Crown Castle
3530 Toringdon Way Suite 300
Charlotte NC 28277

Tel (704) 405-6600

April 7, 2015

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

RE: **T-Mobile-Exempt Modification - Crown Site BU: 876339**
T-Mobile Site ID: CT11032D
Located at: 782 Old Clinton Road, Westbrook, CT 06498

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 Mr. Noel Bishop, First Selectman for the Town of Westbrook and Catherine & Richard Wade, Property Owners.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **782 Old Clinton Road, Westbrook, CT 06498**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to T-Mobile's operations at the site (Exhibit-3).

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

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

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

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

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

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

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

Sincerely,

Jerry Feathers
Real Estate Specialist

Enclosure

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

cc: Mr. Noel Bishop, First Selectman
Town of Westbrook
866 Boston Post Road
Westbrook, CT 06498

cc: Catherine & Richard Wade
782 Old Clinton Road
Westbrook, CT 06498

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11032D
CROWN CASTLE BU #: 876339
SITE NAME: POND MEADOW RD. STABLE
782 OLD CLINTON ROAD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

VICINITY MAP

FROM PARSIPPANY, NJ:

DEPART SYLVAN WAY TOWARD CENTURY DR. TURN RIGHT ONTO US-202/LITTLETON RD. KEEP RIGHT ONTO LITTLETON RD. TAKE RAMP LEFT AND FOLLOW SIGNS FOR I-80 EAST. TAKE RAMP LEFT FOR I-95 NORTH TOWARD G WASHINGTON B/NEW YORK. KEEP LEFT TO STAY ON I-95 N. KEEP LEFT TO STAY ON I-95 N/NEW ENGLAND THROUGHWAY. SITE WILL BE ON THE RIGHT.

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

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

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

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

CONSULTANT TEAM

SITE NAME:
POND MEADOW RD. STABLE

SITE NUMBER:
CT11032D

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

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

COORDINATES:
LATITUDE: 41°-17'-25.7" N (NAD83)
LONGITUDE: 72°-28'-7.9" W (NAD83)
(PER CROWN CASTLE)

CONFIGURATION
702Cu

PROJECT SUMMARY

SITE ADDRESS:
782 OLD CLINTON ROAD
WESTBROOK, CT 06498
MIDDLESEX 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 NORTHEAST LLC
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

CT11032D
POND MEADOW RD.
STABLE

CONSTRUCTION DRAWINGS

0	04/02/15	ISSUED AS FINAL
A	03/31/15	ISSUED FOR REVIEW

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

CONNECTICUT REGISTRATION NO. 0023222

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

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50071489
SITE ADDRESS:	

782 OLD CLINTON RD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

GENERAL NOTES:

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

SITE WORK GENERAL NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

CONCRETE AND REINFORCING STEEL NOTES:

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

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

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

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

STRUCTURAL STEEL NOTES:

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

CONSTRUCTION NOTES:

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

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

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

CT11032D
POND MEADOW RD.
STABLE

CONSTRUCTION DRAWINGS

0	04/02/15	ISSUED AS FINAL
A	03/31/15	ISSUED FOR REVIEW

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Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
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STATE OF CONNECTICUT
JIANG YU
23222
LICENSED
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50071489
SITE ADDRESS:	

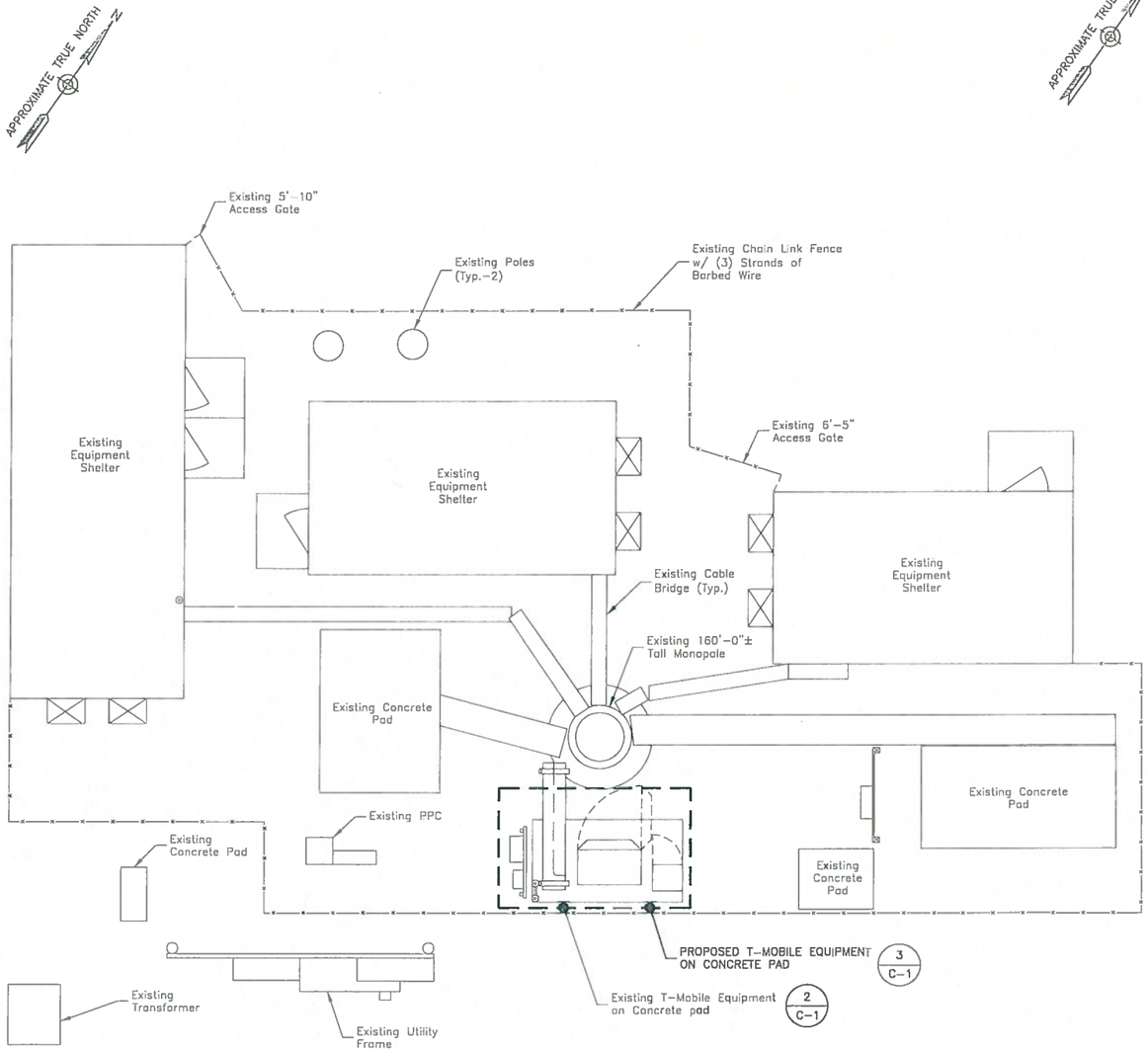
782 OLD CLINTON RD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

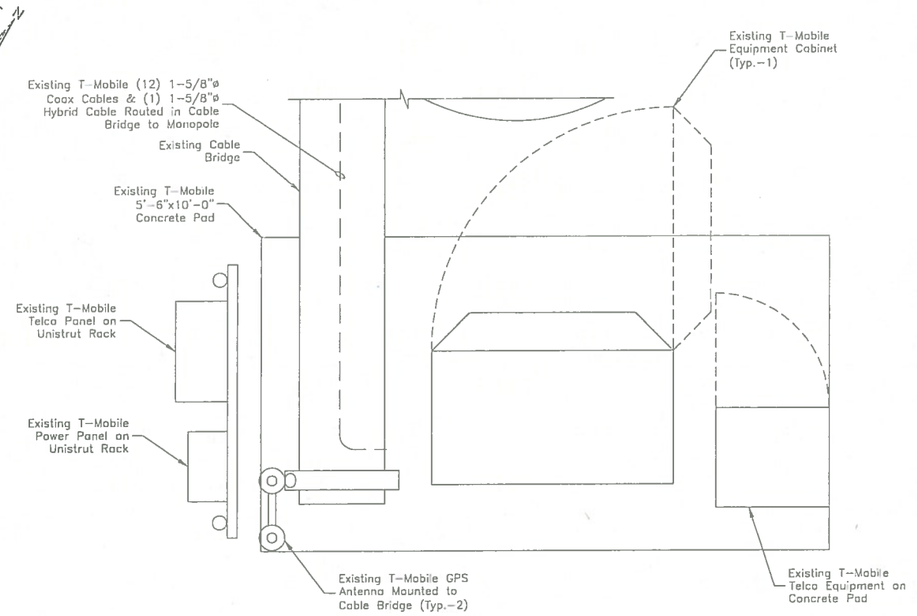
G–1



COMPOUND PLAN 1

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

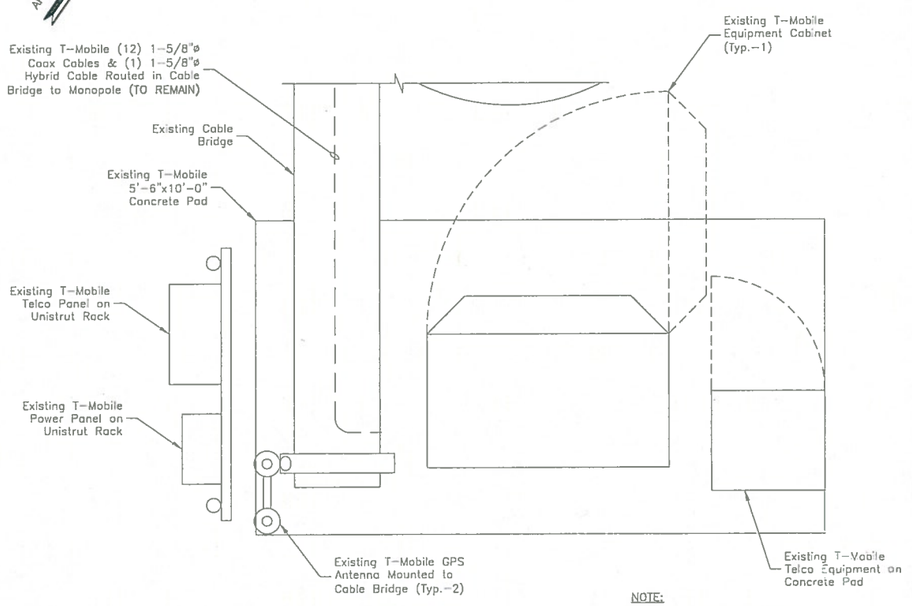
0' 5' 10'



EXISTING EQUIPMENT PLAN 2

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

0' 1' 2' 3'



NOTE:

1. NO EQUIPMENT IS PROPOSED AT GRADE.

PROPOSED EQUIPMENT PLAN 3

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

0' 1' 2' 3'

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY PAUL J FORD AND COMPANY DATED MARCH 12, 2015.

T-Mobile

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CROWN CASTLE

CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
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STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER
CONNECTICUT LICENSE NO. 0023222

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782 OLD CLINTON RD
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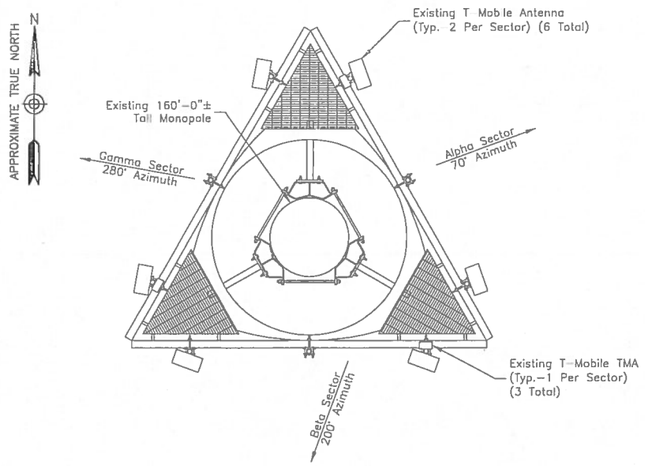
MIDDLESEX COUNTY

SHEET TITLE

COMPOUND PLAN & EQUIPMENT PLANS

SHEET NUMBER

C-1

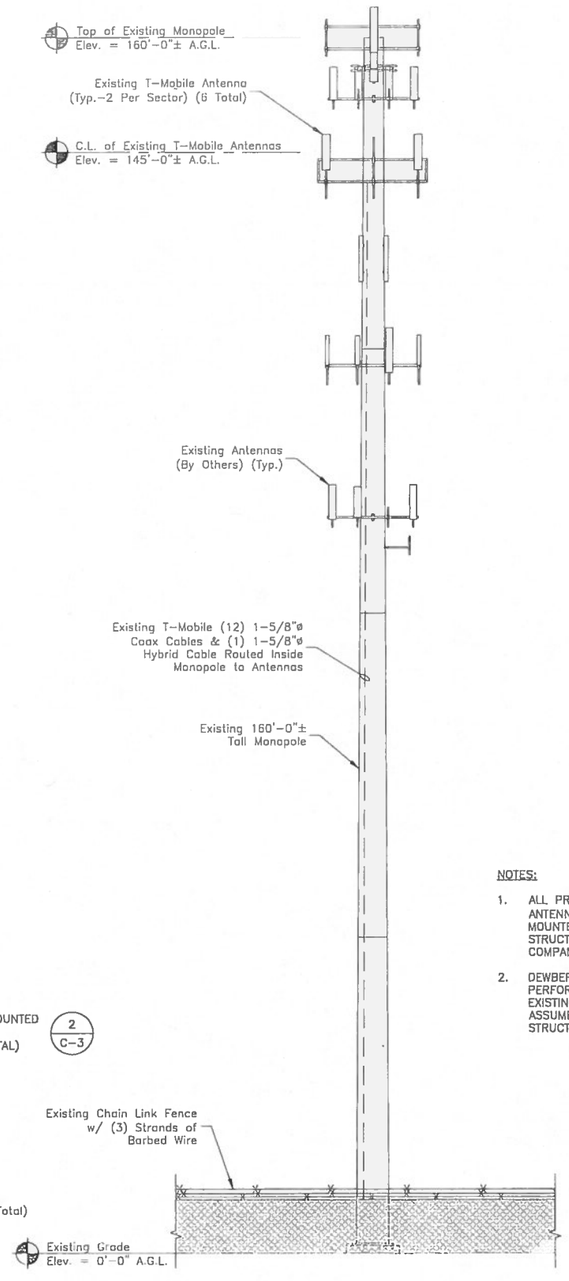


EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.

