

September 13, 2016

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

RE: Notice of Exempt Modification for T-Mobile / L700 Crown Site BU: 845993

T-Mobile Site ID: CTHA509A

Located at: 12 Nepaug Road, Burlington, CT 06013 Latitude: 41° 46' 56.86" / Longitude: -72°59'22.68"

Dear Ms. Bachman,

T-Mobile currently maintains six (6) antennas at the 90-foot level of the existing 119-foot monopole tower located at 12 Nepaug Road, Burlington, CT. The tower is owned by Crown Castle. The property is owned by AT&T Mobility. T-Mobile now proposes to add three (3) new antennas. The antennas would be installed at the same 90-foot level of the tower.

This facility was approved by the Connecticut Siting Council on February 18, 2004, Docket No. 268. This approval included the condition(s) that:

- The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level.
- 2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

- a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
- b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
- 3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
- 4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
- 5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
- 6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
- 7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

- 8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
- 9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

This modification complies with the aforementioned condition(s).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. Theodore Shafer, First Selectman for the Town of Burlington, as well as the property owner and the tower owner.

- 1. The proposed modifications will not result in an increase in the height of the existing tower.
- 2. The proposed modification will not require the extension of the site boundary.
- 3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
- 4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
- 5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
- 6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Amanda Goodall
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
339-205-7017
Amanda.Goodall@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 4: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

cc: First Selectman Theodore ShaferTown of Burlington200 Spielman HighwayBurlington, CT 06013

Crown Castle (Tower Owner) 12 Gill Street, Suite 5800 Woburn, Ma 01801

AT&T Mobility c/o Crown Castle 12 Gill Street, Suite 5800 Woburn, Ma 01801

DOCKET NO. 268 - AT&T Wireless PCS, LLC d/b/a AT&T	}	Connecticut
Wireless application for a Certificate of Environmental		
Compatibility and Public Need for the construction, maintenance	}	Siting
and operation of a wireless telecommunications facility located		
near Lyon and Nepaug Roads in Burlington, Connecticut.	}	Council
	}	February 18 2004

Decision and Order: Burlington Site CT-828

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the proposed site, located at the intersection of Lyon and Nepaug Roads, Burlington, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

- 1. The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level.
- 2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the <u>2002 Connecticut Guidelines for Soil Erosion and Sediment Control</u>, as amended.
- 3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

- 4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
- 5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
- 6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
- 7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
- 8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
- 9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

Docket 268 – AT&T Wireless Burlington Page 3

The parties and intervenors to this proceeding are:

Applicant

AT&T Wireless PCS, LLC d/b/a AT&T Wireless

Intervenor

Sprint Spectrum, L.P. d/b/a Sprint PCS

Its Representative

Christopher B. Fisher, Esq. Cuddy & Feder LLP 90 Maple Avenue White Plains, New York 10601

Its Representative

Thomas J. Regan, Esq. Brown Rudnick Berlack Israels CityPlace 1 185 Asylum Street Hartford, CT 06103 Map Block Lot

5-11-17-A-CELL

Account

30303111

Property Information

Property Location	12 NEPAUG RD		
Owner	AT&T MOBILITY		
Co-Owner	·		
Mailing Address	575 MOROS	GO DRIVE SU	TE 13-F
	ATLANTA	GA	30324
Land Use	402V	Ind Bldg Mdl-(00
Land Class	ı		
Zoning Code			
Census Tract	4101		

0		
		•••
	0	0

Photo



Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	_
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	

Map Block Lot

5-11-17-A-CELL

Account

30303111

	_
Valuation	Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed	
Buildings	0	0	
Extras	0	0	
Improvements	715100	500570	
Outbuildings	715100	500570	
Land	0	0	
Total	715100	500570	

Sub Areas

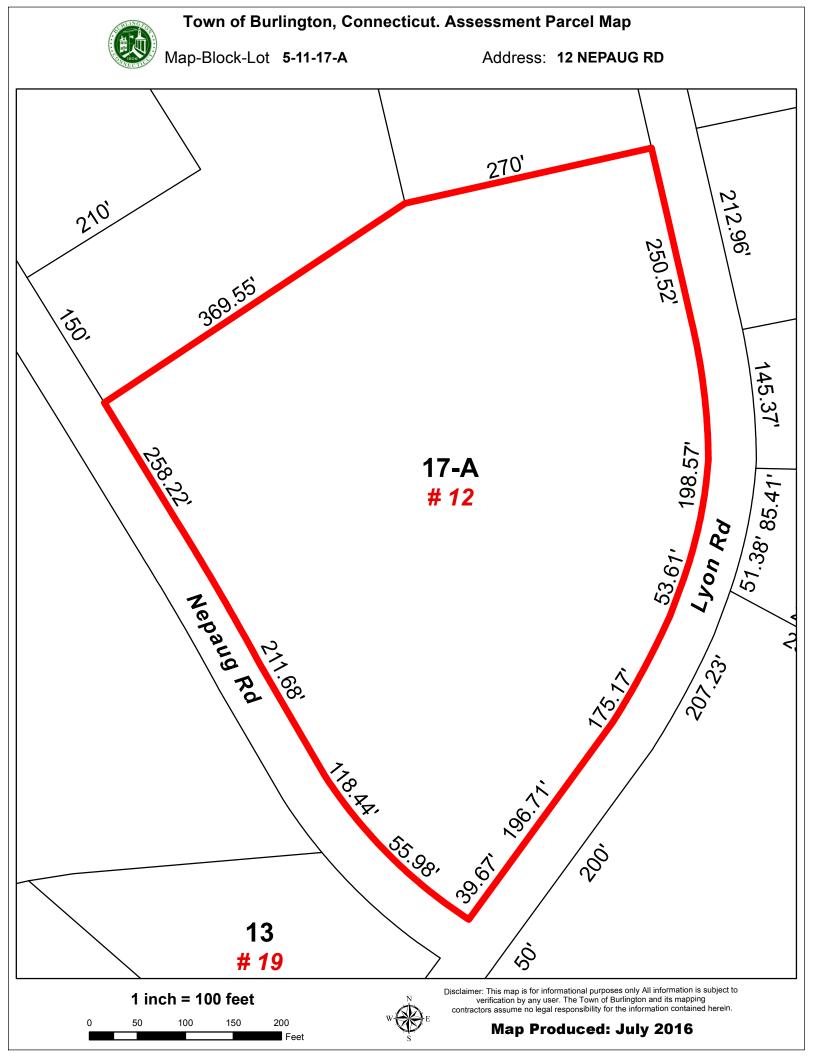
Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
l'otal Area		0

Outbuilding and Extra Items

Туре	Description
Paving-Concret	36.00 S.F.
PerCastConcCel	240.00 S.F.
PerCastConcCel	360.00 S.F.
Fence 8' Chain	260.00 L.F.
CELL SITES	

Sales History

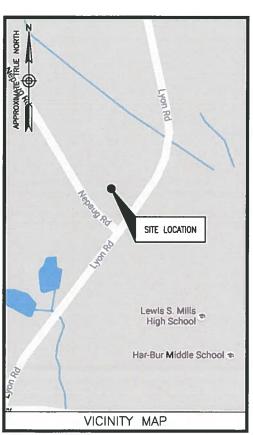
Owner of Record	Book/ Page	Sale Date	Sale Price
AT&T MOBILITY	000/ 000	10/1/2008	0



Te Mobile®

T-MOBILE NORTHEAST LLC

T-MOBILE SITE #: CTHA509A CROWN CASTLE BU #: 845993 SITE NAME: BURLINGTON-NEPAUG ROAD 12 NEPAUG ROAD BURLINGTON, CT 06013 HARTFORD COUNTY



FROM BLOOMFIELD, CT:

HEAD NORTHEAST ON GRIFFIN RD S TOWARD W NEWBERRY RD. TURN LEFT ONTO DAY HILL RD. TURN LEFT ONTO CT-189 S. SLIGHT RIGHT ONTO BROWN ST. TURN RIGHT ONTO CT-178 W. TURN RIGHT ONTO CT-178 W. TURN RIGHT ONTO HOPMEADOW ST. TURN LEFT ONTO CANAL ST. CONTINUE ONTO DEER PARK RD. TURN LEFT ONTO CT-167 S/BUSHY HILL RD. TURN RIGHT ONTO CANTON RD. CONTINUE STRAIGHT ONTO WILDWOOD RD. TURN LEFT ONTO NOTCH RD. SLIGHT LEFT ONTO WASHBURN RD. TURN LEFT ONTO AWTON RD. TURN RIGHT ONTO ALBAMY TURNERE. TURN LEFT ONTO DOWD AVE. CONTINUE ONTO MAPLE AVE. CONTINUE ONTO BRIDGE ST. TURN LEFT ONTO CT-179 S/BURLINGTON AVE. TURN RIGHT ONTO CT-4. TURN RIGHT ONTO LYON RD. TURN LEFT ONTO NEPAUG RD. SITE WILL BE ON THE RIGHT.

ENGINEER

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

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

CONSTRUCTION

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

CONSULTANT TEAM

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

705A-V2

PROJECT SUMMARY

SITE NAME: BURLINGTON-NEPAUG ROAD

> SITE NUMBER: CTHA509A

TOWER OWNER:

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12085

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

COORDINATES:

LATITUDE: 41"-46"-56.86" N (NAD83) LONGITUDE: 72"-59"-22.68" W (NAD83) (PER CROWN CASTLE)

CONFIGURATION

SITE ADDRESS:
12 NEPAUG ROAD BURLINGTON, CT 05013 HARTFORD COUNTY

PROJECT DIRECTORY

INSTALL (3) NEW ANTENNAS.

