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

October 16, 2015

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

RE: **T-Mobile - Exempt Modification - Crown Site BU: 806369**
T-Mobile Site ID: CT11161D
Located at: 439-455 Homestead Avenue, Hartford, CT 06105

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of T-Mobile. T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement their 700MHz technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies ("R.C.S.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Pedro E. Segarra, Mayor, City of Hartford and Talar Properties, LLC, Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **439-455 Homestead Avenue, Hartford, CT**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to T-Mobile's operations at the site (Exhibit-3).

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

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

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

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

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

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

For the foregoing reasons, T-Mobile respectfully submits the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Kimberly Myl.

Sincerely,

Kimberly Myl
Real Estate Specialist

Enclosures

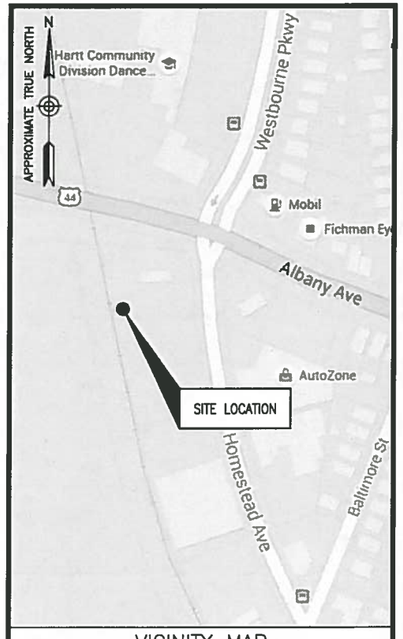
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Pedro E. Segarra
City of Hartford
Office of the Mayor
550 Main Street, Room 200
Hartford, CT 06103

Talar Properties, LLC
705 North Mountain Road
Newington, CT 06111

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11161D
CROWN CASTLE BU #: 806369
SITE NAME: HRT 094 943225
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY



VICINITY MAP

FROM PARSIPPANY, NJ:

DEPART SYLVAN WAY AND TAKE I-287 N TOWARD ALBANY. USE THE RIGHT 2 LANES TO MERGE ONTO I-287 E/I-87 S TOWARD TAPPAN ZEE BR. STAY ON I-287 E AND FOLLOW SIGNS FOR WHITE PLAINS. TAKE EXIT 9N-9S FOR HUTCHINSON PKWY TOWARD WHITE STONE BRIDGE/MERRITT PKWY. MERGE ONTO HUTCHINSON RIVER PKWY N. CONTINUE ONTO CT-15 N. TAKE EXIT 68 N-E TO MERGE ONTO I-91 N TOWARD CT-66 E/HARTFORD/MIDDLETOWN. TAKE EXIT 32A-32B FOR I-84 W TOWARD WATERBURY. TAKE EXIT 48 TOWARD ASYLUM ST. TURN RIGHT ONTO GARDEN ST. TURN LEFT ONTO HOMESTEAD AVE. 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:
HRT 094 943225

SITE NUMBER:
CT11161D

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

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

COORDINATES:
LATITUDE: 41°-47'-1.61" N (NAD83)
LONGITUDE: 72°-42'-13.66" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
702Cu

PROJECT SUMMARY

SITE ADDRESS:
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY

PROJECT DIRECTORY

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

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
E-1	GROUNDING NOTES & DETAILS

SHEET INDEX

T-Mobile

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

CROWN CASTLE

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

CT11161D
HRT 094 943225

CONSTRUCTION DRAWINGS

0	10/16/15	ISSUED AS FINAL
A	10/13/15	ISSUED FOR REVIEW

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

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

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50074615
SITE ADDRESS:	

439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

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

SITE WORK GENERAL NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

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

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.

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

STRUCTURAL STEEL NOTES:

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

CONSTRUCTION NOTES:

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

T·Mobile

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

CROWN CASTLE

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

CT11161D
HRT 094 943225

CONSTRUCTION DRAWINGS

0	10/16/15	ISSUED AS FINAL
A	10/13/15	ISSUED FOR REVIEW

Dewberry

Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
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STATE OF CONNECTICUT
JIANG YU
No. 28[illegible]
PROFESSIONAL ENGINEER
LICENSED

CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50074615
SITE ADDRESS:	

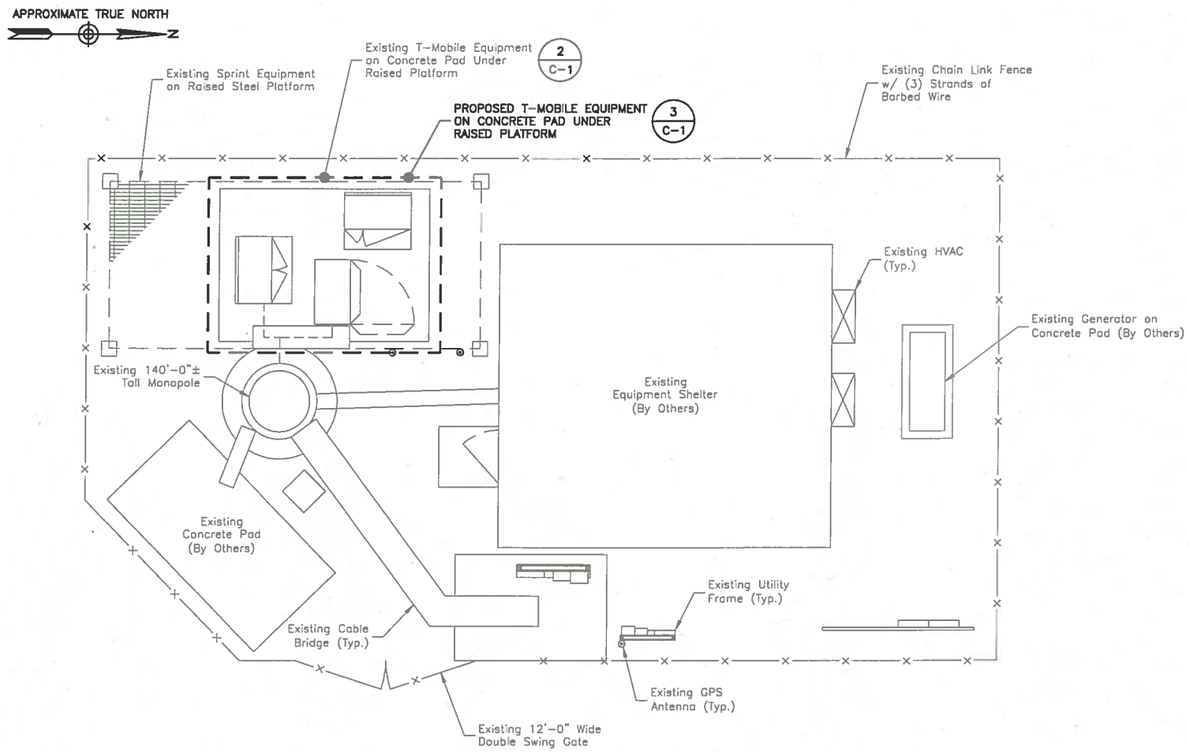
439–455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

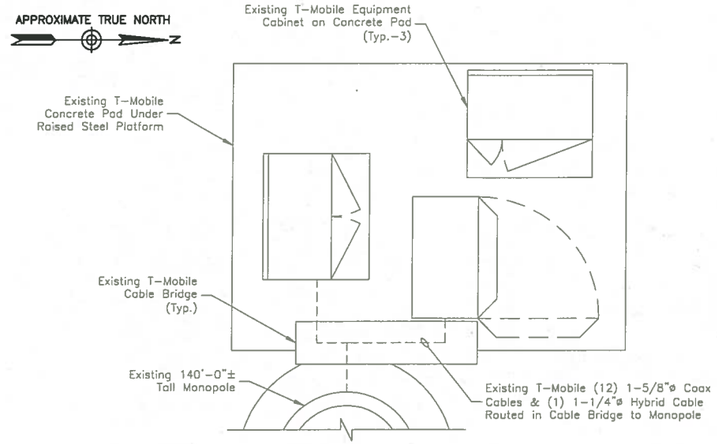
G–1



COMPOUND PLAN 1

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

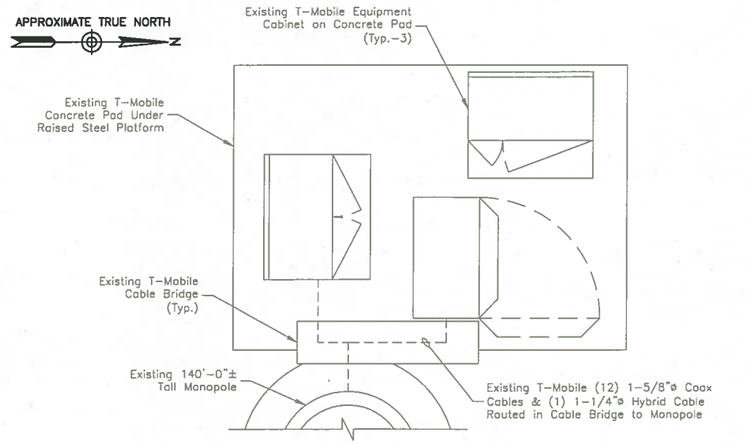
0' 5' 10'



EXISTING EQUIPMENT PLAN 2

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'



NOTE:

1. NO EQUIPMENT IS PROPOSED AT GRADE.

PROPOSED EQUIPMENT PLAN 3

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'

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 CROWN CASTLE DATED SEPTEMBER 21, 2015.

