-*	A	Yes	Ar (CfAe)	180.000 - 0.000	0.000	0.41	12	12	0.850 0.750	1.980		0.001
Face B *-*												
LDF7-50A(1-5/8") (AB) *-*	B	Yes	Ar (CfAe)	170.000 - 0.000	0.000	-0.4	9	9	0.850 75.000	1.980		0.001
FXL 1873	B	Yes	Ar (CfAe)	160.000 - 0.000	-2.000	0.45	6	3	0.850	1.980		0.000

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 klf
PE(1 5/8") (E) *-*									0.750			
Face C AVA5-50(7/8") (P) *-*	C	Yes	Ar (CfAe)	150.000 - 0.000	0.000	0.4	8	8	1.102	1.102		0.000
FLC 78-50J(7/8") (E)	C	Yes	Ar (CfAe)	140.000 - 0.000	0.000	-0.45	12	12	0.850 0.750	1.112		0.000
FB-L98B-002- 75000(3/8") (E)	C	Yes	Ar (CfAe)	140.000 - 0.000	1.500	-0.46	1	1	0.394	0.394		0.000
WR-VG86ST- BRD(3/4) (E) *-*	C	Yes	Ar (CfAe)	140.000 - 0.000	1.500	-0.47	2	2	0.774	0.774		0.001
Feedline Ladder (Af) (E)	A	Yes	Af (CfAe)	190.000 - 0.000	0.000	-0.45	1	1	3.000	3.000	12.000	0.008
Feedline Ladder (Af) (E) ***	A	Yes	Af (CfAe)	180.000 - 0.000	0.000	0.41	1	1	3.000	3.000	12.000	0.008
Feedline Ladder (Af) (E)	B	Yes	Af (CfAe)	170.000 - 0.000	0.000	-0.4	1	1	3.000	3.000	12.000	0.008
Feedline Ladder (Af) (E) ***	B	Yes	Af (CfAe)	160.000 - 0.000	-1.000	0.45	1	1	3.000	3.000	12.000	0.008
Feedline Ladder (Af) (E)	C	Yes	Af (CfAe)	150.000 - 0.000	0.000	0.4	1	1	3.000	3.000	12.000	0.008
Feedline Ladder (Af) (E) *-*	C	Yes	Af (CfAe)	140.000 - 0.000	0.000	-0.45	1	1	3.000	3.000	12.000	0.008
Thin Flat Bar Climbing Ladder (E)	A	Yes	Af (CfAe)	192.000 - 0.000	-6.000	0.45	1	1	2.000	2.000	8.000	0.004
Safety Line 3/8 (E) *-*	A	Yes	Ar (CfAe)	192.000 - 0.000	-6.000	0.45	1	1	0.375	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
-							
Face B							
-							
-							

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	192.000-180.000	A	10.275	4.500	0.000	0.000	0.184
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
T2	180.000-160.000	A	61.075	13.333	0.000	0.000	0.719
		B	14.850	2.500	0.000	0.000	0.158
		C	0.000	0.000	0.000	0.000	0.000
T3	160.000-140.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	7.347	2.500	0.000	0.000	0.108
T4	140.000-120.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505
T5	120.000-100.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505
T6	100.000-80.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505
T7	80.000-60.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505
T8	60.000-40.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505
T9	40.000-20.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505
T10	20.000-0.000	A	61.075	13.333	0.000	0.000	0.719
		B	39.600	10.000	0.000	0.000	0.484
		C	40.169	10.000	0.000	0.000	0.505

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	192.000-180.000	A	1.231	6.537	19.300	0.000	0.000	0.598
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
T2	180.000-160.000	A	1.217	24.507	96.916	0.000	0.000	2.617
		B		3.679	22.719	0.000	0.000	0.577
		C		0.000	0.000	0.000	0.000	0.000

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
T3	160.000-140.000	A	1.199	24.265	96.795	0.000	0.000	2.589
		B		14.595	62.497	0.000	0.000	1.845
		C		2.917	16.689	0.000	0.000	0.403
T4	140.000-120.000	A	1.179	23.993	96.659	0.000	0.000	2.558
		B		14.459	62.406	0.000	0.000	1.824
		C		21.354	79.503	0.000	0.000	1.936
T5	120.000-100.000	A	1.155	23.681	96.503	0.000	0.000	2.523
		B		14.303	62.302	0.000	0.000	1.800
		C		21.042	79.399	0.000	0.000	1.908
T6	100.000-80.000	A	1.128	23.314	96.320	0.000	0.000	2.482
		B		14.120	62.180	0.000	0.000	1.772
		C		20.675	79.276	0.000	0.000	1.874
T7	80.000-60.000	A	1.094	22.867	96.096	0.000	0.000	2.432
		B		13.896	62.031	0.000	0.000	1.739
		C		20.229	79.127	0.000	0.000	1.833
T8	60.000-40.000	A	1.051	22.290	95.808	0.000	0.000	2.368
		B		13.608	61.838	0.000	0.000	1.695
		C		19.651	78.935	0.000	0.000	1.781
T9	40.000-20.000	A	1.000	21.608	95.467	0.000	0.000	2.293
		B		13.267	61.611	0.000	0.000	1.645
		C		18.970	78.708	0.000	0.000	1.720
T10	20.000-0.000	A	1.000	21.608	95.467	0.000	0.000	2.293
		B		13.267	61.611	0.000	0.000	1.645
		C		18.970	78.708	0.000	0.000	1.720

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	192.000-180.000	A	0.000	3.749	1.440	2.665
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	180.000-160.000	A	0.000	13.509	6.580	11.096
		B	0.000	2.915	1.534	2.394
		C	0.000	0.000	0.000	0.000
T3	160.000-140.000	A	0.000	9.151	5.675	9.538
		B	0.000	5.836	3.783	6.083
		C	0.000	1.483	0.751	1.546
T4	140.000-120.000	A	0.000	8.463	5.360	8.973
		B	0.000	5.399	3.573	5.725
		C	0.000	7.029	3.614	7.453
T5	120.000-100.000	A	0.000	7.963	6.202	10.338
		B	0.000	5.083	4.134	6.599
		C	0.000	6.613	4.181	8.585
T6	100.000-80.000	A	0.000	5.485	5.132	8.510
		B	0.000	3.503	3.421	5.435
		C	0.000	4.554	3.460	7.066
T7	80.000-60.000	A	0.000	5.125	5.683	9.365
		B	0.000	3.275	3.789	5.985
		C	0.000	4.254	3.832	7.775
T8	60.000-40.000	A	0.000	4.764	5.547	9.065
		B	0.000	3.047	3.698	5.798
		C	0.000	3.954	3.740	7.523
T9	40.000-20.000	A	0.000	4.406	5.446	8.812
		B	0.000	2.821	3.630	5.643
		C	0.000	3.656	3.672	7.311

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T10	20.000-0.000	A	0.000	4.345	5.370	8.689
		B	0.000	2.782	3.579	5.564
		C	0.000	3.605	3.620	7.209

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	192.000-180.000	-7.819	2.367	-3.804	0.198
T2	180.000-160.000	-7.178	-15.335	-4.424	-11.733
T3	160.000-140.000	-4.976	-15.364	-4.263	-12.766
T4	140.000-120.000	0.286	-8.904	0.457	-6.861
T5	120.000-100.000	0.321	-9.397	0.484	-7.473
T6	100.000-80.000	0.379	-10.634	0.607	-8.806
T7	80.000-60.000	0.415	-11.306	0.637	-9.509
T8	60.000-40.000	0.438	-11.630	0.660	-10.026
T9	40.000-20.000	0.482	-12.569	0.698	-10.883
T10	20.000-0.000	0.522	-13.404	0.749	-11.611

