Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

April 1, 2016

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

RE: **Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 876348**
T-Mobile Site ID: CTHA067A
Bright Meadow Boulevard, Enfield, CT 06082
Latitude: 42° 1' 14.91" / Longitude: -72° 35' 6.59"

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 107 foot level of the existing 147 foot monopole on Bright Meadow Boulevard in Enfield, CT. The Tower Owner is Crown Castle and the Property Owner is Connecticut Light & Power (d/b/a Eversource Energy). T-Mobile now intends to replace the existing mount with a new T-Arm Mount. T-Mobile is proposing to remove three (3) APX18 antennas and remove six (6) coax. T-Mobile is proposing to install six (6) AIR21 antennas, three (3) Commscope antennas, six (6) 1-5/8" coax, one (1) Hybrid, three (3) TMA's, three (3) RRUS and replace one (1) cabinet. No additional ground space is required.

This facility was approved by the Town of Enfield on July 10, 1998. This approval included the condition(s):

1. An engineering bond for removal of the wireless telecommunications facility including the tower and base components in an amount to be determined by the town engineer shall be submitted to the town prior to the start of construction and prior to the issuance of any building permits.
2. An erosion and sedimentation control passbook, pledged to the town, in an amount to be determined by the town engineer, shall be submitted to the town prior to the start of construction.
3. A preconstruction meeting between the applicant, site contractors, project engineer and town staff shall be held prior to the beginning of any site work.
4. The tower shall accommodate both the applicant's Antenna and comparable Antennas for at least two additional users.
5. The tower shall allow for future rearrangement of Antennas upon the tower and shall accommodate Antennas mounted at varying heights.
6. The wireless communications facility shall not interfere with existing or proposed public safety communications, commercial television and radio signals or other forms of communication transmissions.

7. The wireless communication facility shall comply with the standards promulgated by the Federal Communication Commission (FCC).
8. All generators installed in conjunction with the wireless communications facility shall comply with all State and local noise regulators.
9. On or before August 31 every year, the applicant or wireless telecommunications service provider shall submit information to the Planning Zoning Commission file in support of the provision of Section 14-8.6 of the Zoning Ordinance.
10. If the wireless communications facility is not in use for 12 consecutive months, it shall be removed within 90 days from the end of such 12 month period, including any towers and base components by the last service provider using the site or owner, whichever has a contractual obligation to perform the removal.
11. The special use permit for a commercial wireless telecommunication service shall be valid for a maximum period of 10 years with a right of reapplication under regulations in effect at that time.
12. The approval of an application for special use permit shall be void and of no effect unless construction of the project commences within one year from the date of the approval granted by the commission in accordance with Section 14-10.2 of the Zoning Ordinance.
13. Arrangements shall be made with the fire department regarding emergency access to the compound.
14. The plans shall be modified to show a paved apron at the driveway entrance that conforms to town paving specifications.
15. The plans shall be modified to include standard notes as recommended by the town engineer.
16. Monopole shall be maintained if becomes rusty or eye sore.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Scott R. Kaupin, Mayor & Councilor At-Large for the Town of Enfield.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

For the foregoing reasons, T-Mobile respectfully submits that 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

Kimberly Myl
Real Estate Specialist
Crown Castle
1200 MacArthur Boulevard, Suite 200
Mahwah, New Jersey 07430
201-236-9069
kimberly.myl@crowncastle.com

Attachments:

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

cc: The Honorable Scott R. Kaupin, Mayor & Councilor At_Large for the Town of Enfield
Enfield Town Hall
820 Enfield Street
Enfield, CT 06082

Connecticut Light & Power
d/b/a Eversource Energy
PO Box 650031
Dallas, TX 75265-0031

CT03XC 221

TOWN OF ENFIELD

CERTIFIED MAIL Z205 375 469

July 7, 1998

Karen Johnson
Vanasse Hangen Brustlin Inc.
54 Tuttle Place
Middletown, CT 06457

Dear Ms. Johnson:

At the July 2,1998 Regular Meeting of the Enfield Planning & Zoning Commission the following action was taken:

> PH 2053 – Special Use Permit for a Commercial Wireless Telecommunication Service including site plan review of a wireless telecommunication facility consisting of a 150-foot Monopole and associated equipment surrounded by a chain link fence located east of Bright Meadow Blvd. adjacent to the Harley Hotel (Assessor's Map 35, Lot 219 - Old Enfield St) BR zone – The Connecticut Light and Power Company, owner / Sprint Spectrum L.P. (Sprint PCS) aplct.

The Commission approved the application with the following conditions:

1. An engineering bond for removal of the wireless telecommunications facility including the tower and base components in an amount to be determined by the town engineer shall be submitted to the town prior to the start of construction and prior to the issuance of any building permits. Any need to use the bond by the town shall be binding on the site regardless of name of the bond obligee.

2. An erosion and sedimentation control passbook, pledged to the town, in an amount to be determined buy the town engineer, shall be submitted to the town prior to the start of construction.

3. A preconstruction meeting between the applicant, site contractors, project engineer and town staff shall be held prior to the beginning of any site work.

4. The tower shall accommodate both the applicant's Antennas and comparable Antennas for at least two additional users.

5. The tower shall allow for future rearrangement of Antennas upon the tower and shall accommodate Antennas mounted at varying heights.

6. The wireless communication facility shall not interfere with existing or proposed public safety communications, commercial television and radio signals or other forms of communication transmissions. Penalty for subsequent interference shall void the approval of the facility.

7. The wireless communication facility shall comply with the standards promulgated by the Federal Communication Commission (FCC).

8. All generators installed in conjunction with the wireless communications facility shall comply with all State and local noise regulators.

9. On or before August 31 every year, the applicant or wireless telecommunications service provider shall submit information to the Planning Zoning Commission file in support of the provision of Section 14-8.6 of the Zoning Ordinance.

10. If the wireless communications facility is not in use for 12 consecutive months, it shall be removed within 90 days from the end of such 12 month period, including any towers and base components by the last service provider using the site or owner, whichever has a contractual obligation to perform the removal. The site shall be restored to an appearance that is compatible with the surrounding neighborhood and where appropriate, re-vegetated to blend with surrounding area.

11. The special use permit for a commercial wireless telecommunication service shall be valid for a maximum period of 10 years with a right of reapplication under regulations in effect at that time.

12. The approval of an application for special use permit shall be void and of no effect unless construction of the project commences within one year from the date of the approval granted by the commission in accordance with Section 14-10.2 of the Zoning Ordinance.

13. Arrangements shall be made with the fire department regarding emergency access to the compound.

14. The plans shall be modified to show a paved apron at the driveway entrance that conforms to town paving specifications.

15. The plans shall be modified to include standard notes as recommended by the town engineer.

16. Monopole shall be maintained if becomes rusty or eye sore.

If you have any questions regarding this action, please contact me at (860)253-6358.

Very truly yours,

Laurie P. Whitten

Laurie P. Whitten
Acting Town Planner

LPW/vch

8398

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

DATE 3/31/16 32-61-1110

PAY TO THE ORDER OF Connecticut Siting Council $ 625.00/100

Six Hundred Twenty Five 00/100 DOLLARS

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

VALID FOR 180 DAYS

FOR 876348-CTHA067A-358605

MP

⑈008398⑈ ⑆111000614⑆ 464638118⑈

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CTHA067A
CROWN CASTLE BU #: 876348
SITE NAME: ENFIELD
BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
HARTFORD COUNTY

VICINITY MAP

FROM BLOOMFIELD, CT:

HEAD NORTHEAST ON GRIFFIN RD S TOWARD W NEWBERRY RD. TURN RIGHT ONTO DAY HILL RD. USE THE RIGHT 2 LANES TO TURN RIGHT ONTO CT-75 S. USE THE LEFT 2 LANES TO TURN LEFT ONTO THE INTERSTATE 91 N RAMP TO SPRINGFIELD. MERGE ONTO I-91 N. TAKE EXIT 49 TO MERGE ONTO US-5 N. USE THE RIGHT LANE TO MERGE ONTO US-5 N. TURN RIGHT ONTO BRIGHT MEADOW BLVD. SITE WILL BE ON THE LEFT.

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

CONSULTANT TEAM

SITE NAME:
ENFIELD

SITE NUMBER:
CTHA067A

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

APPLICANT/DEVELOPER:
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

COORDINATES:
LATITUDE: 42°-01'-14.91" N (NAD83)
LONGITUDE: 72°-35'-06.59" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
702Cu

PROJECT SUMMARY

SITE ADDRESS:
BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
HARTFORD COUNTY

PROJECT DIRECTORY

- REMOVE AND REPLACE EXISTING ANTENNA MOUNT WITH A NEW ANTENNA MOUNT.
- REMOVE AND REPLACE (3) EXISTING ANTENNAS WITH (9) NEW ANTENNAS.
- INSTALL (3) NEW TMA'S.
- INSTALL (3) NEW RRU'S.
- INSTALL (1) NEW HYBRID CABLE.
- REMOVE AND REPLACE EXISTING EQUIPMENT CABINET WITH (1) NEW EQUIPMENT CABINET AT GRADE.

SCOPE OF WORK

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.

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	COMPOUND PLAN & EQUIPMENT PLANS
C-2	ANTENNA LAYOUTS & ELEVATIONS
C-3	CONSTRUCTION DETAILS I
C-4	CONSTRUCTION DETAILS II
E-1	GROUNDING NOTES & DETAILS

SHEET INDEX

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

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

CTHA067A
ENFIELD

CONSTRUCTION DRAWINGS

0	03/30/16	ISSUED AS FINAL
A	03/28/16	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
LICENSED
PROFESSIONAL ENGINEER

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

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078124
SITE ADDRESS:	

BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
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.

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CONSTRUCTION DRAWINGS

0	03/30/16	ISSUED AS FINAL
A	03/28/16	ISSUED FOR REVIEW

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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER

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:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078124
SITE ADDRESS:	

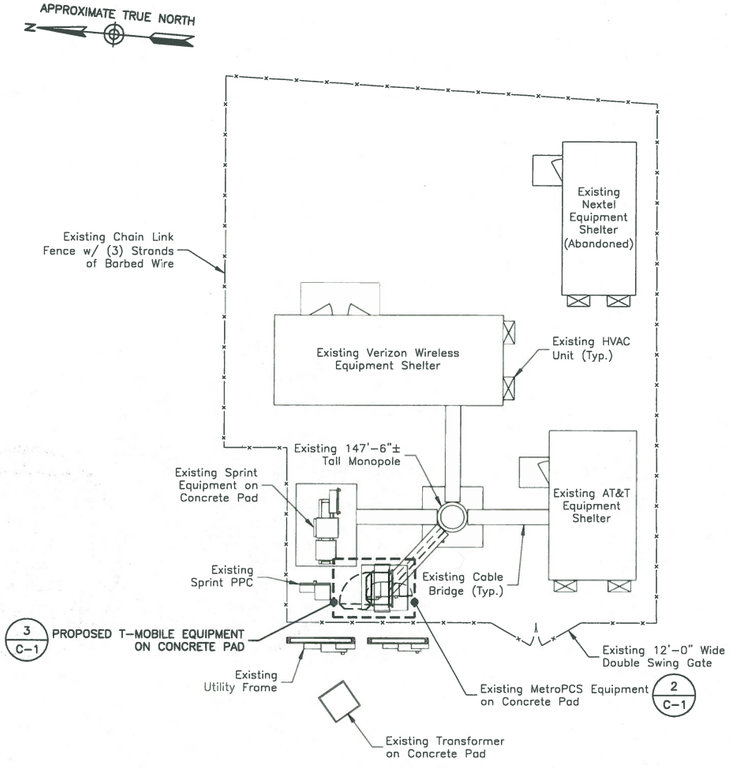
BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G–1

