



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

February 14, 2017

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

RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 801486
AT&T Site ID: CT1138
44 Ff Tyler Place, Suffield, CT 06078
Latitude: 41° 58' 49.7" / Longitude: -72° 39' 26.2"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 107-foot level of the existing 109-foot monopole at 44 Ff Tyler Place in Suffield, CT. The tower is owned by Crown Castle. The property is owned by the Town of Suffield. AT&T now intends to install three (3) RRHs.

This facility was approved by the by the Town of Suffield Planning and Zoning Commission on May 1, 2000. This approval included the conditions that:

1. The heights of the respective mono-pole towers, included antennae, shall not exceed 120-feet.
2. Each tower shall be certified as "self-collapsing" by a Connecticut registered professional engineer;
3. Details drawings are to be submitted with each request for building permits for both the towers and related facilities.
4. FCC licenses shall be produced prior to the issuance of the permits for company leasing space on the towers;
5. The Zoning Enforcement Officer shall review each proposal for zoning conformance prior to the issuance of building permits;
6. All utilities are underground;
7. Site plans are to be revised.

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 Ms. Melissa Mack, First Selectman, Town of Suffield, as well as the property owner, and Crown Castle is the tower owner.

Melanie A. Bachman

February 14, 2017

Page 2

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

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

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

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

Tab 2: Exhibit-2: Structural Modification Report

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

cc:

Ms. Melissa Mack, First Selectman
Town of Suffield
83 Mountain Road
Suffield, CT 06078

Town of Suffield
Department of Planning & Zoning
83 Mountain Road
Suffield, CT 06078



Zoning and Planning Commission

Town of Suffield

May 3, 2000

Town of Suffield
Board of Selectmen
83 Mountain Road
Suffield, Connecticut 06078

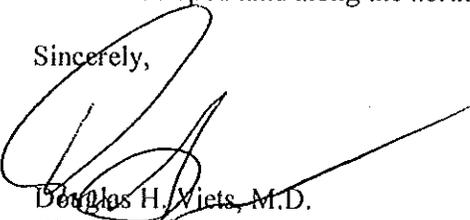
Re: Request of the Suffield Board of Selectmen for the Suffield Zoning and Planning Commission's report concerning three lease sites for communication towers located on Town Properties: WPCA, Highway Department, and Landfill under CGS 8-24.

Gentlemen:

At a duly called Special Meeting of the Suffield Zoning and Planning Commission held on Monday, May 1, 2000, the Commission voted to approve the request of the Suffield Board of Selectmen for the Commission's favorable report, as required under CGS 8-24, concerning a lease agreement between Crown Atlantic Company L.L.C. as Lessee and the Town of Suffield as the Lessor for sites for telecommunication towers located on Town Properties as follows:

1. Town of Suffield Transfer Station site on the west side of Mountain Road (Route 168), on undeveloped land west of the transfer station operations (Site A);
2. Town of Suffield Public Works garage/maintenance facility off of Mountain Road, on land immediately adjacent to the maintenance facility building (Site B); and
3. Town of Suffield Sewage Treatment Plant on the east side of East Street (Route 159), on undeveloped land along the north side of the treatment plant's access driveway (Site C).

Sincerely,


Douglas H. Viets, M.D.
Chairman

:bgk

cc: Building Official
Economic Development Director
Planning Consultant

Town Engineer
Zoning Enforcement Officer
File



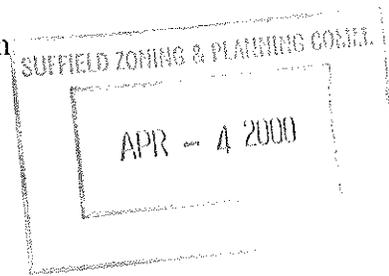
Suffield Conservation Commission

83 Mountain Road • Suffield, Connecticut 06078
(860) 668-3847

March 30, 2000

Elaine Sarsynski
Suffield Economic Development Commission
83 Mountain Road
Suffield, CT 06078

RE: PERMIT # 1264
Communications Towers
Phelps Road, Ff Tyler Place, & Ucar Street



Dear Elaine:

The Suffield Conservation Commission (SCC), at their March 28, 2000 meeting, approved the Town's application for the construction of three communications towers. The properties are located on Phelps Road, Ff Tyler Place, and Ucar Street, Assessor's Map Numbers 80, 34H, and 9, Parcels 55, 70, 32,4, and 9, in Suffield, Connecticut.

This permit is granted as a Declaratory Ruling, as there are no wetland impacts proposed.

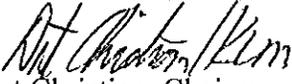
The following items shall be addressed in the final submittal for construction:

- 9) The SCC must be notified in writing prior to any work commencing on site, of the date work will start, and the name, address, and telephone number of the contractor responsible for the work. Failure to do so will render this permit null and void.
- 10) The contractor is responsible for using proper soil and erosion controls. The contractor is also responsible for any fees associated with soil and erosion control inspections by the Town's Consultant.
- 11) All the poles and antennas shall be tinted a dull gray color.
- 12) If the FAA or any other regulatory agency ever requires lights on top of the town landfill tower, the applicant must come back to the Commission for review and approval.

13) The foundation design and geotechnical data must be supplied to the Commission for each pole.

The fee has been waived.

Respectfully,


Art Christian, Chairman

AC/klm

Cc: Suffield Building Department



Zoning and Planning Commission

Town of Suffield

May 4, 2000

Ms. Elaine Sarsynski, Director
Suffield Economic Development Commission
83 Mountain Road
Suffield, Connecticut 06078

Re: File #740 – Request of the Suffield Economic Development Commission for a special use permit for the approval of sites for telecommunication towers located on Town properties: WPCA, Highway Department, and Transfer Station.

Dear Ms. Sarsynski:

At a duly called Special Meeting of the Suffield Zoning and Planning Commission held on Monday, May 1, 2000, the Commission voted to approve the Town of Suffield's special use permit request for the for three (3) proposed telecommunication sites located as designated:

1. Town of Suffield Transfer Station site on the west side of Mountain Road (Route 168), on undeveloped land west of the Transfer Station operations (Site A);
2. Town of Suffield Public Works garage/maintenance facility off of Mountain Road, on land immediately adjacent to the Maintenance Facility Building (Site B); and
3. Town of Suffield Sewage Treatment Plant on the east side of East Street (Route 159), on undeveloped land along the north side of the Treatment's Plant's access driveway (Site C).

with the following conditions:

1. The heights of the respective mono-pole towers, including antennae, shall not exceed 199-feet (Site A); 120-feet (Site B); and 174-feet (Site C);
2. Each tower shall be certified as "self-collapsing" by a Connecticut registered professional engineer;
3. Details drawings are to be submitted with each request for building permits for both the towers and related facilities;
4. FCC licenses shall be produced prior to the issuance of the permits for company leasing space on the towers;
5. The Zoning Enforcement Officer shall review each proposal for zoning conformance prior to the issuance of the building permits;
6. All utilities are to be underground;
7. Site plans are to be revised.

A mylar and four (4) copies of site plans for each of the three approved sites must be submitted to this office as soon as possible for signatures.

Please remit a check in the amount of \$10.00 (payable to the Town of Suffield), *along with this original letter*, to the Office of the Town Clerk, 83 Mountain Road. This fee is required to cover the cost of recording the Special Use Permit in the Office of the Town Clerk.

Ms. Elaine Sarsynski, Director
Suffield Economic Development Commission
May 4, 2000

2

A copy of the legal notice that will appear in the Journal Inquirer on Saturday, May 6, 2000 is enclosed.

Sincerely,

Douglas H. Viets, M.D. /bgk

Douglas H. Viets, M.D.
Chairman

:bgk
Enclosure

cc:	Building Official	Zoning Enforcement Officer
	Planning Consultant	File
	Town Engineer	

LEGAL NOTICE
SUFFIELD PLANNING AND ZONING COMMISSION

At a duly called Special Meeting of the Suffield Zoning and Planning Commission held on Monday, May 1, 2000, the Commission took the following actions:

APPROVED WITH CONDITIONS: Special use permit request of Suffield Economic Development Commission for the approval of sites for communication towers located on Town properties: WPCA, Highway Department and Landfill.

Douglas H. Viets, M.D., Chairman

Stephen J. Martin, Secretary

Journal Inquirer
May 6, 2000



Town of Suffield, CT

Property Listing Report

Map Block Lot

34H-32-4

Account

34522

Property Information

Property Location	44 FFYLER PL
Owner	SUFFIELD TOWN OF
Co-Owner	
Mailing Address	83 MOUNTAIN RD SUFFIELD CT 06078
Land Use	903I Municipal MDL-96
Land Class	E
Zoning Code	TCV
Census Tract	4771.01

Neighborhood	D
Acreage	3.5
Utilities	
Lot Setting/Desc	
Additional Info	

Photo



Sketch



Primary Construction Details

Year Built	2000
Stories	1
Building Style	Pre-Eng Garage
Building Use	Industrial
Building Condition	02
Floors	Concrete
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable
Roof Cover	Asphalt

Exterior Walls	MASONRY
Interior Walls	Minimum
Heating Type	Hot Air-No Duc
Heating Fuel	Oil
AC Type	None
Gross Bldg Area	736
Total Living Area	736



Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	531800	372260
Extras	34200	23940
Improvements	619500	433650
Outbuildings	53500	37450
Land	229000	160300
Total	848500	593950

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	736	736
Total Area	6000	6000

Outbuilding and Extra Items

Type	Description
Kennel - Ave	640 S.F.
Fence - 6' Chain	142 L.F.
Paving - Asphalt	14000 S.F.
Mezzanine Unfinished	837 S.F.
Canopy Ave	1600 S.F.
Shed	1920 S.F.
Garage - Ave	2408 S.F.
Shed	360 S.F.
Paving - Asphalt	880 S.F.