Discrete Tower Loads

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
(2) DB980H90E-M w/ Mount Pipe (E)	A	From Leg	4.000 0.000 2.000	0.000	190.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.036 4.499 4.947 5.870 8.046	3.619 4.481 5.219 6.744 9.995	0.030 0.066 0.109 0.216 0.549
(2) DB980H90E-M w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000	0.000	190.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.036 4.499 4.947 5.870 8.046	3.619 4.481 5.219 6.744 9.995	0.030 0.066 0.109 0.216 0.549
(2) DB980H90E-M w/ Mount Pipe (E)	C	From Leg	4.000 0.000 2.000	0.000	190.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.036 4.499 4.947 5.870 8.046	3.619 4.481 5.219 6.744 9.995	0.030 0.066 0.109 0.216 0.549
Sector Mount [SM 505-3] (E)	C	None		0.000	190.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.860 49.790 64.720 94.580 154.300	34.860 49.790 64.720 94.580 154.300	1.725 2.317 2.909 4.092 6.458
-									
(2) LPA-80080/4CF (E)	A	From Leg	4.000 0.000	0.000	180.000	No Ice 1/2" Ice	2.619 2.922	6.057 6.453	0.012 0.045

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
			1.000			1" Ice	3.232	6.858	0.083
						2" Ice	3.959	7.692	0.172
						4" Ice	5.533	9.466	0.413
(2) LPA-80080/4CF	B	From Leg	4.000	0.000	180.000	No Ice	2.619	6.057	0.012
(E)			0.000			1/2" Ice	2.922	6.453	0.045
			1.000			1" Ice	3.232	6.858	0.083
						2" Ice	3.959	7.692	0.172
						4" Ice	5.533	9.466	0.413
(2) LPA-80080/4CF	C	From Leg	4.000	0.000	180.000	No Ice	2.619	6.057	0.012
(E)			0.000			1/2" Ice	2.922	6.453	0.045
			1.000			1" Ice	3.232	6.858	0.083
						2" Ice	3.959	7.692	0.172
						4" Ice	5.533	9.466	0.413
BXA-70063/6CF	A	From Leg	4.000	0.000	180.000	No Ice	7.742	4.050	0.015
(E)			0.000			1/2" Ice	8.280	4.487	0.057
			1.000			1" Ice	8.826	4.931	0.105
						2" Ice	9.945	5.842	0.219
						4" Ice	12.286	7.751	0.526
BXA-70063/6CF	B	From Leg	4.000	0.000	180.000	No Ice	7.742	4.050	0.015
(E)			0.000			1/2" Ice	8.280	4.487	0.057
			1.000			1" Ice	8.826	4.931	0.105
						2" Ice	9.945	5.842	0.219
						4" Ice	12.286	7.751	0.526
BXA-70063/6CF	C	From Leg	4.000	0.000	180.000	No Ice	7.742	4.050	0.015
(E)			0.000			1/2" Ice	8.280	4.487	0.057
			1.000			1" Ice	8.826	4.931	0.105
						2" Ice	9.945	5.842	0.219
						4" Ice	12.286	7.751	0.526
MG D5-800Tx	A	From Leg	4.000	0.000	180.000	No Ice	3.333	2.137	0.015
(E)			0.000			1/2" Ice	3.671	2.461	0.035
			1.000			1" Ice	4.017	2.792	0.059
						2" Ice	4.827	3.476	0.120
						4" Ice	6.564	4.984	0.301
MG D5-800Tx	B	From Leg	4.000	0.000	180.000	No Ice	3.333	2.137	0.015
(E)			0.000			1/2" Ice	3.671	2.461	0.035
			1.000			1" Ice	4.017	2.792	0.059
						2" Ice	4.827	3.476	0.120
						4" Ice	6.564	4.984	0.301
MG D5-800Tx	C	From Leg	4.000	0.000	180.000	No Ice	3.333	2.137	0.015
(E)			0.000			1/2" Ice	3.671	2.461	0.035
			1.000			1" Ice	4.017	2.792	0.059
						2" Ice	4.827	3.476	0.120
						4" Ice	6.564	4.984	0.301
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000	180.000	No Ice	0.367	0.085	0.003
(E)			0.000			1/2" Ice	0.451	0.136	0.005
			1.000			1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000	180.000	No Ice	0.367	0.085	0.003
(E)			0.000			1/2" Ice	0.451	0.136	0.005
			1.000			1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	180.000	No Ice	0.367	0.085	0.003
(E)			0.000			1/2" Ice	0.451	0.136	0.005
			1.000			1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020

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
						4" Ice	1.281	0.740	0.063
58532A	C	From Leg	4.000	0.000	180.000	No Ice	0.221	0.221	0.000
(E)			0.000			1/2" Ice	0.290	0.290	0.003
			4.000			1" Ice	0.367	0.367	0.006
						2" Ice	0.548	0.548	0.017
						4" Ice	1.014	1.014	0.060
Sector Mount [SM 304-3]	C	None		0.000	180.000	No Ice	44.820	44.820	1.920
(E-4Mount Pipes included)						1/2" Ice	63.480	63.480	2.772
						1" Ice	82.140	82.140	3.624
						2" Ice	119.460	119.460	5.328
						4" Ice	194.100	194.100	8.736
-									
(3) 7130.16.33.00 w/ Mount Pipe	A	From Leg	4.000	0.000	170.000	No Ice	6.001	7.030	0.037
			0.000			1/2" Ice	6.485	7.812	0.096
(AB)			2.000			1" Ice	6.971	8.567	0.162
						2" Ice	7.974	10.130	0.316
						4" Ice	10.105	13.477	0.745
(3) 7130.16.33.00 w/ Mount Pipe	B	From Leg	4.000	0.000	170.000	No Ice	6.001	7.030	0.037
			0.000			1/2" Ice	6.485	7.812	0.096
(AB)			2.000			1" Ice	6.971	8.567	0.162
						2" Ice	7.974	10.130	0.316
						4" Ice	10.105	13.477	0.745
(3) 7130.16.33.00 w/ Mount Pipe	C	From Leg	4.000	0.000	170.000	No Ice	6.001	7.030	0.037
			0.000			1/2" Ice	6.485	7.812	0.096
(AB)			2.000			1" Ice	6.971	8.567	0.162
						2" Ice	7.974	10.130	0.316
						4" Ice	10.105	13.477	0.745
Sector Mount [SM 502-3]	C	None		0.000	170.000	No Ice	33.020	33.020	1.673
(AB)						1/2" Ice	47.360	47.360	2.224
						1" Ice	61.700	61.700	2.775
						2" Ice	90.380	90.380	3.876
						4" Ice	147.740	147.740	6.080
-									
HBX-6516DS-VTM w/ Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	3.598	3.241	0.029
			0.000			1/2" Ice	3.998	3.914	0.062
(E)			0.000			1" Ice	4.435	4.564	0.101
						2" Ice	5.368	5.914	0.199
						4" Ice	7.361	8.877	0.504
HBX-6516DS-VTM w/ Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	3.598	3.241	0.029
			0.000			1/2" Ice	3.998	3.914	0.062
(E)			0.000			1" Ice	4.435	4.564	0.101
						2" Ice	5.368	5.914	0.199
						4" Ice	7.361	8.877	0.504
HBX-6516DS-VTM w/ Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	3.598	3.241	0.029
			0.000			1/2" Ice	3.998	3.914	0.062
(E)			0.000			1" Ice	4.435	4.564	0.101
						2" Ice	5.368	5.914	0.199
						4" Ice	7.361	8.877	0.504
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	1.425	1.425	0.022
(E-Per photo)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	1.425	1.425	0.022
(E-Per photo)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090

