Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

August 27, 2015

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

RE: **T-Mobile - Exempt Modification - Crown Site BU: 806368**
T-Mobile Site ID: CT11248A
Located at: 374 Three Mile Road, Glastonbury, CT 06033

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 Town Manager, Richard J. Johnson, and Mr. John R. Flanagan, Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **374 Three Mile Road, Glastonbury, CT**. 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 additional 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. A Structural Modification Report confirming that the tower and foundation can support T-Mobile's proposed modifications is included as Exhibit-2.

5. The operation of the additional 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.

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). Please send approval/rejection letter to Attn: Kimberly Myl.

Sincerely,

Kimberly Myl
Real Estate Specialist

Enclosures

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: Mr. Richard J. Johnson, Town Manager
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033

Mr. John R. Flanagan
366 Three Mile Road
Glastonbury, CT 06033

5680

CROWN CASTLE - ETA PROPERTY
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

32-61-1110

DATE 8/27/15

PAY TO THE ORDER OF Connecticut Siting Council $ 625.00

six hundred twenty-five & 00/100 DOLLARS

Security Features Included Details on Back.

VALID FOR 180 DAYS

CHASE
JPMorgan Chase Bank, N.A.
www.Chase.com

TMO700 20n

FOR CT11248A_806368_340886_303529

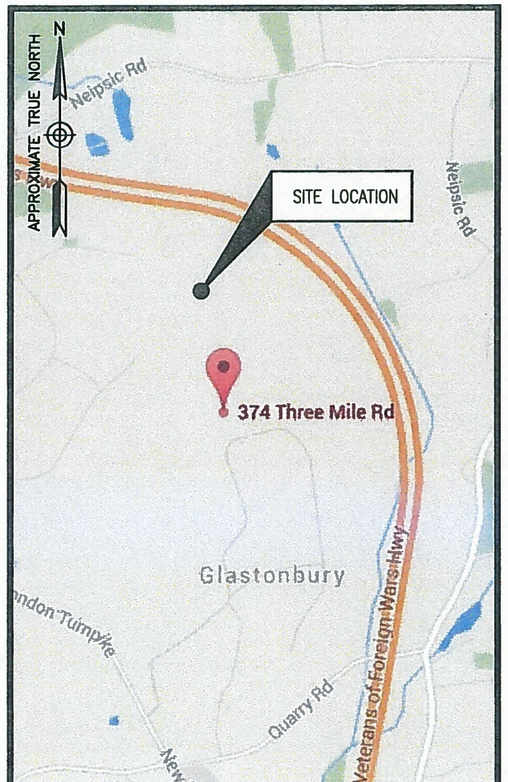
⑈005680⑈ ⑆111000614⑆ 464638118⑈

MP

T-Mobile

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11248A
CROWN CASTLE BU #: 806368
SITE NAME: HRT 049B 943215
374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY



VICINITY MAP

FROM PARSIPPANY, NJ:

HEAD NORTHWEST ON SYLVAN WAY. SLIGHT RIGHT ONTO US-202 N. USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-80 E. TAKE EXIT 43 FOR I-287 TOWARD MORRISTOWN/MAHWAH. USE THE RIGHT 2 LANES TO MERGE ONTO I-287 E/I-87 S TOWARD TAPPAN ZEE BR/NEW YORK CITY. TAKE EXIT 9N-9S FOR HUTCHINSON PKWY TOWARD WHITESTONE BRIDGE/MERRITT PKWY. USE THE RIGHT LANE TO MERGE ONTO WESTCHESTER AVE E. USE THE RIGHT LANE TO TAKE THE HUTCHINSON PKWY N RAMP TO MERRITT PKWY. KEEP RIGHT AT THE FORK TO STAY ON HUTCHINSON RIVER PKWY N. CONTINUE ONTO CT-15 N. TAKE EXIT 68 N-E TO MERGE ONTO I-91 N TOWARD CT-66 E/HARTFORD/MIDDLETOWN. TAKE EXIT 25-26 TO MERGE ONTO CT-3 N TOWARD GLASTONBURY. TAKE THE EXIT ONTO CT-2 E TOWARD NORWICH. USE THE LEFT LANE TO TAKE EXIT 7 FOR CT-17 S TOWARD PORTLAND. KEEP LEFT, FOLLOW SIGNS FOR NEW LONDON TURNPIKE/EAST GLASTONBURY AND MERGE ONTO NEW LONDON TURNPIKE. TURN LEFT ONTO THREE MILE RD. SITE WILL BE ON THE LEFT.

CONSULTANT TEAM

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

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

CONSTRUCTION
CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CONTACT: PATRICIA PELON
PHONE #: (518) 373-3507

PROJECT SUMMARY

SITE NAME:
HRT 049B 943215

SITE NUMBER:
CT11248A

TOWER OWNER:
CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

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

COORDINATES:
LATITUDE: 41° 41' 36.93" N (NAD83)
LONGITUDE: 72° 32' 50.11" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
702Cu

PROJECT DIRECTORY

SITE ADDRESS:
374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SCOPE OF WORK

- INSTALL (3) NEW ANTENNAS.
- INSTALL (3) NEW RRU'S.

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

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

SHEET INDEX

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

CROWN CASTLE

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11248A
HRT 049B 943215

CONSTRUCTION DRAWINGS		
1	08/20/15	ISSUED AS FINAL
0	08/14/15	ISSUED AS FINAL
A	08/04/15	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG YU
No. 23222
PROFESSIONAL ENGINEER
LICENSED

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY:	HD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072431
SITE ADDRESS:	

374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

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

SITE WORK GENERAL NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER
   OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.

5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
   FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM–A–36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

CONSTRUCTION NOTES:

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

T··Mobile·

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

CROWN CASTLE

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11248A
HRT 049B 943215

CONSTRUCTION DRAWINGS

1	08/20/15	ISSUED AS FINAL
0	08/14/15	ISSUED AS FINAL
A	08/04/15	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG YU
23222
LICENSED PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	HD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072431
SITE ADDRESS:	

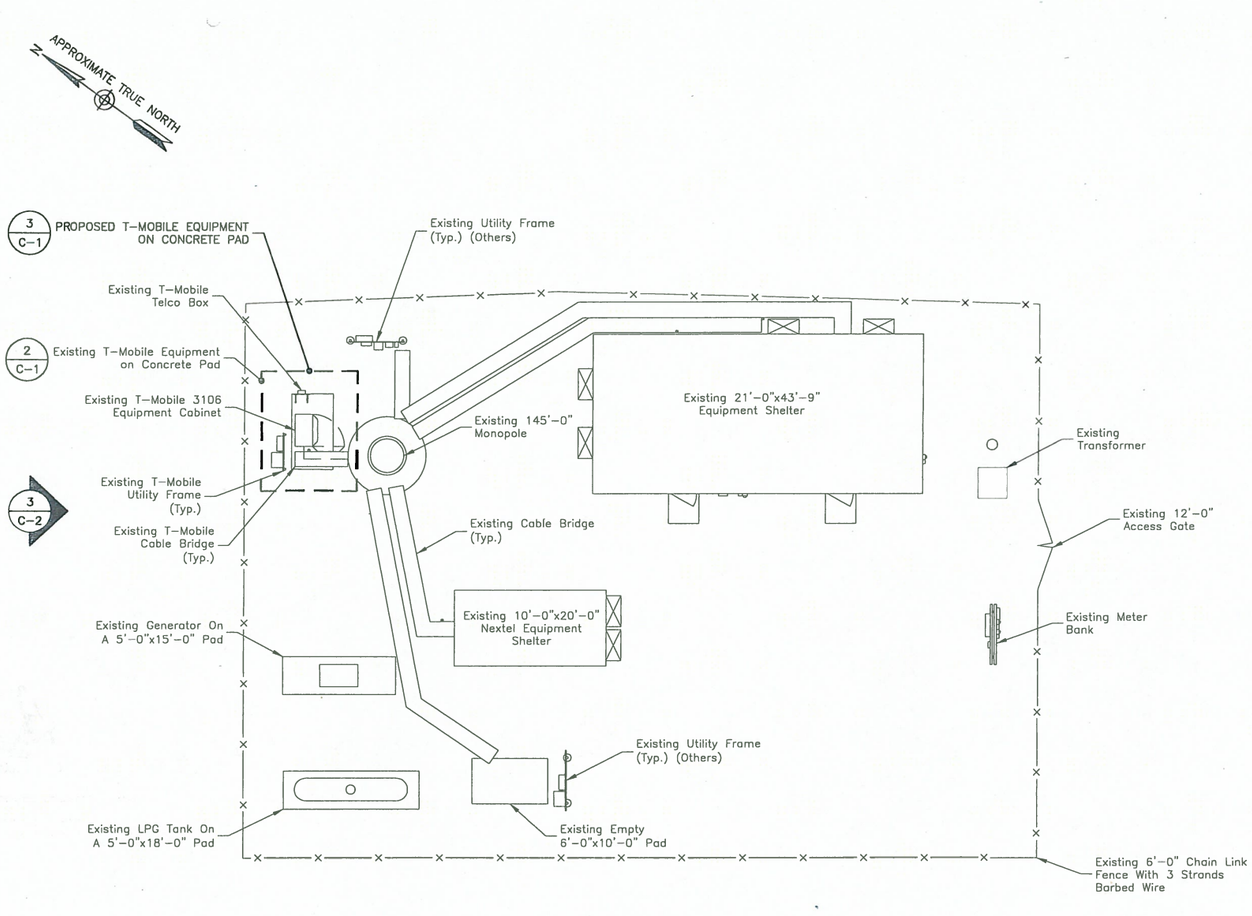
374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

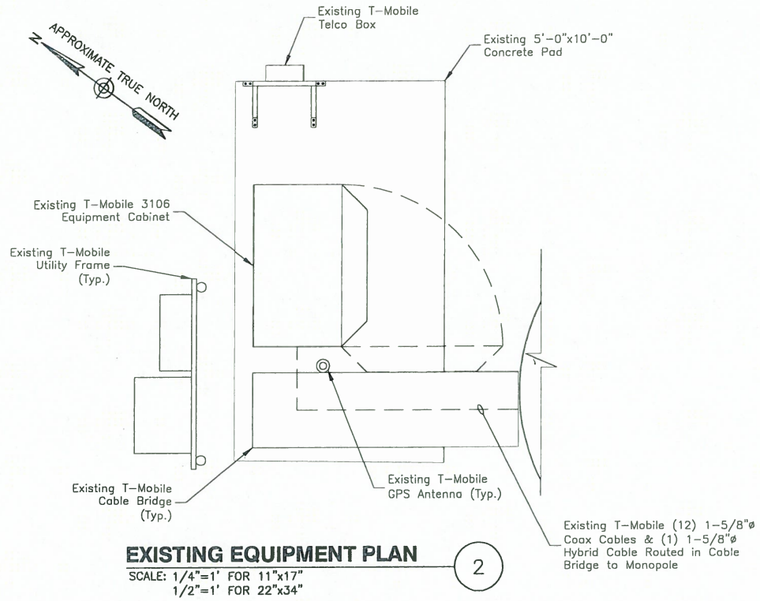
G–1



COMPOUND PLAN 1

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

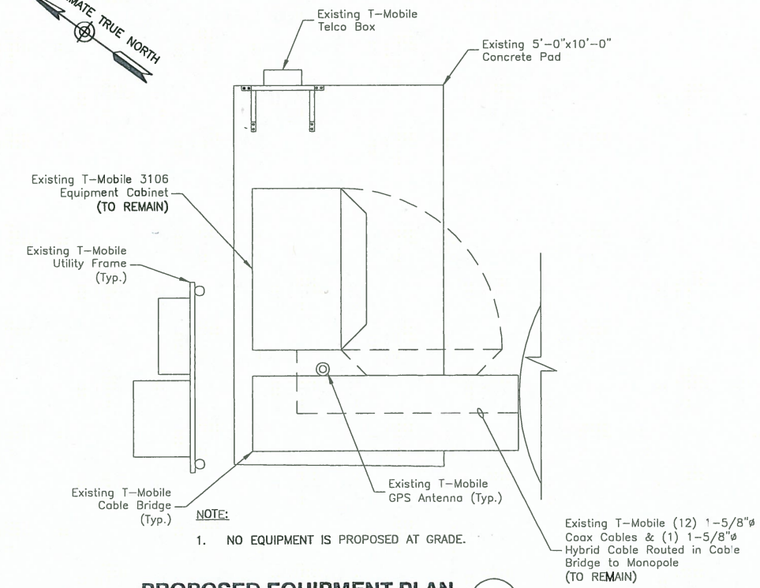
0' 10' 20'



EXISTING EQUIPMENT PLAN 2

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

0' 1' 2' 4'



NOTE:

1. NO EQUIPMENT IS PROPOSED AT GRADE.

PROPOSED EQUIPMENT PLAN 3

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

0' 1' 2' 4'

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY PAUL J. FORD AND COMPANY DATED JULY 21, 2015.