SCOPE OF WORK

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

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

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

T - Mobile

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



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

CTHA509A BURLINGTON -NEPAUG ROAD

	CONSTRUCTION DRAWINGS			
H				
H				
H				
H				
0		ISSUED AS FINAL		
Α	09/01/16	ISSUED FOR REVIEW		



Dewberry Engineers Inc.

60 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973-739-9400



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

DRAWN BY: JC

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50066258

JOB NUMBER: 50078132

SITE ADDRESS:

12 NEPAUG ROAD BURLINGTON, CT 06013 HARTFORD COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

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 ACCOMPUSHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF PROJECT
- 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
- 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 11 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
- 10. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF
- 11. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- 12. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
- 14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
- 15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING
- 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
- 17. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADATION. 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:
 - B) CONFINED SPACE
 - C) ELECTRICAL SAFETY
 - D) TRENCHING & EXCAVATION.
- 3. 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.
- 6. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
- 7. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T-MOBILE SPECIFICATION FOR SITE
- 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.
- 11. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
- 12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- 2. CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT
- 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
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
- 6. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- 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
- 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.
- 10. 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
- 12. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- 13. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 800V, 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
- 14. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED
- 15. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 800V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- 16. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE. COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75'C (90'C IF AVAILABLE).
- 17. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA.
- 18. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- 19. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 4D, 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.
- 21. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE
- 22. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- 23. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- 24. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION—TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- 25. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- 26. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- 27. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- 28. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- 29. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE CALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER
- 30. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEWA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- 31. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- 32. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

CONCRETE AND REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST—IN—PLACE CONCRETE.
- 2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 80, 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:

- A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- 6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN INSTALLATION OF CONCRETE EARANSION, WEDGE ANCION, SPALE BE FER MANUFACTURER WITTEN
 RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S
 RECOMMENDATION FOR EMBEDIMENT 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 $(3/4^{\circ}0)$ 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
- 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 DRAWNINGS. 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.
- 7. 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
- 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.

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



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

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Dewberry Engineers Inc. 600 PARSIPPANY ROAD SUITE 301 PARSIPPANY, NJ 07054 PHONE: 973,739,9400 FAX: 973.739.9710



DRAWN BY:	JC
REVIEWED BY:	BSH

CONNECTICUT LICENSE NO. 0023222

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PROJECT NUMBER: 50066258

GHN

JOB NUMBER: 50078132

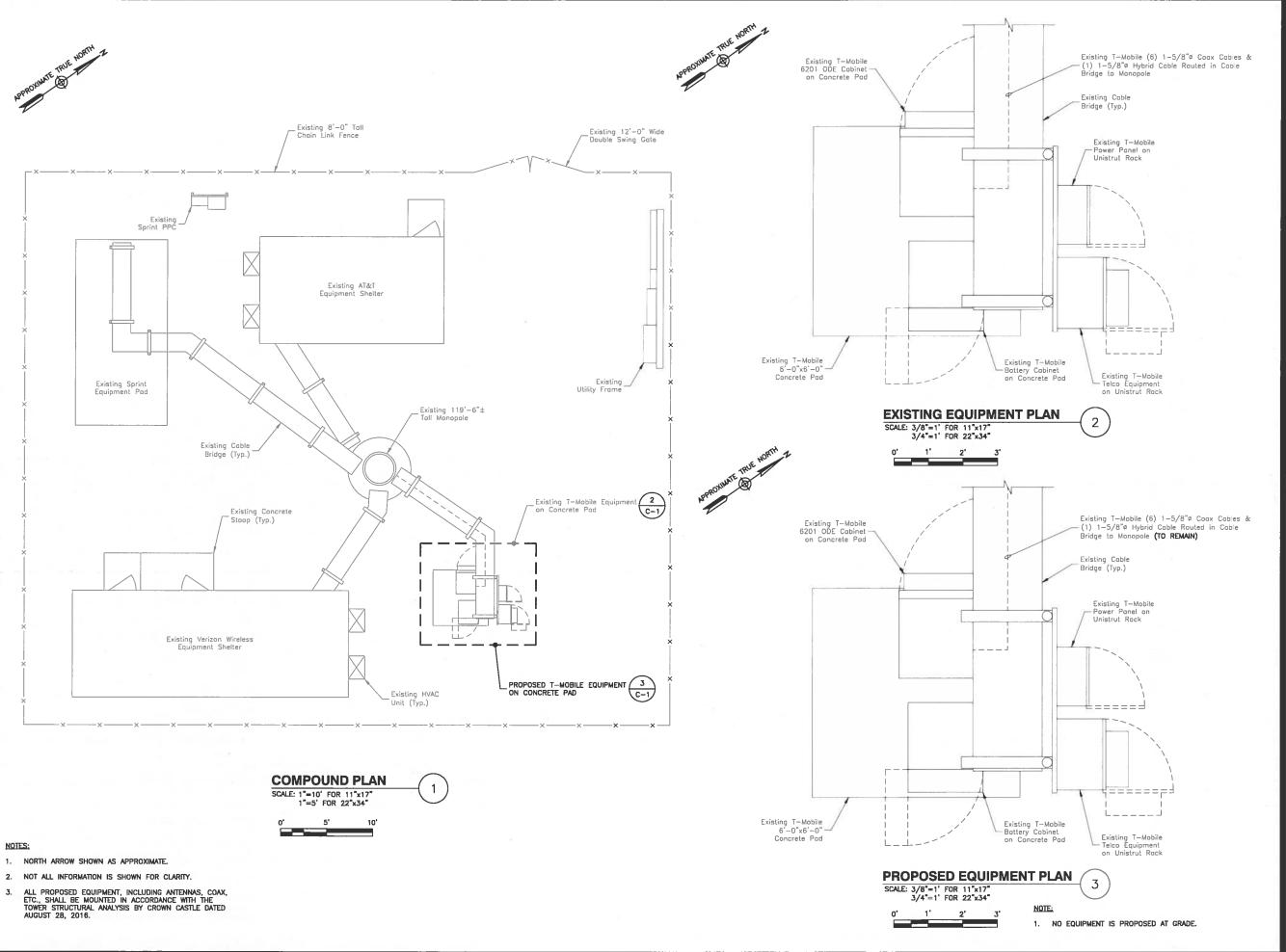
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GENERAL NOTES

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

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JOB NUMBER:	50078132

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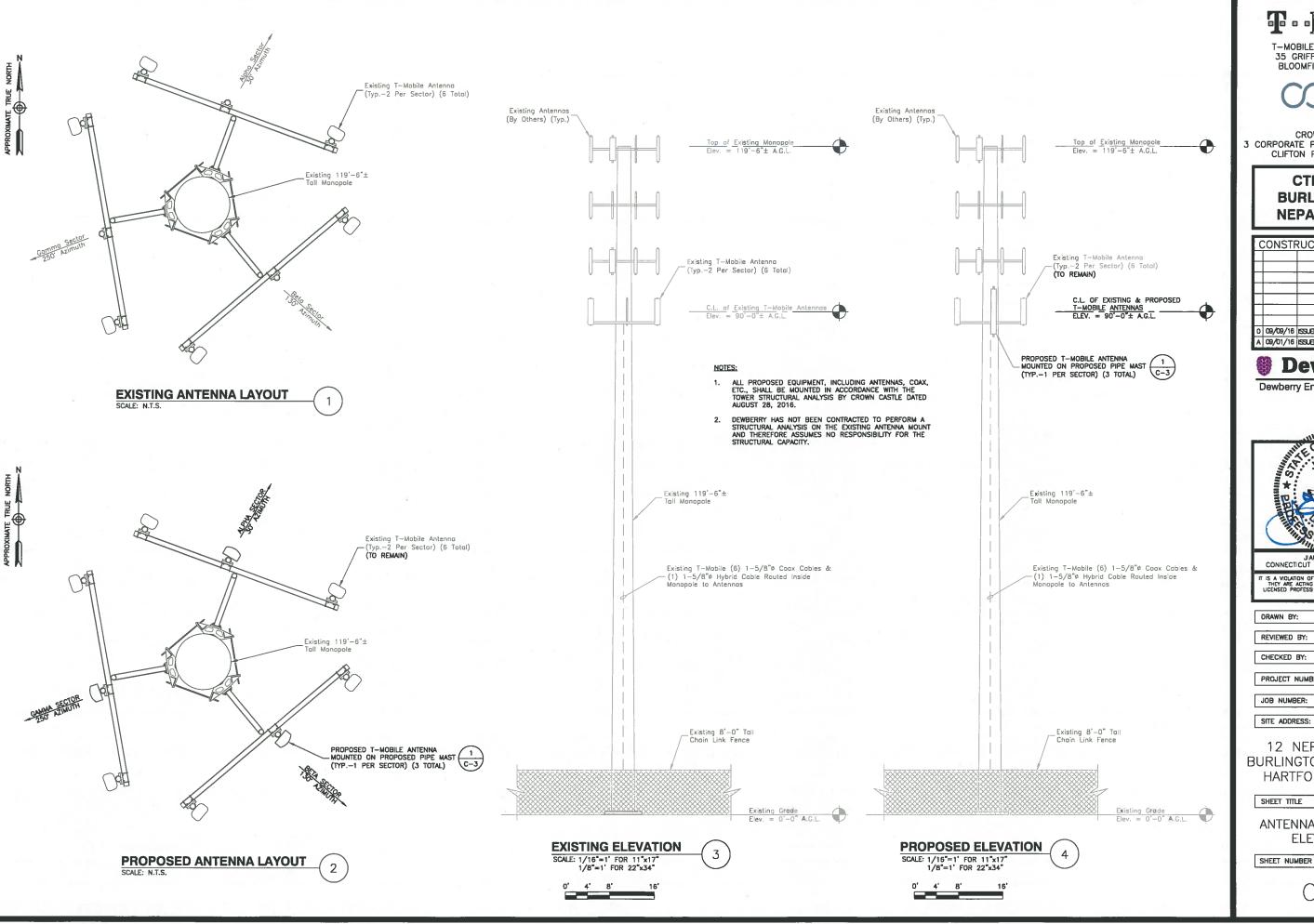
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COMPOUND PLAN & EQUIPMENT PLANS

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

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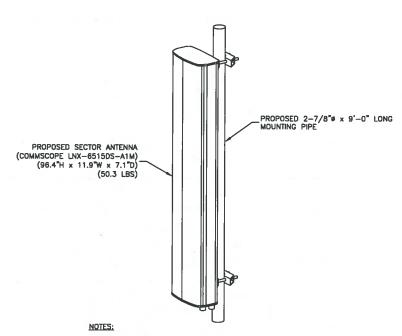
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C-2



- 1. MOUNT ANTENNAS PER MANUFACTURER'S RECOMMENDATIONS.
- 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.