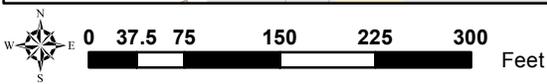
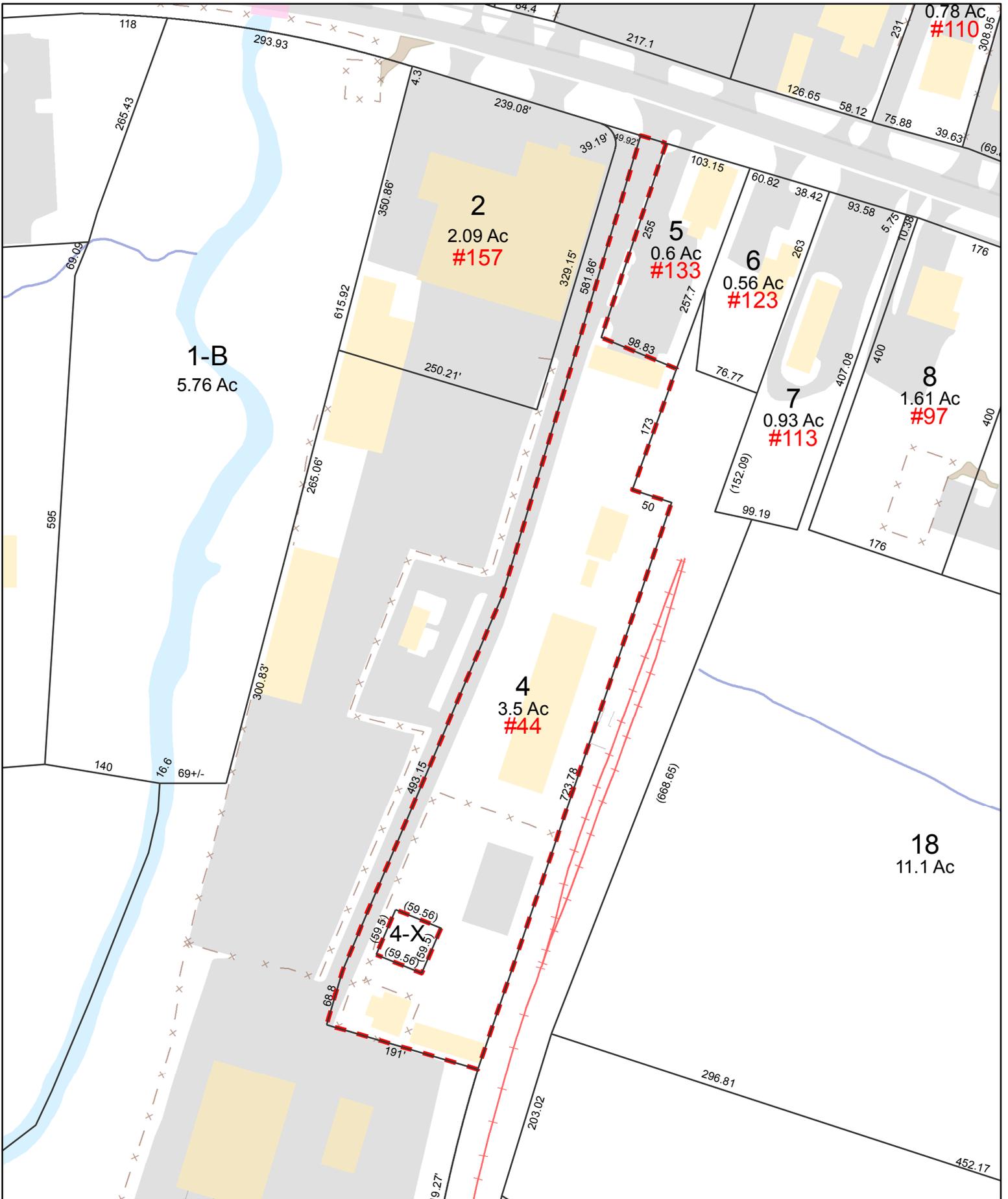
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
SUFFIELD TOWN OF	134/ 430	6/8/1973	0
SUFFIELD TOWN OF	53/ 210	12/22/1920	0
SUFFIELD TOWN OF	53/ 151	4/15/1920	0
SUFFIELD TOWN OF	53/ 141	3/11/1920	0

Town of Suffield, Connecticut - Assessment Parcel Map

Parcel: 34H-32-4

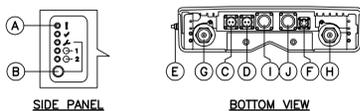
Address: 44 FFYLER PL



Scale
1:1,800

Map Produced: March 2016
Grand List: October 2015

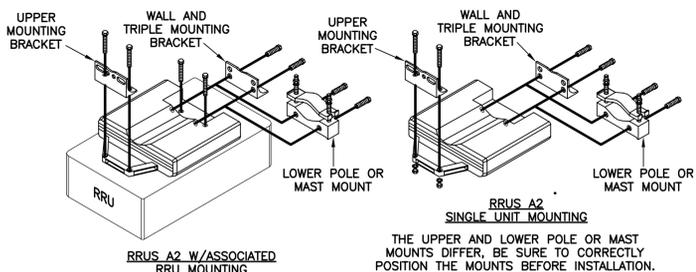
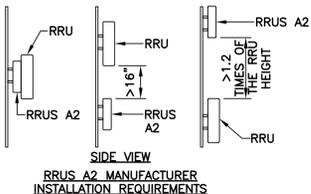
Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Suffield and its mapping contractors assume no legal responsibility for the information contained herein.



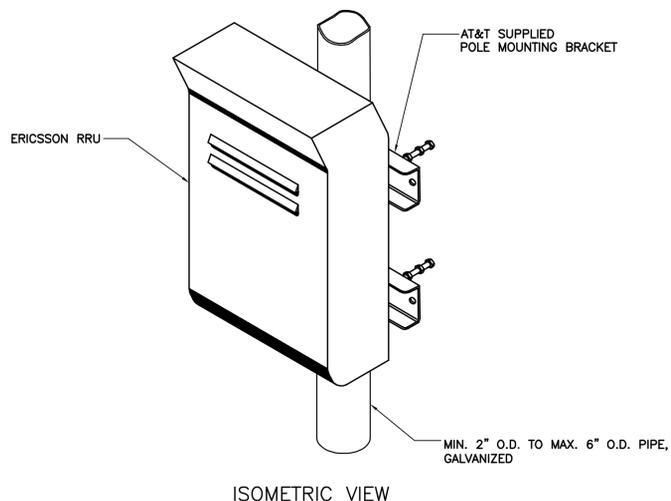
CONNECTION INTERFACE

POSITION (ID)	DESCRIPTION	MARKING
A	OPTICAL INDICATORS	1, 2, 3 O-1, O-2
B	MAINTENANCE	▲
C	-48V DC POWER SUPPLY	POW IN
D	-48V DC POWER SUPPLY TO RRU	POW OUT
E	GROUNDING	⊥
F	RET	RET
G	ANTENNA B	▲ - B
H	ANTENNA A	▲ - A
I	OPTICAL CABLE 1	O-1
J	OPTICAL CABLE 2	O-2

- NOTES:
1. STACKING OF RRU'S IS NOT PERMITTED.
 2. NO PAINTING OF RRU OR THE SOLAR SHIELD IS ALLOWED.
 3. A SINGLE RRU A2 CAN BE INSTALLED AS A STAND ALONE UNIT OR MOUNTED TO THE BACK OF ITS ASSOCIATED RRU.

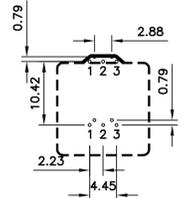


1 ERICSSON RRU A2 DETAILS
N-1 NOT TO SCALE



- NOTES:
1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
 2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

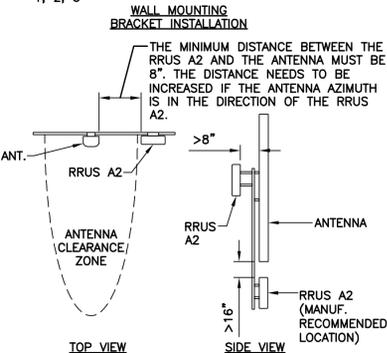
2 TYPICAL RRU MOUNTING DETAILS
N-1 SCALE: NTS



THE NUMBER OF BOLT HOLES DEPENDS ON THE WALL MATERIAL AS SPECIFIED BY THE SITE ENGINEER. A MINIMUM OF TWO BOLT HOLES ARE RECOMMENDED FOR EACH BRACKET.

