



Crown Castle
3530 Toringdon Way Suite 300
Charlotte NC 28277

Tel (704) 405-6600

April 8, 2015

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

RE: T-Mobile-Exempt Modification - Crown Site BU: 876385
T-Mobile Site ID: CT11516A
Located at: 400 Reilly Mountain Road, Coventry, CT 06238

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of T-Mobile. T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement their 700MHz technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mr. John Elsesser, Town Manager for the Town of Coventry, and J & C Wallbeoff Family Trust, Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **400 Reilly Mountain Road, Coventry, CT 06238**. 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. John Elsesser, Town Manager
1712 Main Street
Coventry, CT 06238

J & C Wallbeoff Family Trust
4 Knotty Pine Lane
c/o Ami Beth Degray
Deerfield, VA 24432



T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CT11516A
CROWN CASTLE BU #: 876385
SITE NAME: N. COVENTRY / WALLBEOFF
RILEY MOUNTAIN ROAD
COVENTRY, CT 06238
TOLLAND COUNTY



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



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

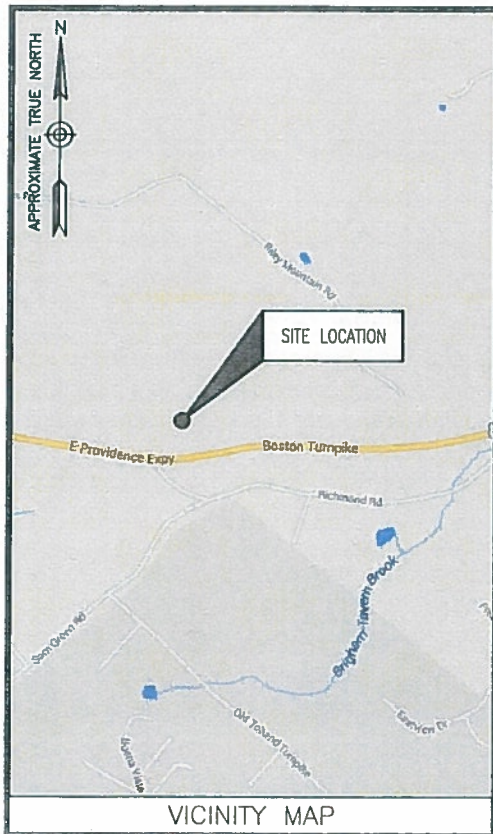
CT11516A
N. COVENTRY /
WALLBEOFF

CONSTRUCTION DRAWINGS

Table with columns for drawing type and date. Includes entries for 'ISSUED AS FINAL' and 'ISSUED FOR REVIEW'.



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



FROM PARSSIPANY, NJ:

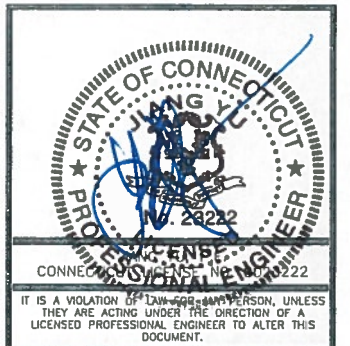
HEAD NORTHWEST ON SYLVAN WAY. TURN RIGHT ONTO US-202 N. TAKE THE RAMP ONTO I-80 E. TAKE EXIT 43 FOR I-287 TOWARD MORRISTOWN/MAHWAH. TAKE THE I-87 S/I-287/NEW YORK THRUWAY EXIT TOWARD TAPPAN ZEE BR/NEW YORK CITY. TAKE EXIT 9N-9S FOR HUTCHINSON PKWY TOWARD WHITESTONE BRIDGE/MERRITT PKWY. MERGE ONTO WESTCHESTER AVE E. TAKE THE HUTCHINSON PKWY N RAMP TO MERRITT PKWY. MERGE ONTO HUTCHINSON RIVER PKWY N. KEEP LEFT TO STAY ON CT-15 N. TAKE EXIT 68 N-E TO MERGE ONTO I-91 N TOWARD CT-66 E/HARTFORD/MIDDLETOWN. TAKE EXIT 29 TO MERGE ONTO CT-15 N/US-5 N TOWARD I-84E/E HARTFORD/BOSTON. TAKE THE EXIT ON THE LEFT ONTO I-84 E TOWARD BOSTON. TAKE EXIT 59 FOR I-384 TOWARD PROVIDENCE. CONTINUE ONTO US-44 E/US-6 E. TURN LEFT ONTO N RIVER RD. SHARP RIGHT ONTO RILEY MOUNTAIN RD. SITE WILL BE ON THE RIGHT.

ENGINEER
DEWBERRY ENGINEERS INC.
600 PARSSIPANY ROAD
SUITE 301
PARSSIPANY, 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

SITE NAME:
N. COVENTRY / WALLBEOFF
SITE NUMBER:
CT11516A
TOWER OWNER:
CROWN CASTLE
500 WEST CUMMINGS PARK, SUITE 3600
WOBURN, MA 01801
APPLICANT/DEVELOPER:
T-MOBILE NORTHEAST LLC
4 SYLVAN WAY
PARSSIPANY, NJ 07054
COORDINATES:
LATITUDE: 41°-47'-56.21" N (NAD83)
LONGITUDE: 72°-19'-55.88" W (NAD83)
(PER CROWN CASTLE)
CONFIGURATION
704G
PROJECT SUMMARY

SITE ADDRESS:
RILEY MOUNTAIN ROAD
COVENTRY, CT 06238
TOLLAND COUNTY
PROJECT DIRECTORY
SCOPE OF WORK
INSTALL (3) NEW ANTENNAS.
INSTALL (3) NEW BIAS TEES.
INSTALL (6) NEW LINES OF COAX.
INSTALL (1) NEW BBU CABINET AT GRADE.
INSTALL (3) NEW RRU'S ON A UNISTRUT RACK AT GRADE.
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.

Table with columns for sheet number and description. Includes entries for Title Sheet, General Notes, Compound Plan & Equipment Plans, Antenna Layouts & Elevations, Construction Details, and Grounding Notes & Details.



DRAWN BY: RA
REVIEWED BY: BSH
CHECKED BY: GHN
PROJECT NUMBER: 50066258
JOB NUMBER: 50072407
SITE ADDRESS:

RILEY MTN. ROAD
COVENTRY, CT 06238
TOLLAND COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

GENERAL NOTES:

- 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
- 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.
- 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.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- 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.
- 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.
- 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.
- 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.
- 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:

- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- 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.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T-MOBILE SPECIFICATION FOR SITE SIGNAGE.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
- 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.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
- 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.
- 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:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLEING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- 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.
- 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).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- 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.
- 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.
- 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.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE, AND NEC.
- NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- 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.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- 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.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE, AND NEC.
- CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- 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.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- 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:

- 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.
- 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.
- 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.
- 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 LARGER2 IN.
#5 AND SMALLER & WWF.....1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL3/4 IN.
BEAMS AND COLUMNS.....1 1/2 IN.
- A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- 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.
- 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.
- 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.
- 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:

- 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".
- 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.
- BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4") CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
- NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
- 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.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
- ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

CONSTRUCTION NOTES:

- FIELD VERIFICATION:
CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T-MOBILE ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
- COORDINATION OF WORK:
CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
- 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.
- 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
WOBRURN, MA 01801

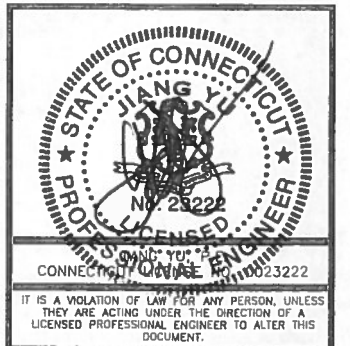
CT11516A
N. COVENTRY /
WALLBEOFF

CONSTRUCTION DRAWINGS

0	04/07/15	ISSUED AS FINAL	
A	03/21/15	ISSUED FOR REVIEW	

Dewberry

Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9110



DRAWN BY:	RA
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50072407
SITE ADDRESS:	

RILEY MTN. ROAD
COVENTRY, CT 06238
TOLLAND COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

T-Mobile

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



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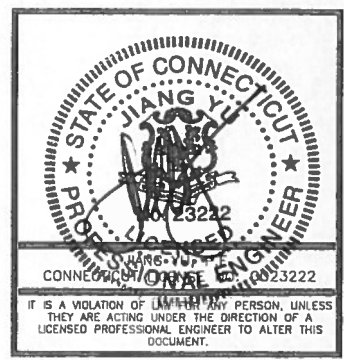
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N. COVENTRY /
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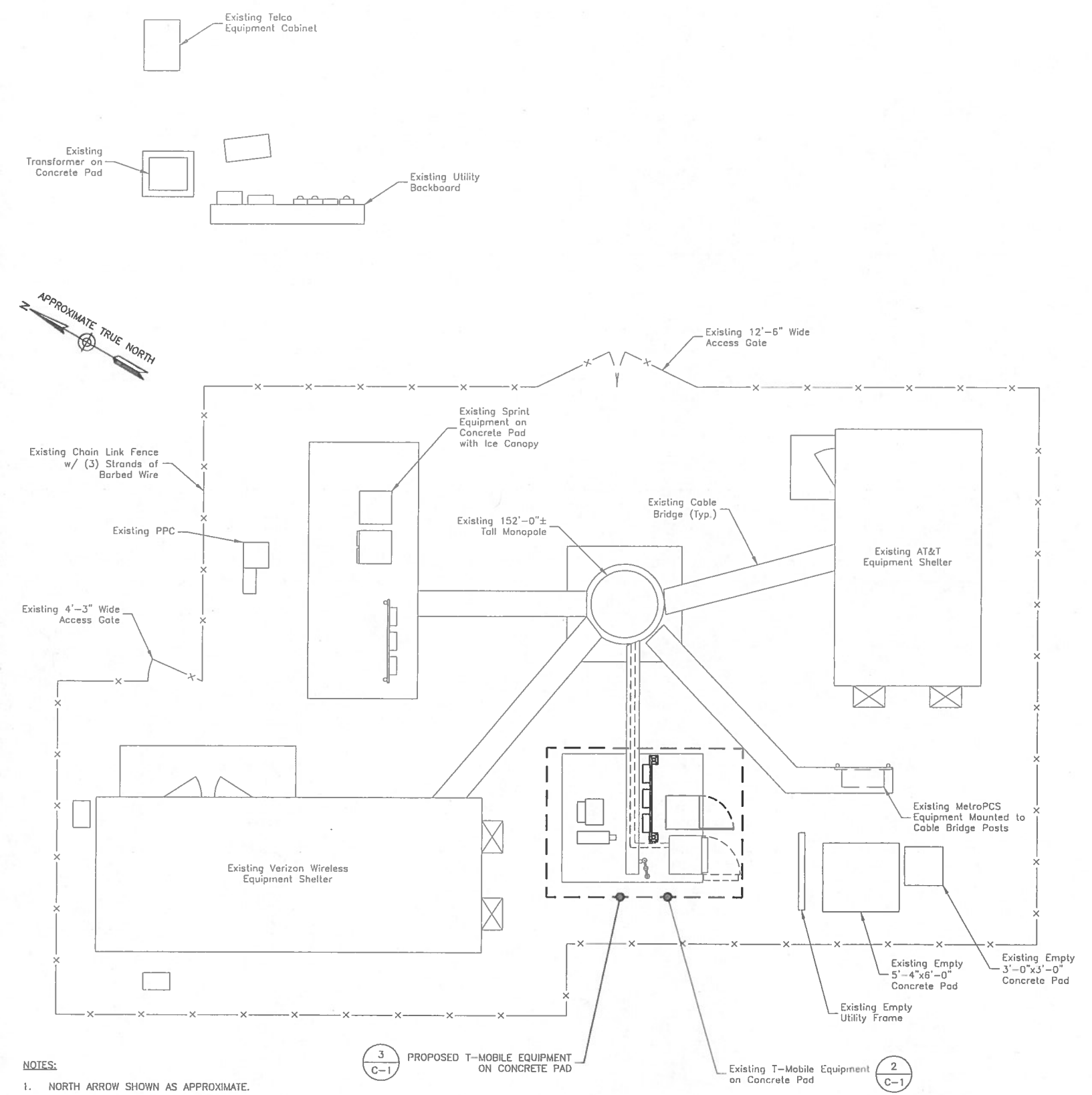


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PROJECT NUMBER:	5006258
JOB NUMBER:	50072407
SITE ADDRESS:	

RILEY MTN. ROAD
COVENTRY, CT 06238
TOLLAND COUNTY

SHEET TITLE	COMPOUND PLAN & EQUIPMENT PLANS
SHEET NUMBER	

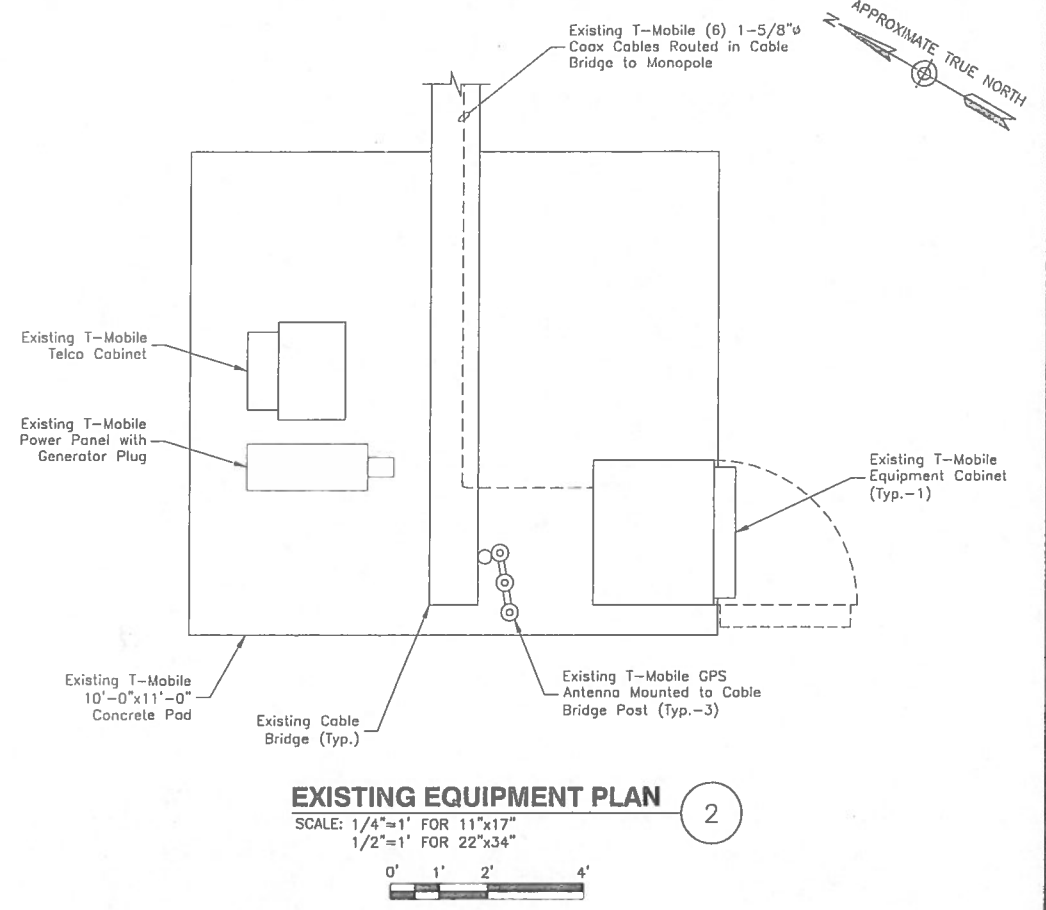
C-1



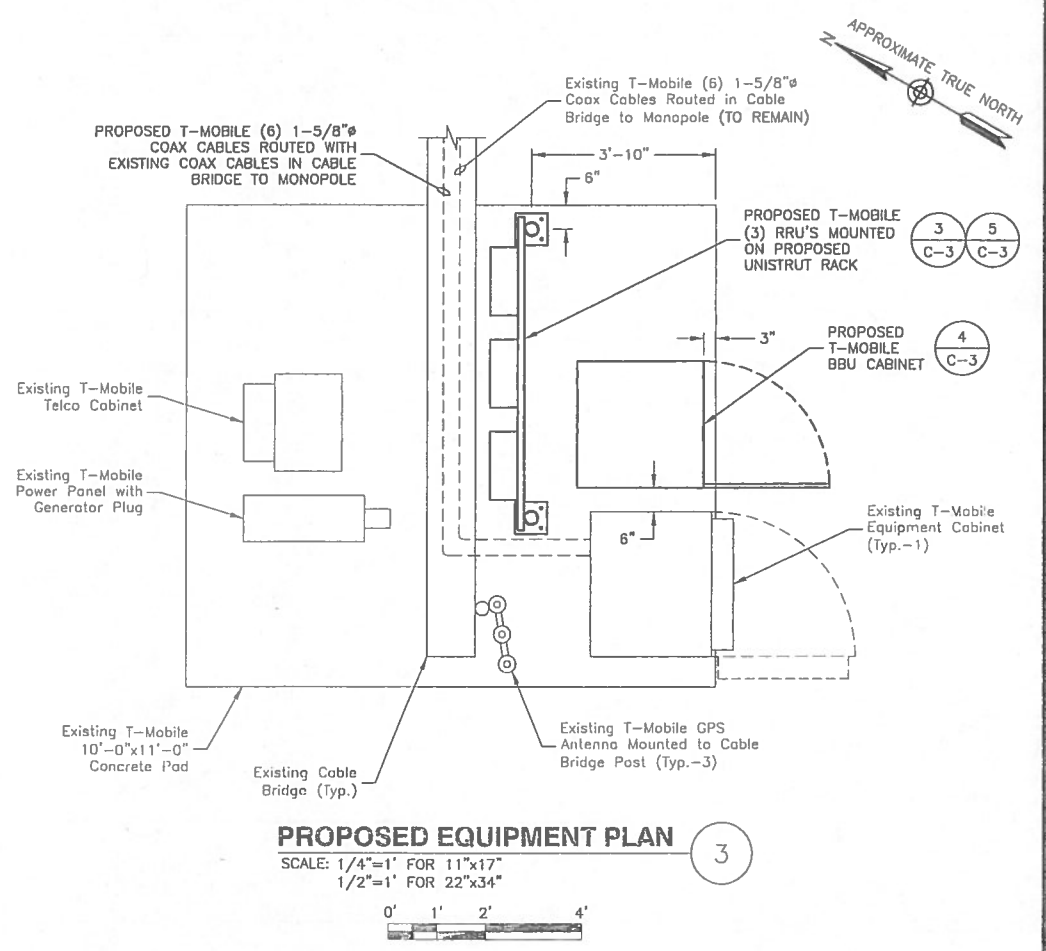
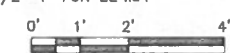
COMPOUND PLAN
SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"
①



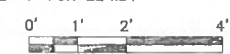
- NOTES:**
1. NORTH ARROW SHOWN AS APPROXIMATE.
 2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
 3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, BIAS TEES, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY FDH ENGINEERING, INC. DATED FEBRUARY 27, 2015.

