July 19, 2018

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

Regarding:	Notice of Exempt Modification – Addition of 3 Antennas, Addition of 3 Remote Radios.
Property Address:	299 Sheffield Street, Waterbury, CT 06704
Applicant:	AT&T Mobility ("AT&T", Site # CT1125)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 158-foot monopole at the above-referenced address, latitude -41.59380556, longitude -73.0508333. Said monopole is owned by SBA Communications Corporation and the ground space is owned by Level Development Corporation. The existing equipment shelter is 12' x 20 totaling 350 square feet.

AT&T desires to modify its existing telecommunications facility by adding (3) Antennas and (3) remote Radios. The centerline height of said antennas is and will remain at 137 feet.

Please accept this application as notification pursuant to R.C.S.A. § 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.C.S.A. § 16-50j-73, a copy of this letter is being sent to Neil O'Leary the Town Mayor of Waterbury, Mr. E. Gil Graveline the town's Building Official and zoning Enforcement Officer. A copy of this letter is also being sent to SBA Communications Corporation, the owner of the structure on which AT&T is located.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's antennas and associated lines will be installed at the existing mount height of 137' atop the 158' Monopole tower.
2. The proposed modifications will not involve any changes to ground-space footprint and, therefore will not require an extension of the site boundary.

16 Esquire Road, Billerica, MA 01862 Phone 339-223-9828 Email: spike@empiretelecomm.com

3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Tower Engineering Solutions, Inc. dated July 16, 2018).

For the foregoing reasons AT&T respectfully requests that the proposed work will be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Scott Pike

Scott Pike
Site Acquisition Specialist
Phone- 339-223-9828
Empire Telecom
16 Esquire Road
Billerica, MA 01862
spike@empiretelecomm.com

Enclosures:

CC: Neil O' Leary, Town Mayor
E. Gill Graveline, Town Building Official
Carla Shorter, SBA, Tower Owner
Level Development Corporation

EMPIRE telecom

16 Esquire Road, Billerica, MA 01862 Phone 339-223-9828 Email: spike@empiretelecomm.com

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.

CITY OF WATERBURY

Information on the Property Records for the Municipality of Waterbury was last updated on 7/18/2018.

Parcel Information

Location:	293 SHEFFIELD ST	Property Use:	Vacant Land	Primary Use:	Residential
Unique ID:	004709830005	Map Block Lot:	0047-0983-0005	Acres:	0.16
490 Acres:	0.00	Zone:	RL	Volume / Page:	5764/ 155
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	Assessed Value

	Appraised Value	Assessed Value
Land	28,204	19,740
Buildings	0	0
Detached Outbuildings	0	0
Total	28,204	19,740

Owner's Information

Owner's Data
LEVEL DEVELOPMENT CORPORATION 293 SHEFFIELD ST WATERBURY, CT 06704

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
LEVEL DEVELOPMENT CORPORATION	5764	0155	05/19/2006	Quit Claim	No	$0
CRONAN THOMAS	0000	0000	10/03/1994		No	$112,000

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
2017.1195	Electrical	05/12/2017		Open Permit	INSTALL 2 SECURITY CAMERAS

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
2015.3990	Comm Renovations	12/18/2015		Closed	INSTALL SECURITY SYSTEM & CCTV
2015.0047	Commercial Demolition	01/08/2015	01/28/2015	Closed	DECONSTRUCT CELL TOWER/REMOVE ANTENNAS & EQUPMENT
2014.2415	Residential Demolition	09/26/2014	09/25/2014	Closed	DEMO
2014.1191	Comm Renovations	05/21/2014		Closed	ADD COAX JUMPERS AS NEEDED TO RECONF
2014.1192	Comm Renovations	05/21/2014		Closed	ADD DC BRANCH CIRCUITS FIBERJUMPER FOR NEW RADIO
0665E	Roof	05/01/2009		Expired Permit	ROOF