T-Mobile

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

CROWN CASTLE

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11248A
HRT 049B 943215

CONSTRUCTION DRAWINGS

1	08/20/15	ISSUED AS FINAL
0	08/14/15	ISSUED AS FINAL
A	08/04/15	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG
No. 23222
LICENSED
PROFESSIONAL ENGINEER
JIANG M.E.
CONNECTICUT LICENSE NO. 0023222

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY:	HD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072431
SITE ADDRESS:	

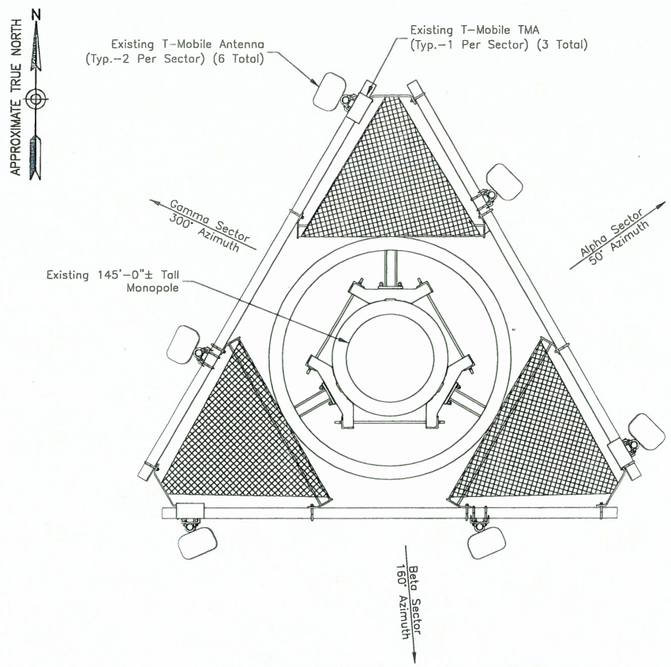
374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SHEET TITLE

COMPOUND PLAN & EQUIPMENT PLANS

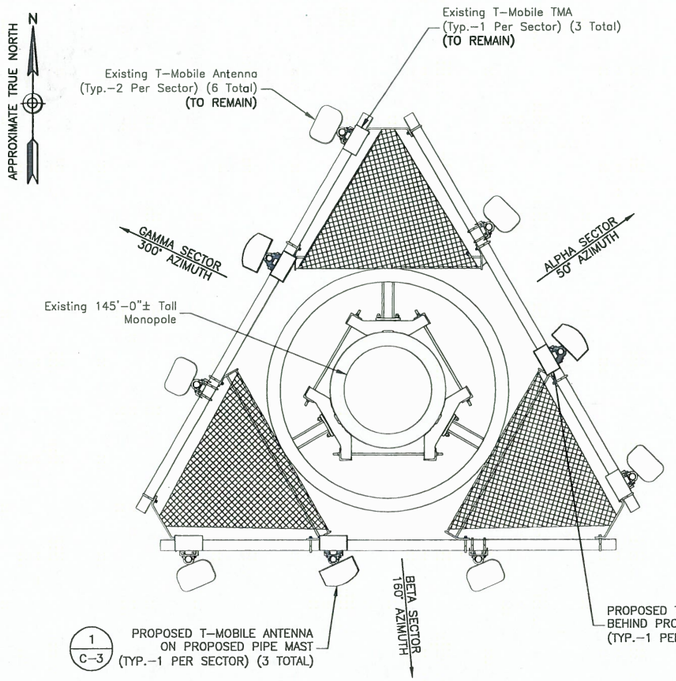
SHEET NUMBER

C-1



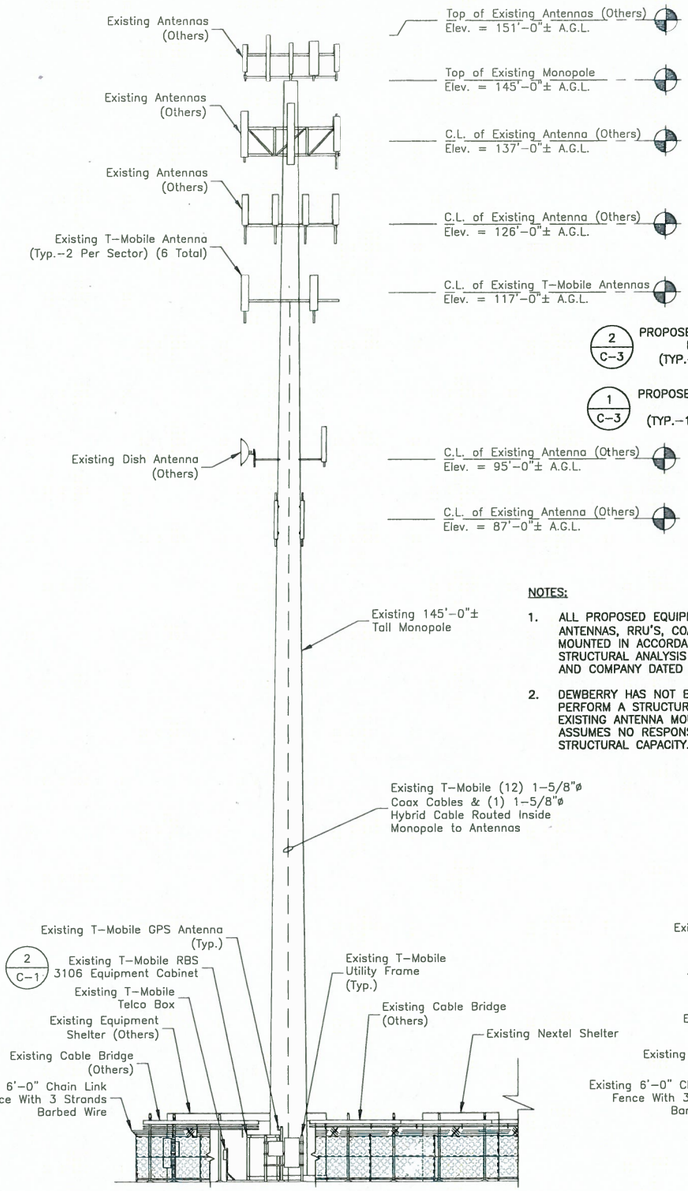
EXISTING ANTENNA LAYOUT 1

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT 2

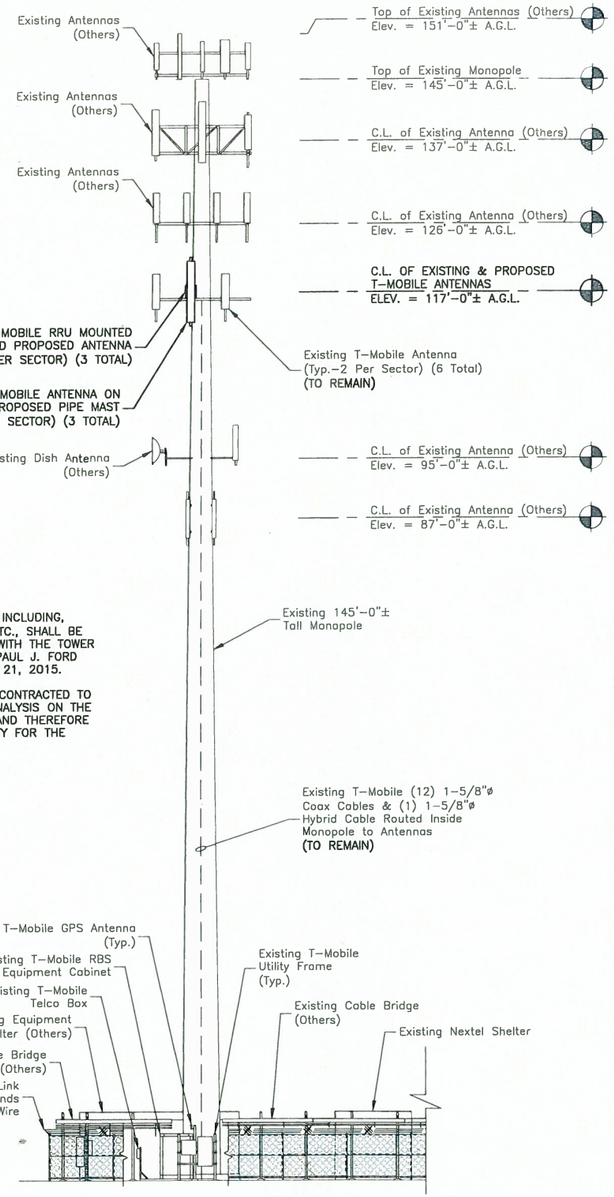
SCALE: N.T.S.



EXISTING ELEVATION 3

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

0' 10' 20'



PROPOSED ELEVATION 4

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

0' 10' 20'

NOTES:

1. ALL PROPOSED EQUIPMENT INCLUDING, ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY PAUL J. FORD AND COMPANY DATED JULY 21, 2015.
2. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.

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

CROWN CASTLE

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11248A
HRT 049B 943215

CONSTRUCTION DRAWINGS

1	08/20/15	ISSUED AS FINAL
0	08/14/15	ISSUED AS FINAL
A	08/04/15	ISSUED FOR REVIEW

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

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 00023222

DRAWN BY:	HD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072431
SITE ADDRESS:	

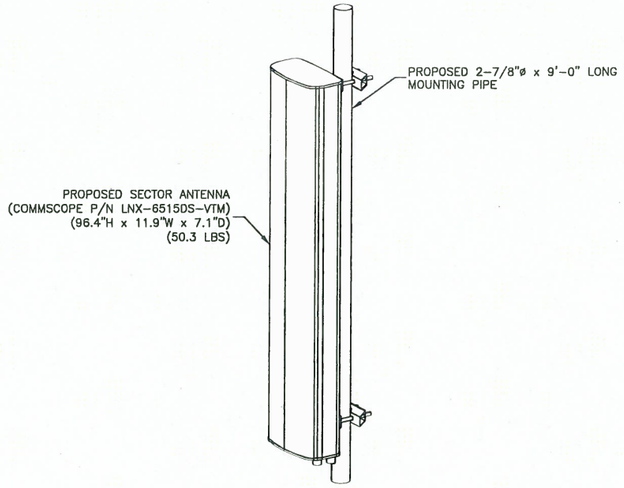
374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

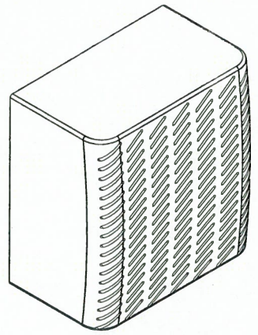
C-2



NOTES:

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

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



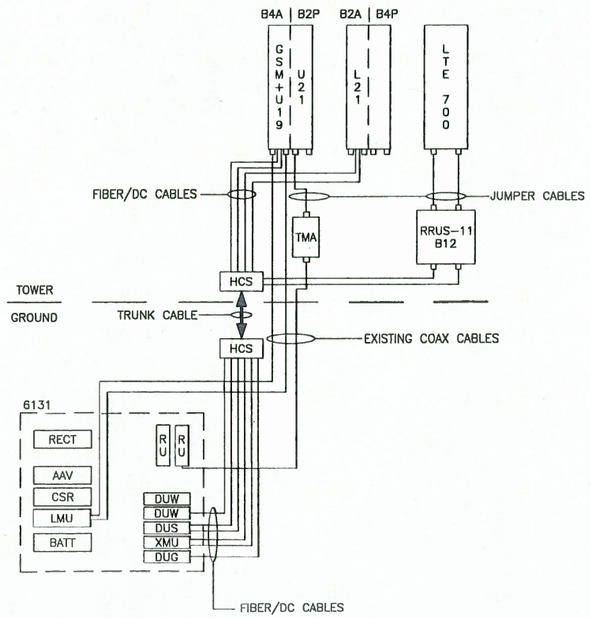
SPECIFICATIONS:
HEIGHT: 20.0"
WIDTH: 17.0"
DEPTH: 7.0"
WEIGHT: 50.7 LBS

ERICSSON RRUS-11 B12

RRU NOTES:

1. MOUNT EQUIPMENT WITH MANUFACTURER PROVIDED MOUNTING BRACKETS.
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.



SITE CONFIGURATION 702Cu (3)
SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX LENGTH	RRH	
	EXISTING	PROPOSED	EXISTING	PROPOSED		EXISTING	PROPOSED
ALPHA	–	–	(4) 1-5/8"ø & MLE HYBRID 9POWER/18FIBER RL 2	–	140'-0"	–	–
	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN				–	–
	–	COMMSCOPE LNX-6515DS-VTM				–	RRUS 11 B12
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN				–	–
BETA	–	–	(4) 1-5/8"ø & MLE HYBRID 9POWER/18FIBER RL 2	–	140'-0"	–	–
	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN				–	–
	–	COMMSCOPE LNX-6515DS-VTM				–	RRUS 11 B12
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN				–	–
GAMMA	–	–	(4) 1-5/8"ø & MLE HYBRID 9POWER/18FIBER RL 2	–	140'-0"	–	–
	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN				–	–
	–	COMMSCOPE LNX-6515DS-VTM				–	RRUS 11 B12
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN				–	–

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

CROWN CASTLE

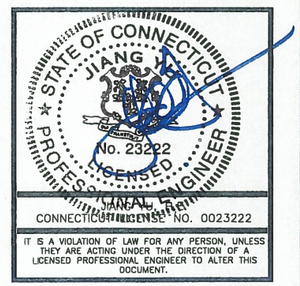
CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

CT11248A
HRT 049B 943215

CONSTRUCTION DRAWINGS

1	08/20/15	ISSUED AS FINAL
0	08/14/15	ISSUED AS FINAL
A	08/04/15	ISSUED FOR REVIEW

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



DRAWN BY:	HD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072431
SITE ADDRESS:	

374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SHEET TITLE

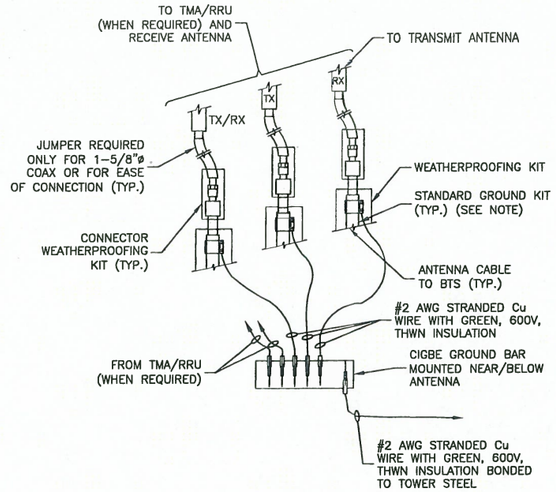
CONSTRUCTION DETAILS

SHEET NUMBER

C-3

GROUNDING NOTES:

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

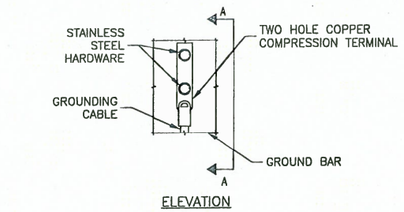


NOTE:

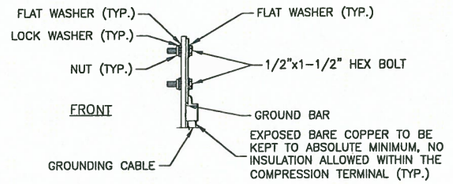
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

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

SCALE: N.T.S.



ELEVATION



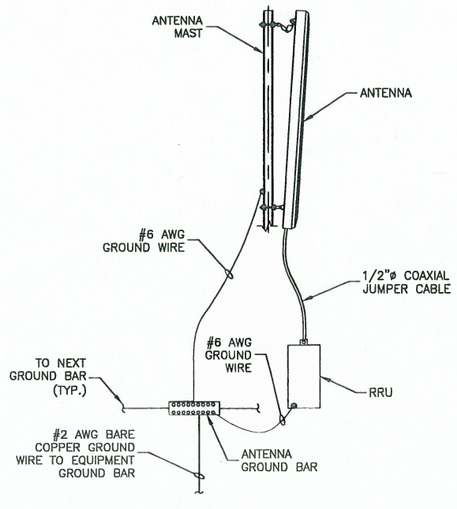
SECTION 'A-A'

NOTES:

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

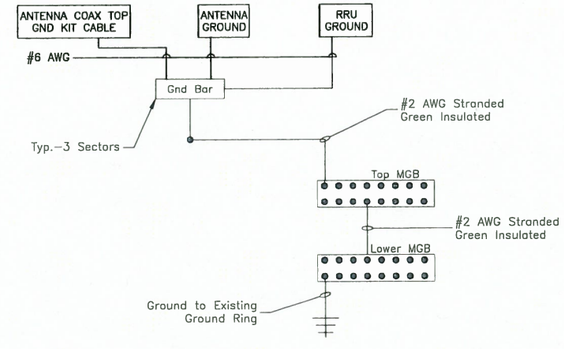
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

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

SCALE: N.T.S.

T-Mobile

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

CROWN CASTLE

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

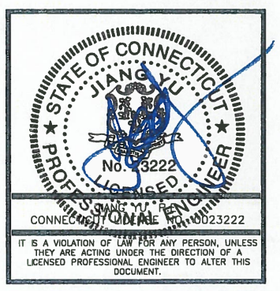
CT11248A
HRT 049B 943215

CONSTRUCTION DRAWINGS

1	08/20/15	ISSUED AS FINAL
0	08/14/15	ISSUED AS FINAL
A	08/04/15	ISSUED FOR REVIEW

Dewberry

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



DRAWN BY:	HD
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072431
SITE ADDRESS:	

374 THREE MILE RD.
GLASTONBURY, CT 06033
HARTFORD COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

PJF PAUL J. FORD & COMPANY

Date: **July 21, 2015**

Sean Dempsey
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
614.221.6679

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11248A
	Carrier Site Name:	Glastonbury
Crown Castle Designation:	**Crown Castle BU Number:**	806368
	Crown Castle Site Name:	HRT 049B 943215
	Crown Castle JDE Job Number:	340886
	Crown Castle Work Order Number:	1092755
	Crown Castle Application Number:	303529 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37515-2141.002.7805
Site Data:	**374 Three Mile Rd., GLASTONBURY, Hartford County, CT** **Latitude *41° 41' 36.93"*, Longitude *-72° 32' 50.11"*** **145 Foot - Monopole Tower**	

Dear Sean Dempsey,

Paul J Ford and Company 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 808496, in accordance with application 303529, revision 0.

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:

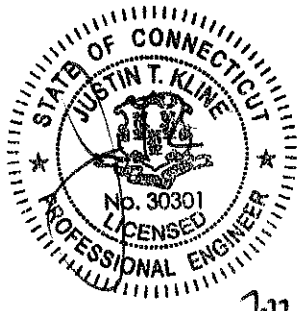
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

We at *Paul J Ford and Company* 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:

Jared Smith, E.I.
Structural Designer



7-22-15

Date: **July 21, 2015**

Sean Dempsey
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
614.221.6679

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11248A
	Carrier Site Name:	Glastonbury
Crown Castle Designation:	**Crown Castle BU Number:**	806368
	Crown Castle Site Name:	HRT 049B 943215
	Crown Castle JDE Job Number:	340886
	Crown Castle Work Order Number:	1092755
	Crown Castle Application Number:	303529 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37515-2141.002.7805
Site Data:	**374 Three Mile Rd., GLASTONBURY, Hartford County, CT** **Latitude *41° 41' 36.93"*, Longitude *-72° 32' 50.11"*** **145 Foot - Monopole Tower**	

Dear Sean Dempsey,

Paul J Ford and Company 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 808496, in accordance with application 303529, revision 0.

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 I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

We at *Paul J Ford and Company* 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:

Jared Smith, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 145 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in January of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. This monopole has been modified to include base plate stiffeners per the referenced reinforcing drawings by GPD dated 3/8/2005 (See assumption #5).

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

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
116.0	117.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	-	-	-
		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
147.0	148.0	3	alcatel lucent	RRH2X60-PCS	2	1-5/8	2
		6	alcatel lucent	RRH2x60-AWS			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		9	andrew	SBNHH-1D65B w/ Mount Pipe			
		2	antel	LPA-80063/6CF w/ Mount Pipe	12 1	1-5/8 1-1/4	1
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
		4	swedcom	SC-E 6014 rev2 w/ Mount Pipe			
	147.0	1	tower mounts	Platform Mount [LP 1001-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
137.0	138.0	3	communication components inc.	DTMABP7819VG12A	12 1 2 1	1-1/4 1/2 3/4 3/8	1
		6	ericsson	RRUS-11			
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	powerwave technologies	7020.00			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		4	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
	137.0	1	tower mounts	Platform Mount [LP 1001-1]			
126.0	130.0	2	gps	GPS_A	12 2	1-1/4 1/2	1
	128.0	12	decibel	DB844G65ZAXY w/ Mount Pipe			
	126.0	1	tower mounts	Platform Mount [LP 601-1]			
116.0	117.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	116.0	1	tower mounts	Platform Mount [LP 601-1]			
95.0	97.0	1	ems wireless	RR65-18-02DP w/ Mount Pipe	3	1-1/4	1
	96.0	1	repeater technologies	DA1900-39			
	95.0	2	tower mounts	Side Arm Mount [SO 701-1]			
87.0	87.0	3	allgon	7250.02 w/ Mount Pipe	6	1-1/4	1
		1	tower mounts	Pipe Mount [PM 601-3]			

Notes:
1) Existing Equipment
2) Reserved Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 12/16/1996	262197	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 2310, 03/25/1997	974245	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 2310, 01/10/1997	262188	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B&T, 2005078.57, 03/08/2005	1037241	CCISITES

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) At the time of this analysis, sufficient foundation information was not available at CCI sites. However, we were able to obtain a copy of the original monopole design. This drawing contained the original foundation design reactions. Based on these reactions we were able to compare to the current analysis. By doing this we have assumed the existing foundation was properly designed to handle the loading from the original monopole design.
5) The existing monopole base plate has been reinforced using a Crown-approved system in accordance with the above referenced documents. However, in this analysis we found that the existing base plate without modifications has adequate capacity and therefore, we did not consider the existing base plate stiffeners in the strength calculations

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	145 - 92.5	Pole	TP35.64x20.5x0.3438	1	-17.31	1948.09	74.7	Pass
L2	92.5 - 44.71	Pole	TP48.61x33.5106x0.4375	2	-30.23	3390.15	78.5	Pass
L3	44.71 - 0	Pole	TP60.5x45.8529x0.4688	3	-49.23	4563.49	80.7	Pass
							Summary	
						Pole (L3)	80.7	Pass
						Rating =	80.7	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	76.9	Pass
1	Base Plate	0	91.5	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	88.9	Pass

Structure Rating (max from all components) =	91.5%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Foundation capacity determined by comparing analysis reactions to original design reactions.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

3) Tower is located in Hartford County, Connecticut.
4) Basic wind speed of 80.00 mph.
5) Nominal ice thickness of 1.0000 in.
6) Ice thickness is considered to increase with height.
7) Ice density of 56.00 pcf.
8) A wind speed of 37.60 mph is used in combination with ice.
9) Deflections calculated using a wind speed of 60.00 mph.
10) A non-linear (P-delta) analysis was used.
11) Pressures are calculated at each section.
12) Stress ratio used in pole design is 1.333.