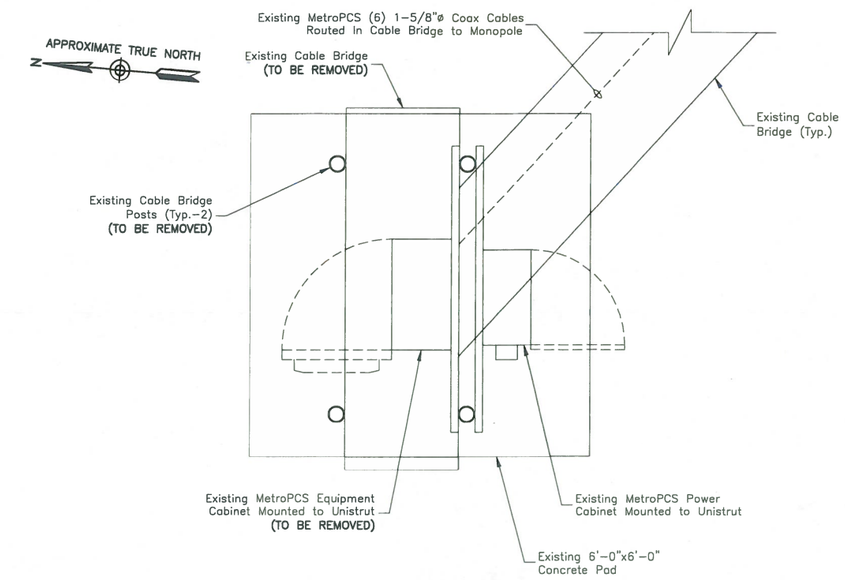


COMPOUND PLAN

1

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

0' 10' 20'

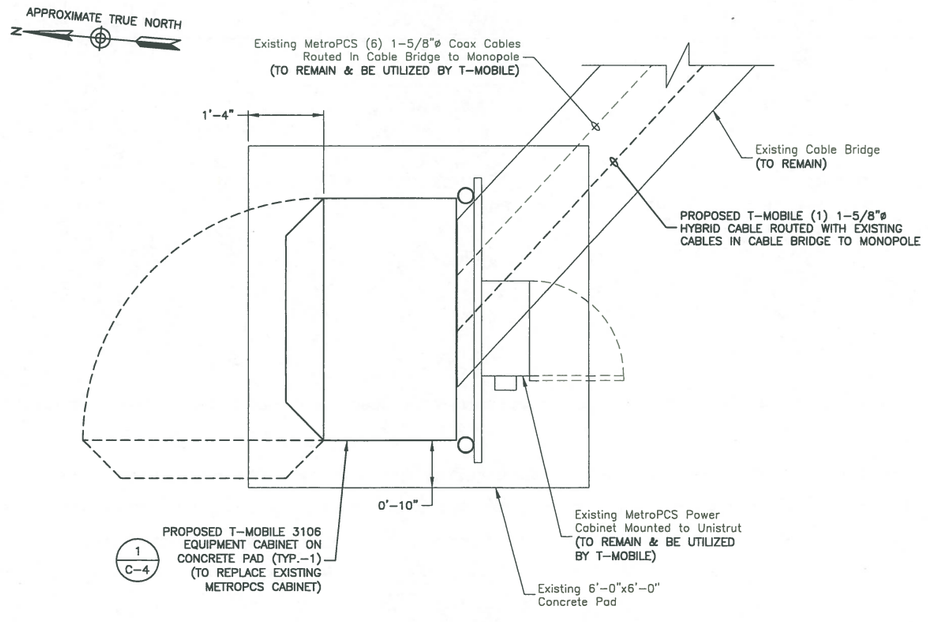


EXISTING EQUIPMENT PLAN

2

SCALE: 3/8"=1' FOR 11"x17"
3/4"=1' FOR 22"x34"

0' 1' 2' 3'



PROPOSED EQUIPMENT PLAN

3

SCALE: 3/8"=1' FOR 11"x17"
3/4"=1' FOR 22"x34"

0' 1' 2' 3'

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 MARCH 07, 2016.

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CONNECTICUT LICENSE NO. 0023222

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REVIEWED BY:	BSH
CHECKED BY:	GHN
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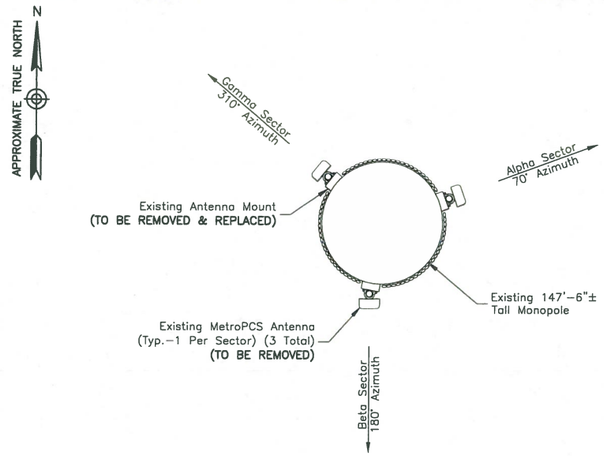
HARTFORD COUNTY

SHEET TITLE

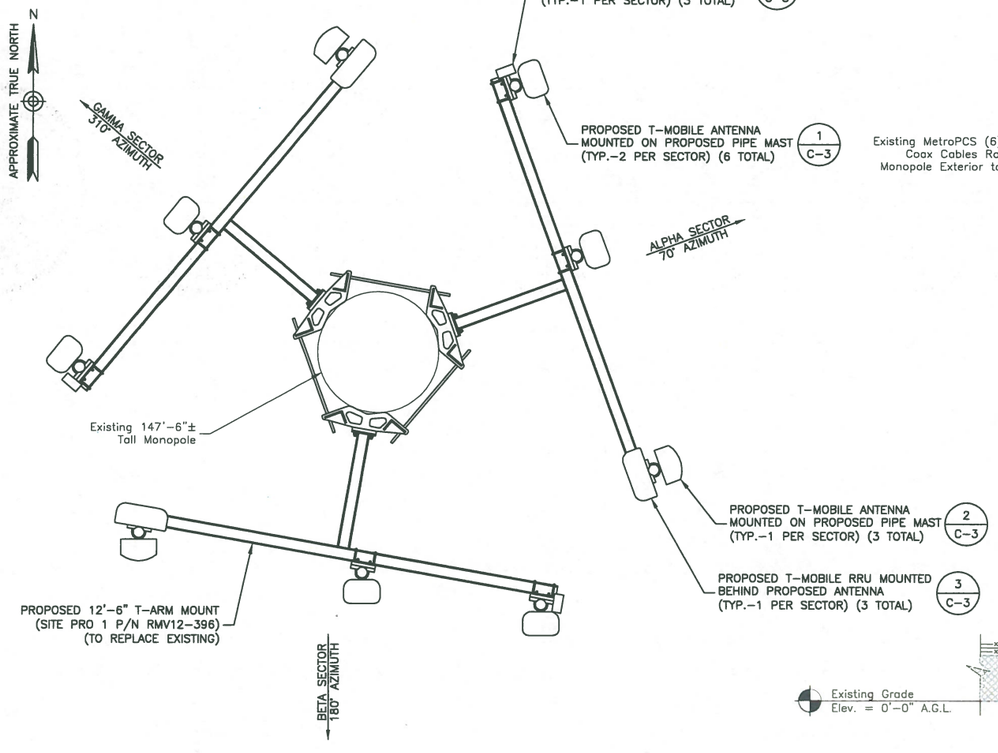
COMPOUND PLAN & EQUIPMENT PLANS

SHEET NUMBER

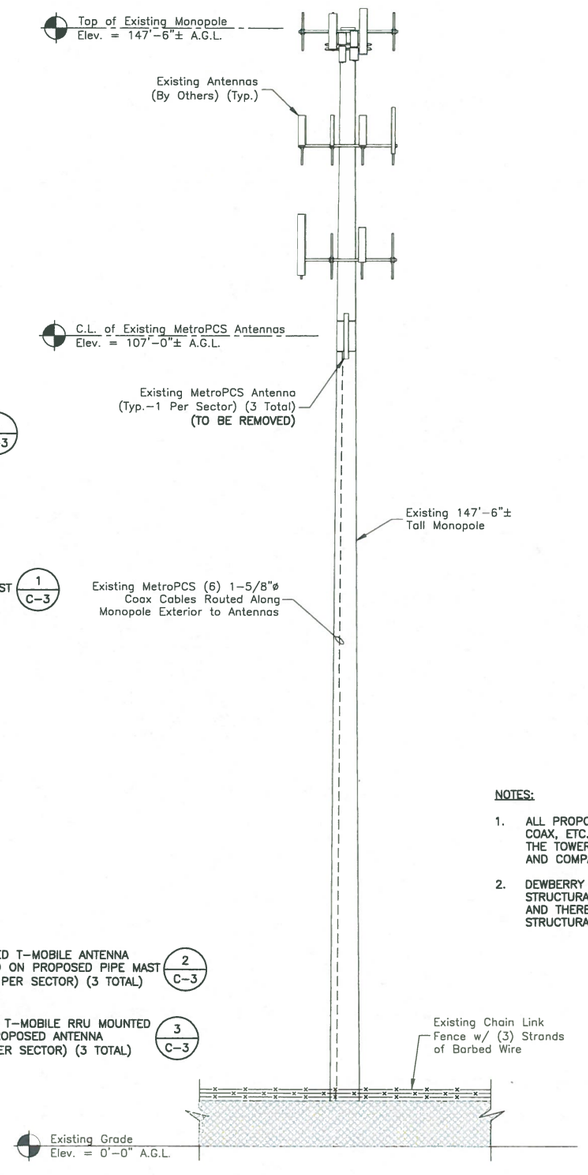
C-1



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

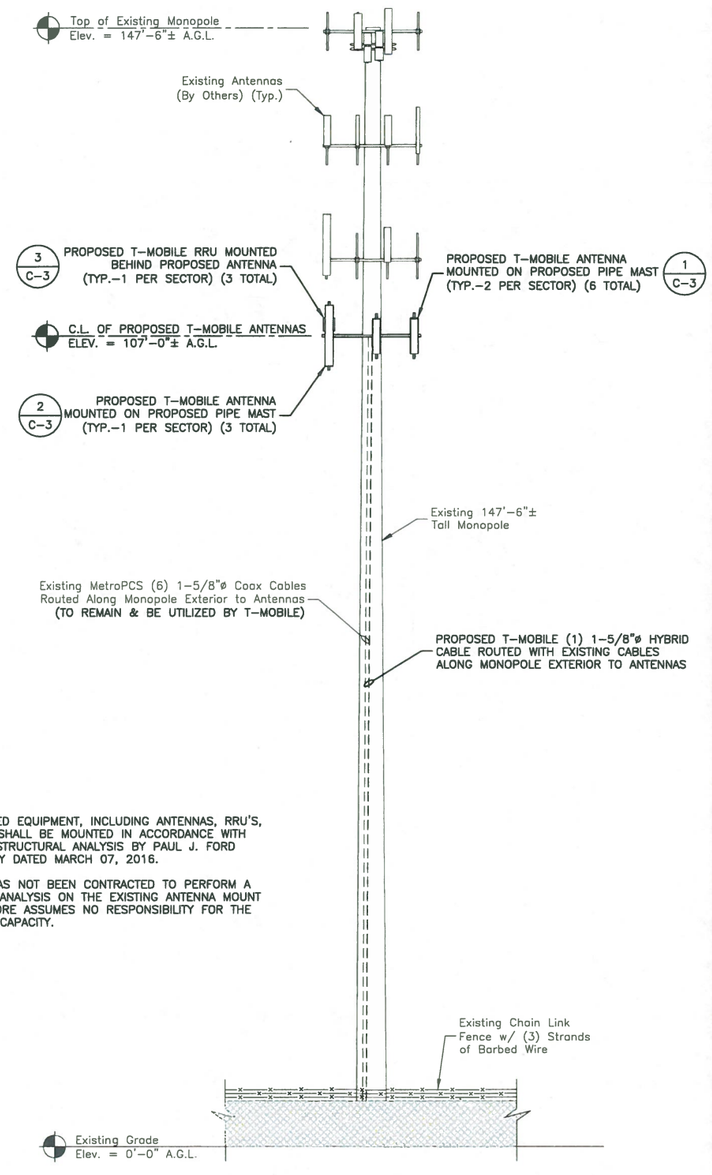


PROPOSED ANTENNA LAYOUT (1)
SCALE: N.T.S.