Information Published With Permission From The Assessor

WIRELESS COMMUNICATIONS FACILITY
CT1125 - LTE 4C/5C/6C FIRSTNET
NORTH WATERBURY
299 SHEFFIELD STREET
WATERBURY, CT 06704

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

   A. AT EACH ANTENNA SECTOR:
   - INSTALL (1) KATHREIN (800-10965) ANTENNA AT POS.3 (TOTAL OF 3)
   - INSTALL (1) B14 4478 (TOTAL OF 3)
   - REMOVE (3) OF (6) EXISTING TMA'S FOR (3) NEW LOWBAND COMBINERS AT POS.2

   B. AT THE EQUIPMENT SHELTER
   - IN LTE RACK, INSTALL 2nd XMU WITH IDLe
   - REPLACE EXISTING (2) DUS WITH (2) 5216
   - RELOCATE EXISTING MOUNTED RRU RACK. (WITHOUT RRUS)
   - DECOMMISSION AND REMOVE EXISTING (3) 1900 RRUS.
   - INSTALL NEW MOUNTED RRU RACK TO HOLD EXISTING/PROPOSED RRUS. (TOTAL OF 9)
   - RE-INSTALL EXISTING (3) 850 RRUS IN THE PROPOSED RACK
   - INSTALL (3) RRUS-E2 IN PROPOSED RACK (ABOVE)
   - INSTALL (3) RRUS-12 IN PROPOSED RACK (BELOW)
   - INSTALL (12) SURGE ARRESTORS (2 PER RRU)
   - REMOVE AND REPLACE (6) OF (12) EXISTING DIPLEXERS FOR (3) NEW LOW-BAND COMBINERS

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.

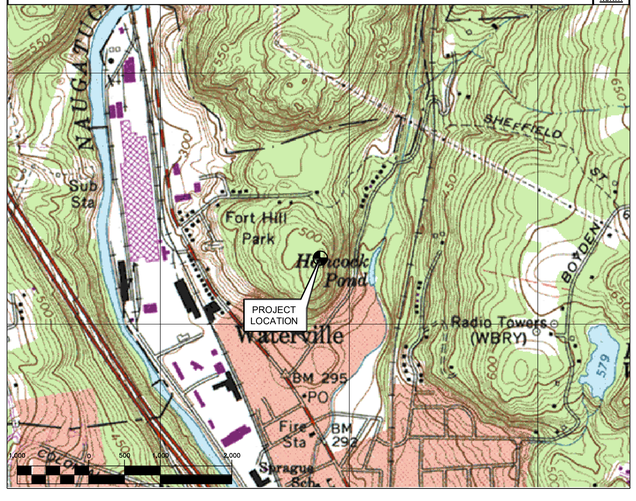
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 299 SHEFFIELD STREET, WATERBURY, 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.	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN.	9.06 MI
5.	MERGE ONTO I-691 W VIA EXIT 18 TOWARD MERIDEN/WATERBURY.	7.98 MI
6.	MERGE ONTO I-84 W VIA EXIT 1 ON THE LEFT TOWARD WATERBURY/DANBURY.	8.72 MI
7.	MERGE ONTO CT-8 N/JAMES H DARCEY MEMORIAL HWY N VIA EXIT 20 TOWARD TORRINGTON.	2.32 MI
8.	TAKE THE HUNTINGDON AVE EXIT, EXIT 36, TOWARD COLONIAL AVE.	0.18 MI
9.	TURN RIGHT ONTO HUNTINGDON AVE.	0.26 MI
10.	TAKE THE 2ND LEFT ONTO THOMASTON AVE.	0.35 MI
11.	TURN RIGHT ONTO SHEFFIELD ST.	0.57 MI
12.	299 SHEFFIELD ST, WATERBURY, CT 06704, IS ON THE LEFT.	