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
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	1.425	1.425	0.022
(E-Per photo)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Sector Mount [SM 104-3]	C	None		0.000	160.000	No Ice	30.020	30.020	0.953
(E)						1/2" Ice	40.480	40.480	1.405
						1" Ice	50.940	50.940	1.857
						2" Ice	71.860	71.860	2.761
						4" Ice	113.700	113.700	4.569
-									
RR90-17-02DP w/ Mount Pipe	A	From Leg	3.000	0.000	150.000	No Ice	4.593	3.319	0.034
			0.000			1/2" Ice	5.088	4.089	0.072
(P)			1.000			1" Ice	5.578	4.784	0.115
						2" Ice	6.588	6.225	0.224
						4" Ice	8.731	9.308	0.557
RR90-17-02DP w/ Mount Pipe	C	From Leg	3.000	0.000	150.000	No Ice	4.593	3.319	0.034
			0.000			1/2" Ice	5.088	4.089	0.072
(P)			1.000			1" Ice	5.578	4.784	0.115
						2" Ice	6.588	6.225	0.224
						4" Ice	8.731	9.308	0.557
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	3.000	0.000	150.000	No Ice	11.683	9.842	0.083
			0.000			1/2" Ice	12.404	11.366	0.173
(P)			1.000			1" Ice	13.135	12.914	0.273
						2" Ice	14.601	15.267	0.506
						4" Ice	17.875	20.139	1.151
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	3.000	0.000	150.000	No Ice	11.683	9.842	0.083
			0.000			1/2" Ice	12.404	11.366	0.173
(P)			1.000			1" Ice	13.135	12.914	0.273
						2" Ice	14.601	15.267	0.506
						4" Ice	17.875	20.139	1.151
KRY 112 144/1	A	From Leg	3.000	0.000	150.000	No Ice	0.408	0.204	0.011
(P)			0.000			1/2" Ice	0.497	0.273	0.014
			1.000			1" Ice	0.594	0.351	0.019
						2" Ice	0.815	0.533	0.032
						4" Ice	1.359	0.999	0.082
KRY 112 144/1	C	From Leg	3.000	0.000	150.000	No Ice	0.408	0.204	0.011
(P)			0.000			1/2" Ice	0.497	0.273	0.014
			1.000			1" Ice	0.594	0.351	0.019
						2" Ice	0.815	0.533	0.032
						4" Ice	1.359	0.999	0.082
ATBT-BOTTOM-24V	A	From Leg	3.000	0.000	150.000	No Ice	0.121	0.075	0.003
(P)			0.000			1/2" Ice	0.172	0.119	0.004
			1.000			1" Ice	0.232	0.172	0.006
						2" Ice	0.377	0.303	0.013
						4" Ice	0.771	0.668	0.045
ATBT-BOTTOM-24V	C	From Leg	3.000	0.000	150.000	No Ice	0.121	0.075	0.003
(P)			0.000			1/2" Ice	0.172	0.119	0.004
			1.000			1" Ice	0.232	0.172	0.006
						2" Ice	0.377	0.303	0.013
						4" Ice	0.771	0.668	0.045
Side Arm Mount [SO 301-1]	A	From Leg	1.500	0.000	150.000	No Ice	1.000	0.900	0.023
(E)			0.000			1/2" Ice	1.390	1.420	0.033
			0.000			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
						4" Ice	4.120	5.060	0.100

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
Side Arm Mount [SO 301-1]	C	From Leg	1.500	0.000	150.000	No Ice	1.000	0.900	0.023
(E)			0.000			1/2" Ice	1.390	1.420	0.033
			0.000			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
						4" Ice	4.120	5.060	0.100
-									
(2)	A	From Leg	4.000	0.000	140.000	No Ice	8.498	6.304	0.074
AM-X-CD-16-65-00T-RET			0.000			1/2" Ice	9.149	7.479	0.139
w/ Mount Pipe			1.000			1" Ice	9.767	8.368	0.212
(E)						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2)	B	From Leg	4.000	0.000	140.000	No Ice	5.744	4.015	0.035
AM-X-CD-14-65-00T-RET			0.000			1/2" Ice	6.198	4.633	0.080
w/ Mount Pipe			1.000			1" Ice	6.661	5.276	0.131
(E)						2" Ice	7.618	6.678	0.254
						4" Ice	9.668	9.744	0.610
(2)	C	From Leg	4.000	0.000	140.000	No Ice	5.744	4.015	0.035
AM-X-CD-14-65-00T-RET			0.000			1/2" Ice	6.198	4.633	0.080
w/ Mount Pipe			1.000			1" Ice	6.661	5.276	0.131
(E)						2" Ice	7.618	6.678	0.254
						4" Ice	9.668	9.744	0.610
800 10121 w/ Mount Pipe	A	From Leg	4.000	0.000	140.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
800 10121 w/ Mount Pipe	B	From Leg	4.000	0.000	140.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
800 10121 w/ Mount Pipe	C	From Leg	4.000	0.000	140.000	No Ice	5.685	4.600	0.066
(E)			0.000			1/2" Ice	6.182	5.351	0.114
			1.000			1" Ice	6.676	6.046	0.168
						2" Ice	7.695	7.526	0.298
						4" Ice	9.858	10.832	0.675
(2) RRUS-11	A	From Leg	4.000	0.000	140.000	No Ice	3.249	1.373	0.048
(E)			0.000			1/2" Ice	3.491	1.551	0.068
			1.000			1" Ice	3.741	1.738	0.092
						2" Ice	4.268	2.138	0.150
						4" Ice	5.426	3.042	0.310
(2) RRUS-11	B	From Leg	4.000	0.000	140.000	No Ice	3.249	1.373	0.048
(E)			0.000			1/2" Ice	3.491	1.551	0.068
			1.000			1" Ice	3.741	1.738	0.092
						2" Ice	4.268	2.138	0.150
						4" Ice	5.426	3.042	0.310
(2) RRUS-11	C	From Leg	4.000	0.000	140.000	No Ice	3.249	1.373	0.048
(E)			0.000			1/2" Ice	3.491	1.551	0.068
			1.000			1" Ice	3.741	1.738	0.092
						2" Ice	4.268	2.138	0.150
						4" Ice	5.426	3.042	0.310
7020.00	A	From Leg	4.000	0.000	140.000	No Ice	0.119	0.204	0.002
(E)			0.000			1/2" Ice	0.171	0.279	0.005
			1.000			1" Ice	0.232	0.363	0.009
						2" Ice	0.380	0.556	0.022
						4" Ice	0.779	1.046	0.071
7020.00	B	From Leg	4.000	0.000	140.000	No Ice	0.119	0.204	0.002

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
(E)			0.000			1/2" Ice	0.171	0.279	0.005
			1.000			1" Ice	0.232	0.363	0.009
						2" Ice	0.380	0.556	0.022
						4" Ice	0.779	1.046	0.071
7020.00	C	From Leg	4.000	0.000	140.000	No Ice	0.119	0.204	0.002
(E)			0.000			1/2" Ice	0.171	0.279	0.005
			1.000			1" Ice	0.232	0.363	0.009
						2" Ice	0.380	0.556	0.022
						4" Ice	0.779	1.046	0.071
LGP13519	A	From Leg	4.000	0.000	140.000	No Ice	0.338	0.207	0.005
(E)			0.000			1/2" Ice	0.422	0.280	0.008
			1.000			1" Ice	0.515	0.362	0.012
						2" Ice	0.726	0.551	0.024
						4" Ice	1.252	1.034	0.071
LGP13519	B	From Leg	4.000	0.000	140.000	No Ice	0.338	0.207	0.005
(E)			0.000			1/2" Ice	0.422	0.280	0.008
			1.000			1" Ice	0.515	0.362	0.012
						2" Ice	0.726	0.551	0.024
						4" Ice	1.252	1.034	0.071
LGP13519	C	From Leg	4.000	0.000	140.000	No Ice	0.338	0.207	0.005
(E)			0.000			1/2" Ice	0.422	0.280	0.008
			1.000			1" Ice	0.515	0.362	0.012
						2" Ice	0.726	0.551	0.024
						4" Ice	1.252	1.034	0.071
DTMABP7819VG12A	A	From Leg	4.000	0.000	140.000	No Ice	1.139	0.391	0.019
(E)			0.000			1/2" Ice	1.284	0.488	0.026
			1.000			1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
DTMABP7819VG12A	B	From Leg	4.000	0.000	140.000	No Ice	1.139	0.391	0.019
(E)			0.000			1/2" Ice	1.284	0.488	0.026
			1.000			1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
DTMABP7819VG12A	C	From Leg	4.000	0.000	140.000	No Ice	1.139	0.391	0.019
(E)			0.000			1/2" Ice	1.284	0.488	0.026
			1.000			1" Ice	1.437	0.595	0.036
						2" Ice	1.769	0.833	0.060
						4" Ice	2.538	1.414	0.140
DC6-48-60-18-8F	A	From Leg	4.000	0.000	140.000	No Ice	1.266	1.266	0.020
(E)			0.000			1/2" Ice	1.456	1.456	0.035
			1.000			1" Ice	1.658	1.658	0.053
						2" Ice	2.093	2.093	0.095
						4" Ice	3.098	3.098	0.215
Sector Mount [SM 504-3]	C	None		0.000	140.000	No Ice	34.250	34.250	1.708
(E)						1/2" Ice	48.980	48.980	2.286
						1" Ice	63.710	63.710	2.864
						2" Ice	93.170	93.170	4.020
						4" Ice	152.090	152.090	6.333
-									
58532A	C	From Leg	4.000	0.000	98.000	No Ice	0.221	0.221	0.000
(E)			0.000			1/2" Ice	0.290	0.290	0.003
			4.000			1" Ice	0.367	0.367	0.006
						2" Ice	0.548	0.548	0.017
						4" Ice	1.014	1.014	0.060
Side Arm Mount [SO 301-1]	C	From Leg	2.000	0.000	98.000	No Ice	1.000	0.900	0.023
(E)			0.000			1/2" Ice	1.390	1.420	0.033