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 MARCH 07, 2016.
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.

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CONNECTICUT LICENSE NO. 0023222

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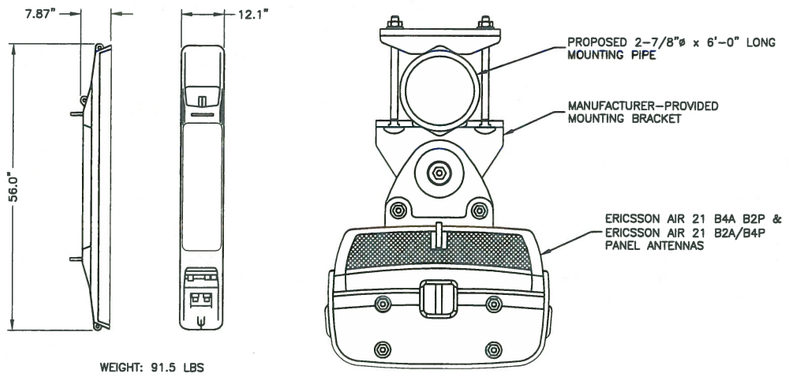
BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

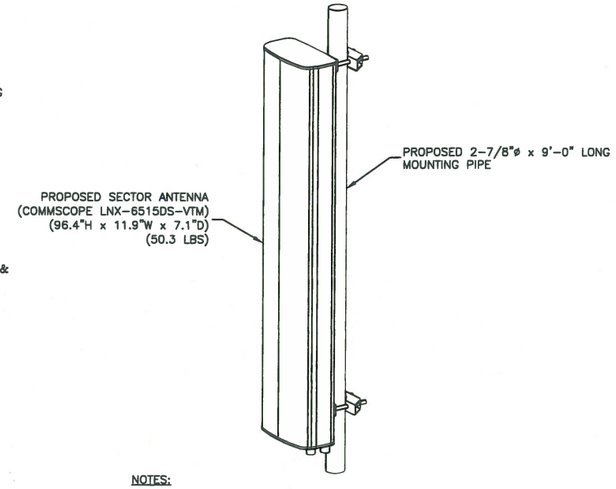
C-2



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.

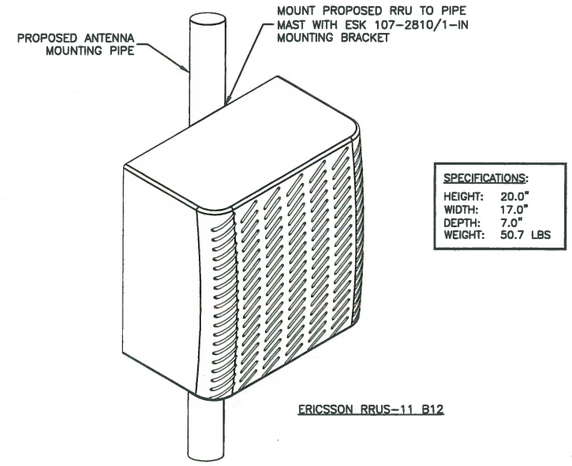
ANTENNA DETAIL 1
SCALE: N.T.S.



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.

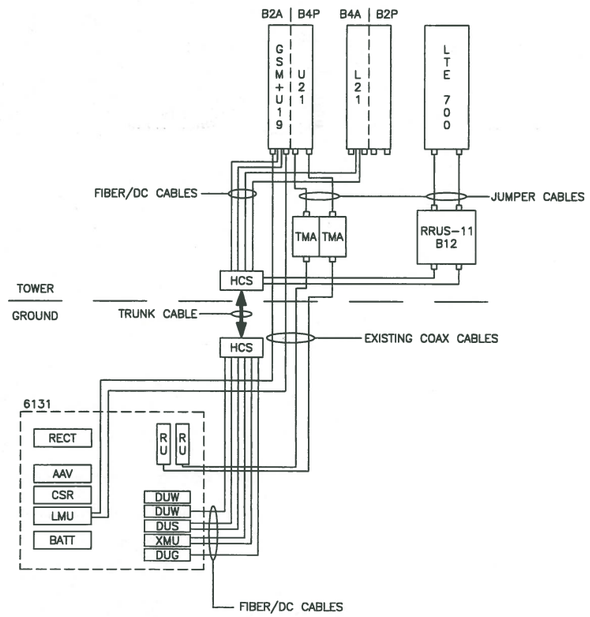
ISOMETRIC ANTENNA DETAIL 2
SCALE: N.T.S.



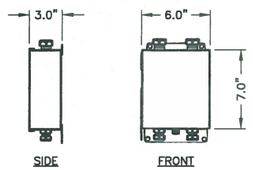
RRU NOTES:

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

RRUS-11 - REMOTE RADIO UNIT 3
SCALE: N.T.S.



SITE CONFIGURATION 702Cu 5
SCALE: N.T.S.



ERICSSON KRY 112 144/1

NOTES:

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

DUAL-PORT TMA DETAIL 4
SCALE: N.T.S.

DESIGN CONFIGURATION

	ANTENNAS		COAX		HYBRID	COAX/HYBRID LENGTH	TMA	RRU
	EXISTING	PROPOSED	EXISTING	PROPOSED	PROPOSED		PROPOSED	PROPOSED
ALPHA	RFS APXV18-206517S-C	ERICSSON AIR 21 B2A B4P	(2) 1-5/8"ø	–	(1) 1-5/8"ø	157'-0"	(1) KRY 112 144/1	–
	–	ERICSSON AIR 21 B4A B2P					–	–
	–	COMMSCOPE LNX-6515DS-VTM					–	(1) RRUS-11 B12
BETA	RFS APXV18-206517S-C	ERICSSON AIR 21 B2A B4P	(2) 1-5/8"ø	–		157'-0"	(1) KRY 112 144/1	–
	–	ERICSSON AIR 21 B4A B2P					–	–
	–	COMMSCOPE LNX-6515DS-VTM					–	(1) RRUS-11 B12
GAMMA	RFS APXV18-206517S-C	ERICSSON AIR 21 B2A B4P	(2) 1-5/8"ø	–		157'-0"	(1) KRY 112 144/1	–
	–	ERICSSON AIR 21 B4A B2P					–	–
	–	COMMSCOPE LNX-6515DS-VTM					–	(1) RRUS-11 B12

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JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER

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

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078124
SITE ADDRESS:	

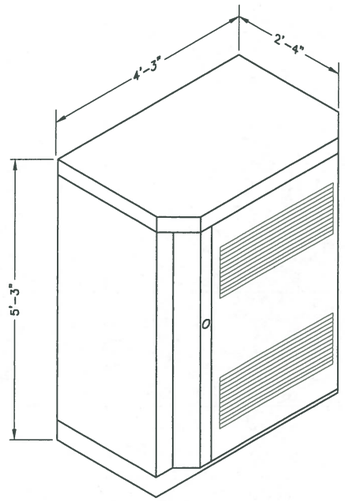
BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE

CONSTRUCTION DETAILS I

SHEET NUMBER

C-3



ISOMETRIC

NOTE:

1. CONTRACTOR SHALL SECURE CABINET AS PER MANUFACTURER RECOMENDATIONS.

ERICSON RBS 3106 CABINET (1)

SCALE: N.T.S.

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HARTFORD COUNTY

SHEET TITLE

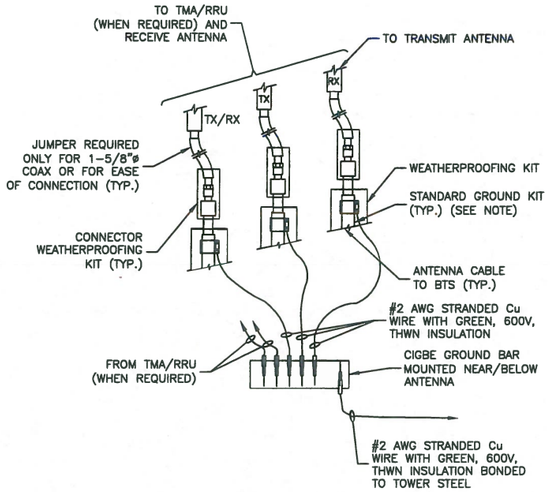
CONSTRUCTION DETAILS II

SHEET NUMBER

C-4

GROUNDING NOTES:

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

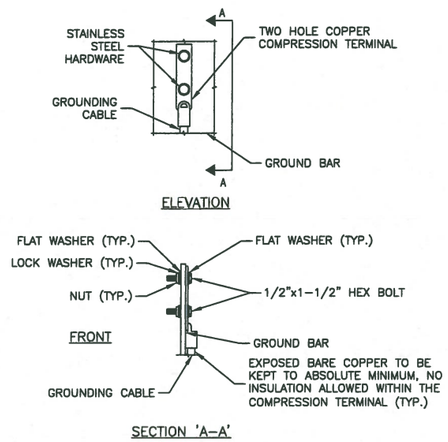


NOTE:

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

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

SCALE: N.T.S.

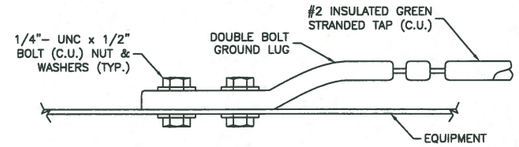


NOTES:

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

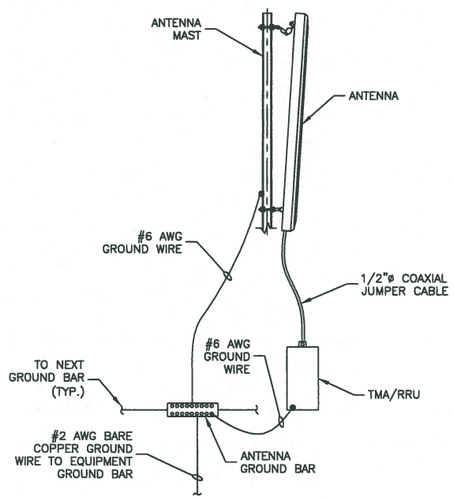
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

SCALE: N.T.S.