PROPOSED ANTENNA LAYOUT (2)

SCALE: N.T.S.



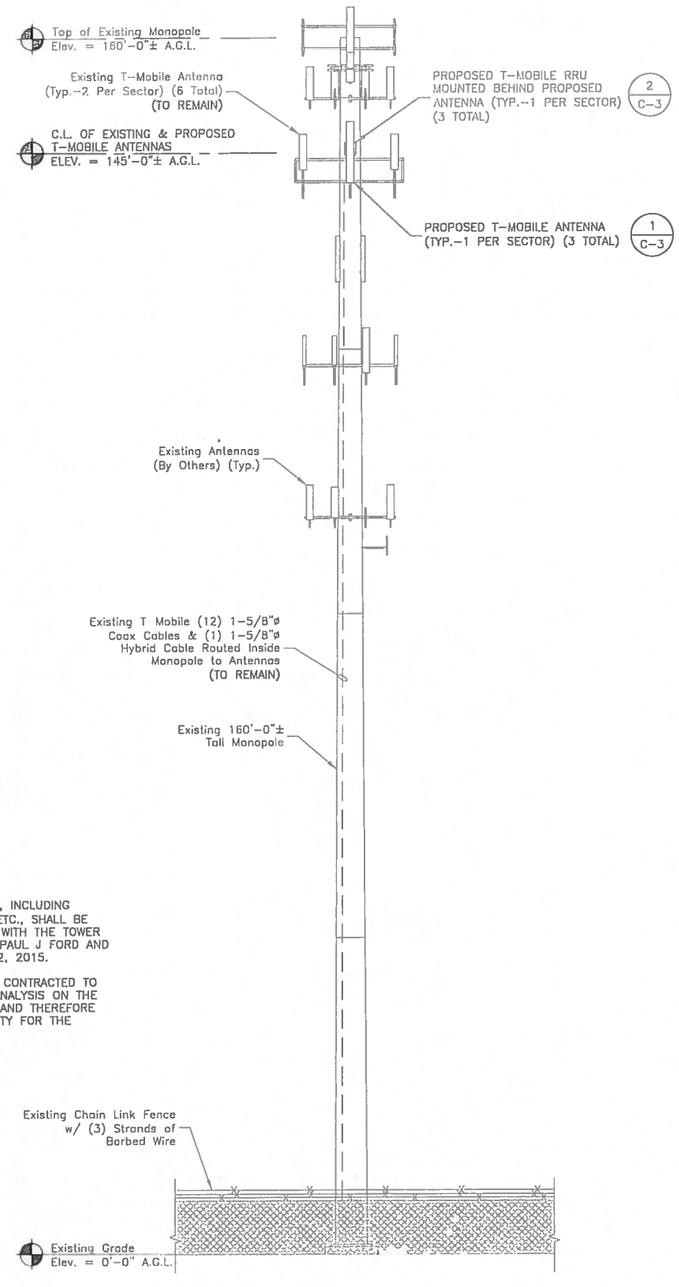
EXISTING ELEVATION (3)

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

0' 10' 20'

NOTES:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, RRU'S, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY PAUL J FORD AND COMPANY DATED MARCH 12, 2015.
2. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.



PROPOSED ELEVATION (4)

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

0' 10' 20'

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4 SYLVAN WAY
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500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801

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STATE OF CONNECTICUT
JIANG YU
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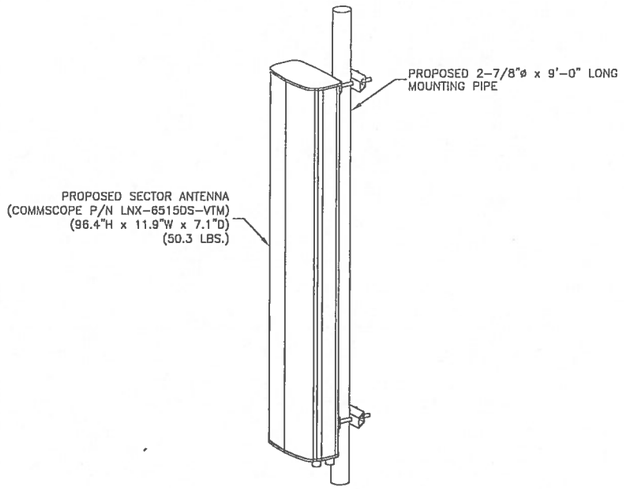
MIDDLESEX COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

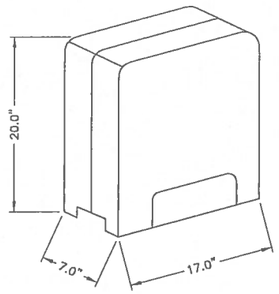
C-2



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:

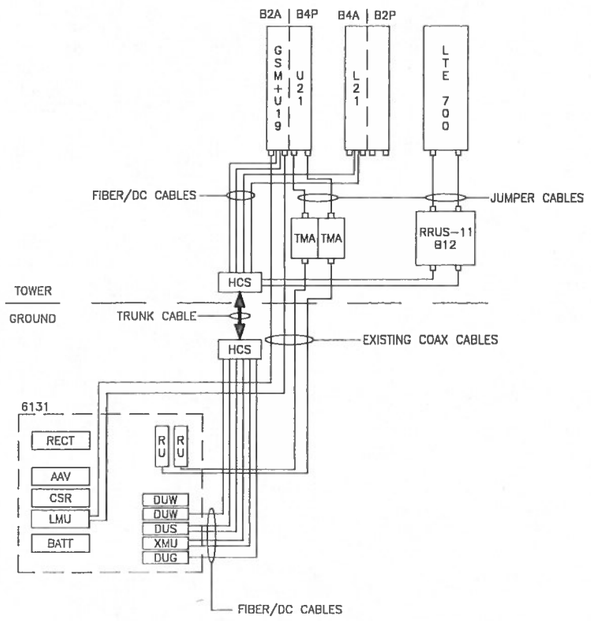
HEIGHT:	20.0"
WIDTH:	17.0"
DEPTH:	7.0"
WEIGHT:	50.7 LBS

ERICSSON RRUS-11 B12

RRU NOTES:

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

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



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

DESIGN CONFIGURATION

	ANTENNAS		COAX		COAX/HCS LENGTH	EXISTING HCS
	EXISTING	PROPOSED	EXISTING	PROPOSED		
ALPHA	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN	(4) 1-5/8"ø	–	195'-0"	(1) 1-5/8"ø @ 195'-0"
	–	COMMSCOPE LNX-6515DS-VTM				
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN				
BETA	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN	(4) 1-5/8"ø	–	195'-0"	
	–	COMMSCOPE LNX-6515DS-VTM				
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN				
GAMMA	ERICSSON AIR21 B2A B4P	EXISTING TO REMAIN	(4) 1-5/8"ø	–	195'-0"	
	–	COMMSCOPE LNX-6515DS-VTM				
	ERICSSON AIR21 B4A B2P	EXISTING TO REMAIN				

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782 OLD CLINTON RD
WESTBROOK, CT 06498
MIDDLESEX COUNTY

SHEET TITLE

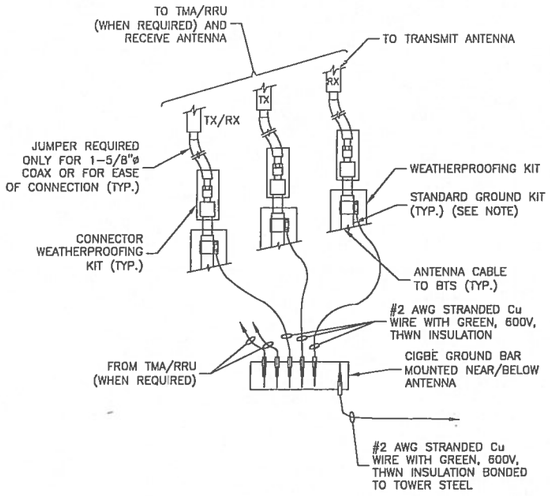
CONSTRUCTION DETAILS

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.

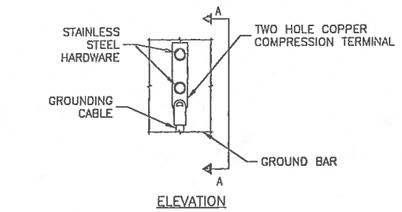


NOTE:

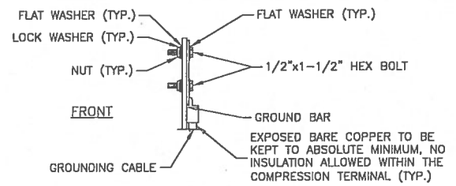
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) 1

SCALE: N.T.S.



ELEVATION



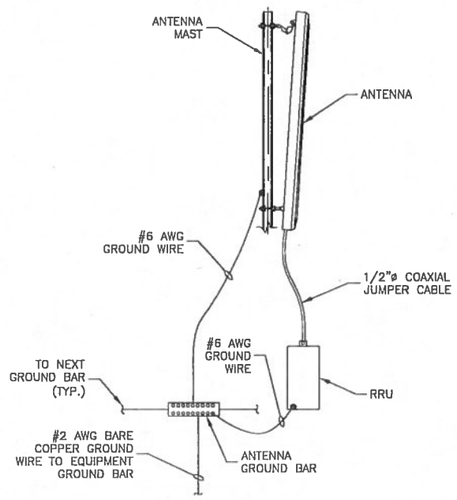
SECTION 'A-A'

NOTES:

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

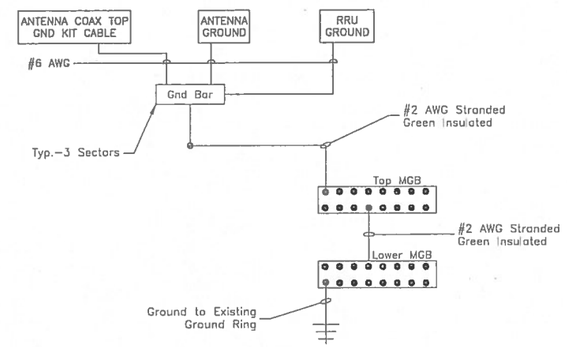
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL 2

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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MIDDLESEX COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

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

Date: **March 12, 2015**

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

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

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11032D
	Carrier Site Name:	Westbrook/ I-95/ X64/ Ch1
Crown Castle Designation:	**Crown Castle BU Number:**	876339
	Crown Castle Site Name:	POND MEADOW RD. STABLE
	Crown Castle JDE Job Number:	324169
	Crown Castle Work Order Number:	1024524
	Crown Castle Application Number:	284767 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37515-0772.002.7805
Site Data:	**782 Old Clinton Road, WESTBROOK, Middlesex County, CT** **Latitude *41° 17' 25.7"*, Longitude *-72° 28' 7.9"*** **160 Foot - Monopole Tower**	

Dear Mitchell Abbott,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 765317, in accordance with application 284767, 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:

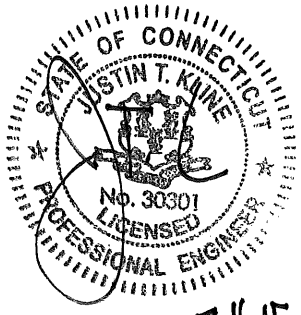
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

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 and the 2005 Connecticut Building Code using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Ryan Ferrante
Structural Designer



3.16.15

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

Date: **March 12, 2015**

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

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

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11032D
	Carrier Site Name:	Westbrook/ I-95/ X64/ Ch1
Crown Castle Designation:	**Crown Castle BU Number:**	876339
	Crown Castle Site Name:	POND MEADOW RD. STABLE
	Crown Castle JDE Job Number:	324169
	Crown Castle Work Order Number:	1024524
	Crown Castle Application Number:	284767 Rev. 0
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Dear Mitchell Abbott,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 765317, in accordance with application 284767, 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.