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
						4" Ice	4.120	5.060	0.100
-									

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	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	192 - 180	Leg	Max Tension	12	3.308	-0.053	-0.045
			Max. Compression	10	-5.114	0.033	-0.064
			Max. Mx	11	-0.686	-0.559	0.001
			Max. My	2	-0.475	-0.018	-0.564
			Max. Vy	11	-0.416	0.271	-0.025
			Max. Vx	2	-0.423	-0.018	0.250
		Diagonal	Max Tension	3	1.272	0.000	0.000
			Max. Compression	3	-1.307	0.000	0.000
			Max. Mx	24	0.174	0.015	0.000
			Max. My	9	1.179	0.004	-0.001
			Max. Vy	24	-0.017	0.015	0.000
			Max. Vx	9	-0.000	0.004	-0.001
		Top Girt	Max Tension	12	0.080	0.000	0.000
			Max. Compression	10	-0.076	0.000	0.000
			Max. Mx	14	-0.006	-0.043	0.000
			Max. Vy	14	0.026	0.000	0.000
T2	180 - 160	Leg	Max Tension	12	26.270	-0.068	-0.034
			Max. Compression	2	-32.691	0.082	0.004
			Max. Mx	6	-32.134	0.087	0.036
			Max. My	11	-2.990	-0.011	-0.175
			Max. Vy	8	-1.147	-0.046	-0.019
			Max. Vx	5	1.133	0.006	-0.011
		Diagonal	Max Tension	9	4.712	0.000	0.000
			Max. Compression	9	-4.668	0.000	0.000
			Max. Mx	15	1.305	0.030	0.003
			Max. My	9	-4.524	-0.004	-0.006
			Max. Vy	15	-0.024	0.030	0.003
			Max. Vx	22	0.001	0.000	0.000
		Top Girt	Max Tension	6	0.810	0.000	0.000
			Max. Compression	4	-0.834	0.000	0.000
			Max. Mx	14	-0.031	-0.047	0.000
			Max. My	14	-0.029	0.000	0.001
			Max. Vy	14	0.028	0.000	0.000
			Max. Vx	14	-0.001	0.000	0.000
T3	160 - 140	Leg	Max Tension	12	55.869	-0.079	-0.032
			Max. Compression	2	-65.838	0.068	-0.028
			Max. Mx	8	44.644	0.355	-0.137
			Max. My	10	20.833	-0.160	0.529
			Max. Vy	8	-0.503	-0.067	-0.003
			Max. Vx	5	0.511	0.004	0.037
		Diagonal	Max Tension	9	6.740	0.000	0.000
			Max. Compression	9	-6.839	0.000	0.000
			Max. Mx	15	1.733	0.059	-0.006
			Max. My	10	3.766	0.034	-0.008
			Max. Vy	25	0.038	0.051	0.006
			Max. Vx	23	0.002	0.000	0.000
T4	140 - 120	Leg	Max Tension	12	89.852	-0.202	-0.023
			Max. Compression	2	-105.401	0.344	0.005
			Max. Mx	10	-104.634	0.345	-0.037
			Max. My	11	-6.771	0.006	-0.340
			Max. Vy	8	-1.134	-0.074	0.027
			Max. Vx	11	-1.187	-0.002	-0.019
		Diagonal	Max Tension	9	7.967	0.000	0.000
			Max. Compression	9	-7.981	0.000	0.000
			Max. Mx	15	2.140	0.071	-0.008
			Max. My	23	1.744	0.070	-0.009
			Max. Vy	25	0.044	0.068	0.008
			Max. Vx	23	0.003	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T5	120 - 100	Leg	Max Tension	12	121.842	-0.328	-0.015
			Max. Compression	2	-141.877	0.713	0.017
			Max. Mx	10	-140.979	0.714	-0.067
			Max. My	11	-8.242	-0.002	-0.624
			Max. Vy	8	0.103	-0.688	-0.018
			Max. Vx	11	0.125	-0.002	-0.624
		Diagonal	Max Tension	9	8.313	0.000	0.000
			Max. Compression	9	-8.303	0.000	0.000
			Max. Mx	15	2.235	0.099	0.012
			Max. My	23	-2.608	0.076	-0.014
			Max. Vy	25	0.059	0.098	-0.012
			Max. Vx	23	0.003	0.000	0.000
T6	100 - 80	Leg	Max Tension	12	149.203	-0.594	-0.046
			Max. Compression	2	-173.490	0.859	0.002
			Max. Mx	10	-172.489	0.861	-0.065
			Max. My	11	-9.342	-0.045	-1.006
			Max. Vy	6	-0.107	0.857	0.063
			Max. Vx	11	-0.159	-0.045	-1.006
		Diagonal	Max Tension	9	9.553	0.000	0.000
			Max. Compression	9	-9.601	0.000	0.000
			Max. Mx	15	2.722	0.164	-0.020
			Max. My	23	2.138	0.151	-0.022
			Max. Vy	25	0.076	0.158	0.019
			Max. Vx	23	0.004	0.000	0.000
T7	80 - 60	Leg	Max Tension	4	178.611	-0.560	0.036
			Max. Compression	2	-208.002	1.168	0.008
			Max. Mx	10	-206.874	1.169	-0.081
			Max. My	11	-11.362	0.023	-1.002
			Max. Vy	6	-0.138	1.165	0.073
			Max. Vx	11	0.133	-0.051	-0.799
		Diagonal	Max Tension	9	10.317	0.000	0.000
			Max. Compression	9	-10.430	0.000	0.000
			Max. Mx	15	2.931	0.210	-0.024
			Max. My	23	2.298	0.195	-0.026
			Max. Vy	25	0.092	0.204	0.023
			Max. Vx	23	0.005	0.000	0.000
T8	60 - 40	Leg	Max Tension	4	205.320	-1.298	0.033
			Max. Compression	2	-240.515	1.087	-0.002
			Max. Mx	25	38.368	-1.999	-0.021
			Max. My	11	-12.333	-0.058	-1.224
			Max. Vy	21	0.300	-1.996	-0.000
			Max. Vx	11	0.142	-0.058	-1.224
		Diagonal	Max Tension	9	10.036	0.000	0.000
			Max. Compression	9	-10.042	0.000	0.000
			Max. Mx	25	1.788	0.261	0.031
			Max. My	23	-2.665	0.203	-0.038
			Max. Vy	25	0.110	0.252	-0.036
			Max. Vx	23	0.006	0.000	0.000
T9	40 - 20	Leg	Max Tension	4	232.306	-1.188	0.032
			Max. Compression	2	-273.388	1.738	0.005
			Max. Mx	25	42.020	-4.082	-0.017
			Max. My	11	-15.043	-0.095	-1.518
			Max. Vy	21	0.664	-4.070	-0.001
			Max. Vx	11	-0.206	-0.095	-1.518
		Diagonal	Max Tension	9	11.638	0.000	0.000
			Max. Compression	9	-11.859	0.000	0.000
			Max. Mx	25	1.640	0.317	0.031
			Max. My	23	3.843	0.249	-0.036
			Max. Vy	25	0.116	0.317	0.031
			Max. Vx	23	0.006	0.000	0.000
T10	20 - 0	Leg	Max Tension	4	266.682	1.317	-0.078

