CROWN CASTLE
Crown Castle
3530 Toringdon Way Suite 300
Charlotte NC 28277
Tel (704) 405-6600

November 14, 2014

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

RE: **T-Mobile-Exempt Modification - Crown Site BU: 842870**
T-Mobile Site ID: CT11018F
Located at: 434 Boston Post Road, Milford, CT 06460

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 Benjamin G. Blake, Mayor for the City of Milford. The city of Milford is also the Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **434 Boston Post Road, Milford, CT 06460**. 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 Benjamin G. Blake, Mayor
110 River Street
Milford CT, 06460

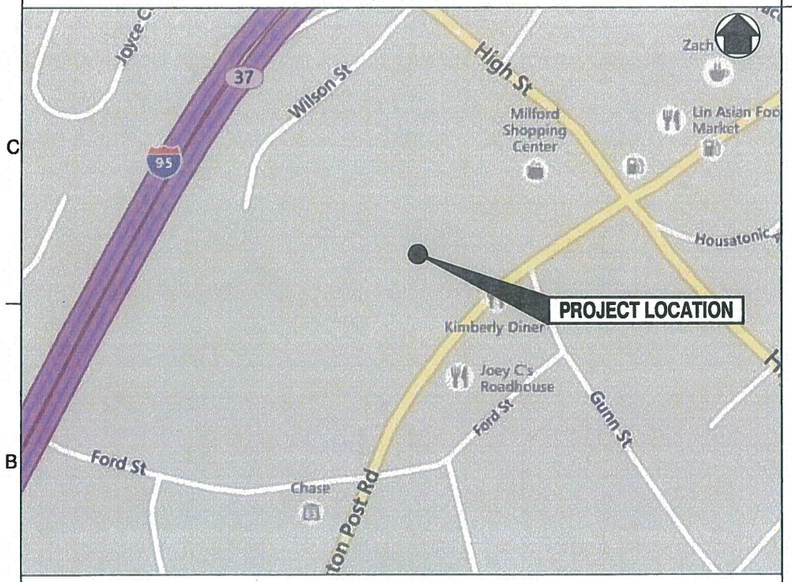
cc: City of Milford
110 River Street, City Hall
Milford, CT 06460

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11018F
CROWN CASTLE BU #: 842870
SITE NAME: MILFORD
434 BOSTON POST ROAD
MILFORD, CT 06460
NEW HAVEN COUNTY

SITE CONFIGURATION: 702C

SITE INFORMATION



KEY MAP
N.T.S.

DIRECTIONS: (FROM PARSIPPANY):

DEPART SYLVAN WAY TOWARD CENTURY DR. TURN RIGHT ONTO US-202/LITTLETON RD. KEEP RIGHT ONTO LITTLETON RD. KEEP RIGHT ONTO LITTLETON RD. TAKE RAMP LEFT AND FOLLOW SIGNS FOR I-80 EAST. TAKE RAMP LEFT FOR I-95 NORTH TOWARD G WASHINGTON B/NEW YORK. KEEP LEFT TO STAY ON I-95 N. AT EXIT 37, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR HIGH ST. TURN RIGHT ONTO HIGH ST. TURN RIGHT ONTO US-1/BOSTON POST RD. SITE WILL BE ON THE RIGHT.

PROJECT INFORMATION

T-MOBILE SITE #:	CT11018F
CROWN CASTLE BU #:	842870
SITE ADDRESS:	434 BOSTON POST ROAD MILFORD, CT 06460 NEW HAVEN COUNTY
LATITUDE:	N 41° 13' 42.69"
LONGITUDE:	W 73° 04' 12.47"
TOWER OWNER:	CROWN CASTLE 1200 MACARTHUR BLVD., SUITE 200 MAHWAH, NJ 07430
CONTACT:	WARREN KELLEHER (781) 970-0055
APPLICANT:	T-MOBILE NORTHEAST, LLC 4 SYLVAN WAY PARSIPPANY, NJ 07054
CONTACT:	PHONE #: (973) 397-4800 FAX #: (973) 292-8893
ENGINEER:	DEWBERRY ENGINEERS INC. 600 PARSIPPANY ROAD, SUITE 301 PARSIPPANY, NJ 07054
CONTACT:	GREG NAWROTZKI (973) 576-9653
SCOPE OF WORK:	REMOVE AND REPLACE (3) EXISTING ANTENNAS WITH (3) NEW ANTENNAS, ADD (3) NEW RRU'S

SHEET INDEX

SHEET NO.	SHEET 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

APPROVALS

T-MOBILE _____ DATE

OWNER/ LANDLORD _____ DATE

RF ENGINEER _____ DATE

ZONING _____ DATE

CONSTRUCTION _____ DATE

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

T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054
PHONE: (973) 397-4800
FAX: (973) 292-8893

MILFORD

CT11018F

434 BOSTON POST ROAD
MILFORD, CT 06460
NEW HAVEN COUNTY

SEAL

STATE OF CONNECTICUT
JIANG YU
No. 29222
REGISTERED PROFESSIONAL ENGINEER

JIANG YU, PE
CONNECTICUT LICENSE NO. 29222

SCALE

AS SHOWN

REV.	DATE	BY	DESCRIPTION
0	11/13/14	JC	ISSUED AS FINAL
A	11/07/14	JC	ISSUED FOR REVIEW

REVISIONS

DRAWN BY JC
CHECKED BY PD
APPROVED BY GHN
DATE 11/04/14
TITLE

TITLE SHEET

PROJECT NO. 50066258/50068461

T - 1

SHEET NO.

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.

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CT11018F

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NEW HAVEN COUNTY

SEAL

SCALE
AS SHOWN

REV.	DATE	BY	DESCRIPTION
0	11/13/14	JC	ISSUED AS FINAL
A	11/07/14	JC	ISSUED FOR REVIEW

REVISIONS

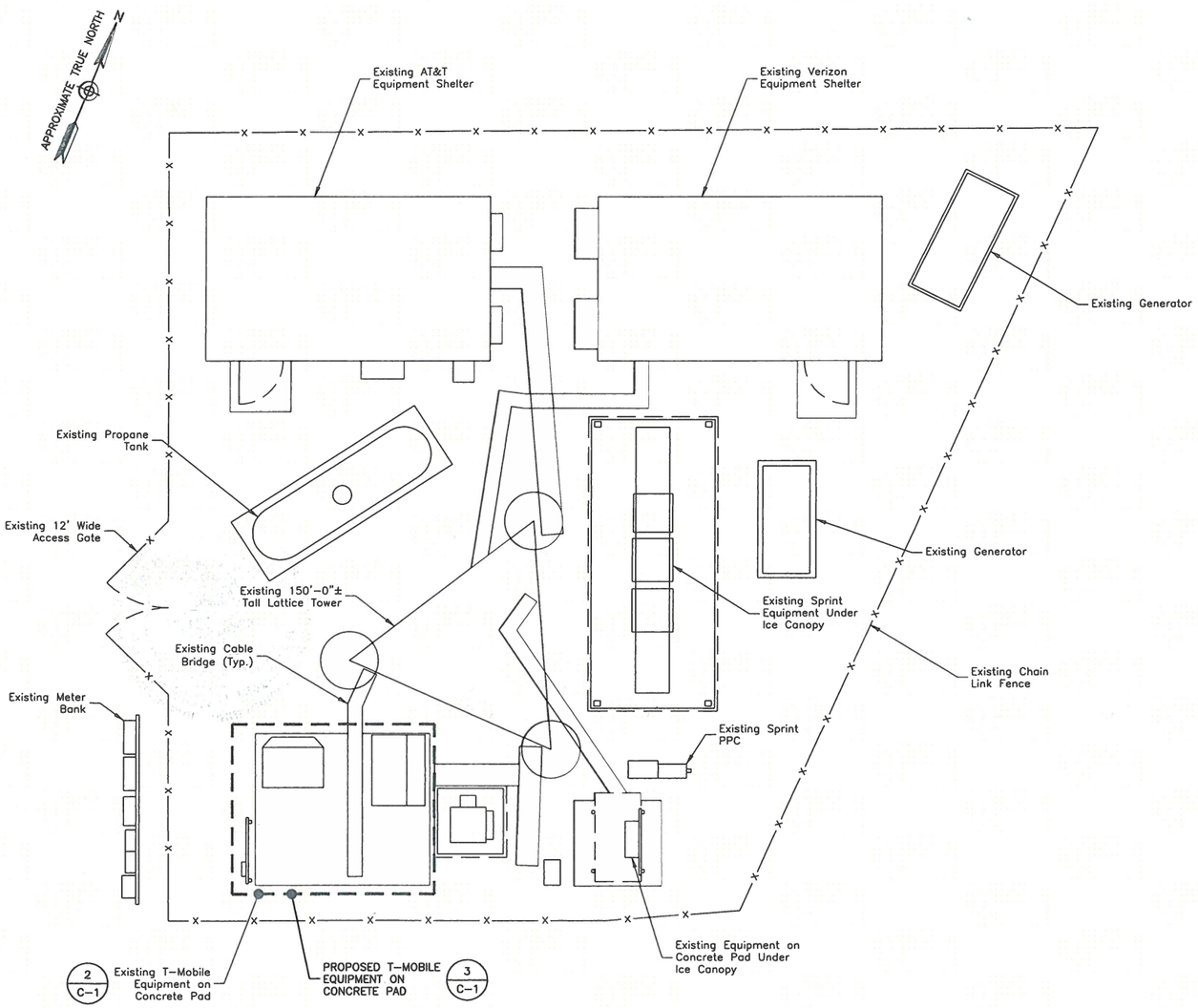
DRAWN BY JC
CHECKED BY PD
APPROVED BY GHN
DATE 11/04/14
TITLE

GENERAL NOTES

PROJECT NO. 50066258/50068461

G - 1

SHEET NO.

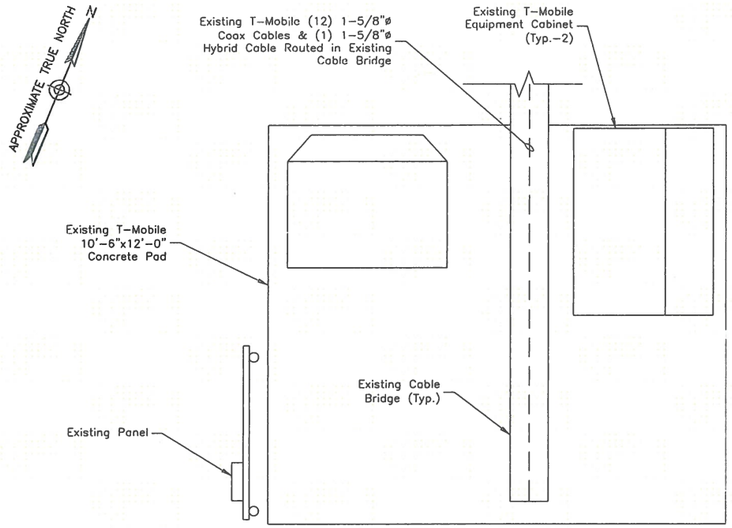


COMPOUND PLAN

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

1

0' 5' 10'

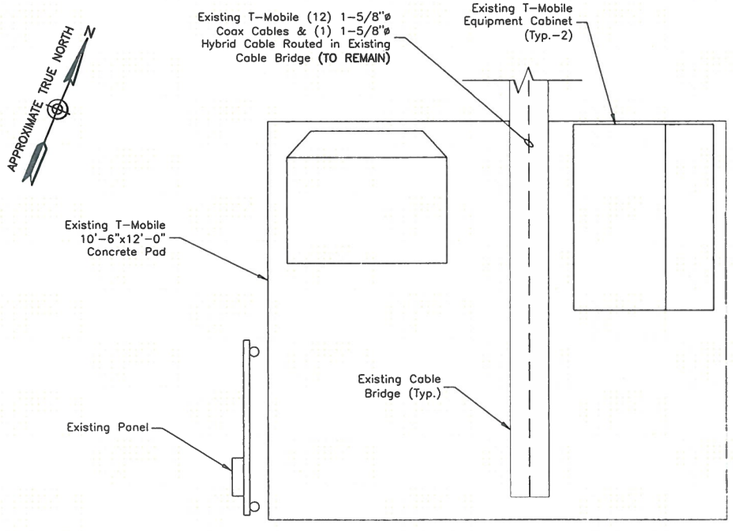


EXISTING EQUIPMENT PLAN

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

2

0' 1' 2' 4'



NOTE:

1. NO EQUIPMENT IS PROPOSED AT GRADE.

PROPOSED EQUIPMENT PLAN

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

3

0' 1' 2' 4'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. MOUNT ALL ANTENNAS, RRU'S, COAX, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS TO BE COMPLETED BY OTHERS.

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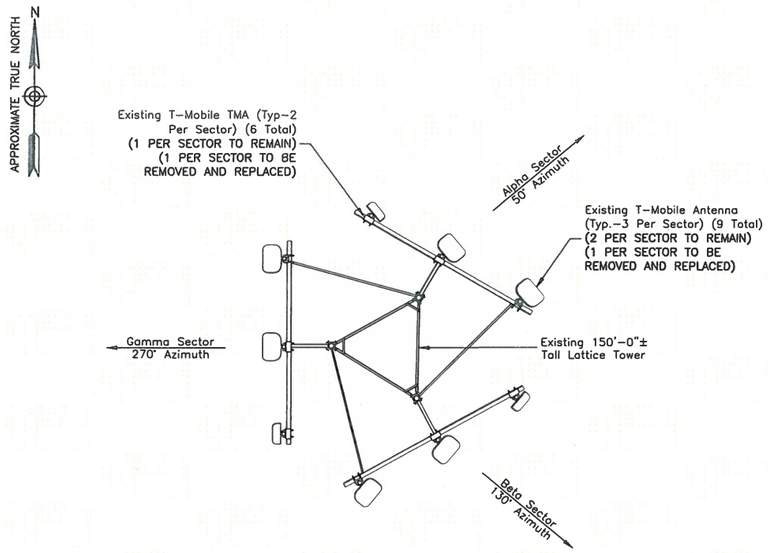
COMPOUND PLAN & EQUIPMENT PLANS

PROJECT NO. 50066258/50068461

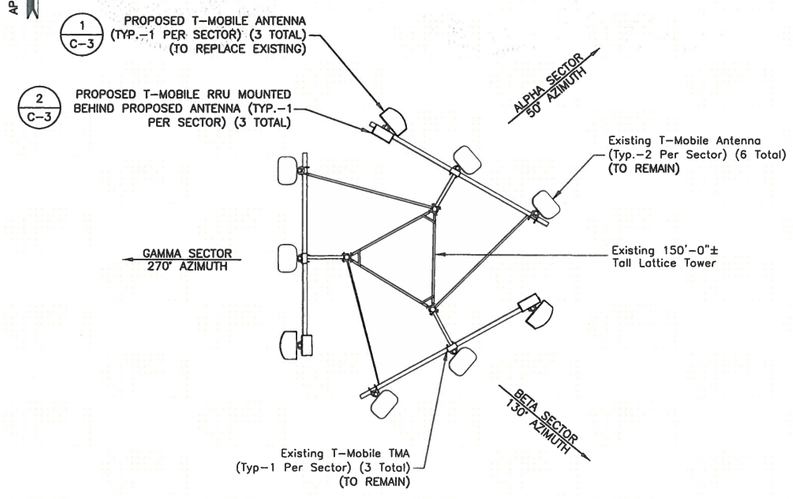
C - 1

SHEET NO.



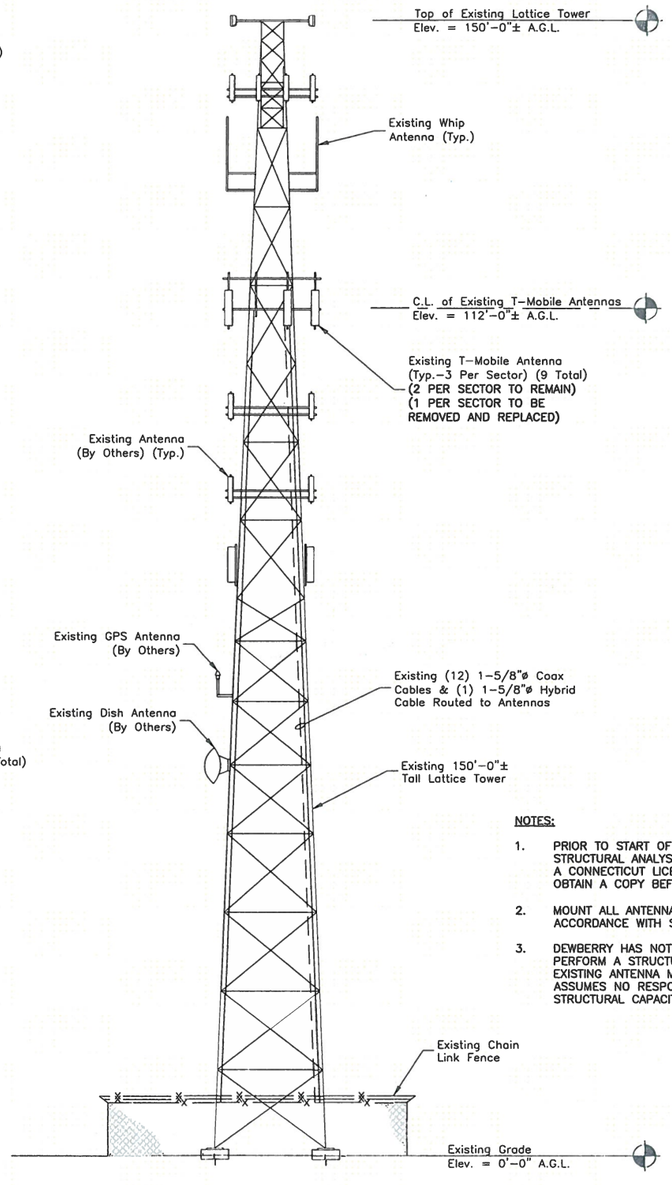
EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT (2)

SCALE: N.T.S.