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 and the 2005 Connecticut Building Code using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Ryan Ferrante
Structural Designer

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1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by VALMONT in July of 1998. The tower was originally designed for a wind speed of 85 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 and the 2005 Connecticut Building Code using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
141.0	145.0	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
159.0	160.0	3	alcatel lucent	TD-RRH8x20-25	1	1-1/4	2
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	3	1-1/4	1
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	159.0	1	tower mounts	Platform Mount [LP 602-1]			
155.0	156.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
	155.0	1	tower mounts	Side Arm Mount [SO 102-3]			
	154.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
151.0	153.0	12	allgon	7130.16 w/ Mount Pipe	12	1-1/4	3
	151.0	1	tower mounts	T-Arm Mount [TA 602-3]			
141.0	145.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
	141.0	1	tower mounts	Platform Mount [LP 602-1]			
		-	-	-	1	1-5/8	3

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
130.0	130.0	3	rfs celwave	APXV18-206517S-ACU w/ Mount Pipe	6	1-5/8	3
		1	tower mounts	Pipe Mount [PM 601-3]			
116.0	118.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	2
		3	andrew	HBX-6517DS-VTM w/ Mount Pipe			
		3	andrew	LNX-6514DS-VTM w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		2	antel	BXA-171063-8BF-EDIN-2 w/ Mount Pipe	12	1-5/8	1
		3	antel	BXA-70063-6CF-EDIN-2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	swedcom	SPXW 8515 w/ Mount Pipe			
	116.0	1	tower mounts	Platform Mount [LP 303-1]			
96.0	103.0	1	gps	GPS_A	1 1 2 12	3/8 1/2 5/8 1-5/8	1
	98.0	6	ericsson	RRUS-11			
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
	96.0	1	tower mounts	T-Arm Mount [TA 602-3]			
92.0	93.0	1	lucent	KS24019-L112A	1	1/2	1
	92.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 10-12295E G1, 01/10/2011	1532966	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Semaan, 17818, 07/06/1998	1533020	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 17618-98, 07/14/1998	1531985	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 111347, 07/18/2011	2923975	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.876339, 08/23/2013	4023333	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 128324, 1/11/2013	3366474	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 31002-0028, 5/8/2002	3682464	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) Monopole was reinforced in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	160 - 117.33	Pole	TP30.46x22.35x0.2188	1	-6.41	1015.10	65.5	Pass
L2	117.33 - 94	Pole	TP34.4549x29.1348x0.281	2	-13.58	1599.24	89.1	Pass
L3	94 - 82.5	Pole	TP36.64x34.4549x0.3817	3	-14.81	1970.09	81.9	Pass
L4	82.5 - 72.75	Pole	TP37.9427x34.8315x0.375	4	-18.64	2358.28	88.4	Pass
L5	72.75 - 56	Pole	TP41.1385x37.9427x0.4482	5	-22.77	2976.35	85.9	Pass
L6	56 - 40.583	Pole	TP44.08x41.1385x0.6042	6	-25.70	3331.82	84.6	Pass
L7	40.583 - 31.5	Pole	TP45.0389x41.6473x0.6915	7	-33.28	3781.35	87.1	Pass
L8	31.5 - 28.75	Pole	TP45.5593x45.0389x0.7353	8	-34.41	4065.20	82.9	Pass
L9	28.75 - 11	Pole	TP48.9184x45.5593x0.6172	9	-41.03	4203.64	90.3	Pass
L10	11 - 8.5	Pole	TP49.3915x48.9184x0.698	10	-42.09	4789.58	80.8	Pass
L11	8.5 - 0	Pole	TP51x49.3915x0.5706	11	-45.25	4350.69	93.2	Pass
							Summary	
						Pole (L11)	93.2	Pass
						Rating =	93.2	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1, 2	Anchor Rods	0	70.8	Pass
1	Base Plate	0	46.6	Pass
1	Base Foundation Structural Steel	0	66.1	Pass
1	Base Foundation Soil Interaction	0	51.0	Pass

Structure Rating (max from all components) =	**93.2%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Worst case scenario between existing and post installed anchors.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Middlesex County, Connecticut.
2) Basic wind speed of 85 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56.00 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	160.0000-117.3300	42.6700	4.67	12	22.3500	30.4600	0.2188	0.8752	A572-65 (65 ksi)
L2	117.3300-94.0000	28.0000	0.00	12	29.1348	34.4549	0.2810	1.1240	A572-65 (65 ksi)
L3	94.0000-82.5000	11.5000	5.50	12	34.4549	36.6400	0.3817	1.5269	Reinf 56.91 ksi (57 ksi)
L4	82.5000-72.7500	15.2500	0.00	12	34.8315	37.9427	0.3750	1.5000	A572-65 (65 ksi)
L5	72.7500-56.0000	16.7500	0.00	12	37.9427	41.1385	0.4482	1.7928	Reinf 63.37 ksi (63 ksi)
L6	56.0000-40.5830	15.4170	6.42	12	41.1385	44.0800	0.6042	2.4167	Reinf 50.68 ksi (51 ksi)
L7	40.5830-31.5000	15.5000	0.00	12	41.6473	45.0389	0.6915	2.7660	Reinf 47.88 ksi (48 ksi)
L8	31.5000-28.7500	2.7500	0.00	12	45.0389	45.5593	0.7353	2.9414	Reinf 47.89 ksi (48 ksi)
L9	28.7500-11.0000	17.7500	0.00	12	45.5593	48.9184	0.6172	2.4689	Reinf 54.75 ksi (55 ksi)
L10	11.0000-8.5000	2.5000	0.00	12	48.9184	49.3915	0.6980	2.7919	Reinf 54.72 ksi (55 ksi)
L11	8.5000-0.0000	8.5000		12	49.3915	51.0000	0.5706	2.2824	Reinf 58.71 ksi (59 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	23.1384	15.5922	974.7742	7.9230	11.5773	84.1970	1975.1568	7.6740	5.4034	24.696
	31.5345	21.3060	2487.0596	10.8263	15.7783	157.6255	5039.4571	10.4862	7.5769	34.629
L2	31.0812	26.1075	2774.3255	10.3297	15.0918	183.8296	5621.5357	12.8493	7.0550	25.107
	35.6704	30.9213	4609.2822	12.2343	17.8477	258.2570	9339.6554	15.2185	8.4808	30.181
L3	35.6704	41.8818	6206.3643	12.1982	17.8477	347.7411	12575.7767	20.6129	8.2109	21.51
	37.9325	44.5676	7478.5836	12.9805	18.9795	394.0344	15153.6378	21.9348	8.7965	23.044
L4	37.2219	41.6062	6305.0275	12.3354	18.0427	349.4499	12775.6952	20.4773	8.3298	22.213
	39.2811	45.3629	8171.7520	13.4492	19.6543	415.7744	16558.1850	22.3263	9.1636	24.436
L5	39.2811	54.1121	9709.8973	13.4230	19.6543	494.0344	19674.8844	26.6323	8.9675	20.008
	42.5897	58.7244	12410.4071	14.5671	21.3097	582.3820	25146.8495	28.9024	9.8239	21.919
L6	42.5897	78.8579	16537.7537	14.5113	21.3097	776.0656	33509.9727	38.8114	9.4059	15.568
	45.6350	84.5805	20405.7007	15.5643	22.8334	893.6761	41347.4819	41.6279	10.1942	16.873

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
L7	44.5701	91.1921	19524.2452	14.6622	21.5733	905.0189	39561.4140	44.8820	9.3083	13.461
	46.6277	98.7439	24787.5378	15.8764	23.3302	1062.4673	50226.2719	48.5988	10.2172	14.776
L8	46.6277	104.9018	26281.2956	15.8607	23.3302	1126.4942	53253.0300	51.6295	10.0997	13.735
	47.1665	106.1340	27218.3529	16.0470	23.5997	1153.3328	55151.7623	52.2359	10.2392	13.924
L9	47.1665	89.3216	23027.6290	16.0893	23.5997	975.7578	46660.2194	43.9614	10.5557	17.102
	50.6440	95.9976	28586.4826	17.2918	25.3397	1128.1298	57923.9640	47.2471	11.4559	18.56
L10	50.6440	108.3751	32164.4912	17.2629	25.3397	1269.3314	65173.9794	53.3389	11.2395	16.103
	51.1338	109.4384	33120.5272	17.4323	25.5848	1294.5404	67111.1675	53.8622	11.3663	16.285
L11	51.1338	89.6986	27288.6795	17.4779	25.5848	1066.5983	55294.2631	44.1469	11.7077	20.519
	52.7991	92.6539	30075.8312	18.0537	26.4180	1138.4598	60941.7881	45.6015	12.1388	21.274

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
HB114-21U3M12-XXXF(1-1/4")	C	No	Inside Pole	159.0000 - 0.0000	1	No Ice	0.0000	1.22
						1/2" Ice	0.0000	1.22
						1" Ice	0.0000	1.22
						2" Ice	0.0000	1.22
						4" Ice	0.0000	1.22
HB114-1-08U4-M5J(1 1/4")	C	No	Inside Pole	159.0000 - 0.0000	3	No Ice	0.0000	1.08
						1/2" Ice	0.0000	1.08
						1" Ice	0.0000	1.08
						2" Ice	0.0000	1.08
						4" Ice	0.0000	1.08
***								
***								
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	141.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07
AL7-50(1 5/8)	C	No	Inside Pole	141.0000 - 0.0000	6	No Ice	0.0000	0.52
						1/2" Ice	0.0000	0.52
						1" Ice	0.0000	0.52
						2" Ice	0.0000	0.52
						4" Ice	0.0000	0.52
LDF7-50A(1-5/8")	C	No	Inside Pole	141.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
***								
***								
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	116.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
						2" Ice	0.0000	1.30
						4" Ice	0.0000	1.30
LDF7-50A(1-5/8")	C	No	Inside Pole	116.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
***								
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	96.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.84
						1" Ice	0.0000	2.14
						2" Ice	0.0000	6.58
						4" Ice	0.0000	22.78
FB-L98-002-XXX(3/8)	C	No	CaAa (Out Of Face)	96.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.61
						1" Ice	0.0000	1.77
						2" Ice	0.0000	5.91
						4" Ice	0.0000	21.54
WR-VG82ST-BRDA(	C	No	CaAa (Out Of	96.0000 - 0.0000	2	No Ice	0.0000	0.31

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
5/8")			Face)			1/2" Ice	0.0000	1.01
						1" Ice	0.0000	2.32
						2" Ice	0.0000	6.77
						4" Ice	0.0000	23.01
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	96.0000 - 0.0000	2	No Ice	0.1980	0.82
						1/2" Ice	0.2980	2.33
						1" Ice	0.3980	4.46
						2" Ice	0.5980	10.54
						4" Ice	0.9980	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	96.0000 - 0.0000	10	No Ice	0.0000	0.82
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.46
						2" Ice	0.0000	10.54
						4" Ice	0.0000	30.04
***								
LDF4-50A(1/2")	C	No	Inside Pole	92.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
***								
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	58.2500 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
						2" Ice	0.6528	0.00
						4" Ice	1.0972	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	74.0000 - 44.0000	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
						2" Ice	0.5694	0.00
						4" Ice	1.0139	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	13.0000 - 0.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	42.2500 - 27.2500	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	96.0000 - 86.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.0000-117.3300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.40
L2	117.3300-94.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.125	0.58
L3	94.0000-82.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.887	0.41
L4	82.5000-72.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.017	0.35
L5	72.7500-56.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.196	0.60

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
L6	56.0000-40.5830	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.095	0.55
L7	40.5830-31.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	7.003	0.32
L8	31.5000-28.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.120	0.10
L9	28.7500-11.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.310	0.63
L10	11.0000-8.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.927	0.09
L11	8.5000-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.553	0.30

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.0000-117.3300	A	0.890	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.40
L2	117.3300-94.0000	A	0.862	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.233	0.67
L3	94.0000-82.5000	A	0.844	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.270	0.89
L4	82.5000-72.7500	A	0.831	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.543	0.75
L5	72.7500-56.0000	A	0.812	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	18.069	1.26
L6	56.0000-40.5830	A	0.785	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	21.008	1.14
L7	40.5830-31.5000	A	0.758	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.023	0.67
L8	31.5000-28.7500	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.862	0.20
L9	28.7500-11.0000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	20.177	1.27
L10	11.0000-8.5000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.511	0.18
L11	8.5000-0.0000	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.937	0.61

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.0000-117.3300	0.0000	0.0000	0.0000	0.0000
L2	117.3300-94.0000	-0.0654	0.0378	-0.1212	0.0700
L3	94.0000-82.5000	-0.5658	0.3267	-0.9214	0.5320

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L4	82.5000-72.7500	-0.4725	0.2728	-0.7758	0.4479
L5	72.7500-56.0000	-0.6124	0.3536	-1.0258	0.5922
L6	56.0000-40.5830	-0.7771	0.4487	-1.2455	0.7191
L7	40.5830-31.5000	-0.8277	0.4779	-1.3059	0.7540
L8	31.5000-28.7500	-0.8317	0.4802	-1.2983	0.7496
L9	28.7500-11.0000	-0.7126	0.4114	-1.1185	0.6458
L10	11.0000-8.5000	-0.8429	0.4867	-1.3283	0.7669
L11	8.5000-0.0000	-0.8457	0.4883	-1.3359	0.7713