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-316.273	0.000	-0.000
			Max. Mx	23	-125.778	4.290	0.013
			Max. My	11	-17.373	-0.145	-2.831
			Max. Vy	10	-17.936	0.000	0.000
			Max. Vx	5	-5.169	0.000	0.000
		Diagonal	Max Tension	9	12.235	0.000	0.000
			Max. Compression	10	-12.511	0.000	0.000
			Max. Mx	25	-0.320	0.454	-0.041
			Max. My	24	5.689	0.263	-0.050
			Max. Vy	25	0.143	0.454	-0.041
			Max. Vx	24	0.007	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	313.253	30.706	-18.919
	Max. H_x	10	313.253	30.706	-18.919
	Max. H_z	4	-265.327	-26.486	16.365
	Min. Vert	4	-265.327	-26.486	16.365
	Min. H_x	4	-265.327	-26.486	16.365
	Min. H_z	10	313.253	30.706	-18.919
Leg B	Max. Vert	6	312.311	-30.749	-18.724
	Max. H_x	12	-265.097	26.534	16.189
	Max. H_z	12	-265.097	26.534	16.189
	Min. Vert	12	-265.097	26.534	16.189
	Min. H_x	6	312.311	-30.749	-18.724
	Min. H_z	6	312.311	-30.749	-18.724
Leg A	Max. Vert	2	314.716	-0.190	36.088
	Max. H_x	11	18.237	5.161	1.501
	Max. H_z	2	314.716	-0.190	36.088
	Min. Vert	8	-264.128	0.177	-31.108
	Min. H_x	5	18.913	-5.169	1.562
	Min. H_z	8	-264.128	0.177	-31.108

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	52.708	0.000	0.000	-21.818	4.456	0.000
Dead+Wind 0 deg - No Ice	52.708	0.049	-58.438	-6446.277	-2.886	-8.015
Dead+Wind 30 deg - No Ice	52.708	27.962	-48.454	-5399.892	-3098.666	-28.598
Dead+Wind 60 deg - No Ice	52.708	47.655	-27.584	-3094.651	-5299.853	-41.011
Dead+Wind 90 deg - No Ice	52.708	55.838	-0.049	-29.160	-6189.072	-43.670
Dead+Wind 120 deg - No Ice	52.708	50.512	29.176	3184.053	-5544.967	-35.848
Dead+Wind 150 deg - No Ice	52.708	27.877	48.405	5348.913	-3085.949	-15.071
Dead+Wind 180 deg - No Ice	52.708	-0.049	55.082	6111.130	11.799	7.741
Dead+Wind 210 deg - No Ice	52.708	-27.962	48.454	5356.256	3107.579	28.598
Dead+Wind 240 deg - No Ice	52.708	-50.561	29.261	3196.770	5561.222	43.862
Dead+Wind 270 deg - No Ice	52.708	-55.838	0.049	-14.476	6197.984	43.670
Dead+Wind 300 deg - No Ice	52.708	-47.606	-27.499	-3081.933	5301.424	33.270

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 330 deg - No Ice	52.708	-27.877	-48.405	-5392.550	3094.862	15.071
Dead+Ice+Temp	125.997	0.000	0.000	-74.911	0.744	0.000
Dead+Wind 0 deg+Ice+Temp	125.997	0.002	-18.703	-2190.166	0.441	-1.956
Dead+Wind 30 deg+Ice+Temp	125.997	8.585	-14.871	-1780.271	-983.797	-7.224
Dead+Wind 60 deg+Ice+Temp	125.997	14.426	-8.331	-1035.301	-1662.009	-10.272
Dead+Wind 90 deg+Ice+Temp	125.997	17.167	-0.002	-75.214	-1967.812	-11.209
Dead+Wind 120 deg+Ice+Temp	125.997	16.193	9.350	982.454	-1830.580	-9.798
Dead+Wind 150 deg+Ice+Temp	125.997	8.582	14.869	1630.147	-983.271	-3.984
Dead+Wind 180 deg+Ice+Temp	125.997	-0.002	16.660	1845.345	1.047	1.842
Dead+Wind 210 deg+Ice+Temp	125.997	-8.585	14.871	1630.450	985.285	7.224
Dead+Wind 240 deg+Ice+Temp	125.997	-16.195	9.353	982.980	1832.372	11.754
Dead+Wind 270 deg+Ice+Temp	125.997	-17.167	0.002	-74.607	1969.301	11.209
Dead+Wind 300 deg+Ice+Temp	125.997	-14.424	-8.328	-1034.776	1663.194	8.430
Dead+Wind 330 deg+Ice+Temp	125.997	-8.582	-14.869	-1779.968	984.760	3.984
Dead+Wind 0 deg - Service	52.708	0.017	-20.221	-2244.814	1.916	-2.773
Dead+Wind 30 deg - Service	52.708	9.675	-16.766	-1882.743	-1069.288	-9.896
Dead+Wind 60 deg - Service	52.708	16.490	-9.545	-1085.082	-1830.945	-14.191
Dead+Wind 90 deg - Service	52.708	19.321	-0.017	-24.359	-2138.633	-15.111
Dead+Wind 120 deg - Service	52.708	17.478	10.096	1087.480	-1915.759	-12.404
Dead+Wind 150 deg - Service	52.708	9.646	16.749	1836.566	-1064.888	-5.215
Dead+Wind 180 deg - Service	52.708	-0.017	19.060	2100.309	6.997	2.679
Dead+Wind 210 deg - Service	52.708	-9.675	16.766	1839.107	1078.201	9.896
Dead+Wind 240 deg - Service	52.708	-17.495	10.125	1091.880	1927.213	15.177
Dead+Wind 270 deg - Service	52.708	-19.321	0.017	-19.278	2147.546	15.111
Dead+Wind 300 deg - Service	52.708	-16.473	-9.515	-1080.682	1837.317	11.512
Dead+Wind 330 deg - Service	52.708	-9.646	-16.749	-1880.203	1073.801	5.215