VICINITY MAP

SCALE: 1" = 1000'



PROJECT INFORMATION

AT&T SITE NUMBER:	CT1125
AT&T SITE NAME:	NORTH WATERBURY
SITE ADDRESS:	299 SHEFFIELD STREET WATERBURY, CT 06704
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T PACE ID NUMBER:	PACE JOB 1 - MRCTB022392 PACE JOB 2 - MRCTB022769 PACE JOB 3 - MRCTB026615
AT&T FA LOCATION CODE:	10035415
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-35'-38.67" N LONGITUDE: 73°-03'-01.99" W GROUND ELEVATION: ±512' 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 ANTENNA SCHEDULE	0
C-1	PLANS AND ELEVATION	0
C-2	ANTENNA CONFIGURATION DETAILS	0
C-3	DETAILS	0
C-4	DETAILS	0
E-1	SCHEMATIC DIAGRAM AND NOTES	0
E-2	WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAW/JR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NORTH WATERBURY
CT1125 - LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

TITLE SHEET

T-1

Sheet No. 1 of 9

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 95–115 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

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

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

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

PAINT NOTES

PAINTING SCHEDULE:

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

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI–SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH–PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON–PETROLEUM–BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

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

APPLICATION:

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

COMPLETED WORK:

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

PROPOSED ANTENNA AND APPURTENANCE SCHEDULE

ANTENNAS								APPURTENANCES			
SECTOR	POSITION	AZIMUTH	DOWNTILT (M)	MAKE & MODEL	RAD CENTER (AGL)	TECHNOLOGY	STATUS	TMA (QTY)	DIPLEXER/TRIPLEXER (QTY)	RRU (QTY)	FEEDER TYPE
ALPHA	POS. 1	143°	0°	KMW (AM–X–CD–16–65–00T–RET)	137'	UMTS 850	REMAIN	CCI: DTMABP7819VG12A TWIN PCS W/700–850BP (1)	PWAV: LGP21901 (2)		$1\frac{5}{8}$ø COAX (2)
ALPHA	POS. 2	23°	0°	CCI (OPA–65R–LCUU–H6)	137'	LTE WCS/850/700DE	REMAIN		DBC0061F1V51–2 (2)	RRUS–E2 (1), RRUS–12 (1), RRUS–32 (1)	FEEDER AND DC POWER, $1\frac{5}{8}$ø COAX (2)
ALPHA	POS. 3	23°	0°	KATHREIN (800–10965)	137'	LTE B14 700	NEW			B14 4478 (1)	FEEDER AND DC POWER
ALPHA	POS. 4	23°	0°	QUINTEL (QS66512–2)	137'	LTE 700BC/PCS	REMAIN			RRUS–11 (1), RRUS–32 B2 (1)	FEEDER AND DC POWER
BETA	POS. 1	263°	0°	KMW (AM–X–CD–16–65–00T–RET)	137'	UMTS 850	REMAIN	CCI: DTMABP7819VG12A TWIN PCS W/700–850BP (1)	PWAV: LGP21901 (2)		$1\frac{5}{8}$ø COAX (2)
BETA	POS. 2	143°	0°	CCI (OPA–65R–LCUU–H6)	137'	LTE WCS/850/700DE	REMAIN		DBC0061F1V51–2 (2)	RRUS–E2 (1), RRUS–12 (1), RRUS–32 (1)	FEEDER AND DC POWER, $1\frac{5}{8}$ø COAX (2)
BETA	POS. 3	143°	0°	KATHREIN (800–10965)	137'	LTE B14 700	NEW			B14 4478 (1)	FEEDER AND DC POWER
BETA	POS. 4	143°	0°	QUINTEL (QS66512–2)	137'	LTE 700BC/PCS	REMAIN			RRUS–11 (1), RRUS–32 B2 (1)	FEEDER AND DC POWER
GAMMA	POS. 1	23°	0°	KMW (AM–X–CD–16–65–00T–RET)	137'	UMTS 850	REMAIN	CCI: DTMABP7819VG12A TWIN PCS W/700–850BP (1)	PWAV: LGP21901 (2)		$1\frac{5}{8}$ø COAX (2)
GAMMA	POS. 2	263°	0°	CCI (OPA–65R–LCUU–H6)	137'	LTE WCS/850/700DE	REMAIN		DBC0061F1V51–2 (2)	RRUS–E2 (1), RRUS–12 (1), RRUS–32 (1)	FEEDER AND DC POWER, $1\frac{5}{8}$ø COAX (2)
GAMMA	POS. 3	263°	0°	KATHREIN (800–10965)	137'	LTE B14 700	NEW			B14 4478 (1)	FEEDER AND DC POWER
GAMMA	POS. 4	263°	0°	QUINTEL (QS66512–2)	137'	LTE 700BC/PCS	REMAIN			RRUS–11 (1), RRUS–32 B2 (1)	FEEDER AND DC POWER