	FIBER/DC CABLES —	B2A B4P	B4A B2P	L T E 7 0
TOWER GROUND	TRUNK CABLE———			COAX CABLES
RECT AAV CSR LMU BATT	DUW DUW DUS DUS DUS			
	SITE CONFIGUR	ATION 7		-(2)
S	CALE: N.T.S.			

	DESIGN CONFIGURATION							
	ANTENNAS		COAX		HYBRID COAX/HYBRID	TMA	RRU	
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	LENGTH	EXISTING/PROPOSED	EXISTING/PROPOSED
	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN					_	_
ALPHA	_	COMMSCOPE LNX-6515DS-A1M	(2) 1-5/8"ø	_		140'-0"	- 1 II-	-
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	ERICSSON AIR 21 B4A B2P	EXISTING TO REMAIN					_	_
	ERICSSON AIR 21 B2A B4P	EXISTING TO REMAIN						
GAMMA		COMMSCOPE LNX-6515DS-A1M	1M (2) 1-5/8*ø –		140'-0"	=	-	
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Dewberry*

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PARSIPPANY, NJ 07054
PHONE: 973,739,9400
FAX: 973,739,9710



DRAWN BY: JC

REVIEWED BY: BSH CHECKED BY: GHN PROJECT NUMBER: 50066258 JOB NUMBER: 50078132 SITE ADDRESS:

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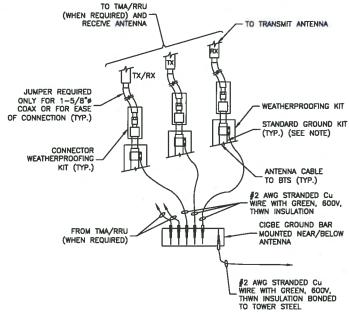
CONSTRUCTION DETAILS

SHEET NUMBER

C-3

GROUNDING NOTES:

- 1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE—SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE ENGINEER FOR RESOLUTION.
- 2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELLOW 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.
- 4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
- 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 GROUNDED 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.
- 8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- 9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- 10. USE OF 90' BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45' BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8
- 11. EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIM-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.
- 13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STANLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM T-MOBILE MARKET REPRESENTATIVE.
- 14. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
- 15. ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
- 16. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STANLESS 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 ANTIOXIDANT 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.
- 21. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
- 22. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.

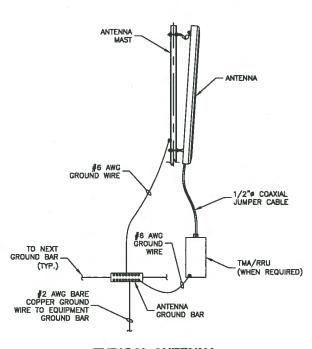


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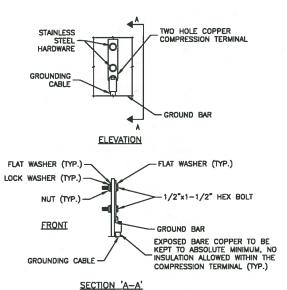
 DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE)

SCALE: N.T.S



TYPICAL ANTENNA
GROUNDING DETAIL
SCALE: N.T.S

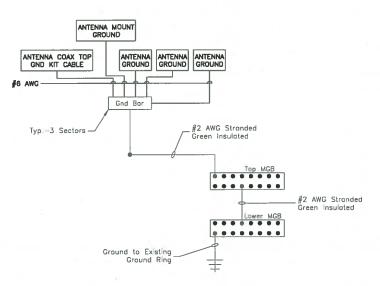


NOTES:

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

TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

E: N.T.S.



NOTES:

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

SCHEMATIC GROUNDING DIAGRAM SCALE: N.T.S.

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Dewberry*

Dewberry Engineers Inc.

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DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50066258
JOB NUMBER:	50078132

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SHEET TITLE

SITE ADDRESS:

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

Date: August 28, 2016

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



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

Subject:

Structural Analysis Report

Carrier Designation:

Metro PCS Co-Locate

Carrier Site Number:

CTHA509A

Carrier Site Name:

AT&T Burlington Monopole^{*}

Crown Castle Designation:

Crown Castle BU Number:

845993

Crown Castle Site Name:

BURLINGTON-NEPAUG ROAD

Crown Castle JDE Job Number: Crown Castle Work Order Number:

392501 1288438

Crown Castle Application Number:

358447 Rev. 0

Engineering Firm Designation:

Crown Castle Project Number:

1288438

Site Data:

12 NEPAUG ROAD, BURLINGTON, Hartford County, CT

Latitude 41° 46′ 56.86″, Longitude -72° 59′ 22.68″

120 Foot - Monopole Tower

Dear Sean Dempsey,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1288438, in accordance with application 358447, revision 0.

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

LC5: Existing + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing loading, respectively.

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

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

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

Structural analysis prepared by: Matthew Hussak / MBC

Respectfully submitted by:

Terry P. Styran, P.E. Senior Project Engineer tnxTower Report - version 7.0.5.1



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Additional Calculations

1) INTRODUCTION

This tower is a 120ft Monopole tower designed by ENGINEERED ENDEAVORS, INC and mapped by FDH in February of 2016. The original design standard and wind speed are unknown.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Elevation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
88.0	90.0	3	commscope	LNX-6515DS-A1M w/ Mount Pipe	-	-	_

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	anufacturer Antenna Model		Feed Line Size (in)	Note
		3	ericsson	RRUS-11			
		1	gps	GPS_A			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe	2	1/2	
119.0	119.0	6	powerwave technologies	LGP13519	2 12	2 7/8 1	1
		6	powerwave technologies				
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 1201-1]			
100.0	400.0	6 andrew 950F85T2E-M w/ Mount Pipe		6	4 4 / 4		
109.0	109.0	1	tower mounts	Platform Mount [LP 1201-1]	6	1-1/4	1
		3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			1
99.0	99.0	6	antel	LPA-80080/4CF w/ Mount Pipe	12	1-5/8	
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 1201-1]			

Mounting Level (ft)	Flevation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	00.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
88.0	90.0	3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	7	1-5/8	1
	88.0	1	tower mounts	T-Arm Mount [TA 602-3]			

Notes:

Table 3 - Design Antenna and Cable Information

Mounti Level (Center Line (t) Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)					
	Information Not Available										

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Jaworski Geotech, Inc.	4551029	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	URS	5072131	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH Velocitel (Foundation Mapping)	6171674	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FDH Velocitel (Tower Mapping)	6172249	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 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. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

¹⁾ Existing Equipment

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	120 - 97	Pole	TP28.93x22.69x0.1875	1	-6.24	858.87	22.2	Pass
L2	97 - 48	Pole	TP39.7x27.5729x0.25	2	-16.10	1565.92	65.6	Pass
L3	48 - 0	Pole	TP51.04x38.0569x0.3125	3	-26.38	2523.73	68.1	Pass
							Summary	
						Pole (L3)	68.1	Pass
						Rating =	68.1	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.4	Pass
1	Base Plate	0	83.8	Pass
1	Base Foundation Structural	0	62.4	Pass
1	Base Foundation Soil Interaction	0	56.8	Pass

Structure Rating (max from all components) =	83.8%
--	-------

Notes:

4.1) Recommendations

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

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

APPENDIX A TNXTOWER OUTPUT

28.9300 0.1875 23.00 3.62 9 52.62 39.7000 8 A572-65 48.0 ft 52.96 51.0400 ო 9 AXIAL 42 K SHEAR 5 K 506 kip-ft TORQUE 0 kip-ft 38 mph WIND - 1.0000 in ICE AXIAL 26 K SHEAR' 20 K 0.0 ft 13.8 TORQUE 0 kip-ft Number of Sides REACTIONS - 80 mph WIND Thickness (in) Top Dia (in) Bot Dia (in) Weight (K) Length (ft)