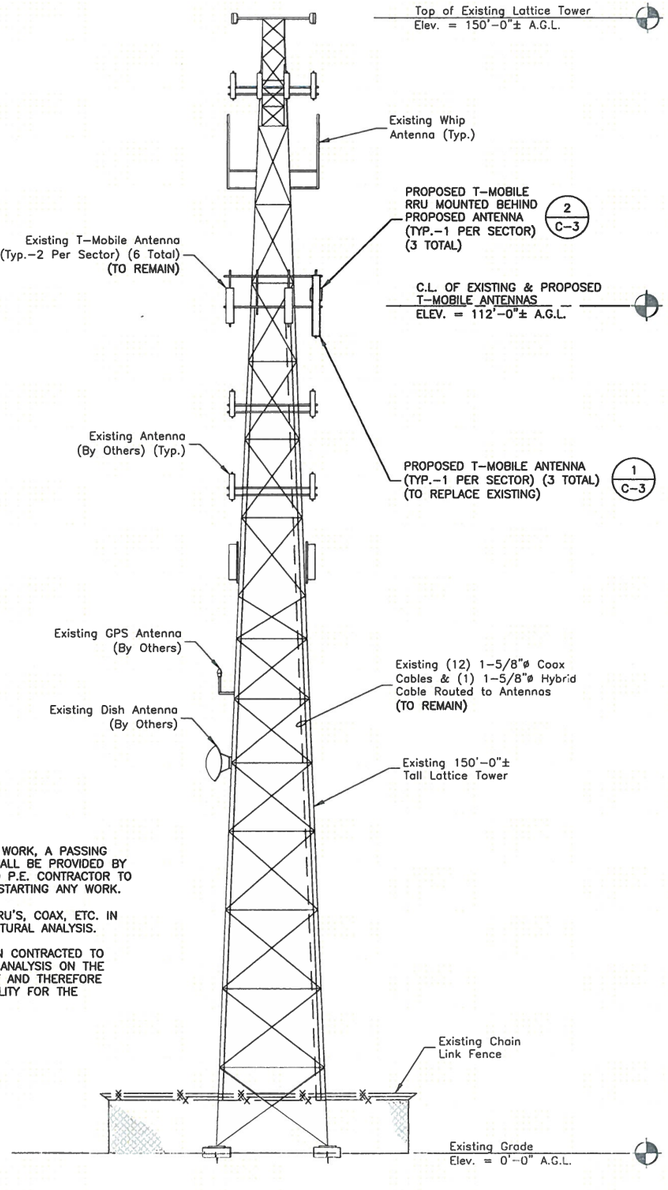
NOTES:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY A CONNECTICUT LICENSED P.E. CONTRACTOR TO OBTAIN A COPY BEFORE STARTING ANY WORK.
2. MOUNT ALL ANTENNAS, RRU'S, COAX, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS.
3. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.

EXISTING ELEVATION (3)

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'



PROPOSED ELEVATION (4)

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

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APPROVED BY GHN
DATE 11/04/14

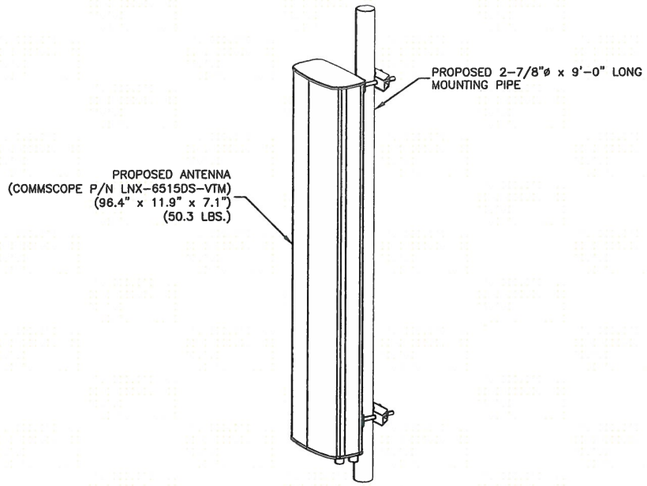
TITLE

ANTENNA LAYOUTS & ELEVATIONS

PROJECT NO. 50066258/50068461

C - 2

SHEET NO.

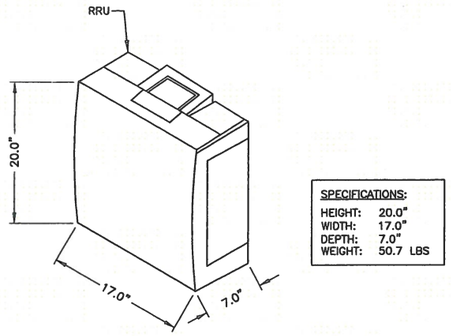


NOTES:

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 DETAIL (1)

SCALE: N.T.S.



SPECIFICATIONS:

HEIGHT:	20.0"
WIDTH:	17.0"
DEPTH:	7.0"
WEIGHT:	50.7 LBS

ERICSSON RRUS-11 B12

RRU 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.

RRUS-11 - REMOTE RADIO UNIT (2)

SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX LENGTH
	EXISTING	PROPOSED	EXISTING	PROPOSED	
ALPHA	EXISTING ANTENNA	COMMSCOPE LNX-6515DS-VTM	(4) 1-5/8"	—	162'
	ERICSSON AIR21 ANTENNA	EXISTING TO REMAIN			
	ERICSSON AIR21 ANTENNA	EXISTING TO REMAIN			
BETA	EXISTING ANTENNA	COMMSCOPE LNX-6515DS-VTM	(4) 1-5/8"	—	162'
	ERICSSON AIR21 ANTENNA	EXISTING TO REMAIN			
	ERICSSON AIR21 ANTENNA	EXISTING TO REMAIN			
GAMMA	EXISTING ANTENNA	COMMSCOPE LNX-6515DS-VTM	(4) 1-5/8"	—	162'
	ERICSSON AIR21 ANTENNA	EXISTING TO REMAIN			
	ERICSSON AIR21 ANTENNA	EXISTING TO REMAIN			

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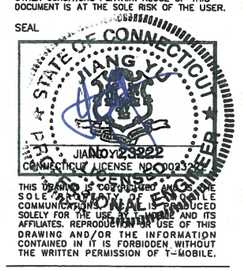

JIANG YU
CONNECTICUT LICENSE NO. 23222

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A	11/07/14	JC	ISSUED FOR REVIEW

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CHECKED BY PD
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DATE 11/04/14

TITLE

CONSTRUCTION DETAILS

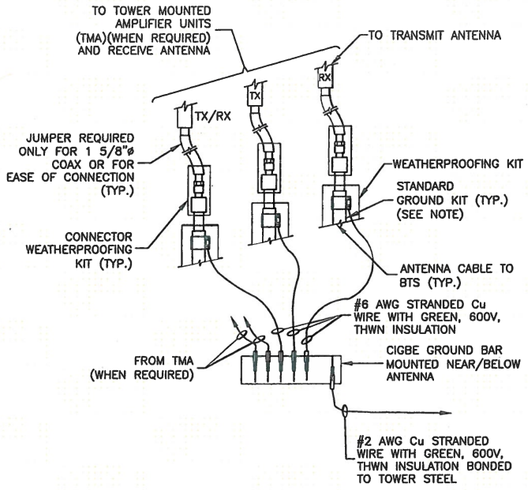
PROJECT NO. 50066258/50068461

C - 3

SHEET NO.

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.

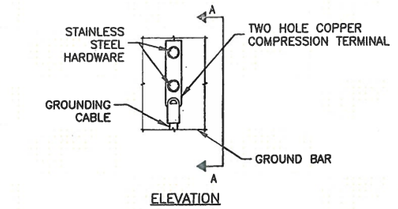


NOTE:

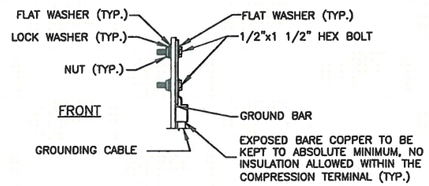
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) — 1

SCALE: N.T.S.



ELEVATION



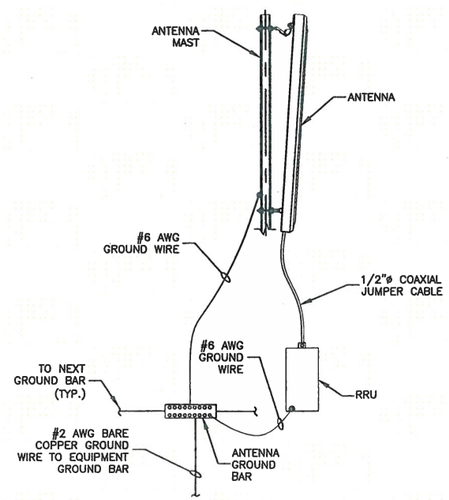
SECTION 'A-A'

NOTES:

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

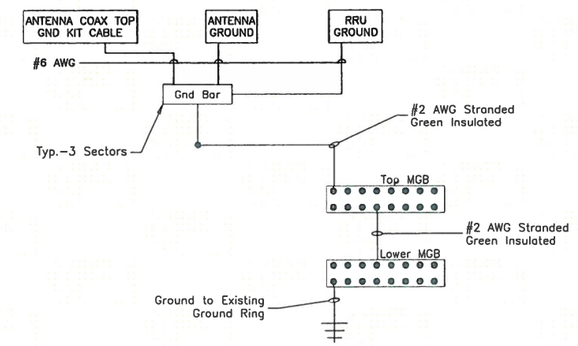
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL — 3

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 — 4

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GROUNDING NOTES & DETAILS

PROJECT NO. 50066258/50068461

E - 1

SHEET NO.

October 22, 2014

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:	CT11018F
	Carrier Site Name:	Milford/ I-95/ X37/ Jct.
Crown Castle Designation:	**Crown Castle BU Number:**	842870
	Crown Castle Site Name:	MILFORD
	Crown Castle JDE Job Number:	311798
	Crown Castle Work Order Number:	951228
	Crown Castle Application Number:	269931 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	91292.002.01
Site Data:	**434 BOSTON POST ROAD, MILFORD, New Haven County, CT** **Latitude *41° 13' 42.69"*, Longitude *-73° 4' 12.47"*** **150 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 720408, in accordance with application 269931, revision 1.

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:

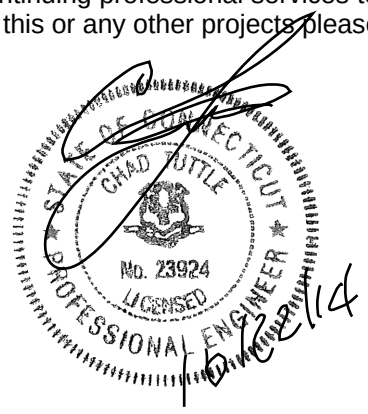
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 90 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.



10/22/14

Jennifer Tillson
Project Engineer

Chad E. Tuttle, P.E.
President

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6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 150 ft. Self-Support tower designed by PiRod Inc. in March of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. This tower has been modified by GPD Group in 2012 and those modifications have been incorporated in this analysis.

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 90 mph with no ice, 37.6 mph with 0.75 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
114.0	112.0	3	Commscope	LNX-6515DS-VTM	--	--	--
		3	Ericsson	RRUS 11 B12			

Table 2 - Existing and Reserved 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	Radiowaves	HPLPD1-18	4	1-5/8	2
	150.0	1	--	Platform Mount [LP 405-1]	--	--	1
148.0	158.0	1	Sinclair	SC229-SFXLDF	2	7/8	2
		1	Sinclair	SC320			
	148.0	2	--	Side Arm Mount [SO 304-1]			
141.0	141.0	3	Ericsson	RRUS 11-700	12 2	1-5/8 1-1/4	1
		3	KMW Comm.	AM-X-CD-14-65-00T-RET			
		6	Powerwave Tech.	7770.00			
		6	Powerwave Tech.	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
		1	--	Sector Mount [SM 411-3]			
135.0	135.0	2	Terrawave	M5160160P10006	2	1-5/8	1
		2	--	Side Arm Mount [SO 304-1]			
133.0	143.0	1	Sinclair	SC229-SFXLDF	2	7/8	2
		1	Sinclair	SC320			
	133.0	2	--	Side Arm Mount [SO 301-1]	--	--	1
115.0	115.0	1	Lucent	KS24019-L112A	--	--	1
		1	--	Pipe Mount [PM 601-1]			
114.0	117.0	**1**	**RFS Celwave**	**MA0528-23AN**	**1** **1**	**1-1/4** **1/2**	**3**
	114.0	1	--	Sector Mount [SM 307-3]	--	--	1
	112.0	**3**	**Andrew**	**ETW200VS12UB**	**--**	**--**	**3**
		3	**EMS Wireless**	**RR90-17-02DP**			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	**RFS Celwave**	**ATMAA1412D-1A20**			
		3	Ericsson	ERICSSON AIR 21 B2A B4P	13	1-5/8	1
		3	Ericsson	ERICSSON AIR 21 B4A B2P			
		3	Ericsson	KRY 112 71			
100.0	100.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	3	1-1/4	2
		3	Alcatel Lucent	PCS 1900MHz 2x40W			
		6	RFS Celwave	APXVSPP18-C-A20			
		1	--	Sector Mount [SM 407-3]	6	1-1/4	1
93.0	93.0	1	Til-Tek	TA-2335-DAB-H	1	1-5/8	1
		1	--	Pipe Mount [PM 601-1]			
88.0	90.0	3	Alcatel Lucent	RRH2X40-AWS	1	1-5/8	2
		3	Antel	BXA-171063/8CF			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
		3	Antel	BXA-171063/8CF	12	1-5/8	1
		6	Antel	LPA-80063/4CF			
		6	RFS Celwave	FD9R6004/2C-3L			
		3	Swedcom	SWCP 2x5514			
	88.0	1	--	Sector Mount [SM 408-3]			
65.0	65.0	3	RFS Celwave	APXV18-206517S-C	6	1-5/8	1
50.0	50.0	1	Pctel	GPS-TMG-HR-26NCM	1	1/2	1
12.0	12.0	1	Prodelin	1130	1	19/64	2
		1	--	Pipe Mount [PM 601-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
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)
150	150	4	Celwave	PD201	7	1 5/8
		3	Scala	PR950		
		1	Generic	LP Platform		
140	140	12	Allgon	7184	12	1 5/8
		3	Generic	T-Frames		
125	125	1	Celwave	PD201	1	1 5/8
		1	Generic	3' Stand off		
115	115	1	Celwave	PD201	2	1 5/8
		1	Celwave	PD220-DT		
		2	Generic	3' Stand off		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110	110	12	Allgon	7184	12	1 5/8
		3	Generic	T-Frames		
100	100	12	Allgon	7184	12	1 5/8
		3	Generic	T-Frames		
90	90	12	Allgon	7184	12	1 5/8
		3	Generic	T-Frames		
80	80	12	Allgon	7184	12	1 5/8
		3	Generic	T-Frames		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	T-Mobile Co-Locate, Rev# 1	269931	CCI Sites
Tower Manufacturer Drawing	PiRod Inc., Eng. File No. A-116849-Q-92250	4480661	CCI Sites
Tower Modification Drawing	GPD Group, Job No. 2012762.86, Date: 03/27/2012	4713244	CCI Sites
Post Modification Inspection	GPD Group, Job No. 2012858.01, Date: 10/23/2012	4713239	CCI Sites
Foundation Drawing	PiRod Inc., Eng. File No. A-116849-Q-92250	4480652	CCI Sites
Geotechnical Report	Clarence Welti Associates, Date: 01/17/2000	4480675	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 10/20/2014	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	150 - 130	Leg	1 1/2	1	23.883	33.498	71.3	Pass
T2	130 - 110	Leg	2	67	-67.051	97.248	68.9	Pass
T3	110 - 100	Leg	Pirod 105244	131	-69.060	122.940	56.2	Pass
T4	100 - 80	Leg	Pirod 105216	143	-105.943	122.940	86.2	Pass
T5	80 - 60	Leg	Pirod 105217	164	-158.891	184.672	86.0	Pass
T6	60 - 40	Leg	Pirod 105218	182	-198.663	258.238	76.9	Pass
T7	40 - 20	Leg	Pirod 105218	197	-235.531	258.238	91.2	Pass
T8	20 - 0	Leg	Pirod 105219	212	-269.533	343.622	78.4	Pass
T1	150 - 130	Diagonal	3/4	12	-3.498	4.339	80.6	Pass
T2	130 - 110	Diagonal	7/8	76	-5.135	6.874	74.7	Pass
T3	110 - 100	Diagonal	L2 1/2x2 1/2x3/16	137	-8.411	12.228	68.8 69.7 (b)	Pass
T4	100 - 80	Diagonal	L2 1/2x2 1/2x3/8	149	-14.424	17.912	80.5	Pass
T5	80 - 60	Diagonal	L3x3x3/16	170	-8.472	13.368	63.4 75.7 (b)	Pass
T6	60 - 40	Diagonal	L3x3x3/16	185	-8.193	10.672	76.8	Pass
T7	40 - 20	Diagonal	L3x3x5/16	200	-8.593	13.740	62.5	Pass
T8	20 - 0	Diagonal	L3x3x5/16	218	-10.373	11.339	91.5	Pass
T1	150 - 130	Horizontal	3/4	23	-0.302	2.433	12.4	Pass
T2	130 - 110	Horizontal	3/4	122	-0.852	2.258	37.7	Pass
T4	100 - 80	Horizontal	L3x3x3/16	153	-8.895	15.576	57.1 95.4 (b)	Pass
T1	150 - 130	Top Girt	7/8	5	-0.320	5.371	6.0	Pass
T2	130 - 110	Top Girt	7/8	70	-1.520	4.298	35.4	Pass
T3	110 - 100	Top Girt	L3x3x3/16	132	-0.806	17.738	4.5 9.5 (b)	Pass
T4	100 - 80	Top Girt	L3x3x3/16	144	-6.175	17.438	35.4 66.2 (b)	Pass
T5	80 - 60	Top Girt	L3x3x3/16	165	-6.585	12.349	53.3 69.5 (b)	Pass
T1	150 - 130	Bottom Girt	7/8	8	-1.418	4.265	33.2	Pass
T2	130 - 110	Bottom Girt	7/8	71	-1.419	3.493	40.6	Pass
							Summary	
						Leg (T7)	91.2	Pass
						Diagonal (T8)	91.5	Pass
						Horizontal (T4)	95.4	Pass
						Top Girt (T5)	69.5	Pass
						Bottom Girt (T2)	40.6	Pass
						Bolt Checks	95.4	Pass
						RATING	95.4	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	48.8	Pass
1	Base Foundation	Base	48.8	Pass