ONE OF THE FOLLOWING SOLUTIONS FOR HOLE POSITIONS MUST BE USED:

- 1, 3
- 1, 2, 3



NOTES AND SPECIFICATIONS

DESIGN BASIS:

- GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.
1. DESIGN CRITERIA:
 - WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90-105 MPH (3 SECOND GUST)
 - RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
 - NOMINAL DESIGN SPEED (OTHER STRUCTURE): 93 MPH (V₅₀) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
 - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
 - A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
 - B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
 - C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
 - D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
 - E. PIPE---ASTM A53 (FY = 35 KSI)
 - F. CONNECTION BOLTS---ASTM A325-N
 - G. U-BOLTS---ASTM A36
 - H. ANCHOR RODS---ASTM F 1554
 - I. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

- PAINTING SCHEDULE:
1. ANTENNA PANELS:
 - A. SHERWIN WILLIAMS POLANE-B
 - B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
 2. COAXIAL CABLES:
 - A. ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
 - B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
 - C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.
- EXAMINATION AND PREPARATION:
1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
 2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
 3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
 4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
 5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
 6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
 7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH-PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
 8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
 9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON-PETROLEUM-BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
 10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
 11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.
- CLEANING:
1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.
- APPLICATION:
1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
 2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
 3. APPLY EACH COAT TO UNIFORM FINISH.
 4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
 5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
 6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
 7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.
- COMPLETED WORK:
1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
 2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION	CAG	12/05/16	HMR
CONSTRUCTION DOCUMENTS - ISSUED FOR CLIENT REVIEW	CAG	11/22/16	RAWUR
REV.	DATE	BY	CHK'D
0	11/22/16	RAWUR	HMR



CENTEK engineering
Centered on Solutions™
(203) 488-0360
(203) 488-8387 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SUFFIELD FFYLER RD
CT1138 - LTE BWE
44 FFYLER ROAD
SUFFIELD, CT 06078

DATE: 11/15/16
SCALE: AS NOTED
JOB NO. 16071.72

NOTES, SPECIFICATIONS AND DETAILS

N-1
Sheet No. 2 of 5

Date: February 7, 2017

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

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
770-701-2500

Subject: Structural Analysis Report

Carrier Designation:

AT&T Mobility Co-Locate

Carrier Site Number:

CT1138

Carrier Site Name:

SUFFIELD FFYLER RD

Crown Castle Designation:

Crown Castle BU Number:

801486

Crown Castle Site Name:

CT SUFFIELD 2 CAC 801486

Crown Castle JDE Job Number:

409149

Crown Castle Work Order Number:

1356617

Crown Castle Application Number:

369072 Rev. 3

Engineering Firm Designation:

Jacobs Engineering Group, Inc. Project Number: 1356617

Site Data:

44 FFyler Place, Suffield, Hartford County, CT
Latitude 41° 58' 49.7", Longitude -72° 39' 26.2"
109 Foot - Monopole Tower

Dear Charles Trask,

Jacobs Engineering Group, Inc. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 997357, in accordance with 369072, revision 3.

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

LC7: Existing + Proposed + Reserved Equipment

Sufficient Capacity

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

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

Respectfully submitted by:

Reviewed By:



Philip Lin
Tower Structural Engineer



Matthew E. Watkins, P.E.
Engineering Project Manager

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Components vs. Capacity

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 109 ft Monopole tower designed by FWT INC. in February of 2002. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
107.0	109.0	3	ericsson	RRUS12/RRUS A2	-	-	-

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
107.0	109.0	3	ericsson	RRUS 12	-	-	3	
		3	ericsson	RRUS A2				
		3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	1 2 12	3/8 3/4 1-5/8	1	
		1	ericsson	RRUS-11				
		3	kathrein	800 10121 w/ Mount Pipe				
		6	kathrein	860 10025				
	3	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe					
	6	powerwave technologies	TT19-08BP111-001					
	107.0	107.0	2	ericsson	RRUS-11	12	3/8 3/4 1-5/8	1
			6	kathrein	860 10025			
			1	raycap	DC6-48-60-18-8F			
			1	tower mounts (crown)	Platform Mount [LP 1001-1 w/o handrails]			
90.0	91.0	3	alcatel lucent	B13 RRH 4X30	2	1-1/2	2	
		3	alcatel lucent	PCS B25 RRH4x30				
		3	alcatel lucent	RRH2x60-AWS				
		2	commscope	RC2DC-3315-PF-48				
		6	commscope	SBNHH-1D65B w/ Mount Pipe	12	1-1/4	1	
		2	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe				
	4	swedcom	SC 9012 rev 2 w/ Mount Pipe					
90.0	90.0	1	tower mounts (crown)	Platform Mount [LP 1001-1 w/o handrails]				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
80.0	81.0	12	decibel	DB844H90-XY w/ Mount Pipe	12	7/8	4
	80.0	1	tower mounts (crown)	Platform Mount [LP 1201-1]			
74.0	74.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts (crown)	Side Arm Mount [SO 102-3]			
72.0	74.0	3	alcatel lucent	TD-RRH8x20-25	1 3	5/8 1-1/4	1
		2	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		1	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
	72.0	1	tower mounts (crown)	Platform Mount [LP 1201-1]			
62.0	62.0	3	rfs celwave	APX18-206516L	6	1-5/8	1
		1	tower mounts (crown)	Pipe Mount [PM 602-3]			

Notes:

- 1) Existing equipment
- 2) Reserved equipment
- 3) Equipment to be removed, not considered in this analysis
- 4) Abandoned equipment, considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110	110	12	swedcom	ALP-9212-N	-	-
102	102	12	swedcom	ALP-9212-N	-	-
92	92	12	swedcom	ALP-9212-N	-	-
82	82	12	swedcom	ALP-9212-N	-	-
72	72	12	swedcom	ALP-9212-N	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clough, Harbour & Associates, LLP	2294830	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FWT	821489	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FWT	823124	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.7.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	109 - 95	Pole	TP26.715x23.476x0.1875	1	-5.59	1051.09	17.5	Pass
L2	95 - 48.08	Pole	TP37.573x26.715x0.3125	2	-24.37	2558.23	46.9	Pass
L3	48.08 - 0	Pole	TP48.075x35.8094x0.375	3	-39.02	3931.05	59.2	Pass
							Summary	
						Pole (L3)	59.2	Pass
						Rating =	59.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	49.3	Pass
1	Base Plate	0	27.4	Pass
1	Base Foundation (Structural)	0	68.3	Pass
1	Base Foundation (Soil Interaction)	0	33.4	Pass
1	Flange Bolts	95	12.4	Pass
1	Flange Plate	95	2.7	Pass

Structure Rating (max from all components) =	68.3%
---	--------------

Notes:

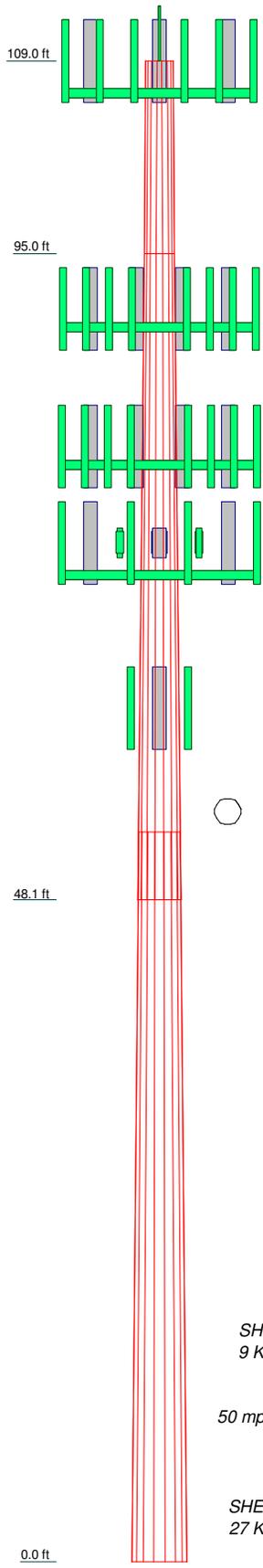
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	14.00	46.92	53.00
Number of Sides	18	18	18
Thickness (in)	0.1875	0.3125	0.3750
Socket Length (ft)		4.92	
Top Dia (in)	23.4760	26.7150	35.8094
Bot Dia (in)	26.7150	37.5730	48.0750
Grade		A572-65	
Weight (K)	0.7	5.0	8.9