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	0.000	-52.708	0.000	0.000	52.708	-0.000	0.000%
2	0.049	-52.708	-58.438	-0.049	52.708	58.438	0.000%
3	27.962	-52.708	-48.454	-27.962	52.708	48.454	0.000%
4	47.655	-52.708	-27.584	-47.655	52.708	27.584	0.000%
5	55.838	-52.708	-0.049	-55.838	52.708	0.049	0.000%
6	50.512	-52.708	29.176	-50.512	52.708	-29.176	0.000%
7	27.877	-52.708	48.405	-27.877	52.708	-48.405	0.000%
8	-0.049	-52.708	55.082	0.049	52.708	-55.082	0.000%
9	-27.962	-52.708	48.454	27.962	52.708	-48.454	0.000%
10	-50.561	-52.708	29.261	50.561	52.708	-29.261	0.000%
11	-55.838	-52.708	0.049	55.838	52.708	-0.049	0.000%
12	-47.606	-52.708	-27.499	47.606	52.708	27.499	0.000%
13	-27.877	-52.708	-48.405	27.877	52.708	48.405	0.000%
14	0.000	-125.997	0.000	-0.000	125.997	-0.000	0.000%
15	0.002	-125.997	-18.703	-0.002	125.997	18.703	0.000%
16	8.585	-125.997	-14.871	-8.585	125.997	14.871	0.000%
17	14.426	-125.997	-8.331	-14.426	125.997	8.331	0.000%
18	17.167	-125.997	-0.002	-17.167	125.997	0.002	0.000%
19	16.193	-125.997	9.350	-16.193	125.997	-9.350	0.000%
20	8.582	-125.997	14.869	-8.582	125.997	-14.869	0.000%
21	-0.002	-125.997	16.660	0.002	125.997	-16.660	0.000%
22	-8.585	-125.997	14.871	8.585	125.997	-14.871	0.000%
23	-16.195	-125.997	9.353	16.195	125.997	-9.353	0.000%
24	-17.167	-125.997	0.002	17.167	125.997	-0.002	0.000%
25	-14.424	-125.997	-8.328	14.424	125.997	8.328	0.000%
26	-8.582	-125.997	-14.869	8.582	125.997	14.869	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
27	0.017	-52.708	-20.221	-0.017	52.708	20.221	0.000%
28	9.675	-52.708	-16.766	-9.675	52.708	16.766	0.000%
29	16.490	-52.708	-9.545	-16.490	52.708	9.545	0.000%
30	19.321	-52.708	-0.017	-19.321	52.708	0.017	0.000%
31	17.478	-52.708	10.096	-17.478	52.708	-10.096	0.000%
32	9.646	-52.708	16.749	-9.646	52.708	-16.749	0.000%
33	-0.017	-52.708	19.060	0.017	52.708	-19.060	0.000%
34	-9.675	-52.708	16.766	9.675	52.708	-16.766	0.000%
35	-17.495	-52.708	10.125	17.495	52.708	-10.125	0.000%
36	-19.321	-52.708	0.017	19.321	52.708	-0.017	0.000%
37	-16.473	-52.708	-9.515	16.473	52.708	9.515	0.000%
38	-9.646	-52.708	-16.749	9.646	52.708	16.749	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	192 - 180	6.171	27	0.292	0.042
T2	180 - 160	5.433	27	0.290	0.042
T3	160 - 140	4.240	27	0.258	0.036
T4	140 - 120	3.210	27	0.217	0.030
T5	120 - 100	2.338	27	0.179	0.021
T6	100 - 80	1.620	27	0.145	0.015
T7	80 - 60	1.051	27	0.111	0.011
T8	60 - 40	0.614	27	0.082	0.007
T9	40 - 20	0.299	27	0.055	0.005
T10	20 - 0	0.090	27	0.028	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.000	(2) DB980H90E-M w/ Mount Pipe	27	6.048	0.292	0.042	Inf
180.000	(2) LPA-80080/4CF	27	5.433	0.290	0.042	297508
170.000	(3) 7130.16.33.00 w/ Mount Pipe	27	4.823	0.277	0.040	45089
160.000	HBX-6516DS-VTM w/ Mount Pipe	27	4.240	0.258	0.036	24628
150.000	RR90-17-02DP w/ Mount Pipe	27	3.703	0.238	0.033	27333
140.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	27	3.210	0.217	0.030	32304
98.000	58532A	27	1.557	0.142	0.015	32480

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	192 - 180	17.683	2	0.836	0.121
T2	180 - 160	15.572	2	0.828	0.120
T3	160 - 140	12.161	2	0.737	0.105
T4	140 - 120	9.213	2	0.622	0.085
T5	120 - 100	6.713	2	0.512	0.061
T6	100 - 80	4.655	2	0.416	0.043
T7	80 - 60	3.020	2	0.318	0.031
T8	60 - 40	1.765	2	0.235	0.021
T9	40 - 20	0.860	2	0.159	0.013
T10	20 - 0	0.258	2	0.081	0.006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.000	(2) DB980H90E-M w/ Mount Pipe	2	17.331	0.836	0.121	545120
180.000	(2) LPA-80080/4CF	2	15.572	0.828	0.120	111486
170.000	(3) 7130.16.33.00 w/ Mount Pipe	2	13.829	0.792	0.115	15842
160.000	HBX-6516DS-VTM w/ Mount Pipe	2	12.161	0.737	0.105	8643
150.000	RR90-17-02DP w/ Mount Pipe	2	10.625	0.680	0.096	9616
140.000	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	9.213	0.622	0.085	11401
98.000	58532A	2	4.473	0.406	0.042	11342

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	192	Leg	A325N	0.625	4	0.827	13.499	0.061 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	1	1.272	3.874	0.328 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.625	1	0.080	3.874	0.021 ✔	1.333	Member Block Shear
T2	180	Leg	A325N	0.625	4	6.567	13.499	0.487 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	1	4.712	4.554	1.035 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.625	1	0.810	4.554	0.178 ✔	1.333	Member Block Shear
T3	160	Leg	A325N	0.875	4	13.967	26.458	0.528 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	1	6.839	6.443	1.061 ✔	1.333	Bolt Shear
T4	140	Leg	A325N	1.000	4	22.463	34.557	0.650 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	1	7.981	6.443	1.239 ✔	1.333	Bolt Shear
T5	120	Leg	A325N	1.000	6	20.307	34.557	0.588 ✔	1.333	Bolt Tension

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
		Diagonal	A325N	0.750	1	8.313	9.141	0.909 ✔	1.333	Member Bearing
T6	100	Leg	A325N	1.000	6	24.867	34.557	0.720 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	1	9.553	9.141	1.045 ✔	1.333	Member Bearing
T7	80	Leg	A325N	1.000	8	22.326	34.557	0.646 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	1	10.317	9.141	1.129 ✔	1.333	Member Bearing
T8	60	Leg	A325N	1.000	8	25.665	34.557	0.743 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.750	1	10.036	11.426	0.878 ✔	1.333	Member Bearing
T9	40	Leg	A325N	1.000	8	29.038	34.557	0.840 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.750	1	11.638	11.426	1.019 ✔	1.333	Member Bearing
T10	20	Leg	A354-BC	1.000	10	26.668	32.398	0.823 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.750	1	12.511	13.254	0.944 ✔	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 $\frac{P}{P_a}$
T1	192 - 180	ROHN 2.5 STD	12.000	4.000	50.7 K=1.00	24.247	1.704	-5.114	41.318	0.124 ✔
T2	180 - 160	ROHN 2.5 STD	20.032	5.008	63.4 K=1.00	22.123	1.704	-32.691	37.699	0.867 ✔
T3	160 - 140	ROHN 3 EH	20.036	6.679	70.5 K=1.00	20.840	3.016	-65.838	62.852	1.048 ✔
T4	140 - 120	ROHN 4 EH	20.038	6.679	54.3 K=1.00	23.670	4.407	-105.401	104.324	1.010 ✔
T5	120 - 100	ROHN 5 EH	20.036	6.679	43.6 K=1.00	25.320	6.112	-141.877	154.752	0.917 ✔
T6	100 - 80	ROHN 6 EHS	20.036	10.018	54.0 K=1.00	23.712	6.713	-173.490	159.182	1.090 ✔
T7	80 - 60	ROHN 6 EH	20.032	10.016	54.8 K=1.00	23.592	8.405	-208.002	198.287	1.049 ✔
T8	60 - 40	ROHN 8 EHS	20.042	10.021	41.2 K=1.00	25.665	9.719	-240.515	249.443	0.964 ✔
T9	40 - 20	ROHN 8 EHS	20.031	10.015	41.2 K=1.00	25.668	9.719	-273.388	249.476	1.096 ✔
T10	20 - 0	ROHN 8 EHS	20.033	9.975	41.0 K=1.00	25.692	9.719	-316.273	249.705	1.267 ✔