Structure Rating (max from all components) =	95.4%

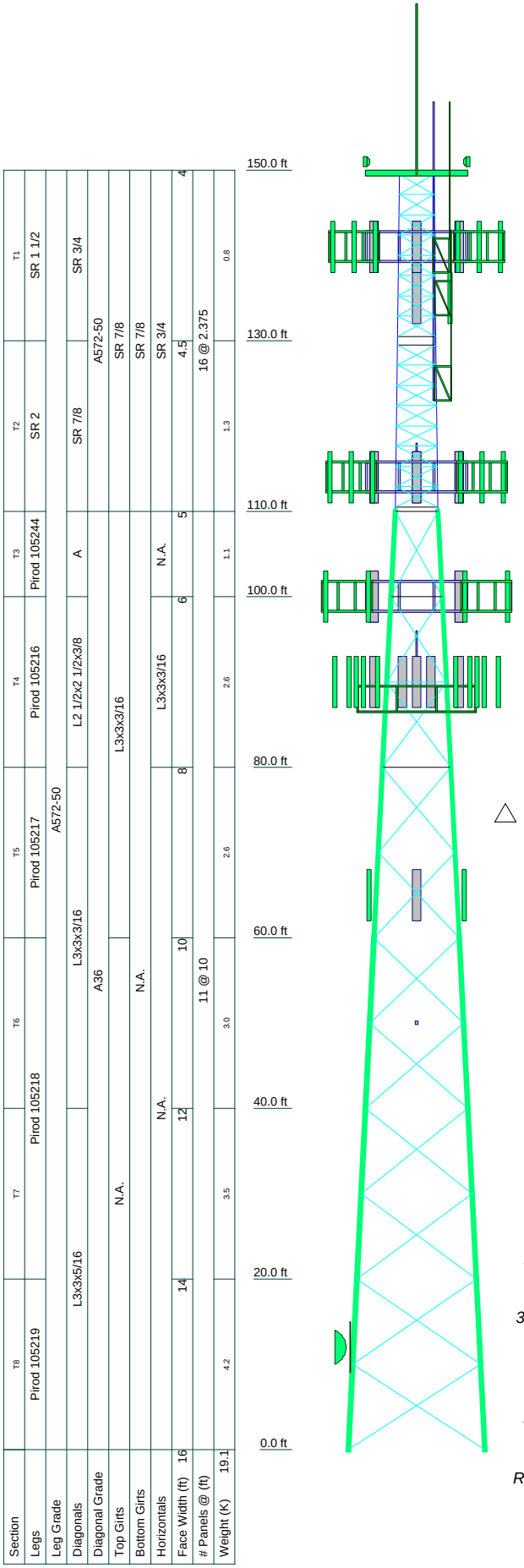
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



Section	T1	T2	T3	T4	T5	T6	T7	T8	
Legs	SR 1 1/2	SR 2	Pirod 105244	Pirod 105216	Pirod 105217	Pirod 105218		Pirod 105219	
Leg Grade	A572-50								
Diagonals	SR 3/4	SR 7/8	A	L2 1/2x2 1/2x3/8	L3x3x3/16	L3x3x5/16			
Diagonal Grade	A572-50			A36					
Top Girts	SR 7/8			L3x3x3/16		N.A.			
Bottom Girts	SR 7/8								
Horizontals	SR 3/4		N.A.	L3x3x3/16		N.A.			
Face Width (ft)	4	4.5	5	6	8	10	12	14	16
# Panels @ (ft)	16 @ 2.375					11 @ 10			
Weight (K)	0.8	1.3	1.1	2.6	2.6	3.0	3.5	4.2	19.1

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8" x 3' on 16' Pole (P)	159.5	ERICSSON AIR 21 B2A B4P (E)	114
(3) 6' x 2" Mount Pipe (E)	150	ERICSSON AIR 21 B2A B4P (E)	114
(3) 6' x 2" Mount Pipe (E)	150	(2) APXVSPP18-C-A20 w/ Mount Pipe (R)	100
(3) 6' x 2" Mount Pipe (E)	150	800MHz 2X50W RRH W/FILTER (R)	100
Platform Mount [LP 405-1] (E)	150	800MHz 2X50W RRH W/FILTER (R)	100
HPLPD1-18 (R)	150	800MHz 2X50W RRH W/FILTER (R)	100
HPLPD1-18 (R)	150	PCS 1900MHz 2x40W (R)	100
Side Arm Mount [SO 304-1] (R)	148	PCS 1900MHz 2x40W (R)	100
Side Arm Mount [SO 304-1] (R)	148	PCS 1900MHz 2x40W (R)	100
SC320 (R)	148	Sector Mount [SM 407-3] (E)	100
SC229-SFXLDF (R)	148	(2) APXVSPP18-C-A20 w/ Mount Pipe (R)	100
(2) 7770.00 w/ Mount Pipe (E)	141	(2) APXVSPP18-C-A20 w/ Mount Pipe (R)	100
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	141	TA-2335-DAB-H (E)	93
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	141	Pipe Mount [PM 601-1] (E)	93
AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	141	(2) LPA-80063/4CF w/ Mount Pipe (E)	88
(2) LGP21401 (E)	141	BXA-171063/8CF w/ Mount Pipe (E)	88
(2) LGP21401 (E)	141	BXA-171063/8CF w/ Mount Pipe (E)	88
(2) LGP21401 (E)	141	BXA-171063/8CF w/ Mount Pipe (E)	88
RRUS 11-700 (E)	141	SWCP 2x5514 w/ Mount Pipe (E)	88
RRUS 11-700 (E)	141	SWCP 2x5514 w/ Mount Pipe (E)	88
RRUS 11-700 (E)	141	SWCP 2x5514 w/ Mount Pipe (E)	88
DC6-48-60-18-8F (E)	141	(2) FD9R6004/2C-3L (E)	88
6' x 2" Mount Pipe (E)	141	(2) FD9R6004/2C-3L (E)	88
6' x 2" Mount Pipe (E)	141	(2) FD9R6004/2C-3L (E)	88
6' x 2" Mount Pipe (E)	141	BXA-171063/8CF w/ Mount Pipe (R)	88
Sector Mount [SM 411-3] (E)	141	BXA-171063/8CF w/ Mount Pipe (R)	88
(2) 7770.00 w/ Mount Pipe (E)	141	BXA-171063/8CF w/ Mount Pipe (R)	88
(2) 7770.00 w/ Mount Pipe (E)	141	RRH2X40-AWS (R)	88
Side Arm Mount [SO 304-1] (E)	135	RRH2X40-AWS (R)	88
Side Arm Mount [SO 304-1] (E)	135	RRH2X40-AWS (R)	88
M5160160P10006 w/ Mount Pipe (E)	135	DB-T1-6Z-8AB-0Z (R)	88
M5160160P10006 w/ Mount Pipe (E)	135	Sector Mount [SM 408-3] (E)	88
Side Arm Mount [SO 301-1] (E)	133	(2) LPA-80063/4CF w/ Mount Pipe (E)	88
Side Arm Mount [SO 301-1] (E)	133	(2) LPA-80063/4CF w/ Mount Pipe (E)	88
SC320 (R)	133	APXV18-206517S-C w/ Mount Pipe (E)	65
SC229-SFXLDF (R)	133	APXV18-206517S-C w/ Mount Pipe (E)	65
KS24019-L112A (E)	115	APXV18-206517S-C w/ Mount Pipe (E)	65
Pipe Mount [PM 601-1] (E)	115	GPS-TMG-HR-26NCM (E)	50
ERICSSON AIR 21 B2A B4P (E)	114	Pipe Mount [PM 601-1] (R)	12
ERICSSON AIR 21 B4A B2P (E)	114	1130 (R)	12
ERICSSON AIR 21 B4A B2P (E)	114		
ERICSSON AIR 21 B4A B2P (E)	114		
KRY 112 71 (E)	114		
KRY 112 71 (E)	114		
KRY 112 71 (E)	114		
LNX-6515DS-VTM (P)	114		
LNX-6515DS-VTM (P)	114		
LNX-6515DS-VTM (P)	114		
RRUS 11 B12 (P)	114		
RRUS 11 B12 (P)	114		
RRUS 11 B12 (P)	114		
Sector Mount [SM 307-3] (4 M.P. / Sec. Inc.)	114		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2 1/2x2 1/2x3/16		

MATERIAL STRENGTH

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

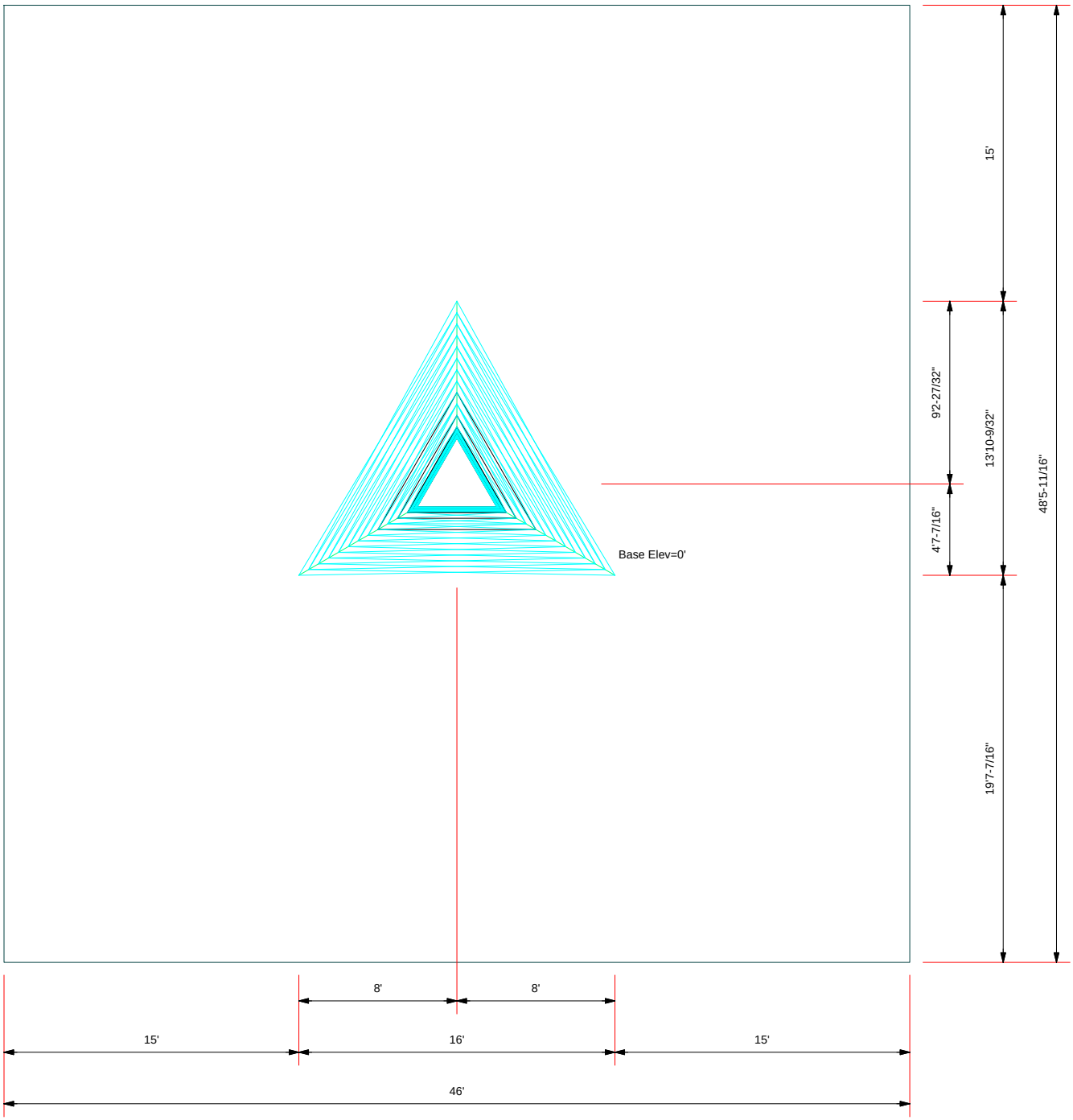
TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 95.4%

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

Job: 91292.002.01 - MILFORD, CT (BU# 842870)			
Project:			
Client: Crown Castle	Drawn by: JTillson	App'd:	
Code: TIA/EIA-222-F	Date: 10/22/14	Scale: NTS	
Path: S:\Projects\Crown Castle\91292_842870_Milford\Engineering\tnxTower\91292_002_01_MILFORD_CT.eri		Dwg No. E-1	

Plot Plan
Total Area - 0.05 Acres



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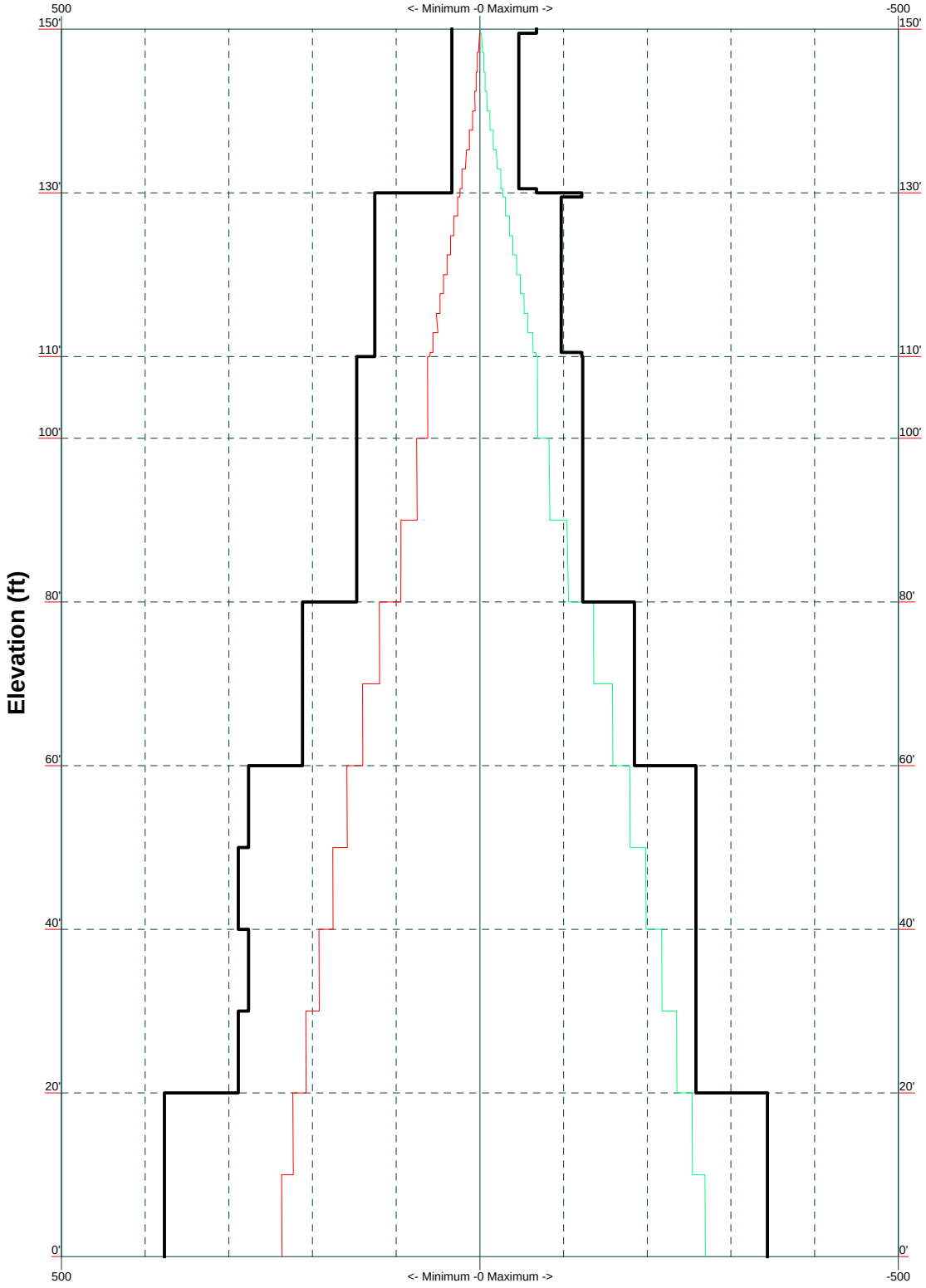
Code: TIA/EIA-222-F	Date: 10/22/14	Scale: NTS
Path: S:\Projects\Crown Castle\91292_842870_Milford\Engineering\tnxTower\91292_002_01_MILFORD_CT.en		Dwg No. E-2

TIA/EIA-222-F - 90 mph/38 mph 0.750 in Ice

Leg Capacity ——— Leg Compression (K)



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Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 91292.002.01 - MILFORD, CT (BU# 842870)		
Project:		
Client: Crown Castle	Drawn by: JTillson	App'd:
Code: TIA/EIA-222-F	Date: 10/22/14	Scale: NTS
Path: S:\Projects\Crown Castle\91292_842870_Milford\Engineering\tnxTower\91292_002_01_MILFORD_CT.en		Dwg No. E-3

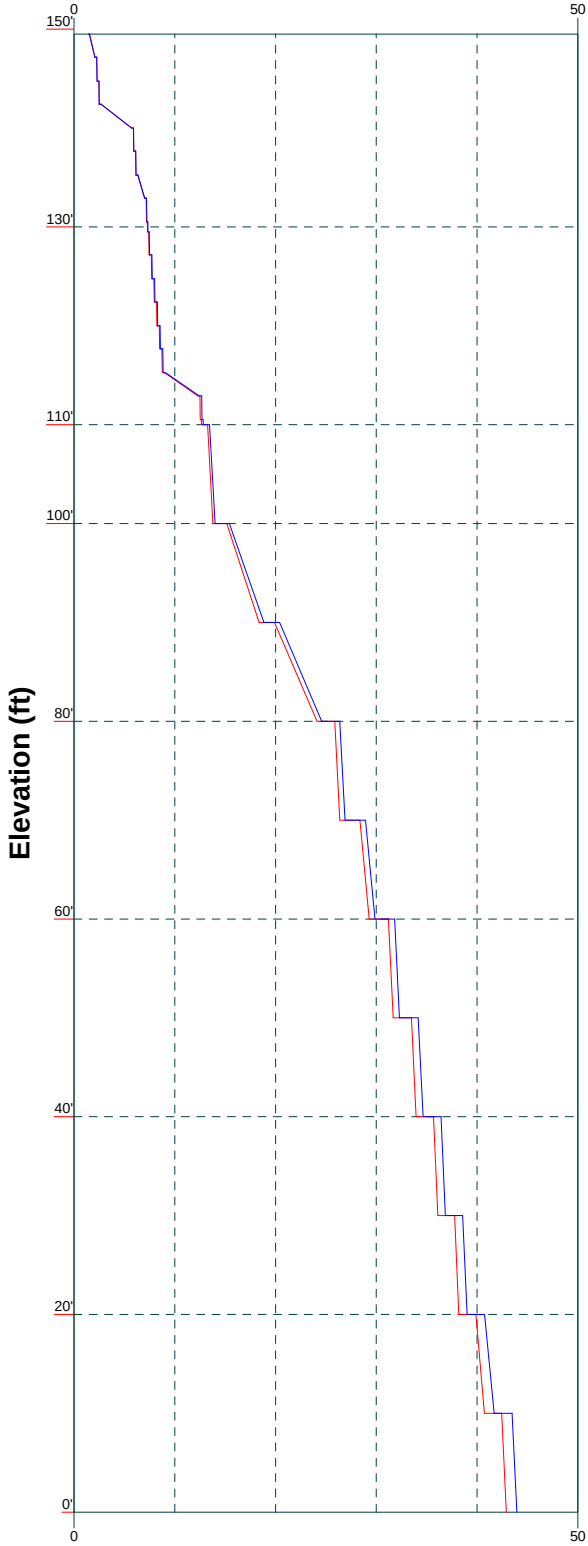
TIA/EIA-222-F - 90 mph/38 mph 0.750 in Ice