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		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	145.0000- 92.5000	52.5000	5.00	12	20.5000	35.6400	0.3438	1.3750	A572-65 (65 ksi)
L2	92.5000- 44.7100	52.7900	6.58	12	33.5106	48.6100	0.4375	1.7500	A572-65 (65 ksi)
L3	44.7100- 0.0000	51.2900		12	45.8529	60.5000	0.4688	1.8750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.2232	22.3104	1156.9477	7.2159	10.6190	108.9507	2344.2898	10.9805	4.5728	13.303
	36.8972	39.0685	6212.5548	12.6361	18.4615	336.5137	12588.3202	19.2283	8.6303	25.106
L2	36.1733	46.5917	6504.9565	11.8402	17.3585	374.7421	13180.8054	22.9310	7.8083	17.848
	50.3248	67.8630	20100.989	17.2458	25.1800	798.2925	40730.054	33.4001	11.8550	27.097

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L3	49.4158	68.5018	18009.2979	16.2475	23.7518	758.2281	36491.7202	33.7145	11.0323	23.536
	62.6342	90.6097	41678.8054	21.4912	31.3390	1329.9341	84452.5593	44.5953	14.9578	31.91

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
L1 145.0000-92.5000				1	1	1		
L2 92.5000-44.7100				1	1	1		
L3 44.7100-0.0000				1	1	1		

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 plf
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	145.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	2.81
						1" Ice	0.0000	4.94
						2" Ice	0.0000	11.02
						4" Ice	0.0000	30.52
HJ7-50A(1-5/8")	C	No	Inside Pole	145.0000 - 0.0000	12	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
						2" Ice	0.0000	1.04
						4" Ice	0.0000	1.04
HB114-21U3M12-XXXF(1-1/4")	C	No	CaAa (Out Of Face)	145.0000 - 0.0000	1	No Ice	0.0000	1.22
						1/2" Ice	0.0000	2.47
						1" Ice	0.0000	4.32
						2" Ice	0.0000	9.87
						4" Ice	0.0000	28.29
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	145.0000 - 0.0000	1	No Ice	0.1980	1.30
						1/2" Ice	0.2980	2.81
						1" Ice	0.3980	4.94
						2" Ice	0.5980	11.02
						4" Ice	0.9980	30.52
LCF114-50J(1-1/4")	C	No	Inside Pole	137.0000 - 0.0000	12	No Ice	0.0000	0.70
						1/2" Ice	0.0000	0.70
						1" Ice	0.0000	0.70
						2" Ice	0.0000	0.70
						4" Ice	0.0000	0.70
LCF12-50J(1/2)	C	No	Inside Pole	137.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
FB-L98B-002-75000(3/8")	C	No	Inside Pole	137.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
						2" Ice	0.0000	0.06
						4" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	137.0000 - 0.0000	2	No Ice	0.0000	0.59
						1/2" Ice	0.0000	0.59
						1" Ice	0.0000	0.59
						2" Ice	0.0000	0.59
						4" Ice	0.0000	0.59
LDF4-50A(1/2")	C	No	Inside Pole	126.0000 - 0.0000	2	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF6-50A(1-1/4")	C	No	Inside Pole	126.0000 - 0.0000	12	No Ice	0.0000	0.66
						1/2" Ice	0.0000	0.66
						1" Ice	0.0000	0.66
						2" Ice	0.0000	0.66
						4" Ice	0.0000	0.66
AVA7-50(1-5/8)	C	No	Inside Pole	116.0000 - 0.0000	6	No Ice	0.0000	0.70
						1/2" Ice	0.0000	0.70
						1" Ice	0.0000	0.70
						2" Ice	0.0000	0.70
						4" Ice	0.0000	0.70
LDF7-50A(1-5/8")	C	No	Inside Pole	116.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	116.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07
LDF6-50A(1-1/4")	C	No	CaAa (Out Of Face)	95.0000 - 0.0000	1	No Ice	0.1550	0.66
						1/2" Ice	0.2550	1.91
						1" Ice	0.3550	3.78
						2" Ice	0.5550	9.33
						4" Ice	0.9550	27.78
LDF6-50A(1-1/4")	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	6	No Ice	0.0000	0.66
						1/2" Ice	0.0000	1.91
						1" Ice	0.0000	3.78
						2" Ice	0.0000	9.33
						4" Ice	0.0000	27.78
LDF6-50A(1-1/4")	C	No	CaAa (Out Of Face)	95.0000 - 0.0000	2	No Ice	0.0000	0.66
						1/2" Ice	0.0000	1.91
						1" Ice	0.0000	3.78
						2" Ice	0.0000	9.33
						4" Ice	0.0000	27.78
2" (Nominal) Conduit	C	No	Inside Pole	137.0000 - 0.0000	1	No Ice	0.0000	0.72
						1/2" Ice	0.0000	0.72
						1" Ice	0.0000	0.72
						2" Ice	0.0000	0.72
						4" Ice	0.0000	0.72

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
L1	145.0000-92.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	10.783	1.84
L2	92.5000-44.7100	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	16.870	2.42
L3	44.7100-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	15.783	2.29

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

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
L1	145.0000-92.5000	A	1.164	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	23.584	2.57
L2	92.5000-44.7100	A	1.090	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	39.117	4.66
L3	44.7100-0.0000	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	35.284	4.28

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	145.0000-92.5000	-0.2475	0.1429	-0.4625	0.2670
L2	92.5000-44.7100	-0.4163	0.2404	-0.8237	0.4756
L3	44.7100-0.0000	-0.4253	0.2455	-0.8436	0.4870

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 1001-1]	C	None		0.0000	147.0000	No Ice	47.7000	47.7000	3.02
						1/2" Ice	59.5000	59.5000	3.62
						1" Ice	71.3000	71.3000	4.22
						2" Ice	94.9000	94.9000	5.43
						4" Ice	142.1000	142.1000	7.85
***									
Platform Mount [LP 1001-1]	C	None		0.0000	137.0000	No Ice	47.7000	47.7000	3.02
						1/2" Ice	59.5000	59.5000	3.62
						1" Ice	71.3000	71.3000	4.22
						2" Ice	94.9000	94.9000	5.43
						4" Ice	142.1000	142.1000	7.85
***									
Platform Mount [LP 601-1]	C	None		0.0000	126.0000	No Ice	28.4700	28.4700	1.12
						1/2" Ice	33.5900	33.5900	1.51
						1" Ice	38.7100	38.7100	1.91
						2" Ice	48.9500	48.9500	2.69
						4" Ice	69.4300	69.4300	4.26
8-ft Ladder	C	None		0.0000	124.0000	No Ice	5.0000	7.0700	0.04
						1/2" Ice	9.7300	9.7300	0.07
						1" Ice	11.1900	11.1900	0.08
						2" Ice	13.9800	13.9800	0.11
						4" Ice	18.8900	18.8900	0.15
***									
Platform Mount [LP 601-1]	C	None		0.0000	116.0000	No Ice	28.4700	28.4700	1.12
						1/2" Ice	33.5900	33.5900	1.51
						1" Ice	38.7100	38.7100	1.91
						2" Ice	48.9500	48.9500	2.69
						4" Ice	69.4300	69.4300	4.26

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*
8-ft Ladder	C	None		0.0000	114.0000	No Ice	5.0000	7.0700	0.04
						1/2" Ice	9.7300	9.7300	0.07
						1" Ice	11.1900	11.1900	0.08
						2" Ice	13.9800	13.9800	0.11
						4" Ice	18.8900	18.8900	0.15
***									
Side Arm Mount [SO 701-1]	B	From Leg	2.0000 0.00 0.00	0.0000	95.0000	No Ice	0.8500	1.6700	0.07
						1/2" Ice	1.1400	2.3400	0.08
						1" Ice	1.4300	3.0100	0.09
						2" Ice	2.0100	4.3500	0.12
						4" Ice	3.1700	7.0300	0.18
Side Arm Mount [SO 701-1]	C	From Leg	2.0000 0.00 0.00	0.0000	95.0000	No Ice	0.8500	1.6700	0.07
						1/2" Ice	1.1400	2.3400	0.08
						1" Ice	1.4300	3.0100	0.09
						2" Ice	2.0100	4.3500	0.12
						4" Ice	3.1700	7.0300	0.18
Ice Shield 1.5' x 2.0'	C	From Leg	4.0000 0.00 0.00	0.0000	99.0000	No Ice	0.3500	0.4667	0.03
						1/2" Ice	0.4840	0.6395	0.04
						1" Ice	0.6265	0.8210	0.06
						2" Ice	0.9377	1.2099	0.12
						4" Ice	1.6636	2.0914	0.27
***									
Pipe Mount [PM 601-3]	C	None		0.0000	87.0000	No Ice	4.3900	4.3900	0.20
						1/2" Ice	5.4800	5.4800	0.24
						1" Ice	6.5700	6.5700	0.28
						2" Ice	8.7500	8.7500	0.36
						4" Ice	13.1100	13.1100	0.53
***									
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 1.00	0.0000	147.0000	No Ice	5.6000	2.3333	0.04
						1/2" Ice	5.9154	2.5580	0.08
						1" Ice	6.2395	2.7914	0.12
						2" Ice	6.9136	3.2840	0.21
						4" Ice	8.3654	4.3728	0.45
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 1.00	0.0000	147.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
(2) SC-E 6014 rev2 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.0000	147.0000	No Ice	3.7829	4.3959	0.03
						1/2" Ice	4.1817	5.0091	0.07
						1" Ice	4.5912	5.6403	0.12
						2" Ice	5.4423	6.9563	0.22
						4" Ice	7.2927	9.8967	0.54
(2) RRH2x60-AWS	A	From Leg	4.0000 0.00 1.00	0.0000	147.0000	No Ice	2.1904	1.4290	0.04
						1/2" Ice	2.3976	1.6109	0.06
						1" Ice	2.6134	1.8015	0.08
						2" Ice	3.0710	2.2085	0.13
						4" Ice	4.0899	3.1263	0.26
RRH2X60-PCS	A	From Leg	4.0000 0.00 1.00	0.0000	147.0000	No Ice	2.5667	2.0106	0.06
						1/2" Ice	2.7914	2.2184	0.08
						1" Ice	3.0247	2.4349	0.10
						2" Ice	3.5173	2.8938	0.16
						4" Ice	4.6062	3.9152	0.31
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00	0.0000	147.0000	No Ice	8.6482	7.4197	0.08
						1/2"	9.2781	8.4535	0.15

