



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

March 17, 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: 842877
AT&T Site ID: CT5003
750 Rainbow Road, Windsor, CT 06095
Latitude: 41° 55' 9.43"/ Longitude: -72° 42' 37.57"

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 93-foot level of the existing 101-foot monopole at 750 Rainbow Road in Windsor, CT. The tower is owned by Crown Castle; the Town of Windsor owns the property. AT&T intends to replace three (3) antennas with three (3) new antennas, replace six (6) RRHs with new models, and install six (6) tower mounted switches.

This facility was approved by the by the Town of Windsor Planning & Zoning Commission on May 15, 2003. This approval did not include conditions.

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 The Honorable Donald S. Trinks, Mayor, Town of Windsor, as well as the property owner, and tower owner.

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.

Melanie A. Bachman

March 17, 2017

Page 2

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: The Honorable Donald S. Trinks, Mayor
Town of Windsor
275 Broad Street
Windsor, CT 06095

Town of Windsor Planning & Zoning
275 Broad Street
Windsor, CT 06095

I, Anita M. Mips, Chairperson of the Windsor Town Planning and Zoning Commission, hereby certify that on December 10, 2002 the Planning and Zoning Commission of the Town of Windsor granted approval of a Special Use for a wireless telecommunications tower facility under Zoning Regulations Section 2.2.19E(1) and Section 12.2 as presented by the applicant including a waiver in the amount of 129.9 feet from the fall zone requirement as requested by the applicant subject to the following condition:

There shall be no lighting or paint striping of the tower as described in an FAA letter to the applicant which letter shall be presented to the Commission as part of the public record.

Said Special Use was granted for the property located at: 750 Rainbow Road

The owner of record of said parcel is: Town of Windsor

Dated at Windsor, Connecticut, this 15th day of May, 2003

 Chairperson

Public Act #75-317

Received for Record this _____ day of _____, 2002

Attest: Town Clerk

RECEIVED FOR RECORD
WINDSOR TOWN CLERK
03 OCT 13 AM 10:46
VOL 417 PG 233
BY Kathleen R. Quinn
TOWN CLERK

Property Cards

Address Search : [Clear Search](#)

Your search returned multiple addresses

Additional addresses:
[750 RAINBOW RD](#)

750 Rainbow Rd

Property Owner:
Windsor Town Of

Property Co-Owner
C/O At&T Mobility

Mailing Address:
575 Morosgo Dr Suite 13-F
Atlanta, GA
30324

File Code
12534

Map:
8

Block:
140

Lot:
750

Census Tract:
12534.01

Property Type:
Cell Tower

Land Area (Acres):
0.05

Zone:
NZ



[Click to Enlarge](#)

Construction Details

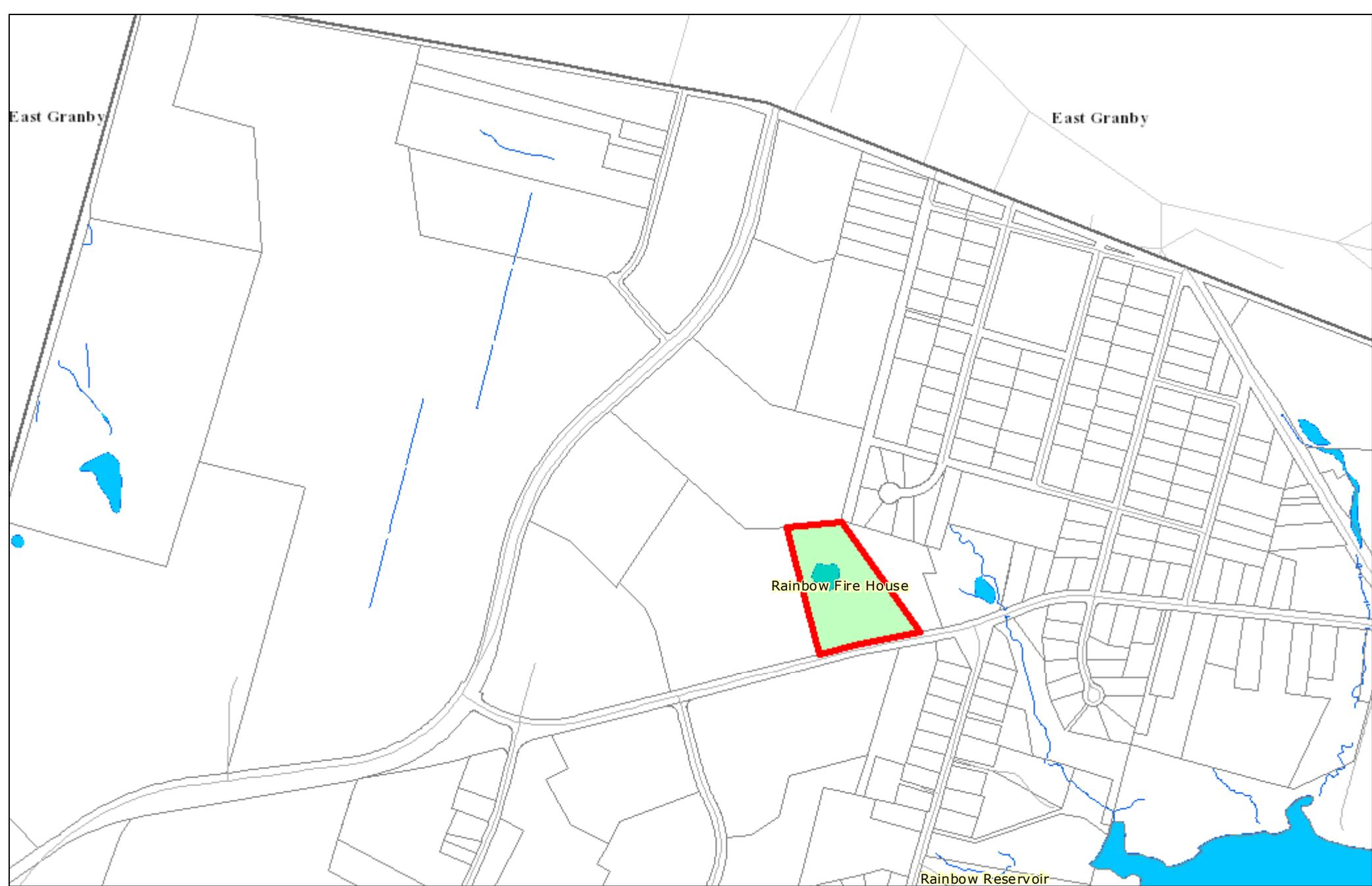
Year Built:	Total Rooms:
Building Style:	Bedrooms:
Stories:	Bathrooms:
Living Area: 0 Sq/Ft	Half Baths:
Building ID 102171	Heating Type
Grade	Heating Fuel
Exterior Wall	AC Type

Valuation	
Assessed Land Value:	\$97,580
Assessed Building Value:	\$119,700
Total Assessed Value:	\$217,280
<hr/>	
Appraised Land Value:	\$139,400
Appraised Building Value:	\$171,000
Total Appraised Value:	\$310,400

Last Sale	
Last Sale Date:	Wednesday, September 23rd, 1998
Last Sale Price:	\$0
Qualified Sale:	U
Book/Page:	1169/ 11

Prior Owners			
Sale Date	Owner Name	Sale Price	Book / Page
1997/6/30	RIVER BEND ASSOCIATES	0	1121/ 400
1976/9/29	CULBRO CORP	0	312/ 1

Parcel Sketch			
<input checked="" type="checkbox"/>		Sub Area Detail	
		Code	Gross Area (Sq Ft) : Living Area (Sq Ft)
Outbuildings & Extra Features			
Code	Description	Appraised Value	Assessed Value
CB3	PerCastConCel	\$131300.00	\$91910.00
AOF	Office Area	APT	Apartment
CAN	Canopy	BAS	First Floor
EAF	Attic (Expan)(Finished)	CDN	Canopy (Det)
FBM	Basement (Finished)	CLP	Loading Platform (Finished)
FDC	Carport (Det)(Framed)	FAT	Attic (Finished)
FEP	Porch (Encl)(Finished)	FCP	Carport (Framed)
FLL	Lower Level (Finished)	FDS	Porch (Scrn)(Det)(Finished)
FST	Utility (Finished)	FDU	Utility (Det)(Finished)
SDA	Store Display Area	FGR	Garage (Framed)
TQS	Three-Qtr Story	FHS	Half-Story (Finished)
UCB	Cabana (Encl)(Unfinished)	FOP	Porch (Open)(Finished)
UEP	Porch (Encl)(Unfinished)	FSP	Porch (Screen)(Finished)
UOP	Porch (Open)(Unfinished)	FUS	Upper-Story (Finished)
UUS	Upper-Story (Unfinished)	SFB	Base (Semi-Finished)
		UAT	Attic (Unfinished)
		UBM	Basement (Unfinished)
		UDU	Utility (Det)(Unfinished)
		ULP	Loading Platform (Unfinished)
		UST	Utility (Strg)(Unfinished)
		WDK	Wood Deck



Hartford County, Connecticut

gis map

Property Boundaries not legally binding for title or zoning purposes.

Horizontal Datum is Connecticut State Plane Feet, NAD83

The Town of Windsor makes no warranty as to the accuracy, reliability, or completeness of the information and is not responsible for any error or omissions for results obtained from the use of the information.

1 inch = 940 feet





WIRELESS COMMUNICATIONS FACILITY

CT5003 - LTE 2C

WINDSOR NORTH

CROWN CASTLE SITE NO.: 842877

750 RAINBOW ROAD

WINDSOR, CT 06095

GENERAL NOTES

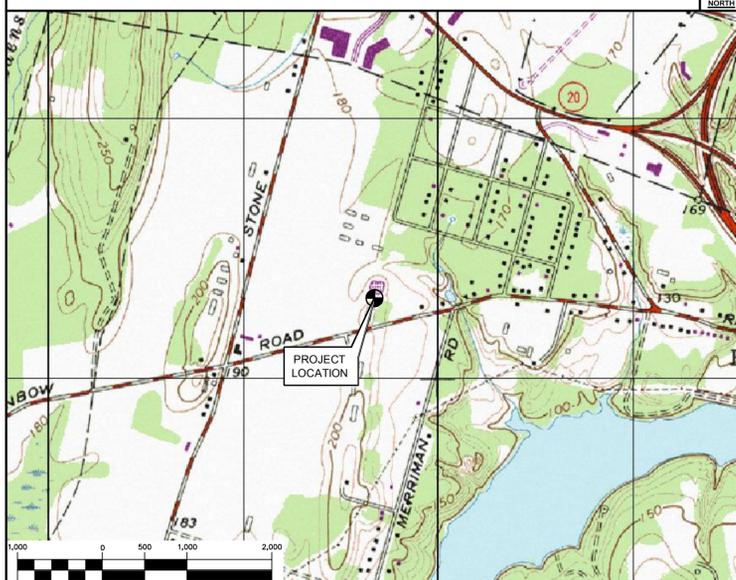
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
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 BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. 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.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. 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.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	TO: 750 RAINBOW ROAD WINDSOR, CONNECTICUT
1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.36 MI
2. TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3. TURN LEFT ONTO WEST ST	0.16 MI
4. TURN LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD	18.79 MI
5. MERGE ONTO CT-20, EXIT 40 TOWARD BRADLEY INTERNATIONAL AIRPORT	2.95 MI
6. TAKE THE HAMILTON RD S EXIT	0.24 MI
7. KEEP LEFT AT THE FORK IN THE RAMP	0.03 MI
8. TURN LEFT ONTO HAMILTON RD	0.20 MI
9. TURN RIGHT ONTO RAINBOW RD	1.27 MI
10. 750 RAINBOW RD IS ON THE RIGHT	

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

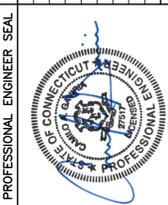
1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
 - A. REMOVE AND REPLACE EXISTING LTE ANTENNA FOR PROPOSED LTE HEXPORT ANTENNA, (1) PER SECTOR.
 - B. INSTALL (3) NEW RRUS-32 B2 BEHIND EXISTING POSITION 4 ANTENNAS
 - C. REMOVE AND REPLACE EXISTING DUL FOR NEW DUS41. INSTALL NEW XMU.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5003
AT&T SITE NAME:	WINDSOR NORTH
SITE ADDRESS:	CROWN CASTLE SITE NO.: 842877 750 RAINBOW ROAD WINDSOR, CT 06095
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEX ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-55'-09.45" N LONGITUDE: 72°-42'-37.60" W GROUND ELEVATION: ±189' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES, SPECIFICATIONS AND DETAILS	0
C-1	PLANS AND ELEVATION	0
C-2	LTE 2C EQUIPMENT DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0



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

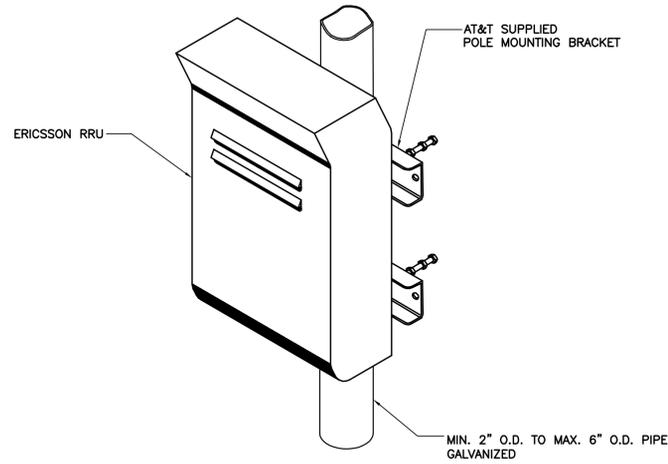
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
WINDSOR NORTH
CT5003 - LTE 2C
750 RAINBOW ROAD
WINDSOR, CT 06095