Vx Vz

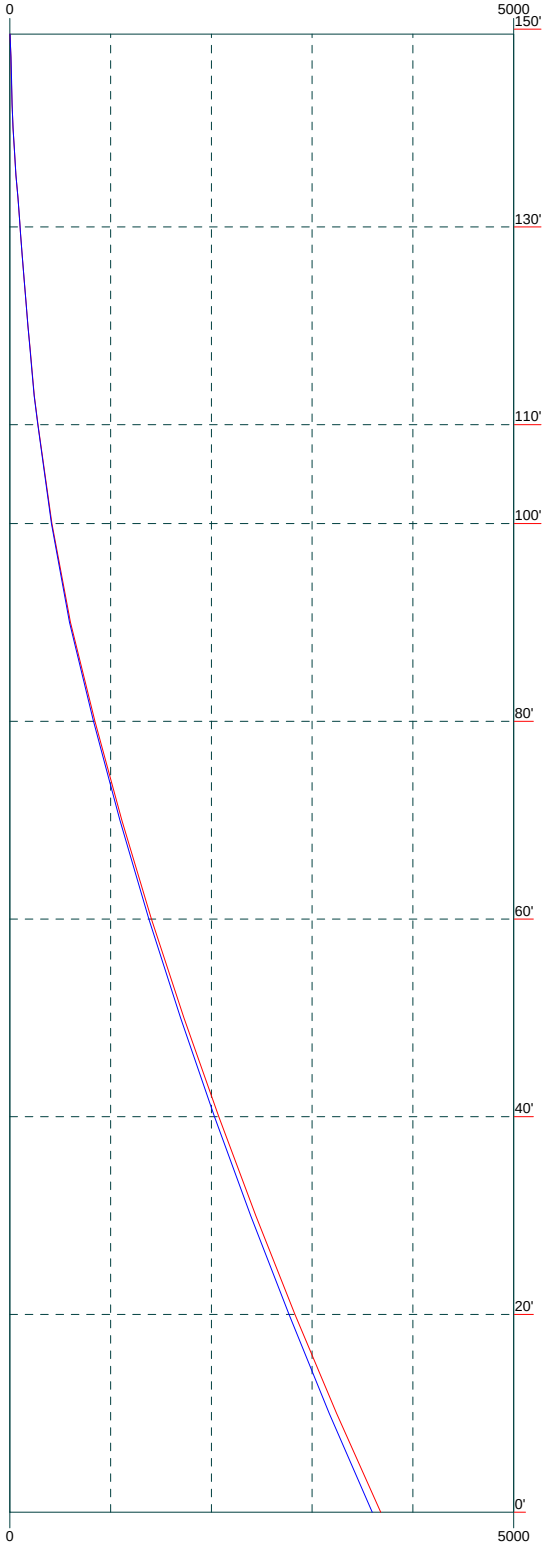
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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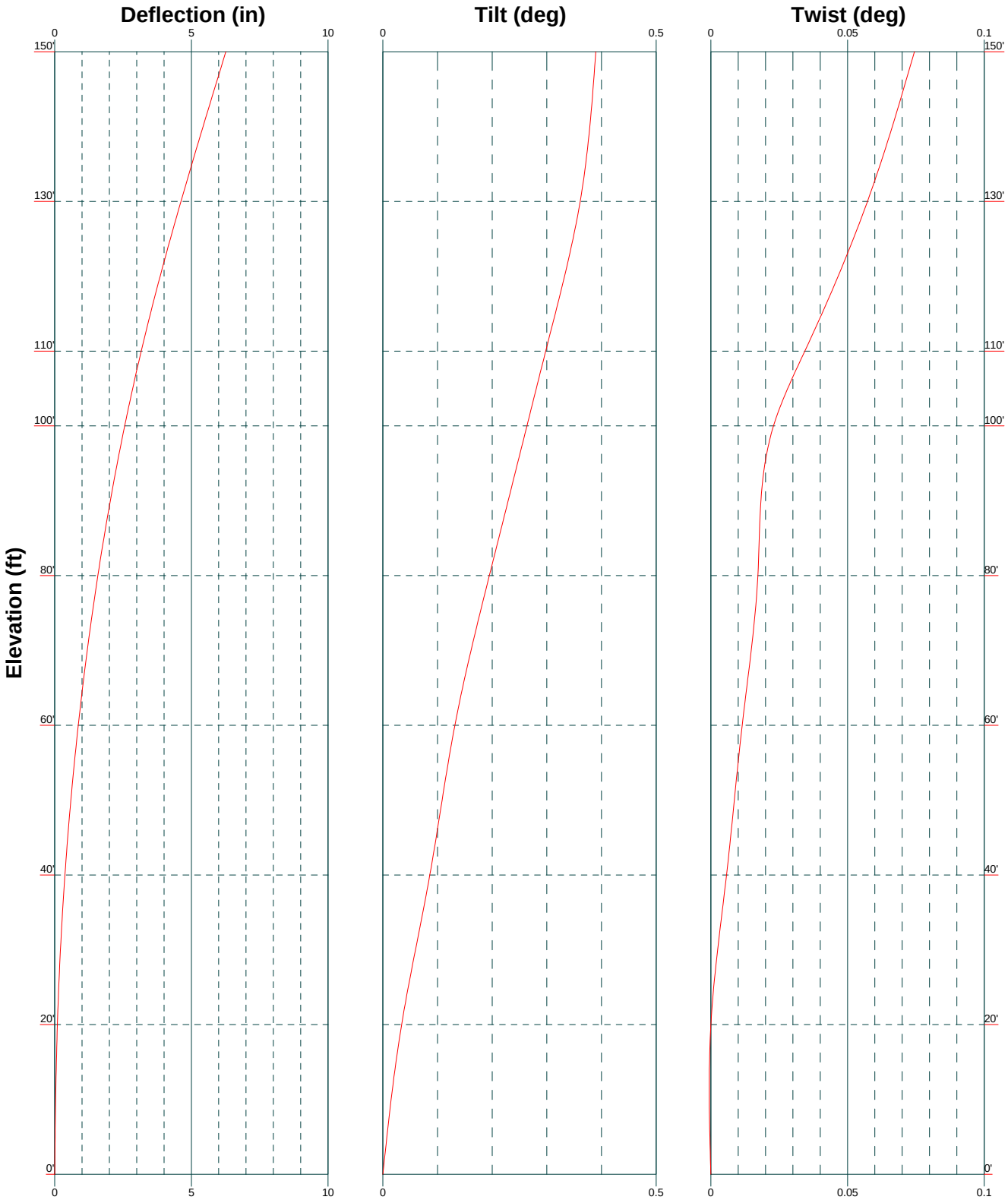
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***91292.002.01 - MILFORD, CT (BU# 842870)***		
Project:		
Client: Crown Castle	Drawn by: JTillson	App'd:
Code: TIA/EIA-222-F	Date: 10/22/14	Scale: NTS
Path: S:\Projects\Crown Castle\91292_842870_Milford\Engineering\tnxTower\91292_002_01_MILFORD_CT.en		Dwg No. E-4

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

Maximum Values

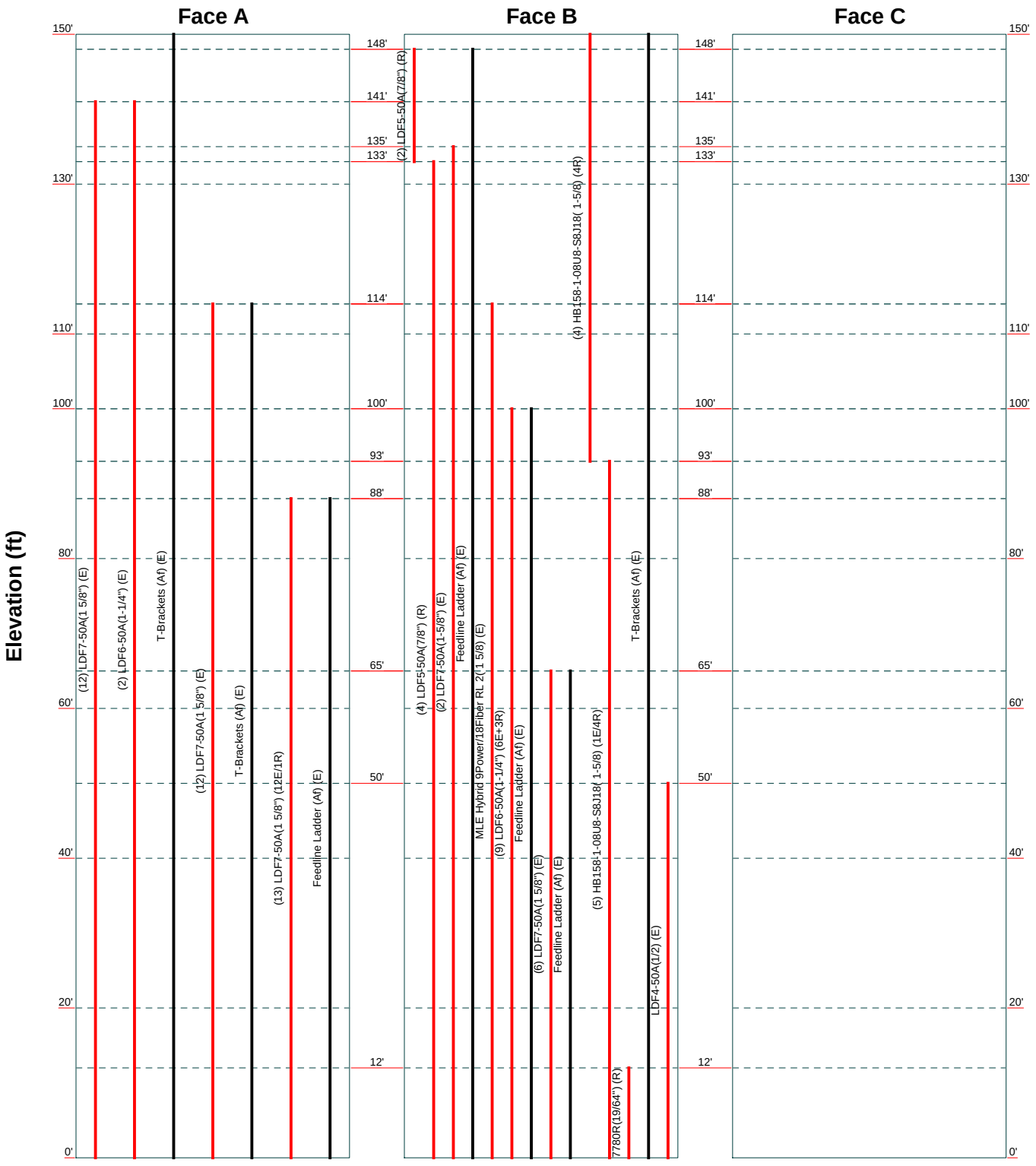


B+T Group
1717 South Boulder Ave, Suite 300
Tulsa, OK - 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***91292.002.01 - MILFORD, CT (BU# 842870)***		
Project:		
Client: Crown Castle	Drawn by: JTillson	App'd:
Code: TIA/EIA-222-F	Date: 10/22/14	Scale: NTS
Path: S:\Projects\Crown Castle\91292_842870_Milford\Engineering\tnxTower\91292_002_01_MILFORD_CT.eri		Dwg No. E-5

Feed Line Distribution Chart
0' - 150'

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



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

Job: ***91292.002.01 - MILFORD, CT (BU# 842870)***		
Project:		
Client: Crown Castle	Drawn by: JTillson	App'd:
Code: TIA/EIA-222-F	Date: 10/22/14	Scale: NTS
Path: S:\Projects\Crown Castle\91292_842870_Milford\Engineering\tnxTower\91292_002_01_MILFORD_CT.eri		Dwg No. E-7

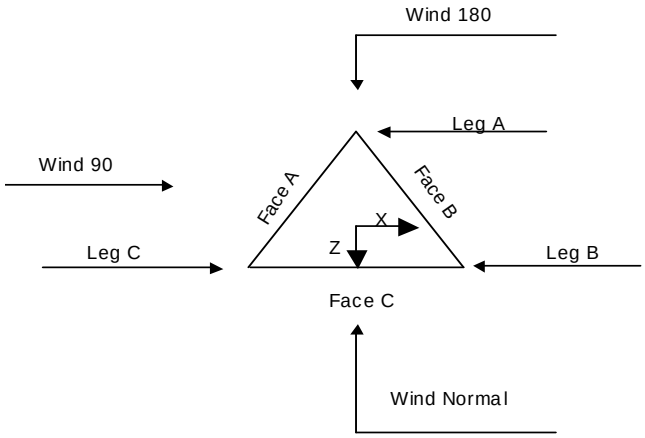
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 150' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 4' at the top and 16' at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 90 mph.
Nominal ice thickness of 0.750 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	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	150'-130'			4'	1	20'
T2	130'-110'			4'6"	1	20'
T3	110'-100'			5'	1	10'
T4	100'-80'			6'	1	20'
T5	80'-60'			8'	1	20'
T6	60'-40'			10'	1	20'
T7	40'-20'			12'	1	20'
T8	20'-0'			14'	1	20'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	150'-130'	2'4-1/2"	X Brace	No	Steps	6.000	6.000
T2	130'-110'	2'4-1/2"	X Brace	No	Steps	6.000	6.000
T3	110'-100'	10'	X Brace	No	Yes	0.000	0.000
T4	100'-80'	10'	X Brace	No	Yes	0.000	0.000
T5	80'-60'	10'	X Brace	No	No	0.000	0.000
T6	60'-40'	10'	X Brace	No	No	0.000	0.000
T7	40'-20'	10'	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
T8	20'-0'	10'	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150'-130'	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 130'-110'	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 110'-100'	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 100'-80'	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/8	A36 (36 ksi)
T5 80'-60'	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 60'-40'	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 40'-20'	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T8 20'-0'	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 150'-130'	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 130'-110'	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 110'-100'	Equal Angle	L3x3x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T4 100'-80'	Equal Angle	L3x3x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T5 80'-60'	Equal Angle	L3x3x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 150'-130'	None	Flat Bar		A36	Solid Round	3/4	A572-50

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2 130'-110'	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	3/4	(50 ksi) A572-50 (50 ksi)
T4 100'-80'	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x3/16	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 150'-130'	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T2 130'-110'	0.000	0.000	A36 (36 ksi)	1	1	1	0.000	0.000
T3 110'-100'	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	0.000	0.000
T4 100'-80'	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	0.000	0.000
T5 80'-60'	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	0.000	0.000
T6 60'-40'	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	0.000	0.000
T7 40'-20'	0.000	0.000	A36 (36 ksi)	1.03	1	1.05	0.000	0.000
T8 20'-0'	0.000	0.000	A36 (36 ksi)	1.03	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 150'-130'	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 130'-110'	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 110'-100'	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 100'-80'	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 80'-60'	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 60'-40'	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 40'-20'	Yes	No	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
				1	1	1	1	1	1	1
T8 20'-0'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Truss-Leg K Factors: Truss-Legs Used As Leg Members — Leg Panels	X Brace Diagonals	Z Brace Diagonals	Truss-Legs Used As Inner Members — Leg Panels	X Brace Diagonals	Z Brace Diagonals
T3 110'-100'	1	0.5	0.85	1	0.5	0.85
T4 100'-80'	1	0.5	0.85	1	0.5	0.85
T5 80'-60'	1	0.5	0.85	1	0.5	0.85
T6 60'-40'	1	0.5	0.85	1	0.5	0.85
T7 40'-20'	1	0.5	0.85	1	0.5	0.85
T8 20'-0'	1	0.5	0.85	1	0.5	0.85

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 150'-130'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T2 130'-110'	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T3 110'-100'	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
T4 100'-80'	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
T5 80'-60'	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
T6 60'-40'	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
T7 40'-20'	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
T8 20'-0'	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

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 150'-130'	Sleeve DS	0.625 A325N	5	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 130'-110'	Flange	1.000 A325N	6	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T3 110'-100'	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T4 100'-80'	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	1.000 A325N	1	0.625 A325N	0
T5 80'-60'	Flange	1.000 A325N	6	1.000 A325N	1	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T6 60'-40'	Flange	1.000 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T7 40'-20'	Flange	1.000 A325N	6	1.000 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T8 20'-0'	Flange	1.250 A687	6	1.250 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	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 B** LDF5-50A(7/8") (R)	B	Yes	Ar (CfAe)	148' - 133'	0.000	0	2	2	0.850 0.750	1.090		0.000
LDF5-50A(7/8") (R)	B	Yes	Ar (CfAe)	133' - 0'	0.000	0	4	4	0.850 0.750	1.090		0.000
## LDF7-50A(1-5/8") (E)	B	Yes	Ar (CfAe)	135' - 0'	0.000	-0.03	2	2	0.850 0.750	1.980		0.001
Feedline Ladder (Af) (E)	B	Yes	Af (CfAe)	148' - 0'	0.000	-0.03	1	1	3.000	3.000	12.000	0.008
## MLE Hybrid 9Power/18Fiber RL 2(1 5/8) (E)	B	Yes	Ar (CfAe)	114' - 0'	0.000	-0.45	1	1	1.625	1.625		0.001
## LDF6-50A(1-1/4") (6E+3R)	B	Yes	Ar (CfAe)	100' - 0'	-1.000	-0.06	9	6	0.750	1.550		0.001
Feedline Ladder (Af) (E)	B	Yes	Af (CfAe)	100' - 0'	-0.010	-0.06	1	1	3.000	3.000	12.000	0.008
## LDF7-50A(1 5/8") (E)	B	Yes	Ar (CfAe)	65' - 0'	-0.010	-0.23	6	6	0.750	1.980		0.001
Feedline	B	Yes	Af (CfAe)	65' - 0'	-0.010	-0.23	1	1	3.000	3.000	12.000	0.008