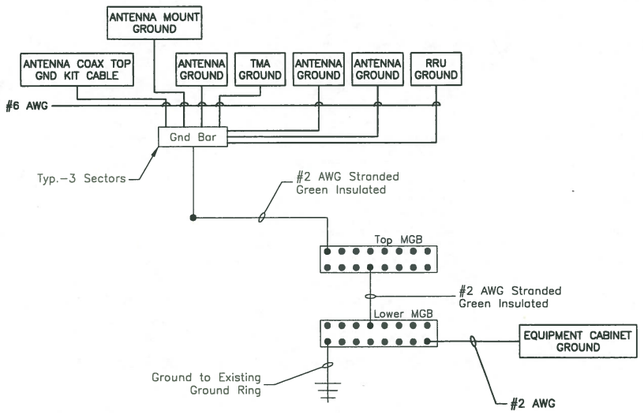
CONNECTION TO EQUIPMENT DETAIL — 3

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL — 4

SCALE: N.T.S



NOTES:

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

SCHEMATIC GROUNDING DIAGRAM — 5

SCALE: N.T.S.

T-Mobile

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

CROWN CASTLE

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

CTHA067A
ENFIELD

CONSTRUCTION DRAWINGS

0	03/30/16	ISSUED AS FINAL
A	03/28/16	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

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

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078124
SITE ADDRESS:	

BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
HARTFORD COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

PJF PAUL J. FORD & COMPANY

Date: **March 07, 2016**

Steve Tuttle
Crown Castle
8 Parkmeadow Drive
Pittsford, NY 14534

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

Subject: **Structural Analysis Report**

Carrier Designation:	***Metro PCS* Co-Locate**	
	Carrier Site Number:	CTHA067A
	Carrier Site Name:	Bright Meadows Blvd
Crown Castle Designation:	**Crown Castle BU Number:**	876348
	Crown Castle Site Name:	ENFIELD
	Crown Castle JDE Job Number:	358605
	Crown Castle Work Order Number:	1203721
	Crown Castle Application Number:	314840 Rev. 1
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-0218.002.7805
Site Data:	**Bright Meadow Blvd., ENFIELD, Hartford County, CT** **Latitude *42° 1' 14.91"*, Longitude *-72° 35' 6.59"*** **147.5 Foot - Monopole Tower**	

Dear Steve Tuttle,

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 879537, in accordance with application 314840, revision 1.

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

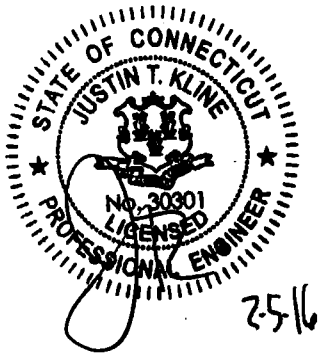
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the 2009 IBC and the TIA-222-G, as allowed by Sections 104.10 and 104.11 of the 2005 CT State Building Code, based upon a wind speed of 100 mph 3-second gust, exposure category B with topographic category 1 and crest height of 0 feet.

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:

Nick Parente, E.I.
Structural Designer



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1) INTRODUCTION

This tower is a 147.5 ft Monopole tower designed by SUMMIT in September of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the 2009 IBC and the TIA-222-G, as allowed by Sections 104.10 and 104.11 of the 2005 CT State Building Code, based upon a wind speed of 100 mph 3-second gust, exposure category B with topographic category 1 and crest height of 0 feet.

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
107.0	107.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	7	1-5/8	-
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
		1	tower mounts	T-Arm Mount [TA 602-3]			

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	147.0	3	alcatel lucent	TD-RRH8x20-25	1 1 3	5/8 3/4 1-1/4	1
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 712-1]			
145.0	146.0	2	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		1	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
	145.0	1	tower mounts	Side Arm Mount [SO 102-3]			
	144.0	1	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		2	alcatel lucent	PCS 1900MHz 4x45W-65MHz			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
132.0	134.0	6	commscope	SBNHH-1D65B w/ Mount Pipe	1	1-5/8	2
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	alcatel lucent	RRH2X60-AWS			
		3	alcatel lucent	RRH2X60-PCS			
		3	alcatel lucent	RRH2x60-700			
		3	antel	BXA-70063-4CF-EDIN-X w/ Mount Pipe	19	1-5/8	1
		3	antel	BXA-70063-6CF-EDIN-2 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
	132.0	1	tower mounts	Platform Mount [LP 712-1]			
117.0	119.0	1	andrew	SBNH-1D6565C w/ Mount Pipe	9 1 2 1	1-5/8 3/8 3/4 2 (Conduit)	1
		1	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
	117.0	1	tower mounts	Platform Mount [LP 712-1]			
115.0	119.0	3	ericsson	RRU-11	-	-	1
		1	raycap	DC6-48-60-18-8F			
	115.0	1	tower mounts	Pipe Mount [PM 601-3]			
107.0	107.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	3
		1	tower mounts	Pipe Mount [PM 601-3]			
49.0	50.0	1	symmetricom	58532A	1	1/2	1
	49.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 120604EG1, 8/20/12	1532963	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PJF, 29298-598, 9/15/98	1613614	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit, 3960, 9/11/98	1613591	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37513-0644, 2/27/13	3667620	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.876348, 8/20/13	3966655	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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) Monopole was reinforced in conformance with the referenced modification drawings.
5) The existing monopole shaft has been reinforced using a Crown-approved system in accordance with the above referenced documents. However, in this analysis we found that the existing pole shaft without modifications has adequate capacity according to TIA-222-G-2 (addendum 2) and therefore, we did not consider the existing reinforcing elements 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 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	147.5 - 108.5	Pole	TP29.41x22x0.25	1	-11.59	1510.73	40.9	Pass
L2	108.5 - 72.25	Pole	TP35.798x28.1975x0.25	2	-19.36	1846.73	83.7	Pass
L3	72.25 - 35.75	Pole	TP42.23x34.4429x0.3125	3	-27.66	2781.95	83.9	Pass
L4	35.75 - 0	Pole	TP48.4x40.6079x0.375	4	-40.02	3948.60	78.4	Pass
							Summary	
						Pole (L3)	83.9	Pass
						Rating =	83.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.7	Pass
1	Base Plate	0	64.3	Pass
1	Base Foundation (Steel)	0	42.0	Pass
1	Base Foundation Soil Interaction	0	30.1	Pass

Structure Rating (max from all components) =	83.9%

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 100 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.0000 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56.00 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Deflections calculated using a wind speed of 60 mph.
12) A non-linear (P-delta) analysis was used.
13) Pressures are calculated at each section.
14) Stress ratio used in pole design is 1.
15) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	147.5000-108.5000	39.0000	3.75	18	22.0000	29.4100	0.2500	1.0000	A572-60 (60 ksi)
L2	108.5000-72.2500	40.0000	4.50	18	28.1975	35.7980	0.2500	1.0000	A607-65 (65 ksi)
L3	72.2500-35.7500	41.0000	5.25	18	34.4429	42.2300	0.3125	1.2500	A607-65 (65 ksi)
L4	35.7500-0.0000	41.0000		18	40.6079	48.4000	0.3750	1.5000	A607-65 (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	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	29.8637	23.1385	2485.6899	10.3518	14.9403	166.3751	4974.6504	11.5714	4.7362	18.945
L2	29.3560	22.1763	2188.3323	9.9214	14.3243	152.7703	4379.5441	11.0903	4.5228	18.091
	36.3502	28.2073	4503.2898	12.6195	18.1854	247.6324	9012.5051	14.1063	5.8604	23.442
L3	35.8421	33.8531	4982.1891	12.1163	17.4970	284.7451	9970.9339	16.9298	5.5120	17.638
	42.8815	41.5769	9229.5497	14.8807	21.4528	430.2251	18471.2439	20.7924	6.8825	22.024
L4	42.2475	47.8872	9793.0711	14.2827	20.6288	474.7281	19599.0282	23.9481	6.4870	17.299
	49.1466	57.1618	16656.2703	17.0489	24.5872	677.4366	33334.4574	28.5863	7.8584	20.956

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
HB058-M12-XXXF(5/8")	C	No	Inside Pole	147.0000 - 0.0000	1	No Ice	0.0000	0.24
						1/2" Ice	0.0000	0.24
						1" Ice	0.0000	0.24
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	147.0000 - 0.0000	3	No Ice	0.0000	1.08
						1/2" Ice	0.0000	1.08
						1" Ice	0.0000	1.08
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	147.0000 - 0.0000	1	No Ice	0.0000	0.58
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
*								
LDF7-50A(1-5/8)	C	No	Inside Pole	132.0000 - 0.0000	19	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	132.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
*								
LDF7-50A(1-5/8)	C	No	Inside Pole	117.0000 - 0.0000	9	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
FB-L98B-002-75000(3/8)	C	No	Inside Pole	117.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	117.0000 - 0.0000	2	No Ice	0.0000	0.58
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
2" (Nominal) Conduit	C	No	Inside Pole	117.0000 - 0.0000	1	No Ice	0.0000	0.72
						1/2" Ice	0.0000	0.72
						1" Ice	0.0000	0.72
*								
LDF7-50A(1-5/8)	C	No	CaAa (Out Of Face)	107.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.46
MLE Hybrid 9Power/18Fiber RL 2(15/8")	C	No	CaAa (Out Of Face)	107.0000 - 0.0000	1	No Ice	0.1625	1.07
						1/2" Ice	0.2625	2.37
						1" Ice	0.3625	4.28
*								
LDF4-50A(1/2")	C	No	Inside Pole	49.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
*								
Aero MP3-03	C	No	CaAa (Out Of Face)	49.0000 - 39.0000	1	No Ice	0.2625	0.00
						1/2" Ice	0.3736	0.00
						1" Ice	0.4847	0.00

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	147.5000-108.5000	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	0.000	0.63
L2	108.5000-72.2500	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	5.647	1.31
L3	72.2500-35.7500	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	8.556	1.33
L4	35.7500-0.0000	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	5.810	1.30

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
L1	147.5000-108.5000	A	2.289	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.63
L2	108.5000-72.2500	A	2.211	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	21.556	4.32
L3	72.2500-35.7500	A	2.101	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	29.610	4.30
L4	35.7500-0.0000	A	1.876	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	20.828	3.95

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.5000-108.5000	0.0000	0.0000	0.0000	0.0000
L2	108.5000-72.2500	-0.1894	0.1093	-0.5632	0.3252
L3	72.2500-35.7500	-0.2841	0.1640	-0.7728	0.4462
L4	35.7500-0.0000	-0.1994	0.1151	-0.5987	0.3457

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 712-1]	C	None		0.00	147.0000	No Ice	24.5300	24.5300	1.34
						1/2" Ice	29.9400	29.9400	1.65
						1" Ice	35.3500	35.3500	1.96
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
TD-RRH8x20-25	A	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
(3) 5' x 2'' Pipe Mount	A	From Face	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.06 0.06 0.08
(3) 5' x 2'' Pipe Mount	B	From Face	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.06 0.06 0.08
(3) 5' x 2'' Pipe Mount	C	From Face	4.0000 0.00 0.00	0.00	147.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.06 0.06 0.08
***									
Side Arm Mount [SO 102-3]	C	None		0.00	145.0000	No Ice 1/2" Ice 1" Ice	3.0000 3.4800 3.9600	3.0000 3.4800 3.9600	0.08 0.11 0.14
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.0000 0.00 1.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.0000 0.00 -1.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.0000 0.00 -1.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
800MHz 2X50W RRH W/FILTER	A	From Leg	2.0000 0.00 -1.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11