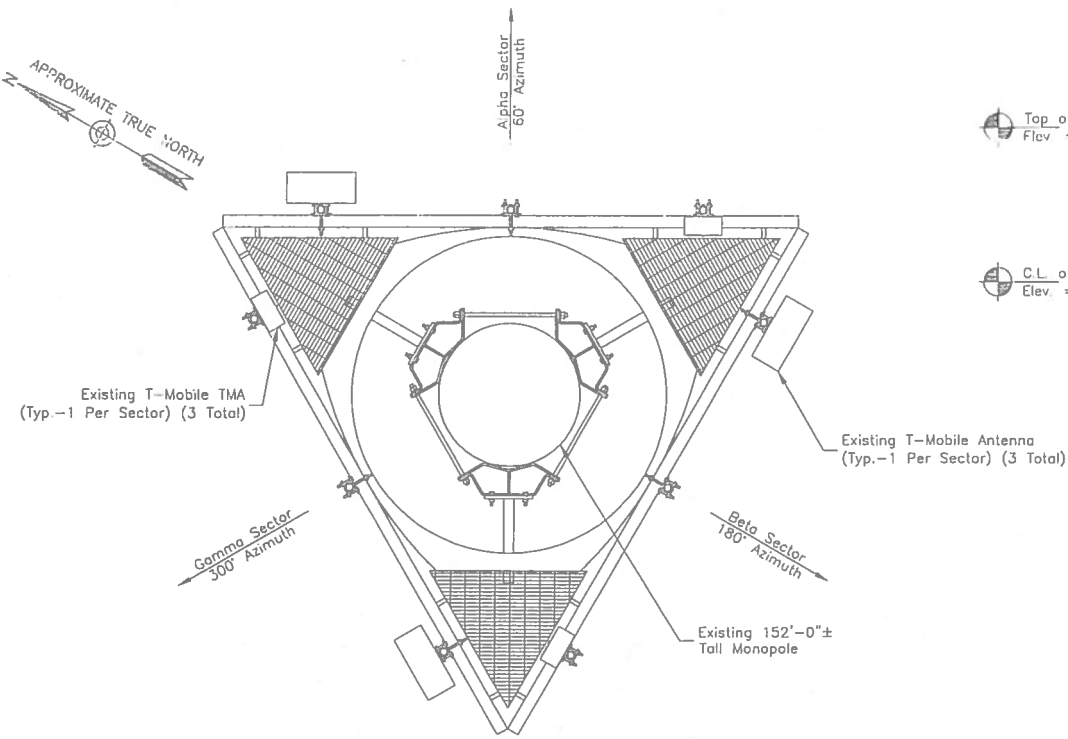


EXISTING EQUIPMENT PLAN
SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"
②

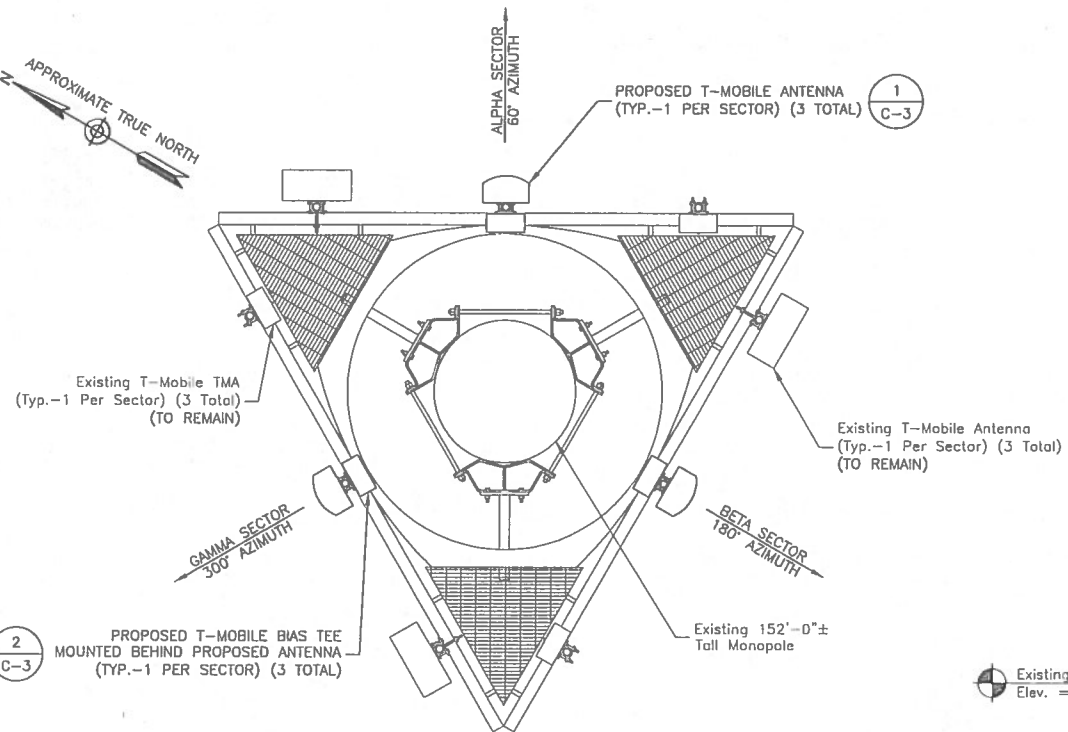


PROPOSED EQUIPMENT PLAN
SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"
③

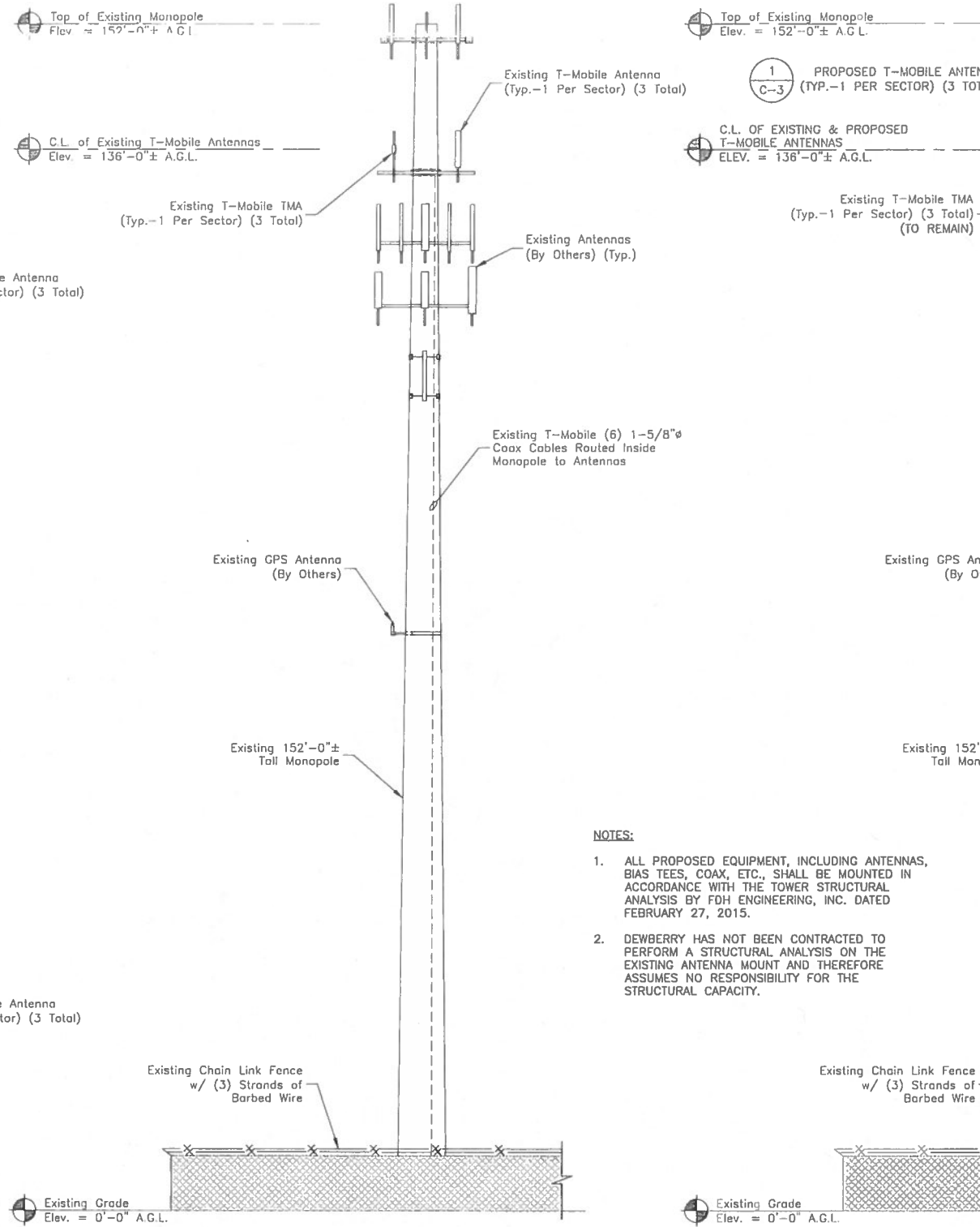




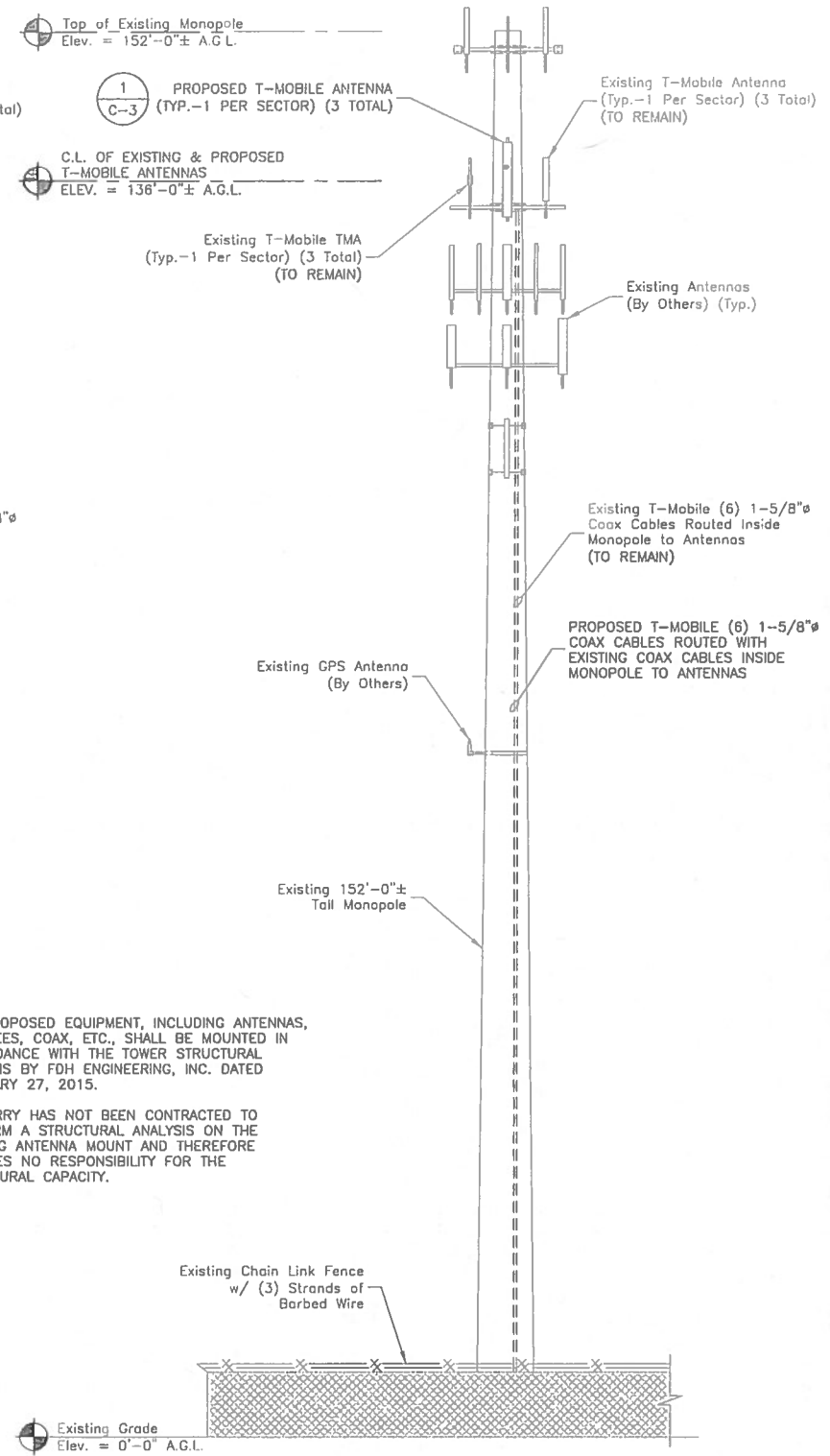
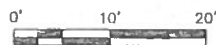
EXISTING ANTENNA LAYOUT
SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.



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



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



NOTES:

1. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, BIAS TEES, COAX, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY FDH ENGINEERING, INC. DATED FEBRUARY 27, 2015.
2. DEWBERRY HAS NOT BEEN CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THE EXISTING ANTENNA MOUNT AND THEREFORE ASSUMES NO RESPONSIBILITY FOR THE STRUCTURAL CAPACITY.

T-Mobile

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WOBRUN, MA 01801

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WALLBOFF

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A 03/21/15 ISSUED FOR REVIEW

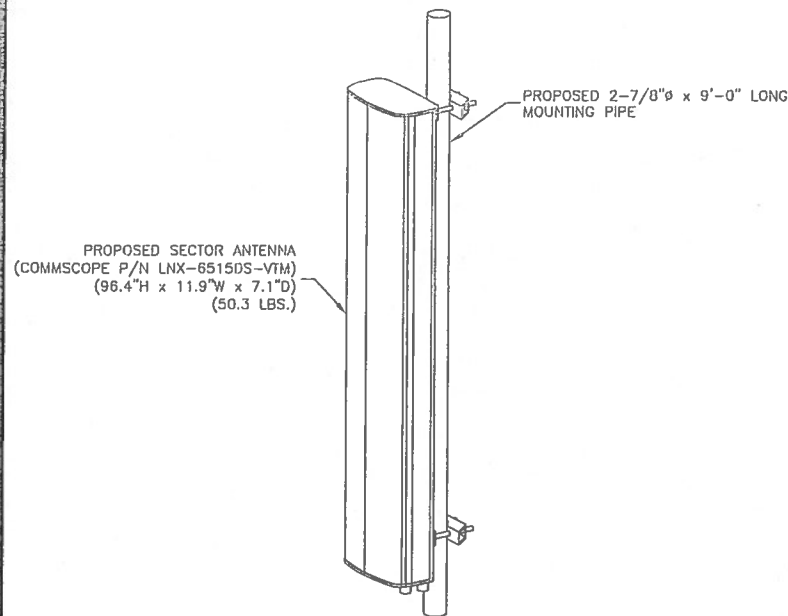
Dewberry
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG YU
Professional Engineer
No. 23222
LICENSE NO. 0023222
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: RA
REVIEWED BY: BSH
CHECKED BY: GHN
PROJECT NUMBER: 50066258
JOB NUMBER: 50072407
SITE ADDRESS: _____

RILEY MTN. ROAD
COVENTRY, CT 06238
TOLLAND COUNTY

SHEET TITLE: ANTENNA LAYOUTS & ELEVATIONS
SHEET NUMBER: _____

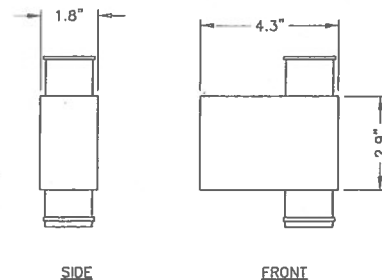


NOTES:

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

SCALE: N.T.S.