DATE: 02/16/17
SCALE: AS NOTED
JOB NO. 17004.12

TITLE SHEET

T-1
Sheet No. 1 of 7

REV.	DATE	BY	CHK'D	CAG	ISSUED FOR
0	02/24/17	KAWUR			CONSTRUCTION DRAWINGS



ISOMETRIC VIEW

NOTES:

- 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.
- NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 TYPICAL RRUS MOUNTING DETAILS
N-1 SCALE: NTS

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

- 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): 97 MPH (V_{asd}) (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:

- ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
- 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.
- 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.
- DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
- 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.
- 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.
- 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.
- 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
- 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.
- 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.
- 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.
- NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
- REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
 - STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
 - STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
 - STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
 - STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
 - PIPE---ASTM A53 (FY = 35 KSI)
 - CONNECTION BOLTS---ASTM A325-N
 - U-BOLTS---ASTM A36
 - ANCHOR RODS---ASTM F 1554
 - WELDING ELECTRODE---ASTM E 70XX
- 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.
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- 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.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- 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.
- CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
- 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.
- LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
- MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- FABRICATE BEAMS WITH MILL CAMBER UP.
- 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.
- COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- 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:

- ANTENNA PANELS:
 - SHERWIN WILLIAMS POLANE-B
 - COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
- COAXIAL CABLES:
 - ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
 - TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
 - COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

- 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.
- 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.
- TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
- PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
- CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
- IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
- 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.
- 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.
- 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.
- 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).
- COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

- COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

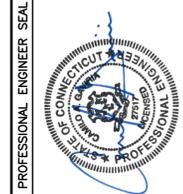
APPLICATION:

- APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
- APPLY EACH COAT TO UNIFORM FINISH.
- APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
- SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
- VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
- ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

- SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
- MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

REV.	DATE	DRAWN BY	CAG	ISSUED FOR
0	02/24/17	KAWUR		CONSTRUCTION DRAWINGS



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750 RAINBOW ROAD
WINDSOR, CT 06095

DATE: 02/16/17
SCALE: AS NOTED
JOB NO. 17004.12

NOTES,
SPECIFICATIONS
AND DETAILS

EXISTING FCC BEACON
 TOP OF EXISTING MONOPOLE
 EL. ±101' A.G.L.
 AT&T ANTENNAS
 EL. ±93' A.G.L.

EXISTING ±101' TALL MONOPOLE
 EXISTING AT&T CABLES ROUTED
 INSIDE MONOPOLE.

TOWER STRUCTURAL NOTES:

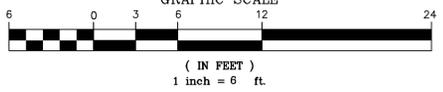
- TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
- ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

- A.G.L. = ABOVE GRADE LEVEL

EXISTING MASONRY WALL
 EXISTING AT&T COAX CABLE ICE BRIDGE
 EXISTING AT&T EQUIPMENT, TYP.
 ATOP OF CONC. SLAB-ON-GRADE
 EXISTING AT&T GPS ANTENNAS, TYP. OF (2)
 EXISTING COAX CABLE ICE BRIDGE
 (BY OTHERS)
 EXISTING EQUIPMENT SHELTERS,
 TYP. (BY OTHERS)

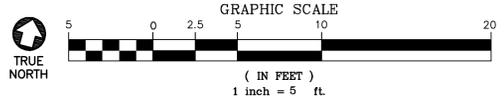
3 WEST ELEVATION
 SCALE: 1" = 6'



EXISTING GENERATOR ATOP
 OF CONC. SLAB-ON-GRADE
 (BY OTHERS)

EXISTING METER BANK

1 COMPOUND PLAN
 SCALE: 1" = 5'



EXISTING CHAINLINK FENCE AT
 PERIMETER OF COMPOUND

EXISTING AT&T EQUIPMENT CABINETS,
 TYP. ATOP OF CONC. SLAB-ON-GRADE

EXISTING AT&T COAX CABLE ICE BRIDGE

EXISTING AT&T GPS ANTENNAS,
 TYP. OF (2)

EXISTING ±101' TALL MONOPOLE

EXISTING COAX CABLE ICE BRIDGE
 (BY OTHERS)

EXISTING EQUIPMENT SHELTERS,
 TYP. OF (2) (BY OTHERS)

EXISTING MASONRY WALL

EXISTING COMPOUND ACCESS GATE

EXISTING AT&T PURCELL CABINET
 PIPE MOUNTED

EXISTING AT&T COAX CABLE ICE BRIDGE

EXISTING AT&T DIPLEXER RACK

EXISTING AT&T POWER CABINET

EXISTING AT&T DC POWER PLANT
 ATOP OF CONC. SLAB-ON-GRADE

EXISTING AT&T TELCO CABINET

EXISTING AT&T NOKIA GSM CABINET
 ATOP OF CONC. SLAB-ON-GRADE

EXISTING AT&T CIENA CABINET

EXISTING MASONRY WALL

EXISTING AT&T GPS ANTENNAS,
 TYP. OF (2)

EXISTING AT&T RRU'S MOUNTED TO
 EXISTING H-FRAME, TYP.

EXISTING AT&T PURCELL CABINET
 ATOP OF CONC. SLAB-ON-GRADE

EXISTING AT&T RXAIT CABINETS,
 TYP. OF (2) ATOP OF CONC.
 SLAB-ON-GRADE. REMOVE
 EXISTING LTE DUS AND REPLACE
 WITH NEW DUS41. INSTALL XMU

EXISTING AT&T UMS CABINET
 ATOP OF CONC. SLAB-ON-GRADE

2 EQUIPMENT LAYOUT PLAN
 SCALE: 3/8" = 1'-0"



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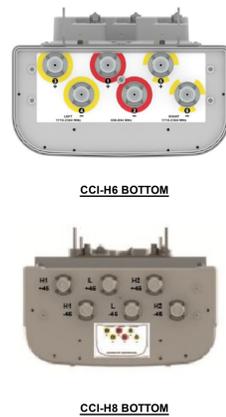
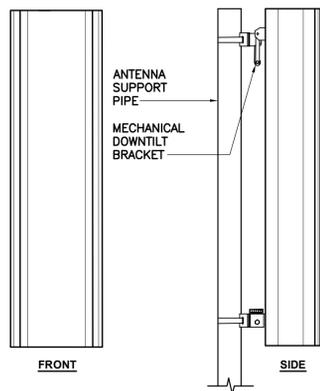
AT&T MOBILITY
 WIRELESS COMMUNICATIONS FACILITY
WINDSOR NORTH
 CT5003 - LTE 2C
 750 RAINBOW ROAD
 WINDSOR, CT 06095

DATE: 02/16/17
 SCALE: AS NOTED
 JOB NO. 17004.12

PLANS AND ELEVATION

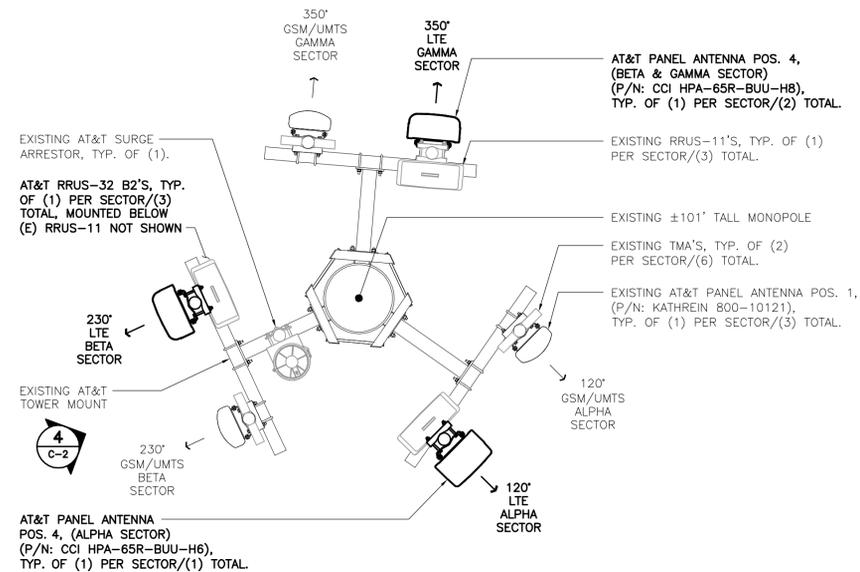
C-1
 Sheet No. 3 of 7

REV.	DATE	BY	CHK'D	CAG	CONSTRUCTION DRAWINGS	ISSUED FOR CONSTRUCTION
0	02/24/17	KAWUR				

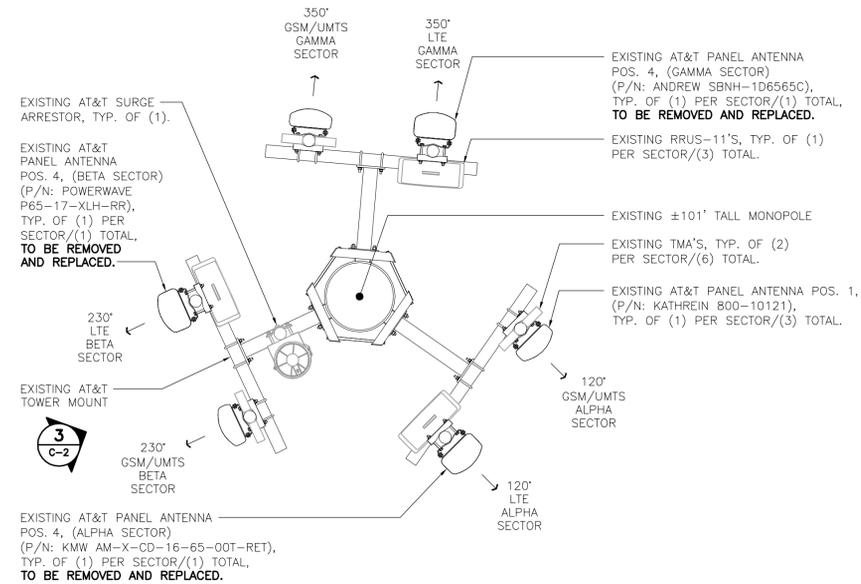


ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT	DIMENSIONS	WEIGHT	
MAKE: CCI MODEL: HPA-65R-BUU-H6	72.3"L x 14.4"W x 7.3"D	42.9 LBS.	
MAKE: CCI MODEL: HPA-65R-BUU-H8	92.4"L x 14.8"W x 7.4"D	68 LBS.	

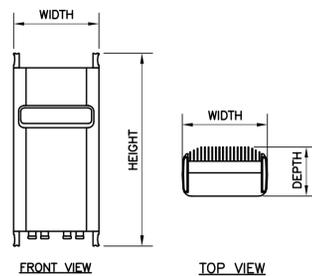
5 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



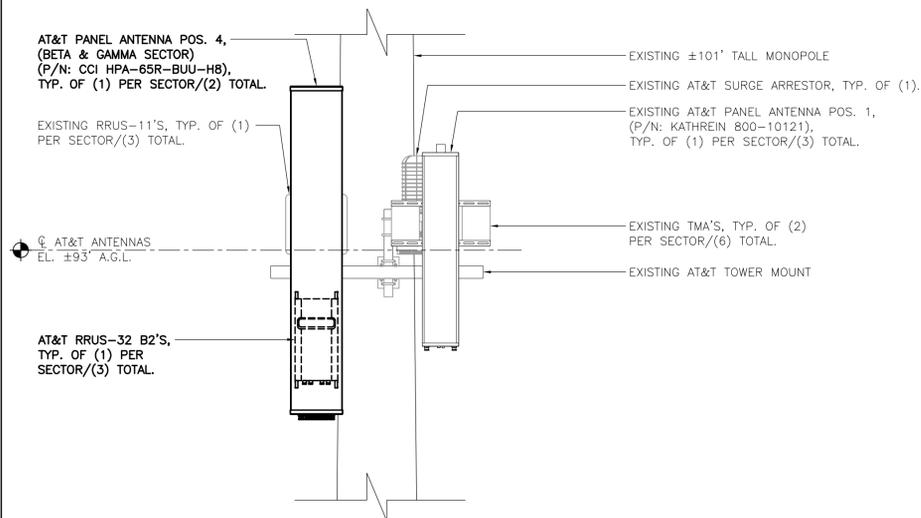
1 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0" NORTH