DESIGNED APPURTENANCE LOADING

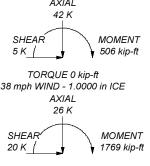
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 1201-1]	119	6' x 2" Mount Pipe	109
AM-X-CD-16-65-00T-RET w/ Mount	119	Platform Mount [LP 1201-1]	99
Pipe		(2) LPA-80080/4CF w/ Mount Pipe	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	(2) LPA-80080/4CF w/ Mount Pipe	99
'	440	(2) LPA-80080/4CF w/ Mount Pipe	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount Pipe	99
(2) 7770.00 w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount	99
(2) 7770.00 w/ Mount Pipe	119	Pipe	
(2) 7770.00 w/ Mount Pipe	119	BXA-171085-8BF-EDIN-2 w/ Mount	99
GPS_A	119	Pipe	
(2) LGP21401	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP21401	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) LGP21401	119	BXA-70063-6CF-2 w/ Mount Pipe	99
DC6-48-60-18-8F	119	(2) FD9R6004/2C-3L	99
(2) LGP13519	119	(2) FD9R6004/2C-3L	99
(2) LGP13519	119	(2) FD9R6004/2C-3L	99
(2) LGP13519	119	T-Arm Mount [TA 602-3]	88
RRUS-11	119	ERICSSON AIR 21 B2A B4P w/ Mount	88
RRUS-11	119	Pipe	
RRUS-11	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	•	00
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	88
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount	88
6' x 2" Mount Pipe	119	Pipe	
6' x 2" Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount	88
6' x 2" Mount Pipe	119	Pipe	
Platform Mount [LP 1201-1]	109	ERICSSON AIR 21 B4A B2P w/ Mount	88
(2) 950F85T2E-M w/ Mount Pipe	109	Pipe	
(2) 950F85T2E-M w/ Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
6' x 2" Mount Pipe	109	LNX-6515DS-A1M w/ Mount Pipe	88
6' x 2" Mount Pipe	109	1	

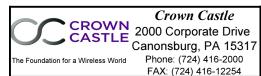
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

- 1. Tower is located in Hartford County, Connecticut.
- 2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
- 3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
- 4. Deflections are based upon a 50 mph wind.5. TOWER RATING: 68.1%





^{Job:} BU# 845993		
Project:		
Client: Crown Castle	Drawn by: MCarll	App'd:
Code: TIA/EIA-222-F	Date: 08/28/16	Scale: NTS
Path:	1200 4201 O A MECUO 45002 MICA200 420	Dwg No. E-

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 1) Tower is located in Hartford County, Connecticut.
- 2) Basic wind speed of 80 mph.
- 3) Nominal ice thickness of 1.0000 in.
- 4) Ice thickness is considered to increase with height.
- 5) Ice density of 56 pcf.
- 6) A wind speed of 38 mph is used in combination with ice.
- 7) Temperature drop of 50 °F.
- 8) Deflections calculated using a wind speed of 50 mph.
- 9) A non-linear (P-delta) analysis was used.
- 10) Pressures are calculated at each section.
- 11) Stress ratio used in pole design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification

- √ Use Code Stress Ratios
- √ Use Code Safety Factors Guys
- ✓ Escalate Ice
 Always Use Max Kz
 Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform Assume Legs Pinned

- √ Assume Rigid Index Plate
- √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension
- √ Bypass Mast Stability Checks
- √ Use Azimuth Dish Coefficients
- √ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination

✓ Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing
Treat Feed Line Bundles As Cylinder

Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation

 ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption

Poles

 ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets

Tapered Pole Section Geometry

Section	Elevation	Section	Splice	Number	Тор	Bottom	Wall	Bend	Pole Grade
		Length	Length	of	Diameter	Diameter	Thickness	Radius	
	ft	ft	ft	Sides	in	in	in	in	
L1	120.00-97.00	23.00	3.62	18	22.6900	28.9300	0.1875	0.7500	A572-65 (65 ksi)
L2	97.00-48.00	52.62	4.96	18	27.5729	39.7000	0.2500	1.0000	A572-65 (65 ksi)
L3	48.00-0.00	52.96		18	38.0569	51.0400	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia.	Area	1	r	С	I/C	J	It/Q	W	w/t
	in	in²	in ⁴	in	in	in ³	in⁴	in²	in	

Section	Tip Dia.	Area	1	r	С	I/C	J	It/Q	W	w/t
	in	in²	in⁴	in	in	in³	in⁴	in²	in	
L1	23.0400	13.3918	856.7181	7.9884	11.5265	74.3258	1714.5635	6.6972	3.6634	19.538
	29.3763	17.1054	1785.3331	10.2036	14.6964	121.4807	3573.0155	8.5543	4.7617	25.396
L2	28.8454	21.6807	2044.8607	9.6996	14.0070	145.9883	4092.4120	10.8424	4.4128	17.651
	40.3124	31.3036	6154.9624	14.0048	20.1676	305.1906	12318.023 6	15.6548	6.5472	26.189
L3	39.8787	37.4377	6738.3192	13.3993	19.3329	348.5416	13485.504 8	18.7224	6.1480	19.674
	51.8274	50.3153	16357.795 4	18.0083	25.9283	630.8853	32737.114 9	25.1625	8.4330	26.986

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	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft²	in				in	in	in
L1 120.00-			1	1	1			
97.00								
L2 97.00-			1	1	1			
48.00								
L3 48.00-0.00			1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat											
Description	Face	Allow	Component	Placement	Total	Number	Clear	Width or	Perimete	Weight	
	or	Shield	Type		Number	Per Row	Spacing	Diamete	r		
	Leg			ft			in	r		plf	
	·							i.	in	•	

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or	Allow Shield	Component Type	Placement	Total Number		C_AA_A	Weight
	Leg	Officia	Турс	ft	rvarriber		f t² /ft	plf
LDF4-50A(1/2")	A	No	Inside Pole	119.00 - 8.00	2	No Ice	0.00	0.15
,						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF5-50A(7/8")	Α	No	Inside Pole	119.00 - 8.00	2	No Ice	0.00	0.33
, ,						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF7-50A(1-5/8")	Α	No	Inside Pole	119.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82

LDF6-50A(1-1/4")	С	No	Inside Pole	109.00 - 8.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
***						4" Ice	0.00	0.66
LDF7-50A(1-5/8")	С	No	Inside Pole	99.00 - 8.00	12	No Ice	0.00	0.82
	·					1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82

Description	Face or	Allow Shield	Component Type	Placement	Total Number		C _A A _A	Weight
	Leg		71	ft			f l² /ft	plf

LDF7-50A(1-5/8")	В	No	Inside Pole	88.00 - 8.00	6	No Ice	0.00	0.82
, ,						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
MLE Hybrid	В	No	Inside Pole	88.00 - 8.00	1	No Ice	0.00	1.07
9Power/18Fiber RL						1/2" Ice	0.00	1.07
2(1-5/8")						1" Ice	0.00	1.07
, ,						2" Ice	0.00	1.07
						4" Ice	0.00	1.07

Feed Line/Linear Appurtenances Section Areas

Tower Sectio	Tower Elevation	Face	AR	AF	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		f t²	ft ²	ft ²	f t²	K
L1	120.00-97.00	Α	0.000	0.000	0.000	0.000	0.24
		В	0.000	0.000	0.000	0.000	0.00
		С	0.000	0.000	0.000	0.000	0.07
L2	97.00-48.00	Α	0.000	0.000	0.000	0.000	0.53
		В	0.000	0.000	0.000	0.000	0.24
		С	0.000	0.000	0.000	0.000	0.68
L3	48.00-0.00	Α	0.000	0.000	0.000	0.000	0.43
		В	0.000	0.000	0.000	0.000	0.24
		С	0.000	0.000	0.000	0.000	0.55

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio	Tower Elevation	Face or	lce Thickness	A_R	AF	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft	Leg	in	ft ²	ft ²	ft ²	ft ²	K
L1	120.00-97.00	Α	1.153	0.000	0.000	0.000	0.000	0.24
		В		0.000	0.000	0.000	0.000	0.00
		С		0.000	0.000	0.000	0.000	0.07
L2	97.00-48.00	Α	1.098	0.000	0.000	0.000	0.000	0.53
		В		0.000	0.000	0.000	0.000	0.24
		С		0.000	0.000	0.000	0.000	0.68
L3	48.00-0.00	Α	1.000	0.000	0.000	0.000	0.000	0.43
		В		0.000	0.000	0.000	0.000	0.24
		С		0.000	0.000	0.000	0.000	0.55

Feed Line Center of Pressure

Section	Elevation	CPx	CPz	CP _X Ice	CPz Ice
	ft	in	in	in	in
L1	120.00-97.00	0.0000	0.0000	0.0000	0.0000
L2	97.00-48.00	0.0000	0.0000	0.0000	0.0000
L3	48.00-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			ft		ft		ft ²	ft ²	K
			ft ft	0					