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 3/4" x 4'	111	RRH2x60-AWS	90
800 10121 w/ Mount Pipe	107	RRH2x60-AWS	90
800 10121 w/ Mount Pipe	107	RRH2x60-AWS	90
800 10121 w/ Mount Pipe	107	RRH2x60-AWS	90
800 10121 w/ Mount Pipe	107	RRH2x60-AWS	90
P65-17-XLH-RR w/ Mount Pipe	107	PCS B25 RRH4x30	90
P65-17-XLH-RR w/ Mount Pipe	107	PCS B25 RRH4x30	90
P65-17-XLH-RR w/ Mount Pipe	107	PCS B25 RRH4x30	90
P65-17-XLH-RR w/ Mount Pipe	107	(2) RC2DC-3315-PF-48	90
HPA-65R-BUU-H8 w/ Mount Pipe	107	Platform Mount [LP 1001-1]	90
HPA-65R-BUU-H8 w/ Mount Pipe	107	Platform Mount [LP 1001-1]	90
HPA-65R-BUU-H8 w/ Mount Pipe	107	(4) DB844H90-XY w/ Mount Pipe	80
HPA-65R-BUU-H8 w/ Mount Pipe	107	(4) DB844H90-XY w/ Mount Pipe	80
(2) TT19-08BP111-001	107	(4) DB844H90-XY w/ Mount Pipe	80
(2) TT19-08BP111-001	107	Platform Mount [LP 1201-1]	80
(2) TT19-08BP111-001	107	Platform Mount [LP 1201-1]	80
(2) 860 10025	107	PCS 1900MHz 4x45W-65MHz	74
(2) 860 10025	107	PCS 1900MHz 4x45W-65MHz	74
(2) 860 10025	107	PCS 1900MHz 4x45W-65MHz	74
(2) 860 10025	107	PCS 1900MHz 4x45W-65MHz	74
(2) 860 10025	107	800MHz 2X50W RRH W/FILTER	74
(2) 860 10025	107	800MHz 2X50W RRH W/FILTER	74
(2) 860 10025	107	800MHz 2X50W RRH W/FILTER	74
(2) 860 10025	107	800MHz 2X50W RRH W/FILTER	74
(2) 860 10025	107	(2) 5x2 1/2" Pipe Mount	74
DC6-48-60-18-8F	107	(2) 5x2 1/2" Pipe Mount	74
RRUS-11	107	(2) 5x2 1/2" Pipe Mount	74
RRUS-11	107	Side Arm Mount [SO 102-3]	74
RRUS-11	107	APXV9ERR18-C-A20 w/ Mount Pipe	72
RRUS12/RRUS A2	107	APXV9ERR18-C-A20 w/ Mount Pipe	72
RRUS12/RRUS A2	107	APXVSP18-C-A20 w/ Mount Pipe	72
RRUS12/RRUS A2	107	APXVSP18-C-A20 w/ Mount Pipe	72
RRUS12/RRUS A2	107	APXVTM14-C-120 w/ Mount Pipe	72
8x2.375" Pipe Mount	107	APXVTM14-C-120 w/ Mount Pipe	72
8x2.375" Pipe Mount	107	APXVTM14-C-120 w/ Mount Pipe	72
8x2.375" Pipe Mount	107	TD-RRH8x20-25	72
Platform Mount [LP 1001-1]	107	TD-RRH8x20-25	72
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	90	TD-RRH8x20-25	72
(2) SC 9012 rev 2 w/ Mount Pipe	90	5' x 2' Pipe Mount	72
(2) SC 9012 rev 2 w/ Mount Pipe	90	5' x 2' Pipe Mount	72
(2) SBNHH-1D65B w/ Mount Pipe	90	5' x 2' Pipe Mount	72
(2) SBNHH-1D65B w/ Mount Pipe	90	Platform Mount [LP 1201-1]	72
(2) SBNHH-1D65B w/ Mount Pipe	90	APX18-206516L	62
B13 RRH 4X30	90	APX18-206516L	62
B13 RRH 4X30	90	APX18-206516L	62
B13 RRH 4X30	90	Pipe Mount [PM 602-3]	62
B13 RRH 4X30	90	Pipe Mount [PM 602-3]	62

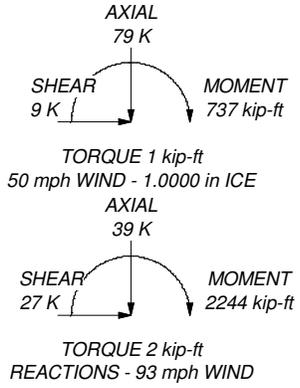
MATERIAL STRENGTH

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 Exposure C to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 59.2%

ALL REACTIONS ARE FACTORED



JACOBS 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job: CT SUFFIELD 2 CAC 801486			
	Project: BU801486_WO1356617	Client: Crown Castle	Drawn by: LinP	App'd:
	Code: TIA-222-G	Date: 02/03/17	Scale: NTS	Dwg No. E-1
	Path: T:\801486 CT_SUFFIELD 2 CAC 801486\WO 1356617\Analysis\LC7\Model\BU801486_WO1356617.rvt			

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	CT SUFFIELD 2 CAC 801486	Page	1 of 10
	Project	BU801486_WO1356617	Date	11:19:37 02/03/17
	Client	Crown Castle	Designed by	LinP

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

1. Tower is located in Hartford County, Connecticut.
2. Basic wind speed of 93 mph.
3. Structure Class II.
4. Exposure Category C.
5. Topographic Category 1.
6. Crest Height 0.00 ft.
7. Nominal ice thickness of 1.0000 in.
8. Ice thickness is considered to increase with height.
9. Ice density of 56 pcf.
10. A wind speed of 50 mph is used in combination with ice.
11. Temperature drop of 50 °F.
12. Deflections calculated using a wind speed of 60 mph.
13. A non-linear (P-delta) analysis was used.
14. Pressures are calculated at each section.
15. Stress ratio used in pole design is 1.
16. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retention 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 	<ul style="list-style-type: none"> 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 <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	109.00-95.00	14.00	0.00	18	23.4760	26.7150	0.1875	0.7500	A572-65 (65 ksi)
L2	95.00-48.08	46.92	4.92	18	26.7150	37.5730	0.3125	1.2500	A572-65 (65 ksi)

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	CT SUFFIELD 2 CAC 801486	Page	2 of 10
	Project	BU801486_WO1356617	Date	11:19:37 02/03/17
	Client	Crown Castle	Designed by	LinP

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade (65 ksi)
L3	48.08-0.00	53.00		18	35.8094	48.0750	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	23.8382	13.8596	949.6645	8.2674	11.9258	79.6310	1900.5786	6.9311	3.8018	20.276
	27.1271	15.7872	1403.5717	9.4173	13.5712	103.4227	2808.9903	7.8951	4.3718	23.316
L2	27.1271	26.1880	2306.3730	9.3729	13.5712	169.9459	4615.7808	13.0965	4.1518	13.286
	38.1526	36.9578	6482.4687	13.2275	19.0871	339.6259	12973.4672	18.4824	6.0628	19.401
L3	37.5180	42.1758	6690.4028	12.5792	18.1912	367.7825	13389.6089	21.0919	5.6425	15.047
	48.8166	56.7749	16320.3992	16.9335	24.4221	668.2635	32662.2732	28.3929	7.8012	20.803

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 109.00-95.00				1	1	1			
L2 95.00-48.08				1	1	1			
L3 48.08-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
*** CR 50 1873(1-5/8")	C	Surface Ar (CaAa)	62.00 - 0.00	6	6	-0.100 0.100	1.9800		0.83
*** Safety Line 3/8	C	Surface Ar (CaAa)	109.00 - 0.00	1	1	-0.400 -0.400	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA} ft ² /ft	Weight plf
LDF7-50A(1-5/8")	C	No	Inside Pole	107.00 - 0.00	12	No Ice 1/2" Ice 1" Ice 0.00 0.00 0.00	0.82 0.82 0.82
FB-L98B-002-75000(3/8")	C	No	Inside Pole	107.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 0.00 0.00 0.00	0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	107.00 - 0.00	2	No Ice 0.00	0.58

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	CT SUFFIELD 2 CAC 801486	Page	3 of 10
	Project	BU801486_WO1356617	Date	11:19:37 02/03/17
	Client	Crown Castle	Designed by	LinP

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_{AA} ft ² /ft	Weight plf
2" Rigid Conduit	C	No	Inside Pole	107.00 - 0.00	1	1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
						No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80

LDF6-50A(1-1/4")	A	No	Inside Pole	90.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
MLC HYBRID 6X12 LI(1-1/2)	A	No	Inside Pole	90.00 - 0.00	2	No Ice	0.00	1.85
						1/2" Ice	0.00	1.85
						1" Ice	0.00	1.85

LDF5-50A(7/8")	A	No	Inside Pole	80.00 - 0.00	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33

HB114-1-08U4-M5J(1 1/4")	B	No	Inside Pole	72.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
HB058-M12-XXXF(5/8")	B	No	Inside Pole	72.00 - 0.00	1	No Ice	0.00	0.24
						1/2" Ice	0.00	0.24
						1" Ice	0.00	0.24

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	109.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.525	0.000	0.17
L2	95.00-48.08	A	0.000	0.000	0.000	0.000	0.61
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	18.296	0.000	0.73
L3	48.08-0.00	A	0.000	0.000	0.000	0.000	0.75
		B	0.000	0.000	0.000	0.000	0.17
		C	0.000	0.000	58.922	0.000	0.92