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
800MHz 2X50W RRH W/FILTER	B	From Leg	2.0000 0.00 1.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	2.0000 0.00 1.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
5' x 2' Pipe Mount	A	From Leg	2.0000 0.00 0.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.03 0.04 0.05
5' x 2' Pipe Mount	B	From Leg	2.0000 0.00 0.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.03 0.04 0.05
5' x 2' Pipe Mount	C	From Leg	2.0000 0.00 0.00	0.00	145.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.03 0.04 0.05
* Platform Mount [LP 712-1]	C	None		0.00	132.0000	No Ice 1/2" Ice 1" Ice	24.5300 29.9400 35.3500	24.5300 29.9400 35.3500	1.34 1.65 1.96
BXA-70063-4CF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	4.9453 5.3243 5.7120	3.6927 4.2947 4.9133	0.03 0.07 0.12
BXA-70063-4CF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	4.9453 5.3243 5.7120	3.6927 4.2947 4.9133	0.03 0.07 0.12
BXA-70063-4CF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	4.9453 5.3243 5.7120	3.6927 4.2947 4.9133	0.03 0.07 0.12
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	7.8065 8.3569 8.8720	5.8008 6.9529 7.8191	0.04 0.10 0.17
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	7.8065 8.3569 8.8720	5.8008 6.9529 7.8191	0.04 0.10 0.17
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	7.8065 8.3569 8.8720	5.8008 6.9529 7.8191	0.04 0.10 0.17
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	8.3995 8.9639 9.4943	7.0730 8.2637 9.1753	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	8.3995 8.9639 9.4943	7.0730 8.2637 9.1753	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	8.3995 8.9639 9.4943	7.0730 8.2637 9.1753	0.07 0.14 0.21
RRH2x60-700	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	1.8157 2.0519 2.2894	0.06 0.08 0.11

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
RRH2x60-700	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	1.8157 2.0519 2.2894	0.06 0.08 0.11
RRH2x60-700	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	1.8157 2.0519 2.2894	0.06 0.08 0.11
RRH2X60-AWS	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	1.8775 2.0551 2.2401	1.2359 1.3858 1.5441	0.04 0.06 0.08
RRH2X60-AWS	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	1.8775 2.0551 2.2401	1.2359 1.3858 1.5441	0.04 0.06 0.08
RRH2X60-AWS	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	1.8775 2.0551 2.2401	1.2359 1.3858 1.5441	0.04 0.06 0.08
RRH2X60-PCS	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.7233 1.9015 2.0870	0.06 0.08 0.10
RRH2X60-PCS	B	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.7233 1.9015 2.0870	0.06 0.08 0.10
RRH2X60-PCS	C	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.7233 1.9015 2.0870	0.06 0.08 0.10
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	4.8000 5.0704 5.3481	2.0000 2.1926 2.3926	0.04 0.08 0.12
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 2.00	0.00	132.0000	No Ice 1/2" Ice 1" Ice	4.8000 5.0704 5.3481	2.0000 2.1926 2.3926	0.04 0.08 0.12
*** ***									
Platform Mount [LP 712-1]	C	None		0.00	117.0000	No Ice 1/2" Ice 1" Ice	24.5300 29.9400 35.3500	24.5300 29.9400 35.3500	1.34 1.65 1.96
(2) 5' x 2'' Pipe Mount	A	From Face	4.0000 0.00 0.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.06 0.06 0.08
(2) 5' x 2'' Pipe Mount	B	From Face	4.0000 0.00 0.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.06 0.06 0.08
(2) 5' x 2'' Pipe Mount	C	From Face	4.0000 0.00 0.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	1.0000 1.3932 1.7031	1.0000 1.3932 1.7031	0.06 0.06 0.08
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	5.8324 6.2677 6.6966	4.7368 5.5082 6.2127	0.09 0.14 0.21
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice	5.8324 6.2677 6.6966	4.7368 5.5082 6.2127	0.09 0.14 0.21

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" Ice			
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	5.8324 6.2677 6.6966	4.7368 5.5082 6.2127	0.09 0.14 0.21
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	11.5561 12.2227 12.8929	9.7151 11.1857 12.5942	0.10 0.19 0.28
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
(2) LGP21401	A	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.0000 0.00 2.00	0.00	117.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
***									
RRU-11	A	From Leg	2.0000 0.00 4.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice	1.6385 1.8016 1.9722	1.2615 1.4102 1.5663	0.04 0.06 0.08
DC6-48-60-18-8F	A	From Leg	2.0000 0.00 4.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.02 0.04 0.06
RRU-11	B	From Leg	2.0000 0.00 4.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice	1.6385 1.8016 1.9722	1.2615 1.4102 1.5663	0.04 0.06 0.08
RRU-11	C	From Leg	2.0000 0.00 4.00	0.00	115.0000	No Ice 1/2" Ice 1" Ice	1.6385 1.8016 1.9722	1.2615 1.4102 1.5663	0.04 0.06 0.08
Pipe Mount [PM 601-3]	A	None		0.00	115.0000	No Ice 1/2" Ice 1" Ice	4.3900 5.4800 6.5700	4.3900 5.4800 6.5700	0.20 0.24 0.28
***									
T-Arm Mount [TA 602-3]	A	None		0.00	107.0000	No Ice 1/2" Ice 1" Ice	11.5900 15.4400 19.2900	11.5900 15.4400 19.2900	0.77 0.99 1.21
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00	0.00	107.0000	No Ice 1/2"	6.3292 6.7751	5.6424 6.4259	0.11 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	7.2137	7.1313	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
RRUS 11 B12	A	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.0000 0.00 0.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
***									
58532A	A	From Leg	4.0000 0.00 1.00	0.00	49.0000	No Ice 1/2" Ice 1" Ice	0.1893 0.2483 0.3147	0.1893 0.2483 0.3147	0.00 0.00 0.01
Side Arm Mount [SO 701-1]	A	From Face	2.0000 0.00 0.00	0.00	49.0000	No Ice 1/2" Ice 1" Ice	0.8500 1.1400 1.4300	1.6700 2.3400 3.0100	0.07 0.08 0.09

Tower Pressures - No Ice

G_H = 1.100

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 147.5000-108.5000	127.2746	1.059	25.72	84.830	A	0.000	84.830	84.830	100.00	0.000	0.000
					B	0.000	84.830		100.00	0.000	0.000
					C	0.000	84.830		100.00	0.000	0.000
L2 108.5000-72.2500	89.9920	0.959	23.28	99.244	A	0.000	99.244	99.244	100.00	0.000	0.000
					B	0.000	99.244		100.00	0.000	0.000
					C	0.000	99.244		100.00	0.000	5.647
L3 72.2500-35.7500	53.9011	0.828	20.04	119.725	A	0.000	119.725	119.725	100.00	0.000	0.000
					B	0.000	119.725		100.00	0.000	0.000
					C	0.000	119.725		100.00	0.000	8.556
L4 35.7500-0.0000	17.4252	0.7	17.02	136.139	A	0.000	136.139	136.139	100.00	0.000	0.000
					B	0.000	136.139		100.00	0.000	0.000
					C	0.000	136.139		100.00	0.000	5.810

Tower Pressure - With Ice

G_H = 1.100

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 147.5000-108.5000	127.2746	1.059	6.43	2.2890	99.709	A	0.000	99.709	99.709	100.00	0.000	0.000
						B	0.000	99.709		100.00	0.000	0.000
						C	0.000	99.709		100.00	0.000	0.000
L2 108.5000-72.2500	89.9920	0.959	5.82	2.2111	113.073	A	0.000	113.073	113.073	100.00	0.000	0.000
						B	0.000	113.073		100.00	0.000	0.000
						C	0.000	113.073		100.00	0.000	21.556
L3 72.2500-35.7500	53.9011	0.828	5.01	2.1006	133.176	A	0.000	133.176	133.176	100.00	0.000	0.000
						B	0.000	133.176		100.00	0.000	0.000
						C	0.000	133.176		100.00	0.000	29.610
L4 35.7500-0.0000	17.4252	0.7	4.26	1.8763	148.655	A	0.000	148.655	148.655	100.00	0.000	0.000
						B	0.000	148.655		100.00	0.000	0.000
						C	0.000	148.655		100.00	0.000	20.828

Tower Pressure - Service

G_H = 1.100

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 147.5000-108.5000	127.2746	1.059	8.28	84.830	A	0.000	84.830	84.830	100.00	0.000	0.000
					B	0.000	84.830		100.00	0.000	0.000
					C	0.000	84.830		100.00	0.000	0.000
L2 108.5000-72.2500	89.9920	0.959	7.50	99.244	A	0.000	99.244	99.244	100.00	0.000	0.000
					B	0.000	99.244		100.00	0.000	0.000
					C	0.000	99.244		100.00	0.000	5.647
L3 72.2500-35.7500	53.9011	0.828	6.45	119.725	A	0.000	119.725	119.725	100.00	0.000	0.000
					B	0.000	119.725		100.00	0.000	0.000
					C	0.000	119.725		100.00	0.000	8.556
L4 35.7500-0.0000	17.4252	0.7	5.48	136.139	A	0.000	136.139	136.139	100.00	0.000	0.000
					B	0.000	136.139		100.00	0.000	0.000
					C	0.000	136.139		100.00	0.000	5.810

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	147.5 - 108.5	Pole	Max Tension	36	0.00	-0.00	-0.00
			Max. Compression	26	-34.02	0.32	4.71
			Max. Mx	20	-11.64	347.84	0.75
			Max. My	2	-11.59	0.02	353.63
			Max. Vy	20	-16.29	347.84	0.75

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-16.53	0.02	353.63
			Max. Torque	9			1.85
L2	108.5 - 72.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.83	4.37	2.98
			Max. Mx	20	-19.39	1074.58	0.70
			Max. My	2	-19.36	0.30	1088.68
			Max. Vy	20	-22.26	1074.58	0.70
			Max. Vx	2	-22.50	0.30	1088.68
			Max. Torque	9			1.85
L3	72.25 - 35.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.62	9.75	0.84
			Max. Mx	20	-27.68	1917.93	0.59
			Max. My	2	-27.66	0.80	1940.16
			Max. Vy	20	-24.81	1917.93	0.59
			Max. Vx	2	-25.06	0.80	1940.16
			Max. Torque	19			-1.80
L4	35.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.17	15.33	-2.27
			Max. Mx	20	-40.02	2984.25	-0.18
			Max. My	2	-40.02	0.76	3015.93
			Max. Vy	20	-27.07	2984.25	-0.18
			Max. Vx	2	-27.32	0.76	3015.93
			Max. Torque	19			-1.79

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	87.17	8.50	-0.01
	Max. H_x	20	40.04	27.04	-0.01
	Max. H_z	3	30.03	-0.01	27.28
	Max. M_x	2	3015.93	-0.01	27.28
	Max. M_z	8	2981.48	-27.04	0.01
	Max. Torsion	7	1.78	-23.42	13.65
	Min. Vert	23	30.03	23.41	13.63
	Min. H_x	8	40.04	-27.04	0.01
	Min. H_z	15	30.03	0.01	-27.28
	Min. M_x	14	-3015.03	0.01	-27.28
	Min. M_z	20	-2984.25	27.04	-0.01
	Min. Torsion	19	-1.79	23.42	-13.65