SIDE

FRONT

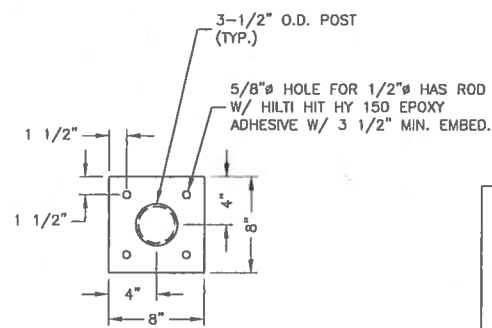
ANDREW ATBT-BOTTOM-24V

NOTES:

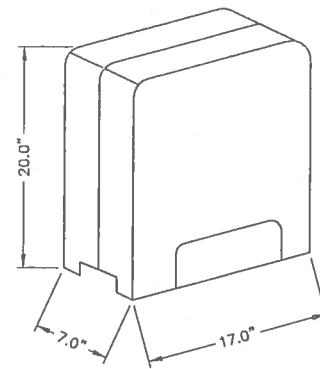
1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

BIAS TEE DETAIL

SCALE: N.T.S.



BASE PLATE



SPECIFICATIONS:

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

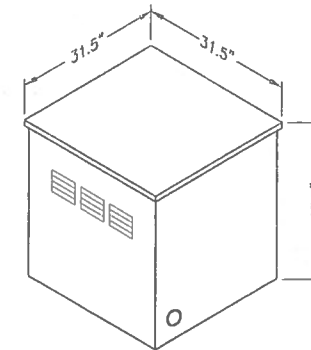
ERICSSON RRUS-11 B12

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

SCALE: N.T.S.



ALCATEL-LUCENT EZBF BATTERY BACKUP SYSTEM

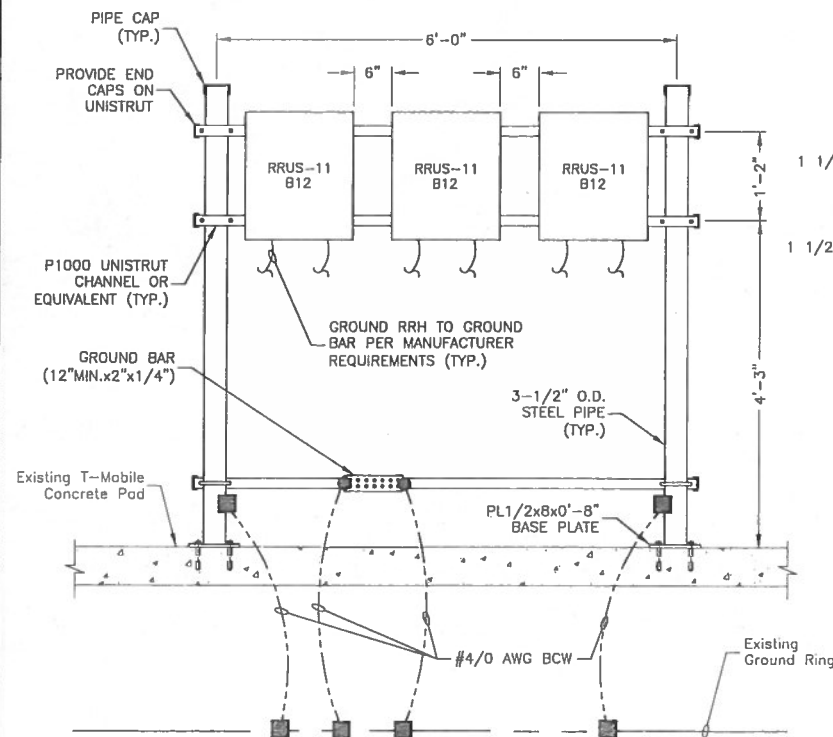
MATERIAL:	ANCHOR:
CONCRETE	3/8" HILTI KWIK BOLT 3 W/2-1/2" MIN. EMBED.
STRUCTURAL STEEL	1/2" STRUCTURAL BOLTS

NOTE:

1. CONTRACTOR SHALL ANCHOR CABINET IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

BBU CABINET DETAIL

SCALE: N.T.S.

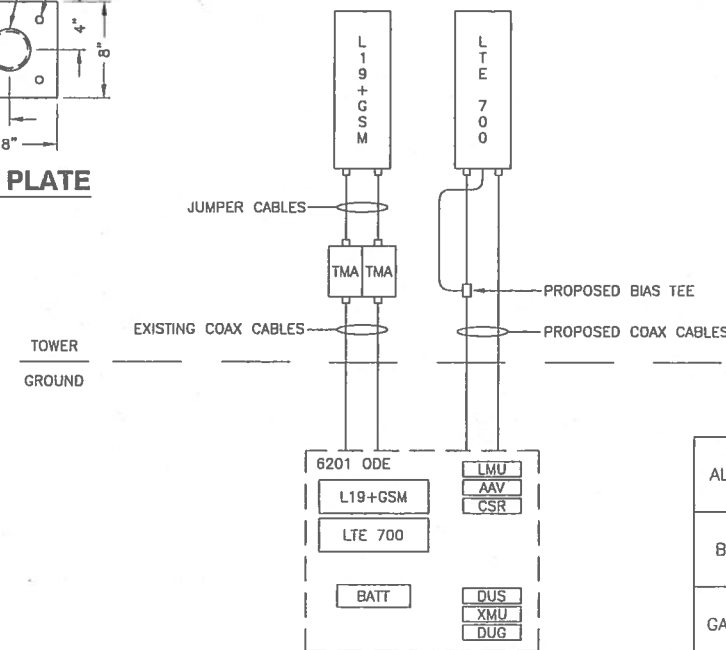


NOTES:

1. CONTRACTOR SHALL SUPPLY AND INSTALL UNISTRUT (OR EQUIVALENT) MOUNTING CHANNELS.
2. CONTRACTOR SHALL SUPPLY (BUT NOT INSTALL) 3/8 inch UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER RRU. CONTRACTOR SHALL BAG THE BOLTING HARDWARE AND HANG FROM INSTALLED UNISTRUT FRAME.
3. SPACING MAY VARY BASED ON SELECTED EQUIPMENT. ADJUSTMENTS TO SPACING WILL BE MADE BY RRU INSTALLER.
4. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

RRU RACK DETAIL

SCALE: N.T.S.



SITE CONFIGURATION 704G

SCALE: N.T.S.

		DESIGN CONFIGURATION			COAX LENGTH
ANTENNAS		COAX			
	EXISTING	PROPOSED	EXISTING	PROPOSED	
ALPHA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	(2) 1-5/8"	186'-0"
	-	COMMSCOPE LNX-6515DS-VTM			
BETA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	(2) 1-5/8"	186'-0"
	-	COMMSCOPE LNX-6515DS-VTM			
GAMMA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	(2) 1-5/8"	186'-0"
	-	COMMSCOPE LNX-6515DS-VTM			

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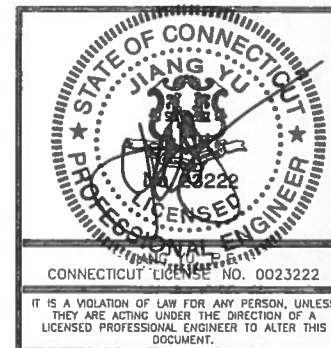
**CT11516A
N. COVENTRY /
WALLBEOFF**

CONSTRUCTION DRAWINGS

DATE	ISSUED AS
04/07/15	ISSUED AS FINAL
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Dewberry

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



DRAWN BY: RA

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50066258

JOB NUMBER: 50072407

SITE ADDRESS:

RILEY MTN. ROAD
COVENTRY, CT 06238
TOLLAND COUNTY

SHEET TITLE

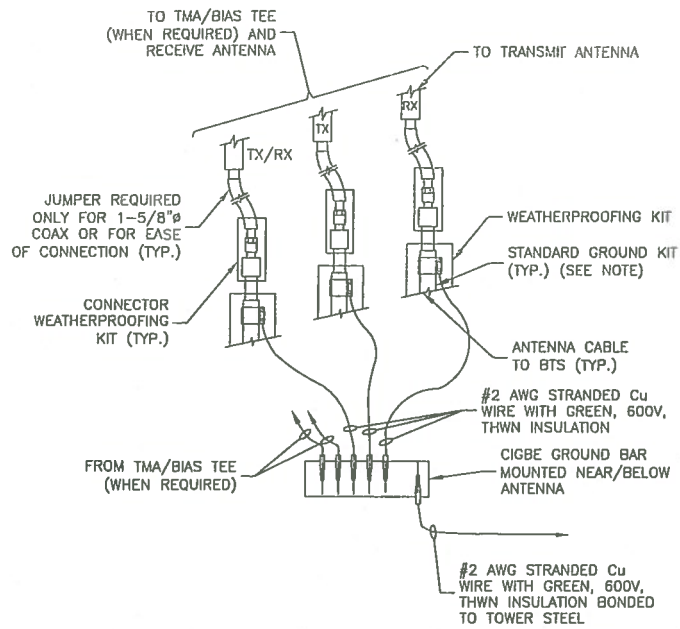
CONSTRUCTION
DETAILS

SHEET NUMBER

C-3

GROUNDING NOTES:

- 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.
- 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.
- 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.
- 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.
- 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.
- METAL CONDUIT AND TRAY SHALL BE GROUNDING AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 8 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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.
- 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.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- 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.
- 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.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
- 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.
- EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTOR'S STRUCTURAL ENGINEER.
- 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.
- ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTIONS. 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.
- 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.
- APPROVED ANTI-OXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- 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.
- 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.

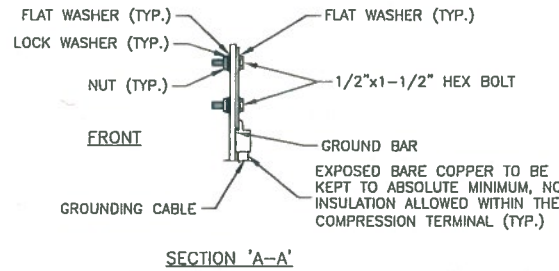
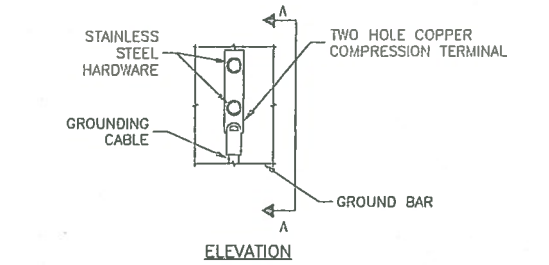


NOTE:

- 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)

SCALE: N.T.S.

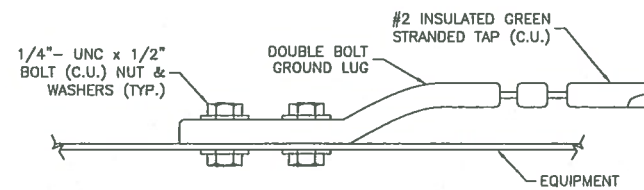


NOTES:

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

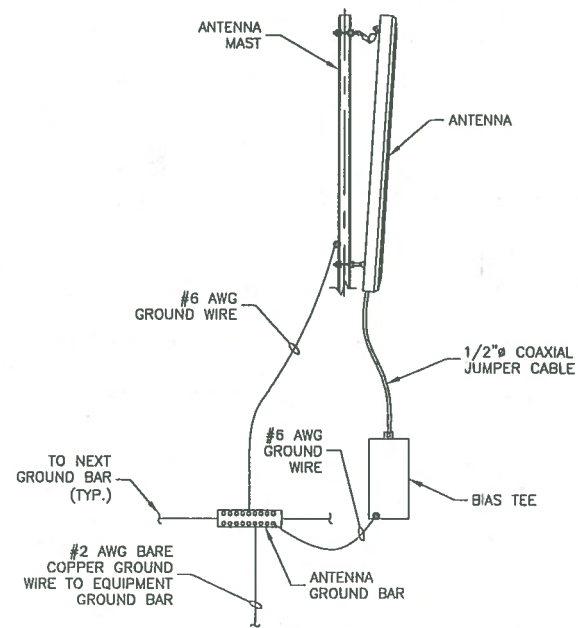
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

SCALE: N.T.S.



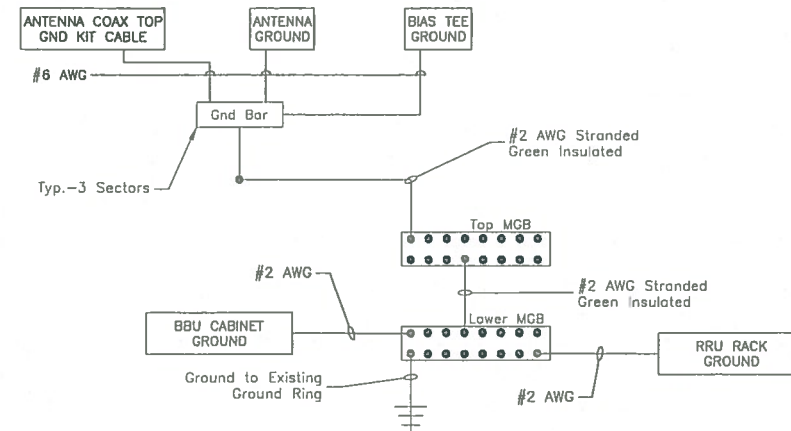
CONNECTION TO EQUIPMENT DETAIL

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL

SCALE: N.T.S.



NOTES:

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

SCHEMATIC GROUNDING DIAGRAM

SCALE: N.T.S.



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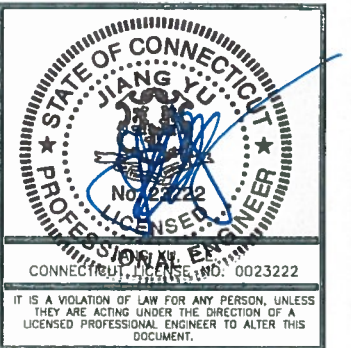
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DRAWN BY:	RA
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PROJECT NUMBER:	5006258
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SITE ADDRESS:	

RILEY MTN. ROAD
COVENTRY, CT 06238
TOLLAND COUNTY

SHEET TITLE

GROUNDING NOTES
& DETAILS

SHEET NUMBER



FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012

Date: **February 27, 2015**

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

Subject: Structural Analysis Report

Carrier Designation:	T-Mobile Co-Locate	
	Carrier Site Number:	CT11516A
	Carrier Site Name:	CT516/Coventry - Sprint
Crown Castle Designation:	Crown Castle BU Number:	876385
	Crown Castle Site Name:	N. COVENTRY / WALLBEOFF
	Crown Castle JDE Job Number:	323992
	Crown Castle Work Order Number:	1013864
	Crown Castle Application Number:	282532 Rev. 1
Engineering Firm Designation:	FDH Engineering, Inc. Project Number:	15BFDC1400
Site Data:	Reilly Mtn. Rd., COVENTRY, Tolland County, CT	
	Latitude 41° 47' 56.21", Longitude -72° 19' 55.88"	
	152 Foot - Monopole Tower	

Dear Sean Dempsey,

FDH Engineering, Inc. 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 759599, in accordance with application 282532, revision 1.

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

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 Connecticut State Building Code based upon a wind speed of 85 mph fastest mile.