Platform Mount [LP 1201-	В	None		0.0000	119.00	No Ice 1/2"	23.10	23.10	2.10
1]						lce	26.80 30.50	26.80 30.50	2.50 2.90
						1" Ice	37.90	37.90	3.70
						2" Ice	52.70	52.70	5.30
						4" Ice			
AM-X-CD-16-65-00T-RET	С	From Leg	4.00	0.0000	119.00	No Ice	8.50	6.30	0.07
w/ Mount Pipe			0.00			1/2"	9.15	7.48	0.14
			0.00			Ice 1" Ice	9.77 11.03	8.37 10.18	0.21 0.38
						2" Ice	13.68	14.02	0.87
						4" Ice			
AM-X-CD-16-65-00T-RET	Α	From Leg	4.00	0.0000	119.00	No Ice	8.50	6.30	0.07
w/ Mount Pipe			0.00			1/2"	9.15	7.48	0.14
			0.00			Ice 1" Ice	9.77 11.03	8.37	0.21
						2" Ice	13.68	10.18 14.02	0.38 0.87
						4" Ice	13.00	14.02	0.07
AM-X-CD-16-65-00T-RET	В	From Leg	4.00	0.0000	119.00	No Ice	8.50	6.30	0.07
w/ Mount Pipe		_	0.00			1/2"	9.15	7.48	0.14
			0.00			Ice	9.77	8.37	0.21
						1" Ice 2" Ice	11.03	10.18	0.38
						4" Ice	13.68	14.02	0.87
(2) 7770.00 w/ Mount Pipe	С	From Leg	4.00	0.0000	119.00	No Ice	6.12	4.25	0.06
(=)			0.00			1/2"	6.63	5.01	0.10
			0.00			Ice	7.13	5.71	0.16
						1" Ice	8.16	7.16	0.29
						2" Ice 4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	Α	From Leg	4.00	0.0000	119.00	No Ice	6.12	4.25	0.06
()			0.00			1/2"	6.63	5.01	0.10
			0.00			Ice	7.13	5.71	0.16
						1" Ice 2" Ice	8.16	7.16	0.29
						4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	В	From Leg	4.00	0.0000	119.00	No Ice	6.12	4.25	0.06
()			0.00			1/2"	6.63	5.01	0.10
			0.00			Ice	7.13	5.71	0.16
						1" Ice	8.16	7.16	0.29
						2" Ice 4" Ice	10.36	10.41	0.66
GPS_A	Α	From Leg	4.00	0.0000	119.00	No Ice	0.30	0.30	0.00
_		J	0.00			1/2"	0.37	0.37	0.00
			0.00			Ice	0.46	0.46	0.01
						1" Ice 2" Ice	0.65 1.15	0.65 1.15	0.02 0.08
						4" Ice	1.13	1.10	0.06
(2) LGP21401	С	From Leg	4.00	0.0000	119.00	No Ice	1.29	0.23	0.01
()			0.00			1/2"	1.45	0.31	0.02
			0.00			Ice	1.61	0.40	0.03
						1" Ice	1.97	0.61	0.05
						2" Ice 4" Ice	2.79	1.12	0.14
(2) LGP21401	Α	From Leg	4.00	0.0000	119.00	No Ice	1.29	0.23	0.01
, , = = : - : .			0.00			1/2"	1.45	0.31	0.02
			0.00			Ice	1.61	0.40	0.03
						1" Ice	1.97	0.61	0.05
						2" Ice	2.79	1.12	0.14
(2) LGP21401	В	From Leg	4.00	0.0000	119.00	4" Ice No Ice	1.29	0.23	0.01
(=) = 01 = 1 = 01		J Log	0.00	2.0000	. 10.00	1/2"	1.45	0.23	0.02
			0.00			Ice	1.61	0.40	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	0	ft		ft²	ft ²	K
						1" Ice 2" Ice 4" Ice	1.97 2.79	0.61 1.12	0.05 0.14
DC6-48-60-18-8F	Α	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.27 1.46 1.66 2.09 3.10	1.27 1.46 1.66 2.09 3.10	0.02 0.04 0.05 0.10 0.21
(2) LGP13519	С	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) LGP13519	Α	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
(2) LGP13519	В	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	0.01 0.01 0.01 0.02 0.07
RRUS-11	С	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
RRUS-11	А	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
RRUS-11	В	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
6' x 2" Mount Pipe	С	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	Α	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	В	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	С	From Leg	2.00 0.00	0.0000	119.00	No Ice 1/2"	1.43 1.92	1.43 1.92	0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			Vert ft ft ft	٥	ft		ft ^e	ft ²	K
			0.00			Ice 1" Ice 2" Ice 4" Ice	2.29 3.06 4.70	2.29 3.06 4.70	0.05 0.09 0.23
6' x 2" Mount Pipe	Α	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	В	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
Platform Mount [LP 1201- 1]	В	None		0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	23.10 26.80 30.50 37.90 52.70	23.10 26.80 30.50 37.90 52.70	2.10 2.50 2.90 3.70 5.30
(2) 950F85T2E-M w/ Mount Pipe	С	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	0.03 0.07 0.12 0.24 0.59
(2) 950F85T2E-M w/ Mount Pipe	Α	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	0.03 0.07 0.12 0.24 0.59
(2) 950F85T2E-M w/ Mount Pipe	В	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	0.03 0.07 0.12 0.24 0.59
6' x 2" Mount Pipe	С	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	Α	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	В	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
Platform Mount [LP 1201- 1]	В	None		0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.10 26.80 30.50 37.90 52.70	23.10 26.80 30.50 37.90 52.70	2.10 2.50 2.90 3.70 5.30

 Description	Face	Offset	Offsets:	Azimuth	Placement		C _A A _A	C _A A _A	Weight
Безсприон	or Leg	Type	Horz Lateral Vert	Adjustmen t	riacement		Front	Side	weigin
			ft ft ft	۰	ft		ft ²	ft²	K
(2) LPA-80080/4CF w/	С	From Leg	4.00	0.0000	99.00	4" Ice No Ice	2.86	7.23	0.03
Mount Pipe	O	1 Tom Log	0.00	0.0000	33.00	1/2"	3.22	7.92	0.08
·			0.00			Ice	3.59	8.63	0.13
						1" Ice 2" Ice	4.45 6.32	10.11	0.25
						4" Ice	6.32	13.34	0.61
(2) LPA-80080/4CF w/	Α	From Leg	4.00	0.0000	99.00	No Ice	2.86	7.23	0.03
Mount Pipe			0.00			1/2"	3.22	7.92	0.08
			0.00			Ice 1" Ice	3.59 4.45	8.63 10.11	0.13 0.25
						2" Ice	6.32	13.34	0.23
						4" Ice			
(2) LPA-80080/4CF w/	В	From Leg	4.00	0.0000	99.00	No Ice	2.86	7.23	0.03
Mount Pipe			0.00 0.00			1/2" Ice	3.22 3.59	7.92 8.63	0.08 0.13
			0.00			1" Ice	4.45	10.11	0.13
						2" Ice	6.32	13.34	0.61
5./. /=/	_					4" Ice			
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	С	From Leg	4.00 0.00	0.0000	99.00	No Ice 1/2"	3.18 3.56	3.35 3.97	0.03 0.06
w/ Would i ipe			0.00			Ice	3.96	4.60	0.00
						1" Ice	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
BXA-171085-8BF-EDIN-2	Α	From Leg	4.00	0.0000	99.00	4" Ice No Ice	3.18	3.35	0.03
w/ Mount Pipe	^	1 Tolli Leg	0.00	0.0000	99.00	1/2"	3.56	3.97	0.06
•			0.00			Ice	3.96	4.60	0.10
						1" Ice	4.85	5.89	0.19
						2" Ice 4" Ice	6.77	8.89	0.49
BXA-171085-8BF-EDIN-2	В	From Leg	4.00	0.0000	99.00	No Ice	3.18	3.35	0.03
w/ Mount Pipe		ŭ	0.00			1/2"	3.56	3.97	0.06
			0.00			Ice 1" Ice	3.96	4.60	0.10
						2" Ice	4.85 6.77	5.89 8.89	0.19 0.49
						4" Ice	0.11	0.00	0.10
BXA-70063-6CF-2 w/	С	From Leg	4.00	0.0000	99.00	No Ice	7.97	5.80	0.04
Mount Pipe			0.00 0.00			1/2" Ice	8.61 9.22	6.95 7.82	0.10 0.17
			0.00			1" Ice	10.46	9.60	0.17
						2" Ice	13.07	13.37	0.80
DV4 =0000 00= 0 /	_					4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	Α	From Leg	4.00 0.00	0.0000	99.00	No Ice 1/2"	7.97 8.61	5.80 6.95	0.04 0.10
Would Tipe			0.00			Ice	9.22	7.82	0.17
						1" Ice	10.46	9.60	0.34
						2" Ice 4" Ice	13.07	13.37	0.80
BXA-70063-6CF-2 w/	В	From Leg	4.00	0.0000	99.00	No Ice	7.97	5.80	0.04
Mount Pipe			0.00			1/2"	8.61	6.95	0.10
			0.00			Ice	9.22	7.82	0.17
						1" Ice 2" Ice	10.46 13.07	9.60 13.37	0.34 0.80
						4" Ice	10.07	10.07	0.00
(2) FD9R6004/2C-3L	С	From Leg	4.00	0.0000	99.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice 1" Ice	0.54 0.75	0.20 0.34	0.01 0.02
						2" Ice	1.28	0.74	0.06
(0) =0.00	_					4" Ice			
(2) FD9R6004/2C-3L	Α	From Leg	4.00 0.00	0.0000	99.00	No Ice 1/2"	0.37 0.45	0.08 0.14	0.00 0.01
			0.00			lce	0.45	0.14	0.01
						1" Ice	0.75	0.34	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			Vert ft ft ft	0	ft		ft ^e	ft ²	К
						2" Ice 4" Ice	1.28	0.74	0.06
(2) FD9R6004/2C-3L	В	From Leg	4.00	0.0000	99.00	No Ice	0.37	0.08	0.00
()		3	0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice	0.75	0.34	0.02
						2" Ice 4" Ice	1.28	0.74	0.06
*** T-Arm Mount [TA 602-3]	В	None		0.0000	88.00	No Ice	11.59	11.59	0.77
						1/2"	15.44	15.44	0.99
						Ice	19.29	19.29	1.21
						1" Ice 2" Ice	26.99 42.39	26.99	1.64
						4" Ice	42.39	42.39	2.50
ERICSSON AIR 21 B2A	С	From Face	4.00	0.0000	88.00	No Ice	6.83	5.64	0.11
B4P w/ Mount Pipe	· ·		0.00	0.000	00.00	1/2"	7.35	6.48	0.17
·			2.00			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice 4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A	Α	From Face	4.00	0.0000	88.00	No Ice	6.83	5.64	0.11
B4P w/ Mount Pipe	^	i ioiii i ace	0.00	0.0000	00.00	1/2"	7.35	6.48	0.11
Bir William i ipo			2.00			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice 4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A	В	From Face	4.00	0.0000	88.00	No Ice	6.83	5.64	0.11
B4P w/ Mount Pipe	_		0.00	0.000	00.00	1/2"	7.35	6.48	0.17
·			2.00			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A	С	From Face	4.00	0.0000	88.00	4" Ice No Ice	6.83	5.64	0.11
B2P w/ Mount Pipe	C	i ioiii i ace	0.00	0.0000	00.00	1/2"	7.35	6.48	0.11
BZI W Would ipe			2.00			Ice	7.86	7.26	0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
EDIO000N AID 04 D44			4.00	0.0000	00.00	4" Ice	0.00	- 04	0.44
ERICSSON AIR 21 B4A	Α	From Face	4.00	0.0000	88.00	No Ice 1/2"	6.83 7.35	5.64	0.11
B2P w/ Mount Pipe			0.00 2.00			Ice	7.33 7.86	6.48 7.26	0.17 0.23
			2.00			1" Ice	8.93	8.86	0.28
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B4A	В	From Face	4.00	0.0000	88.00	No Ice	6.83	5.64	0.11
B2P w/ Mount Pipe			0.00 2.00			1/2" Ice	7.35 7.86	6.48 7.26	0.17 0.23
			2.00			1" Ice	8.93	8.86	0.23
						2" Ice	11.18	12.29	0.81
						4" Ice			
LNX-6515DS-A1M w/	Α	From Leg	4.00	0.0000	88.00	No Ice	11.68	9.84	0.08
Mount Pipe			0.00			1/2"	12.40	11.37	0.17
			2.00			Ice 1" Ice	13.14 14.60	12.91 15.27	0.27 0.51
						2" Ice	17.87	20.14	1.15
						4" Ice	17.07	20.17	1.10
LNX-6515DS-A1M w/	В	From Leg	4.00	0.0000	88.00	No Ice	11.68	9.84	0.08
Mount Pipe		-	0.00			1/2"	12.40	11.37	0.17
			2.00			Ice	13.14	12.91	0.27
						1" Ice 2" Ice	14.60	15.27	0.51
						4" Ice	17.87	20.14	1.15
LNX-6515DS-A1M w/	С	From Leg	4.00	0.0000	88.00	No Ice	11.68	9.84	0.08
Mount Pipe	-	3	0.00			1/2"	12.40	11.37	0.17
•									