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAWJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT ★ CAMILO ... 27517 LICENSED PROFESSIONAL ENGINEER

at&t

EMPIRE telecom

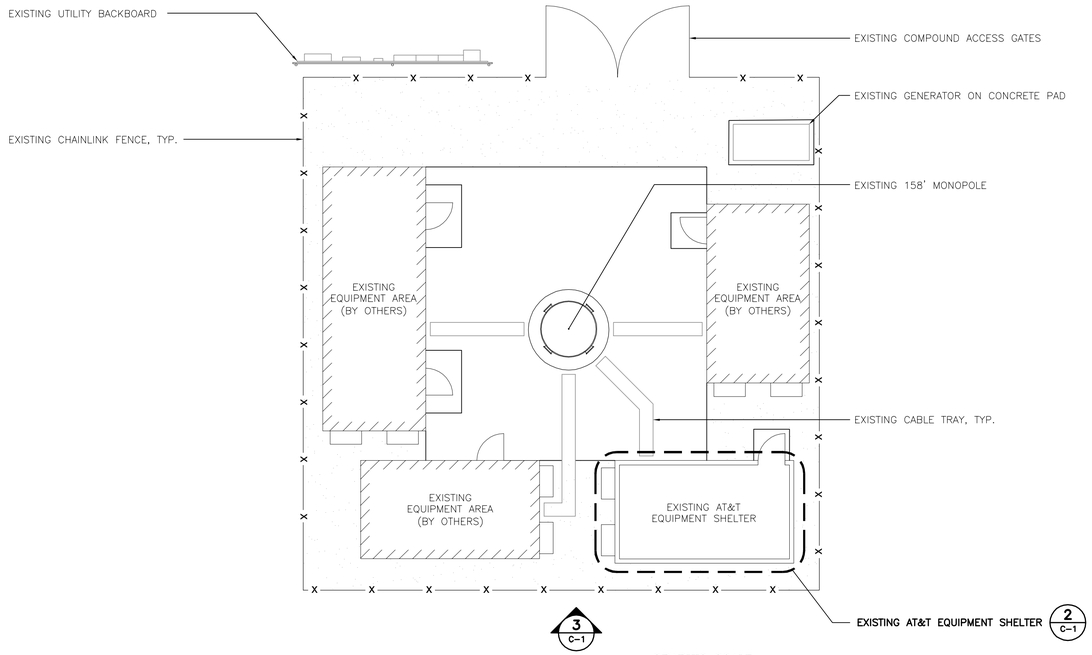
CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NORTH WATERBURY
CT1125 – LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE

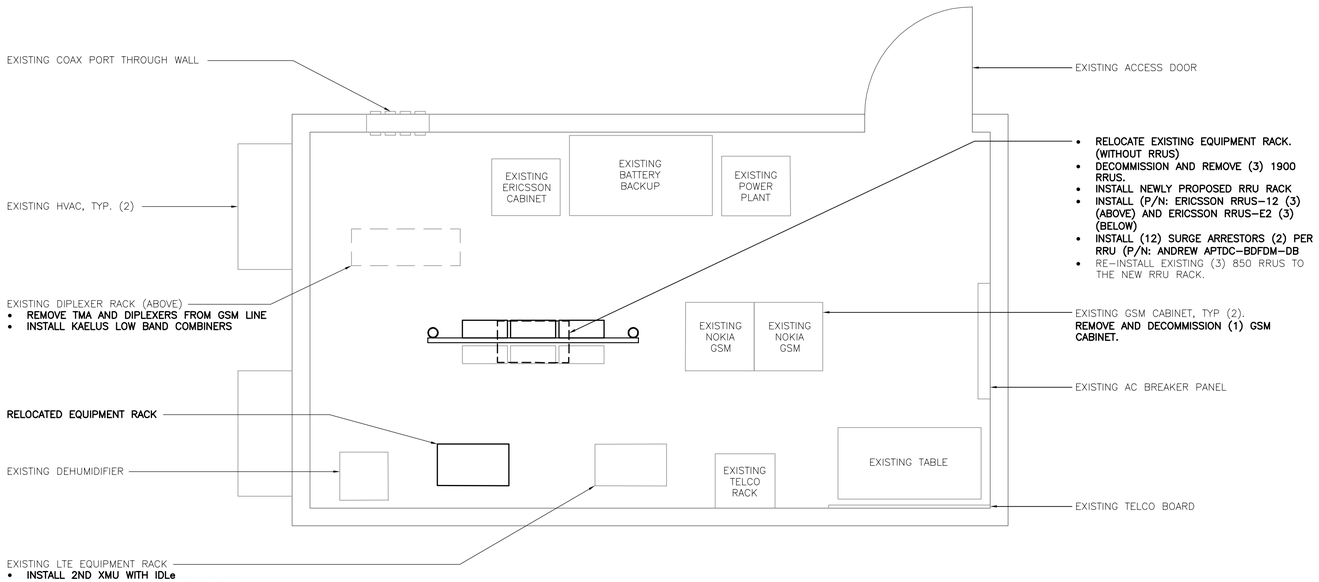
N–1



1 C-1 **PARTIAL SITE PLAN**
SCALE: 1/8" = 1'- 0"

NORTH

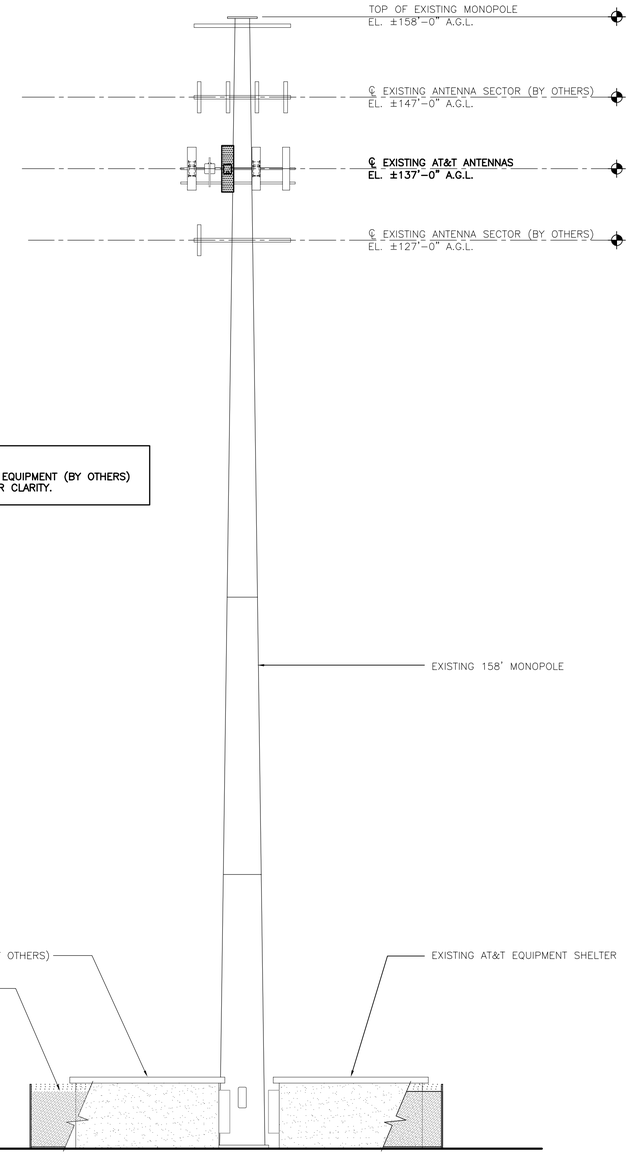
GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1/8 inch = 1 ft.



2 C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 1" = 2'-0"

TRUE NORTH

2 0 1 2 4 8
(IN FEET)
1 inch = 2 ft.



NOTE:
SOME ANTENNA EQUIPMENT (BY OTHERS) NOT SHOWN FOR CLARITY.