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

We at *FDH Engineering, Inc.* 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:

Reviewed By:

Diana Tang, EIT
Project Engineer

Dennis D. Abel, PE
Director - Structural Engineering
CT PE License No. 23247



02-27-2015

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1) INTRODUCTION

This tower is a 152 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in November of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37 mph with 1 inch ice thickness, and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
133.0	136.0	3	commscope	ATBT-BOTTOM-24V	6	1-5/8	1
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			

Notes:

- 1) Proposed Equipment

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	152.0	6	decibel	DB980F90T2E-M w/ Mount Pipe	6	1-5/8	1
	150.0	1	crown mounts	Platform Mount [LP 601-1]			
133.0	136.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	6	1-5/8	1
		3	ericsson	KRY 112 71/2			
	133.0	1	crown mounts	Platform Mount [LP 303-1]			
124.0	126.0	3	alcatel lucent	RRH2x40-AWS	1	1-5/8	2
		6	kathrein	742 213 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
	6	antel	LPA-80080/6CF w/ Mount Pipe	18	1-5/8	1	
124.0	1	crown mounts	Platform Mount [LP 303-1]				
116.0	120.0	3	ericsson	RRUS-11	12 1 2	1-1/4 3/8 3/4	1
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21903			
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	1	raycap	DC6-48-60-18-8F				
116.0	1	crown mounts	Platform Mount [LP 712-1]				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
107.0	107.0	3	kathrein	742 213 w/ Mount Pipe	6	1-5/8	1
74.0	75.0	1	lucent	KS24019-L112A	1	1/2	1
	74.0	1	crown mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment (considered in analysis)

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150	150	1		LP Platform	-	-
		12	Dapa	48000		
140	140	1		LP Platform	-	-
		12	Dapa	48000		
130	130	1		LP Platform	-	-
		12	Dapa	48000		
120	120	1		LP Platform	-	-
		12	Dapa	48000		
110	110	1		LP Platform	-	-
		12	Dapa	48000		
100	100	1		LP Platform	-	-
		12	Dapa	48000		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Goodkind & O'Dea, Inc.	1531969	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	1441268	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	1614566	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.

- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Engineering, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	152 - 137.423	Pole	TP37.31x33.03x0.3125	1	-2.42	1829.53	2.2	Pass
L2	137.423 - 91.09	Pole	TP50.15x35.1679x0.375	2	-17.63	2956.95	23.3	Pass
L3	91.09 - 44.793	Pole	TP62.86x47.4122x0.4375	3	-32.49	4329.64	33.7	Pass
L4	44.793 - 0	Pole	TP75x59.5377x0.5	4	-56.89	6146.50	36.7	Pass
							Summary	
						Pole (L4)	36.7	Pass
						RATING =	36.7	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	33.8	Pass
1	Base Plate	0	49.6	Pass
1	Base Foundation	0	38.4	Pass

Structure Rating (max from all components) =	49.6%
---	--------------

Notes:

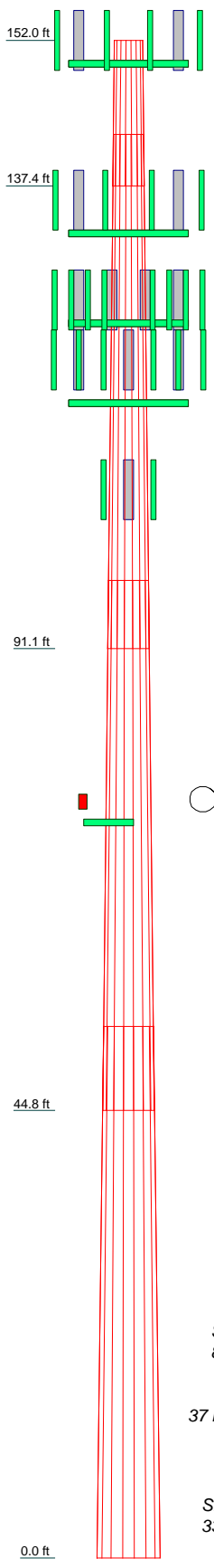
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower, anchor rods, base plate, and foundation have sufficient capacity to support the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	
Length (ft)	14.58	51.50	53.13	53.21	
Number of Sides	18	18	18	18	
Thickness (in)	0.3125	0.3750	0.4375	0.5000	
Socket Length (ft)	5.17	6.83	8.42	59.5377	
Top Dia (in)	33.0300	35.1679	47.4122	59.5377	
Bot Dia (in)	37.3100	50.1500	62.8600	75.0000	
Grade			A572-65		
Weight (K)	1.7	8.8	13.7	19.2	43.5



DESIGNED APPURTENANCE LOADING

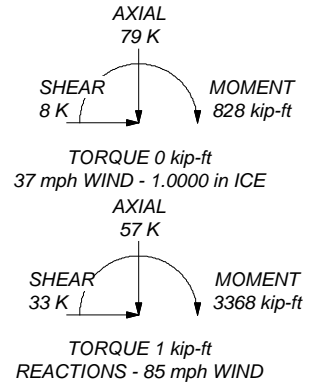
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 601-1]	150	(2) 742 213 w/ Mount Pipe	124
(2) DB980F90T2E-M w/ Mount Pipe	150	RRH2x40-AWS	124
(2) DB980F90T2E-M w/ Mount Pipe	150	RRH2x40-AWS	124
(2) DB980F90T2E-M w/ Mount Pipe	150	RRH2x40-AWS	124
2.5" x 7" mount pipe	150	DB-T1-6Z-8AB-0Z	124
2.5" x 7" mount pipe	150	Platform Mount [LP 712-1]	116
2.5" x 7" mount pipe	150	AM-X-CD-16-65-00T-RET w/ Mount Pipe	116
Platform Mount [LP 303-1]	133	AM-X-CD-16-65-00T-RET w/ Mount Pipe	116
RR90-17-02DP w/ Mount Pipe	133	P65-17-XLH-RR w/ Mount Pipe	116
RR90-17-02DP w/ Mount Pipe	133	(2) 7770.00 w/ Mount Pipe	116
RR90-17-02DP w/ Mount Pipe	133	(2) 7770.00 w/ Mount Pipe	116
KRY 112 71/2	133	(2) 7770.00 w/ Mount Pipe	116
KRY 112 71/2	133	RRUS-11	116
LNX-6515DS-VTM w/ Mount Pipe	133	RRUS-11	116
LNX-6515DS-VTM w/ Mount Pipe	133	RRUS-11	116
LNX-6515DS-VTM w/ Mount Pipe	133	(2) LGP21903	116
ATBT-BOTTOM-24V	133	(2) LGP21903	116
ATBT-BOTTOM-24V	133	(2) LGP21903	116
ATBT-BOTTOM-24V	133	(2) LGP21401	116
Platform Mount [LP 303-1]	124	(2) LGP21401	116
(2) LPA-80080/6CF w/ Mount Pipe	124	(2) LGP21401	116
(2) LPA-80080/6CF w/ Mount Pipe	124	DC6-48-60-18-8F	116
(2) LPA-80080/6CF w/ Mount Pipe	124	742 213 w/ Mount Pipe	107
BXA-70063/6CF-2 w/ Mount Pipe	124	742 213 w/ Mount Pipe	107
BXA-70063/6CF-2 w/ Mount Pipe	124	742 213 w/ Mount Pipe	107
BXA-70063/6CF-2 w/ Mount Pipe	124	Side Arm Mount [SO 701-1]	74
(2) 742 213 w/ Mount Pipe	124	KS24019-L112A	74
(2) 742 213 w/ Mount Pipe	124		


MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Tolland 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 37 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 36.7%



 FDH Engineering, Inc. 6521 Meridian Drive Raleigh, North Carolina 27616 Phone: 9197551012 FAX: 9197551031	Job: BU 876385 - N. COVENTRY WALLBEOFF CT		
	Project: 15BFDC1400		
	Client: Crown Castle	Drawn by: SMagallon	App'd:
	Code: TIA/EIA-222-F	Date: 02/27/15	Scale: NTS
Tower Analysis	Path:	Dwg No. E-1	

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	Client Crown Castle	Designed by DTang

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Tolland County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 37 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

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	152.00-137.42	14.58	5.17	18	33.0300	37.3100	0.3125	1.2500	A572-65 (65 ksi)
L2	137.42-91.09	51.50	6.83	18	35.1679	50.1500	0.3750	1.5000	A572-65 (65 ksi)
L3	91.09-44.79	53.13	8.42	18	47.4122	62.8600	0.4375	1.7500	A572-65 (65 ksi)
L4	44.79-0.00	53.21		18	59.5377	75.0000	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I _t /Q in ²	w in	w/t
L1	33.5395	32.4517	4388.6882	11.6147	16.7792	261.5546	8783.1512	16.2289	5.2633	16.842
	37.8856	36.6969	6346.1675	13.1341	18.9535	334.8286	12700.6855	18.3519	6.0166	19.253
L2	37.2368	41.4122	6333.5547	12.3515	17.8653	354.5173	12675.4433	20.7101	5.5296	14.745
	50.9236	59.2447	18544.2574	17.6701	25.4762	727.9052	37112.9158	29.6280	8.1664	21.777
L3	50.1610	65.2302	18185.0269	16.6760	24.0854	755.0232	36393.9822	32.6213	7.5745	17.313
	63.8297	86.6814	42672.2855	22.1600	31.9329	1336.3118	85400.7203	43.3490	10.2934	23.528
L4	62.9398	93.6929	41257.5064	20.9584	30.2452	1364.1028	82569.3004	46.8553	9.5986	19.197
	76.1570	118.2315	82905.4718	26.4475	38.1000	2175.9966	165920.032	59.1270	12.3200	24.64

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
ft	ft ²	in						
L1 152.00-137.42				1	1	1		
L2 137.42-91.09				1	1	1		
L3 91.09-44.79				1	1	1		
L4 44.79-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
			ft						
*** Safety Line 3/8	C	Surface Ar (CaAa)	152.00 - 0.00	1	1	0.000 0.000	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		C_{AA} ft ² /ft	Weight plf
				ft				
*** LDF7-50A(1-5/8")	C	No	Inside Pole	150.00 - 0.00	6	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.82 0.82 0.82 0.82 0.82
*** LDF7-50A(1-5/8")	C	No	Inside Pole	133.00 - 0.00	6	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.82 0.82 0.82 0.82 0.82
AVA7-50(1-5/8)	C	No	Inside Pole	133.00 - 0.00	6	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.70 0.70 0.70 0.70 0.70
*** LDF7-50A(1-5/8")	C	No	Inside Pole	124.00 - 0.00	18	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.82 0.82 0.82 0.82 0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	124.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	1.30 1.30 1.30 1.30 1.30
*** LCF114-50J(1-1/4")	C	No	Inside Pole	116.00 - 0.00	12	No Ice	0.00	0.70

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}	Weight plf
						1/2" Ice	0.70
						1" Ice	0.70
						2" Ice	0.70
						4" Ice	0.70
FB-L98B-002-75000(3/8")	C	No	Inside Pole	116.00 - 0.00	1	No Ice	0.06
						1/2" Ice	0.06
						1" Ice	0.06
						2" Ice	0.06
						4" Ice	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	116.00 - 0.00	2	No Ice	0.58
						1/2" Ice	0.58
						1" Ice	0.58
						2" Ice	0.58
						4" Ice	0.58
2" Rigid Conduit	C	No	Inside Pole	116.00 - 0.00	1	No Ice	2.80
						1/2" Ice	2.80
						1" Ice	2.80
						2" Ice	2.80
						4" Ice	2.80

AVA7-50(1-5/8)	C	No	Inside Pole	107.00 - 0.00	6	No Ice	0.70
						1/2" Ice	0.70
						1" Ice	0.70
						2" Ice	0.70
						4" Ice	0.70

LDF4-50A(1/2")	C	No	Inside Pole	74.00 - 0.00	1	No Ice	0.15
						1/2" Ice	0.15
						1" Ice	0.15
						2" Ice	0.15
						4" Ice	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	152.00-137.42	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	0.547	0.000	0.07
L2	137.42-91.09	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	1.737	0.000	1.53
L3	91.09-44.79	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	1.736	0.000	2.18
L4	44.79-0.00	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	1.680	0.000	2.11

Feed Line/Linear Appurtenances Section Areas - With Ice

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	Client Crown Castle	Designed by DTang

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	152.00-137.42	A	1.194	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	4.027	0.000	0.10
L2	137.42-91.09	A	1.160	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	12.801	0.000	1.63
L3	91.09-44.79	A	1.090	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	12.474	0.000	2.28
L4	44.79-0.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	11.443	0.000	2.20

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	152.00-137.42	0.0000	0.0561	0.0000	0.3604
L2	137.42-91.09	0.0000	0.0562	0.0000	0.3695
L3	91.09-44.79	0.0000	0.0562	0.0000	0.3702
L4	44.79-0.00	0.0000	0.0562	0.0000	0.3579

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	

Platform Mount [LP 601-1]	C	None		0.0000	150.00	No Ice	28.47	28.47	1.12
						1/2" Ice	33.59	33.59	1.51
						1" Ice	38.71	38.71	1.91
						2" Ice	48.95	48.95	2.69
(2) DB980F90T2E-M w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice	3.99	3.72	0.03
						1/2" Ice	4.45	4.58	0.07
						1" Ice	4.90	5.32	0.11
						2" Ice	5.82	6.85	0.22
(2) DB980F90T2E-M w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice	3.99	3.72	0.03
						1/2" Ice	4.45	4.58	0.07
						1" Ice	4.90	5.32	0.11
						2" Ice	5.82	6.85	0.22
(2) DB980F90T2E-M w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice	3.99	3.72	0.03
						1/2" Ice	4.45	4.58	0.07
						1" Ice	4.90	5.32	0.11
						2" Ice	5.82	6.85	0.22

tnxTower FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Job		BU 876385 - N. COVENTRY WALLBEOFF CT		Page		5 of 26	
	Project		15BFDC1400		Date		18:38:54 02/27/15	
	Client		Crown Castle		Designed by		DTang	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral	Vert					
2.5" x 7' mount pipe	A	From Leg	4.00	0.0000	150.00	4" Ice	7.98	10.10	0.55	
			0.00			No Ice	1.75	1.75	0.03	
			2.00			1/2" Ice	2.45	2.45	0.04	
						1" Ice	3.15	3.15	0.05	
						2" Ice	4.55	4.55	0.08	
2.5" x 7' mount pipe	B	From Leg	4.00	0.0000	150.00	4" Ice	7.35	7.35	0.13	
			0.00			No Ice	1.75	1.75	0.03	
			2.00			1/2" Ice	2.45	2.45	0.04	
						1" Ice	3.15	3.15	0.05	
						2" Ice	4.55	4.55	0.08	
2.5" x 7' mount pipe	C	From Leg	4.00	0.0000	150.00	4" Ice	7.35	7.35	0.13	
			0.00			No Ice	1.75	1.75	0.03	
			2.00			1/2" Ice	2.45	2.45	0.04	
						1" Ice	3.15	3.15	0.05	
						2" Ice	4.55	4.55	0.08	

Platform Mount [LP 303-1]	C	None		0.0000	133.00	4" Ice	7.35	7.35	0.13	
						No Ice	14.66	14.66	1.25	
						1/2" Ice	18.87	18.87	1.48	
						1" Ice	23.08	23.08	1.71	
						2" Ice	31.50	31.50	2.18	
RR90-17-02DP w/ Mount Pipe	A	From Leg	4.00	0.0000	133.00	4" Ice	48.34	48.34	3.10	
			0.00			No Ice	4.59	3.32	0.03	
			3.00			1/2" Ice	5.09	4.09	0.07	
						1" Ice	5.58	4.78	0.12	
						2" Ice	6.59	6.23	0.22	
RR90-17-02DP w/ Mount Pipe	B	From Leg	4.00	0.0000	133.00	4" Ice	8.73	9.31	0.56	
			0.00			No Ice	4.59	3.32	0.03	
			3.00			1/2" Ice	5.09	4.09	0.07	
						1" Ice	5.58	4.78	0.12	
						2" Ice	6.59	6.23	0.22	
RR90-17-02DP w/ Mount Pipe	C	From Leg	4.00	0.0000	133.00	4" Ice	8.73	9.31	0.56	
			0.00			No Ice	4.59	3.32	0.03	
			3.00			1/2" Ice	5.09	4.09	0.07	
						1" Ice	5.58	4.78	0.12	
						2" Ice	6.59	6.23	0.22	
KRY 112 71/2	A	From Leg	4.00	0.0000	133.00	4" Ice	1.90	1.65	0.11	
			0.00			No Ice	0.68	0.51	0.01	
			3.00			1/2" Ice	0.80	0.62	0.02	
						1" Ice	0.93	0.74	0.03	
						2" Ice	1.22	1.01	0.05	
KRY 112 71/2	B	From Leg	4.00	0.0000	133.00	4" Ice	1.90	1.65	0.11	
			0.00			No Ice	0.68	0.51	0.01	
			3.00			1/2" Ice	0.80	0.62	0.02	
						1" Ice	0.93	0.74	0.03	
						2" Ice	1.22	1.01	0.05	
KRY 112 71/2	C	From Leg	4.00	0.0000	133.00	4" Ice	1.90	1.65	0.11	
			0.00			No Ice	0.68	0.51	0.01	
			3.00			1/2" Ice	0.80	0.62	0.02	
						1" Ice	0.93	0.74	0.03	
						2" Ice	1.22	1.01	0.05	
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	133.00	4" Ice	1.90	1.65	0.11	
			0.00			No Ice	11.68	9.84	0.08	
			3.00			1/2" Ice	12.40	11.37	0.17	
						1" Ice	13.14	12.91	0.27	
						2" Ice	14.60	15.27	0.51	
					4" Ice	17.87	20.14	1.15		