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
Ladder (Af) (E) *##*												
Leg B												
HB158-1-08U8-S8J18(1-5/8) (4R)	B	Yes	Ar (CfAe)	150' - 93'	-6.000	0.42	4	4	0.850 0.750	1.980		0.001
HB158-1-08U8-S8J18(1-5/8) (1E/4R)	B	Yes	Ar (CfAe)	93' - 0'	-6.000	0.42	5	5	0.850 0.750	1.980		0.001
7780R(19/64") (R)	B	Yes	Ar (CfAe)	12' - 0'	-4.000	0.4	1	1	0.250	0.030		0.000
T-Brackets (Af) (E) *##*	B	Yes	Af (CfAe)	150' - 0'	-2.000	0.43	1	1	1.000	1.000	4.000	0.008
Leg A												
LDF7-50A(1 5/8") (E)	A	Yes	Ar (CfAe)	141' - 0'	-6.000	0.42	12	6	0.750	1.980		0.001
LDF6-50A(1-1/4") (E)	A	Yes	Ar (CfAe)	141' - 0'	-5.500	0.36	2	2	1.550	1.550		0.001
T-Brackets (Af) (E) *##*	A	Yes	Af (CfAe)	150' - 0'	-2.500	0.39	1	1	1.000	1.000	4.000	0.008
Leg C												
LDF7-50A(1 5/8") (E)	A	Yes	Ar (CfAe)	114' - 0'	-6.000	-0.36	12	6	0.750	1.980		0.001
T-Brackets (Af) (E) *##*	A	Yes	Af (CfAe)	114' - 0'	-2.500	-0.4	1	1	1.000	1.000	4.000	0.008
Face A												
LDF7-50A(1 5/8") (12E/1R)	A	Yes	Ar (CfAe)	88' - 0'	0.000	-0.18	13	12	0.750	1.980		0.001
Feedline Ladder (Af) (E) *##*	A	Yes	Af (CfAe)	88' - 0'	0.000	-0.18	1	1	3.000	3.000	12.000	0.008
LDF4-50A(1/2) (E) *##* *##*	B	Yes	Ar (CfAe)	50' - 0'	-0.500	-0.11	1	1	0.630	0.630		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
##							

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

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	150'-130'	A	13.732	1.667	0.000	0.000	0.291
		B	18.665	6.167	0.000	0.000	0.445
		C	0.000	0.000	0.000	0.000	0.000
T2	130'-110'	A	28.927	2.000	0.000	0.000	0.464
		B	27.608	6.667	0.000	0.000	0.503
		C	0.000	0.000	0.000	0.000	0.000
T3	110'-100'	A	22.383	1.667	0.000	0.000	0.378
		B	14.888	3.333	0.000	0.000	0.260
		C	0.000	0.000	0.000	0.000	0.000
T4	100'-80'	A	60.607	5.333	0.000	0.000	0.908
		B	47.420	11.667	0.000	0.000	0.824
		C	0.000	0.000	0.000	0.000	0.000
T5	80'-60'	A	84.367	8.333	0.000	0.000	1.137
		B	53.525	12.917	0.000	0.000	0.900
		C	0.000	0.000	0.000	0.000	0.000
T6	60'-40'	A	84.367	8.333	0.000	0.000	1.137
		B	68.900	16.667	0.000	0.000	1.101
		C	0.000	0.000	0.000	0.000	0.000
T7	40'-20'	A	84.367	8.333	0.000	0.000	1.137
		B	69.425	16.667	0.000	0.000	1.103
		C	0.000	0.000	0.000	0.000	0.000
T8	20'-0'	A	84.367	8.333	0.000	0.000	1.137
		B	69.455	16.667	0.000	0.000	1.103
		C	0.000	0.000	0.000	0.000	0.000

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	150'-130'	A	0.892	6.507	19.003	0.000	0.000	0.720
		B		12.153	29.142	0.000	0.000	0.944
		C		0.000	0.000	0.000	0.000	0.000
T2	130'-110'	A	0.876	12.965	36.802	0.000	0.000	1.316
		B		18.299	39.125	0.000	0.000	1.172
		C		0.000	0.000	0.000	0.000	0.000
T3	110'-100'	A	0.862	8.900	28.915	0.000	0.000	1.042
		B		11.308	19.532	0.000	0.000	0.610
		C		0.000	0.000	0.000	0.000	0.000
T4	100'-80'	A	0.846	20.091	80.532	0.000	0.000	2.542
		B		27.808	68.106	0.000	0.000	2.006
		C		0.000	0.000	0.000	0.000	0.000
T5	80'-60'	A	0.821	23.428	114.522	0.000	0.000	3.208
		B		28.898	76.982	0.000	0.000	2.174

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.000
T6	60'-40'	A	0.788	22.995	114.306	0.000	0.000	3.153
		B		34.614	98.874	0.000	0.000	2.646
		C		0.000	0.000	0.000	0.000	0.000
T7	40'-20'	A	0.750	27.567	108.883	0.000	0.000	3.072
		B		35.558	98.533	0.000	0.000	2.594
		C		0.000	0.000	0.000	0.000	0.000
T8	20'-0'	A	0.750	27.567	108.883	0.000	0.000	3.072
		B		37.088	98.533	0.000	0.000	2.603
		C		0.000	0.000	0.000	0.000	0.000

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	150'-130'	A	0.995	5.718	0.000	0.000
		B	1.604	9.316	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	130'-110'	A	2.243	11.088	0.000	0.000
		B	2.486	12.924	0.000	0.000
		C	0.000	0.000	0.000	0.000
T3	110'-100'	A	0.000	2.866	2.678	4.318
		B	0.000	2.350	2.029	3.541
		C	0.000	0.000	0.000	0.000
T4	100'-80'	A	0.000	6.527	6.456	10.072
		B	0.000	6.264	5.785	9.667
		C	0.000	0.000	0.000	0.000
T5	80'-60'	A	0.000	6.727	8.100	12.293
		B	0.000	5.204	5.805	9.511
		C	0.000	0.000	0.000	0.000
T6	60'-40'	A	0.000	4.975	6.271	9.465
		B	0.000	4.870	5.788	9.267
		C	0.000	0.000	0.000	0.000
T7	40'-20'	A	0.000	4.385	5.851	8.771
		B	0.000	4.337	5.434	8.674
		C	0.000	0.000	0.000	0.000
T8	20'-0'	A	0.000	4.177	5.573	8.353
		B	0.000	4.177	5.177	8.354
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150'-130'	5.762	-3.043	2.454	-1.382
T2	130'-110'	4.985	-5.324	2.311	-2.583
T3	110'-100'	1.115	-2.660	0.445	-1.517
T4	100'-80'	0.386	-4.206	0.022	-2.608
T5	80'-60'	-2.618	-5.469	-2.070	-3.615
T6	60'-40'	-1.975	-9.027	-1.680	-6.261

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T7	40'-20'	-2.257	-10.638	-1.959	-8.313
T8	20'-0'	-2.511	-11.900	-1.955	-9.174

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 3' on 16' Pole (P) *##*	C	None		0.000	159'6"	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.987 5.908 7.742 11.487 17.567	3.987 5.908 7.742 11.487 17.567	0.083 0.127 0.177 0.301 0.708
(3) 6' x 2" Mount Pipe (E)	A	From Leg	4.000 0' 0'	0.000	150'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(3) 6' x 2" Mount Pipe (E)	B	From Leg	4.000 0' 0'	0.000	150'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(3) 6' x 2" Mount Pipe (E)	C	From Leg	4.000 0' 0'	0.000	150'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
Platform Mount [LP 405-1] (E) *##*	C	None		0.000	150'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	20.800 28.100 35.400 50.000 79.200	20.800 28.100 35.400 50.000 79.200	1.800 2.066 2.332 2.864 3.928
SC320 (R)	A	From Leg	2.000 0' 10'	0.000	148'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.380 8.613 10.862 15.410 24.686	6.380 8.613 10.862 15.410 24.686	0.025 0.071 0.131 0.293 0.791
SC229-SFXLDF (R)	B	From Leg	2.000 0' 10'	0.000	148'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.950 7.967 10.000 14.117 21.449	5.950 7.967 10.000 14.117 21.449	0.032 0.075 0.130 0.279 0.735
Side Arm Mount [SO 304-1] (R)	A	From Leg	1.000 0' 0'	0.000	148'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.630 1.000 1.370 2.110 3.590	0.940 1.450 1.960 2.980 5.020	0.023 0.032 0.041 0.059 0.094
Side Arm Mount [SO 304-1] (R)	B	From Leg	1.000 0'	0.000	148'	No Ice 1/2" Ice	0.630 1.000	0.940 1.450	0.023 0.032

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
			0'			1" Ice	1.370	1.960	0.041
						2" Ice	2.110	2.980	0.059
						4" Ice	3.590	5.020	0.094
##									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	141'	No Ice	6.119	4.254	0.055
(E)			0'			1/2" Ice	6.626	5.014	0.103
			0'			1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	141'	No Ice	6.119	4.254	0.055
(E)			0'			1/2" Ice	6.626	5.014	0.103
			0'			1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	141'	No Ice	6.119	4.254	0.055
(E)			0'			1/2" Ice	6.626	5.014	0.103
			0'			1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
AM-X-CD-14-65-00T-RET	A	From Leg	4.000	0.000	141'	No Ice	5.744	4.015	0.035
w/ Mount Pipe			0'			1/2" Ice	6.198	4.633	0.080
(E)			0'			1" Ice	6.661	5.276	0.131
						2" Ice	7.618	6.678	0.254
						4" Ice	9.668	9.744	0.610
AM-X-CD-14-65-00T-RET	B	From Leg	4.000	0.000	141'	No Ice	5.744	4.015	0.035
w/ Mount Pipe			0'			1/2" Ice	6.198	4.633	0.080
(E)			0'			1" Ice	6.661	5.276	0.131
						2" Ice	7.618	6.678	0.254
						4" Ice	9.668	9.744	0.610
AM-X-CD-14-65-00T-RET	C	From Leg	4.000	0.000	141'	No Ice	5.744	4.015	0.035
w/ Mount Pipe			0'			1/2" Ice	6.198	4.633	0.080
(E)			0'			1" Ice	6.661	5.276	0.131
						2" Ice	7.618	6.678	0.254
						4" Ice	9.668	9.744	0.610
(2) LGP21401	A	From Leg	4.000	0.000	141'	No Ice	1.288	0.233	0.014
(E)			0'			1/2" Ice	1.445	0.313	0.021
			0'			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401	B	From Leg	4.000	0.000	141'	No Ice	1.288	0.233	0.014
(E)			0'			1/2" Ice	1.445	0.313	0.021
			0'			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(2) LGP21401	C	From Leg	4.000	0.000	141'	No Ice	1.288	0.233	0.014
(E)			0'			1/2" Ice	1.445	0.313	0.021
			0'			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
RRUS 11-700	A	From Leg	4.000	0.000	141'	No Ice	2.942	1.246	0.055
(E)			0'			1/2" Ice	3.172	1.412	0.074
			0'			1" Ice	3.410	1.587	0.097
						2" Ice	3.913	1.963	0.151
						4" Ice	5.023	2.819	0.302
RRUS 11-700	B	From Leg	4.000	0.000	141'	No Ice	2.942	1.246	0.055
(E)			0'			1/2" Ice	3.172	1.412	0.074
			0'			1" Ice	3.410	1.587	0.097

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
						2" Ice	3.913	1.963	0.151
						4" Ice	5.023	2.819	0.302
RRUS 11-700	C	From Leg	4.000	0.000	141'	No Ice	2.942	1.246	0.055
(E)			0'			1/2" Ice	3.172	1.412	0.074
			0'			1" Ice	3.410	1.587	0.097
						2" Ice	3.913	1.963	0.151
						4" Ice	5.023	2.819	0.302
DC6-48-60-18-8F	A	From Leg	4.000	0.000	141'	No Ice	1.467	1.467	0.019
(E)			0'			1/2" Ice	1.667	1.667	0.037
			0'			1" Ice	1.878	1.878	0.057
						2" Ice	2.333	2.333	0.105
						4" Ice	3.378	3.378	0.239
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	141'	No Ice	1.425	1.425	0.022
(E)			0'			1/2" Ice	1.925	1.925	0.033
			0'			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	141'	No Ice	1.425	1.425	0.022
(E)			0'			1/2" Ice	1.925	1.925	0.033
			0'			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	C	From Leg	4.000	0.000	141'	No Ice	1.425	1.425	0.022
(E)			0'			1/2" Ice	1.925	1.925	0.033
			0'			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 411-3]	C	None		0.000	141'	No Ice	21.880	21.880	1.069
(E)						1/2" Ice	30.680	30.680	1.485
						1" Ice	39.480	39.480	1.901
						2" Ice	57.080	57.080	2.733
						4" Ice	92.280	92.280	4.396
##									
M5160160P10006 w/ Mount Pipe	A	From Leg	2.000	0.000	135'	No Ice	1.233	0.752	0.011
(E)			0'			1/2" Ice	1.456	1.025	0.023
			0'			1" Ice	1.692	1.317	0.038
						2" Ice	2.223	2.041	0.079
						4" Ice	3.447	3.740	0.221
M5160160P10006 w/ Mount Pipe	B	From Leg	2.000	0.000	135'	No Ice	1.233	0.752	0.011
(E)			0'			1/2" Ice	1.456	1.025	0.023
			0'			1" Ice	1.692	1.317	0.038
						2" Ice	2.223	2.041	0.079
						4" Ice	3.447	3.740	0.221
Side Arm Mount [SO 304-1]	A	From Leg	1.000	0.000	135'	No Ice	0.630	0.940	0.023
(E)			0'			1/2" Ice	1.000	1.450	0.032
			0'			1" Ice	1.370	1.960	0.041
						2" Ice	2.110	2.980	0.059
						4" Ice	3.590	5.020	0.094
Side Arm Mount [SO 304-1]	B	From Leg	1.000	0.000	135'	No Ice	0.630	0.940	0.023
(E)			0'			1/2" Ice	1.000	1.450	0.032
			0'			1" Ice	1.370	1.960	0.041
						2" Ice	2.110	2.980	0.059
						4" Ice	3.590	5.020	0.094
##									
SC320	A	From Leg	2.000	0.000	133'	No Ice	6.380	6.380	0.025
(R)			0'			1/2" Ice	8.613	8.613	0.071
			10'			1" Ice	10.862	10.862	0.131

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
						2" Ice	15.410	15.410	0.293
						4" Ice	24.686	24.686	0.791
SC229-SFXLDF	B	From Leg	2.000	0.000	133'	No Ice	5.950	5.950	0.032
(R)			0'			1/2" Ice	7.967	7.967	0.075
			10'			1" Ice	10.000	10.000	0.130
						2" Ice	14.117	14.117	0.279
						4" Ice	21.449	21.449	0.735
Side Arm Mount [SO 301-1]	A	From Leg	1.000	0.000	133'	No Ice	1.000	0.900	0.023
(E)			0'			1/2" Ice	1.390	1.420	0.033
			0'			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
						4" Ice	4.120	5.060	0.100
Side Arm Mount [SO 301-1]	B	From Leg	1.000	0.000	133'	No Ice	1.000	0.900	0.023
(E)			0'			1/2" Ice	1.390	1.420	0.033
			0'			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
						4" Ice	4.120	5.060	0.100
##									
##									
##									
KS24019-L112A	A	From Leg	0.500	0.000	115'	No Ice	0.156	0.156	0.005
(E)			0'			1/2" Ice	0.225	0.225	0.007
			0'			1" Ice	0.302	0.302	0.009
						2" Ice	0.484	0.484	0.018
						4" Ice	0.951	0.951	0.056
Pipe Mount [PM 601-1]	A	From Leg	0.500	0.000	115'	No Ice	3.000	0.900	0.065
(E)			0'			1/2" Ice	3.740	1.120	0.079
			0'			1" Ice	4.480	1.340	0.093
						2" Ice	5.960	1.780	0.122
						4" Ice	8.920	2.660	0.178
##									
ERICSSON AIR 21 B2A	A	From Leg	4.000	0.000	114'	No Ice	6.588	4.297	0.092
B4P			0'			1/2" Ice	7.033	4.703	0.133
(E)			-2'			1" Ice	7.488	5.130	0.180
						2" Ice	8.422	6.010	0.290
						4" Ice	10.395	7.873	0.580
ERICSSON AIR 21 B2A	B	From Leg	4.000	0.000	114'	No Ice	6.588	4.297	0.092
B4P			0'			1/2" Ice	7.033	4.703	0.133
(E)			-2'			1" Ice	7.488	5.130	0.180
						2" Ice	8.422	6.010	0.290
						4" Ice	10.395	7.873	0.580
ERICSSON AIR 21 B2A	C	From Leg	4.000	0.000	114'	No Ice	6.588	4.297	0.092
B4P			0'			1/2" Ice	7.033	4.703	0.133
(E)			-2'			1" Ice	7.488	5.130	0.180
						2" Ice	8.422	6.010	0.290
						4" Ice	10.395	7.873	0.580
ERICSSON AIR 21 B4A	A	From Leg	4.000	0.000	114'	No Ice	6.588	4.297	0.092
B2P			0'			1/2" Ice	7.033	4.703	0.133
(E)			-2'			1" Ice	7.488	5.130	0.180
						2" Ice	8.422	6.010	0.290
						4" Ice	10.395	7.873	0.580
ERICSSON AIR 21 B4A	B	From Leg	4.000	0.000	114'	No Ice	6.588	4.297	0.092
B2P			0'			1/2" Ice	7.033	4.703	0.133
(E)			-2'			1" Ice	7.488	5.130	0.180
						2" Ice	8.422	6.010	0.290
						4" Ice	10.395	7.873	0.580
ERICSSON AIR 21 B4A	C	From Leg	4.000	0.000	114'	No Ice	6.588	4.297	0.092

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
B2P			0'			1/2" Ice	7.033	4.703	0.133
(E)			-2'			1" Ice	7.488	5.130	0.180
						2" Ice	8.422	6.010	0.290
						4" Ice	10.395	7.873	0.580
KRY 112 71	A	From Leg	4.000	0.000	114'	No Ice	0.681	0.450	0.013
(E)			0'			1/2" Ice	0.802	0.559	0.018
			-2'			1" Ice	0.932	0.677	0.025
						2" Ice	1.219	0.939	0.044
						4" Ice	1.896	1.566	0.111
KRY 112 71	B	From Leg	4.000	0.000	114'	No Ice	0.681	0.450	0.013
(E)			0'			1/2" Ice	0.802	0.559	0.018
			-2'			1" Ice	0.932	0.677	0.025
						2" Ice	1.219	0.939	0.044
						4" Ice	1.896	1.566	0.111
KRY 112 71	C	From Leg	4.000	0.000	114'	No Ice	0.681	0.450	0.013
(E)			0'			1/2" Ice	0.802	0.559	0.018
			-2'			1" Ice	0.932	0.677	0.025
						2" Ice	1.219	0.939	0.044
						4" Ice	1.896	1.566	0.111
LNX-6515DS-VTM	A	From Leg	4.000	0.000	114'	No Ice	11.445	7.696	0.050
(P)			0'			1/2" Ice	12.064	8.289	0.116
			-2'			1" Ice	12.689	8.889	0.190
						2" Ice	14.030	10.111	0.361
						4" Ice	17.045	12.644	0.803
LNX-6515DS-VTM	B	From Leg	4.000	0.000	114'	No Ice	11.445	7.696	0.050
(P)			0'			1/2" Ice	12.064	8.289	0.116
			-2'			1" Ice	12.689	8.889	0.190
						2" Ice	14.030	10.111	0.361
						4" Ice	17.045	12.644	0.803
LNX-6515DS-VTM	C	From Leg	4.000	0.000	114'	No Ice	11.445	7.696	0.050
(P)			0'			1/2" Ice	12.064	8.289	0.116
			-2'			1" Ice	12.689	8.889	0.190
						2" Ice	14.030	10.111	0.361
						4" Ice	17.045	12.644	0.803
RRUS 11 B12	A	From Leg	4.000	0.000	114'	No Ice	3.306	1.361	0.051
(P)			0'			1/2" Ice	3.550	1.540	0.072
			-2'			1" Ice	3.802	1.728	0.095
						2" Ice	4.334	2.130	0.153
						4" Ice	5.501	3.038	0.314
RRUS 11 B12	B	From Leg	4.000	0.000	114'	No Ice	3.306	1.361	0.051
(P)			0'			1/2" Ice	3.550	1.540	0.072
			-2'			1" Ice	3.802	1.728	0.095
						2" Ice	4.334	2.130	0.153
						4" Ice	5.501	3.038	0.314
RRUS 11 B12	C	From Leg	4.000	0.000	114'	No Ice	3.306	1.361	0.051
(P)			0'			1/2" Ice	3.550	1.540	0.072
			-2'			1" Ice	3.802	1.728	0.095
						2" Ice	4.334	2.130	0.153
						4" Ice	5.501	3.038	0.314
Sector Mount [SM 307-3]	C	None		0.000	114'	No Ice	26.220	26.220	1.620
(4 M.P. / Sec. Inc.)						1/2" Ice	36.280	36.280	2.148
						1" Ice	46.340	46.340	2.676
						2" Ice	66.460	66.460	3.733
						4" Ice	106.700	106.700	5.845
##									
(2) APXVSPP18-C-A20 w/	A	From Leg	4.000	0.000	100'	No Ice	8.498	6.946	0.083
Mount Pipe			0'			1/2" Ice	9.149	8.127	0.151