T-Mobile

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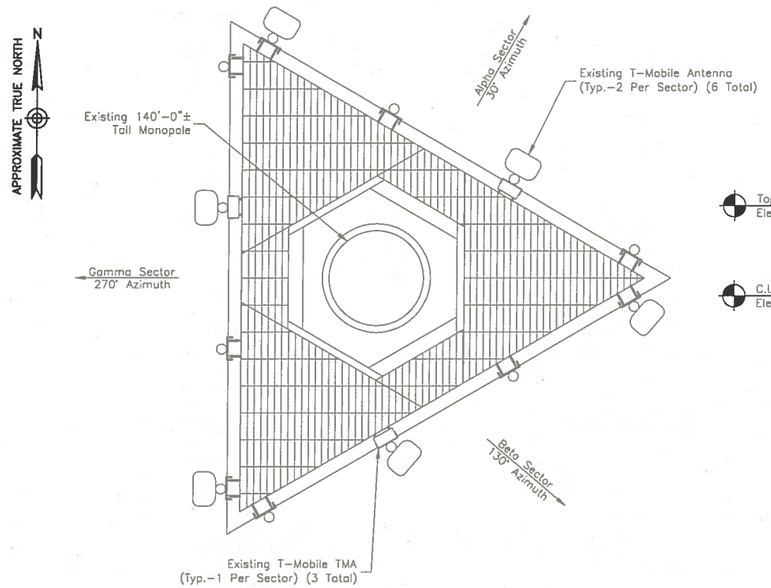
HARTFORD, CT 06105
HARTFORD COUNTY

SHEET TITLE

COMPOUND PLAN & EQUIPMENT PLANS

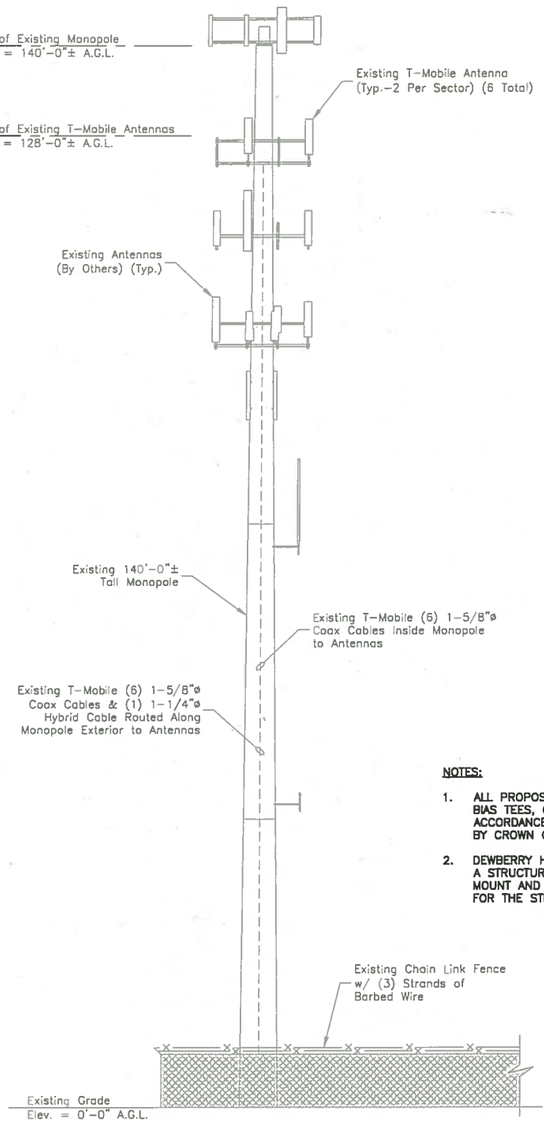
SHEET NUMBER

C–1



EXISTING ANTENNA LAYOUT (1)

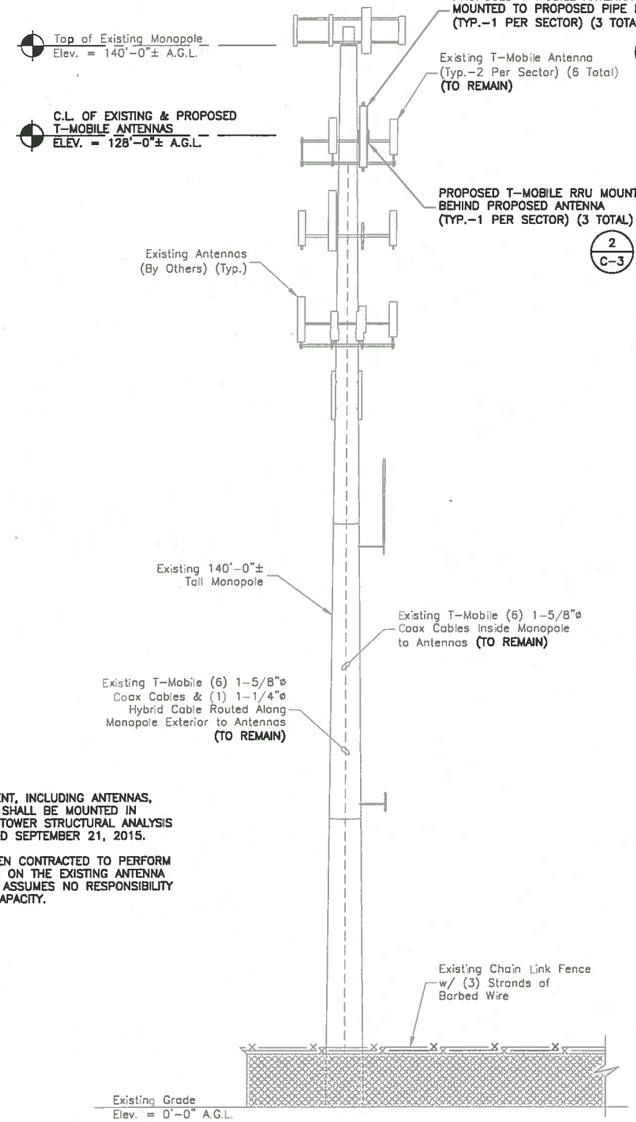
SCALE: N.T.S.



EXISTING ELEVATION (3)

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

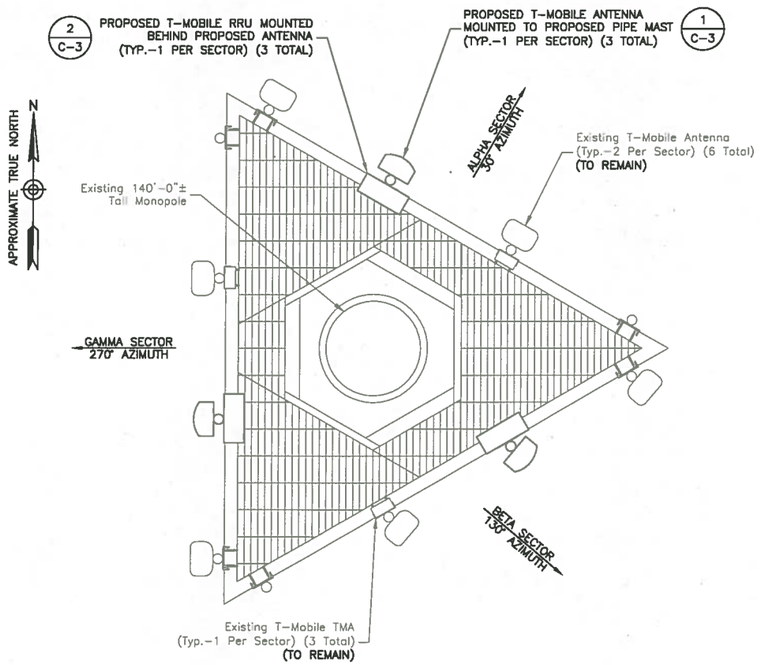
0' 10' 20'



PROPOSED ELEVATION (4)

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

0' 10' 20'



PROPOSED ANTENNA LAYOUT (2)

SCALE: N.T.S.

NOTES:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, BIAS TEES, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY CROWN CASTLE DATED SEPTEMBER 21, 2015.
2. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.

T-Mobile

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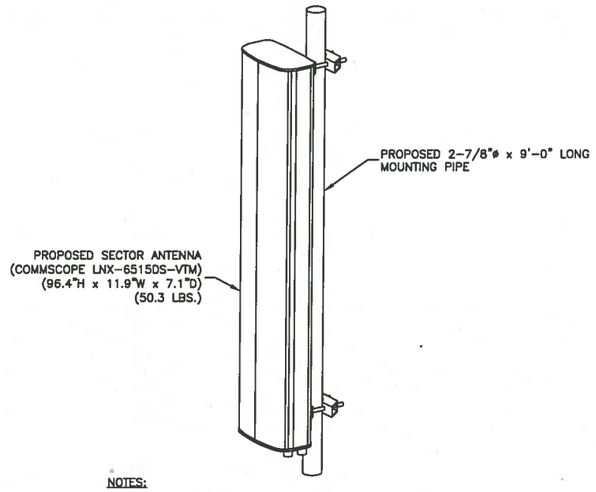
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

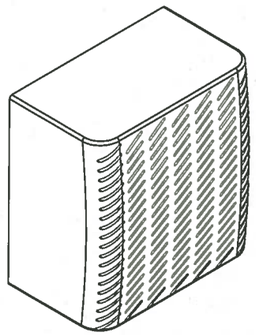
C-2



NOTES:

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

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



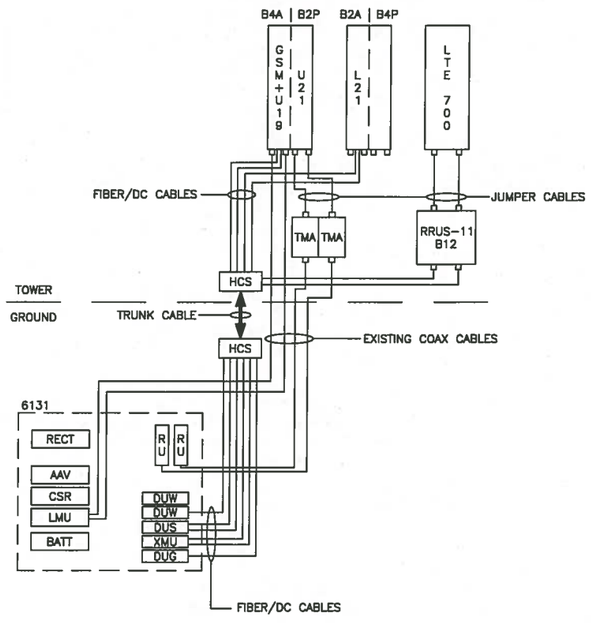
SPECIFICATIONS:
HEIGHT: 20.0"
WIDTH: 17.0"
DEPTH: 7.0"
WEIGHT: 50.7 LBS

ERICSSON RRUS-11 B12

RRU NOTES:

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

RRUS-11 - REMOTE RADIO UNIT (2)
SCALE: N.T.S.



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

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX LENGTH	EXISTING HYBRID	RRH	
	EXISTING	PROPOSED	EXISTING	PROPOSED			EXISTING	PROPOSED
ALPHA	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN	(4) 1-5/8"ø	–	178'-0"	(1) 1-1/4"ø @ 178'-0"	–	–
	–	COMMSCOPE LNX-6515DS-VTM					–	RRUS-11 B12
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN					–	–
BETA	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN	(4) 1-5/8"ø	–	178'-0"		–	–
	–	COMMSCOPE LNX-6515DS-VTM					–	RRUS-11 B12
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN					–	–
GAMMA	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN	(4) 1-5/8"ø	–	178'-0"		–	–
	–	COMMSCOPE LNX-6515DS-VTM					–	RRUS-11 B12
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN					–	–

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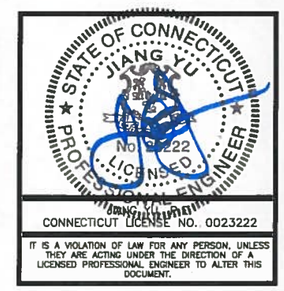

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CHECKED BY:	GHN
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JOB NUMBER:	50074615

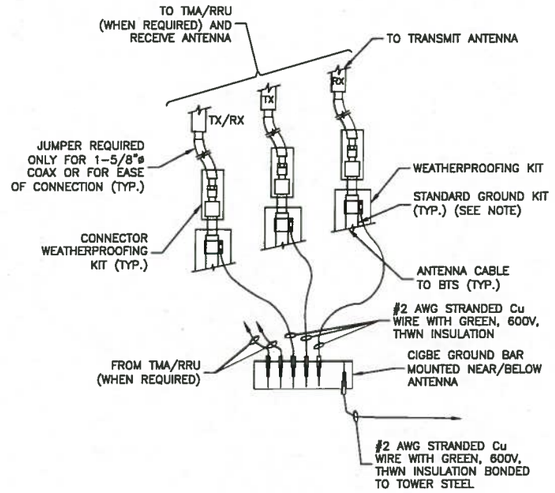
SITE ADDRESS:
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER
C-3

GROUNDING NOTES:

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

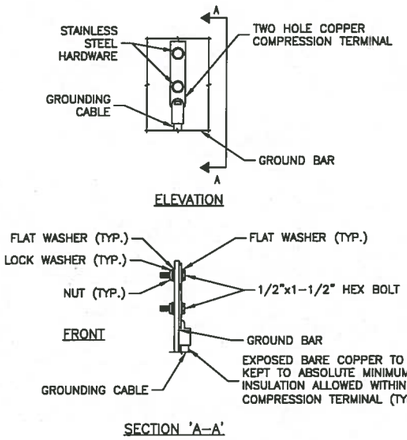


NOTE:

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

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) 1

SCALE: N.T.S.