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	109.00-95.00	A	2.239	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	6.793	0.000	0.27
L2	95.00-48.08	A	2.158	0.000	0.000	0.000	0.000	0.61
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	50.193	0.000	1.45
L3	48.08-0.00	A	1.938	0.000	0.000	0.000	0.000	0.75
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	119.895	0.000	2.64

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	CT SUFFIELD 2 CAC 801486	Page	4 of 10
	Project	BU801486_WO1356617	Date	11:19:37 02/03/17
	Client	Crown Castle	Designed by	LinP

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	109.00-95.00	0.0411	0.0370	0.3850	0.3467
L2	95.00-48.08	0.0364	0.5703	0.3233	0.9411
L3	48.08-0.00	0.0310	1.3978	0.2582	1.7882

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	17	Safety Line 3/8	95.00 - 109.00	1.0000	1.0000
L2	15	CR 50 1873(1-5/8")	48.08 - 62.00	1.0000	1.0000
L2	17	Safety Line 3/8	48.08 - 95.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Lighting Rod 3/4" x 4'	C	None		0.0000	111.00	No Ice	0.30	0.30	0.03
						1/2" Ice	0.71	0.71	0.03
						1" Ice	1.00	1.00	0.04
level 107									
800 10121 w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	5.39	4.60	0.07
			0.00			1/2" Ice	5.81	5.35	0.11
			2.00			1" Ice	6.23	6.05	0.17
800 10121 w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	5.39	4.60	0.07
			0.00			1/2" Ice	5.81	5.35	0.11
			2.00			1" Ice	6.23	6.05	0.17
800 10121 w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	5.39	4.60	0.07
			0.00			1/2" Ice	5.81	5.35	0.11
			2.00			1" Ice	6.23	6.05	0.17
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	11.70	8.94	0.09
			0.00			1/2" Ice	12.42	10.45	0.18
			2.00			1" Ice	13.15	11.99	0.27
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	11.70	8.94	0.09
			0.00			1/2" Ice	12.42	10.45	0.18
			2.00			1" Ice	13.15	11.99	0.27
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	11.70	8.94	0.09
			0.00			1/2" Ice	12.42	10.45	0.18
			2.00			1" Ice	13.15	11.99	0.27

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job		CT SUFFIELD 2 CAC 801486		Page		5 of 10	
	Project		BU801486_WO1356617		Date		11:19:37 02/03/17	
	Client		Crown Castle		Designed by		LinP	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	13.59	10.80	0.08
			0.00			1/2" Ice	14.19	12.12	0.18
			2.00			1" Ice	14.80	13.17	0.29
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	13.59	10.80	0.08
			0.00			1/2" Ice	14.19	12.12	0.18
			2.00			1" Ice	14.80	13.17	0.29
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	13.59	10.80	0.08
			0.00			1/2" Ice	14.19	12.12	0.18
			2.00			1" Ice	14.80	13.17	0.29
(2) TT19-08BP111-001	A	From Leg	4.00	0.0000	107.00	No Ice	0.55	0.44	0.02
			0.00			1/2" Ice	0.64	0.53	0.02
			2.00			1" Ice	0.74	0.63	0.03
(2) TT19-08BP111-001	B	From Leg	4.00	0.0000	107.00	No Ice	0.55	0.44	0.02
			0.00			1/2" Ice	0.64	0.53	0.02
			2.00			1" Ice	0.74	0.63	0.03
(2) TT19-08BP111-001	C	From Leg	4.00	0.0000	107.00	No Ice	0.55	0.44	0.02
			0.00			1/2" Ice	0.64	0.53	0.02
			2.00			1" Ice	0.74	0.63	0.03
(2) 860 10025	A	From Leg	4.00	0.0000	107.00	No Ice	0.14	0.12	0.00
			0.00			1/2" Ice	0.20	0.17	0.00
			0.00			1" Ice	0.26	0.23	0.01
(2) 860 10025	A	From Leg	4.00	0.0000	107.00	No Ice	0.14	0.12	0.00
			0.00			1/2" Ice	0.20	0.17	0.00
			2.00			1" Ice	0.26	0.23	0.01
(2) 860 10025	B	From Leg	4.00	0.0000	107.00	No Ice	0.14	0.12	0.00
			0.00			1/2" Ice	0.20	0.17	0.00
			0.00			1" Ice	0.26	0.23	0.01
(2) 860 10025	B	From Leg	4.00	0.0000	107.00	No Ice	0.14	0.12	0.00
			0.00			1/2" Ice	0.20	0.17	0.00
			2.00			1" Ice	0.26	0.23	0.01
(2) 860 10025	C	From Leg	4.00	0.0000	107.00	No Ice	0.14	0.12	0.00
			0.00			1/2" Ice	0.20	0.17	0.00
			0.00			1" Ice	0.26	0.23	0.01
(2) 860 10025	C	From Leg	4.00	0.0000	107.00	No Ice	0.14	0.12	0.00
			0.00			1/2" Ice	0.20	0.17	0.00
			2.00			1" Ice	0.26	0.23	0.01
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	107.00	No Ice	0.92	0.92	0.03
			0.00			1/2" Ice	1.46	1.46	0.05
			0.00			1" Ice	1.64	1.64	0.07
RRUS-11	A	From Leg	4.00	0.0000	107.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS-11	B	From Leg	4.00	0.0000	107.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			0.00			1" Ice	2.92	1.36	0.10
RRUS-11	C	From Leg	4.00	0.0000	107.00	No Ice	2.52	1.07	0.06
			0.00			1/2" Ice	2.72	1.21	0.07
			2.00			1" Ice	2.92	1.36	0.10
RRUS12/RRUS A2	A	From Leg	4.00	0.0000	107.00	No Ice	3.14	1.84	0.07
			0.00			1/2" Ice	3.36	2.01	0.10
			2.00			1" Ice	3.59	2.20	0.13
RRUS12/RRUS A2	B	From Leg	4.00	0.0000	107.00	No Ice	3.14	1.84	0.07
			0.00			1/2" Ice	3.36	2.01	0.10
			2.00			1" Ice	3.59	2.20	0.13
RRUS12/RRUS A2	C	From Leg	4.00	0.0000	107.00	No Ice	3.14	1.84	0.07
			0.00			1/2" Ice	3.36	2.01	0.10
			2.00			1" Ice	3.59	2.20	0.13

Job	CT SUFFIELD 2 CAC 801486	Page	6 of 10
Project	BU801486_WO1356617	Date	11:19:37 02/03/17
Client	Crown Castle	Designed by	LinP

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
8'x2.375" Pipe Mount	A	From Leg	4.00	0.0000	107.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
8'x2.375" Pipe Mount	B	From Leg	4.00	0.0000	107.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
8'x2.375" Pipe Mount	C	From Leg	4.00	0.0000	107.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
Platform Mount [LP 1001-1]	C	None	4.00	0.0000	107.00	No Ice	42.70	42.70	2.75
			0.00			1/2" Ice	52.50	52.50	3.30
			0.00			1" Ice	62.30	62.30	3.88
level 90									
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00	0.0000	90.00	No Ice	2.86	6.57	0.03
			0.00			1/2" Ice	3.22	7.19	0.08
			1.00			1" Ice	3.59	7.84	0.13
(2) SC 9012 rev 2 w/ Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	2.77	4.04	0.02
			0.00			1/2" Ice	3.07	4.56	0.06
			1.00			1" Ice	3.37	5.10	0.10
(2) SC 9012 rev 2 w/ Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	2.77	4.04	0.02
			0.00			1/2" Ice	3.07	4.56	0.06
			1.00			1" Ice	3.37	5.10	0.10
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	0.0000	90.00	No Ice	8.29	7.00	0.08
			0.00			1/2" Ice	8.85	8.19	0.14
			1.00			1" Ice	9.37	9.08	0.22
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	8.29	7.00	0.08
			0.00			1/2" Ice	8.85	8.19	0.14
			1.00			1" Ice	9.37	9.08	0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	8.29	7.00	0.08
			0.00			1/2" Ice	8.85	8.19	0.14
			1.00			1" Ice	9.37	9.08	0.22
B13 RRH 4X30	A	From Leg	4.00	0.0000	90.00	No Ice	2.06	1.32	0.06
			0.00			1/2" Ice	2.24	1.48	0.07
			1.00			1" Ice	2.43	1.64	0.09
B13 RRH 4X30	B	From Leg	4.00	0.0000	90.00	No Ice	2.06	1.32	0.06
			0.00			1/2" Ice	2.24	1.48	0.07
			1.00			1" Ice	2.43	1.64	0.09
B13 RRH 4X30	C	From Leg	4.00	0.0000	90.00	No Ice	2.06	1.32	0.06
			0.00			1/2" Ice	2.24	1.48	0.07
			1.00			1" Ice	2.43	1.64	0.09
RRH2x60-AWS	A	From Leg	4.00	0.0000	90.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			1.00			1" Ice	4.03	2.29	0.11
RRH2x60-AWS	B	From Leg	4.00	0.0000	90.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			1.00			1" Ice	4.03	2.29	0.11
RRH2x60-AWS	C	From Leg	4.00	0.0000	90.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			1.00			1" Ice	4.03	2.29	0.11
PCS B25 RRH4x30	A	From Leg	4.00	0.0000	90.00	No Ice	2.20	1.74	0.06
			0.00			1/2" Ice	2.39	1.92	0.08
			1.00			1" Ice	2.59	2.11	0.10
PCS B25 RRH4x30	B	From Leg	4.00	0.0000	90.00	No Ice	2.20	1.74	0.06
			0.00			1/2" Ice	2.39	1.92	0.08
			1.00			1" Ice	2.59	2.11	0.10
PCS B25 RRH4x30	C	From Leg	4.00	0.0000	90.00	No Ice	2.20	1.74	0.06
			0.00			1/2" Ice	2.39	1.92	0.08