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
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.9458 8.1266 9.0212 10.8440 14.8507	0.08 0.15 0.23 0.41 0.91
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	7.4708 8.6564 9.5559 11.3884 15.5274	0.09 0.16 0.24 0.42 0.94
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.4975 9.1490 9.7672 11.0311 13.6786	6.9458 8.1266 9.0212 10.8440 14.8507	0.08 0.15 0.23 0.41 0.91
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.1342 7.6618 8.1830 9.2563 11.5262	4.9591 5.7544 6.4723 8.0099 11.4120	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.1342 7.6618 8.1830 9.2563 11.5262	4.9591 5.7544 6.4723 8.0099 11.4120	0.08 0.13 0.19 0.34 0.75
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.1342 7.6618 8.1830 9.2563 11.5262	4.9591 5.7544 6.4723 8.0099 11.4120	0.08 0.13 0.19 0.34 0.75
TD-RRH8x20-25	A	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.7198 5.0138 5.3165 5.9478 7.3141	1.7027 1.9196 2.1453 2.6224 3.6805	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	B	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.7198 5.0138 5.3165 5.9478 7.3141	1.7027 1.9196 2.1453 2.6224 3.6805	0.07 0.10 0.13 0.20 0.40
TD-RRH8x20-25	C	From Leg	4.0000 0.00 1.00	0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.7198 5.0138 5.3165 5.9478 7.3141	1.7027 1.9196 2.1453 2.6224 3.6805	0.07 0.10 0.13 0.20 0.40
Platform Mount [LP 602-1]	C	None		0.00	159.0000	No Ice 1/2" Ice 1" Ice 2" Ice	32.0300 38.7100 45.3900 58.7500	32.0300 38.7100 45.3900 58.7500	1.34 1.80 2.26 3.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	85.4700	85.4700	5.00
5'x2 1/2" Pipe Mount	A	From Leg	4.0000	0.00	159.0000	No Ice	1.3275	1.3275	0.03
			0.00			1/2" Ice	1.6321	1.6321	0.04
			0.00			1" Ice	1.9459	1.9459	0.05
						2" Ice	2.6012	2.6012	0.09
						4" Ice	4.1083	4.1083	0.22
5'x2 1/2" Pipe Mount	B	From Leg	4.0000	0.00	159.0000	No Ice	1.3275	1.3275	0.03
			0.00			1/2" Ice	1.6321	1.6321	0.04
			0.00			1" Ice	1.9459	1.9459	0.05
						2" Ice	2.6012	2.6012	0.09
						4" Ice	4.1083	4.1083	0.22
5'x2 1/2" Pipe Mount	C	From Leg	4.0000	0.00	159.0000	No Ice	1.3275	1.3275	0.03
			0.00			1/2" Ice	1.6321	1.6321	0.04
			0.00			1" Ice	1.9459	1.9459	0.05
						2" Ice	2.6012	2.6012	0.09
						4" Ice	4.1083	4.1083	0.22
****									
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.0000	0.00	155.0000	No Ice	2.7087	2.6111	0.06
			0.00			1/2" Ice	2.9477	2.8475	0.08
			1.00			1" Ice	3.1953	3.0925	0.11
						2" Ice	3.7164	3.6084	0.17
						4" Ice	4.8623	4.7439	0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.0000	0.00	155.0000	No Ice	2.7087	2.6111	0.06
			0.00			1/2" Ice	2.9477	2.8475	0.08
			1.00			1" Ice	3.1953	3.0925	0.11
						2" Ice	3.7164	3.6084	0.17
						4" Ice	4.8623	4.7439	0.35
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.0000	0.00	155.0000	No Ice	2.7087	2.6111	0.06
			0.00			1/2" Ice	2.9477	2.8475	0.08
			1.00			1" Ice	3.1953	3.0925	0.11
						2" Ice	3.7164	3.6084	0.17
						4" Ice	4.8623	4.7439	0.35
800MHz 2X50W RRH W/FILTER	A	From Leg	2.0000	0.00	155.0000	No Ice	2.4014	2.2536	0.06
			0.00			1/2" Ice	2.6131	2.4602	0.09
			-1.00			1" Ice	2.8335	2.6753	0.11
						2" Ice	3.3002	3.1316	0.17
						4" Ice	4.3372	4.1479	0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	2.0000	0.00	155.0000	No Ice	2.4014	2.2536	0.06
			0.00			1/2" Ice	2.6131	2.4602	0.09
			-1.00			1" Ice	2.8335	2.6753	0.11
						2" Ice	3.3002	3.1316	0.17
						4" Ice	4.3372	4.1479	0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	2.0000	0.00	155.0000	No Ice	2.4014	2.2536	0.06
			0.00			1/2" Ice	2.6131	2.4602	0.09
			-1.00			1" Ice	2.8335	2.6753	0.11
						2" Ice	3.3002	3.1316	0.17
						4" Ice	4.3372	4.1479	0.34
Side Arm Mount [SO 102-3]	C	None		0.00	155.0000	No Ice	3.0000	3.0000	0.08
						1/2" Ice	3.4800	3.4800	0.11
						1" Ice	3.9600	3.9600	0.14
						2" Ice	4.9200	4.9200	0.20
						4" Ice	6.8400	6.8400	0.32
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ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000	0.00	141.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2" Ice	7.3471	6.4800	0.17
			4.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000	0.00	141.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2" Ice	7.3471	6.4800	0.17
			4.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B2A	C	From Leg	4.0000	0.00	141.0000	No Ice	6.8253	5.6424	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
B4P w/ Mount Pipe			0.00			1/2" Ice	7.3471	6.4800	0.17
			4.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000	0.00	141.0000	No Ice	6.8155	5.6334	0.11
			0.00			1/2" Ice	7.3373	6.4717	0.17
			4.00			1" Ice	7.8532	7.2478	0.23
						2" Ice	8.9160	8.8537	0.38
						4" Ice	11.1650	12.2804	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000	0.00	141.0000	No Ice	6.8155	5.6334	0.11
			0.00			1/2" Ice	7.3373	6.4717	0.17
			4.00			1" Ice	7.8532	7.2478	0.23
						2" Ice	8.9160	8.8537	0.38
						4" Ice	11.1650	12.2804	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000	0.00	141.0000	No Ice	6.8155	5.6334	0.11
			0.00			1/2" Ice	7.3373	6.4717	0.17
			4.00			1" Ice	7.8532	7.2478	0.23
						2" Ice	8.9160	8.8537	0.38
						4" Ice	11.1650	12.2804	0.81
KRY 112 144/1	A	From Leg	4.0000	0.00	141.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2" Ice	0.4969	0.2733	0.01
			4.00			1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
KRY 112 144/1	B	From Leg	4.0000	0.00	141.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2" Ice	0.4969	0.2733	0.01
			4.00			1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
KRY 112 144/1	C	From Leg	4.0000	0.00	141.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2" Ice	0.4969	0.2733	0.01
			4.00			1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000	0.00	141.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2" Ice	12.4043	11.3657	0.17
			4.00			1" Ice	13.1351	12.9138	0.27
						2" Ice	14.6007	15.2672	0.51
						4" Ice	17.8748	20.1392	1.15
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000	0.00	141.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2" Ice	12.4043	11.3657	0.17
			4.00			1" Ice	13.1351	12.9138	0.27
						2" Ice	14.6007	15.2672	0.51
						4" Ice	17.8748	20.1392	1.15
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000	0.00	141.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2" Ice	12.4043	11.3657	0.17
			4.00			1" Ice	13.1351	12.9138	0.27
						2" Ice	14.6007	15.2672	0.51
						4" Ice	17.8748	20.1392	1.15
RRUS 11 B12	A	From Leg	4.0000	0.00	141.0000	No Ice	3.3056	1.3611	0.05
			0.00			1/2" Ice	3.5497	1.5404	0.07
			4.00			1" Ice	3.8025	1.7284	0.10
						2" Ice	4.3340	2.1302	0.15
						4" Ice	5.5006	3.0377	0.31
RRUS 11 B12	B	From Leg	4.0000	0.00	141.0000	No Ice	3.3056	1.3611	0.05
			0.00			1/2" Ice	3.5497	1.5404	0.07
			4.00			1" Ice	3.8025	1.7284	0.10
						2" Ice	4.3340	2.1302	0.15
						4" Ice	5.5006	3.0377	0.31
RRUS 11 B12	C	From Leg	4.0000	0.00	141.0000	No Ice	3.3056	1.3611	0.05
			0.00			1/2" Ice	3.5497	1.5404	0.07
			4.00			1" Ice	3.8025	1.7284	0.10
						2" Ice	4.3340	2.1302	0.15
						4" Ice	5.5006	3.0377	0.31
Platform Mount [LP 602-1]	C	None		0.00	141.0000	No Ice	32.0300	32.0300	1.34

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
						1/2" Ice	38.7100	38.7100	1.80
						1" Ice	45.3900	45.3900	2.26
						2" Ice	58.7500	58.7500	3.17
						4" Ice	85.4700	85.4700	5.00
****									
****									
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	7.9686	5.8008	0.04
						1/2" Ice	8.6091	6.9529	0.10
						1" Ice	9.2158	7.8191	0.17
						2" Ice	10.4591	9.6015	0.34
						4" Ice	13.0655	13.3662	0.80
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	7.9686	5.8008	0.04
						1/2" Ice	8.6091	6.9529	0.10
						1" Ice	9.2158	7.8191	0.17
						2" Ice	10.4591	9.6015	0.34
						4" Ice	13.0655	13.3662	0.80
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	7.9686	5.8008	0.04
						1/2" Ice	8.6091	6.9529	0.10
						1" Ice	9.2158	7.8191	0.17
						2" Ice	10.4591	9.6015	0.34
						4" Ice	13.0655	13.3662	0.80
SPXW 8515 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	3.4773	3.8615	0.03
						1/2" Ice	3.8873	4.4530	0.07
						1" Ice	4.3079	5.1050	0.11
						2" Ice	5.1808	6.4627	0.21
						4" Ice	7.0671	9.4603	0.52
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	3.1789	3.3530	0.03
						1/2" Ice	3.5550	3.9709	0.06
						1" Ice	3.9637	4.5951	0.10
						2" Ice	4.8533	5.8933	0.19
						4" Ice	6.7671	8.8855	0.49
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	3.1789	3.3530	0.03
						1/2" Ice	3.5550	3.9709	0.06
						1" Ice	3.9637	4.5951	0.10
						2" Ice	4.8533	5.8933	0.19
						4" Ice	6.7671	8.8855	0.49
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
LNX-6514DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	8.6346	7.0679	0.06
						1/2" Ice	9.2852	8.2532	0.13
						1" Ice	9.9050	9.1523	0.21
						2" Ice	11.1720	10.9842	0.39
						4" Ice	13.8246	15.0105	0.90
LNX-6514DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	8.6346	7.0679	0.06
						1/2" Ice	9.2852	8.2532	0.13
						1" Ice	9.9050	9.1523	0.21
						2" Ice	11.1720	10.9842	0.39
						4" Ice	13.8246	15.0105	0.90
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice	8.6346	7.0679	0.06
						1/2" Ice	9.2852	8.2532	0.13
						1" Ice	9.9050	9.1523	0.21
						2" Ice	11.1720	10.9842	0.39

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	13.8246	15.0105	0.90
HBX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.5412 6.1121 6.6539 7.7504 10.1089	5.0210 6.2225 7.1672 9.0109 12.8983	0.05 0.09 0.15 0.28 0.69
HBX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.5412 6.1121 6.6539 7.7504 10.1089	5.0210 6.2225 7.1672 9.0109 12.8983	0.05 0.09 0.15 0.28 0.69
HBX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.5412 6.1121 6.6539 7.7504 10.1089	5.0210 6.2225 7.1672 9.0109 12.8983	0.05 0.09 0.15 0.28 0.69
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.6000 5.9154 6.2395 6.9136 8.3654	2.3333 2.5580 2.7914 3.2840 4.3728	0.04 0.08 0.12 0.21 0.45
RRH2X40-AWS	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5217 2.7530 2.9930 3.4990 4.6146	1.5894 1.7953 2.0098 2.4648 3.4785	0.04 0.06 0.08 0.13 0.28
RRH2X40-AWS	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5217 2.7530 2.9930 3.4990 4.6146	1.5894 1.7953 2.0098 2.4648 3.4785	0.04 0.06 0.08 0.13 0.28
RRH2X40-AWS	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5217 2.7530 2.9930 3.4990 4.6146	1.5894 1.7953 2.0098 2.4648 3.4785	0.04 0.06 0.08 0.13 0.28
Platform Mount [LP 303-1]	C	None		0.00	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	14.6600 18.8700 23.0800 31.5000 48.3400	14.6600 18.8700 23.0800 31.5000 48.3400	1.25 1.48 1.71 2.18 3.10
****									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.2208 6.7144 7.2182 8.2568 10.4762	4.8204 5.5082 6.2127 7.6716 11.0613	0.09 0.14 0.21 0.36 0.76
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.7442 6.1977 6.6606 7.6178 9.6678	4.0153 4.6330 5.2765 6.6779 9.7441	0.05 0.10 0.15 0.27 0.63
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice	5.7442 6.1977 6.6606	4.0153 4.6330 5.2765	0.05 0.10 0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	7.6178	6.6779	0.27
						4" Ice	9.6678	9.7441	0.63
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.7442 6.1977 6.6606 7.6178 9.6678	4.0153 4.6330 5.2765 6.6779 9.7441	0.05 0.10 0.15 0.27 0.63
GPS_A	C	From Leg	4.0000 0.00 7.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.2975 0.3739 0.4589 0.6549 1.1506	0.2975 0.3739 0.4589 0.6549 1.1506	0.00 0.00 0.01 0.02 0.08
(2) TT19-08BP111-001	A	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.6449 0.7568 0.8773 1.1444 1.7822	0.5198 0.6232 0.7354 0.9856 1.5896	0.02 0.02 0.03 0.05 0.12
(2) TT19-08BP111-001	B	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.6449 0.7568 0.8773 1.1444 1.7822	0.5198 0.6232 0.7354 0.9856 1.5896	0.02 0.02 0.03 0.05 0.12
(2) TT19-08BP111-001	C	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.6449 0.7568 0.8773 1.1444 1.7822	0.5198 0.6232 0.7354 0.9856 1.5896	0.02 0.02 0.03 0.05 0.12
(2) RRUS-11	A	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2486 3.4905 3.7411 4.2682 5.4260	1.3726 1.5510 1.7380 2.1381 3.0418	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	B	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2486 3.4905 3.7411 4.2682 5.4260	1.3726 1.5510 1.7380 2.1381 3.0418	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	C	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.2486 3.4905 3.7411 4.2682 5.4260	1.3726 1.5510 1.7380 2.1381 3.0418	0.05 0.07 0.09 0.15 0.31
DC6-48-60-18-8F	A	From Leg	4.0000 0.00 2.00	0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.4667 1.6667 1.8778 2.3333 3.3778	1.4667 1.6667 1.8778 2.3333 3.3778	0.02 0.04 0.06 0.11 0.24
T-Arm Mount [TA 602-3]	C	None		0.00	96.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.5900 15.4400 19.2900 26.9900 42.3900	11.5900 15.4400 19.2900 26.9900 42.3900	0.77 0.99 1.21 1.64 2.50
****									
KS24019-L112A	C	From Leg	4.0000 0.00 1.00	0.00	92.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.1556 0.2247 0.3025 0.4840 0.9506	0.1556 0.2247 0.3025 0.4840 0.9506	0.01 0.01 0.01 0.02 0.06
Side Arm Mount [SO 701-1]	C	None		0.00	92.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.8500 1.1400 1.4300 2.0100 3.1700	1.6700 2.3400 3.0100 4.3500 7.0300	0.07 0.08 0.09 0.12 0.18