ELEVATION

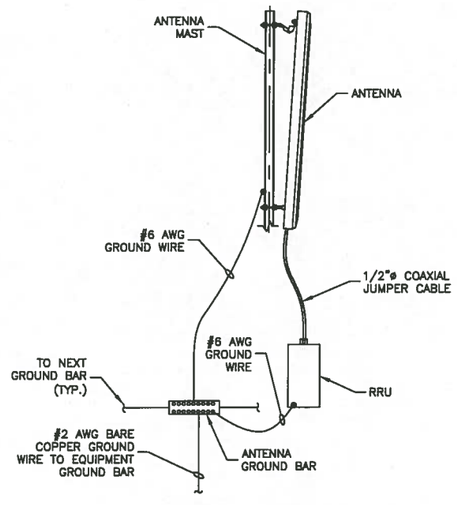
SECTION 'A-A'

NOTES:

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

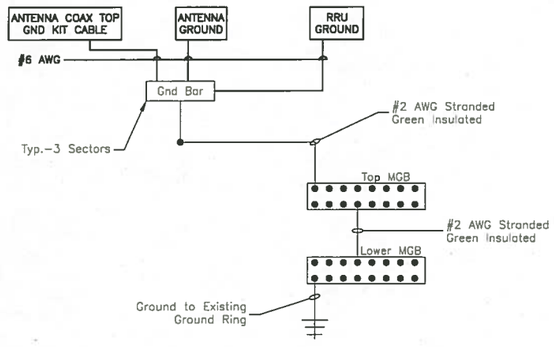
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL 2

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL 3

SCALE: N.T.S



NOTES:

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

SCHEMATIC GROUNDING DIAGRAM 4

SCALE: N.T.S.

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STATE OF CONNECTICUT
JIANG YU
NO. 23
LICENSED PROFESSIONAL ENGINEER

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

DRAWN BY:	RA
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439-455 HOMESTEAD AVENUE
HARTFORD, CT 06105
HARTFORD COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

Date: **September 21, 2015**

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

Crown Castle
2000 Corporate Drive
Canonsburg, PA, 15317
724-416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11161D
	Carrier Site Name:	CT494/CCastle-Wolcott-SST
Crown Castle Designation:	**Crown Castle BU Number:**	806369
	Crown Castle Site Name:	HRT 094 943225
	Crown Castle JDE Job Number:	347009
	Crown Castle Work Order Number:	1121759
	Crown Castle Application Number:	309992 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1121759
Site Data:	**439-455 HOMESTEAD AVE, HARTFORD, Hartford County, CT**	
	Latitude *41° 47' 1.61"*, Longitude *-72° 42' 13.66"*	
	140 Foot - Monopole Tower	

Dear Sean Dempsey,

Crown Castle 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 1121759, in accordance with application 309992, revision 0.

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

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

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

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

We at *Crown Castle* 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.

Structural analysis prepared by: Jeremy Hesson, E.I.T. / AGH

Respectfully submitted by:

Maribel Dentinger, P.E.
Sr. Project Engineer

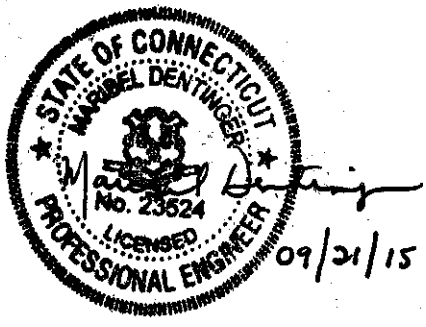


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by VALMONT in August of 1999. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
126.0	128.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	-	-	-
		3	ericsson	RRUS 11 B12			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
142.0	142.0	3	alcatel lucent	RRH2x40-AWS	13	1-5/8	1
		3	amphenol	BXA-80063-4BF-EDIN-X w/ Mount Pipe			
		3	antel	BXA-171063-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-171063/8CF-EDIN-2 w/ Mount Pipe			
		3	css	X7C-FRO-660-V w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 101-1]			
126.0	128.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12 1	1-5/8 1-1/4	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
	126.0	1	tower mounts	Platform Mount [LP 1001-1]			
115.0	117.0	3	ericsson	RRUS 12	-	-	2
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	12 2 1	1-5/8 3/4 3/8	1
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	116.0	12	powerwave technologies	7020.00			
		6	powerwave	7770.00 w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
			technologies				
	115.0	3	ericsson	RRUS-11			
		12	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 712-1]			
103.0	104.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	103.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Collar Mount [SO 102-3]			
	102.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
102.0	108.0	1		VHLP2-180	3 3 3 3	1/2 5/16 1/4 1-1/4	1
		1	andrew	VHLP2.5-11			
		2	dragonwave	HORIZON COMPACT			
	104.0	3	alcatel lucent	TD-RRH8x20-25			
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		1	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD			
	102.0	3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		1	tower mounts	Platform Mount [LP 602-1]			
94.0	94.0	3	kathrein	742 213	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 602-3]			
74.0	80.0	1	antel	BCD-87010	1	7/8	1
	74.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment- Considered in the Analysis.

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)
137	137	12	swedcom	ALP 9212-N	-	-
124	124	6	rfs celwave	APN199015	-	-
114	114	9	allgon	7184.15	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	TEP	2294838	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	TEP (Mapping)	2294380	CCISITES
4-TOWER MANUFACTURER DRAWINGS	TEP (Mapping)	2294379	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Valmont	823121	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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	140 - 86.8333	Pole	TP39.223x26.216x0.313	1	-17.368	1962.962	50.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.212x0.406	2	-29.533	3294.136	70.5	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-46.700	4900.574	69.9	Pass
							Summary	
						Pole (L2)	70.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Rating =	70.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.1	Pass
1	Base Plate	0	34.9	Pass
1	Base Foundation	0	52.8	Pass
1	Base Foundation Soil Interaction	0	34.0	Pass

Structure Rating (max from all components) =	**75.1%**

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

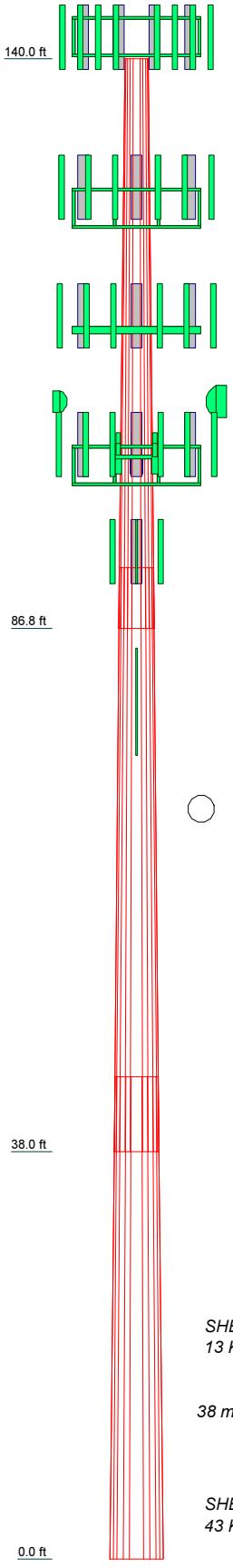
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	53'2"	12	0.313	5'8"	26.216	39.223		5.9
2	54'6"	12	0.406	7'	37.212	50.560	A572-65	10.5
3	45'	12	0.500		48.033	59.050		13.1
								29.5



AXIAL
81 K
SHEAR
13 K
MC
12
TORQUE 0 kip-ft
38 mph WIND - 1.000 in IC

AXIAL
47 K
SHEAR
43 K
MC
40
TORQUE 0 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	P65-17-XLH-RR w/ Mount Pipe	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(4) LGP21401	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(4) LGP21401	115
X7C-FRO-660-V w/ Mount Pipe	142	(4) LGP21401	115
X7C-FRO-660-V w/ Mount Pipe	142	RRUS-11	115
X7C-FRO-660-V w/ Mount Pipe	142	RRUS-11	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	RRUS-11	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	DC6-48-60-18-8F	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	(4) 7020.00	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	(4) 7020.00	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	(4) 7020.00	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	RRUS 12	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	RRUS 12	115
RRH2x40-AWS	142	RRUS 12	115
RRH2x40-AWS	142	8' x 2" Pipe Mount	115
RRH2x40-AWS	142	8' x 2" Pipe Mount	115
DB-T1-6Z-8AB-0Z	142	8' x 2" Pipe Mount	115
(2) FD9R6004/2C-3L	142	Platform Mount [LP 712-1]	115
(2) FD9R6004/2C-3L	142	PCS 1900MHz 4x45W-65MHz	103
(2) FD9R6004/2C-3L	142	PCS 1900MHz 4x45W-65MHz	103
Platform Mount [LP 101-1]	142	PCS 1900MHz 4x45W-65MHz	103
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	PCS 1900MHz 4x45W-65MHz	103
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	PCS 1900MHz 4x45W-65MHz	103
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	PCS 1900MHz 4x45W-65MHz	103
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	800MHz 2X50W RRH W/FILTER	103
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	800MHz 2X50W RRH W/FILTER	103
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	800MHz 2X50W RRH W/FILTER	103
ATMAA1412D-1A20	126	Collar Mount [SO 102-3]	103
ATMAA1412D-1A20	126	LLPX310R-V1 w/ Mount Pipe	102
ATMAA1412D-1A20	126	LLPX310R-V1 w/ Mount Pipe	102
(2) 6' x 2" Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
(2) 6' x 2" Mount Pipe	126	WIMAX DAP HEAD	102
(2) 6' x 2" Mount Pipe	126	WIMAX DAP HEAD	102
Platform Mount [LP 1001-1]	126	WIMAX DAP HEAD	102
LNX-6515DS-VTM w/ Mount Pipe	126	HORIZON COMPACT	102
LNX-6515DS-VTM w/ Mount Pipe	126	HORIZON COMPACT	102
LNX-6515DS-VTM w/ Mount Pipe	126	APXVTM14-C-120 w/ Mount Pipe	102
RRUS 11 B12	126	APXVTM14-C-120 w/ Mount Pipe	102
RRUS 11 B12	126	APXVTM14-C-120 w/ Mount Pipe	102
RRUS 11 B12	126	APXVSPP18-C-A20 w/ Mount Pipe	102
(2) 7770.00 w/ Mount Pipe	115	P40-16-XLPP-RR-A w/ Mount Pipe	102
(2) 7770.00 w/ Mount Pipe	115	APXVSPP18-C-A20 w/ Mount Pipe	102
(2) 7770.00 w/ Mount Pipe	115	TD-RRH8x20-25	102
P65-17-XLH-RR w/ Mount Pipe	115	TD-RRH8x20-25	102
AM-X-CD-16-65-00T-RET w/ Mount Pipe	115	TD-RRH8x20-25	102
		IBC1900HG-2A	102
		IBC1900HG-2A	102
		IBC1900HG-2A	102
		IBC1900BB-1	102
		IBC1900BB-1	102
		IBC1900BB-1	102
		Platform Mount [LP 602-1]	102
		VHLP2.5-11	102
		VHLP2-180	102
		742 213	94
		Pipe Mount [PM 602-3]	94
		742 213	94
		742 213	94
		BCD-87010	74
		Side Arm Mount [SO 701-1]	74