Job	CT SUFFIELD 2 CAC 801486	Page	7 of 10
Project	BU801486_WO1356617	Date	11:19:37 02/03/17
Client	Crown Castle	Designed by	LinP

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral	Vert						°
(2) RC2DC-3315-PF-48	A	From Leg	1.00			0.0000	90.00	1" Ice	2.59	2.11	0.10
			4.00					No Ice	3.79	2.51	0.03
			0.00					1/2" Ice	4.04	2.72	0.06
			1.00					1" Ice	4.30	2.94	0.10
Platform Mount [LP 1001-1]	C	None				0.0000	90.00	No Ice	42.70	42.70	2.75
								1/2" Ice	52.50	52.50	3.30
								1" Ice	62.30	62.30	3.88
*											
*											
level 80											
level 80											
(4) DB844H90-XY w/ Mount Pipe	A	From Leg	4.00			0.0000	80.00	No Ice	3.10	4.98	0.03
			0.00					1/2" Ice	3.48	5.60	0.07
			1.00					1" Ice	3.85	6.23	0.11
(4) DB844H90-XY w/ Mount Pipe	B	From Leg	4.00			0.0000	80.00	No Ice	3.10	4.98	0.03
			0.00					1/2" Ice	3.48	5.60	0.07
			1.00					1" Ice	3.85	6.23	0.11
(4) DB844H90-XY w/ Mount Pipe	C	From Leg	4.00			0.0000	80.00	No Ice	3.10	4.98	0.03
			0.00					1/2" Ice	3.48	5.60	0.07
			1.00					1" Ice	3.85	6.23	0.11
Platform Mount [LP 1201-1]	C	None				0.0000	80.00	No Ice	23.10	23.10	2.10
								1/2" Ice	26.80	26.80	2.50
								1" Ice	30.50	30.50	2.90
level 74											
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00			0.0000	74.00	No Ice	2.32	2.24	0.06
			0.00					1/2" Ice	2.53	2.44	0.08
			0.00					1" Ice	2.74	2.65	0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00			0.0000	74.00	No Ice	2.32	2.24	0.06
			0.00					1/2" Ice	2.53	2.44	0.08
			0.00					1" Ice	2.74	2.65	0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00			0.0000	74.00	No Ice	2.32	2.24	0.06
			0.00					1/2" Ice	2.53	2.44	0.08
			0.00					1" Ice	2.74	2.65	0.11
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00			0.0000	74.00	No Ice	2.06	1.93	0.06
			0.00					1/2" Ice	2.24	2.11	0.09
			0.00					1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00			0.0000	74.00	No Ice	2.06	1.93	0.06
			0.00					1/2" Ice	2.24	2.11	0.09
			0.00					1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00			0.0000	74.00	No Ice	2.06	1.93	0.06
			0.00					1/2" Ice	2.24	2.11	0.09
			0.00					1" Ice	2.43	2.29	0.11
(2) 5'x2 1/2" Pipe Mount	A	From Leg	2.00			0.0000	74.00	No Ice	1.33	1.33	0.03
			0.00					1/2" Ice	1.63	1.63	0.04
			0.00					1" Ice	1.95	1.95	0.05
(2) 5'x2 1/2" Pipe Mount	B	From Leg	2.00			0.0000	74.00	No Ice	1.33	1.33	0.03
			0.00					1/2" Ice	1.63	1.63	0.04
			0.00					1" Ice	1.95	1.95	0.05
(2) 5'x2 1/2" Pipe Mount	C	From Leg	2.00			0.0000	74.00	No Ice	1.33	1.33	0.03
			0.00					1/2" Ice	1.63	1.63	0.04
			0.00					1" Ice	1.95	1.95	0.05
Side Arm Mount [SO 102-3]	C	None				0.0000	74.00	No Ice	3.00	3.00	0.08
								1/2" Ice	3.48	3.48	0.11
								1" Ice	3.96	3.96	0.14
level 72											
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.00			0.0000	72.00	No Ice	8.26	7.47	0.09
			0.00					1/2" Ice	8.82	8.66	0.16

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	CT SUFFIELD 2 CAC 801486	Page	8 of 10
	Project	BU801486_WO1356617	Date	11:19:37 02/03/17
	Client	Crown Castle	Designed by	LinP

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
APXV9ERR18-C-A20 w/ Mount Pipe	C	From Leg	2.00		0.0000	72.00	1" Ice	9.35	9.56	0.24
			4.00				No Ice	8.26	7.47	0.09
			0.00				1/2" Ice	8.82	8.66	0.16
			2.00				1" Ice	9.35	9.56	0.24
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.00		0.0000	72.00	No Ice	8.26	6.95	0.08
			0.00				1/2" Ice	8.82	8.13	0.15
			2.00				1" Ice	9.35	9.02	0.23
			4.00				No Ice	6.58	4.96	0.08
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	0.00		0.0000	72.00	1/2" Ice	7.03	5.75	0.13
			2.00				1" Ice	7.47	6.47	0.19
			4.00				No Ice	6.58	4.96	0.08
			0.00				1/2" Ice	7.03	5.75	0.13
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	2.00		0.0000	72.00	1" Ice	7.47	6.47	0.19
			4.00				No Ice	6.58	4.96	0.08
			0.00				1/2" Ice	7.03	5.75	0.13
			2.00				1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00		0.0000	72.00	No Ice	6.58	4.96	0.08
			0.00				1/2" Ice	7.03	5.75	0.13
			2.00				1" Ice	7.47	6.47	0.19
			4.00				No Ice	4.05	1.53	0.07
TD-RRH8x20-25	A	From Leg	0.00		0.0000	72.00	1/2" Ice	4.30	1.71	0.10
			2.00				1" Ice	4.56	1.90	0.13
			4.00				No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
TD-RRH8x20-25	B	From Leg	2.00		0.0000	72.00	1" Ice	4.56	1.90	0.13
			4.00				No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			2.00				1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	4.00		0.0000	72.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			2.00				1" Ice	4.56	1.90	0.13
			4.00				No Ice	1.00	1.00	0.03
5' x 2' Pipe Mount	A	From Leg	0.00		0.0000	72.00	1/2" Ice	1.39	1.39	0.04
			2.00				1" Ice	1.70	1.70	0.05
			4.00				No Ice	1.00	1.00	0.03
			0.00				1/2" Ice	1.39	1.39	0.04
5' x 2' Pipe Mount	B	From Leg	2.00		0.0000	72.00	1" Ice	1.70	1.70	0.05
			4.00				No Ice	1.00	1.00	0.03
			0.00				1/2" Ice	1.39	1.39	0.04
			2.00				1" Ice	1.70	1.70	0.05
5' x 2' Pipe Mount	C	From Leg	4.00		0.0000	72.00	No Ice	1.00	1.00	0.03
			0.00				1/2" Ice	1.39	1.39	0.04
			2.00				1" Ice	1.70	1.70	0.05
			4.00				No Ice	23.10	23.10	2.10
Platform Mount [LP 1201-1]	C	None			0.0000	72.00	1/2" Ice	26.80	26.80	2.50
							1" Ice	30.50	30.50	2.90
							No Ice	3.51	2.00	0.02
							1/2" Ice	3.85	2.33	0.04
level 62 APX18-206516L	A	From Leg	0.00		0.0000	62.00	1" Ice	4.19	2.66	0.06
			1.00				No Ice	3.51	2.00	0.02
			0.00				1/2" Ice	3.85	2.33	0.04
			0.00				1" Ice	4.19	2.66	0.06
APX18-206516L	B	From Leg	1.00		0.0000	62.00	No Ice	3.51	2.00	0.02
			0.00				1/2" Ice	3.85	2.33	0.04
			0.00				1" Ice	4.19	2.66	0.06
			1.00				No Ice	3.51	2.00	0.02
APX18-206516L	C	From Leg	0.00		0.0000	62.00	1/2" Ice	3.85	2.33	0.04
			0.00				1" Ice	4.19	2.66	0.06
			1.00				No Ice	3.51	2.00	0.02
			0.00				1/2" Ice	3.85	2.33	0.04
Pipe Mount [PM 602-3]	C	None	0.00		0.0000	62.00	1" Ice	4.19	2.66	0.06
							No Ice	7.68	7.68	0.28
							1/2" Ice	9.50	9.50	0.35
							1" Ice	11.32	11.32	0.43
level 47										