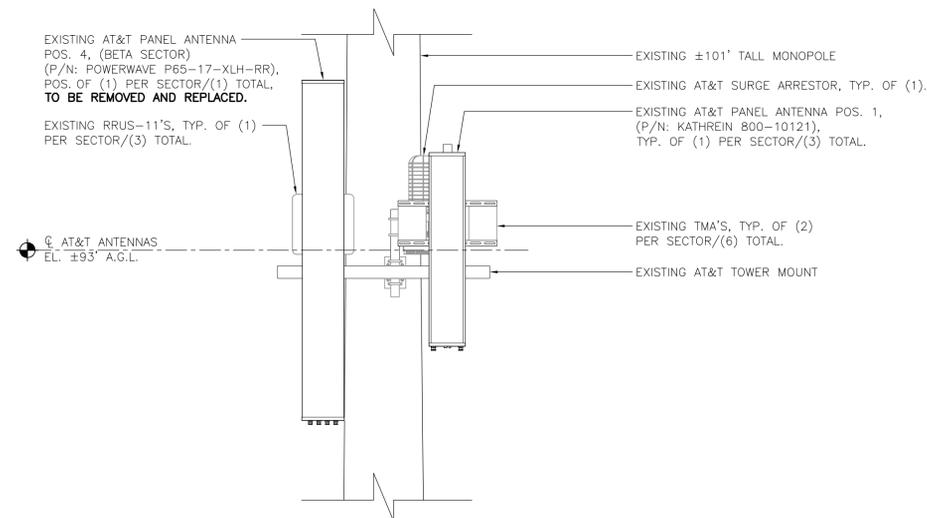
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B2	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 ERICSSON RRUS 32 B2 DETAIL
SCALE: 1" = 1'-0"

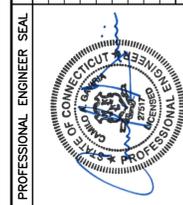


4 PROPOSED ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"



3 EXISTING ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"

REV.	DATE	BY	CHK'D	DESCRIPTION
0	02/24/17	KAWUR	CAG	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

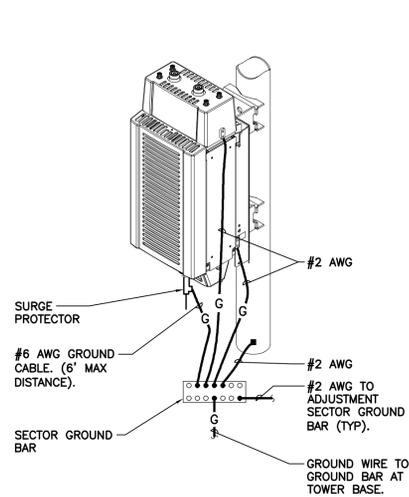


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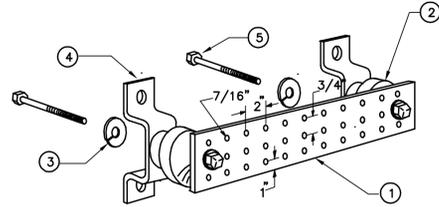
DATE: 02/16/17
SCALE: AS NOTED
JOB NO. 17004.12

LTE 2C
EQUIPMENT
DETAILS
C-2
Sheet No. 4 of 7

EACH RRU CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
 1. AT TOP OF THE CABINET
 2. AT RIGHT SIDE OF THE CABINET.



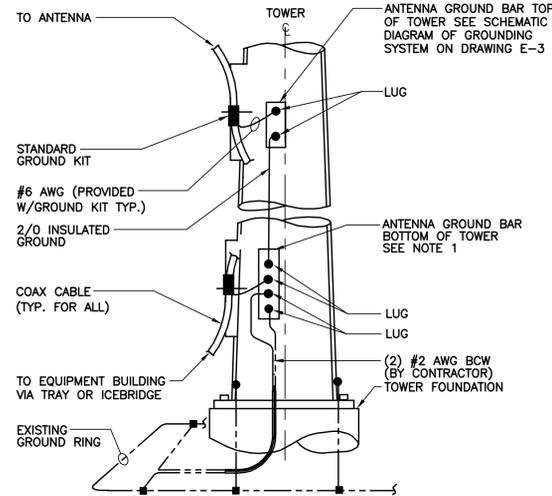
4 RRU POLE MOUNT GROUNING
 E-3 NOT TO SCALE



LEGEND

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

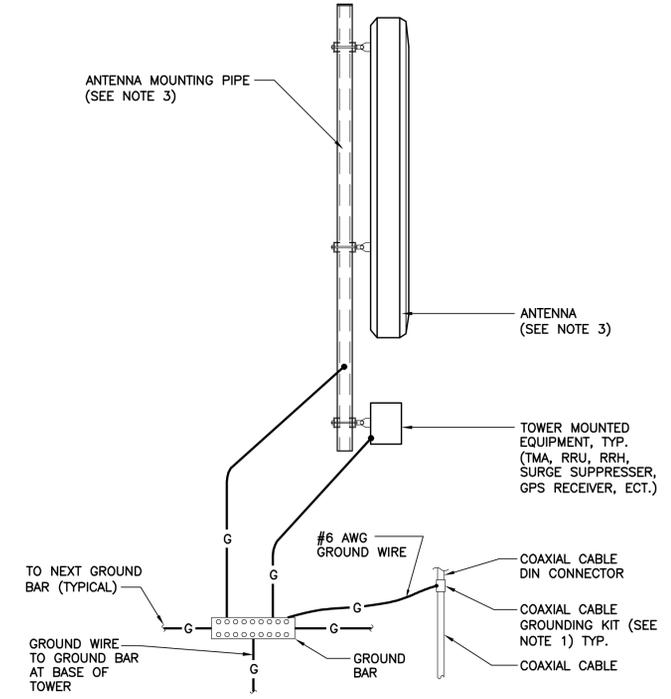
3 GROUND BAR DETAIL
 E-3 NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

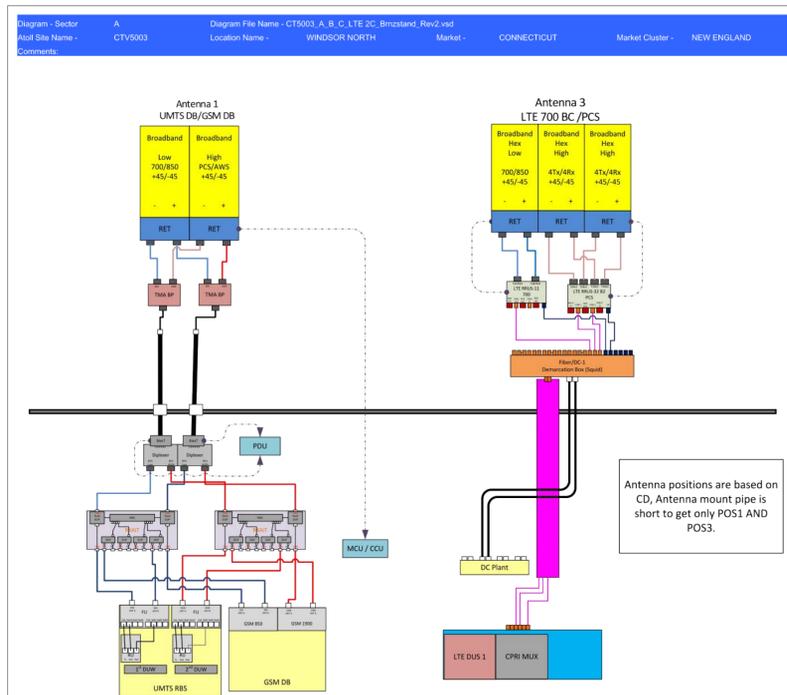
2 ANTENNA CABLE GROUNING - TOWER
 E-3 NOT TO SCALE



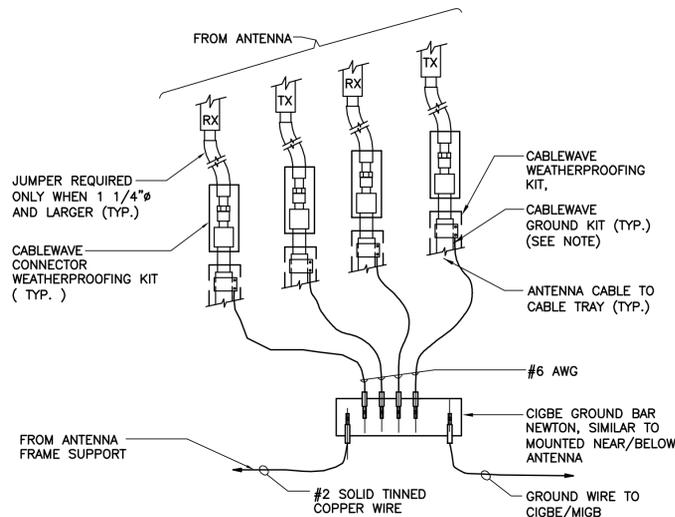
NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 TYPICAL ANTENNA GROUNING DETAIL
 E-3 NOT TO SCALE



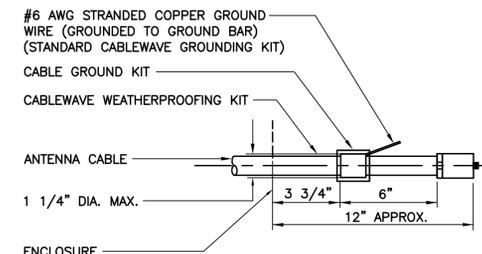
7 RF PLUMBING DIAGRAM
 E-3 NOT TO SCALE



NOTE:

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

6 CONNECTION OF GROUND WIRES TO GROUND BAR
 E-3 NOT TO SCALE



NOTE:

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

5 ANTENNA CABLE GROUNING DETAIL
 E-3 NOT TO SCALE



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TYPICAL ELECTRICAL DETAILS



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 btwo@btgrp.com

February 14, 2017

Charles McGuirt
 Crown Castle
 3530 Toringdon Way Suite 300
 Charlotte, NC 28277
 (704) 405-6607

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT5003
Carrier Site Name: Windsor CT

Crown Castle Designation: **Crown Castle BU Number:** 842877
Crown Castle Site Name: Windsor North
Crown Castle JDE Job Number: 416823
Crown Castle Work Order Number: 1358486
Crown Castle Application Number: 375164 Rev. 2

Engineering Firm Designation: **B+T Group Project Number:** 101655.005.01

Site Data: **750 Rainbow Road, Windsor, Hartford County, CT**
Latitude 41° 55' 9.43", Longitude -72° 42' 37.57"
101 Foot - Monopole Tower

Dear Charles McGuirt,

B+T Group 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 1000224, in accordance with application 375164, revision 2.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
 Note: See Table 1 and Table 2 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 125 mph converted to a nominal 3-second gust wind speed of 97 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 and Risk Category II were used in this analysis.

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 B+T Group 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:
 B+T Engineering, Inc.

Jason Brock, E.I.
 Project Engineer

Scott S. Vance, P.E.
 Engineer of Record
 COA: PEC.0001564 Expires: 02/10/2017

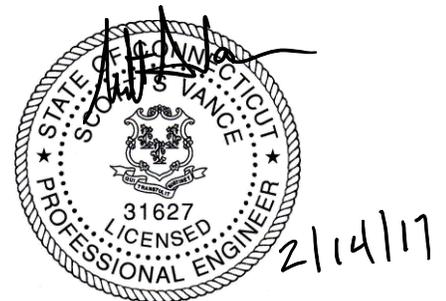


TABLE OF CONTENTS

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 101 ft. Monopole tower designed by Pennsummit Tubular, LLC in March of 2003. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 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
93.0	93.0	1	CCI Antennas	HPA-65R-BUU-H6	--	--	--
		2	CCI Antennas	HPA-65R-BUU-H8			
		2	Ericsson	RRUS 11			
		3	Ericsson	RRUS 32 B2			
		6	Kathrein	860 10025			
	91.0	1	Ericsson	RRUS 11			

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
97.0	97.0	1	Telewave	ANT450D6-9	1	7/8	1
		1	--	Side Arm Mount [SO 303-1]			
93.0	93.0	6	Ericsson	RBS 6601	--	--	3
		3	Powerwave Tech.	P65-17-XLH-RR			
		3	Kathrein	800 10121	6	7/8	1
		6	Powerwave Tech.	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
		1	--	T-Arm Mount [TA 702-3]	2	3/4	
83.0	83.0	3	Alcatel Lucent	B13 RRH 4X30	2	1-3/8	2
		3	Alcatel Lucent	PCS B25 RRH4x30			
		3	Alcatel Lucent	RRH4X45-AWS4 B66			
		9	Andrew	SBNHH-1D65B			
		2	Commscope	RC2DC-3315-PF-48	12	1-5/8	1
		6	Antel	LPA-80063/6CF			
		1	--	Platform Mount [LP 304-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) **Equipment To Be Removed; Not 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)
100.75	100.75	1	Generic	14' Low Profile Platform	--	--
		2	Generic	4' Dia. Std. dish		
		1	Generic	48" x 12" x 3" Panel antenna		
92.75	92.75	6	Allgon	7920 Panel	--	--
		1	Generic	14' Low Profile Platform		
82.75	82.75	1	Generic	14' Low Profile Platform	--	--
		9	Generic	48" x 12" x 3" Panel antenna		
72.75	72.75	1	Generic	14' Low Profile Platform	--	--
		9	Generic	48" x 12" x 3" Panel antenna		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Co-Locate, Rev # 2	375164	CCI Sites
Tower Manufacturer Drawing	PennSummit Tubular, LLC, Job No. 29203-0052	5936703	CCI Sites
Foundation Drawing	PennSummit Tubular, LLC, Job No. 29203-0052	4858945	CCI Sites
Geotech Report	Dr. Clarence Welti, P.E., P.C. Date: 11/06/2002	4713263	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 02/07/2017	CCI Sites