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 70.5%

CROWN CASTLE
The Foundation for a Wireless World

Crown Castle
2000 Corporate Drive
Canonsburg, PA, 15317
Phone: 724-416-2000
FAX: 724-416-4623

Job: ***BU# 806369***			
Project:			
Client: Crown Castle	Drawn by: agholami		App'd:
Code: TIA/EIA-222-F	Date: 09/21/15		Scale: NTS
Path: X:\ENG Work Area\JHesson\QA\806369 WO1121759\QA-AGH\806369.en			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Hartford County, Connecticut.
4) Basic wind speed of 80 mph.
5) Nominal ice thickness of 1.000 in.
6) Ice thickness is considered to increase with height.
7) Ice density of 56.000 pcf.
8) A wind speed of 38 mph is used in combination with ice.
9) Temperature drops of 50.000 °F.
10) Deflections calculated using a wind speed of 50 mph.
11) A non-linear (P-delta) analysis was used.
12) Pressures are calculated at each section.
13) Stress ratio used in pole design is 1.333.
14) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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	140'-86'10"	53'2"	5'8"	12	26.216	39.223	0.313	1.250	A572-65 (65 ksi)
L2	86'10"-38'	54'6"	7'	12	37.212	50.560	0.406	1.625	A572-65 (65 ksi)
L3	38'-0'	45'		12	48.033	59.050	0.500	2.000	A572-65 (65 ksi)

Tapered Pole Properties

Section	*Tip Dia.*	*Area*	*I*	*r*	*C*	*I/C*	*J*	*It/Q*	*w*	*w/t*
	in	in^2	in^4	*in*	*in*	in^3	in^4	in^2	*in*	
L1	27.141	26.065	2232.375	9.273	13.580	164.388	4523.397	12.829	6.188	19.803
	40.607	39.154	7566.452	13.930	20.318	372.410	15331.683	19.270	9.674	30.958

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
L2	39.961	48.146	8324.740	13.176	19.276	431.879	16868.180	23.696	8.884	21.868
	52.344	65.607	21064.222	17.955	26.190	804.282	42681.825	32.290	12.461	30.674
L3	51.502	76.528	22069.805	17.017	24.881	887.010	44719.408	37.665	11.533	23.066
	61.133	94.266	41247.015	20.961	30.588	1348.475	83577.635	46.395	14.485	28.971

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 140'-86'10"				1	1	1		
L2 86'10"-38'				1	1	1		
L3 38'-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
*****										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
LDF7-50A(1-5/8")	B	No	Inside Pole	140' - 0'	0.000	0	12	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	140' - 0'	0.000	0	1	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
*****										
LCF158-50JA-A0(15/8")	B	No	Inside Pole	126' - 0'	0.000	0	6	No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.000
								2" Ice	0.000	0.000
								4" Ice	0.000	0.000
LCF158-50JA-A0(15/8")	B	No	CaAa (Out Of Face)	126' - 0'	0.000	0	2	No Ice	0.198	0.000
								1/2" Ice	0.298	0.002
								1" Ice	0.398	0.004
								2" Ice	0.598	0.010
								4" Ice	0.998	0.029
LCF158-50JA-A0(15/8")	A	No	CaAa (Out Of Face)	126' - 0'	0.000	0	2	No Ice	0.000	0.000
								1/2" Ice	0.298	0.002
								1" Ice	0.398	0.004
								2" Ice	0.598	0.010
								4" Ice	0.998	0.029
LCF158-50JA-A0(15/8")	A	No	CaAa (Out Of Face)	126' - 0'	0.000	0	2	No Ice	0.000	0.000
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.029
MLE Hybrid 9Power/18Fiber RL 2(1 1/4)	A	No	CaAa (Out Of Face)	126' - 0'	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
								4" Ice	0.000	0.029
*****										
LDF7-50A(1-5/8")	C	No	Inside Pole	115' - 0'	0.000	0	12	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	C	No	Inside Pole	115' - 0'	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.000
								2" Ice	0.000	0.000
								4" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	115' - 0'	0.000	0	2	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
2" Rigid Conduit	C	No	Inside Pole	115' - 0'	0.000	0	1	No Ice	0.000	0.003
								1/2" Ice	0.000	0.003
								1" Ice	0.000	0.003
								2" Ice	0.000	0.003
								4" Ice	0.000	0.003
******										
2" Rigid Conduit	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	2	No Ice	0.200	0.003
								1/2" Ice	0.300	0.004
								1" Ice	0.400	0.006
								2" Ice	0.600	0.013
								4" Ice	1.000	0.032
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	2	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.022
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.022
LDF1-50A(1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	3	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.021
ATCB-B01-005(5/16)	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	3	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.021
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	1	No Ice	0.154	0.001
								1/2" Ice	0.254	0.002
								1" Ice	0.354	0.004
								2" Ice	0.554	0.010
								4" Ice	0.954	0.028
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.000	0	2	No Ice	0.000	0.001
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.028
*****										
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.000	0	2	No Ice	0.201	0.001
								1/2" Ice	0.301	0.002
								1" Ice	0.401	0.004
								2" Ice	0.601	0.010
								4" Ice	1.001	0.030
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.000	0	4	No Ice	0.000	0.001
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.030

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
*****										
LDF5-50A(7/8")	B	No	CaAa (Out Of Face)	74' - 0'	0.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.003
								2" Ice	0.000	0.008
								4" Ice	0.000	0.025
*****										
Thin Flat Bar Climbing Ladder	C	No	CaAa (Out Of Face)	116' - 108'	24.000	0	1	No Ice	0.333	0.004
								1/2" Ice	0.444	0.005
								1" Ice	0.556	0.007
								2" Ice	0.778	0.011
								4" Ice	1.222	0.023
*****										

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	140'-86'10"	A	0.000	0.000	0.000	8.402	0.161
		B	0.000	0.000	0.000	18.391	0.647
		C	0.000	0.000	0.000	2.667	0.423
L2	86'10"-38'	A	0.000	0.000	0.000	27.054	0.491
		B	0.000	0.000	0.000	38.969	0.792
		C	0.000	0.000	0.000	0.000	0.678
L3	38'-0'	A	0.000	0.000	0.000	21.052	0.382
		B	0.000	0.000	0.000	30.324	0.620
		C	0.000	0.000	0.000	0.000	0.527

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	140'-86'10"	A	1.158	0.000	0.000	0.000	52.592	1.726
		B		0.000	0.000	0.000	39.854	1.208
		C		0.000	0.000	0.000	4.725	0.450
L2	86'10"-38'	A	1.079	0.000	0.000	0.000	102.945	3.711
		B		0.000	0.000	0.000	84.211	2.723
		C		0.000	0.000	0.000	0.000	0.678
L3	38'-0'	A	1.000	0.000	0.000	0.000	77.091	2.597
		B		0.000	0.000	0.000	63.115	1.993
		C		0.000	0.000	0.000	0.000	0.527

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140'-86'10"	0.345	0.038	0.532	-0.540
L2	86'10"-38'	0.760	-0.170	1.075	-0.897
L3	38'-0'	0.798	-0.179	1.164	-0.970

Discrete Tower Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
BXA-80063-4BF-EDIN-X w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.089 5.515 5.953 6.859 8.816	3.472 4.045 4.640 5.957 8.886	0.030 0.070 0.116 0.227 0.554
BXA-80063-4BF-EDIN-X w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.089 5.515 5.953 6.859 8.816	3.472 4.045 4.640 5.957 8.886	0.030 0.070 0.116 0.227 0.554
BXA-80063-4BF-EDIN-X w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.089 5.515 5.953 6.859 8.816	3.472 4.045 4.640 5.957 8.886	0.030 0.070 0.116 0.227 0.554
X7C-FRO-660-V w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.458 11.127 11.763 13.064 15.784	7.529 8.715 9.615 11.449 15.603	0.061 0.139 0.225 0.426 0.975
X7C-FRO-660-V w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.458 11.127 11.763 13.064 15.784	7.529 8.715 9.615 11.449 15.603	0.061 0.139 0.225 0.426 0.975
X7C-FRO-660-V w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.458 11.127 11.763 13.064 15.784	7.529 8.715 9.615 11.449 15.603	0.061 0.139 0.225 0.426 0.975
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.515 3.915 4.804 6.715	3.510 4.130 4.757 6.059 9.095	0.029 0.062 0.100 0.196 0.492
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.515 3.915 4.804 6.715	3.510 4.130 4.757 6.059 9.095	0.029 0.062 0.100 0.196 0.492
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.515 3.915 4.804 6.715	3.510 4.130 4.757 6.059 9.095	0.029 0.062 0.100 0.196 0.492
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.179 3.555 3.964 4.853 6.767	3.353 3.971 4.595 5.893 8.885	0.029 0.061 0.099 0.193 0.488
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice	3.179 3.555 3.964 4.853 6.767	3.353 3.971 4.595 5.893 8.885	0.029 0.061 0.099 0.193 0.488