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
(R)			0'			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
(2) APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	8.498 9.149	6.946 8.127	0.083 0.151
(R)			0'			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
(2) APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	8.498 9.149	6.946 8.127	0.083 0.151
(R)			0'			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
800MHz 2X50W RRH W/FILTER	A	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	2.401 2.613	2.254 2.460	0.064 0.086
(R)			0'			1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER	B	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	2.401 2.613	2.254 2.460	0.064 0.086
(R)			0'			1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
800MHz 2X50W RRH W/FILTER	C	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	2.401 2.613	2.254 2.460	0.064 0.086
(R)			0'			1" Ice	2.833	2.675	0.111
						2" Ice	3.300	3.132	0.172
						4" Ice	4.337	4.148	0.338
PCS 1900MHz 2x40W	A	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	2.743 2.972	1.456 1.645	0.044 0.062
(R)			0'			1" Ice	3.210	1.844	0.084
						2" Ice	3.711	2.266	0.135
						4" Ice	4.818	3.215	0.282
PCS 1900MHz 2x40W	B	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	2.743 2.972	1.456 1.645	0.044 0.062
(R)			0'			1" Ice	3.210	1.844	0.084
						2" Ice	3.711	2.266	0.135
						4" Ice	4.818	3.215	0.282
PCS 1900MHz 2x40W	C	From Leg	4.000 0'	0.000	100'	No Ice 1/2" Ice	2.743 2.972	1.456 1.645	0.044 0.062
(R)			0'			1" Ice	3.210	1.844	0.084
						2" Ice	3.711	2.266	0.135
						4" Ice	4.818	3.215	0.282
Sector Mount [SM 407-3]	C	None		0.000	100'	No Ice	20.490	20.490	0.956
(E)						1/2" Ice	30.390	30.390	1.376
						1" Ice	40.290	40.290	1.797
						2" Ice	60.090	60.090	2.638
						4" Ice	99.690	99.690	4.321
##									
TA-2335-DAB-H	A	From Leg	1.000 0'	0.000	93'	No Ice 1/2" Ice	7.758 8.145	2.956 3.258	0.033 0.076
(E)			0'			1" Ice	8.540	3.569	0.124
						2" Ice	9.357	4.217	0.234
						4" Ice	11.094	5.617	0.518
Pipe Mount [PM 601-1]	A	From Leg	0.500 0'	0.000	93'	No Ice 1/2" Ice	3.000 3.740	0.900 1.120	0.065 0.079
(E)			0'			1" Ice	4.480	1.340	0.093

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
						2" Ice	5.960	1.780	0.122
						4" Ice	8.920	2.660	0.178
##									
(2) LPA-80063/4CF w/ Mount Pipe (E)	A	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.248 7.719 8.200 9.195 11.320	7.260 7.957 8.672 10.156 13.391	0.038 0.104 0.176 0.344 0.796
(2) LPA-80063/4CF w/ Mount Pipe (E)	B	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.248 7.719 8.200 9.195 11.320	7.260 7.957 8.672 10.156 13.391	0.038 0.104 0.176 0.344 0.796
(2) LPA-80063/4CF w/ Mount Pipe (E)	C	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.248 7.719 8.200 9.195 11.320	7.260 7.957 8.672 10.156 13.391	0.038 0.104 0.176 0.344 0.796
BXA-171063/8CF w/ Mount Pipe (E)	A	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.157 3.531 3.941 4.827 6.734	3.330 3.942 4.563 5.855 8.841	0.028 0.060 0.097 0.191 0.484
BXA-171063/8CF w/ Mount Pipe (E)	B	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.157 3.531 3.941 4.827 6.734	3.330 3.942 4.563 5.855 8.841	0.028 0.060 0.097 0.191 0.484
BXA-171063/8CF w/ Mount Pipe (E)	C	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.157 3.531 3.941 4.827 6.734	3.330 3.942 4.563 5.855 8.841	0.028 0.060 0.097 0.191 0.484
SWCP 2x5514 w/ Mount Pipe (E)	A	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.251 7.751 8.252 9.286 11.480	6.966 7.746 8.499 10.058 13.400	0.039 0.104 0.174 0.339 0.791
SWCP 2x5514 w/ Mount Pipe (E)	B	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.251 7.751 8.252 9.286 11.480	6.966 7.746 8.499 10.058 13.400	0.039 0.104 0.174 0.339 0.791
SWCP 2x5514 w/ Mount Pipe (E)	C	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.251 7.751 8.252 9.286 11.480	6.966 7.746 8.499 10.058 13.400	0.039 0.104 0.174 0.339 0.791
(2) FD9R6004/2C-3L (E)	A	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.009 0.020 0.063
(2) FD9R6004/2C-3L (E)	B	From Leg	4.000 0' 2'	0.000	88'	No Ice 1/2" Ice 1" Ice 2" Ice	0.367 0.451 0.543 0.755	0.085 0.136 0.196 0.343	0.003 0.005 0.009 0.020

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
						4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	88'	No Ice	0.367	0.085	0.003
(E)			0'			1/2" Ice	0.451	0.136	0.005
			2'			1" Ice	0.543	0.196	0.009
						2" Ice	0.755	0.343	0.020
						4" Ice	1.281	0.740	0.063
BXA-171063/8CF w/ Mount Pipe	A	From Leg	4.000	0.000	88'	No Ice	3.157	3.330	0.028
(R)			0'			1/2" Ice	3.531	3.942	0.060
			2'			1" Ice	3.941	4.563	0.097
						2" Ice	4.827	5.855	0.191
						4" Ice	6.734	8.841	0.484
BXA-171063/8CF w/ Mount Pipe	B	From Leg	4.000	0.000	88'	No Ice	3.157	3.330	0.028
(R)			0'			1/2" Ice	3.531	3.942	0.060
			2'			1" Ice	3.941	4.563	0.097
						2" Ice	4.827	5.855	0.191
						4" Ice	6.734	8.841	0.484
BXA-171063/8CF w/ Mount Pipe	C	From Leg	4.000	0.000	88'	No Ice	3.157	3.330	0.028
(R)			0'			1/2" Ice	3.531	3.942	0.060
			2'			1" Ice	3.941	4.563	0.097
						2" Ice	4.827	5.855	0.191
						4" Ice	6.734	8.841	0.484
RRH2X40-AWS	A	From Leg	4.000	0.000	88'	No Ice	2.522	1.589	0.044
(R)			0'			1/2" Ice	2.753	1.795	0.061
			2'			1" Ice	2.993	2.010	0.082
						2" Ice	3.499	2.465	0.132
						4" Ice	4.615	3.479	0.275
RRH2X40-AWS	B	From Leg	4.000	0.000	88'	No Ice	2.522	1.589	0.044
(R)			0'			1/2" Ice	2.753	1.795	0.061
			2'			1" Ice	2.993	2.010	0.082
						2" Ice	3.499	2.465	0.132
						4" Ice	4.615	3.479	0.275
RRH2X40-AWS	C	From Leg	4.000	0.000	88'	No Ice	2.522	1.589	0.044
(R)			0'			1/2" Ice	2.753	1.795	0.061
			2'			1" Ice	2.993	2.010	0.082
						2" Ice	3.499	2.465	0.132
						4" Ice	4.615	3.479	0.275
DB-T1-6Z-8AB-0Z	C	From Leg	4.000	0.000	88'	No Ice	5.600	2.333	0.044
(R)			0'			1/2" Ice	5.915	2.558	0.080
			2'			1" Ice	6.240	2.791	0.120
						2" Ice	6.914	3.284	0.213
						4" Ice	8.365	4.373	0.455
Sector Mount [SM 408-3]	C	None		0.000	88'	No Ice	22.450	22.450	1.019
(E)						1/2" Ice	33.500	33.500	1.475
						1" Ice	44.550	44.550	1.930
						2" Ice	66.650	66.650	2.840
						4" Ice	110.850	110.850	4.661
##									
##									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.000	0.000	65'	No Ice	5.404	4.700	0.052
(E)			0'			1/2" Ice	5.960	5.860	0.097
			0'			1" Ice	6.481	6.734	0.150
						2" Ice	7.547	8.515	0.280
						4" Ice	9.919	12.277	0.679
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.000	0.000	65'	No Ice	5.404	4.700	0.052
(E)			0'			1/2" Ice	5.960	5.860	0.097
			0'			1" Ice	6.481	6.734	0.150
						2" Ice	7.547	8.515	0.280

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
APXV18-206517S-C w/ Mount Pipe (E) *##*	C	From Leg	1.000 0' 0'	0.000	65'	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.919 5.404 5.960 6.481 7.547 9.919	12.277 4.700 5.860 6.734 8.515 12.277	0.679 0.052 0.097 0.150 0.280 0.679
GPS-TMG-HR-26NCM (E) *##* *##*	A	From Leg	1.000 0' 0'	0.000	50'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.156 0.213 0.279 0.437 0.857	0.156 0.213 0.279 0.437 0.857	0.001 0.002 0.005 0.014 0.052
Pipe Mount [PM 601-1] (R) *##*	C	From Leg	0.500 0' 0'	0.000	12'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.000 3.740 4.480 5.960 8.920	0.900 1.120 1.340 1.780 2.660	0.065 0.079 0.093 0.122 0.178

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
HPLPD1-18 (R) *##*	B	Paraboloid w/Shroud (HP)	From Leg	4.000 0' 1'	-27.000		150'	1.140	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.021 1.175 1.330 1.639 2.258	0.017 0.023 0.029 0.041 0.065
HPLPD1-18 (R) *##*	C	Paraboloid w/Shroud (HP)	From Leg	4.000 0' 1'	-11.000		150'	1.140	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.021 1.175 1.330 1.639 2.258	0.017 0.023 0.029 0.041 0.065
1130 (R) *##*	C	Paraboloid w/o Radome	From Leg	1.000 0' 0'	-31.000		12'	4.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.610 14.160 14.730 15.880 18.330	0.055 0.059 0.071 0.122 0.332

Truss-Leg Properties

Section Designation	Area in^2	Area Ice in^2	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
Pirod 105244	1026.861	2520.217	0.563	0.497	7.131	17.502	3.682
Pirod 105216	1998.089	4718.631	0.505	0.978	6.938	16.384	3.682
Pirod 105217	2130.748	4816.579	0.619	0.953	7.398	16.724	5.301
Pirod 105218	2263.469	4881.697	0.755	0.916	7.859	16.950	7.216
Pirod 105218	2263.469	4699.377	0.755	0.847	7.859	16.317	7.216
Pirod 105219	2441.869	5025.091	0.944	0.886	8.479	17.448	9.425

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	150 - 130	Leg	Max Tension	4	23.883	-0.505	0.012
			Max. Compression	6	-27.673	0.513	0.088
			Max. Mx	10	-24.691	-0.705	0.007
			Max. My	11	-1.971	0.003	0.688
			Max. Vy	10	-2.441	0.515	-0.012
			Max. Vx	11	2.309	0.000	-0.466
		Diagonal	Max Tension	7	3.474	0.000	0.000
			Max. Compression	7	-3.498	0.000	0.000
			Max. Mx	26	0.926	-0.003	-0.000
			Max. My	7	-3.488	-0.000	-0.001
			Max. Vy	26	0.005	-0.003	-0.000
			Max. Vx	7	0.000	0.000	0.000
		Horizontal	Max Tension	8	0.434	0.000	0.000
			Max. Compression	2	-0.302	0.000	0.000
			Max. Mx	14	0.142	0.008	0.000
			Max. Vy	14	0.007	0.000	0.000
		Top Girt	Max Tension	2	0.316	0.000	0.000
			Max. Compression	4	-0.320	0.000	0.000
			Max. Mx	14	-0.016	0.008	0.000
			Max. Vy	14	-0.008	0.000	0.000
		Bottom Girt	Max Tension	8	1.494	0.000	0.000
			Max. Compression	10	-1.418	0.000	0.000
			Max. Mx	14	0.026	0.010	0.000
			Max. Vy	14	-0.009	0.000	0.000
T2	130 - 110	Leg	Max Tension	4	59.562	-1.885	0.038
			Max. Compression	2	-67.051	1.896	-0.170
			Max. Mx	10	-66.382	1.904	-0.033
			Max. My	11	-2.007	-0.002	-1.622
			Max. Vy	10	-4.686	1.904	-0.033
			Max. Vx	5	-3.256	-0.007	1.354
		Diagonal	Max Tension	13	5.093	0.000	0.000
			Max. Compression	7	-5.135	0.000	0.000
			Max. Mx	15	1.146	-0.004	-0.000
			Max. My	13	-4.127	-0.000	0.001
			Max. Vy	15	0.006	-0.004	-0.000
			Max. Vx	13	-0.000	-0.000	0.001
		Horizontal	Max Tension	8	0.953	0.000	0.000
			Max. Compression	2	-0.852	0.000	0.000
			Max. Mx	14	0.132	0.010	0.000
			Max. Vy	14	-0.008	0.000	0.000
		Top Girt	Max Tension	10	1.555	0.000	0.000
			Max. Compression	12	-1.520	0.000	0.000
			Max. Mx	14	0.019	0.010	0.000
			Max. Vy	14	-0.009	0.000	0.000
		Bottom Girt	Max Tension	8	1.516	0.000	0.000
			Max. Compression	2	-1.419	0.000	0.000
			Max. Mx	14	0.092	0.012	0.000
			Max. Vy	14	-0.010	0.000	0.000
T3	110 - 100	Leg	Max Tension	4	62.469	-1.885	0.038
			Max. Compression	2	-69.060	4.275	-0.149
			Max. Mx	2	-69.060	4.275	-0.149
			Max. My	5	-3.624	0.026	4.351
			Max. Vy	8	0.326	-4.175	0.188
			Max. Vx	5	-0.409	0.026	4.351
		Diagonal	Max Tension	12	7.196	0.058	-0.009
			Max. Compression	6	-8.411	0.000	0.000
			Max. Mx	5	3.487	0.061	0.004
			Max. My	7	-6.226	-0.047	0.013
			Max. Vy	16	0.017	0.032	-0.003
			Max. Vx	7	-0.003	0.000	0.000
		Top Girt	Max Tension	8	1.070	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
			Max. Compression	2	-0.806	0.000	0.000
			Max. Mx	14	0.274	-0.028	0.000
			Max. My	14	0.243	0.000	0.001
			Max. Vy	14	0.023	0.000	0.000
			Max. Vx	14	-0.001	0.000	0.000
T4	100 - 80	Leg	Max Tension	4	94.484	-4.510	-0.013
			Max. Compression	2	-105.943	4.867	0.079
			Max. Mx	2	-105.943	4.867	0.079
			Max. My	5	-4.728	-0.084	5.174
			Max. Vy	4	-1.041	-4.223	0.093
			Max. Vx	5	1.389	-0.084	5.174
		Diagonal	Max Tension	5	12.408	0.000	0.000
			Max. Compression	5	-14.424	0.000	0.000
			Max. Mx	2	0.440	0.128	-0.007
			Max. My	7	-8.262	-0.081	0.013
			Max. Vy	2	-0.033	0.128	-0.007
			Max. Vx	7	-0.003	0.000	0.000
		Horizontal	Max Tension	4	10.718	0.000	0.000
			Max. Compression	2	-8.895	0.000	0.000
			Max. Mx	14	2.061	-0.055	0.000
			Max. My	14	1.822	0.000	0.002
			Max. Vy	14	-0.031	0.000	0.000
			Max. Vx	14	-0.001	0.000	0.000
		Top Girt	Max Tension	4	7.437	0.000	0.000
			Max. Compression	2	-6.175	0.000	0.000
			Max. Mx	14	1.378	-0.040	0.000
			Max. My	14	1.180	0.000	0.001
			Max. Vy	14	0.027	0.000	0.000
			Max. Vx	14	0.001	0.000	0.000
T5	80 - 60	Leg	Max Tension	4	140.228	-3.997	0.078
			Max. Compression	2	-158.891	5.237	0.020
			Max. Mx	2	-158.891	5.237	0.020
			Max. My	5	-7.837	-0.272	7.066
			Max. Vy	6	-0.322	5.199	0.019
			Max. Vx	5	-0.611	-0.272	7.066
		Diagonal	Max Tension	7	8.508	0.000	0.000
			Max. Compression	7	-8.472	0.000	0.000
			Max. Mx	2	6.677	0.112	-0.009
			Max. My	13	-8.192	-0.058	-0.020
			Max. Vy	15	-0.031	0.073	0.007
			Max. Vx	13	0.004	0.000	0.000
		Top Girt	Max Tension	4	7.812	0.000	0.000
			Max. Compression	2	-6.585	0.000	0.000
			Max. Mx	14	1.431	-0.070	0.000
			Max. My	14	1.285	0.000	0.002
			Max. Vy	14	0.035	0.000	0.000
			Max. Vx	14	-0.001	0.000	0.000
T6	60 - 40	Leg	Max Tension	4	175.761	-4.540	0.032
			Max. Compression	2	-198.663	6.012	-0.004
			Max. Mx	2	-198.663	6.012	-0.004
			Max. My	5	-10.891	0.079	5.733
			Max. Vy	10	-0.223	5.980	-0.171
			Max. Vx	11	0.277	0.052	-5.727
		Diagonal	Max Tension	7	8.332	0.000	0.000
			Max. Compression	7	-8.385	0.000	0.000
			Max. Mx	2	6.711	0.084	-0.006
			Max. My	5	7.182	0.071	0.009
			Max. Vy	17	0.033	0.061	0.008
			Max. Vx	19	-0.002	0.000	0.000
T7	40 - 20	Leg	Max Tension	4	207.957	-4.376	0.041
			Max. Compression	2	-235.531	5.440	0.079