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	Client		Crown Castle		Designed by		DTang	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	133.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			3.00			1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	133.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			3.00			1" Ice	13.14	12.91	0.27
						2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
ATBT-BOTTOM-24V	A	From Leg	4.00	0.0000	133.00	No Ice	0.12	0.08	0.00
			0.00			1/2" Ice	0.17	0.12	0.00
			3.00			1" Ice	0.23	0.17	0.01
						2" Ice	0.38	0.30	0.01
						4" Ice	0.77	0.67	0.04
ATBT-BOTTOM-24V	B	From Leg	4.00	0.0000	133.00	No Ice	0.12	0.08	0.00
			0.00			1/2" Ice	0.17	0.12	0.00
			3.00			1" Ice	0.23	0.17	0.01
						2" Ice	0.38	0.30	0.01
						4" Ice	0.77	0.67	0.04
ATBT-BOTTOM-24V	C	From Leg	4.00	0.0000	133.00	No Ice	0.12	0.08	0.00
			0.00			1/2" Ice	0.17	0.12	0.00
			3.00			1" Ice	0.23	0.17	0.01
						2" Ice	0.38	0.30	0.01
						4" Ice	0.77	0.67	0.04

Platform Mount [LP 303-1]	C	None		0.0000	124.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00	0.0000	124.00	No Ice	4.56	10.73	0.05
			0.00			1/2" Ice	5.11	11.99	0.11
			2.00			1" Ice	5.61	12.97	0.19
						2" Ice	6.65	14.98	0.36
						4" Ice	8.83	19.22	0.86
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00	0.0000	124.00	No Ice	4.56	10.73	0.05
			0.00			1/2" Ice	5.11	11.99	0.11
			2.00			1" Ice	5.61	12.97	0.19
						2" Ice	6.65	14.98	0.36
						4" Ice	8.83	19.22	0.86
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00	0.0000	124.00	No Ice	4.56	10.73	0.05
			0.00			1/2" Ice	5.11	11.99	0.11
			2.00			1" Ice	5.61	12.97	0.19
						2" Ice	6.65	14.98	0.36
						4" Ice	8.83	19.22	0.86
BXA-70063/6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	124.00	No Ice	7.97	5.40	0.04
			0.00			1/2" Ice	8.61	6.55	0.10
			2.00			1" Ice	9.22	7.41	0.17
						2" Ice	10.46	9.18	0.33
						4" Ice	13.07	12.93	0.79
BXA-70063/6CF-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	124.00	No Ice	7.97	5.40	0.04
			0.00			1/2" Ice	8.61	6.55	0.10
			2.00			1" Ice	9.22	7.41	0.17
						2" Ice	10.46	9.18	0.33
						4" Ice	13.07	12.93	0.79
BXA-70063/6CF-2 w/ Mount	C	From Leg	4.00	0.0000	124.00	No Ice	7.97	5.40	0.04

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
Pipe			0.00			1/2" Ice	8.61	6.55	0.10	
			2.00			1" Ice	9.22	7.41	0.17	
						2" Ice	10.46	9.18	0.33	
						4" Ice	13.07	12.93	0.79	
(2) 742 213 w/ Mount Pipe	A	From Leg	4.00		0.0000	124.00	No Ice	5.37	4.62	0.05
			0.00				1/2" Ice	5.95	6.00	0.09
			2.00				1" Ice	6.50	6.98	0.15
							2" Ice	7.61	8.85	0.28
							4" Ice	9.93	12.79	0.68
(2) 742 213 w/ Mount Pipe	B	From Leg	4.00		0.0000	124.00	No Ice	5.37	4.62	0.05
			0.00				1/2" Ice	5.95	6.00	0.09
			2.00				1" Ice	6.50	6.98	0.15
							2" Ice	7.61	8.85	0.28
							4" Ice	9.93	12.79	0.68
(2) 742 213 w/ Mount Pipe	C	From Leg	4.00		0.0000	124.00	No Ice	5.37	4.62	0.05
			0.00				1/2" Ice	5.95	6.00	0.09
			2.00				1" Ice	6.50	6.98	0.15
							2" Ice	7.61	8.85	0.28
							4" Ice	9.93	12.79	0.68
RRH2x40-AWS	A	From Leg	4.00		0.0000	124.00	No Ice	2.52	1.59	0.04
			0.00				1/2" Ice	2.75	1.80	0.06
			2.00				1" Ice	2.99	2.01	0.08
							2" Ice	3.50	2.46	0.13
							4" Ice	4.61	3.48	0.28
RRH2x40-AWS	B	From Leg	4.00		0.0000	124.00	No Ice	2.52	1.59	0.04
			0.00				1/2" Ice	2.75	1.80	0.06
			2.00				1" Ice	2.99	2.01	0.08
							2" Ice	3.50	2.46	0.13
							4" Ice	4.61	3.48	0.28
RRH2x40-AWS	C	From Leg	4.00		0.0000	124.00	No Ice	2.52	1.59	0.04
			0.00				1/2" Ice	2.75	1.80	0.06
			2.00				1" Ice	2.99	2.01	0.08
							2" Ice	3.50	2.46	0.13
							4" Ice	4.61	3.48	0.28
DB-T1-6Z-8AB-0Z	A	From Leg	4.00		0.0000	124.00	No Ice	5.60	2.33	0.04
			0.00				1/2" Ice	5.92	2.56	0.08
			2.00				1" Ice	6.24	2.79	0.12
							2" Ice	6.91	3.28	0.21
							4" Ice	8.37	4.37	0.45

Platform Mount [LP 712-1]	C	None			0.0000	116.00	No Ice	24.53	24.53	1.34
							1/2" Ice	29.94	29.94	1.65
							1" Ice	35.35	35.35	1.96
							2" Ice	46.17	46.17	2.58
							4" Ice	67.81	67.81	3.82
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00		0.0000	116.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			4.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00		0.0000	116.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			4.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00		0.0000	116.00	No Ice	11.70	8.94	0.09
			0.00				1/2" Ice	12.42	10.45	0.18

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
				4.00					
						1" Ice	13.15	11.99	0.27
						2" Ice	14.64	14.31	0.50
						4" Ice	17.91	19.14	1.13
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	116.00	No Ice	6.12	4.25	0.06
			0.00			1/2" Ice	6.63	5.01	0.10
			4.00			1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	116.00	No Ice	6.12	4.25	0.06
			0.00			1/2" Ice	6.63	5.01	0.10
			4.00			1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	116.00	No Ice	6.12	4.25	0.06
			0.00			1/2" Ice	6.63	5.01	0.10
			4.00			1" Ice	7.13	5.71	0.16
						2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
RRUS-11	A	From Leg	4.00	0.0000	116.00	No Ice	3.25	1.37	0.05
			0.00			1/2" Ice	3.49	1.55	0.07
			4.00			1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
RRUS-11	B	From Leg	4.00	0.0000	116.00	No Ice	3.25	1.37	0.05
			0.00			1/2" Ice	3.49	1.55	0.07
			4.00			1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
RRUS-11	C	From Leg	4.00	0.0000	116.00	No Ice	3.25	1.37	0.05
			0.00			1/2" Ice	3.49	1.55	0.07
			4.00			1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
(2) LGP21903	A	From Leg	4.00	0.0000	116.00	No Ice	0.27	0.18	0.01
			0.00			1/2" Ice	0.34	0.25	0.01
			4.00			1" Ice	0.43	0.32	0.02
						2" Ice	0.62	0.49	0.03
						4" Ice	1.10	0.94	0.07
(2) LGP21903	B	From Leg	4.00	0.0000	116.00	No Ice	0.27	0.18	0.01
			0.00			1/2" Ice	0.34	0.25	0.01
			4.00			1" Ice	0.43	0.32	0.02
						2" Ice	0.62	0.49	0.03
						4" Ice	1.10	0.94	0.07
(2) LGP21903	C	From Leg	4.00	0.0000	116.00	No Ice	0.27	0.18	0.01
			0.00			1/2" Ice	0.34	0.25	0.01
			4.00			1" Ice	0.43	0.32	0.02
						2" Ice	0.62	0.49	0.03
						4" Ice	1.10	0.94	0.07
(2) LGP21401	A	From Leg	4.00	0.0000	116.00	No Ice	1.29	0.23	0.01
			0.00			1/2" Ice	1.45	0.31	0.02
			4.00			1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) LGP21401	B	From Leg	4.00	0.0000	116.00	No Ice	1.29	0.23	0.01
			0.00			1/2" Ice	1.45	0.31	0.02
			4.00			1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05

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	Client	Crown Castle	Designed by	DTang

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
(2) LGP21401	C	From Leg	4.00	0.0000	116.00	4" Ice	2.79	1.12	0.14
			0.00	No Ice		1.29	0.23	0.01	
			4.00	1/2" Ice		1.45	0.31	0.02	
				1" Ice		1.61	0.40	0.03	
				2" Ice		1.97	0.61	0.05	
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	116.00	4" Ice	2.79	1.12	0.14
			0.00	No Ice		2.57	4.32	0.03	
			4.00	1/2" Ice		2.80	4.60	0.06	
				1" Ice		3.04	4.88	0.10	
				2" Ice		3.54	5.49	0.18	
			4" Ice	4.66	6.80	0.40			

742 213 w/ Mount Pipe	A	From Leg	1.00	0.0000	107.00	No Ice	5.37	4.62	0.05
			0.00	1/2" Ice		5.95	6.00	0.09	
			0.00	1" Ice		6.50	6.98	0.15	
				2" Ice		7.61	8.85	0.28	
				4" Ice		9.93	12.79	0.68	
742 213 w/ Mount Pipe	B	From Leg	1.00	0.0000	107.00	No Ice	5.37	4.62	0.05
			0.00	1/2" Ice		5.95	6.00	0.09	
			0.00	1" Ice		6.50	6.98	0.15	
				2" Ice		7.61	8.85	0.28	
				4" Ice		9.93	12.79	0.68	
742 213 w/ Mount Pipe	C	From Leg	1.00	0.0000	107.00	No Ice	5.37	4.62	0.05
			0.00	1/2" Ice		5.95	6.00	0.09	
			0.00	1" Ice		6.50	6.98	0.15	
				2" Ice		7.61	8.85	0.28	
				4" Ice		9.93	12.79	0.68	

Side Arm Mount [SO 701-1]	C	From Leg	0.00	0.0000	74.00	No Ice	0.85	1.67	0.07
			0.00	1/2" Ice		1.14	2.34	0.08	
			0.00	1" Ice		1.43	3.01	0.09	
				2" Ice		2.01	4.35	0.12	
				4" Ice		3.17	7.03	0.18	
KS24019-L112A	C	From Leg	3.00	0.0000	74.00	No Ice	0.16	0.16	0.01
			0.00	1/2" Ice		0.22	0.22	0.01	
			1.00	1" Ice		0.30	0.30	0.01	
				2" Ice		0.48	0.48	0.02	
				4" Ice		0.95	0.95	0.06	

Tower Pressures - No Ice

$$G_H = 1.690$$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L1 152.00-137.42	144.56	1.525	28	42.723	A	0.000	42.723	42.723	100.00	0.000	0.000
					B	0.000	42.723		100.00	0.000	0.000

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	Client Crown Castle	Designed by DTang

Section Elevation ft z ft	z ft	K_Z	q_z psf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L2 137.42-91.09	113.39	1.423	26	167.612	C	0.000	42.723	167.612	100.00	0.547	0.000
					A	0.000	167.612			0.000	0.000
					B	0.000	167.612			0.000	0.000
L3 91.09-44.79	67.58	1.227	23	216.552	C	0.000	167.612	216.552	100.00	1.737	0.000
					A	0.000	216.552			0.000	0.000
					B	0.000	216.552			0.000	0.000
L4 44.79-0.00	21.71	1	19	255.663	C	0.000	216.552	255.663	100.00	1.736	0.000
					A	0.000	255.663			0.000	0.000
					B	0.000	255.663			0.000	0.000
					C	0.000	255.663		100.00	1.680	0.000

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	t_z in	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 152.00-137.42	144.56	1.525	5	1.1939	45.623	A	0.000	45.623	45.623	100.00	0.000	0.000
						B	0.000	45.623		100.00	0.000	
						C	0.000	45.623		100.00	4.027	
L2 137.42-91.09	113.39	1.423	5	1.1597	176.832	A	0.000	176.832	176.832	100.00	0.000	0.000
						B	0.000	176.832		100.00	0.000	
						C	0.000	176.832		100.00	12.801	
L3 91.09-44.79	67.58	1.227	4	1.0898	225.500	A	0.000	225.500	225.500	100.00	0.000	0.000
						B	0.000	225.500		100.00	0.000	
						C	0.000	225.500		100.00	12.474	
L4 44.79-0.00	21.71	1	4	1.0000	263.799	A	0.000	263.799	263.799	100.00	0.000	0.000
						B	0.000	263.799		100.00	0.000	
						C	0.000	263.799		100.00	11.443	

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 152.00-137.42	144.56	1.525	10	42.723	A	0.000	42.723	42.723	100.00	0.000	0.000
					B	0.000	42.723		100.00	0.000	
					C	0.000	42.723		100.00	0.547	
L2 137.42-91.09	113.39	1.423	9	167.612	A	0.000	167.612	167.612	100.00	0.000	0.000
					B	0.000	167.612		100.00	0.000	
					C	0.000	167.612		100.00	1.737	
L3 91.09-44.79	67.58	1.227	8	216.552	A	0.000	216.552	216.552	100.00	0.000	0.000
					B	0.000	216.552		100.00	0.000	
					C	0.000	216.552		100.00	1.736	
L4 44.79-0.00	21.71	1	6	255.663	A	0.000	255.663	255.663	100.00	0.000	0.000
					B	0.000	255.663		100.00	0.000	
					C	0.000	255.663		100.00	1.680	

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Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	e						ft ²	K	plf	
L1 152.00-137.42	0.07	1.71	A	1	0.65	1	1	1	42.723	1.35	92.60	C
			B	1	0.65	1	1	1	42.723			
			C	1	0.65	1	1	1	42.723			
L2 137.42-91.09	1.53	8.82	A	1	0.65	1	1	1	167.612	4.91	106.05	C
			B	1	0.65	1	1	1	167.612			
			C	1	0.65	1	1	1	167.612			
L3 91.09-44.79	2.18	13.73	A	1	0.65	1	1	1	216.552	5.44	117.44	C
			B	1	0.65	1	1	1	216.552			
			C	1	0.65	1	1	1	216.552			
L4 44.79-0.00	2.11	19.19	A	1	0.65	1	1	1	255.663	5.26	117.34	C
			B	1	0.65	1	1	1	255.663			
			C	1	0.65	1	1	1	255.663			
Sum Weight:	5.88	43.45						OTM	1233.84 kip-ft	16.96		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	e						ft ²	K	plf	
L1 152.00-137.42	0.07	1.71	A	1	0.65	1	1	1	42.723	1.35	92.60	C
			B	1	0.65	1	1	1	42.723			
			C	1	0.65	1	1	1	42.723			
L2 137.42-91.09	1.53	8.82	A	1	0.65	1	1	1	167.612	4.91	106.05	C
			B	1	0.65	1	1	1	167.612			
			C	1	0.65	1	1	1	167.612			
L3 91.09-44.79	2.18	13.73	A	1	0.65	1	1	1	216.552	5.44	117.44	C
			B	1	0.65	1	1	1	216.552			
			C	1	0.65	1	1	1	216.552			
L4 44.79-0.00	2.11	19.19	A	1	0.65	1	1	1	255.663	5.26	117.34	C
			B	1	0.65	1	1	1	255.663			
			C	1	0.65	1	1	1	255.663			
Sum Weight:	5.88	43.45						OTM	1233.84 kip-ft	16.96		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	e						ft ²	K	plf	
L1 152.00-137.42	0.07	1.71	A	1	0.65	1	1	1	42.723	1.35	92.60	C
			B	1	0.65	1	1	1	42.723			
			C	1	0.65	1	1	1	42.723			
L2	1.53	8.82	A	1	0.65	1	1	1	167.612	4.91	106.05	C