	or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	٥	ft		ft²	ft ²	K
***			2.00			Ice 1" Ice 2" Ice 4" Ice	13.14 14.60 17.87	12.91 15.27 20.14	0.27 0.51 1.15

Load Combinations

Comb.	Description
No.	
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+lce+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+lce+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+lce+Temp
21	Dead+Wind 180 deg+lce+Temp
22	Dead+Wind 210 deg+lce+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+lce+Temp
25	Dead+Wind 300 deg+lce+Temp
26	Dead+Wind 330 deg+lce+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

Sectio	Elevation	Component	Condition	Gov.	Force	Major Axis	Minor Axis
n	ft	Type		Load		Moment	Moment
No.		,,		Comb.	K	kip-ft	kip-ft
L1	120 - 97	Pole	Max Tension	8	0.00	0.00	0.00
			Max Compression	14	-11 83	0.00	0.36

Sectio	Elevation	Component	Condition	Gov.	Force	Major Axis	Minor Axis
n No.	ft	Type		Load Comb.	K	Moment kip-ft	Moment kip-ft
			Max. Mx	5	-6.24	-105.02	0.09
			Max. My	2	-6.24	0.00	105.12
			Max. Vy	5	7.45	-105.02	0.09
			Max. Vx	2	-7.45	0.00	105.12
			Max. Torque	5			0.31
L2	97 - 48	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.56	0.00	0.36
			Max. Mx	5	-16.10	-796.83	0.11
			Max. My	2	-16.10	0.00	796.94
			Max. Vy	5	16.79	-796.83	0.11
			Max. Vx	2	-16.79	0.00	796.94
			Max. Torque	5			0.31
L3	48 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41.61	0.00	0.36
			Max. Mx	5	-26.38	-1768.74	0.11
			Max. My	2	-26.38	0.00	1768.84
			Max. Vy	5	19.94	-1768.74	0.11
			Max. Vx	2	-19.94	0.00	1768.84
			Max. Torque	5			0.31

R4 - 1	D 1'
Maximum	Reactions

Location	Condition	Gov.	Vertical	Horizontal, X	Horizontal, Z
		Load	K	K	K
		Comb.			
Pole	Max. Vert	15	41.61	0.00	5.41
	Max. H _x	11	26.39	19.93	0.00
	Max. H _z	2	26.39	0.00	19.93
	Max. M _x	2	1768.84	0.00	19.93
	Max. M _z	5	1768.74	-19.93	0.00
	Max. Torsion	5	0.31	-19.93	0.00
	Min. Vert	1	26.39	0.00	0.00
	Min. H _x	5	26.39	-19.93	0.00
	Min. H _z	8	26.39	0.00	-19.93
	Min. M _x	8	-1768.63	0.00	-19.93
	Min. M _z	11	-1768.74	19.93	0.00
	Min. Torsion	11	-0.31	19.93	0.00

Tower Mast Reaction Summary

Load	Vertical	Shear _x	Shearz	Overturning	Overturning	Torque
Combination				Moment, M _x	Moment, Mz	
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	26.39	0.00	0.00	-0.10	0.00	0.00
Dead+Wind 0 deg - No Ice	26.39	0.00	-19.93	-1768.84	0.00	0.00
Dead+Wind 30 deg - No Ice	26.39	9.96	-17.26	-1531.88	-884.37	-0.16
Dead+Wind 60 deg - No Ice	26.39	17.26	-9.96	-884.48	-1531.77	-0.27
Dead+Wind 90 deg - No Ice	26.39	19.93	-0.00	-0.11	-1768.74	-0.31
Dead+Wind 120 deg - No Ice	26.39	17.26	9.96	884.26	-1531.77	-0.27
Dead+Wind 150 deg - No Ice	26.39	9.96	17.26	1531.66	-884.37	-0.16
Dead+Wind 180 deg - No Ice	26.39	0.00	19.93	1768.63	0.00	0.00
Dead+Wind 210 deg - No Ice	26.39	-9.96	17.26	1531.66	884.37	0.16
Dead+Wind 240 deg - No Ice	26.39	-17.26	9.96	884.26	1531.77	0.27
Dead+Wind 270 deg - No Ice	26.39	-19.93	-0.00	-0.11	1768.74	0.31
Dead+Wind 300 deg - No Ice	26.39	-17.26	-9.96	-884.48	1531.77	0.27
Dead+Wind 330 deg - No Ice	26.39	-9.96	-17.26	-1531.88	884.37	0.16
Dead+Ice+Temp	41.61	0.00	0.00	-0.36	0.00	0.00
Dead+Wind 0	41.61	0.00	-5.41	-506.29	0.00	0.00
deg+lce+Temp						
Dead+Wind 30	41.61	2.70	-4.68	-438.51	-252.95	-0.05
dea+lce+Temp						

Load	Vertical	Shear _x	Shear₂	Overturning	Overturning	Torque
Combination				Moment, M _x	Moment, Mz	
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60	41.61	4.68	-2.70	-253.34	-438.12	-0.09
deg+lce+Temp						
Dead+Wind 90	41.61	5.41	0.00	-0.39	-505.90	-0.10
deg+lce+Temp						
Dead+Wind 120	41.61	4.68	2.70	252.56	-438.12	-0.09
deg+lce+Temp						
Dead+Wind 150	41.61	2.70	4.68	437.73	-252.95	-0.05
deg+lce+Temp						
Dead+Wind 180	41.61	0.00	5.41	505.50	0.00	0.00
deg+lce+Temp						
Dead+Wind 210	41.61	-2.70	4.68	437.73	252.95	0.05
deg+lce+Temp						
Dead+Wind 240	41.61	-4.68	2.70	252.56	438.12	0.09
deg+lce+Temp						
Dead+Wind 270	41.61	-5.41	0.00	-0.39	505.90	0.10
deg+lce+Temp						
Dead+Wind 300	41.61	-4.68	-2.70	-253.34	438.12	0.09
deg+lce+Temp						
Dead+Wind 330	41.61	-2.70	-4.68	-438.51	252.95	0.05
deg+lce+Temp						
Dead+Wind 0 deg - Service	26.39	0.00	-7.78	-691.34	0.00	0.00
Dead+Wind 30 deg - Service	26.39	3.89	-6.74	-598.74	-345.62	-0.06
Dead+Wind 60 deg - Service	26.39	6.74	-3.89	-345.73	-598.63	-0.11
Dead+Wind 90 deg - Service	26.39	7.78	0.00	-0.11	-691.23	-0.12
Dead+Wind 120 deg -	26.39	6.74	3.89	345.51	-598.63	-0.11
Service						
Dead+Wind 150 deg -	26.39	3.89	6.74	598.52	-345.62	-0.06
Service						
Dead+Wind 180 deg -	26.39	0.00	7.78	691.12	0.00	0.00
Service						
Dead+Wind 210 deg -	26.39	-3.89	6.74	598.52	345.62	0.06
Service						
Dead+Wind 240 deg -	26.39	-6.74	3.89	345.51	598.63	0.11
Service						
Dead+Wind 270 deg -	26.39	-7.78	0.00	-0.11	691.23	0.12
Service						
Dead+Wind 300 deg -	26.39	-6.74	-3.89	-345.73	598.63	0.11
Service						
Dead+Wind 330 deg -	26.39	-3.89	-6.74	-598.74	345.62	0.06
Service						