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	192 - 180	L1 3/4x1 3/4x3/16	7.700	3.590	125.4 K=1.00	9.489	0.621	-1.307	5.894	0.222 ✔
T2	180 - 160	L2x2x3/16	9.686	4.727	144.0 K=1.00	7.206	0.715	-4.668	5.152	0.906 ✔
T3	160 - 140	L2 1/2x2 1/2x1/4	12.241	6.033	147.4 K=1.00	6.869	1.190	-6.839	8.175	0.837 ✔
T4	140 - 120	L2 1/2x2 1/2x1/4	14.067	6.902	168.7 K=1.00	5.248	1.190	-7.981	6.245	1.278 ✔
T5	120 - 100	L3x3x1/4	15.944	7.773	157.6 K=1.00	6.015	1.440	-8.303	8.662	0.959 ✔
T6	100 - 80	L3 1/2x3 1/2x1/4	19.209	9.452	163.4 K=1.00	5.591	1.690	-9.601	9.449	1.016 ✔
T7	80 - 60	L4x4x1/4	20.935	10.297	155.4 K=1.00	6.182	1.940	-10.430	11.993	0.870 ✔
T8	60 - 40	L4x4x5/16	22.872	11.214	170.1 K=1.00	5.160	2.400	-10.042	12.384	0.811 ✔
T9	40 - 20	L4x4x5/16	24.688	12.078	183.2 K=1.00	4.448	2.400	-11.859	10.675	1.111 ✔
T10	20 - 0	L4x4x3/8	26.489	12.990	197.8 K=1.00	3.816	2.860	-12.511	10.915	1.146 ✔

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	192 - 180	L1 3/4x1 3/4x3/16	6.580	6.101	213.2 K=1.00	3.287	0.621	-0.076	2.041	0.037 ✔
T2	180 - 160	KL/R > 200 (C) - 5 L2x2x3/16	6.580	6.101	185.8 K=1.00	4.325	0.715	-0.834	3.092	0.270 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	192 - 180	ROHN 2.5 STD	12.000	4.000	50.7	30.000	1.704	3.308	51.121	0.065 ✔
T2	180 - 160	ROHN 2.5 STD	20.032	5.008	63.4	30.000	1.704	26.270	51.121	0.514 ✔

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 $\frac{P}{P_a}$
T3	160 - 140	ROHN 3 EH	20.036	6.679	70.5	30.000	3.016	55.869	90.478	0.617 ✔
T4	140 - 120	ROHN 4 EH	20.038	6.679	54.3	30.000	4.407	89.852	132.223	0.680 ✔
T5	120 - 100	ROHN 5 EH	20.036	6.679	43.6	30.000	6.112	121.842	183.359	0.664 ✔
T6	100 - 80	ROHN 6 EHS	20.036	10.018	54.0	30.000	6.713	149.203	201.398	0.741 ✔
T7	80 - 60	ROHN 6 EH	20.032	10.016	54.8	30.000	8.405	178.611	252.148	0.708 ✔
T8	60 - 40	ROHN 8 EHS	20.042	10.021	41.2	30.000	9.719	205.320	291.579	0.704 ✔
T9	40 - 20	ROHN 8 EHS	20.031	10.015	41.2	30.000	9.719	232.306	291.579	0.797 ✔
T10	20 - 0	ROHN 8 EHS	20.033	0.083	0.3	30.000	9.719	266.682	291.579	0.915 ✔

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	192 - 180	L1 3/4x1 3/4x3/16	7.700	3.590	82.9	29.000	0.360	1.272	10.450	0.122 ✔
T2	180 - 160	L2x2x3/16	9.686	4.727	94.3	29.000	0.431	4.712	12.493	0.377 ✔
T3	160 - 140	L2 1/2x2 1/2x1/4	12.241	6.033	96.0	29.000	0.752	6.740	21.804	0.309 ✔
T4	140 - 120	L2 1/2x2 1/2x1/4	13.446	6.595	104.8	29.000	0.752	7.967	21.804	0.365 ✔
T5	120 - 100	L3x3x1/4	15.944	7.773	102.0	32.500	0.916	8.313	29.768	0.279 ✔
T6	100 - 80	L3 1/2x3 1/2x1/4	19.209	9.452	105.5	32.500	1.103	9.553	35.862	0.266 ✔
T7	80 - 60	L4x4x1/4	20.935	10.297	100.1	32.500	1.291	10.317	41.956	0.246 ✔
T8	60 - 40	L4x4x5/16	22.872	11.214	109.8	32.500	1.595	10.036	51.835	0.194 ✔
T9	40 - 20	L4x4x5/16	24.688	12.078	118.2	32.500	1.595	11.638	51.835	0.225 ✔
T10	20 - 0	L4x4x3/8	26.489	12.990	128.1	32.500	1.899	12.235	61.715	0.198 ✔

Top Girt Design Data (Tension)

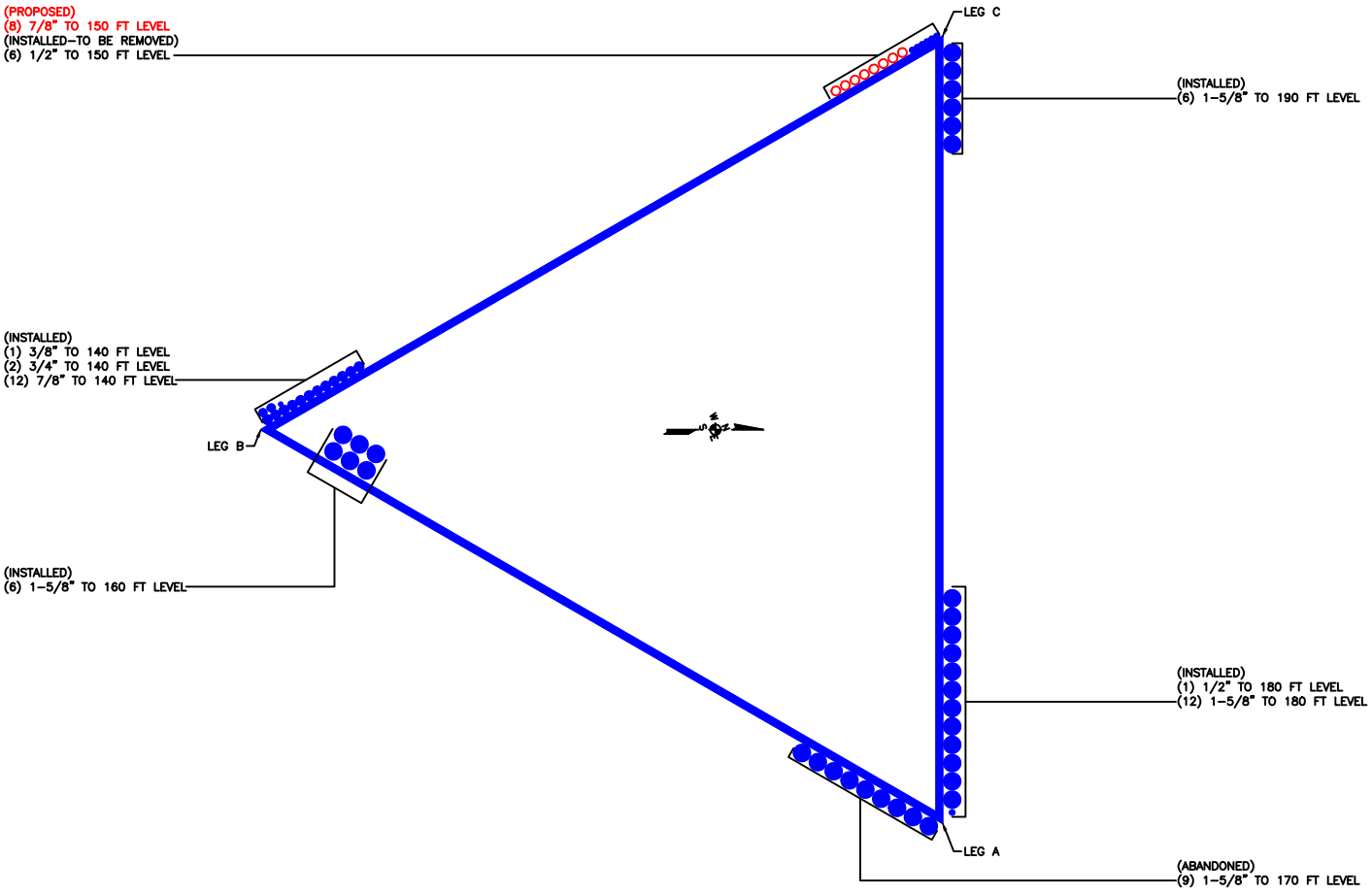
Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	192 - 180	L1 3/4x1 3/4x3/16	6.580	6.101	141.7	29.000	0.360	0.080	10.450	0.008 ✔
T2	180 - 160	L2x2x3/16	6.580	6.101	123.3	29.000	0.431	0.810	12.493	0.065 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	192 - 180	Leg	ROHN 2.5 STD	1	-5.114	55.077	9.3	Pass
T2	180 - 160	Leg	ROHN 2.5 STD	27	-32.691	50.253	65.1	Pass
T3	160 - 140	Leg	ROHN 3 EH	57	-65.838	83.781	78.6	Pass
T4	140 - 120	Leg	ROHN 4 EH	78	-105.401	139.064	75.8	Pass
T5	120 - 100	Leg	ROHN 5 EH	99	-141.877	206.284	68.8	Pass
T6	100 - 80	Leg	ROHN 6 EHS	120	-173.490	212.190	81.8	Pass
T7	80 - 60	Leg	ROHN 6 EH	135	-208.002	264.317	78.7	Pass
T8	60 - 40	Leg	ROHN 8 EHS	150	-240.515	332.508	72.3	Pass
T9	40 - 20	Leg	ROHN 8 EHS	165	-273.388	332.551	82.2	Pass
T10	20 - 0	Leg	ROHN 8 EHS	180	-316.273	332.857	95.0	Pass
T1	192 - 180	Diagonal	L1 3/4x1 3/4x3/16	11	-1.307	7.856	16.6 24.6 (b)	Pass
T2	180 - 160	Diagonal	L2x2x3/16	36	-4.668	6.868	68.0 77.6 (b)	Pass
T3	160 - 140	Diagonal	L2 1/2x2 1/2x1/4	63	-6.839	10.897	62.8 79.6 (b)	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x1/4	84	-7.981	8.324	95.9	Pass
T5	120 - 100	Diagonal	L3x3x1/4	105	-8.303	11.546	71.9	Pass
T6	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	126	-9.601	12.595	76.2 78.4 (b)	Pass
T7	80 - 60	Diagonal	L4x4x1/4	141	-10.430	15.987	65.2 84.7 (b)	Pass
T8	60 - 40	Diagonal	L4x4x5/16	156	-10.042	16.507	60.8 65.9 (b)	Pass
T9	40 - 20	Diagonal	L4x4x5/16	171	-11.859	14.230	83.3	Pass
T10	20 - 0	Diagonal	L4x4x3/8	186	-12.511	14.549	86.0	Pass
T1	192 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-0.076	2.721	2.8	Pass
T2	180 - 160	Top Girt	L2x2x3/16	29	-0.834	4.122	20.2	Pass
							Summary	
							Leg (T10) 95.0	Pass
							Diagonal (T4) 95.9	Pass
							Top Girt (T2) 20.2	Pass
							Bolt Checks 92.9	Pass
							RATING = 95.9	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876345