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.0000-117.3300	137.8063	1.504	27.79	93.892	A	0.000	93.892	93.892	100.00	0.000	0.000
					B	0.000	93.892		100.00	0.000	0.000
					C	0.000	93.892		100.00	0.000	0.000
L2 117.3300-94.0000	105.3977	1.393	25.77	62.677	A	0.000	62.677	62.677	100.00	0.000	0.000
					B	0.000	62.677		100.00	0.000	0.000
					C	0.000	62.677		100.00	0.000	1.125
L3 94.0000-82.5000	88.1911	1.324	24.49	34.066	A	0.000	34.066	34.066	100.00	0.000	0.000
					B	0.000	34.066		100.00	0.000	0.000
					C	0.000	34.066		100.00	0.000	5.887
L4 82.5000-72.7500	77.5813	1.277	23.61	30.020	A	0.000	30.020	30.020	100.00	0.000	0.000
					B	0.000	30.020		100.00	0.000	0.000
					C	0.000	30.020		100.00	0.000	4.017
L5 72.7500-56.0000	64.2622	1.21	22.38	55.192	A	0.000	55.192	55.192	100.00	0.000	0.000
					B	0.000	55.192		100.00	0.000	0.000
					C	0.000	55.192		100.00	0.000	9.196
L6 56.0000-40.5830	48.2028	1.114	20.61	54.742	A	0.000	54.742	54.742	100.00	0.000	0.000
					B	0.000	54.742		100.00	0.000	0.000
					C	0.000	54.742		100.00	0.000	11.095
L7 40.5830-31.5000	36.0073	1.025	18.96	33.339	A	0.000	33.339	33.339	100.00	0.000	0.000
					B	0.000	33.339		100.00	0.000	0.000
					C	0.000	33.339		100.00	0.000	7.003
L8 31.5000-28.7500	30.1224	1	18.50	10.381	A	0.000	10.381	10.381	100.00	0.000	0.000
					B	0.000	10.381		100.00	0.000	0.000
					C	0.000	10.381		100.00	0.000	2.120
L9 28.7500-11.0000	19.7698	1	18.50	69.874	A	0.000	69.874	69.874	100.00	0.000	0.000
					B	0.000	69.874		100.00	0.000	0.000
					C	0.000	69.874		100.00	0.000	11.310
L10 11.0000-8.5000	9.7480	1	18.50	10.241	A	0.000	10.241	10.241	100.00	0.000	0.000
					B	0.000	10.241		100.00	0.000	0.000
					C	0.000	10.241		100.00	0.000	1.927
L11 8.5000-0.0000	4.2273	1	18.50	35.555	A	0.000	35.555	35.555	100.00	0.000	0.000
					B	0.000	35.555		100.00	0.000	0.000
					C	0.000	35.555		100.00	0.000	6.553

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.0000-117.3300	137.8063	1.504	5.44	0.8903	100.224	A	0.000	100.224	100.224	100.00	0.000	0.000
						B	0.000	100.224		100.00	0.000	0.000
						C	0.000	100.224		100.00	0.000	0.000
L2 117.3300-94.0000	105.3977	1.393	5.04	0.8621	66.139	A	0.000	66.139	66.139	100.00	0.000	0.000
						B	0.000	66.139		100.00	0.000	0.000
						C	0.000	66.139		100.00	0.000	2.233
L3 94.0000-82.5000	88.1911	1.324	4.79	0.8439	35.684	A	0.000	35.684	35.684	100.00	0.000	0.000
						B	0.000	35.684		100.00	0.000	0.000
						C	0.000	35.684		100.00	0.000	11.270
L4 82.5000-72.7500	77.5813	1.277	4.62	0.8310	31.392	A	0.000	31.392	31.392	100.00	0.000	0.000
						B	0.000	31.392		100.00	0.000	0.000
						C	0.000	31.392		100.00	0.000	7.543
L5 72.7500-56.0000	64.2622	1.21	4.38	0.8124	57.460	A	0.000	57.460	57.460	100.00	0.000	0.000
						B	0.000	57.460		100.00	0.000	0.000
						C	0.000	57.460		100.00	0.000	18.069
L6 56.0000-40.5830	48.2028	1.114	4.03	0.7849	56.759	A	0.000	56.759	56.759	100.00	0.000	0.000
						B	0.000	56.759		100.00	0.000	0.000
						C	0.000	56.759		100.00	0.000	21.008

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L7 40.5830-31.5000	36.0073	1.025	3.71	0.7579	34.527	A	0.000	34.527	34.527	100.00	0.000	0.000
						B	0.000	34.527		100.00	0.000	0.000
						C	0.000	34.527		100.00	0.000	13.023
L8 31.5000-28.7500	30.1224	1	3.62	0.7500	10.725	A	0.000	10.725	10.725	100.00	0.000	0.000
						B	0.000	10.725		100.00	0.000	0.000
						C	0.000	10.725		100.00	0.000	3.862
L9 28.7500-11.0000	19.7698	1	3.62	0.7500	72.093	A	0.000	72.093	72.093	100.00	0.000	0.000
						B	0.000	72.093		100.00	0.000	0.000
						C	0.000	72.093		100.00	0.000	20.177
L10 11.0000-8.5000	9.7480	1	3.62	0.7500	10.553	A	0.000	10.553	10.553	100.00	0.000	0.000
						B	0.000	10.553		100.00	0.000	0.000
						C	0.000	10.553		100.00	0.000	3.511
L11 8.5000-0.0000	4.2273	1	3.62	0.7500	36.618	A	0.000	36.618	36.618	100.00	0.000	0.000
						B	0.000	36.618		100.00	0.000	0.000
						C	0.000	36.618		100.00	0.000	11.937

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.0000-117.3300	137.8063	1.504	9.62	93.892	A	0.000	93.892	93.892	100.00	0.000	0.000
					B	0.000	93.892		100.00	0.000	0.000
					C	0.000	93.892		100.00	0.000	0.000
L2 117.3300-94.0000	105.3977	1.393	8.92	62.677	A	0.000	62.677	62.677	100.00	0.000	0.000
					B	0.000	62.677		100.00	0.000	0.000
					C	0.000	62.677		100.00	0.000	1.125
L3 94.0000-82.5000	88.1911	1.324	8.48	34.066	A	0.000	34.066	34.066	100.00	0.000	0.000
					B	0.000	34.066		100.00	0.000	0.000
					C	0.000	34.066		100.00	0.000	5.887
L4 82.5000-72.7500	77.5813	1.277	8.17	30.020	A	0.000	30.020	30.020	100.00	0.000	0.000
					B	0.000	30.020		100.00	0.000	0.000
					C	0.000	30.020		100.00	0.000	4.017
L5 72.7500-56.0000	64.2622	1.21	7.74	55.192	A	0.000	55.192	55.192	100.00	0.000	0.000
					B	0.000	55.192		100.00	0.000	0.000
					C	0.000	55.192		100.00	0.000	9.196
L6 56.0000-40.5830	48.2028	1.114	7.13	54.742	A	0.000	54.742	54.742	100.00	0.000	0.000
					B	0.000	54.742		100.00	0.000	0.000
					C	0.000	54.742		100.00	0.000	11.095
L7 40.5830-31.5000	36.0073	1.025	6.56	33.339	A	0.000	33.339	33.339	100.00	0.000	0.000
					B	0.000	33.339		100.00	0.000	0.000
					C	0.000	33.339		100.00	0.000	7.003
L8 31.5000-28.7500	30.1224	1	6.40	10.381	A	0.000	10.381	10.381	100.00	0.000	0.000
					B	0.000	10.381		100.00	0.000	0.000
					C	0.000	10.381		100.00	0.000	2.120
L9 28.7500-11.0000	19.7698	1	6.40	69.874	A	0.000	69.874	69.874	100.00	0.000	0.000
					B	0.000	69.874		100.00	0.000	0.000
					C	0.000	69.874		100.00	0.000	11.310
L10 11.0000-8.5000	9.7480	1	6.40	10.241	A	0.000	10.241	10.241	100.00	0.000	0.000
					B	0.000	10.241		100.00	0.000	0.000
					C	0.000	10.241		100.00	0.000	1.927
L11 8.5000-0.0000	4.2273	1	6.40	35.555	A	0.000	35.555	35.555	100.00	0.000	0.000
					B	0.000	35.555		100.00	0.000	0.000
					C	0.000	35.555		100.00	0.000	6.553

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice

Comb. No.	Description
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	160 - 117.33	Pole	Max Tension	11	0.00	-0.00	-0.00
			Max. Compression	14	-13.06	-0.04	-0.02
			Max. Mx	5	-6.42	-392.69	0.44
			Max. My	8	-6.41	0.41	-393.21
			Max. Vy	11	-14.97	392.60	-0.43
			Max. Vx	2	-14.98	-0.46	393.17
			Max. Torque	9			0.13
L2	117.33 - 94	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-25.13	0.14	0.77
			Max. Mx	5	-13.60	-976.87	1.01
			Max. My	2	-13.58	-0.75	981.43
			Max. Vy	11	-26.29	976.86	-0.51
			Max. Vx	8	26.45	0.77	-980.88
			Max. Torque	5			0.91
L3	94 - 82.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.79	0.58	0.51
			Max. Mx	11	-14.83	1137.59	-0.64
			Max. My	2	-14.81	-0.72	1142.92
			Max. Vy	11	-27.24	1137.59	-0.64
			Max. Vx	8	27.39	0.94	-1142.49
			Max. Torque	5			0.91
L4	82.5 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.86	1.63	-0.10
			Max. Mx	11	-18.65	1570.62	-0.93
			Max. My	2	-18.64	-0.68	1577.96
			Max. Vy	11	-29.46	1570.62	-0.93

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	8	29.61	1.34	-1577.78
			Max. Torque	5			0.84
L5	72.75 - 56	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37.02	2.84	-0.79
			Max. Mx	11	-22.78	2083.71	-1.27
			Max. My	8	-22.77	1.79	-2093.34
			Max. Vy	11	-31.82	2083.71	-1.27
			Max. Vx	8	31.97	1.79	-2093.34
			Max. Torque	5			0.81
L6	56 - 40.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40.54	3.52	-1.19
			Max. Mx	11	-25.71	2375.93	-1.46
			Max. My	8	-25.70	2.04	-2386.89
			Max. Vy	11	-33.12	2375.93	-1.46
			Max. Vx	8	33.27	2.04	-2386.89
			Max. Torque	4			0.77
L7	40.583 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-49.44	4.71	-1.87
			Max. Mx	11	-33.29	2907.80	-1.78
			Max. My	8	-33.28	2.48	-2921.02
			Max. Vy	11	-35.40	2907.80	-1.78
			Max. Vx	8	35.55	2.48	-2921.02
			Max. Torque	4			0.77
L8	31.5 - 28.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-50.75	4.92	-1.99
			Max. Mx	11	-34.41	3005.67	-1.84
			Max. My	8	-34.41	2.56	-3019.29
			Max. Vy	11	-35.77	3005.67	-1.84
			Max. Vx	8	35.92	2.56	-3019.29
			Max. Torque	4			0.77
L9	28.75 - 11	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-58.42	6.33	-2.81
			Max. Mx	11	-41.03	3660.59	-2.23
			Max. My	8	-41.03	3.09	-3676.78
			Max. Vy	11	-38.02	3660.59	-2.23
			Max. Vx	8	38.18	3.09	-3676.78
			Max. Torque	3			0.85
L10	11 - 8.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-59.64	6.54	-2.93
			Max. Mx	11	-42.09	3756.08	-2.29
			Max. My	8	-42.09	3.16	-3772.63
			Max. Vy	11	-38.36	3756.08	-2.29
			Max. Vx	8	38.51	3.16	-3772.63
			Max. Torque	3			0.86
L11	8.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-63.29	7.26	-3.35
			Max. Mx	11	-45.25	4086.89	-2.48
			Max. My	8	-45.25	3.42	-4104.65
			Max. Vy	11	-39.47	4086.89	-2.48
			Max. Vx	8	39.62	3.42	-4104.65
			Max. Torque	3			0.92

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	63.29	0.00	-0.00
	Max. H_x	11	45.27	39.45	-0.01
	Max. H_z	2	45.27	-0.01	39.60
	Max. M_x	2	4103.39	-0.01	39.60
	Max. M_z	5	4083.73	-39.45	0.01
	Max. Torsion	3	0.92	-19.74	34.31
	Min. Vert	8	45.27	0.01	-39.60
	Min. H_x	5	45.27	-39.45	0.01
	Min. H_z	8	45.27	0.01	-39.60

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. M_x	8	-4104.65	0.01	-39.60
	Min. M_z	11	-4086.89	39.45	-0.01
	Min. Torsion	9	-0.90	19.74	-34.31