Solution Summary

	Sun	n of Applied Force	es		Sum of Reactions				
Load	PX	PY	PZ	PX	PY	PZ	% Erro		
Comb.	K	K	K	K	K	K			
1	0.00	-26.39	0.00	0.00	26.39	0.00	0.000%		
2	0.00	-26.39	-19.93	0.00	26.39	19.93	0.000%		
3	9.96	-26.39	-17.26	-9.96	26.39	17.26	0.000%		
4	17.26	-26.39	-9.96	-17.26	26.39	9.96	0.000%		
5	19.93	-26.39	0.00	-19.93	26.39	0.00	0.000%		
6	17.26	-26.39	9.96	-17.26	26.39	-9.96	0.000%		
7	9.96	-26.39	17.26	-9.96	26.39	-17.26	0.000%		
8	0.00	-26.39	19.93	0.00	26.39	-19.93	0.000%		
9	-9.96	-26.39	17.26	9.96	26.39	-17.26	0.000%		
10	-17.26	-26.39	9.96	17.26	26.39	-9.96	0.000%		
11	-19.93	-26.39	0.00	19.93	26.39	0.00	0.000%		
12	-17.26	-26.39	-9.96	17.26	26.39	9.96	0.000%		
13	-9.96	-26.39	-17.26	9.96	26.39	17.26	0.000%		
14	0.00	-41.61	0.00	0.00	41.61	0.00	0.000%		
15	0.00	-41.61	-5.41	0.00	41.61	5.41	0.000%		
16	2.70	-41.61	-4.68	-2.70	41.61	4.68	0.000%		
17	4.68	-41.61	-2.70	-4.68	41.61	2.70	0.000%		
18	5.41	-41.61	0.00	-5.41	41.61	0.00	0.000%		
19	4.68	-41.61	2.70	-4.68	41.61	-2.70	0.000%		
20	2.70	-41.61	4.68	-2.70	41.61	-4.68	0.000%		

	Sur	n of Applied Force	es		Sum of Reaction	ns	
Load	PX	PY	PZ	PX	PY	PZ	% Error
Comb.	K	K	K	K	K	K	
21	0.00	-41.61	5.41	0.00	41.61	-5.41	0.000%
22	-2.70	-41.61	4.68	2.70	41.61	-4.68	0.000%
23	-4.68	-41.61	2.70	4.68	41.61	-2.70	0.000%
24	-5.41	-41.61	0.00	5.41	41.61	0.00	0.000%
25	-4.68	-41.61	-2.70	4.68	41.61	2.70	0.000%
26	-2.70	-41.61	-4.68	2.70	41.61	4.68	0.000%
27	0.00	-26.39	-7.78	0.00	26.39	7.78	0.000%
28	3.89	-26.39	-6.74	-3.89	26.39	6.74	0.000%
29	6.74	-26.39	-3.89	-6.74	26.39	3.89	0.000%
30	7.78	-26.39	0.00	-7.78	26.39	0.00	0.000%
31	6.74	-26.39	3.89	-6.74	26.39	-3.89	0.000%
32	3.89	-26.39	6.74	-3.89	26.39	-6.74	0.000%
33	0.00	-26.39	7.78	0.00	26.39	-7.78	0.000%
34	-3.89	-26.39	6.74	3.89	26.39	-6.74	0.000%
35	-6.74	-26.39	3.89	6.74	26.39	-3.89	0.000%
36	-7.78	-26.39	0.00	7.78	26.39	0.00	0.000%
37	-6.74	-26.39	-3.89	6.74	26.39	3.89	0.000%
38	-3.89	-26.39	-6.74	3.89	26.39	6.74	0.000%

Non-Linear Convergence Results

Load	Converged?	Number	Displacement	Force
Combination		of Cycles	Tolerance	Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00006110
3	Yes	5	0.0000001	0.00024790
4	Yes	5	0.0000001	0.00025473
5	Yes	4	0.0000001	0.00028533
6	Yes	5	0.0000001	0.00024597
7	Yes	5	0.0000001	0.00025265
8	Yes	4	0.0000001	0.00006108
9	Yes	5	0.0000001	0.00025265
10	Yes	5	0.0000001	0.00024597
11	Yes	4	0.0000001	0.00028533
12	Yes	5	0.0000001	0.00025473
13	Yes	5	0.0000001	0.00024790
14	Yes	4	0.0000001	0.0000001
15	Yes	5	0.00000001	0.00009638
16	Yes	5	0.00000001	0.00012322
17	Yes	5	0.00000001	0.00012399
18	Yes	5	0.00000001	0.00009631
19	Yes	5	0.0000001	0.00012254
20	Yes	5	0.00000001	0.00012324
21	Yes	5	0.00000001	0.00009605
22	Yes	5	0.00000001	0.00012324
23	Yes	5	0.0000001	0.00012254
24	Yes	5	0.00000001	0.00009631
25	Yes	5	0.0000001	0.00012399
26	Yes	5	0.00000001	0.00012322
27	Yes	4	0.00000001	0.00003104
28	Yes	4	0.00000001	0.00062131
29	Yes	4	0.0000001	0.00065893
30	Yes	4	0.00000001	0.00006473
31	Yes	4	0.00000001	0.00061114
32	Yes	4	0.00000001	0.00064682
33	Yes	4	0.00000001	0.00003102
34	Yes	4	0.00000001	0.00064682
35	Yes	4	0.00000001	0.00061114
36	Yes	4	0.00000001	0.00006473
37	Yes	4	0.00000001	0.00065893
38	Yes	4	0.00000001	0.00062131

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	0	0
L1	120 - 97	18.604	27	1.2890	0.0015
L2	100.62 - 48	13.467	27	1.2183	0.0008
L3	52.96 - 0	3.693	27	0.6498	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	0	0	ft
119.00	Platform Mount [LP 1201-1]	27	18.335	1.2866	0.0015	34072
109.00	Platform Mount [LP 1201-1]	27	15.655	1.2585	0.0011	15487
99.00	Platform Mount [LP 1201-1]	27	13.053	1.2077	0.0008	8337
88.00	T-Arm Mount [TA 602-3]	27	10.358	1.1111	0.0005	6042

Maximum Tower Deflections - Design Wind

Section	Elevation	Horz.	Gov.	Tilt	Twist
No.		Deflection	Load		
	ft	in	Comb.	٥	0
L1	120 - 97	47.566	2	3.2953	0.0039
L2	100.62 - 48	34.436	2	3.1153	0.0021
L3	52.96 - 0	9.446	2	1.6621	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation	on Appurtenance		Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	0	0	ft
119.00	Platform Mount [LP 1201-1]	2	46.877	3.2893	0.0038	13431
109.00	Platform Mount [LP 1201-1]	2	40.030	3.2178	0.0028	6104
99.00	Platform Mount [LP 1201-1]	2	33.379	3.0881	0.0020	3284
88.00	T-Arm Mount [TA 602-3]	2	26.489	2.8415	0.0014	2375

Compression Checks

Pole Design Data										
Section No.	Elevation	Size	L	Lu	KI/r	Fa	Α	Actual P	Allow. Pa	Ratio P
	ft		ft	ft		ksi	in²	K	K	Pa
L1	120 - 97 (1)	TP28.93x22.69x0.1875	23.00	0.00	0.0	39.000	16.5209	-6.24	644.32	0.010
L2	97 - 48 (2)	TP39.7x27.5729x0.25	52.62	0.00	0.0	38.647	30.3965	-16.10	1174.73	0.014
L3	48 - 0 (3)	TP51.04x38.0569x0.3125	52.96	0.00	0.0	37.628	50.3153	-26.38	1893.27	0.014

Pole Bending Design Data										
Section No.	Elevation	Size	Actual M _x	Actual f _{bx}	Allow. F _{bx}	Ratio f _{bx}	Actual M _y	Actual f _{by}	Allow. F _{by}	Ratio f _{by}
	ft		kip-ft	ksi	ksi	F _{bx}	kip-ft	ksi	ksi	F _{by}
L1	120 - 97 (1)	TP28.93x22.69x0.1875	105.12	11.134	39.000	0.285	0.00	0.000	39.000	0.000
L2	97 - 48 (2)	TP39.7x27.5729x0.25	796.94	33.240	38.647	0.860	0.00	0.000	38.647	0.000
L3	48 - 0 (3)	TP51.04x38.0569x0.3125	1768.8 4	33.645	37.628	0.894	0.00	0.000	37.628	0.000

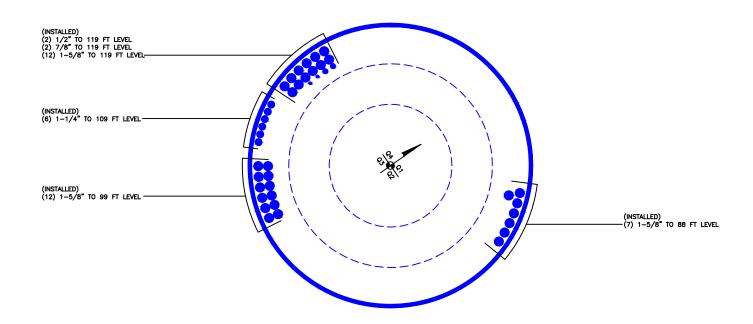
Pole Shear Design Data										
Section No.	Elevation	Size	Actual V	Actual f _v	Allow.	Ratio f _v	Actual T	Actual f _{vt}	Allow. F _{vt}	Ratio f _{vt}
	ft		K	ksi	ksi	F _v	kip-ft	ksi	ksi	F _{vt}
L1	120 - 97 (1)	TP28.93x22.69x0.1875	7.45	0.451	26.000	0.035	0.00	0.000	26.000	0.000
L2	97 - 48 (2)	TP39.7x27.5729x0.25	16.79	0.552	26.000	0.042	0.00	0.000	26.000	0.000
L3	48 - 0 (3)	TP51.04x38.0569x0.3125	19.94	0.396	26.000	0.030	0.00	0.000	26.000	0.000