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	33.37	0.00	0.00	-0.33	1.10	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	40.04	0.01	-27.28	-3015.93	0.76	-1.15
0.9 Dead+1.6 Wind 0 deg - No Ice	30.03	0.01	-27.28	-2972.36	0.41	-1.15
1.2 Dead+1.6 Wind 30 deg - No Ice	40.04	13.53	-23.63	-2612.28	-1490.53	-1.68
0.9 Dead+1.6 Wind 30 deg - No Ice	30.03	13.53	-23.63	-2574.53	-1469.41	-1.69
1.2 Dead+1.6 Wind 60 deg - No Ice	40.04	23.42	-13.65	-1508.78	-2582.13	-1.77
0.9 Dead+1.6 Wind 60 deg -	30.03	23.42	-13.65	-1486.93	-2545.30	-1.78

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
No Ice						
1.2 Dead+1.6 Wind 90 deg - No Ice	40.04	27.04	-0.01	-1.05	-2981.48	-1.38
0.9 Dead+1.6 Wind 90 deg - No Ice	30.03	27.04	-0.01	-0.92	-2938.90	-1.40
1.2 Dead+1.6 Wind 120 deg - No Ice	40.04	23.41	13.63	1506.84	-2581.50	-0.63
0.9 Dead+1.6 Wind 120 deg - No Ice	30.03	23.41	13.63	1485.25	-2544.68	-0.64
1.2 Dead+1.6 Wind 150 deg - No Ice	40.04	13.51	23.62	2610.77	-1489.45	0.30
0.9 Dead+1.6 Wind 150 deg - No Ice	30.03	13.51	23.62	2573.28	-1468.34	0.29
1.2 Dead+1.6 Wind 180 deg - No Ice	40.04	-0.01	27.28	3015.03	1.99	1.15
0.9 Dead+1.6 Wind 180 deg - No Ice	30.03	-0.01	27.28	2971.71	1.63	1.15
1.2 Dead+1.6 Wind 210 deg - No Ice	40.04	-13.53	23.63	2611.39	1493.27	1.70
0.9 Dead+1.6 Wind 210 deg - No Ice	30.03	-13.53	23.63	2573.89	1471.44	1.70
1.2 Dead+1.6 Wind 240 deg - No Ice	40.04	-23.42	13.65	1507.91	2584.88	1.78
0.9 Dead+1.6 Wind 240 deg - No Ice	30.03	-23.42	13.65	1486.30	2547.34	1.79
1.2 Dead+1.6 Wind 270 deg - No Ice	40.04	-27.04	0.01	0.18	2984.25	1.38
0.9 Dead+1.6 Wind 270 deg - No Ice	30.03	-27.04	0.01	0.30	2940.95	1.40
1.2 Dead+1.6 Wind 300 deg - No Ice	40.04	-23.41	-13.63	-1507.72	2584.28	0.62
0.9 Dead+1.6 Wind 300 deg - No Ice	30.03	-23.41	-13.63	-1485.87	2546.74	0.63
1.2 Dead+1.6 Wind 330 deg - No Ice	40.04	-13.51	-23.62	-2611.66	1492.22	-0.31
0.9 Dead+1.6 Wind 330 deg - No Ice	30.03	-13.51	-23.62	-2573.92	1470.40	-0.31
1.2 Dead+1.0 Ice	87.17	-0.00	-0.00	2.27	15.33	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	87.17	0.01	-8.54	-1014.29	15.12	-0.63
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	87.17	4.26	-7.40	-878.36	-489.97	-0.66
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	87.17	7.36	-4.28	-506.32	-859.65	-0.51
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	87.17	8.50	-0.01	2.00	-994.73	-0.23
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	87.17	7.36	4.27	510.40	-859.36	0.11
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	87.17	4.25	7.40	882.65	-489.46	0.42
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	87.17	-0.01	8.54	1018.87	15.70	0.62
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	87.17	-4.26	7.40	882.94	520.79	0.66
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	87.17	-7.36	4.28	510.90	890.47	0.51
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	87.17	-8.50	0.01	2.59	1025.54	0.23
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	87.17	-7.36	-4.27	-505.81	890.18	-0.11
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	87.17	-4.25	-7.40	-878.06	520.29	-0.43
Dead+Wind 0 deg - Service	33.37	0.00	-5.49	-603.00	1.02	-0.04
Dead+Wind 30 deg - Service	33.37	2.72	-4.76	-522.33	-297.00	-0.23
Dead+Wind 60 deg - Service	33.37	4.72	-2.75	-301.80	-515.13	-0.36
Dead+Wind 90 deg - Service	33.37	5.44	-0.00	-0.50	-594.93	-0.40
Dead+Wind 120 deg - Service	33.37	4.71	2.74	300.83	-515.01	-0.33
Dead+Wind 150 deg -	33.37	2.72	4.76	521.45	-296.78	-0.17

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
Service						
Dead+Wind 180 deg - Service	33.37	-0.00	5.49	602.25	1.27	0.04
Dead+Wind 210 deg - Service	33.37	-2.72	4.76	521.57	299.29	0.23
Dead+Wind 240 deg - Service	33.37	-4.72	2.75	301.04	517.43	0.36
Dead+Wind 270 deg - Service	33.37	-5.44	0.00	-0.25	597.22	0.40
Dead+Wind 300 deg - Service	33.37	-4.71	-2.74	-301.58	517.30	0.33
Dead+Wind 330 deg - Service	33.37	-2.72	-4.76	-522.21	299.08	0.17

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	-33.37	0.00	0.00	33.37	0.00	0.000%
2	0.01	-40.04	-27.28	-0.01	40.04	27.28	0.000%
3	0.01	-30.03	-27.28	-0.01	30.03	27.28	0.000%
4	13.53	-40.04	-23.63	-13.53	40.04	23.63	0.000%
5	13.53	-30.03	-23.63	-13.53	30.03	23.63	0.000%
6	23.42	-40.04	-13.65	-23.42	40.04	13.65	0.000%
7	23.42	-30.03	-13.65	-23.42	30.03	13.65	0.000%
8	27.04	-40.04	-0.01	-27.04	40.04	0.01	0.000%
9	27.04	-30.03	-0.01	-27.04	30.03	0.01	0.000%
10	23.41	-40.04	13.63	-23.41	40.04	-13.63	0.000%
11	23.41	-30.03	13.63	-23.41	30.03	-13.63	0.000%
12	13.51	-40.04	23.62	-13.51	40.04	-23.62	0.000%
13	13.51	-30.03	23.62	-13.51	30.03	-23.62	0.000%
14	-0.01	-40.04	27.28	0.01	40.04	-27.28	0.000%
15	-0.01	-30.03	27.28	0.01	30.03	-27.28	0.000%
16	-13.53	-40.04	23.63	13.53	40.04	-23.63	0.000%
17	-13.53	-30.03	23.63	13.53	30.03	-23.63	0.000%
18	-23.42	-40.04	13.65	23.42	40.04	-13.65	0.000%
19	-23.42	-30.03	13.65	23.42	30.03	-13.65	0.000%
20	-27.04	-40.04	0.01	27.04	40.04	-0.01	0.000%
21	-27.04	-30.03	0.01	27.04	30.03	-0.01	0.000%
22	-23.41	-40.04	-13.63	23.41	40.04	13.63	0.000%
23	-23.41	-30.03	-13.63	23.41	30.03	13.63	0.000%
24	-13.51	-40.04	-23.62	13.51	40.04	23.62	0.000%
25	-13.51	-30.03	-23.62	13.51	30.03	23.62	0.000%
26	0.00	-87.17	0.00	0.00	87.17	0.00	0.000%
27	0.01	-87.17	-8.54	-0.01	87.17	8.54	0.000%
28	4.26	-87.17	-7.40	-4.26	87.17	7.40	0.000%
29	7.36	-87.17	-4.28	-7.36	87.17	4.28	0.000%
30	8.50	-87.17	-0.01	-8.50	87.17	0.01	0.000%
31	7.36	-87.17	4.27	-7.36	87.17	-4.27	0.000%
32	4.25	-87.17	7.40	-4.25	87.17	-7.40	0.000%
33	-0.01	-87.17	8.54	0.01	87.17	-8.54	0.000%
34	-4.26	-87.17	7.40	4.26	87.17	-7.40	0.000%
35	-7.36	-87.17	4.28	7.36	87.17	-4.28	0.000%
36	-8.50	-87.17	0.01	8.50	87.17	-0.01	0.000%
37	-7.36	-87.17	-4.27	7.36	87.17	4.27	0.000%
38	-4.25	-87.17	-7.40	4.25	87.17	7.40	0.000%
39	0.00	-33.37	-5.49	-0.00	33.37	5.49	0.000%
40	2.72	-33.37	-4.76	-2.72	33.37	4.76	0.000%
41	4.72	-33.37	-2.75	-4.72	33.37	2.75	0.000%
42	5.44	-33.37	-0.00	-5.44	33.37	0.00	0.000%
43	4.71	-33.37	2.74	-4.71	33.37	-2.74	0.000%
44	2.72	-33.37	4.76	-2.72	33.37	-4.76	0.000%
45	-0.00	-33.37	5.49	0.00	33.37	-5.49	0.000%
46	-2.72	-33.37	4.76	2.72	33.37	-4.76	0.000%
47	-4.72	-33.37	2.75	4.72	33.37	-2.75	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
48	-5.44	-33.37	0.00	5.44	33.37	-0.00	0.000%
49	-4.71	-33.37	-2.74	4.71	33.37	2.74	0.000%
50	-2.72	-33.37	-4.76	2.72	33.37	4.76	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.5 - 108.5	24.96	39	1.43	0.00
L2	112.25 - 72.25	14.78	39	1.28	0.00
L3	76.75 - 35.75	6.69	39	0.85	0.00
L4	41 - 0	1.86	39	0.42	0.00

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 712-1]	39	24.81	1.43	0.00	44557
145.0000	Side Arm Mount [SO 102-3]	39	24.21	1.42	0.00	44557
132.0000	Platform Mount [LP 712-1]	39	20.34	1.39	0.00	14373
117.0000	Platform Mount [LP 712-1]	39	16.06	1.31	0.00	7303
115.0000	RRU-11	39	15.52	1.30	0.00	6863
107.0000	T-Arm Mount [TA 602-3]	39	13.41	1.23	0.00	5943
49.0000	58532A	39	2.63	0.51	0.00	4232

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.5 - 108.5	124.67	2	7.13	0.02
L2	112.25 - 72.25	73.90	2	6.39	0.01
L3	76.75 - 35.75	33.48	2	4.25	0.01
L4	41 - 0	9.32	2	2.08	0.00

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 712-1]	2	123.92	7.13	0.02	9212
145.0000	Side Arm Mount [SO 102-3]	2	120.93	7.10	0.02	9212
132.0000	Platform Mount [LP 712-1]	2	101.66	6.93	0.01	2969
117.0000	Platform Mount [LP 712-1]	2	80.32	6.57	0.01	1505
115.0000	RRU-11	2	77.59	6.50	0.01	1413
107.0000	T-Arm Mount [TA 602-3]	2	67.05	6.15	0.01	1219
49.0000	58532A	2	13.17	2.53	0.00	848