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
			1.00			Ice	9.8967	9.3468	0.23
						1" Ice	11.1637	11.1834	0.42
						2" Ice	13.8163	15.2188	0.94
						4" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000	0.0000	147.0000	No Ice	5.6000	2.3333	0.04
			0.00			1/2"	5.9154	2.5580	0.08
			1.00			Ice	6.2395	2.7914	0.12
						1" Ice	6.9136	3.2840	0.21
						2" Ice	8.3654	4.3728	0.45
						4" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.0000	147.0000	No Ice	0.3665	0.0846	0.00
			0.00			1/2"	0.4506	0.1362	0.01
			1.00			Ice	0.5433	0.1965	0.01
						1" Ice	0.7546	0.3430	0.02
						2" Ice	1.2808	0.7396	0.06
						4" Ice			
(2) SC-E 6014 rev2 w/ Mount Pipe	B	From Leg	4.0000	0.0000	147.0000	No Ice	3.7829	4.3959	0.03
			0.00			1/2"	4.1817	5.0091	0.07
			1.00			Ice	4.5912	5.6403	0.12
						1" Ice	5.4423	6.9563	0.22
						2" Ice	7.2927	9.8967	0.54
						4" Ice			
(2) RRH2x60-AWS	B	From Leg	4.0000	0.0000	147.0000	No Ice	2.1904	1.4290	0.04
			0.00			1/2"	2.3976	1.6109	0.06
			1.00			Ice	2.6134	1.8015	0.08
						1" Ice	3.0710	2.2085	0.13
						2" Ice	4.0899	3.1263	0.26
						4" Ice			
RRH2X60-PCS	B	From Leg	4.0000	0.0000	147.0000	No Ice	2.5667	2.0106	0.06
			0.00			1/2"	2.7914	2.2184	0.08
			1.00			Ice	3.0247	2.4349	0.10
						1" Ice	3.5173	2.8938	0.16
						2" Ice	4.6062	3.9152	0.31
						4" Ice			
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000	0.0000	147.0000	No Ice	8.6482	7.4197	0.08
			0.00			1/2"	9.2781	8.4535	0.15
			1.00			Ice	9.8967	9.3468	0.23
						1" Ice	11.1637	11.1834	0.42
						2" Ice	13.8163	15.2188	0.94
						4" Ice			
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.0000	0.0000	147.0000	No Ice	10.5771	10.6706	0.05
			0.00			1/2"	11.2413	11.9322	0.14
			1.00			Ice	11.8720	12.9107	0.25
						1" Ice	13.1633	14.9215	0.48
						2" Ice	15.8657	19.1577	1.09
						4" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.0000	147.0000	No Ice	0.3665	0.0846	0.00
			0.00			1/2"	0.4506	0.1362	0.01
			1.00			Ice	0.5433	0.1965	0.01
						1" Ice	0.7546	0.3430	0.02
						2" Ice	1.2808	0.7396	0.06
						4" Ice			
(2) RRH2x60-AWS	C	From Leg	4.0000	0.0000	147.0000	No Ice	2.1904	1.4290	0.04
			0.00			1/2"	2.3976	1.6109	0.06
			1.00			Ice	2.6134	1.8015	0.08
						1" Ice	3.0710	2.2085	0.13
						2" Ice	4.0899	3.1263	0.26
						4" Ice			
RRH2X60-PCS	C	From Leg	4.0000	0.0000	147.0000	No Ice	2.5667	2.0106	0.06
			0.00			1/2"	2.7914	2.2184	0.08
			1.00			Ice	3.0247	2.4349	0.10
						1" Ice	3.5173	2.8938	0.16
						2" Ice	4.6062	3.9152	0.31
						4" Ice			
(3) SBNHH-1D65B w/	C	From Leg	4.0000	0.0000	147.0000	No Ice	8.6482	7.4197	0.08

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*
Mount Pipe			0.00			1/2"	9.2781	8.4535	0.15
			1.00			Ice	9.8967	9.3468	0.23
						1" Ice	11.1637	11.1834	0.42
						2" Ice	13.8163	15.2188	0.94
						4" Ice			
***									
DTMABP7819VG12A	A	From Leg	4.0000	0.0000	137.0000	No Ice	1.1389	0.3907	0.02
			0.00			1/2"	1.2835	0.4884	0.03
			1.00			Ice	1.4368	0.5947	0.04
						1" Ice	1.7693	0.8334	0.06
						2" Ice	2.5380	1.4144	0.14
						4" Ice			
(2) RRUS-11	A	From Leg	4.0000	0.0000	137.0000	No Ice	3.2486	1.3726	0.05
			0.00			1/2"	3.4905	1.5510	0.07
			1.00			Ice	3.7411	1.7380	0.09
						1" Ice	4.2682	2.1381	0.15
						2" Ice	5.4260	3.0418	0.31
						4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000	0.0000	137.0000	No Ice	8.4975	6.3042	0.07
			0.00			1/2"	9.1490	7.4790	0.14
			1.00			Ice	9.7672	8.3676	0.21
						1" Ice	11.0311	10.1785	0.38
						2" Ice	13.6786	14.0237	0.87
						4" Ice			
7020.00	A	From Leg	4.0000	0.0000	137.0000	No Ice	0.1191	0.2042	0.00
			0.00			1/2"	0.1714	0.2791	0.01
			1.00			Ice	0.2323	0.3627	0.01
						1" Ice	0.3801	0.5559	0.02
						2" Ice	0.7793	1.0459	0.07
						4" Ice			
7770.00 w/ Mount Pipe	A	From Leg	4.0000	0.0000	137.0000	No Ice	6.2208	4.8204	0.09
			0.00			1/2"	6.7144	5.5082	0.14
			1.00			Ice	7.2182	6.2127	0.21
						1" Ice	8.2568	7.6716	0.36
						2" Ice	10.4762	11.0613	0.76
						4" Ice			
(2) LGP13519	A	From Leg	4.0000	0.0000	137.0000	No Ice	0.3379	0.2074	0.01
			0.00			1/2"	0.4220	0.2804	0.01
			1.00			Ice	0.5147	0.3621	0.01
						1" Ice	0.7260	0.5513	0.02
						2" Ice	1.2523	1.0335	0.07
						4" Ice			
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.0000	0.0000	137.0000	No Ice	11.8229	9.0563	0.09
			0.00			1/2"	12.5940	10.6186	0.18
			1.00			Ice	13.3752	12.2051	0.28
						1" Ice	14.9400	14.6968	0.51
						2" Ice	18.3336	19.6430	1.14
						4" Ice			
TT19-08BP111-001	A	From Leg	4.0000	0.0000	137.0000	No Ice	0.6449	0.5198	0.02
			0.00			1/2"	0.7568	0.6232	0.02
			1.00			Ice	0.8773	0.7354	0.03
						1" Ice	1.1444	0.9856	0.05
						2" Ice	1.7822	1.5896	0.12
						4" Ice			
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	137.0000	No Ice	1.4667	1.4667	0.02
			0.00			1/2"	1.6667	1.6667	0.04
			1.00			Ice	1.8778	1.8778	0.06
						1" Ice	2.3333	2.3333	0.11
						2" Ice	3.3778	3.3778	0.24
						4" Ice			
DTMABP7819VG12A	B	From Leg	4.0000	0.0000	137.0000	No Ice	1.1389	0.3907	0.02
			0.00			1/2"	1.2835	0.4884	0.03
			1.00			Ice	1.4368	0.5947	0.04
						1" Ice	1.7693	0.8334	0.06
						2" Ice	2.5380	1.4144	0.14

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			
(2) RRUS-11	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2486 3.4905 3.7411 4.2682 5.4260	1.3726 1.5510 1.7380 2.1381 3.0418	0.05 0.07 0.09 0.15 0.31
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.3042 7.4790 8.3676 10.1785 14.0237	0.07 0.14 0.21 0.38 0.87
7020.00	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.1191 0.1714 0.2323 0.3801 0.7793	0.2042 0.2791 0.3627 0.5559 1.0459	0.00 0.01 0.01 0.02 0.07
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
(2) LGP13519	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3379 0.4220 0.5147 0.7260 1.2523	0.2074 0.2804 0.3621 0.5513 1.0335	0.01 0.01 0.01 0.02 0.07
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.8229 12.5940 13.3752 14.9400 18.3336	9.0563 10.6186 12.2051 14.6968 19.6430	0.09 0.18 0.28 0.51 1.14
TT19-08BP111-001	B	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.6449 0.7568 0.8773 1.1444 1.7822	0.5198 0.6232 0.7354 0.9856 1.5896	0.02 0.02 0.03 0.05 0.12
DTMABP7819VG12A	C	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.1389 1.2835 1.4368 1.7693 2.5380	0.3907 0.4884 0.5947 0.8334 1.4144	0.02 0.03 0.04 0.06 0.14
(2) RRUS-11	C	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2486 3.4905 3.7411 4.2682 5.4260	1.3726 1.5510 1.7380 2.1381 3.0418	0.05 0.07 0.09 0.15 0.31
7020.00	C	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.1191 0.1714 0.2323 0.3801 0.7793	0.2042 0.2791 0.3627 0.5559 1.0459	0.00 0.01 0.01 0.02 0.07
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.0000	137.0000	No Ice 1/2" Ice 1" Ice	6.2208 6.7144 7.2182 8.2568	4.8204 5.5082 6.2127 7.6716	0.09 0.14 0.21 0.36

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	10.4762	11.0613	0.76
						4" Ice			
(2) LGP13519	C	From Leg	4.0000	0.0000	137.0000	No Ice	0.3379	0.2074	0.01
			0.00			1/2"	0.4220	0.2804	0.01
			1.00			Ice	0.5147	0.3621	0.01
						1" Ice	0.7260	0.5513	0.02
						2" Ice	1.2523	1.0335	0.07
						4" Ice			
(2) P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.0000	0.0000	137.0000	No Ice	11.8229	9.0563	0.09
			0.00			1/2"	12.5940	10.6186	0.18
			1.00			Ice	13.3752	12.2051	0.28
						1" Ice	14.9400	14.6968	0.51
						2" Ice	18.3336	19.6430	1.14
						4" Ice			
TT19-08BP111-001	C	From Leg	4.0000	0.0000	137.0000	No Ice	0.6449	0.5198	0.02
			0.00			1/2"	0.7568	0.6232	0.02
			1.00			Ice	0.8773	0.7354	0.03
						1" Ice	1.1444	0.9856	0.05
						2" Ice	1.7822	1.5896	0.12
						4" Ice			
***									
(4) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.0000	0.0000	126.0000	No Ice	4.9042	4.9208	0.03
			0.00			1/2"	5.3460	5.5962	0.08
			2.00			Ice	5.7972	6.2837	0.13
						1" Ice	6.7311	7.7123	0.26
						2" Ice	8.7345	10.8330	0.62
						4" Ice			
(2) GPS_A	A	From Leg	4.0000	0.0000	126.0000	No Ice	0.2975	0.2975	0.00
			0.00			1/2"	0.3739	0.3739	0.00
			4.00			Ice	0.4589	0.4589	0.01
						1" Ice	0.6549	0.6549	0.02
						2" Ice	1.1506	1.1506	0.08
						4" Ice			
(4) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.0000	0.0000	126.0000	No Ice	4.9042	4.9208	0.03
			0.00			1/2"	5.3460	5.5962	0.08
			2.00			Ice	5.7972	6.2837	0.13
						1" Ice	6.7311	7.7123	0.26
						2" Ice	8.7345	10.8330	0.62
						4" Ice			
(4) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.0000	0.0000	126.0000	No Ice	4.9042	4.9208	0.03
			0.00			1/2"	5.3460	5.5962	0.08
			2.00			Ice	5.7972	6.2837	0.13
						1" Ice	6.7311	7.7123	0.26
						2" Ice	8.7345	10.8330	0.62
						4" Ice			
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000	0.0000	116.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2"	7.3471	6.4800	0.17
			1.00			Ice	7.8631	7.2567	0.23
						1" Ice	8.9261	8.8640	0.38
						2" Ice	11.1755	12.2932	0.81
						4" Ice			
KRY 112 144/1	A	From Leg	4.0000	0.0000	116.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2"	0.4969	0.2733	0.01
			1.00			Ice	0.5941	0.3511	0.02
						1" Ice	0.8145	0.5326	0.03
						2" Ice	1.3590	0.9992	0.08
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000	0.0000	116.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2"	7.3471	6.4800	0.17
			1.00			Ice	7.8631	7.2567	0.23
						1" Ice	8.9261	8.8640	0.38
						2" Ice	11.1755	12.2932	0.81
						4" Ice			
KRY 112 144/1	B	From Leg	4.0000	0.0000	116.0000	No Ice	0.4083	0.2042	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2"	0.4969	0.2733	0.01
			1.00				Ice	0.5941	0.3511	0.02
							1" Ice	0.8145	0.5326	0.03
							2" Ice	1.3590	0.9992	0.08
							4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000		0.0000	116.0000	No Ice	6.8253	5.6424	0.11
			0.00				1/2"	7.3471	6.4800	0.17
			1.00				Ice	7.8631	7.2567	0.23
							1" Ice	8.9261	8.8640	0.38
							2" Ice	11.1755	12.2932	0.81
							4" Ice			
KRY 112 144/1	C	From Leg	4.0000		0.0000	116.0000	No Ice	0.4083	0.2042	0.01
			0.00				1/2"	0.4969	0.2733	0.01
			1.00				Ice	0.5941	0.3511	0.02
							1" Ice	0.8145	0.5326	0.03
							2" Ice	1.3590	0.9992	0.08
							4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000		0.0000	116.0000	No Ice	6.8155	5.6334	0.11
			0.00				1/2"	7.3373	6.4717	0.17
			1.00				Ice	7.8532	7.2478	0.23
							1" Ice	8.9160	8.8537	0.38
							2" Ice	11.1650	12.2804	0.81
							4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000		0.0000	116.0000	No Ice	6.8155	5.6334	0.11
			0.00				1/2"	7.3373	6.4717	0.17
			1.00				Ice	7.8532	7.2478	0.23
							1" Ice	8.9160	8.8537	0.38
							2" Ice	11.1650	12.2804	0.81
							4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000		0.0000	116.0000	No Ice	6.8155	5.6334	0.11
			0.00				1/2"	7.3373	6.4717	0.17
			1.00				Ice	7.8532	7.2478	0.23
							1" Ice	8.9160	8.8537	0.38
							2" Ice	11.1650	12.2804	0.81
							4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000		0.0000	116.0000	No Ice	11.6828	9.8418	0.08
			0.00				1/2"	12.4043	11.3657	0.17
			1.00				Ice	13.1351	12.9138	0.27
							1" Ice	14.6007	15.2672	0.51
							2" Ice	17.8748	20.1392	1.15
							4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000		0.0000	116.0000	No Ice	11.6828	9.8418	0.08
			0.00				1/2"	12.4043	11.3657	0.17
			1.00				Ice	13.1351	12.9138	0.27
							1" Ice	14.6007	15.2672	0.51
							2" Ice	17.8748	20.1392	1.15
							4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000		0.0000	116.0000	No Ice	11.6828	9.8418	0.08
			0.00				1/2"	12.4043	11.3657	0.17
			1.00				Ice	13.1351	12.9138	0.27
							1" Ice	14.6007	15.2672	0.51
							2" Ice	17.8748	20.1392	1.15
							4" Ice			
RRUS 11 B12	A	From Leg	4.0000		0.0000	116.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			1.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
							4" Ice			
RRUS 11 B12	B	From Leg	4.0000		0.0000	116.0000	No Ice	3.3056	1.3611	0.05
			0.00				1/2"	3.5497	1.5404	0.07
			1.00				Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
							4" Ice			