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
						4" Ice			
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.179 3.555 3.964 4.853 6.767	3.353 3.971 4.595 5.893 8.885	0.029 0.061 0.099 0.193 0.488
RRH2x40-AWS	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
RRH2x40-AWS	B	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
RRH2x40-AWS	C	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.522 2.753 2.993 3.499 4.615	1.589 1.795 2.010 2.465 3.479	0.044 0.061 0.082 0.132 0.275
DB-T1-6Z-8AB-0Z	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.600 5.915 6.240 6.914 8.365	2.333 2.558 2.791 3.284 4.373	0.044 0.080 0.120 0.213 0.455
(2) FD9R6004/2C-3L	A	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.009 0.020 0.063
(2) FD9R6004/2C-3L	B	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.009 0.020 0.063
(2) FD9R6004/2C-3L	C	From Leg	4.000 0' 0'	0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.009 0.020 0.063
Platform Mount [LP 101-1]	C	None		0.000	142'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	36.210 42.820 49.430 62.650 89.090	36.210 42.820 49.430 62.650 89.090	1.503 2.301 3.099 4.695 7.887
*126 ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	126'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.825 7.347 7.863 8.926 11.175	5.642 6.480 7.257 8.864 12.293	0.112 0.169 0.233 0.383 0.807
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	126'	No Ice 1/2" Ice	6.825 7.347 7.863	5.642 6.480 7.257	0.112 0.169 0.233

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	8.926	8.864	0.383
						2" Ice	11.175	12.293	0.807
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	126'	No Ice	6.825	5.642	0.112
						1/2" Ice	7.347	6.480	0.169
						1" Ice	7.863	7.257	0.233
						2" Ice	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	126'	No Ice	6.825	5.642	0.112
						1/2" Ice	7.347	6.480	0.169
						1" Ice	7.863	7.257	0.233
						2" Ice	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	126'	No Ice	6.825	5.642	0.112
						1/2" Ice	7.347	6.480	0.169
						1" Ice	7.863	7.257	0.233
						2" Ice	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	126'	No Ice	6.825	5.642	0.112
						1/2" Ice	7.347	6.480	0.169
						1" Ice	7.863	7.257	0.233
						2" Ice	8.926	8.864	0.383
						4" Ice	11.175	12.293	0.807
ATMAA1412D-1A20	A	From Leg	4.000 0' 2'	0.000	126'	No Ice	0.467	1.167	0.013
						1/2" Ice	0.575	1.314	0.021
						1" Ice	0.691	1.469	0.030
						2" Ice	0.951	1.806	0.056
						4" Ice	1.573	2.584	0.137
ATMAA1412D-1A20	B	From Leg	4.000 0' 2'	0.000	126'	No Ice	0.467	1.167	0.013
						1/2" Ice	0.575	1.314	0.021
						1" Ice	0.691	1.469	0.030
						2" Ice	0.951	1.806	0.056
						4" Ice	1.573	2.584	0.137
ATMAA1412D-1A20	C	From Leg	4.000 0' 2'	0.000	126'	No Ice	0.467	1.167	0.013
						1/2" Ice	0.575	1.314	0.021
						1" Ice	0.691	1.469	0.030
						2" Ice	0.951	1.806	0.056
						4" Ice	1.573	2.584	0.137
(2) 6' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	126'	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	126'	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
(2) 6' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	126'	No Ice	1.425	1.425	0.022
						1/2" Ice	1.925	1.925	0.033
						1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Platform Mount [LP 1001-1]	C	None		0.000	126'	No Ice	47.700	47.700	3.017
						1/2" Ice	59.500	59.500	3.621

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
						Ice	71.300	71.300	4.225
						1" Ice	94.900	94.900	5.433
						2" Ice	142.100	142.100	7.849
						4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	126'	No Ice	11.683	9.842	0.083
						1/2" Ice	12.404	11.366	0.173
						1" Ice	13.135	12.914	0.273
						2" Ice	14.601	15.267	0.506
						4" Ice	17.875	20.139	1.151
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	126'	No Ice	11.683	9.842	0.083
						1/2" Ice	12.404	11.366	0.173
						1" Ice	13.135	12.914	0.273
						2" Ice	14.601	15.267	0.506
						4" Ice	17.875	20.139	1.151
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	126'	No Ice	11.683	9.842	0.083
						1/2" Ice	12.404	11.366	0.173
						1" Ice	13.135	12.914	0.273
						2" Ice	14.601	15.267	0.506
						4" Ice	17.875	20.139	1.151
RRUS 11 B12	A	From Leg	4.000 0' 2'	0.000	126'	No Ice	3.306	1.361	0.051
						1/2" Ice	3.550	1.540	0.072
						1" Ice	3.802	1.728	0.095
						2" Ice	4.334	2.130	0.153
						4" Ice	5.501	3.038	0.314
RRUS 11 B12	B	From Leg	4.000 0' 2'	0.000	126'	No Ice	3.306	1.361	0.051
						1/2" Ice	3.550	1.540	0.072
						1" Ice	3.802	1.728	0.095
						2" Ice	4.334	2.130	0.153
						4" Ice	5.501	3.038	0.314
RRUS 11 B12	C	From Leg	4.000 0' 2'	0.000	126'	No Ice	3.306	1.361	0.051
						1/2" Ice	3.550	1.540	0.072
						1" Ice	3.802	1.728	0.095
						2" Ice	4.334	2.130	0.153
						4" Ice	5.501	3.038	0.314
*115									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	115'	No Ice	6.119	4.254	0.055
						1/2" Ice	6.626	5.014	0.103
						1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	115'	No Ice	6.119	4.254	0.055
						1/2" Ice	6.626	5.014	0.103
						1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	115'	No Ice	6.119	4.254	0.055
						1/2" Ice	6.626	5.014	0.103
						1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	115'	No Ice	11.704	8.938	0.092
						1/2" Ice	12.424	10.450	0.178
						1" Ice	13.153	11.986	0.273
						2" Ice	14.639	14.313	0.498
						4" Ice	17.906	19.144	1.126

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
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.074 0.139 0.212 0.385 0.874
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.704 12.424 13.153 14.639 17.906	8.938 10.450 11.986 14.313 19.144	0.092 0.178 0.273 0.498 1.126
(4) LGP21401	A	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
(4) LGP21401	B	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
(4) LGP21401	C	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
RRUS-11	A	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.249 3.491 3.741 4.268 5.426	1.373 1.551 1.738 2.138 3.042	0.048 0.068 0.092 0.150 0.310
RRUS-11	B	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.249 3.491 3.741 4.268 5.426	1.373 1.551 1.738 2.138 3.042	0.048 0.068 0.092 0.150 0.310
RRUS-11	C	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.249 3.491 3.741 4.268 5.426	1.373 1.551 1.738 2.138 3.042	0.048 0.068 0.092 0.150 0.310
DC6-48-60-18-8F	A	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.266 1.456 1.658 2.093 3.098	1.266 1.456 1.658 2.093 3.098	0.020 0.035 0.053 0.095 0.215
(4) 7020.00	A	From Leg	4.000 0' 1'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.119 0.171 0.232 0.380 0.779	0.204 0.279 0.363 0.556 1.046	0.002 0.005 0.009 0.022 0.071
(4) 7020.00	B	From Leg	4.000 0' 1'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice	0.119 0.171 0.232 0.380 0.779	0.204 0.279 0.363 0.556 1.046	0.002 0.005 0.009 0.022 0.071

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
						4" Ice			
(4) 7020.00	C	From Leg	4.000 0' 1'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.119 0.171 0.232 0.380 0.779	0.204 0.279 0.363 0.556 1.046	0.002 0.005 0.009 0.022 0.071
RRUS 12	A	From Leg	4.000 0' 2'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.669 3.926 4.191 4.747 5.963	1.488 1.673 1.866 2.280 3.211	0.058 0.081 0.108 0.171 0.344
RRUS 12	B	From Leg	4.000 0' 2'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.669 3.926 4.191 4.747 5.963	1.488 1.673 1.866 2.280 3.211	0.058 0.081 0.108 0.171 0.344
RRUS 12	C	From Leg	4.000 0' 2'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.669 3.926 4.191 4.747 5.963	1.488 1.673 1.866 2.280 3.211	0.058 0.081 0.108 0.171 0.344
8' x 2" Pipe Mount	A	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.900 2.728 3.401 4.396 6.498	1.900 2.728 3.401 4.396 6.498	0.029 0.044 0.063 0.119 0.300
8' x 2" Pipe Mount	B	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.900 2.728 3.401 4.396 6.498	1.900 2.728 3.401 4.396 6.498	0.029 0.044 0.063 0.119 0.300
8' x 2" Pipe Mount	C	From Leg	4.000 0' 0'	0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.900 2.728 3.401 4.396 6.498	1.900 2.728 3.401 4.396 6.498	0.029 0.044 0.063 0.119 0.300
Platform Mount [LP 712-1]	C	None		0.000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.530 29.940 35.350 46.170 67.810	24.530 29.940 35.350 46.170 67.810	1.335 1.646 1.956 2.577 3.820
*103 PCS 1900MHz 4x45W-65MHz	A	From Leg	0.500 0' 1'	0.000	103'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz	B	From Leg	0.500 0' 1'	0.000	103'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.709 2.948 3.195 3.716 4.862	2.611 2.847 3.092 3.608 4.744	0.060 0.083 0.110 0.173 0.347
PCS 1900MHz 4x45W-65MHz	C	From Leg	0.500 0' 1'	0.000	103'	No Ice 1/2" Ice	2.709 2.948 3.195	2.611 2.847 3.092	0.060 0.083 0.110

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	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
PCS 1900MHz 4x45W-65MHz	A	From Leg	0.500 0' 0'	0.000	103'	No Ice	2.709	2.611	0.060
						1/2"	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
PCS 1900MHz 4x45W-65MHz	B	From Leg	0.500 0' 0'	0.000	103'	No Ice	2.709	2.611	0.060
						1/2"	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
PCS 1900MHz 4x45W-65MHz	C	From Leg	0.500 0' 0'	0.000	103'	No Ice	2.709	2.611	0.060
						1/2"	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	0.500 0' -1'	0.000	103'	No Ice	2.401	2.254	0.064
						1/2"	2.613	2.460	0.086
						Ice	2.833	2.675	0.111
						1" Ice	3.300	3.132	0.172
						2" Ice	4.337	4.148	0.338
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	0.500 0' -1'	0.000	103'	No Ice	2.401	2.254	0.064
						1/2"	2.613	2.460	0.086
						Ice	2.833	2.675	0.111
						1" Ice	3.300	3.132	0.172
						2" Ice	4.337	4.148	0.338
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	0.500 0' -1'	0.000	103'	No Ice	2.401	2.254	0.064
						1/2"	2.613	2.460	0.086
						Ice	2.833	2.675	0.111
						1" Ice	3.300	3.132	0.172
						2" Ice	4.337	4.148	0.338
						4" Ice			
Collar Mount [SO 102-3]	C	None		0.000	103'	No Ice	3.000	3.000	0.081
						1/2"	3.480	3.480	0.111
						Ice	3.960	3.960	0.141
						1" Ice	4.920	4.920	0.201
						2" Ice	6.840	6.840	0.321
						4" Ice			
*102 clearwire									
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	102'	No Ice	5.065	2.983	0.045
						1/2"	5.480	3.526	0.083
						Ice	5.905	4.086	0.126
						1" Ice	6.788	5.313	0.232
						2" Ice	8.704	8.131	0.544
						4" Ice			
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	102'	No Ice	5.065	2.983	0.045
						1/2"	5.480	3.526	0.083
						Ice	5.905	4.086	0.126
						1" Ice	6.788	5.313	0.232
						2" Ice	8.704	8.131	0.544
						4" Ice			
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	102'	No Ice	5.065	2.983	0.045
						1/2"	5.480	3.526	0.083
						Ice	5.905	4.086	0.126
						1" Ice	6.788	5.313	0.232
						2" Ice	8.704	8.131	0.544
						4" Ice			
WIMAX DAP HEAD	A	From Leg	4.000	0.000	102'	No Ice	1.804	0.778	0.033