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
137.42-91.09			B	1	0.65	1	1	1	167.612			
			C	1	0.65	1	1	1	167.612			
L3 91.09-44.79	2.18	13.73	A	1	0.65	1	1	1	216.552	5.44	117.44	C
			B	1	0.65	1	1	1	216.552			
			C	1	0.65	1	1	1	216.552			
L4 44.79-0.00	2.11	19.19	A	1	0.65	1	1	1	255.663	5.26	117.34	C
			B	1	0.65	1	1	1	255.663			
			C	1	0.65	1	1	1	255.663			
Sum Weight:	5.88	43.45						OTM	1233.84 kip-ft	16.96		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 152.00-137.42	0.10	2.50	A	1	0.65	1	1	1	45.623	0.30	20.87	C
			B	1	0.65	1	1	1	45.623			
			C	1	0.65	1	1	1	45.623			
L2 137.42-91.09	1.63	11.78	A	1	0.65	1	1	1	176.832	1.07	23.19	C
			B	1	0.65	1	1	1	176.832			
			C	1	0.65	1	1	1	176.832			
L3 91.09-44.79	2.28	17.30	A	1	0.65	1	1	1	225.500	1.15	24.84	C
			B	1	0.65	1	1	1	225.500			
			C	1	0.65	1	1	1	225.500			
L4 44.79-0.00	2.20	23.03	A	1	0.65	1	1	1	263.799	1.09	24.23	C
			B	1	0.65	1	1	1	263.799			
			C	1	0.65	1	1	1	263.799			
Sum Weight:	6.21	54.60						OTM	267.09 kip-ft	3.61		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 152.00-137.42	0.10	2.50	A	1	0.65	1	1	1	45.623	0.30	20.87	C
			B	1	0.65	1	1	1	45.623			
			C	1	0.65	1	1	1	45.623			
L2 137.42-91.09	1.63	11.78	A	1	0.65	1	1	1	176.832	1.07	23.19	C
			B	1	0.65	1	1	1	176.832			
			C	1	0.65	1	1	1	176.832			
L3 91.09-44.79	2.28	17.30	A	1	0.65	1	1	1	225.500	1.15	24.84	C
			B	1	0.65	1	1	1	225.500			
			C	1	0.65	1	1	1	225.500			
L4 44.79-0.00	2.20	23.03	A	1	0.65	1	1	1	263.799	1.09	24.23	C
			B	1	0.65	1	1	1	263.799			
			C	1	0.65	1	1	1	263.799			
Sum Weight:	6.21	54.60						OTM	267.09	3.61		

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
									kip-ft			

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 152.00-137.42	0.10	2.50	A	1	0.65	1	1	1	45.623	0.30	20.87	C
			B	1	0.65	1	1	1	45.623			
			C	1	0.65	1	1	1	45.623			
L2 137.42-91.09	1.63	11.78	A	1	0.65	1	1	1	176.832	1.07	23.19	C
			B	1	0.65	1	1	1	176.832			
			C	1	0.65	1	1	1	176.832			
L3 91.09-44.79	2.28	17.30	A	1	0.65	1	1	1	225.500	1.15	24.84	C
			B	1	0.65	1	1	1	225.500			
			C	1	0.65	1	1	1	225.500			
L4 44.79-0.00	2.20	23.03	A	1	0.65	1	1	1	263.799	1.09	24.23	C
			B	1	0.65	1	1	1	263.799			
			C	1	0.65	1	1	1	263.799			
Sum Weight:	6.21	54.60						OTM	267.09 kip-ft	3.61		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 152.00-137.42	0.07	1.71	A	1	0.65	1	1	1	42.723	0.47	32.04	C
			B	1	0.65	1	1	1	42.723			
			C	1	0.65	1	1	1	42.723			
L2 137.42-91.09	1.53	8.82	A	1	0.65	1	1	1	167.612	1.70	36.69	C
			B	1	0.65	1	1	1	167.612			
			C	1	0.65	1	1	1	167.612			
L3 91.09-44.79	2.18	13.73	A	1	0.65	1	1	1	216.552	1.88	40.64	C
			B	1	0.65	1	1	1	216.552			
			C	1	0.65	1	1	1	216.552			
L4 44.79-0.00	2.11	19.19	A	1	0.65	1	1	1	255.663	1.82	40.60	C
			B	1	0.65	1	1	1	255.663			
			C	1	0.65	1	1	1	255.663			
Sum Weight:	5.88	43.45						OTM	426.93 kip-ft	5.87		

Tower Forces - Service - Wind 60 To Face

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 152.00-137.42	0.07	1.71	A	1	0.65	1	1	1	42.723	0.47	32.04	C
			B	1	0.65	1	1	1	42.723			
			C	1	0.65	1	1	1	42.723			
L2 137.42-91.09	1.53	8.82	A	1	0.65	1	1	1	167.612	1.70	36.69	C
			B	1	0.65	1	1	1	167.612			
			C	1	0.65	1	1	1	167.612			
L3 91.09-44.79	2.18	13.73	A	1	0.65	1	1	1	216.552	1.88	40.64	C
			B	1	0.65	1	1	1	216.552			
			C	1	0.65	1	1	1	216.552			
L4 44.79-0.00	2.11	19.19	A	1	0.65	1	1	1	255.663	1.82	40.60	C
			B	1	0.65	1	1	1	255.663			
			C	1	0.65	1	1	1	255.663			
Sum Weight:	5.88	43.45						OTM	426.93 kip-ft	5.87		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 152.00-137.42	0.07	1.71	A	1	0.65	1	1	1	42.723	0.47	32.04	C
			B	1	0.65	1	1	1	42.723			
			C	1	0.65	1	1	1	42.723			
L2 137.42-91.09	1.53	8.82	A	1	0.65	1	1	1	167.612	1.70	36.69	C
			B	1	0.65	1	1	1	167.612			
			C	1	0.65	1	1	1	167.612			
L3 91.09-44.79	2.18	13.73	A	1	0.65	1	1	1	216.552	1.88	40.64	C
			B	1	0.65	1	1	1	216.552			
			C	1	0.65	1	1	1	216.552			
L4 44.79-0.00	2.11	19.19	A	1	0.65	1	1	1	255.663	1.82	40.60	C
			B	1	0.65	1	1	1	255.663			
			C	1	0.65	1	1	1	255.663			
Sum Weight:	5.88	43.45						OTM	426.93 kip-ft	5.87		

Discrete Appurtenance Pressures - No Ice G_H = 1.690

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A Ac Front ft ²	C _A Ac Side ft ²
Platform Mount [LP 601-1]	0.0000	1.12	0.00	0.00	150.00	1.541	29	28.47	28.47
DB980F90T2E-M w/ Mount Pipe	0.0000	0.06	0.00	-5.40	152.00	1.547	29	7.97	7.43
DB980F90T2E-M w/ Mount Pipe	120.0000	0.06	4.68	2.70	152.00	1.547	29	7.97	7.43
DB980F90T2E-M w/ Mount Pipe	240.0000	0.06	-4.68	2.70	152.00	1.547	29	7.97	7.43
2.5" x 7' mount pipe	0.0000	0.03	0.00	-5.40	152.00	1.547	29	1.75	1.75
2.5" x 7' mount pipe	120.0000	0.03	4.68	2.70	152.00	1.547	29	1.75	1.75

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
2.5" x 7" mount pipe	240.0000	0.03	-4.68	2.70	152.00	1.547	29	1.75	1.75
Platform Mount [LP 303-1]	0.0000	1.25	0.00	0.00	133.00	1.489	28	14.66	14.66
RR90-17-02DP w/ Mount Pipe	0.0000	0.03	0.00	-5.58	136.00	1.499	28	4.59	3.32
RR90-17-02DP w/ Mount Pipe	120.0000	0.03	4.83	2.79	136.00	1.499	28	4.59	3.32
RR90-17-02DP w/ Mount Pipe	240.0000	0.03	-4.83	2.79	136.00	1.499	28	4.59	3.32
KRY 112 71/2	0.0000	0.01	0.00	-5.58	136.00	1.499	28	0.68	0.51
KRY 112 71/2	120.0000	0.01	4.83	2.79	136.00	1.499	28	0.68	0.51
KRY 112 71/2	240.0000	0.01	-4.83	2.79	136.00	1.499	28	0.68	0.51
LNx-6515DS-VTM w/ Mount Pipe	0.0000	0.08	0.00	-5.58	136.00	1.499	28	11.68	9.84
LNx-6515DS-VTM w/ Mount Pipe	120.0000	0.08	4.83	2.79	136.00	1.499	28	11.68	9.84
LNx-6515DS-VTM w/ Mount Pipe	240.0000	0.08	-4.83	2.79	136.00	1.499	28	11.68	9.84
ATBT-BOTTOM-24V	0.0000	0.00	0.00	-5.58	136.00	1.499	28	0.12	0.08
ATBT-BOTTOM-24V	120.0000	0.00	4.83	2.79	136.00	1.499	28	0.12	0.08
ATBT-BOTTOM-24V	240.0000	0.00	-4.83	2.79	136.00	1.499	28	0.12	0.08
Platform Mount [LP 303-1]	0.0000	1.25	0.00	0.00	124.00	1.460	27	14.66	14.66
LPA-80080/6CF w/ Mount Pipe	0.0000	0.10	0.00	-5.69	126.00	1.466	27	9.13	21.46
LPA-80080/6CF w/ Mount Pipe	120.0000	0.10	4.93	2.85	126.00	1.466	27	9.13	21.46
LPA-80080/6CF w/ Mount Pipe	240.0000	0.10	-4.93	2.85	126.00	1.466	27	9.13	21.46
BXA-70063/6CF-2 w/ Mount Pipe	0.0000	0.04	0.00	-5.69	126.00	1.466	27	7.97	5.40
BXA-70063/6CF-2 w/ Mount Pipe	120.0000	0.04	4.93	2.85	126.00	1.466	27	7.97	5.40
BXA-70063/6CF-2 w/ Mount Pipe	240.0000	0.04	-4.93	2.85	126.00	1.466	27	7.97	5.40
742 213 w/ Mount Pipe	0.0000	0.10	0.00	-5.69	126.00	1.466	27	10.75	9.24
742 213 w/ Mount Pipe	120.0000	0.10	4.93	2.85	126.00	1.466	27	10.75	9.24
742 213 w/ Mount Pipe	240.0000	0.10	-4.93	2.85	126.00	1.466	27	10.75	9.24
RRH2x40-AWS	0.0000	0.04	0.00	-5.69	126.00	1.466	27	2.52	1.59
RRH2x40-AWS	120.0000	0.04	4.93	2.85	126.00	1.466	27	2.52	1.59
RRH2x40-AWS	240.0000	0.04	-4.93	2.85	126.00	1.466	27	2.52	1.59
DB-T1-6Z-8AB-OZ	0.0000	0.04	0.00	-5.69	126.00	1.466	27	5.60	2.33
Platform Mount [LP 712-1]	0.0000	1.34	0.00	0.00	116.00	1.432	26	24.53	24.53
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	0.0000	0.07	0.00	-5.79	120.00	1.446	27	8.50	6.30
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	120.0000	0.07	5.01	2.89	120.00	1.446	27	8.50	6.30
P65-17-XLH-RR w/ Mount Pipe	240.0000	0.09	-5.01	2.89	120.00	1.446	27	11.70	8.94
7770.00 w/ Mount Pipe	0.0000	0.12	0.00	-5.79	120.00	1.446	27	12.24	8.51
7770.00 w/ Mount Pipe	120.0000	0.12	5.01	2.89	120.00	1.446	27	12.24	8.51
7770.00 w/ Mount Pipe	240.0000	0.12	-5.01	2.89	120.00	1.446	27	12.24	8.51
RRUS-11	0.0000	0.05	0.00	-5.79	120.00	1.446	27	3.25	1.37
RRUS-11	120.0000	0.05	5.01	2.89	120.00	1.446	27	3.25	1.37
RRUS-11	240.0000	0.05	-5.01	2.89	120.00	1.446	27	3.25	1.37
LGP21903	0.0000	0.02	0.00	-5.79	120.00	1.446	27	0.54	0.37
LGP21903	120.0000	0.02	5.01	2.89	120.00	1.446	27	0.54	0.37
LGP21903	240.0000	0.02	-5.01	2.89	120.00	1.446	27	0.54	0.37
LGP21401	0.0000	0.02	0.00	-5.79	120.00	1.446	27	2.58	0.47
LGP21401	120.0000	0.02	5.01	2.89	120.00	1.446	27	2.58	0.47

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031</p>	Job	BU 876385 - N. COVENTRY WALLBEOFF CT	Page	16 of 26
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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
LGP21401	240.0000	0.02	-5.01	2.89	120.00	1.446	27	2.58	0.47
DC6-48-60-18-8F	0.0000	0.03	0.00	-5.79	120.00	1.446	27	2.57	4.32
742 213 w/ Mount Pipe	0.0000	0.05	0.00	-2.90	107.00	1.399	26	5.37	4.62
742 213 w/ Mount Pipe	120.0000	0.05	2.51	1.45	107.00	1.399	26	5.37	4.62
742 213 w/ Mount Pipe	240.0000	0.05	-2.51	1.45	107.00	1.399	26	5.37	4.62
Side Arm Mount [SO 701-1]	240.0000	0.07	-1.96	1.13	74.00	1.260	23	0.85	1.67
KS24019-L112A	240.0000	0.01	-4.56	2.63	75.00	1.264	23	0.16	0.16
Sum		7.57							
Weight:									

Discrete Appurtenance Pressures - With Ice G_H = 1.690

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²	t _z in
Platform Mount [LP 601-1]	0.0000	2.06	0.00	0.00	150.00	1.541	5	40.75	40.75	1.1992
DB980F90T2E-M w/ Mount Pipe	0.0000	0.26	0.00	-5.40	152.00	1.547	5	10.16	11.24	1.1992
DB980F90T2E-M w/ Mount Pipe	120.0000	0.26	4.68	2.70	152.00	1.547	5	10.16	11.24	1.1992
DB980F90T2E-M w/ Mount Pipe	240.0000	0.26	-4.68	2.70	152.00	1.547	5	10.16	11.24	1.1992
2.5" x 7' mount pipe	0.0000	0.06	0.00	-5.40	152.00	1.547	5	3.43	3.43	1.1992
2.5" x 7' mount pipe	120.0000	0.06	4.68	2.70	152.00	1.547	5	3.43	3.43	1.1992
2.5" x 7' mount pipe	240.0000	0.06	-4.68	2.70	152.00	1.547	5	3.43	3.43	1.1992
Platform Mount [LP 303-1]	0.0000	1.80	0.00	0.00	133.00	1.489	5	24.61	24.61	1.1821
RR90-17-02DP w/ Mount Pipe	0.0000	0.13	0.00	-5.58	136.00	1.499	5	5.76	5.05	1.1821
RR90-17-02DP w/ Mount Pipe	120.0000	0.13	4.83	2.79	136.00	1.499	5	5.76	5.05	1.1821
RR90-17-02DP w/ Mount Pipe	240.0000	0.13	-4.83	2.79	136.00	1.499	5	5.76	5.05	1.1821
KRY 112 71/2	0.0000	0.03	0.00	-5.58	136.00	1.499	5	0.98	0.79	1.1821
KRY 112 71/2	120.0000	0.03	4.83	2.79	136.00	1.499	5	0.98	0.79	1.1821
KRY 112 71/2	240.0000	0.03	-4.83	2.79	136.00	1.499	5	0.98	0.79	1.1821
LNx-6515DS-VTM w/ Mount Pipe	0.0000	0.32	0.00	-5.58	136.00	1.499	5	13.40	13.34	1.1821
LNx-6515DS-VTM w/ Mount Pipe	120.0000	0.32	4.83	2.79	136.00	1.499	5	13.40	13.34	1.1821
LNx-6515DS-VTM w/ Mount Pipe	240.0000	0.32	-4.83	2.79	136.00	1.499	5	13.40	13.34	1.1821
ATBT-BOTTOM-24V	0.0000	0.01	0.00	-5.58	136.00	1.499	5	0.26	0.20	1.1821
ATBT-BOTTOM-24V	120.0000	0.01	4.83	2.79	136.00	1.499	5	0.26	0.20	1.1821
ATBT-BOTTOM-24V	240.0000	0.01	-4.83	2.79	136.00	1.499	5	0.26	0.20	1.1821
Platform Mount [LP 303-1]	0.0000	1.79	0.00	0.00	124.00	1.460	5	24.53	24.53	1.1722
LPA-80080/6CF w/ Mount Pipe	0.0000	0.43	0.00	-5.69	126.00	1.466	5	11.58	26.63	1.1722
LPA-80080/6CF w/ Mount Pipe	120.0000	0.43	4.93	2.85	126.00	1.466	5	11.58	26.63	1.1722
LPA-80080/6CF w/ Mount Pipe	240.0000	0.43	-4.93	2.85	126.00	1.466	5	11.58	26.63	1.1722
BXA-70063/6CF-2 w/ Mount Pipe	0.0000	0.20	0.00	-5.69	126.00	1.466	5	9.43	7.71	1.1722
BXA-70063/6CF-2 w/	120.0000	0.20	4.93	2.85	126.00	1.466	5	9.43	7.71	1.1722