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	2	-217.163	6.012	-0.004
			Max. My	5	-11.472	0.079	5.733
			Max. Vy	21	0.516	-4.507	-0.011
			Max. Vx	11	-0.337	-0.164	-5.457
		Diagonal	Max Tension	7	8.498	0.000	0.000
			Max. Compression	7	-8.593	0.000	0.000
			Max. Mx	2	6.685	0.136	0.008
			Max. My	18	2.847	0.087	0.012
			Max. Vy	25	0.048	0.089	0.011
			Max. Vx	18	-0.003	0.000	0.000
T8	20 - 0	Leg	Max Tension	4	236.852	-5.072	0.105
			Max. Compression	2	-269.533	0.000	0.000
			Max. Mx	15	-112.637	6.331	-0.002
			Max. My	13	-11.815	-0.421	8.397
			Max. Vy	21	-0.863	-4.507	-0.011
			Max. Vx	5	0.957	-0.245	8.383
		Diagonal	Max Tension	4	9.843	0.000	0.000
			Max. Compression	10	-10.373	0.000	0.000
			Max. Mx	2	6.753	0.126	-0.015
			Max. My	5	8.109	0.108	0.020
			Max. Vy	25	0.054	0.122	-0.012
			Max. Vx	18	-0.003	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	277.523	25.235	-15.291
	Max. H_x	10	277.523	25.235	-15.291
	Max. H_z	4	-245.508	-22.681	13.884
	Min. Vert	4	-245.508	-22.681	13.884
	Min. H_x	4	-245.508	-22.681	13.884
	Min. H_z	10	277.523	25.235	-15.291
Leg B	Max. Vert	6	276.639	-25.105	-15.157
	Max. H_x	12	-244.549	22.541	13.610
	Max. H_z	12	-244.549	22.541	13.610
	Min. Vert	12	-244.549	22.541	13.610
	Min. H_x	6	276.639	-25.105	-15.157
	Min. H_z	6	276.639	-25.105	-15.157
Leg A	Max. Vert	2	279.841	-0.114	29.678
	Max. H_x	11	14.613	2.018	1.138
	Max. H_z	2	279.841	-0.114	29.678
	Min. Vert	8	-244.645	0.094	-26.521
	Min. H_x	5	16.022	-2.126	1.517
	Min. H_z	8	-244.645	0.094	-26.521

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	42.581	0.000	-0.000	-13.095	-0.165	0.000

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 0 deg - No Ice	42.581	0.341	-44.836	-3680.920	-11.225	-2.486
Dead+Wind 30 deg - No Ice	42.581	22.036	-38.259	-3150.032	-1806.061	-11.965
Dead+Wind 60 deg - No Ice	42.581	37.675	-22.192	-1821.349	-3103.677	-18.770
Dead+Wind 90 deg - No Ice	42.581	43.769	-0.498	-25.336	-3597.064	-20.729
Dead+Wind 120 deg - No Ice	42.581	38.344	22.191	1811.844	-3153.056	-15.378
Dead+Wind 150 deg - No Ice	42.581	21.715	37.948	3115.208	-1792.516	-7.051
Dead+Wind 180 deg - No Ice	42.581	-0.093	43.653	3586.574	6.138	2.518
Dead+Wind 210 deg - No Ice	42.581	-21.963	38.104	3120.565	1804.899	11.092
Dead+Wind 240 deg - No Ice	42.581	-38.559	22.409	1823.744	3160.329	16.732
Dead+Wind 270 deg - No Ice	42.581	-43.643	0.139	-5.812	3595.506	18.092
Dead+Wind 300 deg - No Ice	42.581	-37.461	-21.689	-1806.263	3097.043	14.779
Dead+Wind 330 deg - No Ice	42.581	-21.475	-38.243	-3144.467	1790.631	6.044
Dead+Ice+Temp	92.750	0.000	-0.000	-38.387	5.233	0.000
Dead+Wind 0 deg+Ice+Temp	92.750	0.067	-14.130	-1171.056	2.742	-0.689
Dead+Wind 30 deg+Ice+Temp	92.750	6.651	-11.536	-975.354	-534.846	-2.771
Dead+Wind 60 deg+Ice+Temp	92.750	11.214	-6.559	-571.161	-911.652	-4.183
Dead+Wind 90 deg+Ice+Temp	92.750	13.240	-0.096	-41.069	-1071.433	-4.668
Dead+Wind 120 deg+Ice+Temp	92.750	12.143	7.019	525.893	-970.841	-3.691
Dead+Wind 150 deg+Ice+Temp	92.750	6.585	11.475	896.620	-531.666	-1.576
Dead+Wind 180 deg+Ice+Temp	92.750	-0.021	12.977	1023.435	6.771	0.608
Dead+Wind 210 deg+Ice+Temp	92.750	-6.638	11.507	897.915	545.159	2.609
Dead+Wind 240 deg+Ice+Temp	92.750	-12.186	7.066	528.752	983.080	4.170
Dead+Wind 270 deg+Ice+Temp	92.750	-13.216	0.029	-36.650	1081.683	4.179
Dead+Wind 300 deg+Ice+Temp	92.750	-11.171	-6.460	-567.722	920.638	3.299
Dead+Wind 330 deg+Ice+Temp	92.750	-6.541	-11.529	-973.945	541.897	1.388
Dead+Wind 0 deg - Service	42.581	0.105	-13.838	-1145.139	-3.578	-0.767
Dead+Wind 30 deg - Service	42.581	6.801	-11.808	-981.285	-557.540	-3.693
Dead+Wind 60 deg - Service	42.581	11.628	-6.849	-571.198	-958.039	-5.793
Dead+Wind 90 deg - Service	42.581	13.509	-0.154	-16.873	-1110.319	-6.398
Dead+Wind 120 deg - Service	42.581	11.835	6.849	550.158	-973.279	-4.746
Dead+Wind 150 deg - Service	42.581	6.702	11.712	952.431	-553.360	-2.176
Dead+Wind 180 deg - Service	42.581	-0.029	13.473	1097.914	1.780	0.777
Dead+Wind 210 deg - Service	42.581	-6.779	11.761	954.084	556.954	3.423
Dead+Wind 240 deg - Service	42.581	-11.901	6.916	553.831	975.296	5.164
Dead+Wind 270 deg - Service	42.581	-13.470	0.043	-10.847	1109.610	5.584
Dead+Wind 300 deg - Service	42.581	-11.562	-6.694	-566.542	955.764	4.561
Dead+Wind 330 deg - Service	42.581	-6.628	-11.803	-979.568	552.550	1.865

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	-42.581	0.000	0.000	42.581	0.000	0.000%
2	0.341	-42.581	-44.836	-0.341	42.581	44.836	0.000%
3	22.036	-42.581	-38.259	-22.036	42.581	38.259	0.000%
4	37.675	-42.581	-22.192	-37.675	42.581	22.192	0.000%
5	43.769	-42.581	-0.498	-43.769	42.581	0.498	0.000%
6	38.344	-42.581	22.191	-38.344	42.581	-22.191	0.000%
7	21.715	-42.581	37.948	-21.715	42.581	-37.948	0.000%
8	-0.093	-42.581	43.653	0.093	42.581	-43.653	0.000%
9	-21.963	-42.581	38.104	21.963	42.581	-38.104	0.000%
10	-38.559	-42.581	22.409	38.559	42.581	-22.409	0.000%
11	-43.643	-42.581	0.139	43.643	42.581	-0.139	0.000%
12	-37.461	-42.581	-21.689	37.461	42.581	21.689	0.000%
13	-21.475	-42.581	-38.243	21.475	42.581	38.243	0.000%
14	0.000	-92.750	0.000	0.000	92.750	0.000	0.000%
15	0.067	-92.750	-14.130	-0.067	92.750	14.130	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
16	6.651	-92.750	-11.536	-6.651	92.750	11.536	0.000%
17	11.214	-92.750	-6.559	-11.214	92.750	6.559	0.000%
18	13.240	-92.750	-0.096	-13.240	92.750	0.096	0.000%
19	12.143	-92.750	7.019	-12.143	92.750	-7.019	0.000%
20	6.585	-92.750	11.475	-6.585	92.750	-11.475	0.000%
21	-0.021	-92.750	12.977	0.021	92.750	-12.977	0.000%
22	-6.638	-92.750	11.507	6.638	92.750	-11.507	0.000%
23	-12.186	-92.750	7.066	12.186	92.750	-7.066	0.000%
24	-13.216	-92.750	0.029	13.216	92.750	-0.029	0.000%
25	-11.171	-92.750	-6.460	11.171	92.750	6.460	0.000%
26	-6.541	-92.750	-11.529	6.541	92.750	11.529	0.000%
27	0.105	-42.581	-13.838	-0.105	42.581	13.838	0.000%
28	6.801	-42.581	-11.808	-6.801	42.581	11.808	0.000%
29	11.628	-42.581	-6.849	-11.628	42.581	6.849	0.000%
30	13.509	-42.581	-0.154	-13.509	42.581	0.154	0.000%
31	11.835	-42.581	6.849	-11.835	42.581	-6.849	0.000%
32	6.702	-42.581	11.712	-6.702	42.581	-11.712	0.000%
33	-0.029	-42.581	13.473	0.029	42.581	-13.473	0.000%
34	-6.779	-42.581	11.761	6.779	42.581	-11.761	0.000%
35	-11.901	-42.581	6.916	11.901	42.581	-6.916	0.000%
36	-13.470	-42.581	0.043	13.470	42.581	-0.043	0.000%
37	-11.562	-42.581	-6.694	11.562	42.581	6.694	0.000%
38	-6.628	-42.581	-11.803	6.628	42.581	11.803	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 130	6.261	27	0.389	0.074
T2	130 - 110	4.619	27	0.361	0.058
T3	110 - 100	3.167	27	0.300	0.032
T4	100 - 80	2.561	27	0.266	0.021
T5	80 - 60	1.580	27	0.192	0.015
T6	60 - 40	0.863	27	0.132	0.010
T7	40 - 20	0.375	27	0.085	0.006
T8	20 - 0	0.099	27	0.037	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159'6"	Lightning Rod 5/8" x 3' on 16' Pole	27	6.261	0.389	0.074	96241
151'	HPLPD1-18	27	6.261	0.389	0.074	96241
150'	(3) 6' x 2" Mount Pipe	27	6.261	0.389	0.074	96241
148'	SC320	27	6.094	0.387	0.072	96241
141'	(2) 7770.00 w/ Mount Pipe	27	5.511	0.379	0.068	53467
135'	M5160160P10006 w/ Mount Pipe	27	5.019	0.371	0.063	32080
133'	SC320	27	4.858	0.367	0.061	28321
115'	KS24019-L112A	27	3.503	0.316	0.038	14809
114'	ERICSSON AIR 21 B2A B4P	27	3.434	0.313	0.037	14443

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100'	(2) APXVSPP18-C-A20 w/ Mount Pipe	27	2.561	0.266	0.021	15275
93'	TA-2335-DAB-H	27	2.185	0.240	0.018	16277
88'	(2) LPA-80063/4CF w/ Mount Pipe	27	1.938	0.222	0.016	16974
65'	APXV18-206517S-C w/ Mount Pipe	27	1.020	0.145	0.011	20525
50'	GPS-TMG-HR-26NCM	27	0.592	0.108	0.008	22206
12'	1130	27	0.045	0.021	0.002	37259

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 130	20.126	2	1.248	0.238
T2	130 - 110	14.853	2	1.158	0.187
T3	110 - 100	10.187	2	0.962	0.103
T4	100 - 80	8.239	2	0.854	0.070
T5	80 - 60	5.084	2	0.618	0.049
T6	60 - 40	2.779	2	0.423	0.032
T7	40 - 20	1.208	2	0.272	0.018
T8	20 - 0	0.318	2	0.118	0.009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159'6"	Lightning Rod 5/8" x 3' on 16' Pole	2	20.126	1.248	0.238	30752
151'	HPLPD1-18	2	20.126	1.248	0.238	30752
150'	(3) 6' x 2" Mount Pipe	2	20.126	1.248	0.238	30752
148'	SC320	2	19.588	1.241	0.234	30752
141'	(2) 7770.00 w/ Mount Pipe	2	17.716	1.217	0.219	17084
135'	M5160160P10006 w/ Mount Pipe	2	16.138	1.190	0.203	10250
133'	SC320	2	15.620	1.178	0.197	9048
115'	KS24019-L112A	2	11.265	1.017	0.125	4655
114'	ERICSSON AIR 21 B2A B4P	2	11.044	1.006	0.120	4535
100'	(2) APXVSPP18-C-A20 w/ Mount Pipe	2	8.239	0.854	0.070	4752
93'	TA-2335-DAB-H	2	7.029	0.772	0.058	5066
88'	(2) LPA-80063/4CF w/ Mount Pipe	2	6.236	0.712	0.053	5285
65'	APXV18-206517S-C w/ Mount Pipe	2	3.283	0.466	0.037	6386
50'	GPS-TMG-HR-26NCM	2	1.907	0.346	0.024	6902
12'	1130	2	0.147	0.066	0.006	11602

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	150	Leg	A325N	0.625	5	5.535	12.885	0.430 ✔	1.333	Bolt DS
T2	130	Leg	A325N	1.000	6	9.927	34.519	0.288 ✔	1.333	Bolt Tension
T3	110	Leg	A325N	1.000	6	10.412	34.557	0.301 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.000	1	7.196	7.748	0.929 ✔	1.333	Member Block Shear
		Top Girt	A325N	1.000	1	1.070	8.428	0.127 ✔	1.333	Member Block Shear
T4	100	Leg	A325N	1.000	6	15.747	34.556	0.456 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.000	1	14.424	16.493	0.875 ✔	1.333	Bolt Shear
		Horizontal	A325N	1.000	1	10.717	8.428	1.272 ✔	1.333	Member Block Shear
		Top Girt	A325N	1.000	1	7.437	8.428	0.882 ✔	1.333	Member Block Shear
T5	80	Leg	A325N	1.000	6	23.371	34.557	0.676 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.000	1	8.508	8.428	1.009 ✔	1.333	Member Block Shear
		Top Girt	A325N	1.000	1	7.812	8.428	0.927 ✔	1.333	Member Block Shear
T6	60	Leg	A325N	1.000	6	29.294	34.557	0.848 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.000	1	8.332	8.428	0.989 ✔	1.333	Member Block Shear
T7	40	Leg	A325N	1.000	6	34.660	34.557	1.003 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.000	1	8.498	14.047	0.605 ✔	1.333	Member Block Shear
T8	20	Leg	A687	1.250	6	39.475	60.746	0.650 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.250	1	9.843	14.953	0.658 ✔	1.333	Member Block 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	150 - 130	1 1/2	20'1/32"	2'4-1/2"	76.0 K=1.00	19.799	1.767	-27.674	34.987	0.791 ✔
T2	130 - 110	2	20'1/32"	2'4-1/2"	57.0 K=1.00	23.222	3.142	-67.051	72.954	0.919 ✔
T3	110 - 100	Pirod 105244	10'7/32"	10'7/32"	45.4 K=1.00	25.051	3.682	-69.060	92.228	0.749 ✔
T4	100 - 80	Pirod 105216	20'13/32"	10'7/32"	45.4 K=1.00	25.051	3.682	-105.943	92.228	1.149 ✔
T5	80 - 60	Pirod 105217	20'13/32"	10'7/32"	37.8 K=1.00	26.132	5.301	-158.891	138.539	1.147 ✔
T6	60 - 40	Pirod 105218	20'13/32"	10'7/32"	32.4	26.848	7.216	-198.663	193.727	1.025

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
					K=1.00					✓
T7	40 - 20	Pirod 105218	20'13/32"	10'7/32"	32.4 K=1.00	26.848	7.216	-235.531	193.727	1.216 ✓
T8	20 - 0	Pirod 105219	20'13/32"	10'7/32"	28.4 K=1.00	27.351	9.425	-269.533	257.781	1.046 ✓

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T3	110 - 100	0.5	1'5-25/32"	121.0	10.193	0.196	0.409	2.240	0.183 ✓
T4	100 - 80	0.5	1'5-25/32"	121.0	10.133	0.196	1.390	2.227	0.624 ✓
T5	80 - 60	0.5	1'5-21/32"	120.0	10.279	0.196	0.614	2.259	0.272 ✓
T6	60 - 40	0.5	1'5-1/2"	119.0	10.423	0.196	0.278	2.290	0.122 ✓
T7	40 - 20	0.5	1'5-1/2"	119.0	10.423	0.196	0.516	2.290	0.225 ✓
T8	20 - 0	0.625	1'5-11/32"	94.4	13.671	0.307	0.957	4.694	0.204 ✓

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	150 - 130	3/4	5'5/8"	2'5-21/32"	142.4 K=0.90	7.368	0.442	-3.498	3.255	1.075 ✓
T2	130 - 110	7/8	5'5-31/32"	2'8-1/16"	132.0 K=0.90	8.576	0.601	-5.135	5.157	0.996 ✓
T3	110 - 100	L2 1/2x2 1/2x3/16	11'5"	4'11-25/32"	120.8 K=1.00	10.170	0.902	-8.411	9.173	0.917 ✓
T4	100 - 80	L2 1/2x2 1/2x3/8	12'6-1/32"	5'7-17/32"	138.7 K=1.00	7.767	1.730	-14.424	13.437	1.073 ✓
T5	80 - 60	L3x3x3/16	13'9-9/16"	6'3-15/16"	127.4 K=1.00	9.200	1.090	-8.472	10.028	0.845 ✓
T6	60 - 40	L3x3x3/16	15'2-29/32"	7'31/32"	142.6 K=1.00	7.345	1.090	-8.193	8.006	1.023 ✓
T7	40 - 20	L3x3x5/16	16'9-5/8"	7'10-19/32"	160.6 K=1.00	5.791	1.780	-8.593	10.308	0.834 ✓
T8	20 - 0	L3x3x5/16	18'5-3/8"	8'8-1/8"	176.8 K=1.00	4.779	1.780	-10.373	8.506	1.219 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	150 - 130	3/4	4'4-7/16"	4'2-15/16''	190.1 K=0.70	4.131	0.442	-0.302	1.825	0.166 ✔
T2	130 - 110	3/4	4'6-7/8"	4'4-7/8"	197.4 K=0.70	3.834	0.442	-0.852	1.694	0.503 ✔
T4	100 - 80	L3x3x3/16	7'	5'7"	116.2 K=1.03	10.720	1.090	-8.895	11.685	0.761 ✔