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
RRUS 11 B12	C	From Leg	4.0000 0.00 1.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.3056 3.5497 3.8025 4.3340 5.5006	1.3611 1.5404 1.7284 2.1302 3.0377	0.05 0.07 0.10 0.15 0.31
***									
RR65-18-02DP w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.0000	95.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.5931 5.0883 5.5778 6.5876 8.7306	3.3194 4.0888 4.7844 6.2255 9.3076	0.03 0.07 0.12 0.22 0.56
***									
7250.02 w/ Mount Pipe	A	From Leg	1.0000 0.00 0.00	0.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.2362 4.7096 5.1662 6.1061 8.3213	3.3238 4.3022 5.0504 6.5968 9.8896	0.04 0.07 0.12 0.22 0.56
7250.02 w/ Mount Pipe	B	From Leg	1.0000 0.00 0.00	0.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.2362 4.7096 5.1662 6.1061 8.3213	3.3238 4.3022 5.0504 6.5968 9.8896	0.04 0.07 0.12 0.22 0.56
7250.02 w/ Mount Pipe	C	From Leg	1.0000 0.00 0.00	0.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.2362 4.7096 5.1662 6.1061 8.3213	3.3238 4.3022 5.0504 6.5968 9.8896	0.04 0.07 0.12 0.22 0.56

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
DA1900-39	C	Paraboloid w/o Radome	From Leg	4.0000 0.00 1.00	0.0000		95.0000	3.5417	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.8500 10.3200 10.7900 11.7300 13.6000	0.05 0.10 0.15 0.26 0.47

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 145.0000-92.5000	116.7975	1.435	23.46	122.806	A B	0.000 0.000	122.806 122.806	122.806	100.00 100.00	0.000 0.000	0.000 0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	122.806		100.00	0.000	10.783
L2 92.5000-44.7100	67.9006	1.229	20.02	166.370	A	0.000	166.370	166.370	100.00	0.000	0.000
					B	0.000	166.370		100.00	0.000	0.000
					C	0.000	166.370		100.00	0.000	16.870
L3 44.7100-0.0000	21.4903	1	16.40	201.627	A	0.000	201.627	201.627	100.00	0.000	0.000
					B	0.000	201.627		100.00	0.000	0.000
					C	0.000	201.627		100.00	0.000	15.783

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 145.0000-92.5000	116.7975	1.435	5.18	1.1638	132.989	A	0.000	132.989	132.989	100.00	0.000	0.000
						B	0.000	132.989		100.00	0.000	0.000
						C	0.000	132.989		100.00	0.000	23.584
L2 92.5000-44.7100	67.9006	1.229	4.42	1.0904	175.640	A	0.000	175.640	175.640	100.00	0.000	0.000
						B	0.000	175.640		100.00	0.000	0.000
						C	0.000	175.640		100.00	0.000	39.117
L3 44.7100-0.0000	21.4903	1	3.62	1.0000	209.753	A	0.000	209.753	209.753	100.00	0.000	0.000
						B	0.000	209.753		100.00	0.000	0.000
						C	0.000	209.753		100.00	0.000	35.284

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 145.0000-92.5000	116.7975	1.435	13.19	122.806	A	0.000	122.806	122.806	100.00	0.000	0.000
					B	0.000	122.806		100.00	0.000	0.000
					C	0.000	122.806		100.00	0.000	10.783
L2 92.5000-44.7100	67.9006	1.229	11.26	166.370	A	0.000	166.370	166.370	100.00	0.000	0.000
					B	0.000	166.370		100.00	0.000	0.000
					C	0.000	166.370		100.00	0.000	16.870
L3 44.7100-0.0000	21.4903	1	9.23	201.627	A	0.000	201.627	201.627	100.00	0.000	0.000
					B	0.000	201.627		100.00	0.000	0.000
					C	0.000	201.627		100.00	0.000	15.783

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	29.65					
Bracing Weight	0.00					
Total Member Self-Weight	29.65			1.18	2.22	
Total Weight	49.26			1.18	2.22	
Wind 0 deg - No Ice		0.49	-41.48	-4320.62	-46.24	-3.15
Wind 30 deg - No Ice		20.93	-35.87	-3737.48	-2171.97	-1.73

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 60 deg - No Ice		35.87	-20.84	-2170.68	-3725.45	-0.43
Wind 90 deg - No Ice		41.34	-0.30	-29.45	-4293.12	1.00
Wind 120 deg - No Ice		35.94	20.32	2120.10	-3730.70	2.73
Wind 150 deg - No Ice		20.48	35.70	3721.91	-2125.78	3.83
Wind 180 deg - No Ice		-0.07	41.33	4308.42	10.22	3.89
Wind 210 deg - No Ice		-20.60	35.86	3738.94	2144.89	2.78
Wind 240 deg - No Ice		-35.72	20.75	2164.22	3714.63	0.43
Wind 270 deg - No Ice		-41.17	0.02	4.95	4281.03	-2.04
Wind 300 deg - No Ice		-35.60	-20.61	-2145.52	3702.31	-3.46
Wind 330 deg - No Ice		-20.48	-35.70	-3719.14	2130.95	-3.83
Member Ice	8.12					
Total Weight Ice	76.66			6.11	11.89	
Wind 0 deg - Ice		0.11	-11.57	-1229.67	1.07	-0.95
Wind 30 deg - Ice		5.82	-10.00	-1062.57	-607.36	-0.51
Wind 60 deg - Ice		9.99	-5.80	-613.56	-1052.39	-0.07
Wind 90 deg - Ice		11.51	-0.07	-0.34	-1215.43	0.38
Wind 120 deg - Ice		10.01	5.68	614.63	-1054.72	0.88
Wind 150 deg - Ice		5.72	9.97	1071.45	-597.86	1.16
Wind 180 deg - Ice		-0.01	11.53	1238.32	12.80	1.13
Wind 210 deg - Ice		-5.74	10.00	1074.57	623.41	0.76
Wind 240 deg - Ice		-9.95	5.78	623.62	1072.42	0.07
Wind 270 deg - Ice		-11.47	-0.00	5.99	1235.16	-0.64
Wind 300 deg - Ice		-9.93	-5.76	-609.21	1070.45	-1.06
Wind 330 deg - Ice		-5.72	-9.96	-1059.13	621.81	-1.16
Total Weight	49.26			1.18	2.22	
Wind 0 deg - Service		0.28	-23.33	-2430.84	-26.77	-1.77
Wind 30 deg - Service		11.77	-20.18	-2102.82	-1222.50	-0.97
Wind 60 deg - Service		20.18	-11.72	-1221.50	-2096.33	-0.24
Wind 90 deg - Service		23.25	-0.17	-17.05	-2415.64	0.56
Wind 120 deg - Service		20.22	11.43	1192.07	-2099.28	1.53
Wind 150 deg - Service		11.52	20.08	2093.09	-1196.51	2.15
Wind 180 deg - Service		-0.04	23.25	2423.00	4.99	2.19
Wind 210 deg - Service		-11.59	20.17	2102.66	1205.74	1.56
Wind 240 deg - Service		-20.09	11.67	1216.89	2088.72	0.24
Wind 270 deg - Service		-23.16	0.01	2.30	2407.31	-1.15
Wind 300 deg - Service		-20.03	-11.59	-1207.34	2081.79	-1.95
Wind 330 deg - Service		-11.52	-20.08	-2092.51	1197.89	-2.15

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
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice

Comb. No.	Description
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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
L1	145 - 92.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.40	3.05	0.11
			Max. Mx	11	-17.34	976.52	-1.32
			Max. My	2	-17.31	-1.19	988.96
			Max. Vy	5	27.97	-975.40	1.75
			Max. Vx	2	-28.22	-1.19	988.96
			Max. Torque	2			2.92
L2	92.5 - 44.71	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-53.19	6.96	-3.19
			Max. Mx	5	-30.25	-2454.44	14.90
			Max. My	2	-30.23	-22.83	2474.98
			Max. Vy	5	35.10	-2454.44	14.90
			Max. Vx	2	-35.25	-22.83	2474.98
			Max. Torque	8			-3.62
L3	44.71 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-77.41	12.17	-6.21
			Max. Mx	5	-49.23	-4413.88	30.16
			Max. My	2	-49.23	-47.32	4442.33
			Max. Vy	5	41.37	-4413.88	30.16
			Max. Vx	2	-41.51	-47.32	4442.33
			Max. Torque	8			-3.87

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	77.41	-0.00	0.00
	Max. H_x	11	49.26	41.17	-0.02
	Max. H_z	2	49.26	-0.49	41.48
	Max. M_x	2	4442.33	-0.49	41.48
	Max. M_z	5	4413.88	-41.34	0.30
	Max. Torsion	13	3.76	20.48	35.70
	Min. Vert	30	49.26	-23.25	0.17
	Min. H_x	5	49.26	-41.34	0.30
	Min. H_z	8	49.26	0.07	-41.33
	Min. M_x	8	-4429.88	0.07	-41.33
	Min. M_z	11	-4401.56	41.17	-0.02
	Min. Torsion	8	-3.87	0.07	-41.33