APPENDIX C

ADDITIONAL CALCULATIONS

CCI Foundation Tool Suite - SS Drilled Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 2/25/2015

BU:	876345
Site Name:	SKY HILL, CT
App Number:	282529; Revision:2
Work Order:	1012239

Self-Support Drilled Pier

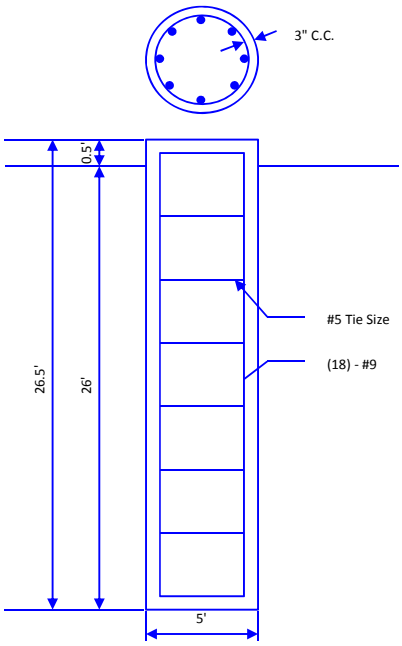
Input

Criteria	
TIA Revision:	F
ACI 318 Revision:	2002
Seismic Category:	B

Forces		
Compression	315	kips
Compression Shear	36	kips
Uplift	265	kips
Uplift Shear	31	kips
Add'l Moment	0	k-ft
Swelling Force	0	kips

Foundation Dimensions		
Pier Diameter:	5	ft
Ext. above grade:	0.5	ft
Depth below grade:	26	ft
Bell Diameter:		ft
Bell Angle:		deg

Material Properties		
Number of Rebar:	18	
Rebar Size:	9	
Tie Size	5	
Rebar tensile strength:	60	ksi
Concrete Strength:	3000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	3	in



Soil Profile — Soil profile per FDH.

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	2	0	2	120			0	0	0	
2	1.33	2	3.33	130			0	0	0	
3	1.67	3.33	5	130	3000		0	0	0	
4	21	5	26	135	5000		2.1	2.1	25.46	

Analysis Results

Soil Lateral Capacity	Uplift case		Comp. case	
Depth to Zero Shear:	11.0	ft	11.0	ft
Max Moment, Mu:	246.8	k-ft	286.6	k-ft
Soil Safety Factor:	45.4		39.1	
Safety Factor Req'd:	2		2	
RATING:	4.41%		5.12%	

Soil Axial Capacity		
Concrete Weight:	62.4	kips
Skin Friction:	346.4	kips
Soil Cone:		kips
Uplift Capacity (k), ϕTn:	408.8	kips
Uplift (k), Tu:	265.0	kips
RATING:	64.82%	

Skin Friction (k):	346.4	kips
End Bearing (k):	250.0	kips
Comp. Capacity (k), ϕCn:	596.3	kips
Comp. (k), Cu:	315.0	kips
RATING:	52.82%	

Concrete/Steel Check	Uplift Case		Comp case	
Mu (from soil analysis)	320.8	k-ft	372.5	k-ft
ϕMn	1320.9	k-ft	2608.8	k-ft
RATING:	24.28%		14.28%	

rho provided	0.64	
rho required	0.33	OK
Rebar Spacing	7.9	
Spacing required	18.0	OK
Dev. Length required	14.7	
Dev. Length provided	49.4	OK

Overall Foundation Rating: 64.8%

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: CT11353C

Ashford / I-84_1
36 Janowski Road
Ashford, CT 06278

March 12, 2015

EBI Project Number: 6215001399

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	33.01 %

EBI Consulting
environmental | engineering | due diligence

March 12, 2015

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

Emissions Analysis for Site: **CT11353C – Ashford / I-84_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **36 Janowski Road, Ashford, 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 **36 Janowski Road, Ashford, 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 **EMS RR90_17_02DP** for 1900 MHz (PCS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **EMS RR90_17_02DP** has a maximum gain of **14.4 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **151 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.

T-Mobile Site Inventory and Power Data

Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**
Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	151	Height (AGL):	151
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	6	# PCS Channels:	6
Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,610.15	ERP (W):	6,610.15
Antenna B1 MPE%	1.13	Antenna C1 MPE%	1.13
Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	151	Height (AGL):	151
Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30
ERP (W):	865.21	ERP (W):	865.21
Antenna B2 MPE%	0.32	Antenna C2 MPE%	0.32

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**2.89**
AT&T	19.63 %
Verizon Wireless	7.18 %
Nextel	1.97 %
Sprint	1.34 %
Site Total MPE %:	**33.01 %**

T-Mobile Sector 1 Total:	0.00 %
T-Mobile Sector 2 Total:	1.45 %
T-Mobile Sector 3 Total:	1.45 %
Site Total:	33.01 %

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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 2:	1.45 %
Sector 3 :	1.45 %
T-Mobile Total:	2.89 %
Site Total:	33.01 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **33.01%** 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.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803