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	45.27	-0.00	0.00	0.63	1.55	0.00
Dead+Wind 0 deg - No Ice	45.27	0.01	-39.60	-4103.39	-0.26	-0.81
Dead+Wind 30 deg - No Ice	45.27	19.74	-34.31	-3554.94	-2042.92	-0.92
Dead+Wind 60 deg - No Ice	45.27	34.18	-19.81	-2053.26	-3537.77	-0.77
Dead+Wind 90 deg - No Ice	45.27	39.45	-0.01	-1.21	-4083.73	-0.42
Dead+Wind 120 deg - No Ice	45.27	34.17	19.79	2051.34	-3535.93	0.05
Dead+Wind 150 deg - No Ice	45.27	19.72	34.30	3554.38	-2039.73	0.50
Dead+Wind 180 deg - No Ice	45.27	-0.01	39.60	4104.65	3.42	0.81
Dead+Wind 210 deg - No Ice	45.27	-19.74	34.31	3556.21	2046.07	0.90
Dead+Wind 240 deg - No Ice	45.27	-34.18	19.81	2054.52	3540.93	0.76
Dead+Wind 270 deg - No Ice	45.27	-39.45	0.01	2.48	4086.89	0.42
Dead+Wind 300 deg - No Ice	45.27	-34.17	-19.79	-2050.07	3539.10	-0.04
Dead+Wind 330 deg - No Ice	45.27	-19.72	-34.30	-3553.11	2042.89	-0.49
Dead+Ice+Temp	63.29	-0.00	0.00	3.35	7.26	0.00
Dead+Wind 0 deg+Ice+Temp	63.29	0.00	-9.19	-973.68	7.13	-0.31
Dead+Wind 30 deg+Ice+Temp	63.29	4.58	-7.96	-842.96	-479.39	-0.28
Dead+Wind 60 deg+Ice+Temp	63.29	7.93	-4.60	-485.46	-835.44	-0.18
Dead+Wind 90 deg+Ice+Temp	63.29	9.16	-0.00	3.04	-965.60	-0.03
Dead+Wind 120 deg+Ice+Temp	63.29	7.93	4.59	491.64	-835.07	0.13
Dead+Wind 150 deg+Ice+Temp	63.29	4.58	7.96	849.42	-478.74	0.25
Dead+Wind 180 deg+Ice+Temp	63.29	-0.00	9.19	980.51	7.88	0.31
Dead+Wind 210 deg+Ice+Temp	63.29	-4.58	7.96	849.80	494.39	0.28
Dead+Wind 240 deg+Ice+Temp	63.29	-7.93	4.60	492.29	850.44	0.18
Dead+Wind 270 deg+Ice+Temp	63.29	-9.16	0.00	3.79	980.63	0.03
Dead+Wind 300 deg+Ice+Temp	63.29	-7.93	-4.59	-484.81	850.07	-0.12
Dead+Wind 330 deg+Ice+Temp	63.29	-4.58	-7.96	-842.59	493.74	-0.25
Dead+Wind 0 deg - Service	45.27	0.00	-13.70	-1421.08	0.94	-0.28
Dead+Wind 30 deg - Service	45.27	6.83	-11.87	-1231.03	-706.64	-0.32
Dead+Wind 60 deg - Service	45.27	11.83	-6.86	-710.84	-1224.45	-0.27
Dead+Wind 90 deg - Service	45.27	13.65	-0.00	-0.01	-1413.63	-0.15
Dead+Wind 120 deg - Service	45.27	11.82	6.85	711.00	-1223.82	0.01
Dead+Wind 150 deg - Service	45.27	6.82	11.87	1231.66	-705.53	0.17
Dead+Wind 180 deg - Service	45.27	-0.00	13.70	1422.34	2.22	0.28
Dead+Wind 210 deg - Service	45.27	-6.83	11.87	1232.29	709.80	0.32
Dead+Wind 240 deg - Service	45.27	-11.83	6.86	712.10	1227.62	0.27
Dead+Wind 270 deg - Service	45.27	-13.65	0.00	1.27	1416.80	0.15
Dead+Wind 300 deg - Service	45.27	-11.82	-6.85	-709.73	1226.98	-0.01
Dead+Wind 330 deg - Service	45.27	-6.82	-11.87	-1230.39	708.70	-0.17

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-45.27	0.00	0.00	45.27	0.00	0.000%
2	0.01	-45.27	-39.61	-0.01	45.27	39.60	0.007%
3	19.74	-45.27	-34.31	-19.74	45.27	34.31	0.000%
4	34.18	-45.27	-19.81	-34.18	45.27	19.81	0.000%
5	39.46	-45.27	-0.01	-39.45	45.27	0.01	0.007%
6	34.17	-45.27	19.79	-34.17	45.27	-19.79	0.000%
7	19.72	-45.27	34.30	-19.72	45.27	-34.30	0.000%
8	-0.01	-45.27	39.61	0.01	45.27	-39.60	0.007%
9	-19.74	-45.27	34.31	19.74	45.27	-34.31	0.000%
10	-34.18	-45.27	19.81	34.18	45.27	-19.81	0.000%
11	-39.46	-45.27	0.01	39.45	45.27	-0.01	0.007%
12	-34.17	-45.27	-19.79	34.17	45.27	19.79	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
13	-19.72	-45.27	-34.30	19.72	45.27	34.30	0.000%
14	0.00	-63.29	0.00	0.00	63.29	-0.00	0.000%
15	0.00	-63.29	-9.19	-0.00	63.29	9.19	0.000%
16	4.58	-63.29	-7.96	-4.58	63.29	7.96	0.000%
17	7.93	-63.29	-4.60	-7.93	63.29	4.60	0.000%
18	9.16	-63.29	-0.00	-9.16	63.29	0.00	0.000%
19	7.93	-63.29	4.59	-7.93	63.29	-4.59	0.000%
20	4.58	-63.29	7.96	-4.58	63.29	-7.96	0.000%
21	-0.00	-63.29	9.19	0.00	63.29	-9.19	0.000%
22	-4.58	-63.29	7.96	4.58	63.29	-7.96	0.000%
23	-7.93	-63.29	4.60	7.93	63.29	-4.60	0.000%
24	-9.16	-63.29	0.00	9.16	63.29	-0.00	0.000%
25	-7.93	-63.29	-4.59	7.93	63.29	4.59	0.000%
26	-4.58	-63.29	-7.96	4.58	63.29	7.96	0.000%
27	0.00	-45.27	-13.71	-0.00	45.27	13.70	0.003%
28	6.83	-45.27	-11.87	-6.83	45.27	11.87	0.001%
29	11.83	-45.27	-6.86	-11.83	45.27	6.86	0.001%
30	13.65	-45.27	-0.00	-13.65	45.27	0.00	0.003%
31	11.82	-45.27	6.85	-11.82	45.27	-6.85	0.001%
32	6.82	-45.27	11.87	-6.82	45.27	-11.87	0.001%
33	-0.00	-45.27	13.71	0.00	45.27	-13.70	0.003%
34	-6.83	-45.27	11.87	6.83	45.27	-11.87	0.001%
35	-11.83	-45.27	6.86	11.83	45.27	-6.86	0.001%
36	-13.65	-45.27	0.00	13.65	45.27	-0.00	0.003%
37	-11.82	-45.27	-6.85	11.82	45.27	6.85	0.001%
38	-6.82	-45.27	-11.87	6.82	45.27	11.87	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00008207	0.00009795
3	Yes	17	0.00000001	0.00013989
4	Yes	17	0.00000001	0.00014227
5	Yes	13	0.00008212	0.00012396
6	Yes	17	0.00000001	0.00013965
7	Yes	17	0.00000001	0.00014075
8	Yes	13	0.00008207	0.00010177
9	Yes	17	0.00000001	0.00014225
10	Yes	17	0.00000001	0.00013972
11	Yes	13	0.00008212	0.00011661
12	Yes	17	0.00000001	0.00014147
13	Yes	17	0.00000001	0.00014052
14	Yes	6	0.00000001	0.00000001
15	Yes	16	0.00000001	0.00006449
16	Yes	16	0.00000001	0.00007124
17	Yes	16	0.00000001	0.00007120
18	Yes	15	0.00000001	0.00014991
19	Yes	16	0.00000001	0.00007119
20	Yes	16	0.00000001	0.00007137
21	Yes	16	0.00000001	0.00006465
22	Yes	16	0.00000001	0.00007214
23	Yes	16	0.00000001	0.00007195
24	Yes	16	0.00000001	0.00006465
25	Yes	16	0.00000001	0.00007178
26	Yes	16	0.00000001	0.00007184
27	Yes	13	0.00008709	0.00004563
28	Yes	14	0.00000001	0.00011839
29	Yes	14	0.00000001	0.00012469
30	Yes	13	0.00008710	0.00004710
31	Yes	14	0.00000001	0.00011837
32	Yes	14	0.00000001	0.00012131
33	Yes	13	0.00008708	0.00004572
34	Yes	14	0.00000001	0.00012464
35	Yes	14	0.00000001	0.00011793
36	Yes	13	0.00008709	0.00004696

37	Yes	14	0.00000001	0.00012321
38	Yes	14	0.00000001	0.00012068

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 117.33	36.226	33	2.05	0.00
L2	122 - 94	20.730	33	1.73	0.00
L3	94 - 82.5	11.793	33	1.26	0.00
L4	88 - 72.75	10.268	33	1.17	0.00
L5	72.75 - 56	6.856	33	0.93	0.00
L6	56 - 40.583	4.057	33	0.66	0.00
L7	47 - 31.5	2.919	33	0.55	0.00
L8	31.5 - 28.75	1.346	33	0.40	0.00
L9	28.75 - 11	1.124	33	0.37	0.00
L10	11 - 8.5	0.170	33	0.14	0.00
L11	8.5 - 0	0.102	33	0.12	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.0000	APXVSPP18-C-A20 w/ Mount Pipe	33	35.798	2.05	0.00	29192
155.0000	PCS 1900MHz 4x45W-65MHz	33	34.090	2.02	0.00	29192
141.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	33	28.195	1.93	0.00	7681
116.0000	BXA-70063-6CF-EDIN-2 w/ Mount Pipe	33	18.579	1.64	0.00	3567
96.0000	(2) 7770.00 w/ Mount Pipe	33	12.331	1.30	0.00	2928
92.0000	KS24019-L112A	33	11.271	1.23	0.00	3394

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 117.33	104.359	8	5.91	0.00
L2	122 - 94	59.757	8	4.98	0.00
L3	94 - 82.5	34.010	8	3.64	0.00
L4	88 - 72.75	29.613	8	3.36	0.00
L5	72.75 - 56	19.778	8	2.70	0.00
L6	56 - 40.583	11.705	8	1.90	0.00
L7	47 - 31.5	8.423	8	1.58	0.00
L8	31.5 - 28.75	3.885	8	1.16	0.00
L9	28.75 - 11	3.244	8	1.07	0.00
L10	11 - 8.5	0.490	8	0.41	0.00
L11	8.5 - 0	0.295	8	0.33	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
159.0000	APXVSPP18-C-A20 w/ Mount Pipe	8	103.128	5.90	0.00	10330
155.0000	PCS 1900MHz 4x45W-65MHz	8	98.211	5.83	0.00	10330
141.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	81.248	5.56	0.00	2716
116.0000	BXA-70063-6CF-EDIN-2 w/ Mount Pipe	8	53.561	4.73	0.00	1255
96.0000	(2) 7770.00 w/ Mount Pipe	8	35.562	3.74	0.00	1025
92.0000	KS24019-L112A	8	32.505	3.54	0.00	1187

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	160 - 117.33 (1)	TP30.46x22.35x0.2188	42.6700	0.0000	0.0	36.82	20.6807	-6.41	761.52	0.008
L2	117.33 - 94 (2)	TP34.4549x29.1348x0.281	28.0000	0.0000	0.0	38.80	30.9213	-13.58	1199.73	0.011
L3	94 - 82.5 (3)	TP36.64x34.4549x0.3817	11.5000	0.0000	0.0	34.15	43.2831	-14.81	1477.94	0.010
L4	82.5 - 72.75 (4)	TP37.9427x34.8315x0.375	15.2500	0.0000	0.0	39.00	45.3629	-18.64	1769.15	0.011
L5	72.75 - 56 (5)	TP41.1385x37.9427x0.4482	16.7500	0.0000	0.0	38.02	58.7244	-22.77	2232.82	0.010
L6	56 - 40.583 (6)	TP44.08x41.1385x0.6042	15.4170	0.0000	0.0	30.41	82.1985	-25.70	2499.49	0.010
L7	40.583 - 31.5 (7)	TP45.0389x41.6473x0.6915	15.5000	0.0000	0.0	28.73	98.7439	-33.28	2836.72	0.012
L8	31.5 - 28.75 (8)	TP45.5593x45.0389x0.7353	2.7500	0.0000	0.0	28.73	106.1340	-34.41	3049.66	0.011
L9	28.75 - 11 (9)	TP48.9184x45.5593x0.6172	17.7500	0.0000	0.0	32.85	95.9976	-41.03	3153.52	0.013
L10	11 - 8.5 (10)	TP49.3915x48.9184x0.698	2.5000	0.0000	0.0	32.83	109.4380	-42.09	3593.08	0.012
L11	8.5 - 0 (11)	TP51x49.3915x0.5706	8.5000	0.0000	0.0	35.23	92.6539	-45.25	3263.83	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	160 - 117.33 (1)	TP30.46x22.35x0.2188	393.48	31.80	36.82	0.864	0.00	0.00	36.82	0.000
L2	117.33 - 94 (2)	TP34.4549x29.1348x0.281	981.43	45.60	38.80	1.175	0.00	0.00	38.80	0.000
L3	94 - 82.5 (3)	TP36.64x34.4549x0.3817	1142.93	36.91	34.15	1.081	0.00	0.00	34.15	0.000
L4	82.5 - 72.75 (4)	TP37.9427x34.8315x0.375	1577.96	45.54	39.00	1.168	0.00	0.00	39.00	0.000
L5	72.75 - 56 (5)	TP41.1385x37.9427x0.4482	2093.34	43.13	38.02	1.134	0.00	0.00	38.02	0.000
L6	56 - 40.583 (6)	TP44.08x41.1385x0.6042	2386.88	33.95	30.41	1.116	0.00	0.00	30.41	0.000
L7	40.583 - 31.5 (7)	TP45.0389x41.6473x0.6915	2921.02	32.99	28.73	1.148	0.00	0.00	28.73	0.000
L8	31.5 - 28.75 (8)	TP45.5593x45.0389x0.7353	3019.29	31.41	28.73	1.093	0.00	0.00	28.73	0.000
L9	28.75 - 11 (9)	TP48.9184x45.5593x0.6172	3676.78	39.11	32.85	1.191	0.00	0.00	32.85	0.000
L10	11 - 8.5 (10)	TP49.3915x48.9184x0.698	3772.63	34.97	32.83	1.065	0.00	0.00	32.83	0.000
L11	8.5 - 0 (11)	TP51x49.3915x0.5706	4104.66	43.27	35.23	1.228	0.00	0.00	35.23	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	160 - 117.33 (1)	TP30.46x22.35x0.2188	14.99	0.73	26.00	0.057	0.13	0.00	26.00	0.000
L2	117.33 - 94 (2)	TP34.4549x29.1348x0.281	26.45	0.86	26.00	0.067	0.03	0.00	26.00	0.000
L3	94 - 82.5 (3)	TP36.64x34.4549x0.3817	27.39	0.63	22.76	0.056	0.04	0.00	22.76	0.000
L4	82.5 - 72.75 (4)	TP37.9427x34.8315x0.375	29.61	0.65	26.00	0.051	0.13	0.00	26.00	0.000
L5	72.75 - 56 (5)	TP41.1385x37.9427x0.4482	31.97	0.54	25.35	0.044	0.26	0.00	25.35	0.000
L6	56 - 40.583 (6)	TP44.08x41.1385x0.6042	33.27	0.40	20.27	0.041	0.35	0.00	20.27	0.000
L7	40.583 - 31.5 (7)	TP45.0389x41.6473x0.6915	35.55	0.36	19.15	0.038	0.51	0.00	19.15	0.000
L8	31.5 - 28.75 (8)	TP45.5593x45.0389x0.7353	35.92	0.34	19.16	0.036	0.53	0.00	19.16	0.000
L9	28.75 - 11 (9)	TP48.9184x45.5593x0.6172	38.18	0.40	21.90	0.037	0.69	0.00	21.90	0.000
L10	11 - 8.5 (10)	TP49.3915x48.9184x0.698	38.51	0.35	21.89	0.033	0.71	0.00	21.89	0.000
L11	8.5 - 0 (11)	TP51x49.3915x0.5706	39.62	0.43	23.48	0.037	0.81	0.00	23.48	0.000