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
RR90-17-02DP w/ Mount Pipe	0.0000	0.03	0.00	-5.58	136.00	1.499	10	4.59	3.32
RR90-17-02DP w/ Mount Pipe	120.0000	0.03	4.83	2.79	136.00	1.499	10	4.59	3.32
RR90-17-02DP w/ Mount Pipe	240.0000	0.03	-4.83	2.79	136.00	1.499	10	4.59	3.32
KRY 112 71/2	0.0000	0.01	0.00	-5.58	136.00	1.499	10	0.68	0.51
KRY 112 71/2	120.0000	0.01	4.83	2.79	136.00	1.499	10	0.68	0.51
KRY 112 71/2	240.0000	0.01	-4.83	2.79	136.00	1.499	10	0.68	0.51
LNx-6515DS-VTM w/ Mount Pipe	0.0000	0.08	0.00	-5.58	136.00	1.499	10	11.68	9.84
LNx-6515DS-VTM w/ Mount Pipe	120.0000	0.08	4.83	2.79	136.00	1.499	10	11.68	9.84
LNx-6515DS-VTM w/ Mount Pipe	240.0000	0.08	-4.83	2.79	136.00	1.499	10	11.68	9.84
ATBT-BOTTOM-24V	0.0000	0.00	0.00	-5.58	136.00	1.499	10	0.12	0.08
ATBT-BOTTOM-24V	120.0000	0.00	4.83	2.79	136.00	1.499	10	0.12	0.08
ATBT-BOTTOM-24V	240.0000	0.00	-4.83	2.79	136.00	1.499	10	0.12	0.08
Platform Mount [LP 303-1]	0.0000	1.25	0.00	0.00	124.00	1.460	9	14.66	14.66
LPA-80080/6CF w/ Mount Pipe	0.0000	0.10	0.00	-5.69	126.00	1.466	9	9.13	21.46
LPA-80080/6CF w/ Mount Pipe	120.0000	0.10	4.93	2.85	126.00	1.466	9	9.13	21.46
LPA-80080/6CF w/ Mount Pipe	240.0000	0.10	-4.93	2.85	126.00	1.466	9	9.13	21.46
BXA-70063/6CF-2 w/ Mount Pipe	0.0000	0.04	0.00	-5.69	126.00	1.466	9	7.97	5.40
BXA-70063/6CF-2 w/ Mount Pipe	120.0000	0.04	4.93	2.85	126.00	1.466	9	7.97	5.40
BXA-70063/6CF-2 w/ Mount Pipe	240.0000	0.04	-4.93	2.85	126.00	1.466	9	7.97	5.40
742 213 w/ Mount Pipe	0.0000	0.10	0.00	-5.69	126.00	1.466	9	10.75	9.24
742 213 w/ Mount Pipe	120.0000	0.10	4.93	2.85	126.00	1.466	9	10.75	9.24
742 213 w/ Mount Pipe	240.0000	0.10	-4.93	2.85	126.00	1.466	9	10.75	9.24
RRH2x40-AWS	0.0000	0.04	0.00	-5.69	126.00	1.466	9	2.52	1.59
RRH2x40-AWS	120.0000	0.04	4.93	2.85	126.00	1.466	9	2.52	1.59
RRH2x40-AWS	240.0000	0.04	-4.93	2.85	126.00	1.466	9	2.52	1.59
DB-T1-6Z-8AB-0Z	0.0000	0.04	0.00	-5.69	126.00	1.466	9	5.60	2.33
Platform Mount [LP 712-1]	0.0000	1.34	0.00	0.00	116.00	1.432	9	24.53	24.53
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	0.0000	0.07	0.00	-5.79	120.00	1.446	9	8.50	6.30
AM-X-CD-16-65-00T-R ET w/ Mount Pipe	120.0000	0.07	5.01	2.89	120.00	1.446	9	8.50	6.30
P65-17-XLH-RR w/ Mount Pipe	240.0000	0.09	-5.01	2.89	120.00	1.446	9	11.70	8.94
7770.00 w/ Mount Pipe	0.0000	0.12	0.00	-5.79	120.00	1.446	9	12.24	8.51
7770.00 w/ Mount Pipe	120.0000	0.12	5.01	2.89	120.00	1.446	9	12.24	8.51
7770.00 w/ Mount Pipe	240.0000	0.12	-5.01	2.89	120.00	1.446	9	12.24	8.51
RRUS-11	0.0000	0.05	0.00	-5.79	120.00	1.446	9	3.25	1.37
RRUS-11	120.0000	0.05	5.01	2.89	120.00	1.446	9	3.25	1.37
RRUS-11	240.0000	0.05	-5.01	2.89	120.00	1.446	9	3.25	1.37
LGP21903	0.0000	0.02	0.00	-5.79	120.00	1.446	9	0.54	0.37
LGP21903	120.0000	0.02	5.01	2.89	120.00	1.446	9	0.54	0.37
LGP21903	240.0000	0.02	-5.01	2.89	120.00	1.446	9	0.54	0.37
LGP21401	0.0000	0.02	0.00	-5.79	120.00	1.446	9	2.58	0.47
LGP21401	120.0000	0.02	5.01	2.89	120.00	1.446	9	2.58	0.47
LGP21401	240.0000	0.02	-5.01	2.89	120.00	1.446	9	2.58	0.47
DC6-48-60-18-8F	0.0000	0.03	0.00	-5.79	120.00	1.446	9	2.57	4.32
742 213 w/ Mount Pipe	0.0000	0.05	0.00	-2.90	107.00	1.399	9	5.37	4.62

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
742 213 w/ Mount Pipe	120.0000	0.05	2.51	1.45	107.00	1.399	9	5.37	4.62
742 213 w/ Mount Pipe	240.0000	0.05	-2.51	1.45	107.00	1.399	9	5.37	4.62
Side Arm Mount [SO 701-1]	240.0000	0.07	-1.96	1.13	74.00	1.260	8	0.85	1.67
KS24019-L112A	240.0000	0.01	-4.56	2.63	75.00	1.264	8	0.16	0.16
Sum Weight:		7.57							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight	43.45					
Bracing Weight	0.00					
Total Member Self-Weight	43.45			-0.18	0.25	
Total Weight	56.90			-0.18	0.25	
Wind 0 deg - No Ice		-0.00	-33.20	-3328.60	-0.06	-0.75
Wind 30 deg - No Ice		16.56	-28.75	-2882.84	-1659.72	-1.26
Wind 60 deg - No Ice		28.69	-16.60	-1664.66	-2874.60	-1.44
Wind 90 deg - No Ice		33.13	0.00	-0.49	-3319.16	-1.22
Wind 120 deg - No Ice		28.69	16.60	1663.76	-2874.29	-0.68
Wind 150 deg - No Ice		16.57	28.76	2882.16	-1659.18	0.04
Wind 180 deg - No Ice		0.00	33.20	3328.24	0.56	0.75
Wind 210 deg - No Ice		-16.56	28.75	2882.47	1660.23	1.26
Wind 240 deg - No Ice		-28.69	16.60	1664.30	2875.10	1.44
Wind 270 deg - No Ice		-33.13	-0.00	0.13	3319.66	1.22
Wind 300 deg - No Ice		-28.69	-16.60	-1664.12	2874.79	0.68
Wind 330 deg - No Ice		-16.57	-28.76	-2882.52	1659.68	-0.04
Member Ice	11.14					
Total Weight Ice	77.43			-0.28	0.58	
Wind 0 deg - Ice		-0.01	-7.84	-812.59	1.10	-0.22
Wind 30 deg - Ice		3.90	-6.78	-703.50	-403.87	-0.26
Wind 60 deg - Ice		6.77	-3.91	-405.99	-700.48	-0.24
Wind 90 deg - Ice		7.82	0.01	0.24	-809.23	-0.15
Wind 120 deg - Ice		6.77	3.92	406.32	-701.00	-0.03
Wind 150 deg - Ice		3.91	6.79	703.46	-404.78	0.11
Wind 180 deg - Ice		0.01	7.84	812.03	0.06	0.22
Wind 210 deg - Ice		-3.90	6.78	702.94	405.04	0.26
Wind 240 deg - Ice		-6.77	3.91	405.42	701.64	0.24
Wind 270 deg - Ice		-7.82	-0.01	-0.80	810.40	0.15
Wind 300 deg - Ice		-6.77	-3.92	-406.89	702.17	0.03
Wind 330 deg - Ice		-3.91	-6.79	-704.02	405.94	-0.11
Total Weight	56.90			-0.18	0.25	
Wind 0 deg - Service		-0.00	-11.49	-1151.96	0.14	-0.26
Wind 30 deg - Service		5.73	-9.95	-997.71	-574.14	-0.44
Wind 60 deg - Service		9.93	-5.74	-576.20	-994.51	-0.50
Wind 90 deg - Service		11.46	0.00	-0.36	-1148.33	-0.42
Wind 120 deg - Service		9.93	5.75	575.50	-994.40	-0.24
Wind 150 deg - Service		5.73	9.95	997.09	-573.95	0.01
Wind 180 deg - Service		0.00	11.49	1151.45	0.36	0.26
Wind 210 deg - Service		-5.73	9.95	997.20	574.64	0.44
Wind 240 deg - Service		-9.93	5.74	575.69	995.01	0.50
Wind 270 deg - Service		-11.46	-0.00	-0.15	1148.84	0.42
Wind 300 deg - Service		-9.93	-5.75	-576.01	994.90	0.24
Wind 330 deg - Service		-5.73	-9.95	-997.61	574.45	-0.01

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Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	152 - 137.423	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-4.67	0.00	-0.03
			Max. Mx	11	-2.42	27.39	-0.00
			Max. My	8	-2.42	0.00	-27.39
			Max. Vy	11	-3.65	27.39	-0.00
			Max. Vx	2	-3.65	0.00	27.39
			Max. Torque	24			
L2	137.423 -	Pole	Max Tension	1	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	91.09		Max. Compression	14	-30.83	0.35	0.99
			Max. M _x	11	-17.63	655.34	0.06
			Max. M _y	2	-17.63	-0.15	657.77
			Max. V _y	11	-21.94	655.34	0.06
			Max. V _x	2	-22.00	-0.15	657.77
			Max. Torque	4			1.49
L3	91.09 - 44.793	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-49.57	0.58	0.61
			Max. M _x	11	-32.49	1754.09	-0.25
			Max. M _y	2	-32.49	-0.21	1759.22
			Max. V _y	11	-27.19	1754.09	-0.25
			Max. V _x	2	-27.26	-0.21	1759.22
			Max. Torque	4			1.48
L4	44.793 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-79.01	0.58	0.28
			Max. M _x	11	-56.89	3359.01	-0.13
			Max. M _y	2	-56.89	-0.07	3368.07
			Max. V _y	11	-33.14	3359.01	-0.13
			Max. V _x	2	-33.22	-0.07	3368.07
			Max. Torque	4			1.46

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	79.01	0.00	0.00
	Max. H _x	11	56.90	33.13	0.00
	Max. H _z	2	56.90	0.00	33.20
	Max. M _x	2	3368.07	0.00	33.20
	Max. M _z	5	3358.50	-33.13	-0.00
	Max. Torsion	4	1.44	-28.69	16.60
	Min. Vert	27	56.90	0.00	11.49
	Min. H _x	5	56.90	-33.13	-0.00
	Min. H _z	8	56.90	-0.00	-33.20
	Min. M _x	8	-3367.70	-0.00	-33.20
	Min. M _z	11	-3359.01	33.13	0.00
	Min. Torsion	10	-1.44	28.69	-16.60

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	56.90	0.00	0.00	-0.18	0.25	0.00
Dead+Wind 0 deg - No Ice	56.90	-0.00	-33.20	-3368.07	-0.07	-0.75
Dead+Wind 30 deg - No Ice	56.90	16.56	-28.75	-2917.02	-1679.40	-1.27
Dead+Wind 60 deg - No Ice	56.90	28.69	-16.60	-1684.40	-2908.67	-1.44
Dead+Wind 90 deg - No Ice	56.90	33.13	0.00	-0.51	-3358.50	-1.22
Dead+Wind 120 deg - No Ice	56.90	28.69	16.60	1683.48	-2908.35	-0.68
Dead+Wind 150 deg - No Ice	56.90	16.57	28.76	2916.33	-1678.85	0.04
Dead+Wind 180 deg - No Ice	56.90	0.00	33.20	3367.70	0.57	0.75

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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+Wind 210 deg - No Ice	56.90	-16.56	28.75	2916.65	1679.91	1.26
Dead+Wind 240 deg - No Ice	56.90	-28.69	16.60	1684.03	2909.18	1.44
Dead+Wind 270 deg - No Ice	56.90	-33.13	-0.00	0.13	3359.01	1.22
Dead+Wind 300 deg - No Ice	56.90	-28.69	-16.60	-1683.85	2908.86	0.68
Dead+Wind 330 deg - No Ice	56.90	-16.57	-28.76	-2916.70	1679.36	-0.04
Dead+Ice+Temp	79.01	0.00	0.00	-0.28	0.58	0.00
Dead+Wind 0 deg+Ice+Temp	79.01	-0.01	-7.84	-828.41	1.13	-0.22
Dead+Wind 30 deg+Ice+Temp	79.01	3.90	-6.78	-717.20	-411.72	-0.26
Dead+Wind 60 deg+Ice+Temp	79.01	6.77	-3.91	-413.90	-714.09	-0.24
Dead+Wind 90 deg+Ice+Temp	79.01	7.82	0.01	0.22	-824.96	-0.16
Dead+Wind 120 deg+Ice+Temp	79.01	6.77	3.92	414.21	-714.62	-0.03
Dead+Wind 150 deg+Ice+Temp	79.01	3.91	6.79	717.12	-412.64	0.11
Dead+Wind 180 deg+Ice+Temp	79.01	0.01	7.84	827.80	0.07	0.22
Dead+Wind 210 deg+Ice+Temp	79.01	-3.90	6.78	716.59	412.93	0.26
Dead+Wind 240 deg+Ice+Temp	79.01	-6.77	3.91	413.29	715.30	0.24
Dead+Wind 270 deg+Ice+Temp	79.01	-7.82	-0.01	-0.83	826.17	0.16
Dead+Wind 300 deg+Ice+Temp	79.01	-6.77	-3.92	-414.82	715.83	0.03
Dead+Wind 330 deg+Ice+Temp	79.01	-3.91	-6.79	-717.73	413.84	-0.11
Dead+Wind 0 deg - Service	56.90	-0.00	-11.49	-1165.63	0.14	-0.26
Dead+Wind 30 deg - Service	56.90	5.73	-9.95	-1009.54	-580.98	-0.44
Dead+Wind 60 deg - Service	56.90	9.93	-5.74	-583.00	-1006.37	-0.50
Dead+Wind 90 deg - Service	56.90	11.46	0.00	-0.30	-1162.03	-0.42
Dead+Wind 120 deg - Service	56.90	9.93	5.75	582.44	-1006.26	-0.24
Dead+Wind 150 deg - Service	56.90	5.73	9.95	1009.06	-580.79	0.01
Dead+Wind 180 deg - Service	56.90	0.00	11.49	1165.26	0.37	0.26
Dead+Wind 210 deg - Service	56.90	-5.73	9.95	1009.17	581.49	0.44
Dead+Wind 240 deg - Service	56.90	-9.93	5.74	582.63	1006.88	0.50
Dead+Wind 270 deg - Service	56.90	-11.46	-0.00	-0.08	1162.54	0.42
Dead+Wind 300 deg - Service	56.90	-9.93	-5.75	-582.81	1006.77	0.24
Dead+Wind 330 deg - Service	56.90	-5.73	-9.95	-1009.43	581.30	-0.01