3 C-1 **PARTIAL SOUTH ELEVATION - PROPOSED**
SCALE: 1" = 10'

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAW/JR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

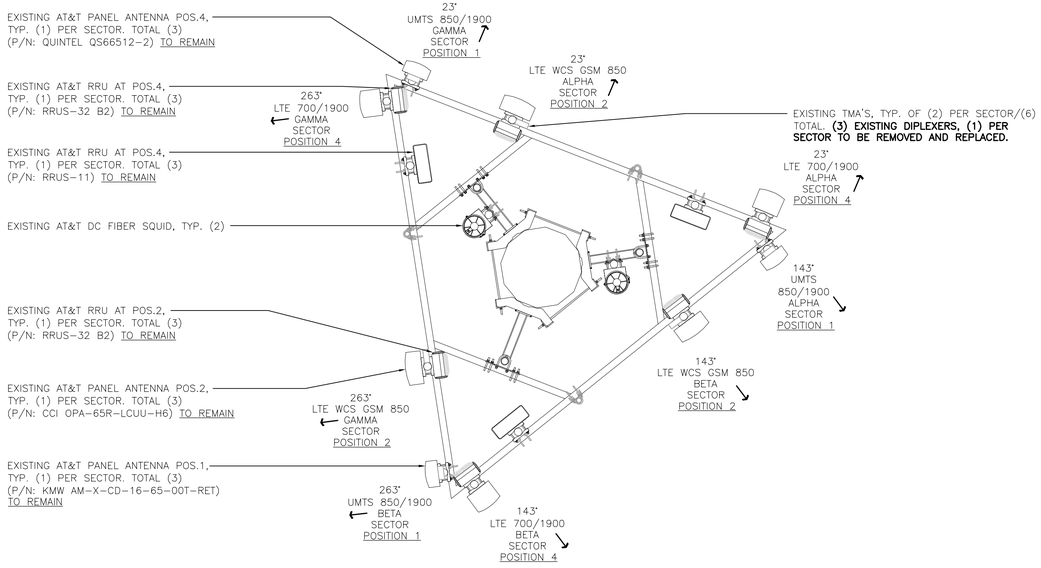
CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NORTH WATERBURY
CT1125 - LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