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
			0'			1/2"	1.988	0.918	0.045
			2'			Ice	2.180	1.067	0.058
						1" Ice	2.589	1.391	0.094
						2" Ice	3.512	2.143	0.201
						4" Ice			
WIMAX DAP HEAD	B	From Leg	4.000	0.000	102'	No Ice	1.804	0.778	0.033
			0'			1/2"	1.988	0.918	0.045
			2'			Ice	2.180	1.067	0.058
						1" Ice	2.589	1.391	0.094
						2" Ice	3.512	2.143	0.201
						4" Ice			
WIMAX DAP HEAD	C	From Leg	4.000	0.000	102'	No Ice	1.804	0.778	0.033
			0'			1/2"	1.988	0.918	0.045
			2'			Ice	2.180	1.067	0.058
						1" Ice	2.589	1.391	0.094
						2" Ice	3.512	2.143	0.201
						4" Ice			
HORIZON COMPACT	B	From Leg	4.000	0.000	102'	No Ice	0.841	0.429	0.012
			0'			1/2"	0.966	0.525	0.018
			6'			Ice	1.099	0.629	0.026
						1" Ice	1.392	0.863	0.048
						2" Ice	2.082	1.435	0.122
						4" Ice			
HORIZON COMPACT	C	From Leg	4.000	0.000	102'	No Ice	0.841	0.429	0.012
			0'			1/2"	0.966	0.525	0.018
			6'			Ice	1.099	0.629	0.026
						1" Ice	1.392	0.863	0.048
						2" Ice	2.082	1.435	0.122
						4" Ice			
*102 Sprint APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	0.000	102'	No Ice	7.134	4.959	0.074
			0'			1/2"	7.662	5.754	0.128
			2'			Ice	8.183	6.472	0.190
						1" Ice	9.256	8.010	0.335
						2" Ice	11.526	11.412	0.749
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	102'	No Ice	7.134	4.959	0.074
			0'			1/2"	7.662	5.754	0.128
			2'			Ice	8.183	6.472	0.190
						1" Ice	9.256	8.010	0.335
						2" Ice	11.526	11.412	0.749
						4" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	102'	No Ice	7.134	4.959	0.074
			0'			1/2"	7.662	5.754	0.128
			2'			Ice	8.183	6.472	0.190
						1" Ice	9.256	8.010	0.335
						2" Ice	11.526	11.412	0.749
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000	0.000	102'	No Ice	8.498	6.946	0.083
			0'			1/2"	9.149	8.127	0.151
			2'			Ice	9.767	9.021	0.227
						1" Ice	11.031	10.844	0.406
						2" Ice	13.679	14.851	0.909
						4" Ice			
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Leg	4.000	0.000	102'	No Ice	10.738	4.825	0.073
			0'			1/2"	11.294	5.571	0.141
			2'			Ice	11.848	6.265	0.216
						1" Ice	12.988	7.803	0.389
						2" Ice	15.392	11.107	0.862
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000	0.000	102'	No Ice	8.498	6.946	0.083
			0'			1/2"	9.149	8.127	0.151
			2'			Ice	9.767	9.021	0.227
						1" Ice	11.031	10.844	0.406
						2" Ice	13.679	14.851	0.909

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
						4" Ice			
TD-RRH8x20-25	A	From Leg	4.000	0.000	102'	No Ice	4.720	1.703	0.070
			0'			1/2" Ice	5.014	1.920	0.097
			2'			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	B	From Leg	4.000	0.000	102'	No Ice	4.720	1.703	0.070
			0'			1/2" Ice	5.014	1.920	0.097
			2'			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
TD-RRH8x20-25	C	From Leg	4.000	0.000	102'	No Ice	4.720	1.703	0.070
			0'			1/2" Ice	5.014	1.920	0.097
			2'			1" Ice	5.316	2.145	0.128
						2" Ice	5.948	2.622	0.201
						4" Ice	7.314	3.680	0.397
IBC1900HG-2A	A	From Leg	4.000	0.000	102'	No Ice	1.127	0.533	0.022
			0'			1/2" Ice	1.273	0.647	0.030
			0'			1" Ice	1.427	0.770	0.039
						2" Ice	1.761	1.041	0.065
						4" Ice	2.534	1.688	0.147
IBC1900HG-2A	B	From Leg	4.000	0.000	102'	No Ice	1.127	0.533	0.022
			0'			1/2" Ice	1.273	0.647	0.030
			0'			1" Ice	1.427	0.770	0.039
						2" Ice	1.761	1.041	0.065
						4" Ice	2.534	1.688	0.147
IBC1900HG-2A	C	From Leg	4.000	0.000	102'	No Ice	1.127	0.533	0.022
			0'			1/2" Ice	1.273	0.647	0.030
			0'			1" Ice	1.427	0.770	0.039
						2" Ice	1.761	1.041	0.065
						4" Ice	2.534	1.688	0.147
IBC1900BB-1	A	From Leg	4.000	0.000	102'	No Ice	1.127	0.533	0.022
			0'			1/2" Ice	1.273	0.647	0.030
			0'			1" Ice	1.427	0.770	0.039
						2" Ice	1.761	1.041	0.065
						4" Ice	2.534	1.688	0.147
IBC1900BB-1	B	From Leg	4.000	0.000	102'	No Ice	1.127	0.533	0.022
			0'			1/2" Ice	1.273	0.647	0.030
			0'			1" Ice	1.427	0.770	0.039
						2" Ice	1.761	1.041	0.065
						4" Ice	2.534	1.688	0.147
IBC1900BB-1	C	From Leg	4.000	0.000	102'	No Ice	1.127	0.533	0.022
			0'			1/2" Ice	1.273	0.647	0.030
			0'			1" Ice	1.427	0.770	0.039
						2" Ice	1.761	1.041	0.065
						4" Ice	2.534	1.688	0.147
Platform Mount [LP 602-1]	C	None		0.000	102'	No Ice	32.030	32.030	1.343
						1/2" Ice	38.710	38.710	1.800
						1" Ice	45.390	45.390	2.257
						2" Ice	58.750	58.750	3.170
						4" Ice	85.470	85.470	4.998
*94 742 213	A	From Leg	1.000	0.000	94'	No Ice	5.135	2.869	0.022
			0'			1/2" Ice	5.609	3.483	0.047
			0'			1" Ice	6.090	3.946	0.078

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	7.074	4.893	0.158
						2" Ice	9.130	6.876	0.394
						4" Ice			
742 213	B	From Leg	1.000 0' 0'	0.000	94'	No Ice	5.135	2.869	0.022
						1/2" Ice	5.609	3.483	0.047
						1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
742 213	C	From Leg	1.000 0' 0'	0.000	94'	No Ice	5.135	2.869	0.022
						1/2" Ice	5.609	3.483	0.047
						1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
Pipe Mount [PM 602-3]	C	None		0.000	94'	No Ice	7.680	7.680	0.279
						1/2" Ice	9.500	9.500	0.353
						1" Ice	11.320	11.320	0.427
						2" Ice	14.960	14.960	0.576
						4" Ice	22.240	22.240	0.873
*74									
BCD-87010	C	From Face	3.000 0' 6'	0.000	74'	No Ice	2.903	2.903	0.027
						1/2" Ice	4.050	4.050	0.048
						1" Ice	5.213	5.213	0.077
						2" Ice	7.015	7.015	0.156
						4" Ice	9.848	9.848	0.410
Side Arm Mount [SO 701-1]	C	From Face	1.500 0' 0'	0.000	74'	No Ice	0.850	1.670	0.065
						1/2" Ice	1.140	2.340	0.079
						1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
***									

Dishes

Description	*Face or Leg*	*Dish Type*	*Offset Type*	*Offsets: Horz Lateral Vert* ft	*Azimuth Adjustment* °	*3 dB Beam Width* °	*Elevation* ft	*Outside Diameter* ft		*Aperture Area* ft^2	*Weight* K
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	6.000 0' 6'	3.000		102'	2.917	No Ice	6.680	0.030
									1/2" Ice	7.070	0.040
									1" Ice	7.460	0.050
									2" Ice	8.230	0.070
									4" Ice	9.780	0.110
VHLP2-180	C	Paraboloid w/Shroud (HP)	From Leg	6.000 0' 6'	86.000		102'	2.000	No Ice	3.140	0.025
									1/2" Ice	3.407	0.042
									1" Ice	3.674	0.060
									2" Ice	4.208	0.095
									4" Ice	5.277	0.165
*****											

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Force K*	*Major Axis Moment kip-ft*	*Minor Axis Moment kip-ft*
L1	140 - 86.8333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-36.618	-0.232	2.665
			Max. Mx	11	-17.381	744.053	3.615
			Max. My	2	-17.378	4.076	749.252
			Max. Vy	11	-27.750	744.053	3.615
			Max. Vx	8	27.745	-3.199	-748.712
			Max. Torque	4			1.119
L2	86.8333 - 38	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-56.212	-3.359	6.510
			Max. Mx	11	-29.539	2249.344	15.039
			Max. My	2	-29.539	17.036	2253.749
			Max. Vy	11	-35.651	2249.344	15.039
			Max. Vx	8	35.616	-14.469	-2252.941
			Max. Torque	7			-0.873
L3	38 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-80.515	-6.902	11.340
			Max. Mx	11	-46.700	4010.711	26.223
			Max. My	2	-46.700	29.059	4014.419
			Max. Vy	11	-42.609	4010.711	26.223
			Max. Vx	8	42.574	-25.156	-4012.373
			Max. Torque	6			-0.604

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	80.515	0.072	13.229
	Max. H_x	11	46.720	42.587	0.229
	Max. H_z	2	46.720	0.273	42.545
	Max. M_x	2	4014.419	0.273	42.545
	Max. M_z	5	4006.474	-42.537	-0.233
	Max. Torsion	9	0.387	21.078	-36.805
	Min. Vert	1	46.720	0.000	0.000
	Min. H_x	5	46.720	-42.537	-0.233
	Min. H_z	8	46.720	-0.226	-42.551
	Min. M_x	8	-4012.373	-0.226	-42.551
	Min. M_z	11	-4010.711	42.587	0.229
	Min. Torsion	5	-0.490	-42.537	-0.233