Pole Interaction Design Data

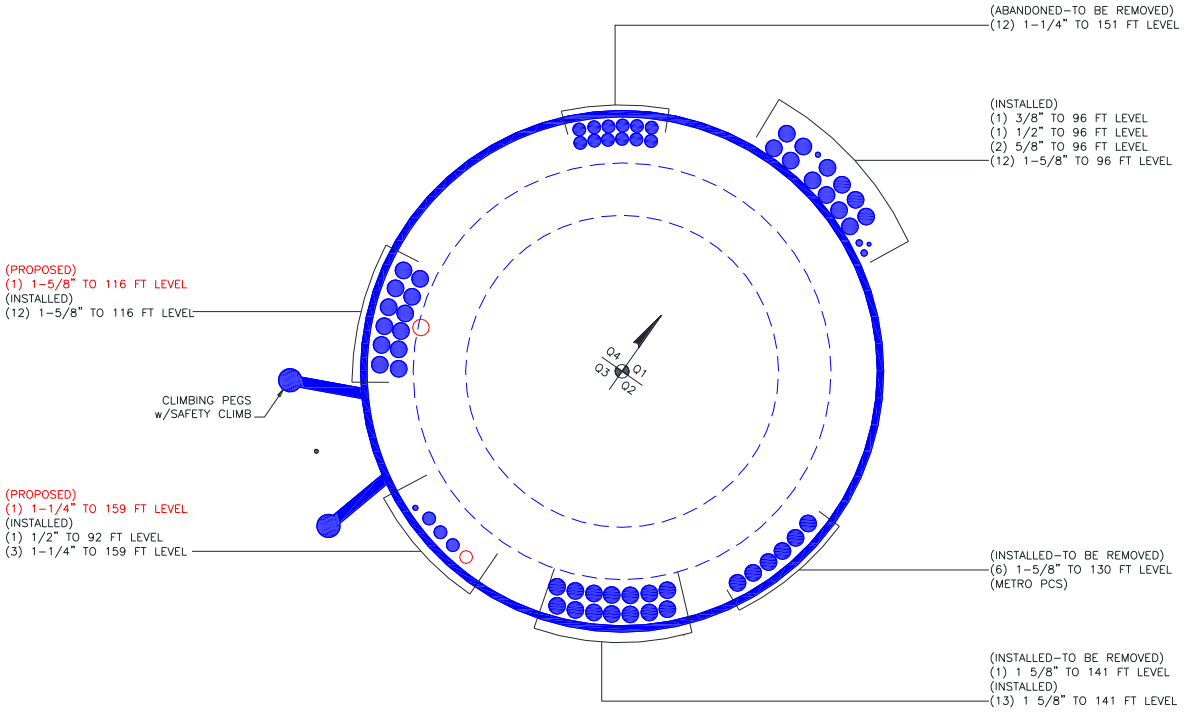
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 117.33 (1)	0.008	0.864	0.000	0.057	0.000	0.873 ✔	1.333	H1-3+VT ✔
L2	117.33 - 94 (2)	0.011	1.175	0.000	0.067	0.000	1.188 ✔	1.333	H1-3+VT ✔
L3	94 - 82.5 (3)	0.010	1.081	0.000	0.056	0.000	1.092 ✔	1.333	H1-3+VT ✔
L4	82.5 - 72.75 (4)	0.011	1.168	0.000	0.051	0.000	1.179 ✔	1.333	H1-3+VT ✔
L5	72.75 - 56 (5)	0.010	1.134	0.000	0.044	0.000	1.145 ✔	1.333	H1-3+VT ✔
L6	56 - 40.583 (6)	0.010	1.116	0.000	0.041	0.000	1.127 ✔	1.333	H1-3+VT ✔
L7	40.583 - 31.5 (7)	0.012	1.148	0.000	0.038	0.000	1.161 ✔	1.333	H1-3+VT ✔
L8	31.5 - 28.75 (8)	0.011	1.093	0.000	0.036	0.000	1.105 ✔	1.333	H1-3+VT ✔
L9	28.75 - 11 (9)	0.013	1.191	0.000	0.037	0.000	1.204 ✔	1.333	H1-3+VT ✔
L10	11 - 8.5 (10)	0.012	1.065	0.000	0.033	0.000	1.077 ✔	1.333	H1-3+VT ✔
L11	8.5 - 0 (11)	0.014	1.228	0.000	0.037	0.000	1.242 ✔	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	160 - 117.33	Pole	TP30.46x22.35x0.2188	1	-6.41	1015.10	65.5	Pass
L2	117.33 - 94	Pole	TP34.4549x29.1348x0.281	2	-13.58	1599.24	89.1	Pass
L3	94 - 82.5	Pole	TP36.64x34.4549x0.3817	3	-14.81	1970.09	81.9	Pass
L4	82.5 - 72.75	Pole	TP37.9427x34.8315x0.375	4	-18.64	2358.28	88.4	Pass
L5	72.75 - 56	Pole	TP41.1385x37.9427x0.4482	5	-22.77	2976.35	85.9	Pass
L6	56 - 40.583	Pole	TP44.08x41.1385x0.6042	6	-25.70	3331.82	84.6	Pass
L7	40.583 - 31.5	Pole	TP45.0389x41.6473x0.6915	7	-33.28	3781.35	87.1	Pass
L8	31.5 - 28.75	Pole	TP45.5593x45.0389x0.7353	8	-34.41	4065.20	82.9	Pass
L9	28.75 - 11	Pole	TP48.9184x45.5593x0.6172	9	-41.03	4203.64	90.3	Pass
L10	11 - 8.5	Pole	TP49.3915x48.9184x0.698	10	-42.09	4789.58	80.8	Pass
L11	8.5 - 0	Pole	TP51x49.3915x0.5706	11	-45.25	4350.69	93.2	Pass
							Summary	
						Pole (L11)	93.2	Pass
						RATING =	**93.2**	**Pass**

APPENDIX B

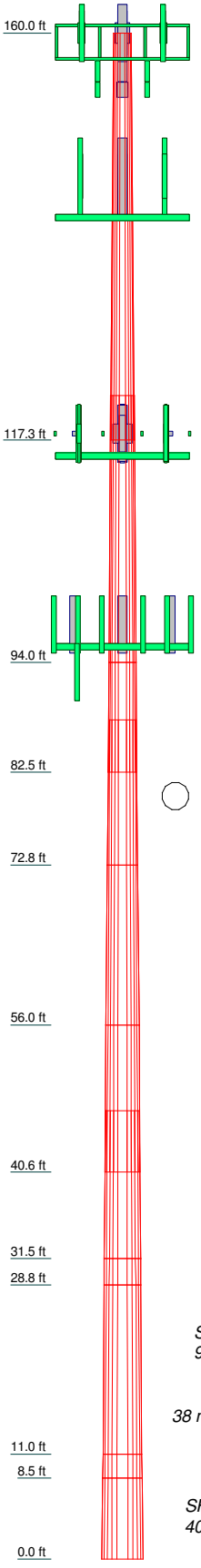
BASE LEVEL DRAWING


(ABANDONED-TO BE REMOVED)
(12) 1-1/4" TO 151 FT LEVEL
(INSTALLED)
(1) 3/8" TO 96 FT LEVEL
(1) 1/2" TO 96 FT LEVEL
(2) 5/8" TO 96 FT LEVEL
(12) 1-5/8" TO 96 FT LEVEL
(PROPOSED)
(1) 1-5/8" TO 116 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 116 FT LEVEL
CLIMBING PEGS
w/SAFETY CLIMB
Q4
Q1
Q3
Q2
(PROPOSED)
(1) 1-1/4" TO 159 FT LEVEL
(INSTALLED)
(1) 1/2" TO 92 FT LEVEL
(3) 1-1/4" TO 159 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-5/8" TO 130 FT LEVEL
(METRO PCS)
(INSTALLED-TO BE REMOVED)
(1) 1 5/8" TO 141 FT LEVEL
(INSTALLED)
(13) 1 5/8" TO 141 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11
Length (ft)	42.6700	28.0000	11.5000	15.2500	16.7500	15.4170	15.5000	2.7500	17.7500	2.5000	8.5000
Number of Sides	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.2188	0.2810	0.3817	0.3750	0.4482	0.6042	0.6915	0.7353	0.6172	0.6980	0.5706
Socket Length (ft)	4.6700		5.5000			6.4170					
Top Dia (in)	22.3500	29.1348	34.4549	34.8315	37.9427	41.1385	41.6473	45.0389	45.5593	48.9184	49.3915
Bot Dia (in)	30.4600	34.4549	36.6400	37.9427	41.1385	44.0800	45.0389	45.5593	48.9184	49.3915	51.0000
Grade	A572-65			Reinf 56.91 ksi	A572-65	Reinf 63.37 ksi	Reinf 50.68 ksi	Reinf 47.88 ksi	Reinf 47.89 ksi	Reinf 54.75 ksi	Reinf 58.71 ksi
Weight (K)	2.7	2.7	1.7	2.3	3.2	4.3	5.0	1.0	5.6	0.9	2.6



AXIAL
63 K

SHEAR
9 K

MOMENT
983 kip-ft

TORQUE 0 kip-ft
38 mph WIND - 0.7500 in ICE

AXIAL
45 K

SHEAR
40 K

MOMENT
4105 kip-ft

TORQUE 1 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
APXVSPP18-C-A20 w/ Mount Pipe	159
APXV9ERR18-C-A20 w/ Mount Pipe	159
APXVSPP18-C-A20 w/ Mount Pipe	159
APXVTM14-C-120 w/ Mount Pipe	159
APXVTM14-C-120 w/ Mount Pipe	159
APXVTM14-C-120 w/ Mount Pipe	159
TD-RRH8x20-25	159
TD-RRH8x20-25	159
TD-RRH8x20-25	159
Platform Mount [LP 602-1]	159
5'x2 1/2" Pipe Mount	159
5'x2 1/2" Pipe Mount	159
5'x2 1/2" Pipe Mount	159
PCS 1900MHz 4x45W-65MHz	155
PCS 1900MHz 4x45W-65MHz	155
PCS 1900MHz 4x45W-65MHz	155
800MHz 2X50W RRH W/FILTER	155
800MHz 2X50W RRH W/FILTER	155
800MHz 2X50W RRH W/FILTER	155
Side Arm Mount [SO 102-3]	155
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	141
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	141
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	141
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	141
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	141
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	141
KRY 112 144/1	141
KRY 112 144/1	141
KRY 112 144/1	141
LNX-6515DS-VTM w/ Mount Pipe	141
LNX-6515DS-VTM w/ Mount Pipe	141
LNX-6515DS-VTM w/ Mount Pipe	141
RRUS 11 B12	141
RRUS 11 B12	141
RRUS 11 B12	141
Platform Mount [LP 602-1]	141
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	116