Tower Mast Reaction Summary

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 Only	49.26	-0.00	0.00	1.18	2.22	0.00
Dead+Wind 0 deg - No Ice	49.26	0.49	-41.48	-4442.33	-47.32	-3.15
Dead+Wind 30 deg - No Ice	49.26	20.93	-35.87	-3842.92	-2232.98	-1.78
Dead+Wind 60 deg - No Ice	49.26	35.87	-20.84	-2231.89	-3830.29	-0.48
Dead+Wind 90 deg - No Ice	49.26	41.34	-0.30	-30.16	-4413.88	0.96
Dead+Wind 120 deg - No Ice	49.26	35.94	20.32	2180.11	-3835.65	2.72
Dead+Wind 150 deg - No Ice	49.26	20.48	35.70	3827.01	-2185.71	3.81
Dead+Wind 180 deg - No Ice	49.26	-0.07	41.33	4429.88	10.49	3.87
Dead+Wind 210 deg - No Ice	49.26	-20.60	35.86	3844.43	2205.32	2.76
Dead+Wind 240 deg - No Ice	49.26	-35.72	20.75	2225.30	3819.28	0.43
Dead+Wind 270 deg - No Ice	49.26	-41.17	0.02	5.09	4401.56	-2.00
Dead+Wind 300 deg - No Ice	49.26	-35.60	-20.61	-2206.14	3806.66	-3.39
Dead+Wind 330 deg - No Ice	49.26	-20.48	-35.70	-3824.20	2191.00	-3.76
Dead+Ice	77.41	0.00	-0.00	6.21	12.17	0.00
Dead+Wind 0 deg+Ice	77.41	0.11	-11.57	-1297.11	1.29	-0.98
Dead+Wind 30 deg+Ice	77.41	5.82	-10.00	-1120.88	-640.48	-0.55
Dead+Wind 60 deg+Ice	77.41	9.99	-5.80	-647.22	-1109.90	-0.11
Dead+Wind 90 deg+Ice	77.41	11.51	-0.07	-0.35	-1281.88	0.36
Dead+Wind 120 deg+Ice	77.41	10.01	5.68	648.35	-1112.33	0.87
Dead+Wind 150 deg+Ice	77.41	5.72	9.96	1130.14	-630.59	1.18
Dead+Wind 180 deg+Ice	77.41	-0.01	11.53	1306.14	13.51	1.16
Dead+Wind 210 deg+Ice	77.41	-5.74	10.00	1133.39	657.55	0.80
Dead+Wind 240 deg+Ice	77.41	-9.95	5.78	657.71	1131.13	0.11
Dead+Wind 270 deg+Ice	77.41	-11.47	-0.00	6.24	1302.78	-0.62
Dead+Wind 300 deg+Ice	77.41	-9.93	-5.76	-642.70	1129.08	-1.05
Dead+Wind 330 deg+Ice	77.41	-5.72	-9.96	-1117.29	655.89	-1.17
Dead+Wind 0 deg - Service	49.26	0.28	-23.33	-2500.12	-25.62	-1.78
Dead+Wind 30 deg - Service	49.26	11.77	-20.18	-2162.70	-1255.96	-1.00
Dead+Wind 60 deg - Service	49.26	20.18	-11.72	-1255.82	-2155.09	-0.27
Dead+Wind 90 deg - Service	49.26	23.25	-0.17	-16.44	-2483.35	0.54
Dead+Wind 120 deg - Service	49.26	20.22	11.43	1227.73	-2158.09	1.53
Dead+Wind 150 deg - Service	49.26	11.52	20.08	2154.77	-1229.34	2.15
Dead+Wind 180 deg - Service	49.26	-0.04	23.25	2494.16	6.91	2.19
Dead+Wind 210 deg - Service	49.26	-11.59	20.17	2164.59	1242.40	1.57
Dead+Wind 240 deg - Service	49.26	-20.09	11.67	1253.16	2150.89	0.25
Dead+Wind 270 deg - Service	49.26	-23.16	0.01	3.40	2478.66	-1.13
Dead+Wind 300 deg - Service	49.26	-20.03	-11.59	-1241.31	2143.78	-1.92
Dead+Wind 330 deg - Service	49.26	-11.52	-20.08	-2152.14	1234.33	-2.13

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-49.26	0.00	0.00	49.26	-0.00	0.000%
2	0.49	-49.26	-41.48	-0.49	49.26	41.48	0.002%
3	20.93	-49.26	-35.87	-20.93	49.26	35.87	0.000%
4	35.87	-49.26	-20.84	-35.87	49.26	20.84	0.000%
5	41.34	-49.26	-0.30	-41.34	49.26	0.30	0.002%
6	35.94	-49.26	20.32	-35.94	49.26	-20.32	0.000%
7	20.48	-49.26	35.70	-20.48	49.26	-35.70	0.000%
8	-0.07	-49.26	41.33	0.07	49.26	-41.33	0.002%
9	-20.60	-49.26	35.86	20.60	49.26	-35.86	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
10	-35.72	-49.26	20.75	35.72	49.26	-20.75	0.000%
11	-41.17	-49.26	0.02	41.17	49.26	-0.02	0.002%
12	-35.60	-49.26	-20.61	35.60	49.26	20.61	0.000%
13	-20.48	-49.26	-35.70	20.48	49.26	35.70	0.000%
14	0.00	-77.41	0.00	-0.00	77.41	0.00	0.003%
15	0.11	-77.41	-11.57	-0.11	77.41	11.57	0.001%
16	5.82	-77.41	-10.00	-5.82	77.41	10.00	0.001%
17	9.99	-77.41	-5.80	-9.99	77.41	5.80	0.001%
18	11.51	-77.41	-0.07	-11.51	77.41	0.07	0.001%
19	10.01	-77.41	5.68	-10.01	77.41	-5.68	0.001%
20	5.72	-77.41	9.97	-5.72	77.41	-9.96	0.001%
21	-0.01	-77.41	11.53	0.01	77.41	-11.53	0.001%
22	-5.74	-77.41	10.00	5.74	77.41	-10.00	0.001%
23	-9.95	-77.41	5.78	9.95	77.41	-5.78	0.001%
24	-11.47	-77.41	-0.00	11.47	77.41	0.00	0.001%
25	-9.93	-77.41	-5.76	9.93	77.41	5.76	0.001%
26	-5.72	-77.41	-9.96	5.72	77.41	9.96	0.001%
27	0.28	-49.26	-23.33	-0.28	49.26	23.33	0.001%
28	11.77	-49.26	-20.18	-11.77	49.26	20.18	0.000%
29	20.18	-49.26	-11.72	-20.18	49.26	11.72	0.000%
30	23.25	-49.26	-0.17	-23.25	49.26	0.17	0.005%
31	20.22	-49.26	11.43	-20.22	49.26	-11.43	0.000%
32	11.52	-49.26	20.08	-11.52	49.26	-20.08	0.000%
33	-0.04	-49.26	23.25	0.04	49.26	-23.25	0.001%
34	-11.59	-49.26	20.17	11.59	49.26	-20.17	0.000%
35	-20.09	-49.26	11.67	20.09	49.26	-11.67	0.000%
36	-23.16	-49.26	0.01	23.16	49.26	-0.01	0.001%
37	-20.03	-49.26	-11.59	20.03	49.26	11.59	0.000%
38	-11.52	-49.26	-20.08	11.52	49.26	20.08	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	11	0.00000001	0.00007410
3	Yes	13	0.00000001	0.00006431
4	Yes	13	0.00000001	0.00006609
5	Yes	11	0.00000001	0.00005517
6	Yes	13	0.00000001	0.00006635
7	Yes	13	0.00000001	0.00006157
8	Yes	11	0.00000001	0.00010215
9	Yes	13	0.00000001	0.00006794
10	Yes	13	0.00000001	0.00006468
11	Yes	11	0.00000001	0.00006641
12	Yes	13	0.00000001	0.00006210
13	Yes	13	0.00000001	0.00006790
14	Yes	6	0.00000001	0.00003075
15	Yes	11	0.00000001	0.00003126
16	Yes	11	0.00000001	0.00003329
17	Yes	11	0.00000001	0.00003823
18	Yes	11	0.00000001	0.00002864
19	Yes	11	0.00000001	0.00004294
20	Yes	11	0.00000001	0.00003070
21	Yes	11	0.00000001	0.00003250
22	Yes	11	0.00000001	0.00004574
23	Yes	11	0.00000001	0.00003740
24	Yes	11	0.00000001	0.00002967
25	Yes	11	0.00000001	0.00003246
26	Yes	11	0.00000001	0.00004722
27	Yes	11	0.00000001	0.00004641
28	Yes	12	0.00000001	0.00005329
29	Yes	12	0.00000001	0.00005644
30	Yes	10	0.00009295	0.00014732
31	Yes	12	0.00000001	0.00005789

32	Yes	12	0.00000001	0.00004992
33	Yes	11	0.00000001	0.00005264
34	Yes	12	0.00000001	0.00005983
35	Yes	12	0.00000001	0.00005435
36	Yes	11	0.00000001	0.00004220
37	Yes	12	0.00000001	0.00005071
38	Yes	12	0.00000001	0.00006027

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 92.5	44.575	27	2.9031	0.0147
L2	97.5 - 44.71	19.279	27	1.9748	0.0042
L3	51.29 - 0	5.085	28	0.9270	0.0013

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	Platform Mount [LP 1001-1]	27	44.575	2.9031	0.0147	19108
137.0000	Platform Mount [LP 1001-1]	27	39.946	2.7556	0.0126	11942
126.0000	Platform Mount [LP 601-1]	27	33.700	2.5499	0.0098	5027
124.0000	8-ft Ladder	27	32.591	2.5119	0.0094	4548
116.0000	Platform Mount [LP 601-1]	27	28.269	2.3570	0.0076	3293
114.0000	8-ft Ladder	27	27.223	2.3175	0.0071	3080
99.0000	Ice Shield 1.5' x 2.0'	27	19.942	2.0074	0.0044	2089
96.0000	DA1900-39	27	18.629	1.9419	0.0040	2034
95.0000	Side Arm Mount [SO 701-1]	27	18.203	1.9199	0.0039	2032
87.0000	Pipe Mount [PM 601-3]	27	15.009	1.7392	0.0030	2087

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 92.5	79.111	2	5.1524	0.0260
L2	97.5 - 44.71	34.237	2	3.5070	0.0074
L3	51.29 - 0	9.036	3	1.6471	0.0023

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	Platform Mount [LP 1001-1]	2	79.111	5.1524	0.0260	10872
137.0000	Platform Mount [LP 1001-1]	2	70.901	4.8911	0.0223	6794
126.0000	Platform Mount [LP 601-1]	2	59.822	4.5267	0.0174	2859
124.0000	8-ft Ladder	2	57.854	4.4593	0.0166	2586
116.0000	Platform Mount [LP 601-1]	2	50.188	4.1848	0.0134	1871
114.0000	8-ft Ladder	2	48.332	4.1147	0.0126	1750
99.0000	Ice Shield 1.5' x 2.0'	2	35.414	3.5648	0.0078	1185
96.0000	DA1900-39	2	33.084	3.4487	0.0071	1153
95.0000	Side Arm Mount [SO 701-1]	2	32.328	3.4095	0.0069	1152

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
87.0000	Pipe Mount [PM 601-3]	2	26.657	3.0889	0.0053	1182