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-56.90	0.00	0.00	56.90	0.00	0.000%
2	-0.00	-56.90	-33.20	0.00	56.90	33.20	0.000%
3	16.56	-56.90	-28.75	-16.56	56.90	28.75	0.000%
4	28.69	-56.90	-16.60	-28.69	56.90	16.60	0.000%
5	33.13	-56.90	0.00	-33.13	56.90	-0.00	0.000%
6	28.69	-56.90	16.60	-28.69	56.90	-16.60	0.000%
7	16.57	-56.90	28.76	-16.57	56.90	-28.76	0.000%
8	0.00	-56.90	33.20	-0.00	56.90	-33.20	0.000%
9	-16.56	-56.90	28.75	16.56	56.90	-28.75	0.000%
10	-28.69	-56.90	16.60	28.69	56.90	-16.60	0.000%
11	-33.13	-56.90	-0.00	33.13	56.90	0.00	0.000%
12	-28.69	-56.90	-16.60	28.69	56.90	16.60	0.000%
13	-16.57	-56.90	-28.76	16.57	56.90	28.76	0.000%
14	0.00	-79.01	0.00	0.00	79.01	0.00	0.000%
15	-0.01	-79.01	-7.84	0.01	79.01	7.84	0.000%
16	3.90	-79.01	-6.78	-3.90	79.01	6.78	0.000%
17	6.77	-79.01	-3.91	-6.77	79.01	3.91	0.000%
18	7.82	-79.01	0.01	-7.82	79.01	-0.01	0.000%
19	6.77	-79.01	3.92	-6.77	79.01	-3.92	0.000%
20	3.91	-79.01	6.79	-3.91	79.01	-6.79	0.000%
21	0.01	-79.01	7.84	-0.01	79.01	-7.84	0.000%
22	-3.90	-79.01	6.78	3.90	79.01	-6.78	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
23	-6.77	-79.01	3.91	6.77	79.01	-3.91	0.000%
24	-7.82	-79.01	-0.01	7.82	79.01	0.01	0.000%
25	-6.77	-79.01	-3.92	6.77	79.01	3.92	0.000%
26	-3.91	-79.01	-6.79	3.91	79.01	6.79	0.000%
27	-0.00	-56.90	-11.49	0.00	56.90	11.49	0.000%
28	5.73	-56.90	-9.95	-5.73	56.90	9.95	0.000%
29	9.93	-56.90	-5.74	-9.93	56.90	5.74	0.000%
30	11.46	-56.90	0.00	-11.46	56.90	-0.00	0.000%
31	9.93	-56.90	5.75	-9.93	56.90	-5.75	0.000%
32	5.73	-56.90	9.95	-5.73	56.90	-9.95	0.000%
33	0.00	-56.90	11.49	-0.00	56.90	-11.49	0.000%
34	-5.73	-56.90	9.95	5.73	56.90	-9.95	0.000%
35	-9.93	-56.90	5.74	9.93	56.90	-5.74	0.000%
36	-11.46	-56.90	-0.00	11.46	56.90	0.00	0.000%
37	-9.93	-56.90	-5.75	9.93	56.90	5.75	0.000%
38	-5.73	-56.90	-9.95	5.73	56.90	9.95	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00001384
3	Yes	5	0.0000001	0.00000231
4	Yes	5	0.0000001	0.00000266
5	Yes	4	0.0000001	0.00002473
6	Yes	5	0.0000001	0.00000235
7	Yes	5	0.0000001	0.00000246
8	Yes	4	0.0000001	0.00001397
9	Yes	5	0.0000001	0.00000262
10	Yes	5	0.0000001	0.00000001
11	Yes	4	0.0000001	0.00002459
12	Yes	5	0.0000001	0.00000256
13	Yes	5	0.0000001	0.00000244
14	Yes	4	0.0000001	0.00000001
15	Yes	5	0.0000001	0.00000448
16	Yes	5	0.0000001	0.00000458
17	Yes	5	0.0000001	0.00000457
18	Yes	5	0.0000001	0.00000445
19	Yes	5	0.0000001	0.00000456
20	Yes	5	0.0000001	0.00000457
21	Yes	5	0.0000001	0.00000446
22	Yes	5	0.0000001	0.00000457
23	Yes	5	0.0000001	0.00000457
24	Yes	5	0.0000001	0.00000446
25	Yes	5	0.0000001	0.00000458
26	Yes	5	0.0000001	0.00000459
27	Yes	4	0.0000001	0.00000389
28	Yes	4	0.0000001	0.00000981
29	Yes	4	0.0000001	0.00001268
30	Yes	4	0.0000001	0.00000491
31	Yes	4	0.0000001	0.00000995
32	Yes	4	0.0000001	0.00001075
33	Yes	4	0.0000001	0.00000389
34	Yes	4	0.0000001	0.00001228
35	Yes	4	0.0000001	0.00000975

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36	Yes	4	0.00000001	0.00000491
37	Yes	4	0.00000001	0.00001169
38	Yes	4	0.00000001	0.00001056

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	152 - 137.423	9.086	27	0.4737	0.0007
L2	142.59 - 91.09	8.154	27	0.4716	0.0007
L3	97.923 - 44.793	4.024	27	0.3813	0.0004
L4	53.21 - 0	1.204	27	0.2036	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Platform Mount [LP 601-1]	27	8.888	0.4735	0.0007	284564
133.00	Platform Mount [LP 303-1]	27	7.212	0.4636	0.0007	56680
124.00	Platform Mount [LP 303-1]	27	6.345	0.4499	0.0007	35700
116.00	Platform Mount [LP 712-1]	27	5.597	0.4331	0.0006	26862
107.00	742 213 w/ Mount Pipe	27	4.791	0.4096	0.0005	21010
74.00	Side Arm Mount [SO 701-1]	27	2.293	0.2902	0.0003	13306

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	152 - 137.423	26.246	2	1.3681	0.0021
L2	142.59 - 91.09	23.553	2	1.3622	0.0021
L3	97.923 - 44.793	11.625	2	1.1015	0.0013
L4	53.21 - 0	3.478	2	0.5881	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Platform Mount [LP 601-1]	2	25.673	1.3675	0.0021	98644
133.00	Platform Mount [LP 303-1]	2	20.832	1.3389	0.0021	19653
124.00	Platform Mount [LP 303-1]	2	18.329	1.2994	0.0019	12380
116.00	Platform Mount [LP 712-1]	2	16.170	1.2511	0.0017	9315
107.00	742 213 w/ Mount Pipe	2	13.839	1.1832	0.0015	7286
74.00	Side Arm Mount [SO 701-1]	2	6.625	0.8384	0.0008	4609

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Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
L1	152 - 137.423 (1)	TP37.31x33.03x0.3125	14.58	0.00	0.0	39.000	35.1921	-2.42	1372.49	0.002
L2	137.423 - 91.09 (2)	TP50.15x35.1679x0.375	51.50	0.00	0.0	39.000	56.8787	-17.63	2218.27	0.008
L3	91.09 - 44.793 (3)	TP62.86x47.4122x0.4375	53.13	0.00	0.0	39.000	83.2831	-32.49	3248.04	0.010
L4	44.793 - 0 (4)	TP75x59.5377x0.5	53.21	0.00	0.0	39.000	118.2310	-56.89	4611.03	0.012

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	152 - 137.423 (1)	TP37.31x33.03x0.3125	27.39	1.068	39.000	0.027	0.00	0.000	39.000	0.000
L2	137.423 - 91.09 (2)	TP50.15x35.1679x0.375	657.77	11.768	39.000	0.302	0.00	0.000	39.000	0.000
L3	91.09 - 44.793 (3)	TP62.86x47.4122x0.4375	1759.22	17.118	39.000	0.439	0.00	0.000	39.000	0.000
L4	44.793 - 0 (4)	TP75x59.5377x0.5	3368.07	18.574	39.000	0.476	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	152 - 137.423 (1)	TP37.31x33.03x0.3125	3.65	0.104	26.000	0.008	0.00	0.000	26.000	0.000
L2	137.423 - 91.09 (2)	TP50.15x35.1679x0.375	22.00	0.387	26.000	0.030	0.60	0.005	26.000	0.000
L3	91.09 - 44.793 (3)	TP62.86x47.4122x0.4375	27.26	0.327	26.000	0.025	0.75	0.004	26.000	0.000
L4	44.793 - 0 (4)	TP75x59.5377x0.5	33.22	0.281	26.000	0.022	0.75	0.002	26.000	0.000

Pole Interaction Design Data

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Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	152 - 137.423 (1)	0.002	0.027	0.000	0.008	0.000	0.029	1.333	H1-3+VT ✓
L2	137.423 - 91.09 (2)	0.008	0.302	0.000	0.030	0.000	0.310	1.333	H1-3+VT ✓
L3	91.09 - 44.793 (3)	0.010	0.439	0.000	0.025	0.000	0.449	1.333	H1-3+VT ✓
L4	44.793 - 0 (4)	0.012	0.476	0.000	0.022	0.000	0.489	1.333	H1-3+VT ✓

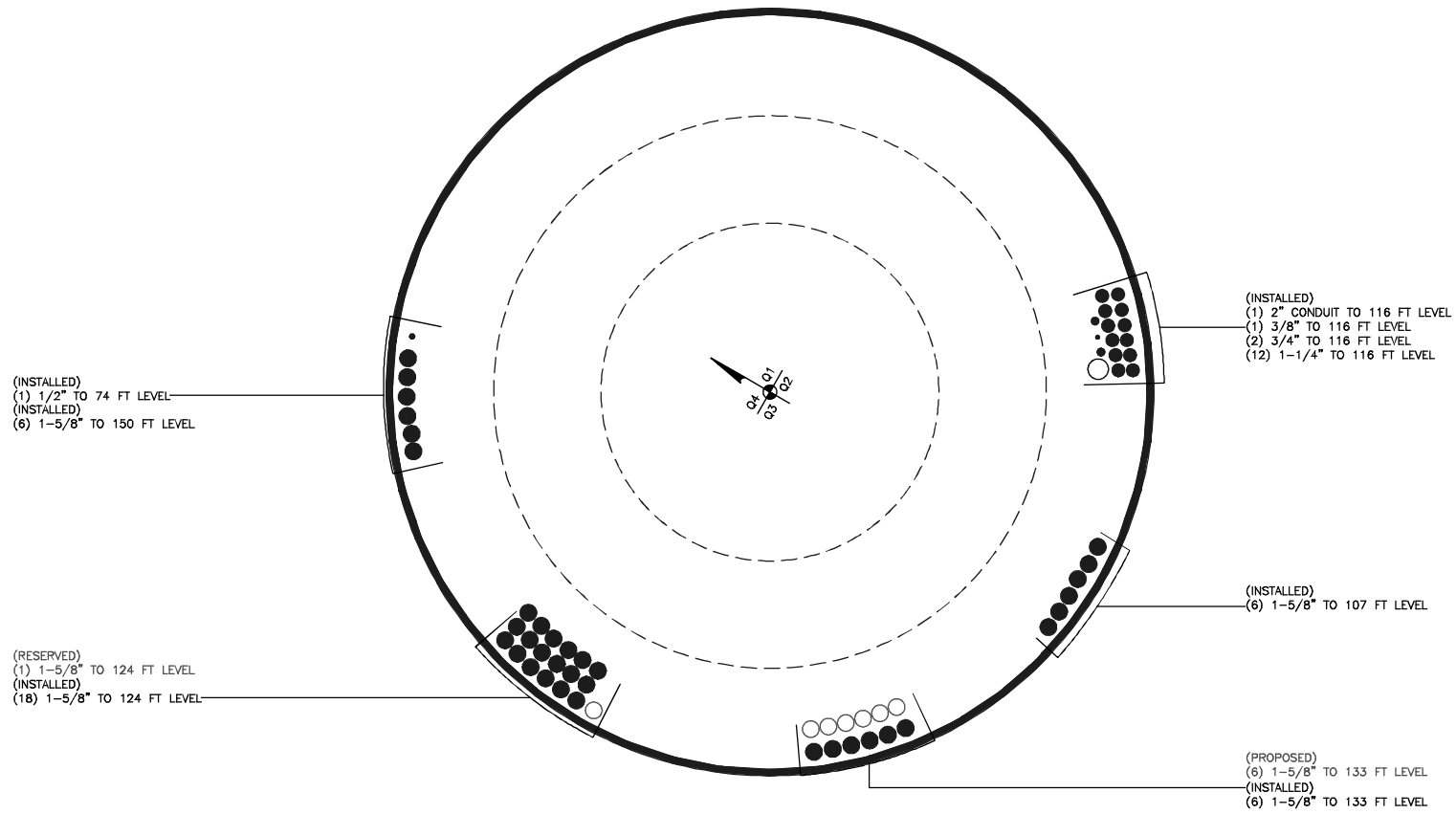
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
L1	152 - 137.423	Pole	TP37.31x33.03x0.3125	1	-2.42	1829.53	2.2	Pass
L2	137.423 - 91.09	Pole	TP50.15x35.1679x0.375	2	-17.63	2956.95	23.3	Pass
L3	91.09 - 44.793	Pole	TP62.86x47.4122x0.4375	3	-32.49	4329.64	33.7	Pass
L4	44.793 - 0	Pole	TP75x59.5377x0.5	4	-56.89	6146.50	36.7	Pass
Summary								
Pole (L4)							36.7	Pass
RATING =							36.7	Pass

Element Map

Section No.	Section Elevation ft	Component Type	Element List
L1	152.00-137.42	Pole	1
L2	137.42-91.09	Pole	2
L3	91.09-44.79	Pole	3
L4	44.79-0.00	Pole	4
			Total number of elements: 4

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU: 876385

Site Name: N. Coventry Wallbeoff

Pole Manufacturer: **Other**

Anchor Rod Data

Qty:	28	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	85	in

Plate Data

Diam:	91	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.50	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:	75	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333	
-------	-------	--

Reactions

Moment:	3368	ft-kips
Axial:	57	kips
Shear:	33	kips

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

Anchor Rod Results

Maximum Rod Tension: 65.9 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 33.8% **Pass**

Rigid
Service, ASD
Fty*ASIF

Base Plate Results

Base Plate Stress: 29.8 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 49.6% **Pass**

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
40.00

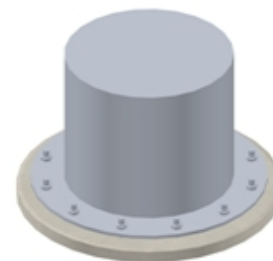
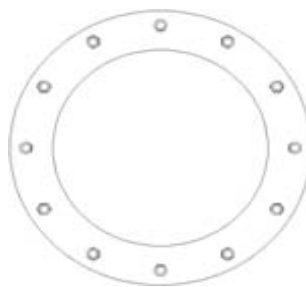
n/a

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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU: 876385
Site Name: N. Coventry Wallbeoff

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	57	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	33	kips
Unfactored WL Moment, M:	3368	ft-kips

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	68.4	kips
0.90	0.9D+1.6W, Pu:	51.3	kips
1.35	Vu:	44.55	kips
	Mu:	4546.8	ft-kips

Pad & Pier Data		
Base PL Dist. Above Pier:	2	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	8	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	29	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	9	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	81.00	ft^2
Pier Height:	6.00	ft
Soil (above pad) Height:	5.00	ft

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	1111.62	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	4893.49	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 4.40 ft
 Orthogonal qu= 2.12 ksf
 qu/φ*qn Ratio= **17.70% Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 3.11 ft
 Diagonal qu= 2.14 ksf
 qu/φ*qn Ratio= **17.86% Pass**

<-- Press Upon Completing All Input

Soil Parameters		
Unit Weight, γ:	110.0	pcf
Ultimate Bearing Capacity, qn:	16.00	ksf
Strength Reduct. factor, φ:	0.75	
Angle of Friction, Φ:	28.8	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: φ*qn:	12.00	ksf
Passive Pres. Coeff., Kp	2.86	

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	869.99	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	4419.41	ft-kips

Orthogonal ecc3 = M2/P2 = 5.08 ft
 Ortho Non Bearing Length,NBL= **10.16 ft**
 Orthogonal qu= 1.76 ksf
 Diagonal qu= 1.83 ksf

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	44.6	kips
Pad Force Location Above D:	1.38	ft
φ(Passive Pressure Moment):	61.68	ft-kips
Factored O.T. M(WL), "1.6W":	4955.2	ft-kips
Factored OT (MW-Msoil), M1	4893.49	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	2.75	ft
Sum of Soil Wedges Wt:	40.31	kips
Soil Wedges ecc, K1:	13.07	ft
Ftg+Soil above Pad wt:	869.4	kips
Unfactored (Total ftg-soil Wt):	909.66	kips
1.2D. No Soil Wedges.	1111.62	kips
0.9D. With Soil Wedges	869.99	kips

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating

Actual M:	3368.00		
M Orthogonal:	8764.45	38.43%	Pass
M Diagonal:	8764.45	38.43%	Pass

Resistance due to Cohesion (Vertical)		
φ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

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

T-Mobile Existing Facility

Site ID: CT11516A

Coventry- Sprint
400 Riley Mountain Road
Coventry, CT 6238

March 18, 2015

EBI Project Number: 6215001500

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	76.10 %

March 18, 2015

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

Emissions Analysis for Site: **CT11516A – Coventry- Sprint**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **400 Riley Mountain Road, Coventry, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 700 MHz Band is $467 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS and AWS bands is $1000 \mu\text{W}/\text{cm}^2$. 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 **400 Riley Mountain Road, Coventry, 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 (PCS Band - 1900 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 (PCS Band - 1900 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 **EMS RR90_17_02DP** for 1900 MHz (PCS) 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 **EMS RR90_17_02DP** has a maximum gain of **14.4 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerline of the proposed antennas is **136 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.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	136	Height (AGL):	136	Height (AGL):	136
Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)	Frequency Bands	1900 MHz(PCS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,610.15	ERP (W):	6,610.15	ERP (W):	6,610.15
Antenna A1 MPE%	1.41	Antenna B1 MPE%	1.41	Antenna C1 MPE%	1.41
Antenna #:	2	Antenna #:	2	Antenna #:	2
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):	136	Height (AGL):	136	Height (AGL):	136
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 A2 MPE%	0.39	Antenna B2 MPE%	0.39	Antenna C2 MPE%	0.39

Site Composite MPE%	
Carrier	MPE%
T-Mobile	5.40
AT&T	23.87 %
MetroPCS	5.95 %
Sprint	7.03 %
Verizon Wireless	33.85 %
Site Total MPE %:	76.10 %

T-Mobile Sector 1 Total:	1.80 %
T-Mobile Sector 2 Total:	1.80 %
T-Mobile Sector 3 Total:	1.80 %
Site Total:	76.10 %

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:	1.80 %
Sector 2:	1.80 %
Sector 3 :	1.80 %
T-Mobile Total:	5.40 %
Site Total:	76.10 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **76.10%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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