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.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Mount areas and weights are assumed based on photographs provided.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group 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	101 - 72.75	Pole	TP25.481x20x0.188	1	-6.098	1004.400	28.0	Pass
L2	72.75 - 36	Pole	TP32.236x24.475x0.25	2	-10.603	1725.600	58.3	Pass
L3	36 - 0	Pole	TP38.72x30.96x0.25	3	-17.094	1961.860	84.1	Pass
							Summary	
						Pole (L3)	84.1	Pass
						Rating =	84.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	43.1	Pass
1	Base Plate	Base	65.3	Pass
1	Base Foundation (Structure)	Base	41.8	Pass
1	Base Foundation (Soil Interaction)	Base	52.6	Pass

Structure Rating (max from all components) =	84.1%
---	--------------

Notes:

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

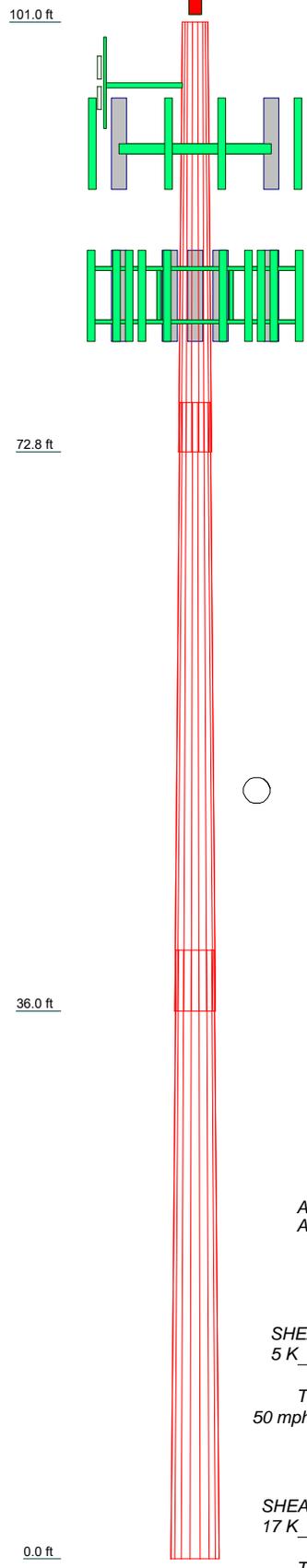
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	8.1
Length (ft)	28.250	40.000	40.000	40.000
Number of Sides	18	18	18	18
Thickness (in)	0.188	0.250	0.250	0.250
Socket Length (ft)	3.250	4.000	4.000	4.000
Top Dia (in)	20.000	24.475	30.960	30.960
Bot Dia (in)	25.481	32.236	38.720	38.720
Grade		A607-65		
Weight (K)	1.3	3.0	3.7	8.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Strobe (E-Per Photo)	101.5	Side Arm Mount [SO 102-3] (E-Mount Attachment)	93
ANT450D6-9 (E)	97	T-Arm Mount [TA 702-3] (E)	93
Side Arm Mount [SO 303-1] (E)	97	(2) LPA-80063/6CF w/ Mount Pipe (E)	83
800 10121 w/ Mount Pipe (E)	93	(2) LPA-80063/6CF w/ Mount Pipe (E)	83
800 10121 w/ Mount Pipe (E)	93	(2) LPA-80063/6CF w/ Mount Pipe (E)	83
800 10121 w/ Mount Pipe (E)	93	(3) SBNHH-1D65B w/ Mount Pipe (R)	83
(2) LGP21401 (E)	93	(3) SBNHH-1D65B w/ Mount Pipe (R)	83
(2) LGP21401 (E)	93	(3) SBNHH-1D65B w/ Mount Pipe (R)	83
DC6-48-60-18-8F (E)	93	PCS B25 RRH4x30 (R)	83
HPA-65R-BUU-H8 w/ Mount Pipe (P)	93	PCS B25 RRH4x30 (R)	83
HPA-65R-BUU-H8 w/ Mount Pipe (P)	93	RRH4X45-AWS4 B66 (R)	83
HPA-65R-BUU-H6 w/ Mount Pipe (P)	93	RRH4X45-AWS4 B66 (R)	83
RRUS 11 (P)	93	RRH4X45-AWS4 B66 (R)	83
RRUS 11 (P)	93	RRH4X45-AWS4 B66 (R)	83
RRUS 11 (P)	93	B13 RRH 4X30 (R)	83
(2) 860 10025 (P)	93	B13 RRH 4X30 (R)	83
(2) 860 10025 (P)	93	B13 RRH 4X30 (R)	83
(2) 860 10025 (P)	93	RC2DC-3315-PF-48 (R)	83
RRUS 32 B2 (P)	93	RC2DC-3315-PF-48 (R)	83
RRUS 32 B2 (P)	93	Platform Mount [LP 304-1] (E-14' Per Photo)	83
RRUS 32 B2 (P)	93		

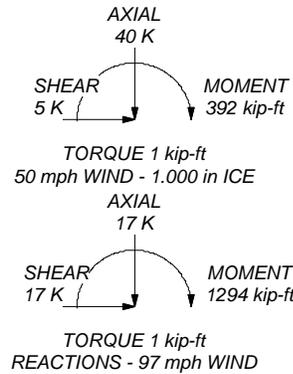
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	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 97 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 0.000 ft
8. TOWER RATING: 84.1%

ALL REACTIONS ARE FACTORED



B+T Group
 1717 South Boulder Ave.
 Tulsa, Ok. 74119
 Phone: 918-587-4630
 FAX:

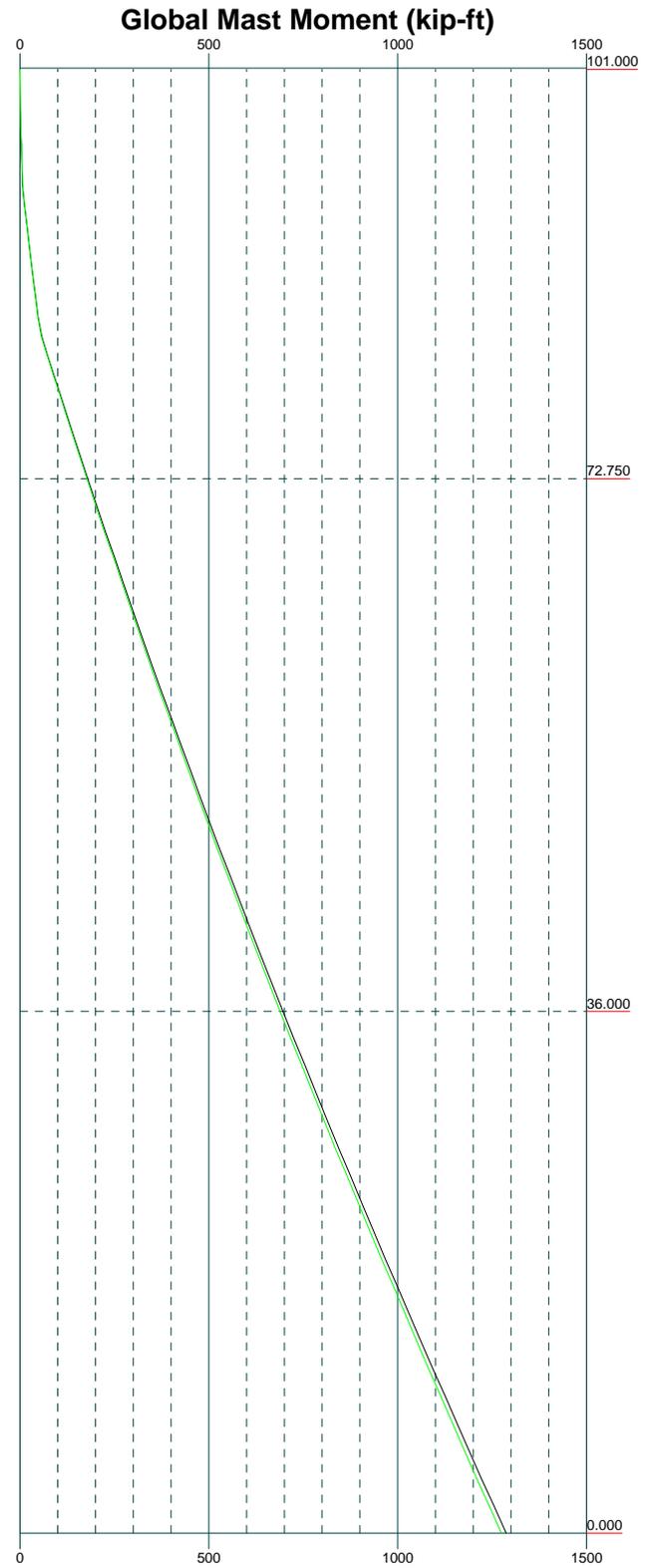
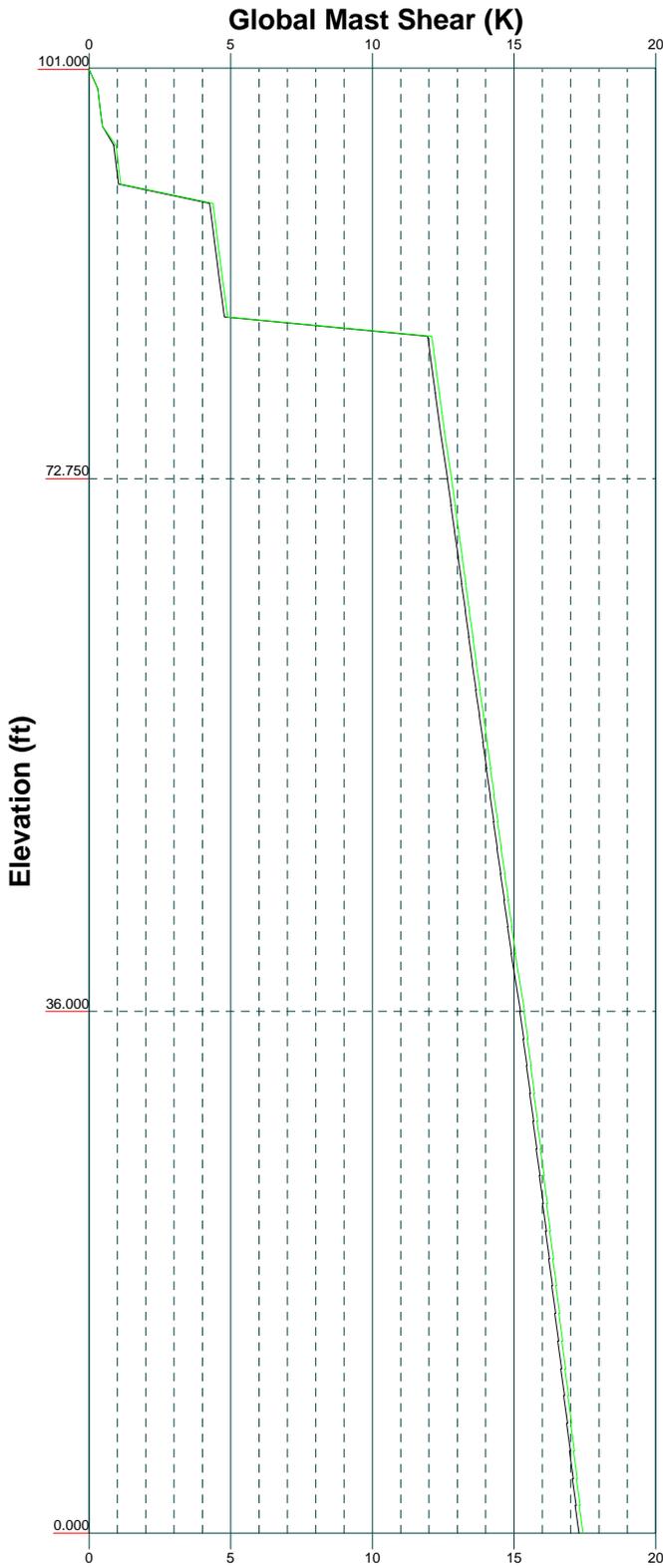
Job: **101655.005.01 - WINDSOR NORTH, CT (BU# 84287)**
 Project:
 Client: Crown Castle
 Drawn by: jbrock
 App'd:
 Code: TIA-222-G
 Date: 02/14/17
 Scale: NTS
 Path:
 Dwg No: E-1