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	145 - 92.5 (1)	TP35.64x20.5x0.3438	52.5000	0.0000	0.0	39.000	37.4725	-17.31	1461.43	0.012
L2	92.5 - 44.71 (2)	TP48.61x33.5106x0.4375	52.7900	0.0000	0.0	39.000	65.2117	-30.23	2543.25	0.012
L3	44.71 - 0 (3)	TP60.5x45.8529x0.4688	51.2900	0.0000	0.0	37.783	90.6097	-49.23	3423.47	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	145 - 92.5 (1)	TP35.64x20.5x0.3438	988.96	38.350	39.000	0.983	0.00	0.000	39.000	0.000
L2	92.5 - 44.71 (2)	TP48.61x33.5106x0.4375	2475.09	40.307	39.000	1.034	0.00	0.000	39.000	0.000
L3	44.71 - 0 (3)	TP60.5x45.8529x0.4688	4444.57	40.103	37.783	1.061	0.00	0.000	37.783	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	145 - 92.5 (1)	TP35.64x20.5x0.3438	28.22	0.753	26.000	0.060	2.92	0.053	26.000	0.002
L2	92.5 - 44.71 (2)	TP48.61x33.5106x0.4375	35.25	0.541	26.000	0.042	2.90	0.022	26.000	0.001
L3	44.71 - 0 (3)	TP60.5x45.8529x0.4688	41.57	0.459	26.000	0.036	1.78	0.008	26.000	0.000

Pole Interaction Design Data

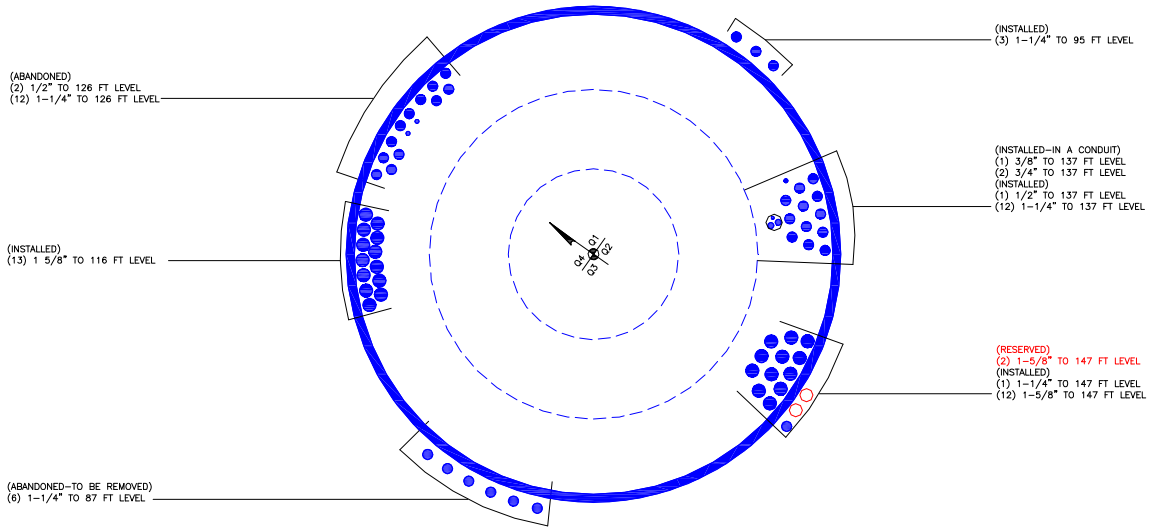
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	145 - 92.5 (1)	0.012	0.983	0.000	0.060	0.002	0.996 ✔	1.333	H1-3+VT ✔
L2	92.5 - 44.71 (2)	0.012	1.034	0.000	0.042	0.001	1.046 ✔	1.333	H1-3+VT ✔
L3	44.71 - 0 (3)	0.014	1.061	0.000	0.036	0.000	1.076 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	145 - 92.5	Pole	TP35.64x20.5x0.3438	1	-17.31	1948.09	74.7	Pass
L2	92.5 - 44.71	Pole	TP48.61x33.5106x0.4375	2	-30.23	3390.15	78.5	Pass
L3	44.71 - 0	Pole	TP60.5x45.8529x0.4688	3	-49.23	4563.49	80.7	Pass
							Summary	
						Pole (L3)	80.7	Pass
						RATING =	**80.7**	**Pass**

APPENDIX B

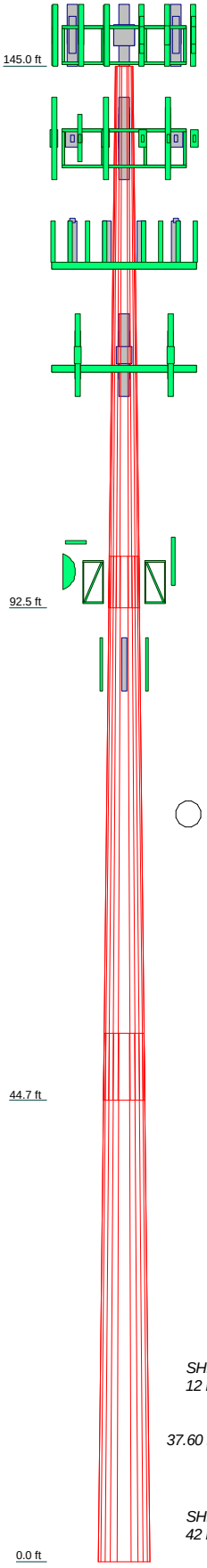
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	52.5000	12	0.3438	5.0000	20.5000	35.6400		5.5
2	52.7900	12	0.4375	6.5800	33.5106	48.6100	A572-65	10.3
3	51.2900	12	0.4688		45.8529	60.5000		13.9



AXIAL
77 K
SHEAR
12 K
MOMENT
1310 kip-ft
TORQUE 1 kip-ft
37.60 mph WIND - 1.0000 in ICE
AXIAL
49 K
SHEAR
42 K
MOMENT
4445 kip-ft
TORQUE 4 kip-ft
REACTIONS - 80.00 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1001-1]	147	(2) P65-17-XLH-RR w/ Mount Pipe	137
DB-T1-6Z-8AB-0Z	147	TT19-08BP111-001	137
(2) FD9R6004/2C-3L	147	Platform Mount [LP 601-1]	126
(2) SC-E 6014 rev2 w/ Mount Pipe	147	(4) DB844G65ZAXY w/ Mount Pipe	126
(2) RRH2x60-AWS	147	(2) GPS_A	126
RRH2X60-PCS	147	(4) DB844G65ZAXY w/ Mount Pipe	126
(3) SBNHH-1D65B w/ Mount Pipe	147	(4) DB844G65ZAXY w/ Mount Pipe	126
DB-T1-6Z-8AB-0Z	147	8-ft Ladder	124
(2) FD9R6004/2C-3L	147	Platform Mount [LP 601-1]	116
(2) SC-E 6014 rev2 w/ Mount Pipe	147	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) RRH2x60-AWS	147	KRY 112 144/1	116
RRH2X60-PCS	147	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(3) SBNHH-1D65B w/ Mount Pipe	147	KRY 112 144/1	116
(2) LPA-80063/6CF w/ Mount Pipe	147	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) FD9R6004/2C-3L	147	KRY 112 144/1	116
(2) RRH2x60-AWS	147	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
RRH2X60-PCS	147	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
(3) SBNHH-1D65B w/ Mount Pipe	147	LNX-6515DS-VTM w/ Mount Pipe	116
Platform Mount [LP 1001-1]	137	LNX-6515DS-VTM w/ Mount Pipe	116
DTMABP7819VG12A	137	LNX-6515DS-VTM w/ Mount Pipe	116
(2) RRUS-11	137	RRUS 11 B12	116
AM-X-CD-16-65-00T-RET w/ Mount Pipe	137	RRUS 11 B12	116
7020.00	137	RRUS 11 B12	116
7770.00 w/ Mount Pipe	137	8-ft Ladder	114
(2) LGP13519	137	Ice Shield 1.5' x 2.0'	99
P65-17-XLH-RR w/ Mount Pipe	137	Side Arm Mount [SO 701-1]	95
TT19-08BP111-001	137	Side Arm Mount [SO 701-1]	95
DC6-48-60-18-8F	137	RR65-18-02DP w/ Mount Pipe	95
DTMABP7819VG12A	137	DA1900-39	95
(2) RRUS-11	137	7250.02 w/ Mount Pipe	87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	137	7250.02 w/ Mount Pipe	87
7020.00	137	7250.02 w/ Mount Pipe	87
7770.00 w/ Mount Pipe	137	Pipe Mount [PM 601-3]	87
(2) LGP13519	137		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60.00 mph wind.
5. TOWER RATING: 80.7%

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: ***Ex. 145-ft Monopole in Hartford Co., CT***		
Project: ***PJF: 37515-2141 (BU: 806368)***		
Client: Crown Castle	Drawn by: Jared Smith	App'd:
Code: TIA/EIA-222-F	Date: 07/22/15	Scale: NTS
Path: G:\TOWER\375_Crown_Castle\37515-2141_806368_HRT-0498\[37515-2141-002-7805_SA_1000]37515-2141-002.eri		Dwg No. E-1

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#:	*806368*
Site Name:	
App #:	
Pole Manufacturer:	*Other*

Reactions		
Moment:	4445	ft-kips
Axial:	49	kips
Shear:	42	kips

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	70	in

Plate Data		
Diam:	76.5	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	9.73	in

Stiffener Data (Welding at both sides)		
Config:		*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	60.5	in
Thick:	0.46875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension:	150.0 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	76.9% **Pass**	Fty*ASIF

Base Plate Results

Base Plate Stress:	54.9 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	91.5% **Pass**	0.75*Fy*ASIF
	Flexural Check	Y.L. Length: 35.21

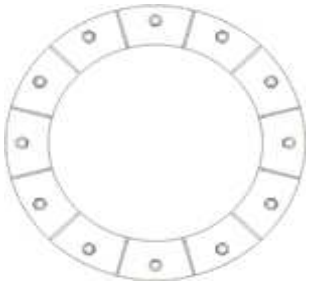
n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Page	1	of	1
By	JWS	Date	7/22/2015
Project	37515-2141.002		
Client	CCI		
PROJ#	879129		

Foundation Comparison

Reactions	Original Design	Current Analysis	Ratio
Moment (ft-kips)	5001.4	4445.0	88.9%
Shear (kips)	44.6	42.0	94.2%

Note: Although the shear capacity is at 94.2%, the moment reaction is the governing criteria for a monopole drilled shaft foundation, therefore, the overall capacity for this foundation 88.9%.

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11248A

Glastonbury
374 Three Mile Road
Glastonbury, CT 06033

August 12, 2015

EBI Project Number: 6215004253

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	89.43 %

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

EBI Consulting
environmental | engineering | due diligence

August 12, 2015

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

Emissions Analysis for Site: **CT11248A – Glastonbury**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **374 Three Mile Road, Glastonbury, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **374 Three Mile Road, Glastonbury, 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** & **B2A/B4P)** 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** & **B2A/B4P)** have a maximum gain of **15.9 dBd** at their 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 **117 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.

EBI Consulting

environmental | engineering | due diligence

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):	117	Height (AGL):	117	Height (AGL):	117
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):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.36	Antenna B1 MPE%	1.36	Antenna C1 MPE%	1.36
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	117	Height (AGL):	117	Height (AGL):	117
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):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	1.36	Antenna B2 MPE%	1.36	Antenna C2 MPE%	1.36
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):	117	Height (AGL):	117	Height (AGL):	117
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):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.54	Antenna B3 MPE%	0.54	Antenna C3 MPE%	0.54

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**9.79**
Nextel	3.59 %
Verizon Wireless	20.84 %
AT&T	21.39 %
Sprint	0.42 %
XM Satellite Radio	33.40 %
Site Total MPE %:	**89.43 %**

T-Mobile Sector 1 Total:	3.26 %
T-Mobile Sector 2 Total:	3.26 %
T-Mobile Sector 3 Total:	3.26 %
Site Total:	89.43 %

EBI Consulting
environmental | engineering | due diligence

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:	3.26 %
Sector 2:	3.26 %
Sector 3 :	3.26 %
T-Mobile Total:	9.79 %
Site Total:	89.43 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **89.43%** 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