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	147.5 - 108.5 (1)	TP29.41x22x0.25	39.0000	0.0000	0.0	22.5731	-11.59	1510.73	0.008
L2	108.5 - 72.25 (2)	TP35.798x28.1975x0.25	40.0000	0.0000	0.0	27.5289	-19.36	1846.73	0.010
L3	72.25 - 35.75 (3)	TP42.23x34.4429x0.3125	41.0000	0.0000	0.0	40.5879	-27.66	2781.95	0.010
L4	35.75 - 0 (4)	TP48.4x40.6079x0.375	41.0000	0.0000	0.0	57.1618	-40.02	3948.60	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	147.5 - 108.5 (1)	TP29.41x22x0.25	353.63	882.92	0.401	0.00	882.92	0.000
L2	108.5 - 72.25 (2)	TP35.798x28.1975x0.25	1088.68	1318.31	0.826	0.00	1318.31	0.000
L3	72.25 - 35.75 (3)	TP42.23x34.4429x0.3125	1940.16	2341.41	0.829	0.00	2341.41	0.000
L4	35.75 - 0 (4)	TP48.4x40.6079x0.375	3015.93	3899.64	0.773	0.00	3899.64	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	147.5 - 108.5 (1)	TP29.41x22x0.25	16.53	755.37	0.022	0.00	1768.01	0.000
L2	108.5 - 72.25 (2)	TP35.798x28.1975x0.25	22.50	923.36	0.024	0.23	2639.85	0.000
L3	72.25 - 35.75 (3)	TP42.23x34.4429x0.3125	25.06	1383.72	0.018	0.81	4688.55	0.000
L4	35.75 - 0 (4)	TP48.4x40.6079x0.375	27.32	1964.64	0.014	1.15	7808.83	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147.5 - 108.5 (1)	0.008	0.401	0.000	0.022	0.000	0.409 ✔	1.000	4.8.2 ✔
L2	108.5 - 72.25 (2)	0.010	0.826	0.000	0.024	0.000	0.837 ✔	1.000	4.8.2 ✔
L3	72.25 - 35.75 (3)	0.010	0.829	0.000	0.018	0.000	0.839 ✔	1.000	4.8.2 ✔

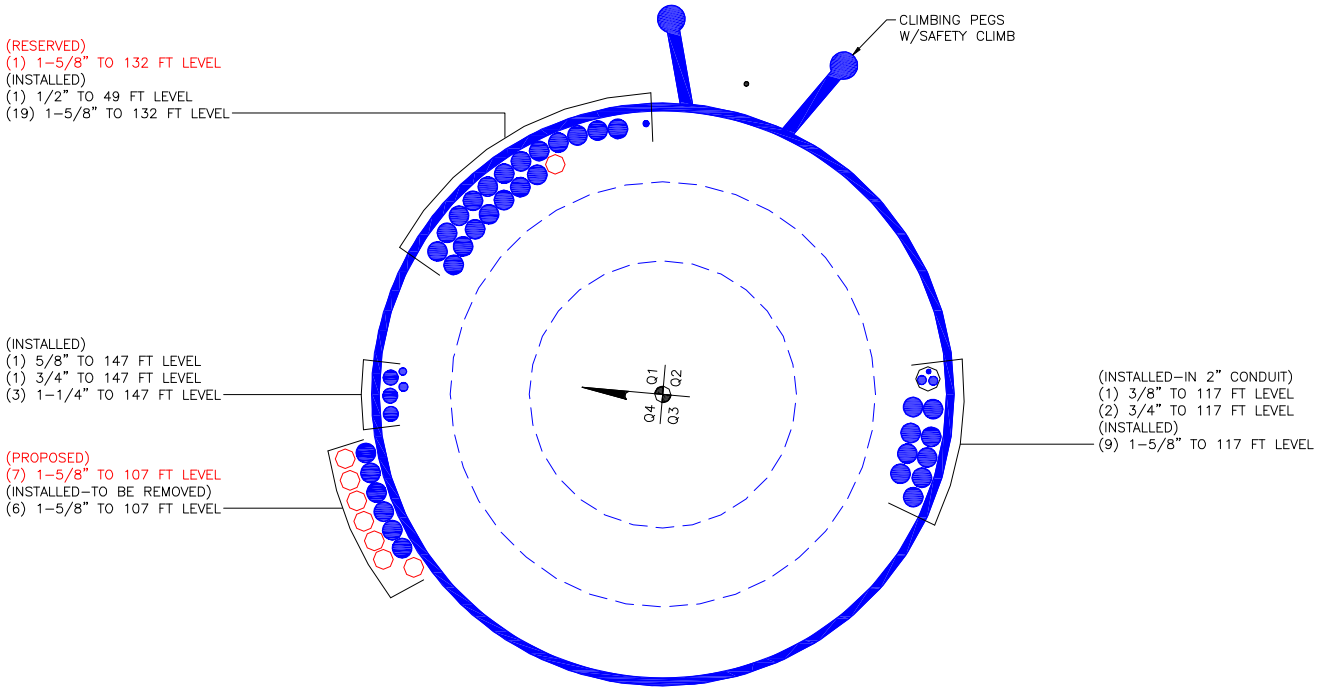
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L4	35.75 - 0 (4)	0.010	0.773	0.000	0.014	0.000	0.784 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	147.5 - 108.5	Pole	TP29.41x22x0.25	1	-11.59	1510.73	40.9	Pass
L2	108.5 - 72.25	Pole	TP35.798x28.1975x0.25	2	-19.36	1846.73	83.7	Pass
L3	72.25 - 35.75	Pole	TP42.23x34.4429x0.3125	3	-27.66	2781.95	83.9	Pass
L4	35.75 - 0	Pole	TP48.4x40.6079x0.375	4	-40.02	3948.60	78.4	Pass
							Summary	
						Pole (L3)	83.9	Pass
						RATING =	**83.9**	**Pass**

APPENDIX B

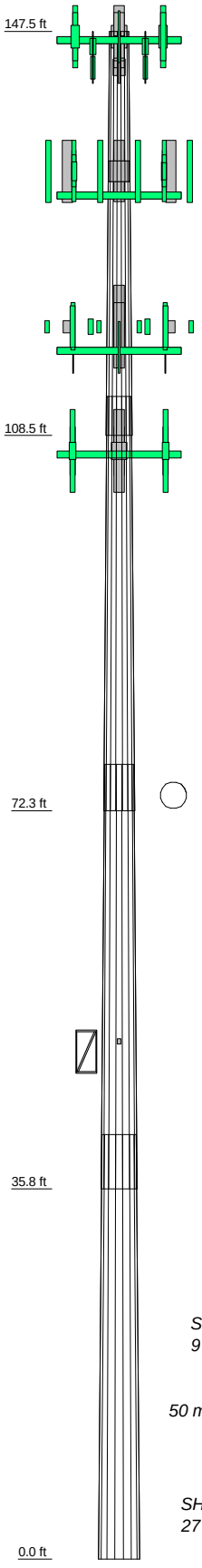
BASE LEVEL DRAWING



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	39.0000	18	0.2500	3.7500	22.0000	29.4100	A572-60	2.7
2	40.0000	18	0.2500	4.5000	28.1975	35.7980	A572-60	3.4
3	41.0000	18	0.3125	5.2500	34.4429	42.2300	A607-65	5.3
4	41.0000	18	0.3750		40.6079	48.4000		7.3
								18.7



ALL REACTIONS ARE FACTORED

AXIAL 87 K

SHEAR 9 K

MOMENT 1027 kip-ft

TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 40 K

SHEAR 27 K

MOMENT 3016 kip-ft

TORQUE 2 kip-ft
REACTIONS - 100 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 712-1]	147	RRH2X60-PCS	132
APXVSPP18-C-A20 w/ Mount Pipe	147	DB-T1-6Z-8AB-0Z	132
APXVSPP18-C-A20 w/ Mount Pipe	147	DB-T1-6Z-8AB-0Z	132
APXVSPP18-C-A20 w/ Mount Pipe	147	Platform Mount [LP 712-1]	117
APXVTM14-ALU-I20 w/ Mount Pipe	147	(2) 5' x 2" Pipe Mount	117
APXVTM14-ALU-I20 w/ Mount Pipe	147	(2) 5' x 2" Pipe Mount	117
APXVTM14-ALU-I20 w/ Mount Pipe	147	(2) 5' x 2" Pipe Mount	117
TD-RRH8x20-25	147	7770.00 w/ Mount Pipe	117
TD-RRH8x20-25	147	7770.00 w/ Mount Pipe	117
TD-RRH8x20-25	147	7770.00 w/ Mount Pipe	117
(3) 5' x 2" Pipe Mount	147	SBNH-1D6565C w/ Mount Pipe	117
(3) 5' x 2" Pipe Mount	147	AM-X-CD-14-65-00T-RET w/ Mount Pipe	117
(3) 5' x 2" Pipe Mount	147		
Side Arm Mount [SO 102-3]	145	AM-X-CD-14-65-00T-RET w/ Mount Pipe	117
PCS 1900MHz 4x45W-65MHz	145		
PCS 1900MHz 4x45W-65MHz	145	(2) LGP21401	117
PCS 1900MHz 4x45W-65MHz	145	(2) LGP21401	117
800MHz 2X50W RRH W/FILTER	145	(2) LGP21401	117
800MHz 2X50W RRH W/FILTER	145	RRU-11	115
800MHz 2X50W RRH W/FILTER	145	DC6-48-60-18-8F	115
5' x 2' Pipe Mount	145	RRU-11	115
5' x 2' Pipe Mount	145	RRU-11	115
5' x 2' Pipe Mount	145	Pipe Mount [PM 601-3]	115
Platform Mount [LP 712-1]	132	T-Arm Mount [TA 602-3]	107
BXA-70063-4CF-EDIN-X w/ Mount Pipe	132	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
BXA-70063-4CF-EDIN-X w/ Mount Pipe	132	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
BXA-70063-4CF-EDIN-X w/ Mount Pipe	132	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	107
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	132	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	132	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	132	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	107
(2) SBNHH-1D65B w/ Mount Pipe	132	LNX-6515DS-VTM w/ Mount Pipe	107
(2) SBNHH-1D65B w/ Mount Pipe	132	LNX-6515DS-VTM w/ Mount Pipe	107
(2) SBNHH-1D65B w/ Mount Pipe	132	LNX-6515DS-VTM w/ Mount Pipe	107
RRH2x60-700	132	KRY 112 144/1	107
RRH2x60-700	132	KRY 112 144/1	107
RRH2x60-700	132	KRY 112 144/1	107
RRH2X60-AWS	132	RRUS 11 B12	107
RRH2X60-AWS	132	RRUS 11 B12	107
RRH2X60-AWS	132	RRUS 11 B12	107
RRH2X60-PCS	132	58532A	49
RRH2X60-PCS	132	Side Arm Mount [SO 701-1]	49

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 83.9%

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

Job: **147' MP; Enfield, CT; Enfield**			
Project: **PJF 37515-1738 (BU 876348)**			
Client: Crown Castle	Drawn by: Nick Parente, E.I.	App'd:	
Code: TIA-222-G	Date: 03/07/16	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2016\37516-0218_876348_ENFIELD\37516-0218.002.7805_SA_1203721\37516-0218.002.7805(Rev G).eri		Dwg No. E-1	

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

v4.4 - Effective 7-12-13

Date: 3/7/2016
PJF Project: 37516-0218.001.7700
Client Ref. # BU 876348
Site Name: Enfield
Description: 147.5' MP
Owner: Crown Castle
Engineer: NZP