Vx

Vz

Mx

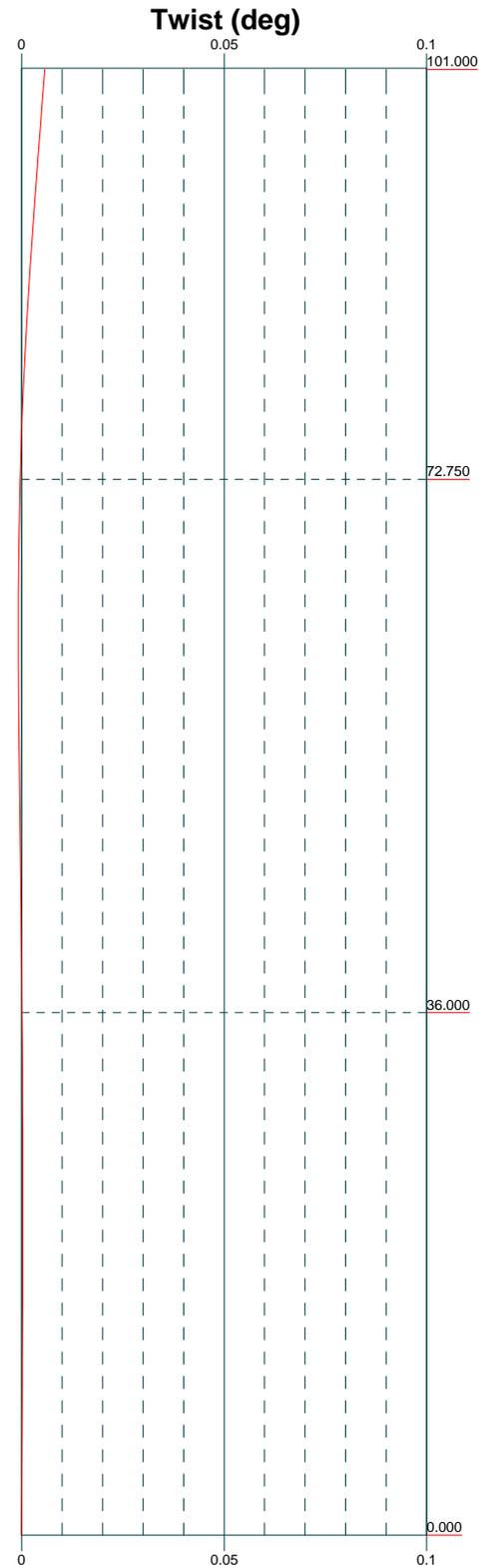
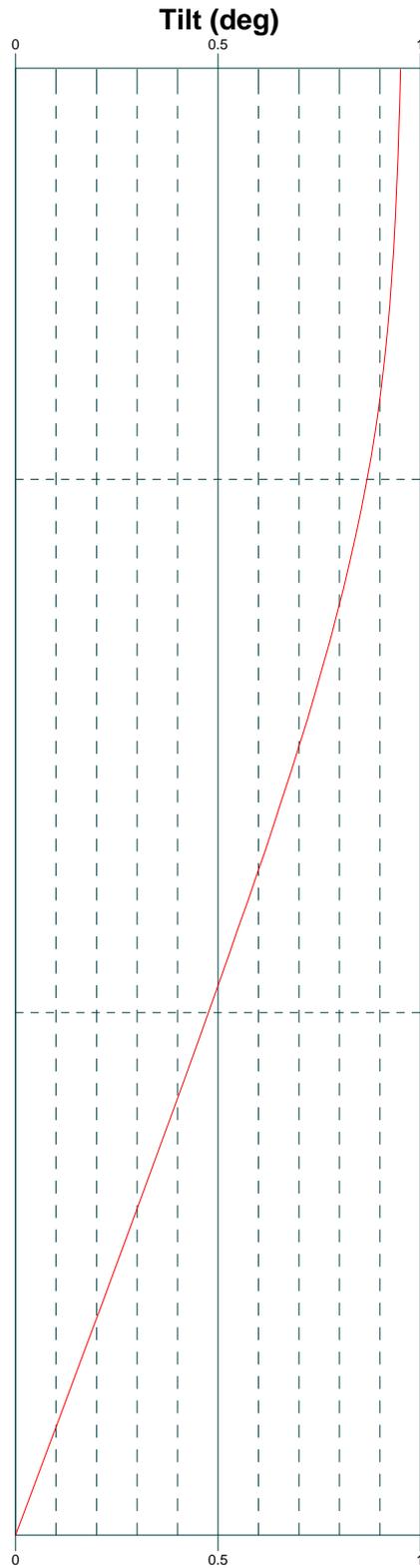
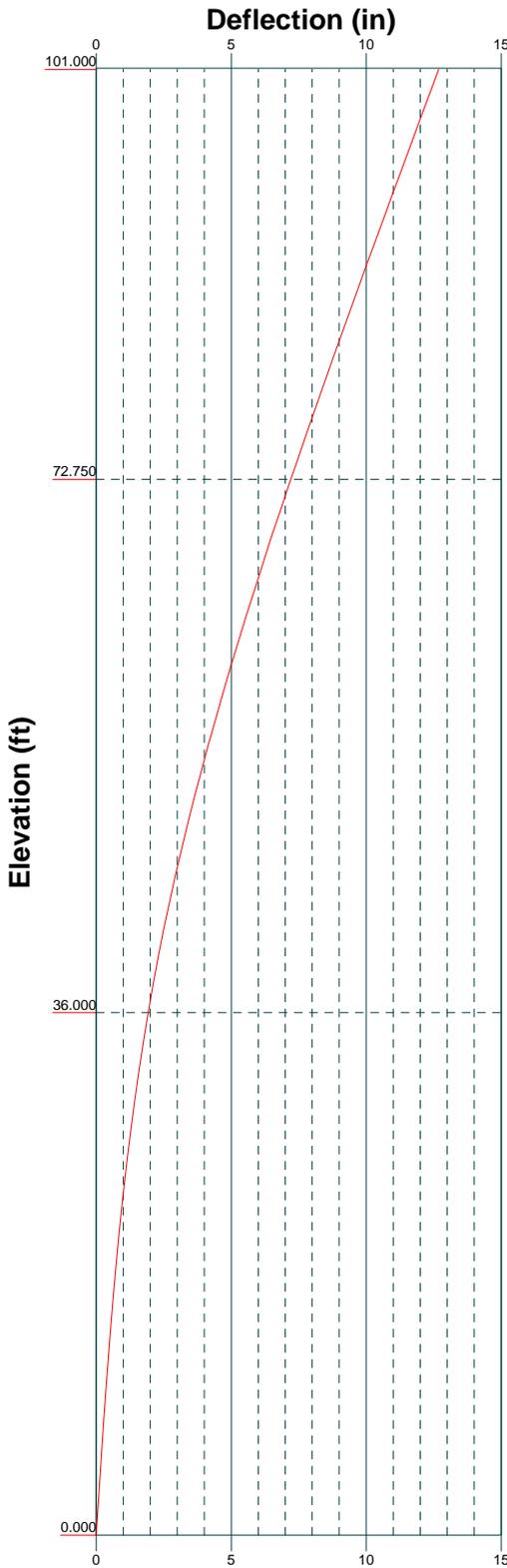
Mz



Elevation (ft)

B+T Group
 1717 S. Boulder, Suite 300
 Tulsa, OK 74119
 Phone: (918) 587-4630
 FAX: (918) 295-0265

Job: 101655.005.01 - WINDSOR NORTH, CT (BU# 84287)		
Project:		
Client: Crown Castle	Drawn by: Yathish	App'd:
Code: TIA-222-G	Date: 02/10/17	Scale: NTS
Path:		Dwg No. E-4



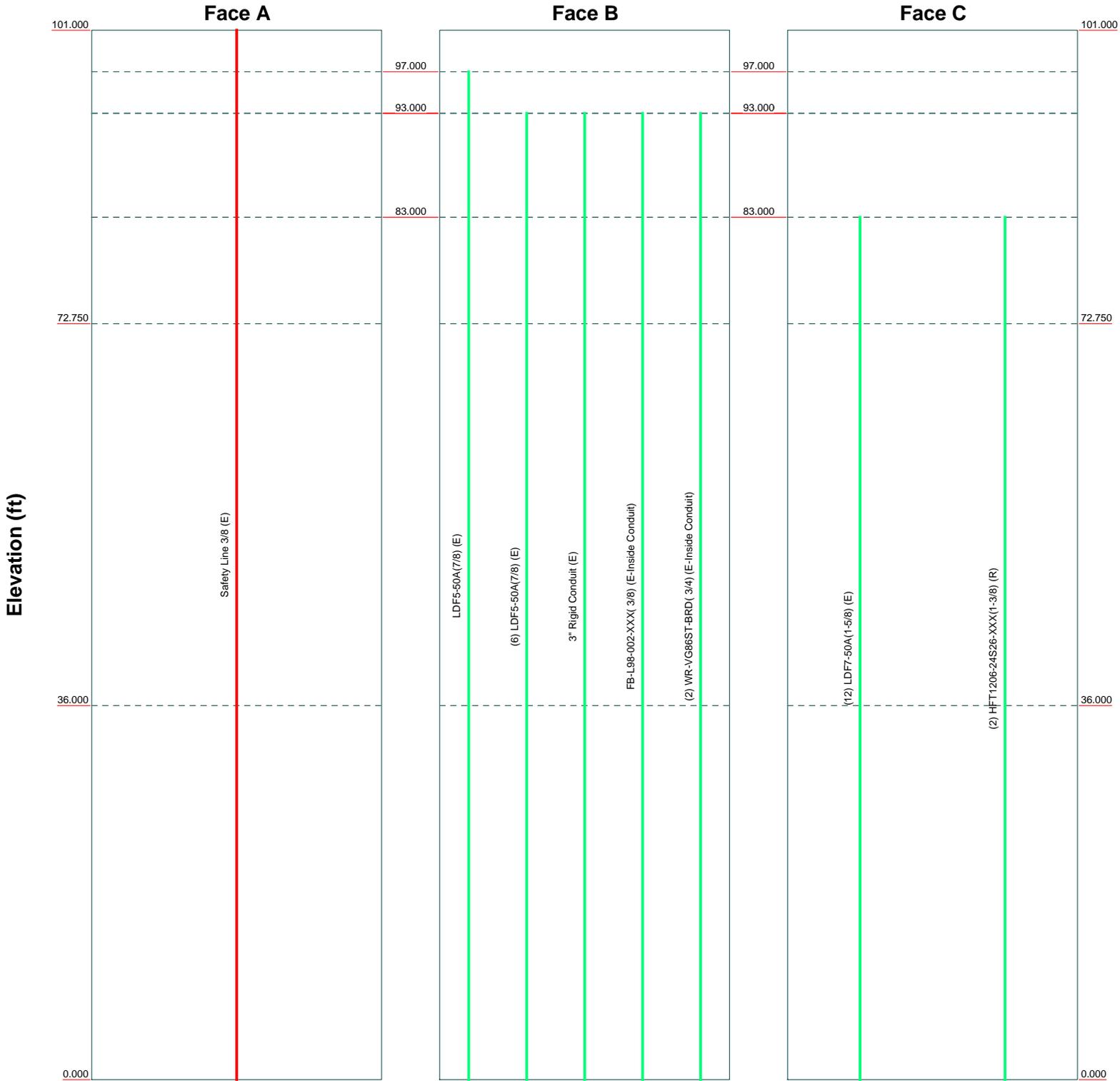
B+T Group
 1717 S. Boulder, Suite 300
 Tulsa, OK 74119
 Phone: (918) 587-4630
 FAX: (918) 295-0265

Job: 101655.005.01 - WINDSOR NORTH, CT (BU# 84287)		
Project:		
Client: Crown Castle	Drawn by: Yathish	App'd:
Code: TIA-222-G	Date: 02/10/17	Scale: NTS
Path:	Dwg No. E-5	

Feed Line Distribution Chart

0' - 101'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



B+T Group

1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 101655.005.01 - WINDSOR NORTH, CT (BU# 84287)		
Project:		
Client: Crown Castle	Drawn by: Yathish	App'd:
Code: TIA-222-G	Date: 02/10/17	Scale: NTS
Path:	Dwg No. E-7	

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 1 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Tower Input Data

There is a pole section.