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	46.720	0.000	0.000	-1.362	-0.625	0.000
Dead+Wind 0 deg - No Ice	46.720	-0.273	-42.545	-4014.419	29.059	0.152
Dead+Wind 30 deg - No Ice	46.720	21.135	-36.764	-3468.037	-1989.221	0.483
Dead+Wind 60 deg - No Ice	46.720	36.789	-21.101	-1989.361	-3464.566	0.398
Dead+Wind 90 deg - No Ice	46.720	42.537	0.233	23.903	-4006.474	0.490
Dead+Wind 120 deg - No Ice	46.720	36.906	21.410	2019.985	-3477.136	0.311
Dead+Wind 150 deg - No Ice	46.720	21.422	36.898	3479.613	-2020.131	0.087
Dead+Wind 180 deg - No Ice	46.720	0.226	42.551	4012.373	-25.156	-0.118
Dead+Wind 210 deg - No Ice	46.720	-21.078	36.805	3469.793	1981.699	-0.387
Dead+Wind 240 deg - No Ice	46.720	-36.835	21.042	1980.117	3468.454	-0.326
Dead+Wind 270 deg - No Ice	46.720	-42.587	-0.229	-26.223	4010.711	-0.250
Dead+Wind 300 deg - No Ice	46.720	-36.939	-21.423	-2024.099	3479.416	-0.005
Dead+Wind 330 deg - No Ice	46.720	-21.455	-36.920	-3484.802	2022.444	0.192
Dead+Ice+Temp	80.515	0.000	-0.000	-11.340	-6.902	-0.000
Dead+Wind 0 deg+Ice+Temp	80.515	-0.072	-13.229	-1269.552	1.060	0.228
Dead+Wind 30 deg+Ice+Temp	80.515	6.582	-11.435	-1098.573	-631.602	0.103
Dead+Wind 60 deg+Ice+Temp	80.515	11.450	-6.568	-635.413	-1094.339	-0.120
Dead+Wind 90 deg+Ice+Temp	80.515	13.238	0.063	-4.519	-1264.369	-0.236
Dead+Wind 120 deg+Ice+Temp	80.515	11.484	6.653	621.753	-1098.015	-0.331
Dead+Wind 150 deg+Ice+Temp	80.515	6.661	11.472	1079.697	-640.311	-0.326
Dead+Wind 180 deg+Ice+Temp	80.515	0.061	13.231	1246.786	-13.742	-0.219
Dead+Wind 210 deg+Ice+Temp	80.515	-6.568	11.445	1076.760	615.987	-0.076
Dead+Wind 240 deg+Ice+Temp	80.515	-11.462	6.554	610.740	1081.689	0.138
Dead+Wind 270 deg+Ice+Temp	80.515	-13.251	-0.061	-18.320	1251.774	0.301
Dead+Wind 300 deg+Ice+Temp	80.515	-11.491	-6.655	-645.056	1084.901	0.410
Dead+Wind 330	80.515	-6.669	-11.477	-1103.271	627.213	0.396

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
deg+Ice+Temp						
Dead+Wind 0 deg - Service	46.720	-0.107	-16.619	-1569.666	10.971	0.058
Dead+Wind 30 deg - Service	46.720	8.256	-14.361	-1356.137	-777.762	0.190
Dead+Wind 60 deg - Service	46.720	14.371	-8.243	-778.277	-1354.316	0.157
Dead+Wind 90 deg - Service	46.720	16.616	0.091	8.495	-1566.094	0.192
Dead+Wind 120 deg - Service	46.720	14.417	8.363	788.556	-1359.235	0.121
Dead+Wind 150 deg - Service	46.720	8.368	14.413	1358.976	-789.845	0.033
Dead+Wind 180 deg - Service	46.720	0.088	16.622	1567.174	-10.216	-0.046
Dead+Wind 210 deg - Service	46.720	-8.234	14.377	1355.130	774.051	-0.150
Dead+Wind 240 deg - Service	46.720	-14.389	8.220	772.972	1355.065	-0.125
Dead+Wind 270 deg - Service	46.720	-16.635	-0.089	-11.094	1566.980	-0.097
Dead+Wind 300 deg - Service	46.720	-14.429	-8.368	-791.857	1359.357	-0.003
Dead+Wind 330 deg - Service	46.720	-8.381	-14.422	-1362.697	789.979	0.073

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-46.720	0.000	0.000	46.720	0.000	0.000%
2	-0.273	-46.720	-42.545	0.273	46.720	42.545	0.000%
3	21.135	-46.720	-36.764	-21.135	46.720	36.764	0.000%
4	36.789	-46.720	-21.101	-36.789	46.720	21.101	0.000%
5	42.537	-46.720	0.233	-42.537	46.720	-0.233	0.000%
6	36.906	-46.720	21.410	-36.906	46.720	-21.410	0.000%
7	21.422	-46.720	36.898	-21.422	46.720	-36.898	0.000%
8	0.226	-46.720	42.551	-0.226	46.720	-42.551	0.000%
9	-21.078	-46.720	36.805	21.078	46.720	-36.805	0.000%
10	-36.835	-46.720	21.042	36.835	46.720	-21.042	0.000%
11	-42.587	-46.720	-0.229	42.587	46.720	0.229	0.000%
12	-36.939	-46.720	-21.423	36.939	46.720	21.423	0.000%
13	-21.455	-46.720	-36.920	21.455	46.720	36.920	0.000%
14	0.000	-80.515	0.000	-0.000	80.515	0.000	0.000%
15	-0.072	-80.515	-13.229	0.072	80.515	13.229	0.000%
16	6.582	-80.515	-11.434	-6.582	80.515	11.435	0.000%
17	11.450	-80.515	-6.568	-11.450	80.515	6.568	0.000%
18	13.238	-80.515	0.063	-13.238	80.515	-0.063	0.000%
19	11.484	-80.515	6.652	-11.484	80.515	-6.653	0.000%
20	6.661	-80.515	11.472	-6.661	80.515	-11.472	0.000%
21	0.061	-80.515	13.231	-0.061	80.515	-13.231	0.000%
22	-6.568	-80.515	11.445	6.568	80.515	-11.445	0.000%
23	-11.462	-80.515	6.553	11.462	80.515	-6.554	0.000%
24	-13.250	-80.515	-0.061	13.251	80.515	0.061	0.000%
25	-11.491	-80.515	-6.655	11.491	80.515	6.655	0.000%
26	-6.669	-80.515	-11.477	6.669	80.515	11.477	0.000%
27	-0.107	-46.720	-16.619	0.107	46.720	16.619	0.000%
28	8.256	-46.720	-14.361	-8.256	46.720	14.361	0.000%
29	14.371	-46.720	-8.243	-14.371	46.720	8.243	0.000%
30	16.616	-46.720	0.091	-16.616	46.720	-0.091	0.000%
31	14.417	-46.720	8.363	-14.417	46.720	-8.363	0.000%
32	8.368	-46.720	14.413	-8.368	46.720	-14.413	0.000%
33	0.088	-46.720	16.622	-0.088	46.720	-16.622	0.000%
34	-8.234	-46.720	14.377	8.234	46.720	-14.377	0.000%
35	-14.389	-46.720	8.220	14.389	46.720	-8.220	0.000%
36	-16.635	-46.720	-0.089	16.635	46.720	0.089	0.000%
37	-14.429	-46.720	-8.368	14.429	46.720	8.368	0.000%
38	-8.381	-46.720	-14.422	8.381	46.720	14.422	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00005447
3	Yes	5	0.00000001	0.00003289
4	Yes	5	0.00000001	0.00003296
5	Yes	4	0.00000001	0.00004493
6	Yes	5	0.00000001	0.00003378
7	Yes	5	0.00000001	0.00003321
8	Yes	4	0.00000001	0.00002804
9	Yes	5	0.00000001	0.00003307
10	Yes	5	0.00000001	0.00003268
11	Yes	4	0.00000001	0.00003468
12	Yes	5	0.00000001	0.00003347
13	Yes	5	0.00000001	0.00003385
14	Yes	4	0.00000001	0.00000933
15	Yes	4	0.00000001	0.00077415
16	Yes	4	0.00000001	0.00086364
17	Yes	4	0.00000001	0.00086320
18	Yes	4	0.00000001	0.00076843
19	Yes	4	0.00000001	0.00085575
20	Yes	4	0.00000001	0.00085523
21	Yes	4	0.00000001	0.00075933
22	Yes	4	0.00000001	0.00084235
23	Yes	4	0.00000001	0.00084128
24	Yes	4	0.00000001	0.00076280
25	Yes	4	0.00000001	0.00086399
26	Yes	4	0.00000001	0.00086544
27	Yes	4	0.00000001	0.00001658
28	Yes	4	0.00000001	0.00012342
29	Yes	4	0.00000001	0.00012429
30	Yes	4	0.00000001	0.00001581
31	Yes	4	0.00000001	0.00012865
32	Yes	4	0.00000001	0.00012409
33	Yes	4	0.00000001	0.00001539
34	Yes	4	0.00000001	0.00012488
35	Yes	4	0.00000001	0.00012223
36	Yes	4	0.00000001	0.00001515
37	Yes	4	0.00000001	0.00012624
38	Yes	4	0.00000001	0.00012874

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	22.111	38	1.315	0.001
L2	92.5 - 38	9.992	38	1.024	0.000
L3	45 - 0	2.334	38	0.468	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142'	BXA-80063-4BF-EDIN-X w/ Mount Pipe	38	22.111	1.315	0.001	51312
126'	ERICSSON AIR 21 B2A B4P w/	38	18.314	1.249	0.001	18325

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Mount Pipe					
115'	(2) 7770.00 w/ Mount Pipe	38	15.415	1.190	0.001	10262
108'	VHLP2.5-11	38	13.639	1.146	0.000	8017
103'	PCS 1900MHz 4x45W-65MHz	38	12.415	1.111	0.000	6933
102'	LLPX310R-V1 w/ Mount Pipe	38	12.175	1.104	0.000	6750
94'	742 213	38	10.324	1.038	0.000	5599
74'	BCD-87010	38	6.320	0.825	0.000	4772

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	56.508	13	3.361	0.003
L2	92.5 - 38	25.548	13	2.618	0.001
L3	45 - 0	5.970	13	1.198	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142'	BXA-80063-4BF-EDIN-X w/ Mount Pipe	13	56.508	3.361	0.003	20198
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	46.810	3.193	0.002	7213
115'	(2) 7770.00 w/ Mount Pipe	13	39.403	3.043	0.001	4038
108'	VHLP2.5-11	13	34.867	2.931	0.001	3153
103'	PCS 1900MHz 4x45W-65MHz	13	31.740	2.841	0.001	2727
102'	LLPX310R-V1 w/ Mount Pipe	13	31.127	2.822	0.001	2655
94'	742 213	13	26.398	2.653	0.001	2201
74'	BCD-87010	13	16.162	2.109	0.001	1872