Pole Interaction Design Data									
Section No.	Elevation	Ratio P	Ratio f _{bx}	Ratio f _{by}	Ratio f _v	Ratio f _{vt}	Comb. Stress	Allow. Stress	Criteria
	ft	Pa	F _{bx}	F _{by}	F_v	F _{vt}	Ratio	Ratio	
L1	120 - 97 (1)	0.010	0.285	0.000	0.035	0.000	0.295	1.333	H1-3+VT 🗸
L2	97 - 48 (2)	0.014	0.860	0.000	0.042	0.000	0.874	1.333	H1-3+VT 🗸
L3	48 - 0 (3)	0.014	0.894	0.000	0.030	0.000	0.908	1.333	H1-3+VT 🗸

			Section Capac	ity Tab	le			
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
L1	120 - 97	Pole	TP28.93x22.69x0.1875	1	-6.24	858.87	22.2	Pass
L2	97 - 48	Pole	TP39.7x27.5729x0.25	2	-16.10	1565.92	65.6	Pass
L3	48 - 0	Pole	TP51.04x38.0569x0.3125	3	-26.38	2523.73	68.1	Pass
							Summary	
						Pole (L3)	68.1	Pass
						RATING =	68.1	Pass

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#: 845993 Site Name: Burlington-Nepaug Road

App #: 358447 Rev. 0

Pole Manufacturer: Other

Reactions		
Moment:	1769	ft-kips
Axial:	26	kips
Shear:	20	kips

If No stiffeners, Criteria:

Anchor Rod Results

Allowable Tension:

Maximum Rod Tension:

Anchor Rod Stress Ratio:

AISC ASD <-Only Applicable to Unstiffened Cases

115.7 Kips

195.0 Kips

59.4% Pass

Non-Rigid

Service, ASD Fty*ASIF

Anchor Rod Data				
Qty:	12			
Diam:	2.25	in		
Rod Material:	A615-J			
Strength (Fu):	100	ksi		
Yield (Fy):	75	ksi		
Bolt Circle:	60	in		

Plate Data				
Diam:	74	in		
Thick:	2.25	in		
Grade:	36	ksi		
Single-Rod B-eff:	13.50	lin		

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

Pole Data				
Diam:	51.04	in		
Thick:	0.3125	in		
Grade:	65	ksi		
# of Sides:	18	"0" IF Round		
Fu	80	ksi		
Reinf. Fillet Weld	0	"0" if None		

Stress Inc	crease Facto	or
ASIF:	1.333	

Base Plate Results	Flexural Check
Base Plate Stress:	30.2 ksi
Allowable Plate Stress:	36.0 ksi
Base Plate Stress Ratio:	83.8% Pass

ıral Check	Non-Rigid
30.2 ksi	Service ASD
36.0 ksi	0.75*Fy*ASIF
83.8% Pass	Y.L. Length:
	04 = 4

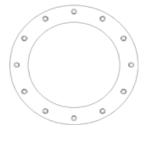
<u>n/a</u>

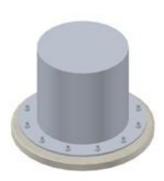
Stiffener Results

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





CCIplate v2.0 Analysis Date: 8/28/2016

^{* 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

Monopole Pier and Pad Foundation

BU #: 845993

Site Name: Burlington-Nepaug Road

App. Number: 358447 Rev. 0
TIA-222 Revision: F

-	
20	kips
1769	ft-kips
120	ft
26	kips
4.25	ft
	1769 120 26

Foundation Dimensions			
Depth, D :	5	ft	
Pad Width, W:	23.8	ft	
Neglected Depth, N:	3.33	ft	
Thickness, T:	3.00	ft	
Pier Diameter, Pd:	7.00	ft	
Ext. Above Grade, E:	0.90	ft	
BP Dist. Above Pier:	3	in.	
Clear Cover, Cc:	3.0	in	

Soil Properties				
Soil Unit Weight, γ:	0.120	kcf		
Ult. Bearing Capacity, Bc:	12.0	ksf		
Angle of Friction, Φ:	30	deg		
Cohesion, Co:	0.000	ksf		
Passive Pressure, Pp :	0.000	ksf		
Base Friction, μ:	0.45			

Material Properties		
Rebar Yield Strength, Fy:	60000	psi
Concrete Strength, F'c:	3000	psi
Concrete Unit Weight, δc:	0.150	kcf
Seismic Zone, z:	1	

Rebar Properties		
Pier Rebar Size, Sp :	8	
Pier Rebar Quanity, mp:	29	36
Pad Rebar Size, Spad:	8	
Pad Rebar Quanity, mpad:	29	12
Pier Tie Size, St:	3	3
Tie Quanity, mt :	5	5



Design Checks					
	Capacity/ Availability	Demand/ Limits	Check		
Req'd Pier Diam.(ft)	7	5.75	ок		
Overturning (ft-kips)	3114.10	1769.00	56.8%		
Shear Capacity (kips)	98.54	20.00	20.3%		
Bearing (ksf)	9.00	1.80	20.0%		
Pad Shear - 1-way (kips)	762.59	249.02	32.7%		
Pad Shear - 2-way (kips)	1954.52	78.08	4.0%		
Pad Moment Capacity (k-ft)	3253.29	753.23	23.2%		
Pier Moment Capacity (k-ft)	2927.91	1827.00	62.4%		



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

T-Mobile Existing Facility

Site ID: CTHA509A

AT&T Burlington Monopole 12 Nepaug Road Burlington, CT 06013

September 2, 2016

EBI Project Number: 6216003937

Site Compliance Summary			
Compliance Status:	COMPLIANT		
Site total MPE% of FCC general public allowable limit:	11.95 %		



September 2, 2016

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

Emissions Analysis for Site: CTHA509A – AT&T Burlington Monopole

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **12 Nepaug Road**, **Burlington**, **CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μ W/cm²). The number of μ W/cm² 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 (μ W/cm²). The general population exposure limit for the 700 MHz Band is approximately 467 μ W/cm², and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 μ W/cm². 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 **12 Nepaug Road**, **Burlington**, **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 UMTS channels (PCS Band 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 LTE channels (AWS Band 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel
- 3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 4) 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.



- 5) For the following calculations the sample point was the top of a 6-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.
- 6) The antennas used in this modeling are the Ericsson AIR21 B4A/B2P & Ericsson AIR21 B2A/B4P for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the Commscope LNX-6515DS-VTM for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The Ericsson AIR21 B4A/B2P has a maximum gain of 15.9 dBd at its main lobe at 1900 MHz and 2100 MHz. The Ericsson AIR21 B2A/B4P has a maximum gain of 15.9 dBd at its main lobe at 1900 MHz and 2100 MHz. 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.
- 7) The antenna mounting height centerline of the proposed antennas is **90 feet** above ground level (AGL).
- 8) 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.
- 9) All calculations were done with respect to uncontrolled / general public threshold limits.



T-Mobile Site Inventory and Power Data

Q		a .		G ·	
Sector:	A	Sector:	В	Sector:	С
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21	Make / Model:	Ericsson AIR21	Make / Model:	Ericsson AIR21
	B4A/B2P		B4A/B2P		B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	1900 MHz(PCS) /	Frequency Bands	1900 MHz(PCS) /	Frequency Bands	1900 MHz(PCS) /
1 requeitey Bands	2100 MHz (AWS)	1 requeriey Burids	2100 MHz (AWS)	Trequency Bunds	2100 MHz (AWS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	2.38	Antenna B1 MPE%	2.38	Antenna C1 MPE%	2.38
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21	Make / Model:	Ericsson AIR21	Make / Model:	Ericsson AIR21
Make / Model:	B2A/B4P	Make / Model:	B2A/B4P	Make / Model:	B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	1900 MHz(PCS) /	Frequency Bands	1900 MHz(PCS) /	Frequency Bands	1900 MHz(PCS) /
riequency bands	2100 MHz (AWS)	rrequency bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	2,334.27	ERP (W):	2,334.27	ERP (W):	2,334.27
Antenna A2 MPE%	1.19	Antenna B2 MPE%	1.19	Antenna C2 MPE%	1.19
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-	Make / Model:	Commscope LNX-	Make / Model:	Commscope LNX-
Make / Model:	6515DS-VTM	Make / Model:	6515DS-VTM	Make / Model:	6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	90	Height (AGL):	90	Height (AGL):	90
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.94	Antenna B3 MPE%	0.94	Antenna C3 MPE%	0.94

Site Composite MPE%			
Carrier	MPE%		
T-Mobile (Per Sector Max)	4.51 %		
Sprint	0.83 %		
AT&T	2.52 %		
Verizon Wireless	4.09 %		
Site Total MPE %:	11.95 %		

T-Mobile Sector A Total:	4.51 %
T-Mobile Sector B Total:	4.51 %
T-Mobile Sector C Total:	4.51 %
Site Total:	11.95 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (µW/cm²)	Frequency (MHz)	Allowable MPE (µW/cm²)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	90	23.79	AWS - 2100 MHz	1000	2.38%
T-Mobile PCS - 1950 MHz UMTS	2	1,167.14	90	11.89	PCS - 1950 MHz	1000	1.19%
T-Mobile 700 MHz LTE	1	865.21	90	4.41	700 MHz	467	0.94%
						Total:	4.51%



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 A:	4.51 %
Sector B:	4.51 %
Sector C:	4.51 %
T-Mobile Per Sector	4.51 %
Maximum:	4.51 %
Site Total:	11.95 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **11.95%** 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.