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

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 97 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.000 ft.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50.000 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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 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 	<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="background-color: #e0e0e0;">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	101.000-72.750	28.250	3.250	18	20.000	25.481	0.188	0.750	A607-65 (65 ksi)
L2	72.750-36.000	40.000	4.000	18	24.475	32.236	0.250	1.000	A607-65 (65 ksi)

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	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

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	36.000-0.000	40.000		18	30.960	38.720	0.250	1.000	A607-65 (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	20.309	11.791	584.741	7.033	10.160	57.553	1170.251	5.897	3.190	17.013
	25.874	15.053	1216.669	8.979	12.944	93.992	2434.939	7.528	4.155	22.158
L2	25.493	19.223	1425.278	8.600	12.434	114.632	2852.431	9.613	3.868	15.471
	32.733	25.381	3280.682	11.355	16.376	200.336	6565.681	12.693	5.234	20.934
L3	32.226	24.368	2903.497	10.902	15.728	184.611	5810.815	12.186	5.009	20.036
	39.317	30.526	5707.566	13.657	19.670	290.170	11422.642	15.266	6.375	25.499

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 101.000-72.75 0				1	1	1			
L2 72.750-36.000				1	1	1			
L3 36.000-0.000				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 klf
*_*_*_*_ Safety Line 3/8 (E) *_*_*_*_	A	Surface Ar (CaAa)	101.000 - 0.000	1	1	-0.100 -0.100	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight klf
LDF5-50A(7/8) (E)	B	No	Inside Pole	97.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000
*_*_*_*_ LDF5-50A(7/8) (E)	B	No	Inside Pole	93.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000

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	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
3" Rigid Conduit (E)	B	No	Inside Pole	93.000 - 0.000	1	No Ice	0.000	0.003
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.003
FB-L98-002-XXX(3/8) (E-Inside Conduit)	B	No	Inside Pole	93.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (E-Inside Conduit)	B	No	Inside Pole	93.000 - 0.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
*_*_*_* LDF7-50A(1-5/8) (E)	C	No	Inside Pole	83.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
HFT1206-24S26-XXX(1 -3/8) (R)	C	No	Inside Pole	83.000 - 0.000	2	No Ice	0.000	0.002
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.002
*_*_*_* *_*_*_*								

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	101.000-72.750	A	0.000	0.000	1.059	0.000	0.006
		B	0.000	0.000	0.000	0.000	0.138
		C	0.000	0.000	0.000	0.000	0.134
L2	72.750-36.000	A	0.000	0.000	1.378	0.000	0.008
		B	0.000	0.000	0.000	0.000	0.248
		C	0.000	0.000	0.000	0.000	0.481
L3	36.000-0.000	A	0.000	0.000	1.350	0.000	0.008
		B	0.000	0.000	0.000	0.000	0.243
		C	0.000	0.000	0.000	0.000	0.471

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	101.000-72.750	A	2.202	0.000	0.000	13.500	0.000	0.202
		B		0.000	0.000	0.000	0.000	0.138
		C		0.000	0.000	0.000	0.000	0.134
L2	72.750-36.000	A	2.101	0.000	0.000	17.562	0.000	0.263
		B		0.000	0.000	0.000	0.000	0.248
		C		0.000	0.000	0.000	0.000	0.481
L3	36.000-0.000	A	1.882	0.000	0.000	16.475	0.000	0.237
		B		0.000	0.000	0.000	0.000	0.243
		C		0.000	0.000	0.000	0.000	0.471

Feed Line Center of Pressure

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 4 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L1	101.000-72.750	-0.053	-0.017	-0.474	-0.154
L2	72.750-36.000	-0.053	-0.017	-0.504	-0.164
L3	36.000-0.000	-0.053	-0.017	-0.511	-0.166

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	12	Safety Line 3/8	72.75 - 101.00	1.0000	1.0000
L2	12	Safety Line 3/8	36.00 - 72.75	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 _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Strobe (E-Per Photo)	C	None		0.000	101.500	No Ice	4.500	3.000	0.020
						1/2" Ice	4.770	3.237	0.058
						1" Ice	5.048	3.481	0.100
*_*_*_* ANT450D6-9 (E)	C	From Leg	6.000 0.000 0.000	0.000	97.000	No Ice	2.862	2.862	0.176
						1/2" Ice	4.370	4.370	0.200
						1" Ice	5.878	5.878	0.224
Side Arm Mount [SO 303-1] (E)	C	From Leg	3.000 0.000 0.000	0.000	97.000	No Ice	2.240	5.320	0.115
						1/2" Ice	3.190	7.690	0.159
						1" Ice	4.140	10.060	0.202
*_*_*_* 800 10121 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	93.000	No Ice	5.388	4.600	0.066
						1/2" Ice	5.813	5.351	0.114
						1" Ice	6.234	6.046	0.168
800 10121 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	93.000	No Ice	5.388	4.600	0.066
						1/2" Ice	5.813	5.351	0.114
						1" Ice	6.234	6.046	0.168
800 10121 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	93.000	No Ice	5.388	4.600	0.066
						1/2" Ice	5.813	5.351	0.114
						1" Ice	6.234	6.046	0.168
(2) LGP21401 (E)	A	From Leg	4.000 0.000 0.000	0.000	93.000	No Ice	1.104	0.207	0.014
						1/2" Ice	1.239	0.274	0.021
						1" Ice	1.381	0.348	0.030
(2) LGP21401 (E)	B	From Leg	4.000 0.000 0.000	0.000	93.000	No Ice	1.104	0.207	0.014
						1/2" Ice	1.239	0.274	0.021
						1" Ice	1.381	0.348	0.030
(2) LGP21401 (E)	C	From Leg	4.000 0.000	0.000	93.000	No Ice	1.104	0.207	0.014
						1/2" Ice	1.239	0.274	0.021

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			Vert						
			ft	ft	°	ft	ft ²	ft ²	K
			ft						
DC6-48-60-18-8F (E)	A	From Leg	0.000		0.000	93.000	1" Ice	0.348	0.030
			4.000				No Ice	0.917	0.019
			0.000				1/2" Ice	1.458	0.037
			0.000				1" Ice	1.643	0.057
HPA-65R-BUU-H8 w/ Mount Pipe (P)	A	From Leg	4.000		0.000	93.000	No Ice	9.582	0.100
			0.000				1/2" Ice	13.899	0.196
			0.000				1" Ice	14.587	0.303
			0.000				No Ice	13.213	0.100
HPA-65R-BUU-H8 w/ Mount Pipe (P)	B	From Leg	4.000		0.000	93.000	1/2" Ice	11.052	0.196
			0.000				1" Ice	14.587	0.303
			0.000				No Ice	13.213	0.100
			0.000				1/2" Ice	13.899	0.196
HPA-65R-BUU-H6 w/ Mount Pipe (P)	C	From Leg	4.000		0.000	93.000	1" Ice	12.496	0.303
			0.000				No Ice	9.895	0.077
			0.000				1/2" Ice	10.470	0.158
			0.000				1" Ice	11.010	0.248
RRUS 11 (P)	A	From Leg	4.000		0.000	93.000	No Ice	1.187	0.048
			0.000				1/2" Ice	2.992	0.068
			0.000				1" Ice	3.207	0.092
			0.000				No Ice	2.784	0.048
RRUS 11 (P)	B	From Leg	4.000		0.000	93.000	1/2" Ice	1.334	0.068
			0.000				1" Ice	3.207	0.092
			-2.000				No Ice	2.784	0.048
			0.000				1/2" Ice	2.992	0.068
RRUS 11 (P)	C	From Leg	4.000		0.000	93.000	1" Ice	1.490	0.092
			0.000				No Ice	2.784	0.048
			0.000				1/2" Ice	2.992	0.068
			0.000				1" Ice	3.207	0.092
(2) 860 10025 (P)	C	From Leg	4.000		0.000	93.000	No Ice	0.121	0.001
			0.000				1/2" Ice	0.196	0.003
			0.000				1" Ice	0.259	0.005
			0.000				No Ice	0.142	0.001
(2) 860 10025 (P)	A	From Leg	4.000		0.000	93.000	1/2" Ice	0.173	0.003
			0.000				1" Ice	0.259	0.005
			0.000				No Ice	0.142	0.001
			0.000				1/2" Ice	0.196	0.003
(2) 860 10025 (P)	B	From Leg	4.000		0.000	93.000	1" Ice	0.231	0.005
			0.000				No Ice	0.142	0.001
			0.000				1/2" Ice	0.196	0.003
			0.000				1" Ice	0.259	0.005
RRUS 32 B2 (P)	A	From Leg	4.000		0.000	93.000	No Ice	1.668	0.053
			0.000				1/2" Ice	2.953	0.074
			0.000				1" Ice	3.182	0.098
			0.000				No Ice	2.731	0.053
RRUS 32 B2 (P)	B	From Leg	4.000		0.000	93.000	1/2" Ice	1.855	0.074
			0.000				1" Ice	3.182	0.098
			0.000				No Ice	2.731	0.053
			0.000				1/2" Ice	2.953	0.074
RRUS 32 B2 (P)	C	From Leg	4.000		0.000	93.000	1" Ice	2.049	0.098
			0.000				No Ice	2.731	0.053
			0.000				1/2" Ice	2.953	0.074
			0.000				1" Ice	3.182	0.098
Side Arm Mount [SO 102-3] (E-Mount Attachment)	C	None			0.000	93.000	No Ice	3.000	0.081
							1/2" Ice	3.480	0.111
							1" Ice	3.960	0.141
							No Ice	5.640	0.339
T-Arm Mount [TA 702-3] (E)	C	None			0.000	93.000	1/2" Ice	6.550	0.429
							1" Ice	7.460	0.519
							No Ice	9.831	0.052
							1/2" Ice	10.400	0.145
*_**_*	A	From Leg	4.000		0.000	83.000	1" Ice	12.269	0.246
			0.000				No Ice	9.831	0.052
			0.000				1/2" Ice	10.400	0.145
			0.000				1" Ice	10.933	0.246
(2) LPA-80063/6CF w/ Mount Pipe (E)	B	From Leg	4.000		0.000	83.000	No Ice	10.215	0.052
			0.000				1/2" Ice	11.384	0.145
			0.000				1" Ice	12.269	0.246
			0.000				No Ice	9.831	0.052
(2) LPA-80063/6CF w/ Mount Pipe (E)	C	From Leg	4.000		0.000	83.000	1/2" Ice	11.384	0.145
			0.000				1" Ice	12.269	0.246
			0.000				No Ice	9.831	0.052
			0.000				1/2" Ice	10.400	0.145
(3) SBNHH-1D65B w/	A	From Leg	4.000		0.000	83.000	1" Ice	12.269	0.246
			0.000				No Ice	8.397	0.066
			0.000				1/2" Ice	10.400	0.145
			0.000				1" Ice	10.933	0.246

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 6 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			Vert						
			ft	ft	°	ft	ft ²	ft ²	K
			ft						
Mount Pipe (R)			0.000			1/2" Ice	8.960	8.260	0.135
			0.000			1" Ice	9.490	9.170	0.212
(3) SBNHH-1D65B w/ Mount Pipe (R)	B	From Leg	4.000	0.000	83.000	No Ice	8.397	7.071	0.066
			0.000			1/2" Ice	8.960	8.260	0.135
			0.000			1" Ice	9.490	9.170	0.212
(3) SBNHH-1D65B w/ Mount Pipe (R)	C	From Leg	4.000	0.000	83.000	No Ice	8.397	7.071	0.066
			0.000			1/2" Ice	8.960	8.260	0.135
			0.000			1" Ice	9.490	9.170	0.212
PCS B25 RRH4x30 (R)	A	From Leg	4.000	0.000	83.000	No Ice	2.200	1.742	0.055
			0.000			1/2" Ice	2.393	1.920	0.075
			0.000			1" Ice	2.593	2.106	0.099
PCS B25 RRH4x30 (R)	B	From Leg	4.000	0.000	83.000	No Ice	2.200	1.742	0.055
			0.000			1/2" Ice	2.393	1.920	0.075
			0.000			1" Ice	2.593	2.106	0.099
PCS B25 RRH4x30 (R)	C	From Leg	4.000	0.000	83.000	No Ice	2.200	1.742	0.055
			0.000			1/2" Ice	2.393	1.920	0.075
			0.000			1" Ice	2.593	2.106	0.099
RRH4X45-AWS4 B66 (R)	A	From Leg	4.000	0.000	83.000	No Ice	2.660	1.586	0.064
			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
RRH4X45-AWS4 B66 (R)	B	From Leg	4.000	0.000	83.000	No Ice	2.660	1.586	0.064
			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
RRH4X45-AWS4 B66 (R)	C	From Leg	4.000	0.000	83.000	No Ice	2.660	1.586	0.064
			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
B13 RRH 4X30 (R)	A	From Leg	4.000	0.000	83.000	No Ice	2.055	1.320	0.056
			0.000			1/2" Ice	2.241	1.475	0.073
			0.000			1" Ice	2.433	1.638	0.093
B13 RRH 4X30 (R)	B	From Leg	4.000	0.000	83.000	No Ice	2.055	1.320	0.056
			0.000			1/2" Ice	2.241	1.475	0.073
			0.000			1" Ice	2.433	1.638	0.093
B13 RRH 4X30 (R)	C	From Leg	4.000	0.000	83.000	No Ice	2.055	1.320	0.056
			0.000			1/2" Ice	2.241	1.475	0.073
			0.000			1" Ice	2.433	1.638	0.093
RC2DC-3315-PF-48 (R)	A	From Leg	4.000	0.000	83.000	No Ice	3.792	2.512	0.032
			0.000			1/2" Ice	4.044	2.725	0.063
			0.000			1" Ice	4.303	2.945	0.099
RC2DC-3315-PF-48 (R)	B	From Leg	4.000	0.000	83.000	No Ice	3.792	2.512	0.032
			0.000			1/2" Ice	4.044	2.725	0.063
			0.000			1" Ice	4.303	2.945	0.099
Platform Mount [LP 304-1] (E-14' Per Photo)	C	None		0.000	83.000	No Ice	17.460	17.460	1.349
						1/2" Ice	22.440	22.440	1.625
						1" Ice	27.420	27.420	1.900

*_*_*_*

Load Combinations

Comb. No.	Description
1	Dead Only

<p>tnxTower</p> <p>B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	<p>Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)</p>	<p>Page 7 of 14</p>
	<p>Project</p>	<p>Date 13:16:12 02/10/17</p>
	<p>Client Crown Castle</p>	<p>Designed by Yathish</p>

Comb. No.	Description
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	101 - 72.75	Pole	Max Tension	36	0.000	-0.000	0.000
			Max. Compression	26	-22.279	1.893	-0.298
			Max. Mx	20	-6.128	136.585	1.418
			Max. My	14	-6.108	-0.716	-138.420