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.313	53'2"	0'	0.0	39.000	37.759	-17.368	1472.590	0.012
L2	86.8333 - 38 (2)	TP50.56x37.212x0.406	54'6"	0'	0.0	39.000	63.365	-29.533	2471.220	0.012
L3	38 - 0 (3)	TP59.05x48.033x0.5	45'	0'	0.0	39.000	94.266	-46.700	3676.350	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.313	750.014	25.994	39.000	0.667	0.000	0.000	39.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.212x0.406	2261.708	36.186	39.000	0.928	0.000	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	4029.158	35.855	39.000	0.919	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.313	27.890	0.739	26.000	0.058	0.428	0.007	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.212x0.406	35.768	0.564	26.000	0.044	0.322	0.002	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	42.724	0.453	26.000	0.035	0.192	0.001	26.000	0.000

Pole Interaction Design Data

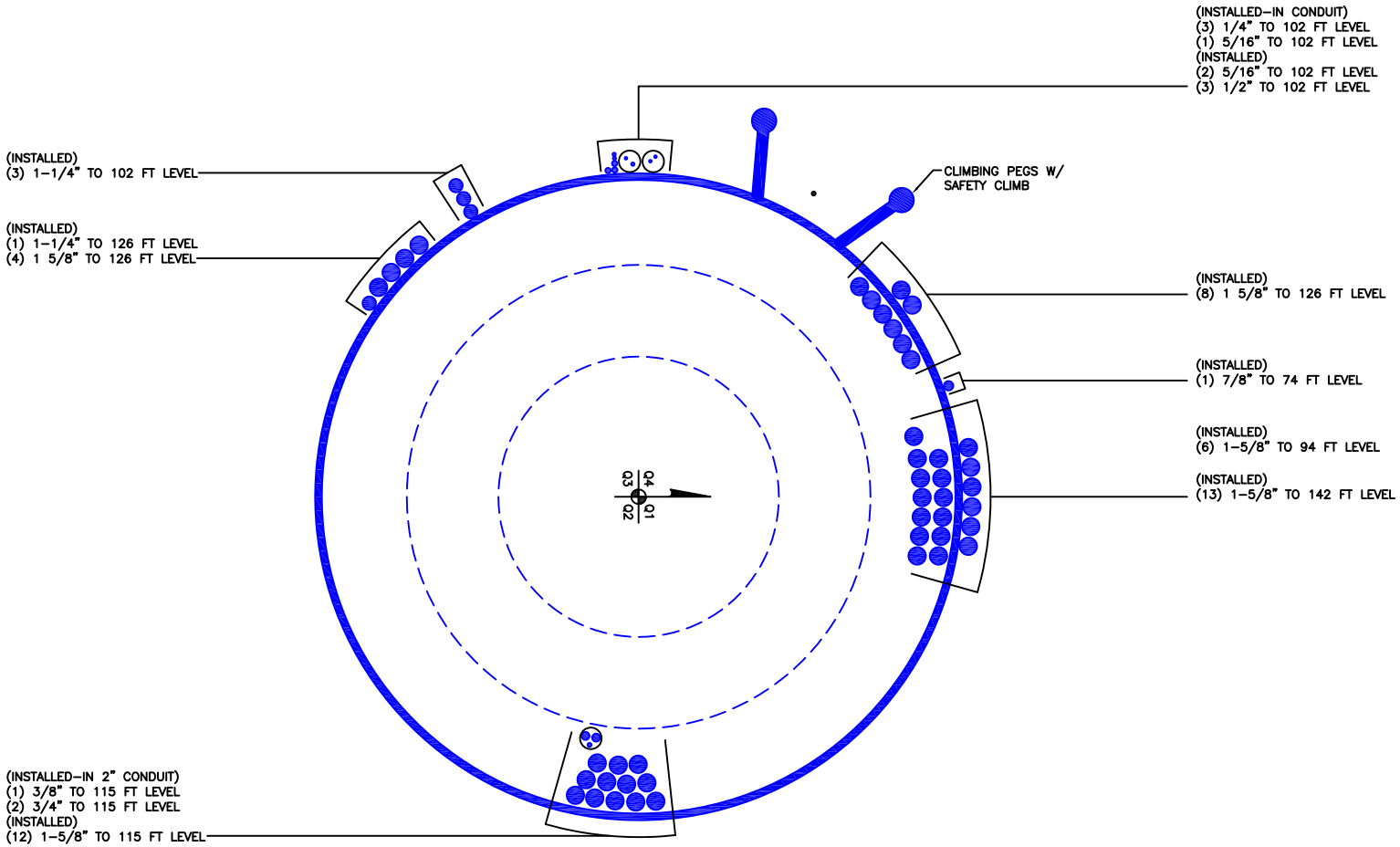
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 86.8333 (1)	0.012	0.667	0.000	0.058	0.000	0.679 ✔	1.333	H1-3+VT ✔
L2	86.8333 - 38 (2)	0.012	0.928	0.000	0.044	0.000	0.940 ✔	1.333	H1-3+VT ✔
L3	38 - 0 (3)	0.013	0.919	0.000	0.035	0.000	0.932 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.313	1	-17.368	1962.962	50.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.212x0.406	2	-29.533	3294.136	70.5	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-46.700	4900.574	69.9	Pass
							Summary	
						Pole (L2)	70.5	Pass
						RATING =	**70.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806369 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.2.108.14286 - Phase 1-2 Date: 9/21/2015

BU:	806369
Site Name:	HRT 094 943225
App Number:	309992 Rev#0
Work Order:	1121759

Monopole Drilled Pier

Input

Criteria

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

Forces

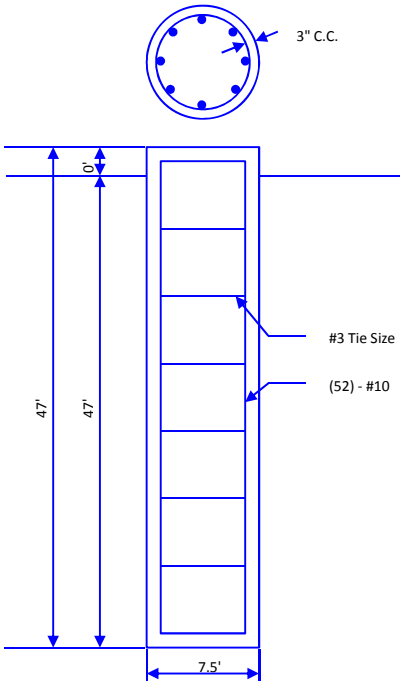
Compression	47	kips
Shear	43	kips
Moment	4029	k-ft
Swelling Force	0	kips

Foundation Dimensions

Pier Diameter:	7.5	ft
Ext. above grade:	0	ft
Depth below grade:	47	ft

Material Properties

Number of Rebar:	52	
Rebar Size:	10	
Tie Size	3	
Rebar tensile strength:	60	ksi
Concrete Strength:	3000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	3	in



Soil Profile: 806369

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	2	0	2	105	0	0	0	0	0	
2	3	2	5	100	0	0	0	0	0	
3	5	5	10	100	500	30	0.6	0.6	0	
4	15	10	25	36	100	27	0.4	0.4	0	
5	10	25	35	36	10	27	0.6	0.6	0	
6	10	35	45	41	200	0	0.6	0.6	0	
7	2	45	47	41	0	32	1	1	9	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	8.35	ft
Max Moment, Mu:	4335.06	k-ft
Soil Safety Factor:	5.89	
Safety Factor Req'd:	2	
RATING:	34.0%	

Soil Axial Capacity

Skin Friction (k):	270.96	kips
End Bearing (k):	198.80	kips
Comp. Capacity (k), ϕCn:	469.77	kips
Comp. (k), Cu:	61.10	kips
RATING:	13.0%	

Concrete/Steel Check

Mu (from soil analysis)	5635.58	k-ft
ϕMn	10671.87	k-ft
RATING:	52.8%	

rho provided	1.04	
rho required	0.33	OK

Rebar Spacing	3.68	
Spacing required	20.32	OK

Dev. Length required	38.40	
Dev. Length provided	55.65	OK

Overall Foundation Rating: 52.8%

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

TIA Rev F

Site Data

BU#: *806396*
Site Name: *HRT 094 943225*
App #: *309992 Rev#0*

Pole Manufacturer:	*Other*

Reactions		
Moment:	4029	ft-kips
Axial:	47	kips
Shear:	43	kips

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

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65.05	in

Anchor Rod Results

Maximum Rod Tension:	146.3 Kips	
Allowable Tension:	195.0 Kips	
Anchor Rod Stress Ratio:	75.1% **Pass**	

Rigid
Service, ASD
Fty*ASIF

Plate Data		
Diam:	71.05	in
Thick:	3	in
Grade:	60	ksi
Single-Rod B-eff:	9.49	in

Base Plate Results Flexural Check

Base Plate Stress:	21.0 ksi	
Allowable Plate Stress:	60.0 ksi	
Base Plate Stress Ratio:	34.9% **Pass**	

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length: 27.29

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

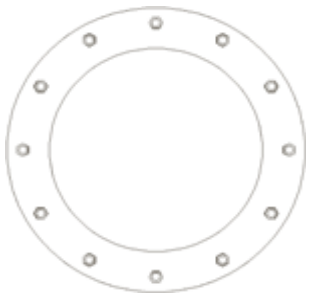
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a

Pole Data		
Diam:	59.05	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

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: CT11161D

CT161/ Jn of Albany_1
439 Homestead Avenue
Hartford, CT 06112

September 23, 2015

EBI Project Number: 6215004873

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.42 %

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

EBI Consulting
environmental | engineering | due diligence

September 23, 2015

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

Emissions Analysis for Site: **CT11161D – CT161/ Jn of Albany_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **439 Homestead Avenue, Hartford, 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 **439 Homestead Avenue, Hartford, 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 **128 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):	128	Height (AGL):	128	Height (AGL):	128
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.13	Antenna B1 MPE%	1.13	Antenna C1 MPE%	1.13
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):	128	Height (AGL):	128	Height (AGL):	128
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	1.13	Antenna B2 MPE%	1.13	Antenna C2 MPE%	1.13
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):	128	Height (AGL):	128	Height (AGL):	128
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.45	Antenna B3 MPE%	0.45	Antenna C3 MPE%	0.45

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**2.70 %**
Sprint	0.94 %
Clearwire	0.17 %
Sensus (CL&P)	0.21 %
MetroPCS	1.38 %
Verizon Wireless	2.63 %
AT&T	2.39 %
Site Total MPE %:	**10.42 %**

T-Mobile Sector 1 Total:	2.70 %
T-Mobile Sector 2 Total:	2.70 %
T-Mobile Sector 3 Total:	2.70 %
Site Total:	10.42 %

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**	**128**	**11.28**	**2100**	**1000**	**1.13 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**128**	**2.09**	**700**	**467**	**0.45 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**1167.14**	**128**	**5.64**	**1900**	**1000**	**0.56 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**128**	**5.64**	**2100**	**1000**	**0.56 %**
						Total:	**2.70%**

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	2.70 %
Sector 2:	2.70 %
Sector 3 :	2.70 %
T-Mobile Per Sector Maximum:	2.70 %
Site Total:	10.42 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.42%** 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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