Asymmetric Anchor Rod Analysis

Moment =	3016	k-ft	TIA Ref.	G	Location =	Base Plate		
Axial =	40.0	kips	ASIF =	N/A	η =	0.55	for BP, Rev. G Sect. 4.9.9	
Shear =	27.0	kips	Max Ratio =	105.0%	Threads =	X-Excluded	for FP, Rev. G	
Anchor Qty =	15							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	32.4	55.00	0.00	3.98	188.12	182.33	191.68	0.00	260.00	73.7%
2	2.250	#18J A615 Gr 75	75	100	45.0	55.00	0.00	3.98	190.80	185.01	194.36	0.00	260.00	74.8%
3	2.250	#18J A615 Gr 75	75	100	57.6	55.00	0.00	3.98	193.34	187.55	196.90	0.00	260.00	75.7%
4	2.250	#18J A615 Gr 75	75	100	122.4	55.00	0.00	3.98	193.34	187.55	196.90	0.00	260.00	75.7%
5	2.250	#18J A615 Gr 75	75	100	135.0	55.00	0.00	3.98	190.80	185.01	194.36	0.00	260.00	74.8%
6	2.250	#18J A615 Gr 75	75	100	147.6	55.00	0.00	3.98	188.12	182.33	191.68	0.00	260.00	73.7%
7	2.250	#18J A615 Gr 75	75	100	212.4	55.00	0.00	3.98	184.90	179.11	188.45	0.00	260.00	72.5%
8	2.250	#18J A615 Gr 75	75	100	225.0	55.00	0.00	3.98	186.59	180.80	190.15	0.00	260.00	73.1%
9	2.250	#18J A615 Gr 75	75	100	237.6	55.00	0.00	3.98	188.38	182.58	191.93	0.00	260.00	73.8%
10	2.250	#18J A615 Gr 75	75	100	302.4	55.00	0.00	3.98	188.38	182.58	191.93	0.00	260.00	73.8%
11	2.250	#18J A615 Gr 75	75	100	315.0	55.00	0.00	3.98	186.59	180.80	190.15	0.00	260.00	73.1%
12	2.250	#18J A615 Gr 75	75	100	327.6	55.00	0.00	3.98	184.90	179.11	188.45	0.00	260.00	72.5%
13	1.750	A193 Gr B7	105	125	20.0	60.40	0.00	2.41	123.07	119.57	125.21	0.00	190.00	65.9%
14	1.750	A193 Gr B7	105	125	160.0	60.40	0.00	2.41	123.07	119.57	125.21	0.00	190.00	65.9%
15	1.750	A193 Gr B7	105	125	270.0	60.40	0.00	2.41	126.66	123.16	128.80	0.00	190.00	67.8%
								54.98						

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876348*
Site Name: *Enfield*
App #:

Anchor Rod Data		
Eta Factor, η	0.55	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	55	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	52	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	4	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
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:	48.4	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	2618.7	ft-kips
Factored Axial, Pu:	34.7	kips
Factored Shear, Vu:	23.5	kips

Reactions adjusted to account for additional anchor rods

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	196.9	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	75.7%	**Pass**

Base Plate Results	Flexural Check	
Base Plate Stress:	28.9	ksi
PL Design Bending Strength, Φ*Fy:	45.0	ksi
Base Plate Stress Ratio:	64.3%	**Pass**

PL Ref. Data
Yield Line (in):
25.14
Max PL Length:
25.14

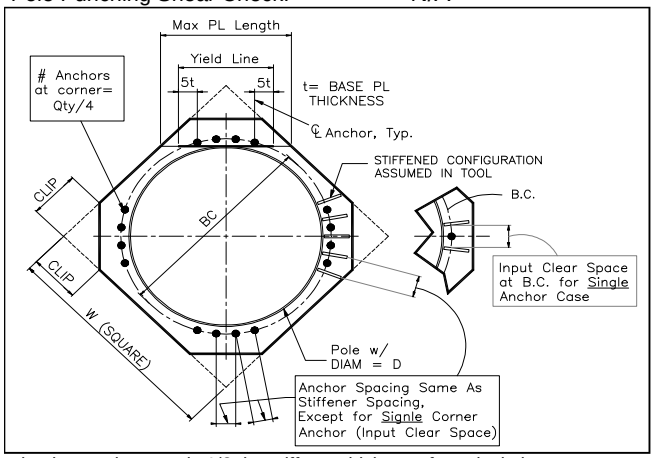
N/A - Unstiffened

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



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

Factored Foundation Loads:

	LC1	LC2	
Factored Axial Load (+Comp, -Ten) =	**40**	**30**	kips
Factored Horiz. Load at Top of Pier =	**27**	**27**	kips
Factored OTM at Top of Pier =	**3016**	**3016**	kips

LRFD Resistance and Load Factors:

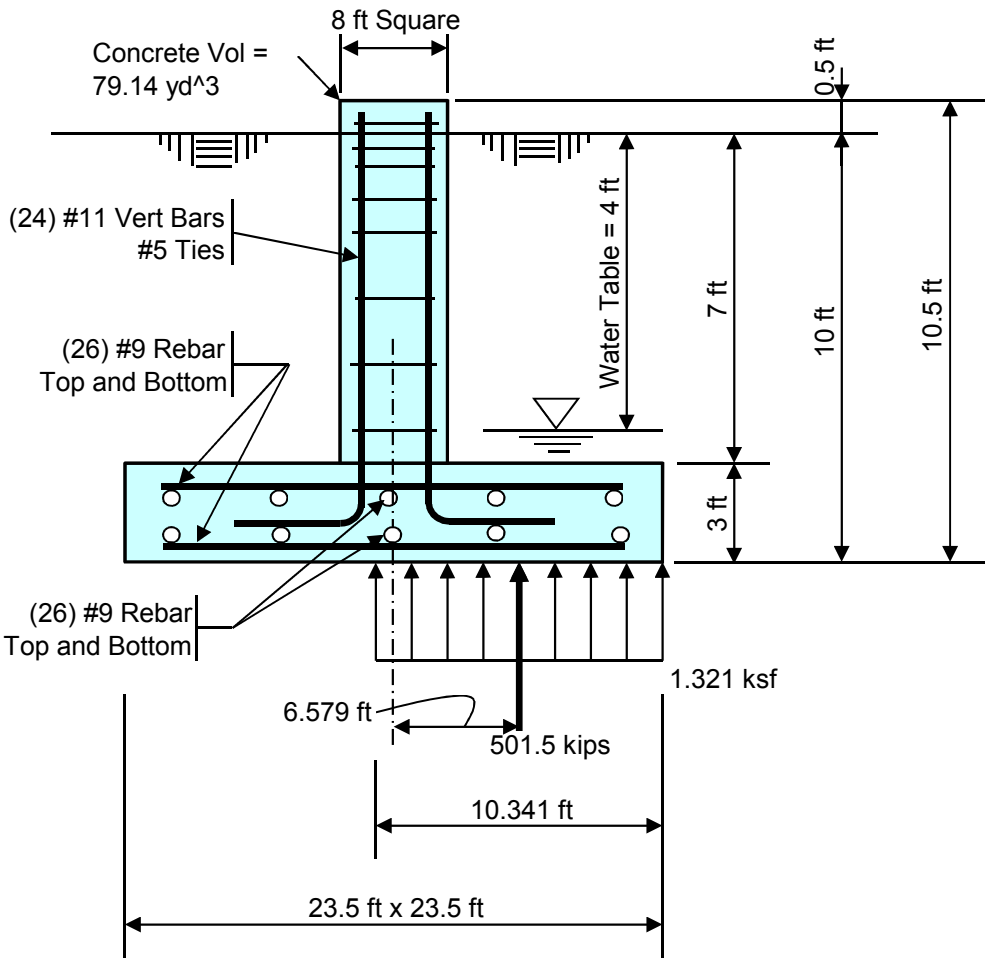
	Φ	Dead Load Factors	
Soil Bearing =	**0.75**		
Soil Weight =	**0.75**	1.2	0.9
Concrete Weight =	**0.75**	1.2	0.9

Soil Properties:

Depth to Water Table = **4** ft

Uplift Cone from **Top** of footing

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
2	**115**	**0**	**30**		**2.00**
2	**130**	**0**	**30**		**4.00**
2	**115**	**0**	**30**		**6.00**
6	**120**	**0**	**30**	**6.5**	**12.00**



Dimensions:

Pier Shape =	**Square**	
Pier Width =	**8**	ft Square
Pier Height above Grade =	**0.5**	ft
Depth to Bottom of Footing =	**10**	ft
Footing Thickness =	**3**	ft
Footing Width, B =	**23.5**	ft
Footing Length, L =	**23.5**	ft

Concrete:

Concrete Strength =	**3**	ksi
Rebar Strength =	**60**	ksi

Total Pad Reinf Stl =	**52.00**	in^2 >= 18.27 in^2 = Min Stl, OK
Total Pier Reinf Stl =	**37.44**	**in^2 < 46.08 in^2 = Min Stl**
Footing Thickness =	**3.00**	ft >= 2.05 ft = Min Ftg Thk, OK

Summary Results:

	Required		Available		
Maximum Net Soil Bearing =	**1.469**	ksf	**4.875**	ksf	Stress Ratio = **30.1%** in Soil Bearing
Uplift =	**0.0**	kips	**514.2**	kips	Stress Ratio = **0.0%** in Uplift
Punching Shear Stress =	**0.028**	ksi	**0.164**	ksi	Stress Ratio = **17.2%** in Punching Shear
Bending Shear Stress =	**177.8**	kips	**725.4**	kips	Stress Ratio = **24.5%** in Bending Shear
Bending Moment =	**1036.9**	k-ft	**3536.1**	k-ft	Stress Ratio = **29.3%** in Bending Moment
Conc Pier Reinforcing Steel =	**3218.5**	k-ft	**7666.4**	k-ft	Stress Ratio = **42.0%** in Pier Rebar

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: CTHA067A

Bright Meadows Blvd
55 Bright Meadow Blvd
Enfield, CT 06082

March 11, 2016

EBI Project Number: 6216001531

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	12.65 %

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

EBI Consulting
environmental | engineering | due diligence

March 11, 2016

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

Emissions Analysis for Site: **CTHA067A – Bright Meadows Blvd**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **55 Bright Meadow Blvd, Enfield, 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 **55 Bright Meadow Blvd, Enfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

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

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

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

5) 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 **107 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	107	Height (AGL):	107	Height (AGL):	107
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	Channel Count	2
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.65	Antenna B1 MPE%	1.65	Antenna C1 MPE%	1.65
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):	107	Height (AGL):	107	Height (AGL):	107
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(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	1.65	Antenna B2 MPE%	1.65	Antenna C2 MPE%	1.65
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):	107	Height (AGL):	107	Height (AGL):	107
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.65	Antenna B3 MPE%	0.65	Antenna C3 MPE%	0.65

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**3.94 %**
AT&T	2.55 %
MetroPCS	1.19 %
Clearwire	0.09 %
Sprint	0.32 %
Verizon Wireless	4.05 %
Nextel	0.39 %
XM Satellite Radio	0.12 %
Site Total MPE %:	**12.65 %**

T-Mobile Sector 1 Total:	3.94 %
T-Mobile Sector 2 Total:	3.94 %
T-Mobile Sector 3 Total:	3.94 %
Site Total:	12.65 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**107**	**16.45**	**2100**	**1000**	**1.65 %**
T-Mobile 1900 MHz (PCS) GSM/UMTS	**2**	**1167.14**	**107**	**8.23**	**1900**	**1000**	**0.82 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**107**	**8.23**	**2100**	**1000**	**0.82 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**107**	**3.05**	**700**	**467**	**0.65 %**
						Total:	**3.94 %**

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	3.94 %
Sector 2:	3.94 %
Sector 3 :	3.94 %
T-Mobile Per Sector Maximum:	3.94 %
Site Total:	12.65 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.65%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

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