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 8 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	72.75 - 36	Pole	Max. Vy	20	-12.404	136.585	1.418
			Max. Vx	14	12.549	-0.716	-138.420
			Max. Torque	24			2.149
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.879	2.370	-0.218
			Max. Mx	20	-10.623	628.564	5.933
			Max. My	14	-10.610	-5.169	-635.616
			Max. Vy	20	-14.914	628.564	5.933
L3	36 - 0	Pole	Max. Vx	14	15.059	-5.169	-635.616
			Max. Torque	12			-1.280
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.758	2.759	-0.100
			Max. Mx	20	-17.095	1274.751	10.891
			Max. My	14	-17.095	-10.096	-1287.515
			Max. Vy	20	-17.292	1274.751	10.891
			Max. Vx	14	17.432	-10.096	-1287.515
		Max. Torque	12			-1.277	

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	38	39.758	2.582	4.473
	Max. H _x	20	17.113	17.274	0.121
	Max. H _z	3	12.835	0.121	17.414
	Max. M _x	2	1286.035	0.121	17.414
	Max. M _z	8	1271.679	-17.274	-0.121
	Max. Torsion	24	1.270	8.742	15.141
	Min. Vert	7	12.835	-14.899	8.602
	Min. H _x	8	17.113	-17.274	-0.121
	Min. H _z	14	17.113	-0.121	-17.414
	Min. M _x	14	-1287.515	-0.121	-17.414
	Min. M _z	20	-1274.751	17.274	0.121
	Min. Torsion	12	-1.274	-8.742	-15.141

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	14.261	0.000	0.000	0.604	1.253	-0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	17.113	-0.121	-17.414	-1286.035	13.169	-1.179
0.9 Dead+1.6 Wind 0 deg - No Ice	12.835	-0.121	-17.414	-1276.750	12.676	-1.153
1.2 Dead+1.6 Wind 30 deg - No Ice	17.113	8.532	-15.020	-1107.854	-624.997	-0.774
0.9 Dead+1.6 Wind 30 deg - No Ice	12.835	8.532	-15.020	-1099.885	-620.794	-0.759
1.2 Dead+1.6 Wind 60 deg - No Ice	17.113	14.899	-8.602	-632.599	-1095.300	-0.162
0.9 Dead+1.6 Wind 60 deg - No Ice	12.835	14.899	-8.602	-628.134	-1087.633	-0.161

<p>tnxTower</p> <p>B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	<p>Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)</p>	<p>Page 9 of 14</p>
	<p>Project</p>	<p>Date 13:16:12 02/10/17</p>
	<p>Client Crown Castle</p>	<p>Designed by Yathish</p>

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Ice						
1.2 Dead+1.6 Wind 90 deg - No Ice	17.113	17.274	0.121	12.375	-1271.679	0.495
0.9 Dead+1.6 Wind 90 deg - No Ice	12.835	17.274	0.121	12.087	-1262.712	0.481
1.2 Dead+1.6 Wind 120 deg - No Ice	17.113	15.020	8.812	654.204	-1106.888	1.021
0.9 Dead+1.6 Wind 120 deg - No Ice	12.835	15.020	8.812	649.191	-1099.128	0.997
1.2 Dead+1.6 Wind 150 deg - No Ice	17.113	8.742	15.141	1120.923	-645.119	1.274
0.9 Dead+1.6 Wind 150 deg - No Ice	12.835	8.742	15.141	1112.476	-640.753	1.245
1.2 Dead+1.6 Wind 180 deg - No Ice	17.113	0.121	17.414	1287.515	-10.096	1.184
0.9 Dead+1.6 Wind 180 deg - No Ice	12.835	0.121	17.414	1277.846	-10.400	1.159
1.2 Dead+1.6 Wind 210 deg - No Ice	17.113	-8.532	15.020	1109.335	628.070	0.775
0.9 Dead+1.6 Wind 210 deg - No Ice	12.835	-8.532	15.020	1100.982	623.069	0.760
1.2 Dead+1.6 Wind 240 deg - No Ice	17.113	-14.899	8.602	634.081	1098.372	0.158
0.9 Dead+1.6 Wind 240 deg - No Ice	12.835	-14.899	8.602	629.231	1089.908	0.157
1.2 Dead+1.6 Wind 270 deg - No Ice	17.113	-17.274	-0.121	-10.891	1274.751	-0.501
0.9 Dead+1.6 Wind 270 deg - No Ice	12.835	-17.274	-0.121	-10.989	1264.986	-0.487
1.2 Dead+1.6 Wind 300 deg - No Ice	17.113	-15.020	-8.812	-652.721	1109.960	-1.022
0.9 Dead+1.6 Wind 300 deg - No Ice	12.835	-15.020	-8.812	-648.093	1101.403	-0.998
1.2 Dead+1.6 Wind 330 deg - No Ice	17.113	-8.742	-15.141	-1119.440	648.193	-1.270
0.9 Dead+1.6 Wind 330 deg - No Ice	12.835	-8.742	-15.141	-1111.378	643.029	-1.241
1.2 Dead+1.0 Ice+1.0 Temp	39.758	-0.000	0.000	0.100	2.759	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	39.758	-0.041	-5.141	-388.424	7.126	-0.802
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	39.758	2.511	-4.432	-334.216	-185.208	-0.502
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	39.758	4.390	-2.535	-190.427	-327.161	-0.068
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	39.758	5.093	0.041	4.413	-380.698	0.384
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	39.758	4.432	2.606	198.098	-331.473	0.734
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	39.758	2.582	4.473	338.731	-192.677	0.886
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	39.758	0.041	5.141	388.630	-1.498	0.801
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	39.758	-2.511	4.432	334.423	190.839	0.502
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	39.758	-4.390	2.535	190.633	332.795	0.067
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	39.758	-5.093	-0.041	-4.211	386.332	-0.385
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	39.758	-4.432	-2.606	-197.898	337.104	-0.734
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	39.758	-2.582	-4.473	-338.529	198.305	-0.887

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 10 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	14.261	-0.026	-3.726	-273.649	3.753	-0.251
Dead+Wind 30 deg - Service	14.261	1.825	-3.214	-235.665	-132.262	-0.165
Dead+Wind 60 deg - Service	14.261	3.188	-1.840	-134.371	-232.497	-0.034
Dead+Wind 90 deg - Service	14.261	3.696	0.026	3.093	-270.092	0.105
Dead+Wind 120 deg - Service	14.261	3.214	1.885	139.893	-234.975	0.217
Dead+Wind 150 deg - Service	14.261	1.870	3.240	239.373	-136.555	0.270
Dead+Wind 180 deg - Service	14.261	0.026	3.726	274.878	-1.204	0.251
Dead+Wind 210 deg - Service	14.261	-1.825	3.214	236.895	134.812	0.165
Dead+Wind 240 deg - Service	14.261	-3.188	1.840	135.600	235.047	0.034
Dead+Wind 270 deg - Service	14.261	-3.696	-0.026	-1.864	272.642	-0.105
Dead+Wind 300 deg - Service	14.261	-3.214	-1.885	-138.664	237.525	-0.217
Dead+Wind 330 deg - Service	14.261	-1.870	-3.240	-238.144	139.105	-0.270

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-14.261	0.000	0.000	14.261	0.000	0.000%
2	-0.121	-17.113	-17.414	0.121	17.113	17.414	0.000%
3	-0.121	-12.835	-17.414	0.121	12.835	17.414	0.000%
4	8.532	-17.113	-15.020	-8.532	17.113	15.020	0.000%
5	8.532	-12.835	-15.020	-8.532	12.835	15.020	0.000%
6	14.899	-17.113	-8.602	-14.899	17.113	8.602	0.000%
7	14.899	-12.835	-8.602	-14.899	12.835	8.602	0.000%
8	17.274	-17.113	0.121	-17.274	17.113	-0.121	0.000%
9	17.274	-12.835	0.121	-17.274	12.835	-0.121	0.000%
10	15.020	-17.113	8.812	-15.020	17.113	-8.812	0.000%
11	15.020	-12.835	8.812	-15.020	12.835	-8.812	0.000%
12	8.742	-17.113	15.141	-8.742	17.113	-15.141	0.000%
13	8.742	-12.835	15.141	-8.742	12.835	-15.141	0.000%
14	0.121	-17.113	17.414	-0.121	17.113	-17.414	0.000%
15	0.121	-12.835	17.414	-0.121	12.835	-17.414	0.000%
16	-8.532	-17.113	15.020	8.532	17.113	-15.020	0.000%
17	-8.532	-12.835	15.020	8.532	12.835	-15.020	0.000%
18	-14.899	-17.113	8.602	14.899	17.113	-8.602	0.000%
19	-14.899	-12.835	8.602	14.899	12.835	-8.602	0.000%
20	-17.274	-17.113	-0.121	17.274	17.113	0.121	0.000%
21	-17.274	-12.835	-0.121	17.274	12.835	0.121	0.000%
22	-15.020	-17.113	-8.812	15.020	17.113	8.812	0.000%
23	-15.020	-12.835	-8.812	15.020	12.835	8.812	0.000%
24	-8.742	-17.113	-15.141	8.742	17.113	15.141	0.000%
25	-8.742	-12.835	-15.141	8.742	12.835	15.141	0.000%
26	0.000	-39.758	0.000	0.000	39.758	-0.000	0.000%
27	-0.041	-39.758	-5.141	0.041	39.758	5.141	0.000%
28	2.511	-39.758	-4.432	-2.511	39.758	4.432	0.000%
29	4.390	-39.758	-2.535	-4.390	39.758	2.535	0.000%
30	5.093	-39.758	0.041	-5.093	39.758	-0.041	0.000%
31	4.432	-39.758	2.606	-4.432	39.758	-2.606	0.000%
32	2.582	-39.758	4.473	-2.582	39.758	-4.473	0.000%
33	0.041	-39.758	5.141	-0.041	39.758	-5.141	0.000%
34	-2.511	-39.758	4.432	2.511	39.758	-4.432	0.000%
35	-4.390	-39.758	2.535	4.390	39.758	-2.535	0.000%
36	-5.093	-39.758	-0.041	5.093	39.758	0.041	0.000%
37	-4.432	-39.758	-2.606	4.432	39.758	2.606	0.000%
38	-2.582	-39.758	-4.473	2.582	39.758	4.473	0.000%
39	-0.026	-14.261	-3.726	0.026	14.261	3.726	0.000%

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job	101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page	11 of 14
	Project		Date	13:16:12 02/10/17
	Client	Crown Castle		Designed by

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
40	1.825	-14.261	-3.214	-1.825	14.261	3.214	0.000%
41	3.188	-14.261	-1.840	-3.188	14.261	1.840	0.000%
42	3.696	-14.261	0.026	-3.696	14.261	-0.026	0.000%
43	3.214	-14.261	1.885	-3.214	14.261	-1.885	0.000%
44	1.870	-14.261	3.240	-1.870	14.261	-3.240	0.000%
45	0.026	-14.261	3.726	-0.026	14.261	-3.726	0.000%
46	-1.825	-14.261	3.214	1.825	14.261	-3.214	0.000%
47	-3.188	-14.261	1.840	3.188	14.261	-1.840	0.000%
48	-3.696	-14.261	-0.026	3.696	14.261	0.026	0.000%
49	-3.214	-14.261	-1.885	3.214	14.261	1.885	0.000%
50	-1.870	-14.261	-3.240	1.870	14.261	3.240	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	5	0.0000001	0.00004716
3	Yes	4	0.0000001	0.00084113
4	Yes	5	0.0000001	0.00028022
5	Yes	5	0.0000001	0.00011565
6	Yes	5	0.0000001	0.00029492
7	Yes	5	0.0000001	0.00012237
8	Yes	4	0.0000001	0.00075041
9	Yes	4	0.0000001	0.00043751
10	Yes	5	0.0000001	0.00032487
11	Yes	5	0.0000001	0.00013411
12	Yes	5	0.0000001	0.00028738
13	Yes	5	0.0000001	0.00011728
14	Yes	4	0.0000001	0.00099579
15	Yes	4	0.0000001	0.00057826
16	Yes	5	0.0000001	0.00031264
17	Yes	5	0.0000001	0.00012940
18	Yes	5	0.0000001	0.00029462
19	Yes	5	0.0000001	0.00012145
20	Yes	4	0.0000001	0.00032172
21	Yes	4	0.0000001	0.00018308
22	Yes	5	0.0000001	0.00029232
23	Yes	5	0.0000001	0.00011933
24	Yes	5	0.0000001	0.00033308
25	Yes	5	0.0000001	0.00013736
26	Yes	4	0.0000001	0.00003399
27	Yes	5	0.0000001	0.00031919
28	Yes	5	0.0000001	0.00039279
29	Yes	5	0.0000001	0.00039993
30	Yes	5	0.0000001	0.00029092
31	Yes	5	0.0000001	0.00044856
32	Yes	5	0.0000001	0.00041612
33	Yes	5	0.0000001	0.00031623
34	Yes	5	0.0000001	0.00043448
35	Yes	5	0.0000001	0.00041100
36	Yes	5	0.0000001	0.00029656
37	Yes	5	0.0000001	0.00042464
38	Yes	5	0.0000001	0.00047440
39	Yes	4	0.0000001	0.00008117
40	Yes	4	0.0000001	0.00012142

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 12 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

41	Yes	4	0.00000001	0.00014111
42	Yes	4	0.00000001	0.00003783
43	Yes	4	0.00000001	0.00018599
44	Yes	4	0.00000001	0.00013167
45	Yes	4	0.00000001	0.00007579
46	Yes	4	0.00000001	0.00017576
47	Yes	4	0.00000001	0.00014270
48	Yes	4	0.00000001	0.00003289
49	Yes	4	0.00000001	0.00013556
50	Yes	4	0.00000001	0.00020293