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job CT SUFFIELD 2 CAC 801486	Page 9 of 10
	Project BU801486_WO1356617	Date 11:19:37 02/03/17
	Client Crown Castle	Designed by LinP

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	109 - 95 (1)	TP26.715x23.476x0.1875	14.00	0.00	0.0	15.7872	-5.59	1051.09	0.005
L2	95 - 48.08 (2)	TP37.573x26.715x0.3125	46.92	0.00	0.0	35.8284	-24.37	2558.23	0.010
L3	48.08 - 0 (3)	TP48.075x35.8094x0.375	53.00	0.00	0.0	56.7749	-39.02	3931.05	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	109 - 95 (1)	TP26.715x23.476x0.1875	97.17	573.81	0.169	0.00	573.81	0.000
L2	95 - 48.08 (2)	TP37.573x26.715x0.3125	871.47	1898.72	0.459	0.00	1898.72	0.000
L3	48.08 - 0 (3)	TP48.075x35.8094x0.375	2244.40	3855.83	0.582	0.00	3855.83	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T _u kip-ft	φT _n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	109 - 95 (1)	TP26.715x23.476x0.1875	7.80	525.54	0.015	0.10	1149.03	0.000
L2	95 - 48.08 (2)	TP37.573x26.715x0.3125	24.10	1279.11	0.019	2.12	3802.08	0.001
L3	48.08 - 0 (3)	TP48.075x35.8094x0.375	27.52	1965.52	0.014	2.12	7721.10	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	109 - 95 (1)	0.005	0.169	0.000	0.015	0.000	0.175	1.000	4.8.2 ✓
L2	95 - 48.08 (2)	0.010	0.459	0.000	0.019	0.001	0.469	1.000	4.8.2 ✓
L3	48.08 - 0 (3)	0.010	0.582	0.000	0.014	0.000	0.592	1.000	4.8.2 ✓

tnxTower Jacobs Engineering Group, Inc. 5449 Bells Ferry Road Acworth, GA 30102 Phone: 770-701-2500 FAX: 770-701-2501	Job	CT SUFFIELD 2 CAC 801486	Page	10 of 10
	Project	BU801486_WO1356617	Date	11:19:37 02/03/17
	Client	Crown Castle	Designed by	LinP

Section Capacity Table

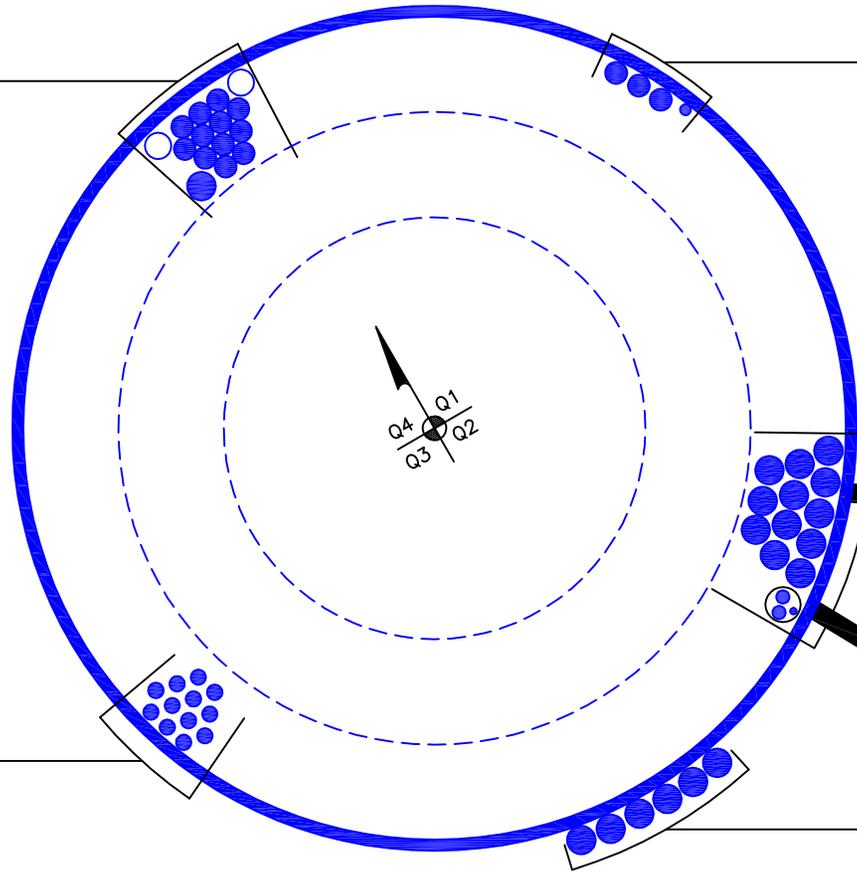
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	109 - 95	Pole	TP26.715x23.476x0.1875	1	-5.59	1051.09	17.5	Pass
L2	95 - 48.08	Pole	TP37.573x26.715x0.3125	2	-24.37	2558.23	46.9	Pass
L3	48.08 - 0	Pole	TP48.075x35.8094x0.375	3	-39.02	3931.05	59.2	Pass
Summary								
Pole (L3)							59.2	Pass
RATING =							59.2	Pass

APPENDIX B
BASE LEVEL DRAWING



(RESERVED)
(2) 1-1/2" TO 90 FT LEVEL
(INSTALLED)
(12) 1-1/4" TO 90 FT LEVEL

(INSTALLED)
(1) 5/8" TO 72 FT LEVEL
(3) 1-1/4" TO 72 FT LEVEL



(INSTALLED-IN CONDUIT)
(1) 3/8" TO 107 FT LEVEL
(2) 3/4" TO 107 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 107 FT LEVEL

(ABANDONED)
(12) 7/8" TO 80 FT LEVEL

CLIMBING PEGS W/
SAFETY CLIMB

(INSTALLED)
(6) 1-5/8" TO 62 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: 801486
 Site Name: CT SUFFIELD 2 CAC 801486
 App #: 369072 Rev. 3

Reactions		
Mu	97	ft-kips
Axial, Pu:	5.6	kips
Shear, Vu:	7.8	kips
Elevation:	95	feet

Bolt Threads:
X-Excluded
$\phi V_n = \phi(0.55 \cdot A_b \cdot F_u)$
$\phi = 0.75, \phi \cdot V_n$ (kips):
38.88

Pole Manufacturer:	Other
--------------------	-------

If No stiffeners, Criteria: TIA G <-Only Applicable to Unstiffened Cases

Bolt Data		
Qty:	20	
Diameter (in.):	1	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	75	<-- Disregard
N/A:	55	<-- Disregard
Circle (in.):	33	

Flange Bolt Results		Rigid
Bolt Tension Capacity, $\phi \cdot T_n, B1$:	54.54 kips	$\phi \cdot T_n$
Adjusted $\phi \cdot T_n$ (due to $V_u = V_u / Qty$), B :	54.54 kips	$\phi T_n [1 - (V_u / \phi V_n)^2]^{0.5}$
Max Bolt directly applied Tu:	6.77 Kips	
Min. PL "tc" for B cap. w/o Pry:	1.381 in	
Min PL "treq" for actual T w/ Pry:	0.368 in	
Min PL "t1" for actual T w/o Pry:	0.487 in	
T allowable w/o Prying:	54.54 kips	$\alpha' < 0$ case
Prying Force, q:	0.00 kips	
Total Bolt Tension = Tu + q:	6.77 kips	
Non-Prying Bolt Stress Ratio, Tu/B:	12.4% Pass	

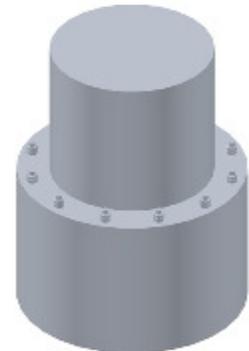
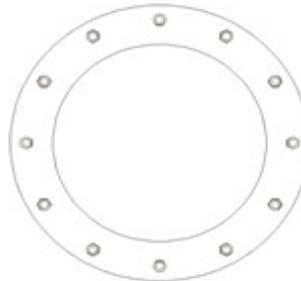
Plate Data		
Diam:	36	in
Thick, t:	2.25	in
Grade (Fy):	60	ksi
Strength, Fu:	80	ksi
Single-Rod B-eff:	4.24	in

Exterior Flange Plate Results		Rigid
Flexural Check		TIA G
Compression Side Plate Stress:	2.5 ksi	$\phi \cdot F_y$
Allowable Plate Stress:	54.0 ksi	Comp. Y.L. Length:
Compression Plate Stress Ratio:	4.6% Pass	19.37
No Prying		
Tension Side Stress Ratio, $(treq/t)^2$:	2.7% Pass	

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

n/a
Stiffener Results
 Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, $f_b / F_b + (f_v / F_v)^2$: n/a
 Plate Tension+Shear, $f_t / F_t + (f_v / F_v)^2$: n/a
 Plate Comp. (AISC Bracket): n/a
Pole Results
 Pole Punching Shear Check: n/a