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	150 - 130	7/8	4'5/32"	3'10-21/32"	149.3 K=0.70	6.701	0.601	-0.320	4.030	0.079 ✔
T2	130 - 110	7/8	4'6-5/32"	4'4-5/32"	166.9 K=0.70	5.362	0.601	-1.520	3.224	0.471 ✔
T3	110 - 100	L3x3x3/16	5'	4'5"	104.5 K=1.17	12.208	1.090	-0.806	13.307	0.061 ✔
T4	100 - 80	L3x3x3/16	6'	4'7"	106.1 K=1.15	12.002	1.090	-6.175	13.082	0.472 ✔
T5	80 - 60	L3x3x3/16	8'	6'7"	132.6 K=1.00	8.499	1.090	-6.585	9.264	0.711 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	150 - 130	7/8	4'5-27/32''	4'4-11/32''	167.5 K=0.70	5.321	0.601	-1.418	3.200	0.443 ✔
T2	130 - 110	7/8	4'11-27/32"	4'9-27/32''	185.1 K=0.70	4.358	0.601	-1.419	2.620	0.542 ✔

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	150 - 130	1 1/2	20'1/32"	6"	16.0	32.500	0.773	23.883	25.130	0.950 ✓
T2	130 - 110	2	20'1/32"	6"	12.0	30.000	3.142	59.563	94.248	0.632 ✓
T3	110 - 100	Pirod 105244	10'7/32"	10'7/32"	45.4	30.000	3.682	62.469	110.447	0.566 ✓
T4	100 - 80	Pirod 105216	20'13/32"	10'7/32"	45.4	30.000	3.682	94.484	110.447	0.855 ✓
T5	80 - 60	Pirod 105217	20'13/32"	10'7/32"	37.8	30.000	5.301	140.228	159.043	0.882 ✓
T6	60 - 40	Pirod 105218	20'13/32"	10'7/32"	32.4	30.000	7.216	175.761	216.475	0.812 ✓
T7	40 - 20	Pirod 105218	20'13/32"	10'7/32"	32.4	30.000	7.216	207.957	216.475	0.961 ✓
T8	20 - 0	Pirod 105219	20'13/32"	10'7/32"	28.4	30.000	9.425	236.852	282.743	0.838 ✓

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T3	110 - 100	0.5	1'5-25/32"	121.0	10.193	0.196	0.409	2.240	0.183 ✓
T4	100 - 80	0.5	1'5-25/32"	121.0	10.133	0.196	1.390	2.227	0.624 ✓
T5	80 - 60	0.5	1'5-21/32"	120.0	10.279	0.196	0.614	2.259	0.272 ✓
T6	60 - 40	0.5	1'5-1/2"	119.0	10.423	0.196	0.278	2.290	0.122 ✓
T7	40 - 20	0.5	1'5-1/2"	119.0	10.423	0.196	0.516	2.290	0.225 ✓
T8	20 - 0	0.625	1'5-11/32"	94.4	13.671	0.307	0.957	4.694	0.204 ✓

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	150 - 130	3/4	5'5/8"	2'5-21/32"	158.2	30.000	0.442	3.474	13.254	0.262 ✓
T2	130 - 110	7/8	5'5-31/32"	2'8-1/16"	146.6	30.000	0.601	5.093	18.040	0.282 ✓
T3	110 - 100	L2 1/2x2 1/2x3/16	11'5"	4'11-25/32"	80.1	29.000	0.518	7.196	15.031	0.479 ✓
T4	100 - 80	L2 1/2x2 1/2x3/8	12'6-1/32"	5'7-17/32"	93.0	29.000	0.981	12.408	28.452	0.436 ✓

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 $\frac{P}{P_a}$
T5	80 - 60	L3x3x3/16	13'9-9/16"	6'3-15/16"	83.5	29.000	0.659	8.508	19.120	0.445 ✓
T6	60 - 40	L3x3x3/16	14'6-1/32"	6'8-23/32"	88.6	29.000	0.659	8.332	19.120	0.436 ✓
T7	40 - 20	L3x3x5/16	16'1/8"	7'5-15/16"	100.3	29.000	1.071	8.498	31.069	0.274 ✓
T8	20 - 0	L3x3x5/16	18'5-3/8"	8'8-1/8"	116.2	29.000	1.013	9.843	29.369	0.335 ✓

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	150 - 130	3/4	4'4-7/16"	4'2-15/16"	271.6	30.000	0.442	0.434	13.254	0.033 ✓
T2	130 - 110	3/4	4'6-7/8"	4'4-7/8"	281.9	30.000	0.442	0.953	13.254	0.072 ✓
T4	100 - 80	L3x3x3/16	7'	5'7"	76.7	29.000	0.659	10.717	19.120	0.561 ✓

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	150 - 130	7/8	4'5/32"	3'10-21/32"	213.3	30.000	0.601	0.316	18.040	0.018 ✓
T2	130 - 110	7/8	4'6-5/32"	4'4-5/32"	238.4	30.000	0.601	1.555	18.040	0.086 ✓
T3	110 - 100	L3x3x3/16	5'	4'5"	61.8	29.000	0.659	1.070	19.120	0.056 ✓
T4	100 - 80	L3x3x3/16	6'	4'7"	63.9	29.000	0.659	7.437	19.120	0.389 ✓
T5	80 - 60	L3x3x3/16	8'	6'7"	89.5	29.000	0.659	7.812	19.120	0.409 ✓

Bottom Girt Design Data (Tension)

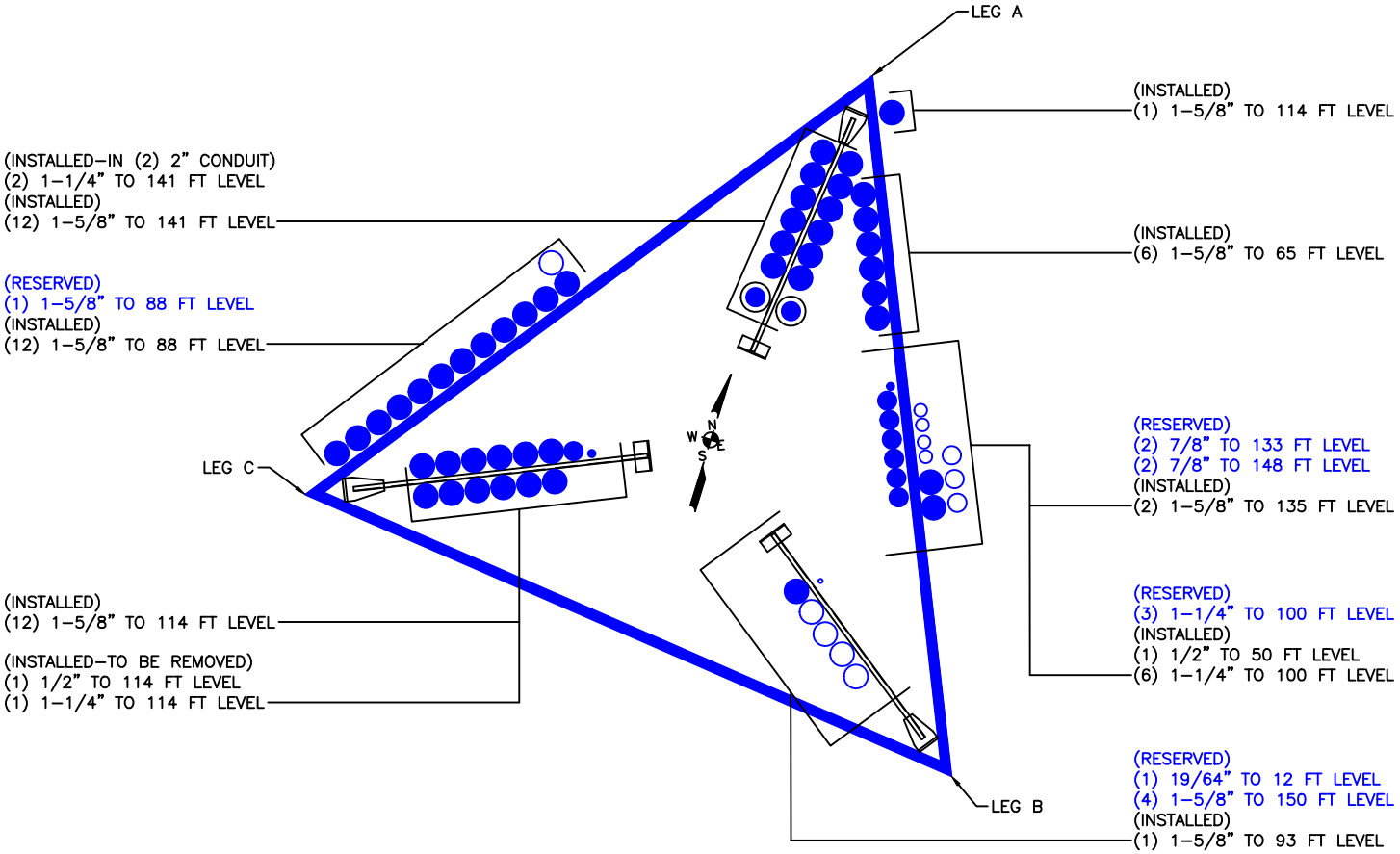
Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	150 - 130	7/8	4'5-27/32"	4'4-11/32"	239.3	30.000	0.601	1.494	18.040	0.083 ✓
T2	130 - 110	7/8	4'11-27/32"	4'9-27/32"	264.5	30.000	0.601	1.516	18.040	0.084 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T1	150 - 130	Leg	1 1/2	1	23.883	33.498	71.3	Pass
T2	130 - 110	Leg	2	67	-67.051	97.248	68.9	Pass
T3	110 - 100	Leg	Pirod 105244	131	-69.060	122.940	56.2	Pass
T4	100 - 80	Leg	Pirod 105216	143	-105.943	122.940	86.2	Pass
T5	80 - 60	Leg	Pirod 105217	164	-158.891	184.672	86.0	Pass
T6	60 - 40	Leg	Pirod 105218	182	-198.663	258.238	76.9	Pass
T7	40 - 20	Leg	Pirod 105218	197	-235.531	258.238	91.2	Pass
T8	20 - 0	Leg	Pirod 105219	212	-269.533	343.622	78.4	Pass
T1	150 - 130	Diagonal	3/4	12	-3.498	4.339	80.6	Pass
T2	130 - 110	Diagonal	7/8	76	-5.135	6.874	74.7	Pass
T3	110 - 100	Diagonal	L2 1/2x2 1/2x3/16	137	-8.411	12.228	68.8 69.7 (b)	Pass
T4	100 - 80	Diagonal	L2 1/2x2 1/2x3/8	149	-14.424	17.912	80.5	Pass
T5	80 - 60	Diagonal	L3x3x3/16	170	-8.472	13.368	63.4 75.7 (b)	Pass
T6	60 - 40	Diagonal	L3x3x3/16	185	-8.193	10.672	76.8	Pass
T7	40 - 20	Diagonal	L3x3x5/16	200	-8.593	13.740	62.5	Pass
T8	20 - 0	Diagonal	L3x3x5/16	218	-10.373	11.339	91.5	Pass
T1	150 - 130	Horizontal	3/4	23	-0.302	2.433	12.4	Pass
T2	130 - 110	Horizontal	3/4	122	-0.852	2.258	37.7	Pass
T4	100 - 80	Horizontal	L3x3x3/16	153	-8.895	15.576	57.1 95.4 (b)	Pass
T1	150 - 130	Top Girt	7/8	5	-0.320	5.371	6.0	Pass
T2	130 - 110	Top Girt	7/8	70	-1.520	4.298	35.4	Pass
T3	110 - 100	Top Girt	L3x3x3/16	132	-0.806	17.738	4.5 9.5 (b)	Pass
T4	100 - 80	Top Girt	L3x3x3/16	144	-6.175	17.438	35.4 66.2 (b)	Pass
T5	80 - 60	Top Girt	L3x3x3/16	165	-6.585	12.349	53.3 69.5 (b)	Pass
T1	150 - 130	Bottom Girt	7/8	8	-1.418	4.265	33.2	Pass
T2	130 - 110	Bottom Girt	7/8	71	-1.419	3.493	40.6	Pass
						Summary		
						Leg (T7)	91.2	Pass
						Diagonal (T8)	91.5	Pass
						Horizontal (T4)	95.4	Pass
						Top Girt (T5)	69.5	Pass
						Bottom Girt (T2)	40.6	Pass
						Bolt Checks	95.4	Pass
						RATING =	**95.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842870 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

PROJECT	**91292.002.01 - Milford,CT**	**ss**
SUBJECT	**Pad Footing Analysis**	
DATE	**10/22/14**	

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

91292_002_01_SS Unit Base Unified (1 5)_Square_Rev F-G.xls

B&T Proj. No.: 0

Combined Footing Foundation Analysis

Rev. Type: F

Design Loads:

Input unfactored loads

Compression per leg (P_C)	=	280.0	(k)
Tension per leg (P_T)	=	246.0	(k)
Overturning Moment (M_O)	=	3,681.0	(k)
Total Tower Horizontal Load	=	45.0	(k-ft)
Tower + Appurtenances	=	43.0	(k)

Saftey Factors

Uplift S.F. (Conc. Wt.)	=	1.25
Uplift S.F. (Soil Wt.)	=	2.00
Overturning S.F.	=	1.50
Bearinging S.F.	=	2.00

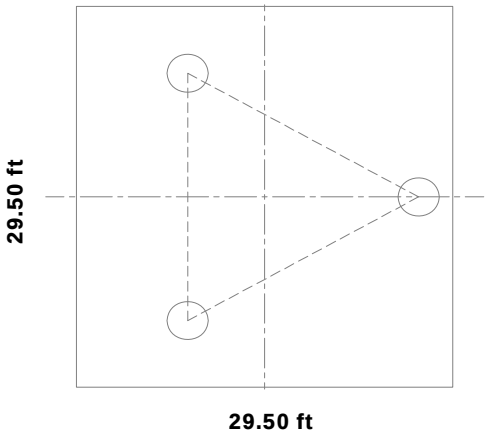
Tower Information

Tower base width	=	16.00	ft

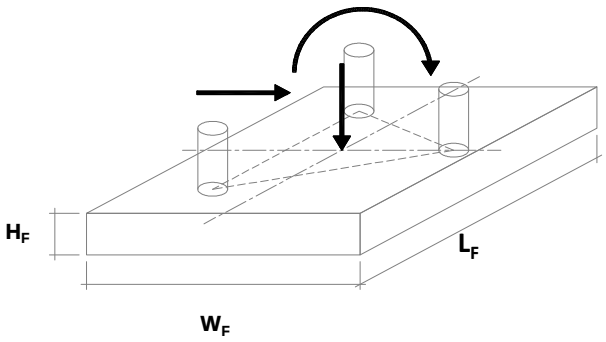
Pad & Pier Dimensions / Properties:

Tower Shape (triangle or square)	=	T	
Pier Shape (round or square)	=	R	
Pier Diameter (H_P)	=	4.50	(ft)
Pier height above grade (D_A)	=	0.50	(ft)
Footing Width (W_F)	=	29.50	(ft)
Footing Thickness (H_F)	=	3.75	(ft)
Depth to BOC (D)	=	6.50	(ft)
Concrete Strength (F'c)	=	3.00	(ksi)
Rebar Strength (Fy)	=	60.00	(ksi)
Ultimate Load Factor	=	1.30	
Min. Cover over Rebar	=	3.00	(in)
Qty of footing Rebar (1 layer)	=	58	
Size of footing Rebar	=	# 9	(bar)
Qty of Vertical Rebar per Pier	=	16	
Size of Pier Vertical Rebar	=	# 8	(bar)
Qty of Rebar Ties per Pier	=	11	
Size of Pier Rebar Ties	=	# 4	(bar)

Plan View for Triangle or Square Tower



Total Overview



Soil Data:

Allowable Values

Soil bearing	=	6000	(psf)
Soil bearing (ultimate)	=	12000	(psf)
Soil Cone for Uplift (θ)	=	34	(degrees)
Cohesion (C)	=	0.00	(ft)
Top Soil to Neglect (N)	=	3.33	(ft)
Base Sliding (μ)	=	0.60	(ksf)
Dry Soil Density (γ_{DRY})	=	125	(pcf)

Summary of Results

Overturing	48.79%
Soil Bearing	22.98%
Base Sliding	5.36%
One way Shear	2.33%
Punching Shear	18.55%
Pad Moment Capacity	24.43%
Pier Moment Capacity	13.37%

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

T-Mobile Existing Facility

Site ID: CT11018F

Milford / I-95 / X37
434 Boston Post Road
Milford, CT 06460

October 31, 2014

EBI Project Number: 62145920

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	61.47 %

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

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October 31, 2014

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

Emissions Analysis for Site: **CT11018F – Milford / I-95 / X37**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **434 Boston Post Road, Milford, 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 **434 Boston Post Road, Milford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

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

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

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

7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 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 **112 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	112	Height (AGL):	112	Height (AGL):	112
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A1 MPE%	1.49	Antenna B1 MPE%	1.49	Antenna C1 MPE%	1.49
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	112	Height (AGL):	112	Height (AGL):	112
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A2 MPE%	1.49	Antenna B2 MPE%	1.49	Antenna C2 MPE%	1.49
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	112	Height (AGL):	112	Height (AGL):	112
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A3 MPE%	0.59	Antenna B3 MPE%	0.59	Antenna C3 MPE%	0.59

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**10.74**
Town Antennas	0.30 %
XM Satellite Radio	21.12 %
Sprint	9.89 %
Verizon Wireless	7.15 %
AT&T	12.27 %
Site Total MPE %:	**61.47 %**

T-Mobile Sector 1 Total:	3.58 %
T-Mobile Sector 2 Total:	3.58 %
T-Mobile Sector 3 Total:	3.58 %
Site Total:	61.47 %

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	3.58 %
Sector 2:	3.58 %
Sector 3 :	3.58 %
T-Mobile Total:	10.74 %
Site Total:	61.47 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **61.47%** 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`

From: (704) 405-6556
Jerry Feathers
Crown Castle
3530 Toringdon Way
Suite 300
Charlotte, NC 28277

Origin ID: MEOA

FedEx Express

J142214092303uv

Ship Date: 13NOV14
ActWgt: 1.0 LB
CAD: 104924201/INET3550

Delivery Address Bar Code

Ref # 1765.6680
Invoice #
PO #
Dept #

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Melanie A. Bachman
Connecticut Siting Council
10 Franklin Square

NEW BRITAIN, CT 06051

FRI - 14 NOV AA
STANDARD OVERNIGHT

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XE MPEA

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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.