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 72.75	12.682	50	0.949	0.006
L2	76 - 36	7.808	50	0.885	0.003
L3	40 - 0	2.313	50	0.525	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
101.500	Strobe	50	12.682	0.949	0.006	55185
97.000	ANT450D6-9	50	11.885	0.945	0.005	55185
93.000	800 10121 w/ Mount Pipe	50	11.091	0.939	0.005	34490
83.000	(2) LPA-80063/6CF w/ Mount Pipe	50	9.135	0.916	0.003	15329

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 72.75	59.440	24	4.436	0.026
L2	76 - 36	36.611	24	4.154	0.012
L3	40 - 0	10.849	24	2.464	0.004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
101.500	Strobe	24	59.440	4.436	0.026	12388
97.000	ANT450D6-9	24	55.708	4.418	0.024	12388
93.000	800 10121 w/ Mount Pipe	24	51.989	4.396	0.021	7742

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 101655.005.01 - WINDSOR NORTH, CT (BU# 842877)	Page 13 of 14
	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
83.000	(2) LPA-80063/6CF w/ Mount Pipe	24	42.827	4.294	0.015	3439

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio P _u /φP _n
	ft		ft	ft		in ²	K	K	
L1	101 - 72.75 (1)	TP25.481x20x0.188	28.250	0.000	0.0	14.677	-6.098	1004.400	0.006
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	40.000	0.000	0.0	24.765	-10.603	1725.600	0.006
L3	36 - 0 (3)	TP38.72x30.96x0.25	40.000	0.000	0.0	30.526	-17.094	1961.860	0.009

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{ux}	Ratio M _{ux} /φM _{ux}	M _{uy}	φM _{uy}	Ratio M _{uy} /φM _{uy}
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	101 - 72.75 (1)	TP25.481x20x0.188	138.992	509.514	0.273	0.000	509.514	0.000
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	638.793	1107.292	0.577	0.000	1107.292	0.000
L3	36 - 0 (3)	TP38.72x30.96x0.25	1293.558	1554.067	0.832	0.000	1554.067	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V _u	φV _n	Ratio V _u /φV _n	Actual T _u	φT _n	Ratio T _u /φT _n
	ft		K	K		kip-ft	kip-ft	
L1	101 - 72.75 (1)	TP25.481x20x0.188	12.621	502.202	0.025	1.276	1020.275	0.001
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	15.131	862.802	0.018	1.272	2217.292	0.001
L3	36 - 0 (3)	TP38.72x30.96x0.25	17.502	980.930	0.018	1.270	3111.933	0.000

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	Project	Date 13:16:12 02/10/17
	Client Crown Castle	Designed by Yathish

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{ux}	ϕM_{uy}	ϕV_n	ϕT_n			
L1	101 - 72.75 (1)	0.006	0.273	0.000	0.025	0.001	0.280	1.000	4.8.2 ✓
L2	72.75 - 36 (2)	0.006	0.577	0.000	0.018	0.001	0.583	1.000	4.8.2 ✓
L3	36 - 0 (3)	0.009	0.832	0.000	0.018	0.000	0.841	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	101 - 72.75	Pole	TP25.481x20x0.188	1	-6.098	1004.400	28.0	Pass	
L2	72.75 - 36	Pole	TP32.236x24.475x0.25	2	-10.603	1725.600	58.3	Pass	
L3	36 - 0	Pole	TP38.72x30.96x0.25	3	-17.094	1961.860	84.1	Pass	
							Summary		
							Pole (L3)	84.1	Pass
							RATING =	84.1	Pass

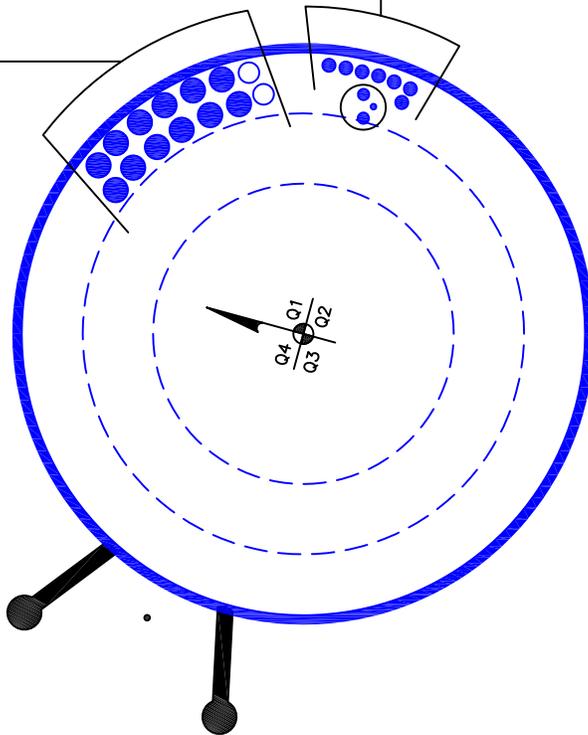
APPENDIX B
BASE LEVEL DRAWING



(INSTALLED-IN 3" CONDUIT)
(1) 3/8" TO 93 FT LEVEL
(2) 3/4" TO 93 FT LEVEL
(INSTALLED)
(6) 7/8" TO 93 FT LEVEL

(INSTALLED)
(1) 7/8" TO 97 FT LEVEL

(RESERVED)
(2) 1-3/8" TO 83 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 83 FT LEVEL



CLIMBING PEGS W/
SAFETY CLIMB

BUSINESS UNIT: 842877

APPENDIX C
ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: 842877

Site Name: WINDSOR NORTH, CT

App #: 375164 Revision # 2

Anchor Rod Data

Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, F_y :	75	ksi
Strength, F_u :	100	ksi
Bolt Circle:	48	in
Anchor Spacing:	6	in

Plate Data

W=Side:	46	in
Thick:	2.5	in
Grade:	55	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	38.72	in
Thick:	0.25	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, M_u :	1294	ft-kips
Factored Axial, P_u :	17	kips
Factored Shear, V_u :	17	kips

Anchor Rod Results

TIA G --> Max Rod ($C_u + V_u/\eta$): 112.1 Kips
 Axial Design Strength, $\Phi * F_u * A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 43.1% **Pass**

Base Plate Results

Base Plate Stress: 32.3 ksi
 PL Design Bending Strength, $\Phi * F_y$: 49.5 ksi
 Base Plate Stress Ratio: 65.3% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	26.33
Max PL Length:	26.33

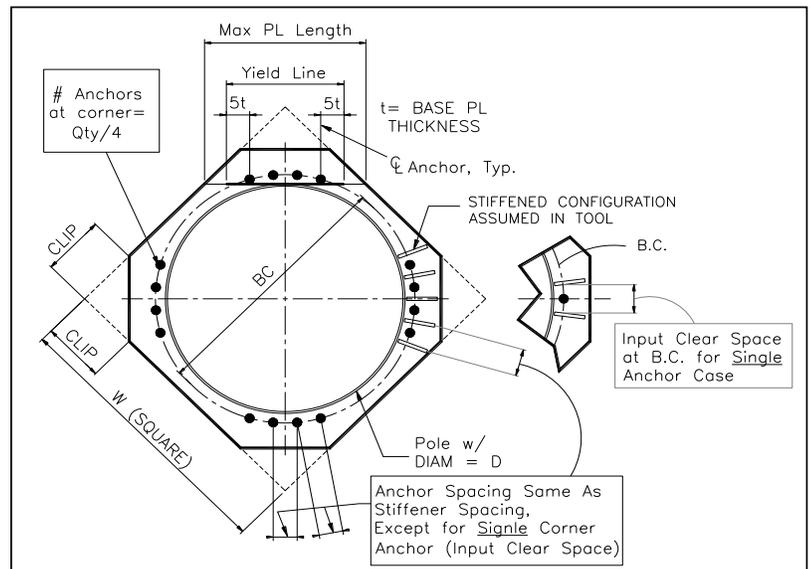
N/A - Unstiffened

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



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

BU:	842877
Site Name:	WINDSOR NORTH, CT
App Number:	375164 Revision # 2
Work Order:	1358486

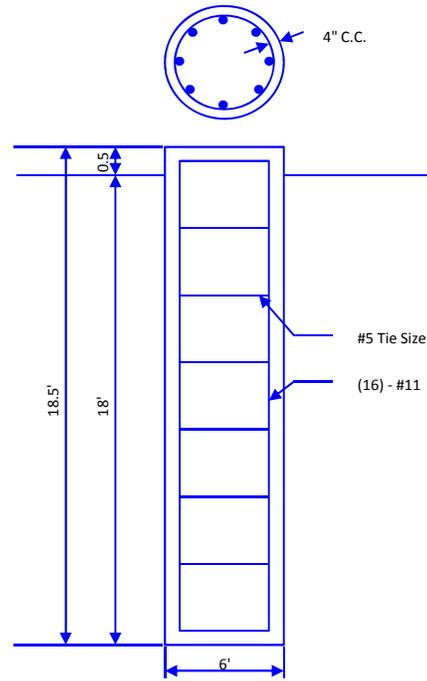


Monopole Drilled Pier

Input

Criteria	
TIA Revision:	G
ACI 318 Revision:	2008
Seismic Category:	B
Forces	
Compression	17 kips
Shear	17 kips
Moment	1294 k-ft
Swelling Force	0 kips
Foundation Dimensions	
Pier Diameter:	6 ft
Ext. above grade:	0.5 ft
Depth below grade:	18 ft
Material Properties	
Number of Rebar:	16
Rebar Size:	11
Tie Size	5
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	4 in

Soil Profile: Soil



Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Friction (ksf)	Ultimate Comp. Friction (ksf)	Ultimate Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	135			0	0	0	0	
2	1.5	3.5	5	135		34	0	0	0	0	
3	3	5	8	135		34	1	1	0	0	
4	7	8	15	75		34	1	1	0	0	
5	3	15	18	75		34	1.6	1.6	32		

Analysis Results

Soil Lateral Capacity	
Depth to Zero Shear:	4.72 ft
Max Moment, Mu:	1373.32 k-ft
Soil Safety Factor:	2.53
Safety Factor Req'd:	1.33
RATING:	52.6%

Soil Axial Capacity	
Skin Friction (k):	209.23 kips
End Bearing (k):	678.58 kips
Comp. Capacity (k), φCn:	887.81 kips
Comp. (k), Cu:	17.00 kips
RATING:	1.9%

Concrete/Steel Check	
Mu (from soil analysis)	1373.32 k-ft
φMn	3282.95 k-ft
RATING:	41.8%

rho provided	0.61
rho required	0.33 OK

Rebar Spacing	10.63
Spacing required	22.56 OK

Dev. Length required	12.95
Dev. Length provided	61.78 OK

Overall Foundation Rating: 52.6%



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5003

Windsor North
750 Rainbow Road
Windsor, CT 6095

March 8, 2017

Centerline Communications Project Number: 950006-043

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	13.78 %



March 8, 2017

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

Emissions Analysis for Site: **CT5003 – Windsor North**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **750 Rainbow Road, Windsor, 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 population 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 population 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.

Population 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 performed for the proposed AT&T Wireless antenna facility located at **750 Rainbow Road, Windsor, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
GSM	850 MHz	2	30
GSM	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	93
A	2	CCI HPA-65R-BUU-H6	93
B	1	Kathrein 800-10121	93
B	2	CCI HPA-65R-BUU-H8	93
C	1	Kathrein 800-10121	93
C	2	CCI HPA-65R-BUU-H8	93

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	8	240	4,942.88	2.96
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	3.61
Sector A Composite MPE%							6.57
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	8	240	4,942.88	2.96
Antenna B2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	4	240	6,229.75	4.30
Sector B Composite MPE%							7.26
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	8	240	4,942.88	2.96
Antenna C2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	4	240	6,229.75	4.30
Sector C Composite MPE%							7.26

Table 3: AT&T Emissions Levels



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sectors with the largest calculated MPE% is Sectors B&C. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	7.26 %
Windsor FD	0.49 %
Verizon Wireless	6.03 %
Site Total MPE %:	13.78 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	6.57 %
AT&T Sector B Total:	7.26 %
AT&T Sector C Total:	7.26 %
Site Total:	13.78 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sector with the largest calculated MPE% is Sector B&C.

AT&T _ Frequency Band / Technology (Sectors B&C)	# 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	93	3.98	850 MHz	567	0.70%
AT&T 1900 MHz (PCS) UMTS	2	816.81	93	7.76	1900 MHz (PCS)	1000	0.78%
AT&T 850 MHz GSM	2	418.91	93	3.98	850 MHz	567	0.70%
AT&T 1900 MHz (PCS) GSM	2	816.81	93	7.76	1900 MHz (PCS)	1000	0.78%
AT&T 700 MHz LTE	2	1,239.23	93	11.77	700 MHz	467	2.52%
AT&T 1900 MHz (PCS) LTE	2	1,875.65	93	17.82	1900 MHz (PCS)	1000	1.78%
						Total:	7.26%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	6.57 %
Sector B:	7.26 %
Sector C:	7.26 %
AT&T Maximum Total (per sector):	7.26 %
Site Total:	13.78 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **13.78 %** of the allowable FCC established general population 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.

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the printed name.

Scott Heffernan
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