TYPE	ELEVATION
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	116
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	116
SPXW 8515 w/ Mount Pipe	116
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	116
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	116
(2) FD9R6004/2C-3L	116
(2) FD9R6004/2C-3L	116
(2) FD9R6004/2C-3L	116
LNX-6514DS-VTM w/ Mount Pipe	116
LNX-6514DS-VTM w/ Mount Pipe	116
LNX-6514DS-VTM w/ Mount Pipe	116
HBX-6517DS-VTM w/ Mount Pipe	116
HBX-6517DS-VTM w/ Mount Pipe	116
HBX-6517DS-VTM w/ Mount Pipe	116
DB-T1-6Z-8AB-0Z	116
RRH2X40-AWS	116
RRH2X40-AWS	116
RRH2X40-AWS	116
Platform Mount [LP 303-1]	116
(2) 7770.00 w/ Mount Pipe	96
(2) 7770.00 w/ Mount Pipe	96
(2) 7770.00 w/ Mount Pipe	96
AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
AM-X-CD-14-65-00T-RET w/ Mount Pipe	96
GPS_A	96
(2) TT19-08BP111-001	96
(2) TT19-08BP111-001	96
(2) TT19-08BP111-001	96
(2) RRUS-11	96
(2) RRUS-11	96
(2) RRUS-11	96
DC6-48-60-18-8F	96
T-Arm Mount [TA 602-3]	96
KS24019-L112A	92
Side Arm Mount [SO 701-1]	92

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 47.89 ksi	48 ksi	60 ksi
Reinf 56.91 ksi	57 ksi	72 ksi	Reinf 54.75 ksi	55 ksi	69 ksi
Reinf 63.37 ksi	63 ksi	80 ksi	Reinf 54.72 ksi	55 ksi	69 ksi
Reinf 50.68 ksi	51 ksi	64 ksi	Reinf 58.71 ksi	59 ksi	74 ksi
Reinf 47.88 ksi	48 ksi	60 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.2%

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

Job: ***160-Ft Monopole / Pond Meadow***			
Project: ***37515-072.002 / BU# 876339***			
Client: Crown Castle	Drawn by: Ryan Ferrante	App'd:	
Code: TIA/EIA-222-F	Date: 03/12/15	Scale: NTS	
Path:		Dwg No. E-1	

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708
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v4.0 - Effective 1-12-12

Date: 3/12/2015
PJF Project: 37515-0772.002
Client Ref. # BU 876339
Site Name: Pond Meadow
Description: 160 Ft Monopole
Owner: CCI
Engineer: RMF

Asymmetric Anchor Rod Analysis

Moment =	4105	k-ft	TIA Ref.	F	Location =	Base Plate		
Axial =	45.0	kips	ASIF =	1.3333	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	40.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	25							

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

Item	Nominal Anchor Dia, in	Anchor Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
2	2.250	#18J A615 Gr 75	75	100	22.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
3	2.250	#18J A615 Gr 75	75	100	45.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
4	2.250	#18J A615 Gr 75	75	100	67.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
5	2.250	#18J A615 Gr 75	75	100	90.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
6	2.250	#18J A615 Gr 75	75	100	112.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
7	2.250	#18J A615 Gr 75	75	100	135.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
8	2.250	#18J A615 Gr 75	75	100	157.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
9	2.250	#18J A615 Gr 75	75	100	180.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
10	2.250	#18J A615 Gr 75	75	100	202.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
11	2.250	#18J A615 Gr 75	75	100	225.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
12	2.250	#18J A615 Gr 75	75	100	247.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
13	2.250	#18J A615 Gr 75	75	100	270.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
14	2.250	#18J A615 Gr 75	75	100	292.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
15	2.250	#18J A615 Gr 75	75	100	315.0	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
16	2.250	#18J A615 Gr 75	75	100	337.5	59.30	0.00	3.98	139.29	135.30	135.30	0.00	195.00	69.4%
17	2.000	A193 Gr B7	105	125	15.0	65.80	0.00	3.14	121.83	118.68	118.68	0.00	172.79	68.7%
18	2.000	A193 Gr B7	105	125	45.0	65.80	0.00	3.14	121.83	118.68	118.68	0.00	172.79	68.7%
19	2.000	A193 Gr B7	105	125	135.0	65.80	0.00	3.14	121.83	118.68	118.68	0.00	172.79	68.7%
20	2.000	A193 Gr B7	105	125	165.0	65.80	0.00	3.14	121.83	118.68	118.68	0.00	172.79	68.7%
21	2.000	A193 Gr B7	105	125	255.0	65.80	0.00	3.14	121.83	118.68	118.68	0.00	172.79	68.7%
22	2.000	A193 Gr B7	105	125	285.0	65.80	0.00	3.14	121.83	118.68	118.68	0.00	172.79	68.7%
23	1.750	F1554 Gr 105	105	125	105.0	67.80	0.00	2.41	96.07	93.66	93.66	0.00	132.29	70.8%
24	1.750	F1554 Gr 105	105	125	225.0	67.80	0.00	2.41	96.07	93.66	93.66	0.00	132.29	70.8%
25	1.750	F1554 Gr 105	105	125	345.0	67.80	0.00	2.41	96.07	93.66	93.66	0.00	132.29	70.8%
								89.75						

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

TIA Rev F

Site Data

BU#: *876339*
Site Name:
App #:

Pole Manufacturer:	*Other*

Reactions		
Moment:	2713.9	ft-kips
Axial:	31.9	kips
Shear:	28.4	kips

Reactions adjusted to account for additional anchor rods.

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	59.3	in

Plate Data		
Diam:	65.3	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	10.25	in

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

Pole Data		
Diam:	51	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

			Rigid
Maximum Rod Tension:	135.3	Kips	Service, ASD
Allowable Tension:	195.0	Kips	Fty*ASIF
Anchor Rod Stress Ratio:	69.4%	**Pass**	

Base Plate Results

	Flexural Check		Rigid
Base Plate Stress:	27.9	ksi	Service ASD
Allowable Plate Stress:	60.0	ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	46.6%	**Pass**	Y.L. Length: 30.26

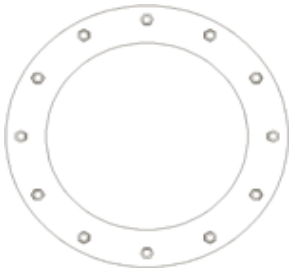
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

Foundation Loads:

Pole weight or tower leg compression =	**45**	(kips)
Horizontal load at top of pier =	**40**	(kips)
Overturning moment at top of pier=	**4105**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	

Soil Properties:

Soil density =	**110**	(pcf)
Allowable soil bearing =	**15**	(ksf)
Depth to water table =	**99**	(ft)

Dimensions:

Pier shape (round or square)	**R**	("R" or "S")
Pier width =	**7**	(ft)
Pier height above grade =	**0.5**	(ft)
depth to bottom of footing =	**7.5**	(ft)
Footing thickness =	**3.5**	(ft)
Footing width =	**23**	(ft)
Footing length =	**23**	(ft)

Concrete:

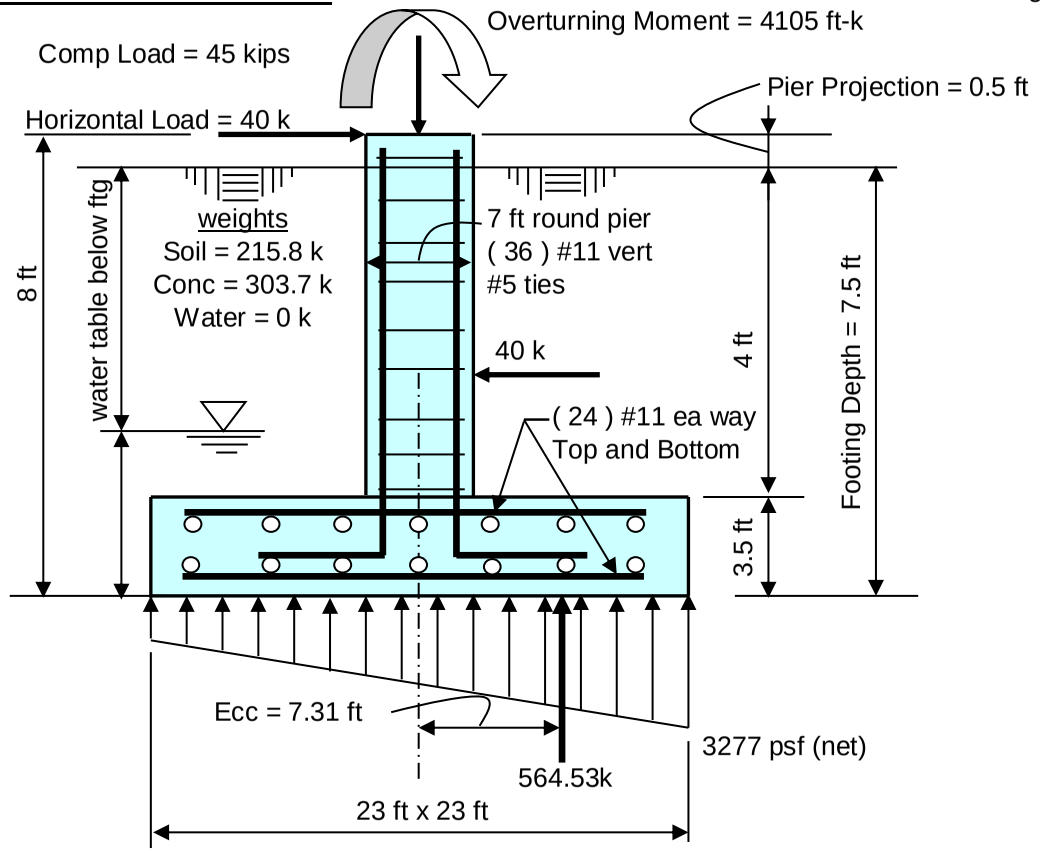
Concrete strength =	**4**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

Reinforcing Steel:

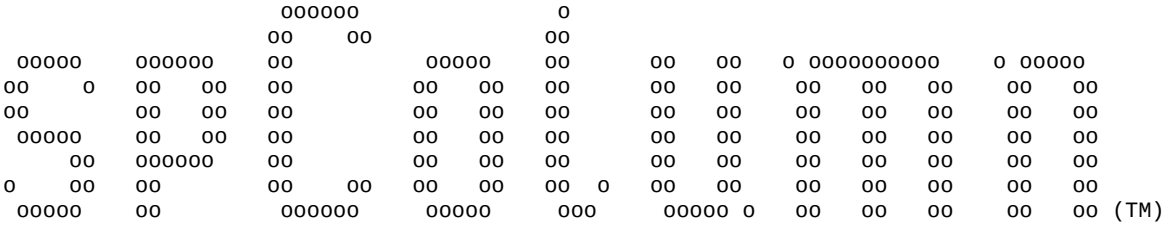
	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#11**	bar
quantity of pad rebar =	**24**	(ea direction)

Reinforcing Steel:

	Pier	
size of vert rebar in pier=	**#11**	bar
vertical rebar quantity =	**36**	
size of pier ties =	**#5**	bar
minimum cover over rebar =	**3**	inches
Total volume of concrete =	75.0	cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 3.277 ksf Allowable Net Soil Bearing = 15 ksf **Soil Bearing Stress Ratio = 0.22 Okay**	Ult Bending Shear Capacity = 126 psi Ult Bending Shear Stress = 43 psi **Bending Shear Stress Ratio = 0.34 Okay**
Ftg Overturning Resistance ** = 12054 ft-kips Overturning Moment = 4127 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 2.921 **Ratio = 0.51 Okay** ** Includes Resistance from Rock Anchors	Pad Bending Moment Capacity= 6022 ft-k Pad Bending Moment = 2021 ft-k **Bending Moment Stress Ratio = 0.34 OK**



spColumn v4.80 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

General Information:
====================
File Name: T:\375_Crown_Castle\2015\37515-0772_876339_POND MEADOW RD. STABLE\3...\37515-0772.002.col
Project:
Column: Engineer:
Code: ACI 318-11 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Structural

Material Properties:
====================
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
Ultimate strain = 0.003 in/in
Beta1 = 0.85

Section:
========
Circular: Diameter = 84 in

Gross section area, Ag = 5541.77 in^2
Ix = 2.44392e+006 in^4 Iy = 2.44392e+006 in^4
rx = 21 in ry = 21 in
Xo = 0 in Yo = 0 in

Reinforcement:
==============
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 56.16 in^2 at rho = 1.01%
Minimum clear spacing = 5.18 in

36 #11 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
==

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	45.00	5570.50	8424.51	1.512	17.43	79.79	0.01074	0.900

*** End of output ***

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

T-Mobile Existing Facility

Site ID: CT11032D

Westbrook/ I-95/ X64/ Ch1
782 Old Clinton Road
Westbrook, CT 06498

March 23, 2015

EBI Project Number: 6215001737

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	80.12 %

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

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March 23, 2015

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

Emissions Analysis for Site: **CT11032D – Westbrook/ I-95/ X64/ Ch1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **782 Old Clinton Road, Westbrook, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **782 Old Clinton Road, Westbrook, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

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

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

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

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

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

7) The antennas used in this modeling are the **Ericsson AIR21 (B4A/B2P& B2A/B4P)** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 (B4A/B2P& B2A/B4P)** have a maximum gain of **15.9 dBd** at their main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **145 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):	145	Height (AGL):	145	Height (AGL):	145
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	0.87	Antenna B1 MPE%	0.87	Antenna C1 MPE%	0.87
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):	145	Height (AGL):	145	Height (AGL):	145
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%	0.87	Antenna B2 MPE%	0.87	Antenna C2 MPE%	0.87
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):	145	Height (AGL):	145	Height (AGL):	145
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%	0.34	Antenna B3 MPE%	0.34	Antenna C3 MPE%	0.34

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**6.25**
Nextel	2.47 %
Sprint	5.83 %
MetroPCS	4.03 %
Verizon Wireless	32.94 %
AT&T	28.60 %
Site Total MPE %:	**80.12 %**

T-Mobile Sector 1 Total:	2.08 %
T-Mobile Sector 2 Total:	2.08 %
T-Mobile Sector 3 Total:	2.08 %
Site Total:	80.12 %

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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:	2.08 %
Sector 2:	2.08 %
Sector 3 :	2.08 %
T-Mobile Total:	6.25 %
Site Total:	80.12 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **80.12%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

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