Pole Data		
Diam:	26.715	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



* 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

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

TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	801486
Site Name:	CT SUFFIELD 2 CAC 801486
App #:	369072 Rev. 3
Pole Manufacturer:	Other

Reactions		
Mu:	2244	ft-kips
Axial, Pu:	39	kips
Shear, Vu:	27	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	55	in

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

Anchor Rod Results

Max Rod ($C_u + V_u/\eta$): 128.2 Kips
 Allowable Axial, $\Phi * F_u * A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 49.3% **Pass**

Rigid
AISC LRFD
$\phi * T_n$

Plate Data		
Diam:	61	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	9.54	in

Base Plate Results

Base Plate Stress: 14.8 ksi
 Allowable Plate Stress: 54.0 ksi
 Base Plate Stress Ratio: 27.4% **Pass**

Flexural Check

Rigid
AISC LRFD
$\phi * F_y$
Y.L. Length: 26.72

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

n/a

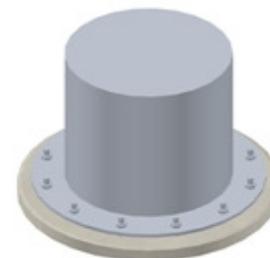
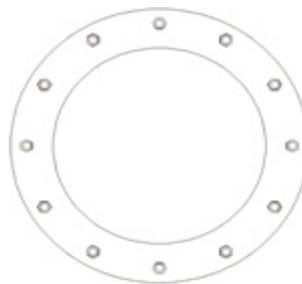
Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: n/a
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	48.075	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



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

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

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

Site Data

BU#: 801486
Site Name: CT SUFFIELD 2 CAC 801486
App #: 369072 Rev. 3

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDU:	39	kips
Factored WL Axial, PWu:	0	kips
Factored WL Shear, Vu:	27	kips
Factored WL Moment, Mu:	2244	ft-kips

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	39	kips
0.90	0.9D+1.6W, Pu:	29.25	kips
1.00	Vu:	27	kips
	Mu:	2244	ft-kips

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	6.5	ft
Pad Thickness, T:	2.5	ft
Pad Width=Length, L:	26	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	6.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	33.18	ft^2
Pier Height:	4.50	ft
Soil (above pad) Height:	4.00	ft

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	740.34	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	2399.83	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 3.24 ft
 Orthogonal qu= 1.64 ksf
 qu/φ*qn Ratio= **27.36% Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 2.29 ft
 Diagonal qu= 1.61 ksf
 qu/φ*qn Ratio= **26.90% Pass**

<-- Press Upon Completing All Input

Soil Parameters		
Unit Weight, γ:	120.0	pcf
Ultimate Bearing Capacity, qn:	8.00	ksf
Strength Reduct. factor, φ:	0.75	
Angle of Friction, Φ:	0.0	degrees
Undrained Shear Strength, Cu:	1.15	ksf
Allowable Bearing: φ*qn:	6.00	ksf
Passive Pres. Coeff., Kp	1.00	

Overturning Stability Check

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	27.0	kips
Pad Force Location Above D:	1.23	ft
φ(Passive Pressure Moment):	33.17	ft-kips
Factored O.T. M(WL), "1.6W":	2433.0	ft-kips
Factored OT (MW-Msoil), M1	2399.83	ft-kips

0.9D+1.6W Load Combination, Bearing Results:

(w/ Soil Wedges) [Reaction+Conc+Soil]	555.26	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	1687.12	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	584.5	kips
Unfactored (Total ftg-soil Wt):	584.45	kips
1.2D. No Soil Wedges.	740.34	kips
0.9D. With Soil Wedges	555.26	kips

Orthogonal ecc3 = M2/P2 = 3.04 ft
 Ortho Non Bearing Length,NBL= **6.08 ft**
 Orthogonal qu= 1.21 ksf
 Diagonal qu= 1.18 ksf

Resistance due to Cohesion (Vertical)		
φ*(1/2*Cu)(Total Vert. Planes)	65.82	kips
Cohesion Force Eccentricity, K2	12.03	ft

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	2244.00		
M Orthogonal:	6723.08	33.38%	Pass
M Diagonal:	6723.08	33.38%	Pass

Project Name: CT SUFFIELD 2 CAC 801486
 Project Number: 801486
 Job Number: 1356617
 Date: 2/3/2017



Created On: 6/3/2014
 Checked By: DW
 Revised On: 12/1/2016
 Revision No.: 1.7

Monopole Pad & Pier Foundation

Foundation Parameters

Load	
Code	G
Axial	39 kips
Shear	27 kips
Moment	2244 k-ft
Soil Unit Weight	120 pcf
Friction Angle	0
Cohesion	1150 psf

Material	
Concrete Strength (F'c)	3000 psi
Concrete Density	150 pcf
Rebar Tensile (Fy)	60 ksi
Clear Cover	3.5 in

Pad	
Thickness	2.5 ft
Bearing Depth	6.5 ft
Width	26 ft
Rebar Size	9
Rebar Quantity	22

Pier	
Pier type	Circle
Diameter	6.5 ft
Height above Grade	0.5 ft
Rebar Size	9
Rebar Quantity	32
Tie Size	5
Tie C/C Spacing	9 in

Structural Checks

Pad Beam Shear Capacity	635.9	kips
Pad Beam Shear	306.7	kips
Pad Beam Shear Check	48.2%	Pass

Pad Bending Moment Capacity	2373.9	k-ft
Pad Bending Moment	1621.9	k-ft
Pad Bending Moment Check	68.3%	Pass

Punching Shear Capacity	1316.6	kips
Punching Shear	338.5	kips
Punching Shear Check	25.7%	Pass

Pad-Pier Bearing Capacity	15840.3	kips
Pad-Pier Bearing	740.3	kips
Pad-Pier Bearing Check	4.7%	Pass

Pier Beam Shear Capacity	455.4	kips
Pier Beam Shear	27.0	kips
Pier Beam Shear Check	5.9%	Pass

Pier Bending Moment Capacity	4623.4	k-ft
Pier Bending Moment	2353.9	k-ft
Pier Bending Moment Check	50.9%	Pass



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

AT&T Existing Facility

Site ID: CT1138

Suffield Ffyer Rd
Ffyer Road
Suffield, CT 06078

December 5, 2016

EBI Project Number: 6216005597

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	18.68 %



December 5, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT1138 – Suffield Ff Tyler Rd**

EBI Consulting was directed to analyze the proposed AT&T facility located at **Ff Tyler Road, Suffield, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **Ff Tyler Road, Suffield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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 (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 6) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.



- 7) 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.
- 8) 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.
- 9) The antennas used in this modeling are the **Kathrein 800-10121** and the **CCI HPA-65R-BUU-H8** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. 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.
- 10) The antenna mounting height centerlines of the proposed antennas are **107 feet** above ground level (AGL) for **Sector A**, **107 feet** above ground level (AGL) for **Sector B** and **107 feet** above ground level (AGL) for Sector C.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,471.44	ERP (W):	2,471.44	ERP (W):	2,471.44
Antenna A1 MPE%	1.10 %	Antenna B1 MPE%	1.10 %	Antenna C1 MPE%	1.10 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd
Height (AGL):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,229.75	ERP (W):	6,229.75	ERP (W):	6,229.75
Antenna A2 MPE%	3.19 %	Antenna B2 MPE%	3.19 %	Antenna C2 MPE%	3.19 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	107 feet	Height (AGL):	107 feet	Height (AGL):	107 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,471.44	ERP (W):	2,471.44	ERP (W):	2,471.44
Antenna A3 MPE%	1.10 %	Antenna B3 MPE%	1.10 %	Antenna C3 MPE%	1.10 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	5.39 %
Verizon	7.94 %
Pocket (now MetroPCS)	2.17 %
Nextel	0.96 %
Sprint	2.22 %
Site Total MPE %:	18.68 %

AT&T Sector A Total:	5.39 %
AT&T Sector B Total:	5.39 %
AT&T Sector C Total:	5.39 %
Site Total:	18.68 %

AT&T _ Frequency Band / Technology per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	418.91	107	2.95	850 MHz	567	0.52%
AT&T 1900 MHz (PCS) UMTS	2	816.81	107	5.76	1900 MHz (PCS)	1000	0.58%
AT&T 700 MHz LTE	2	1,239.23	107	8.73	700 MHz	467	1.87%
AT&T 1900 MHz (PCS) LTE	2	1,875.65	107	13.22	1900 MHz (PCS)	1000	1.32%
AT&T 850 MHz GSM	2	418.91	107	2.95	850 MHz	567	0.52%
AT&T 1900 MHz (PCS) GSM	2	816.81	107	5.76	1900 MHz (PCS)	1000	0.58%
						Total:	5.39%



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 AT&T 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:

AT&T Sector	Power Density Value (%)
Sector A:	5.39 %
Sector B:	5.39 %
Sector C:	5.39 %
AT&T Maximum Total (per sector):	5.39 %
Site Total:	18.68 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **18.68 %** 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.