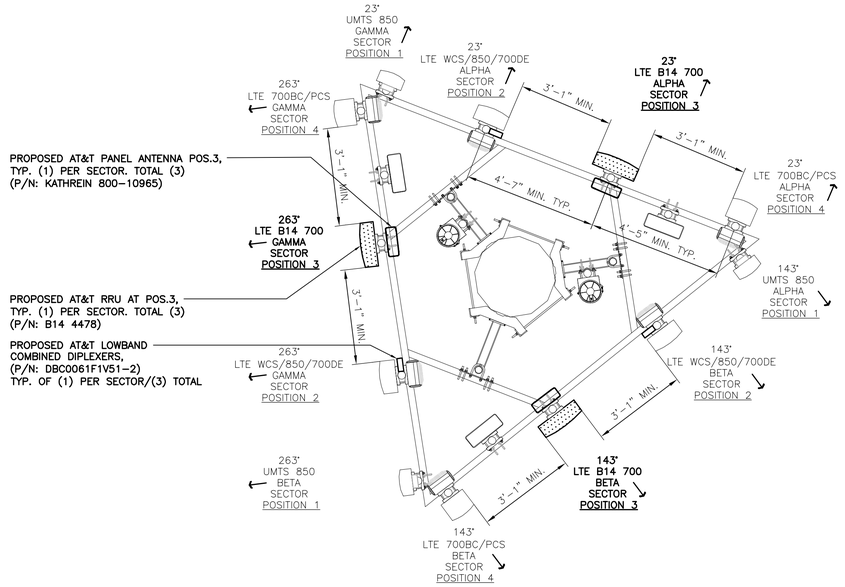
PLANS AND ELEVATION

C-1
Sheet No. 3 of 9



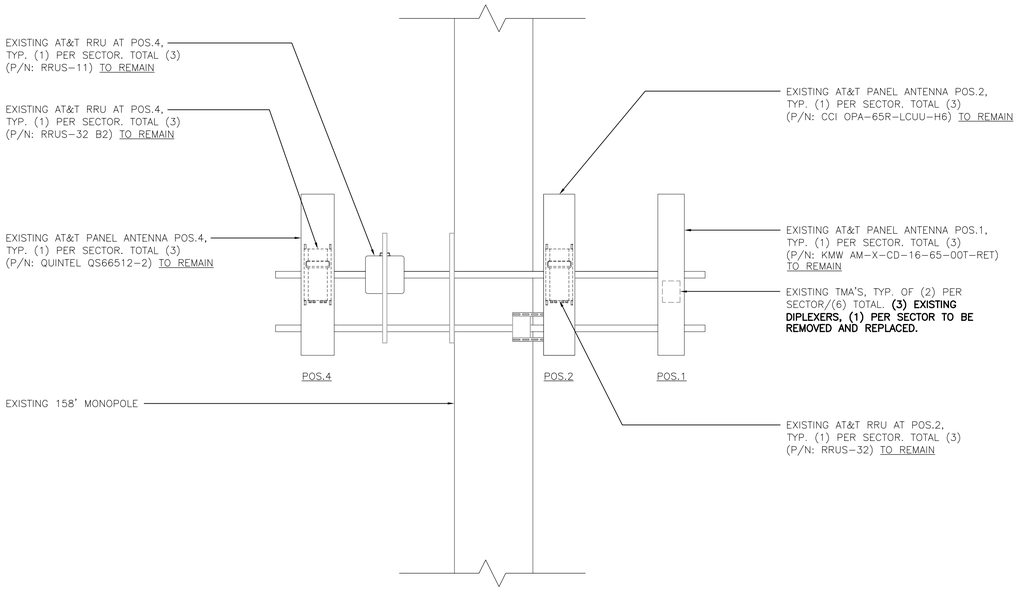
1 C-2 **EXISTING ANTENNA PLAN**
SCALE: 3/8" = 1'-0"

TRUE NORTH



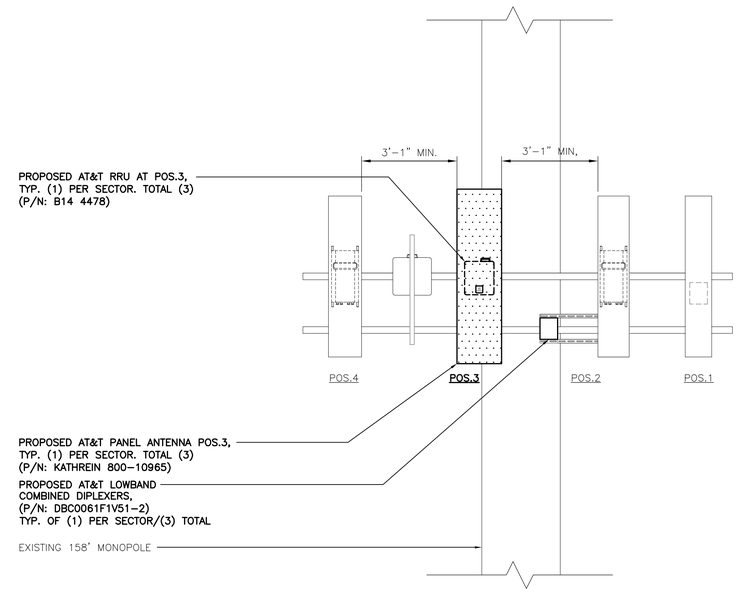
2 C-2 **PROPOSED ANTENNA PLAN**
SCALE: 3/8" = 1'-0"

TRUE NORTH



TYPICAL SECTOR

1A C-2 **EXISTING ANTENNA ELEVATION**
SCALE: 3/8" = 1'-0"



TYPICAL SECTOR

2A C-2 **ANTENNA ELEVATION - PROPOSED**
SCALE: 3/8" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAWJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — DANIEL M. DIBARTOLOMEO — 21521 — REGISTERED PROFESSIONAL ENGINEER

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

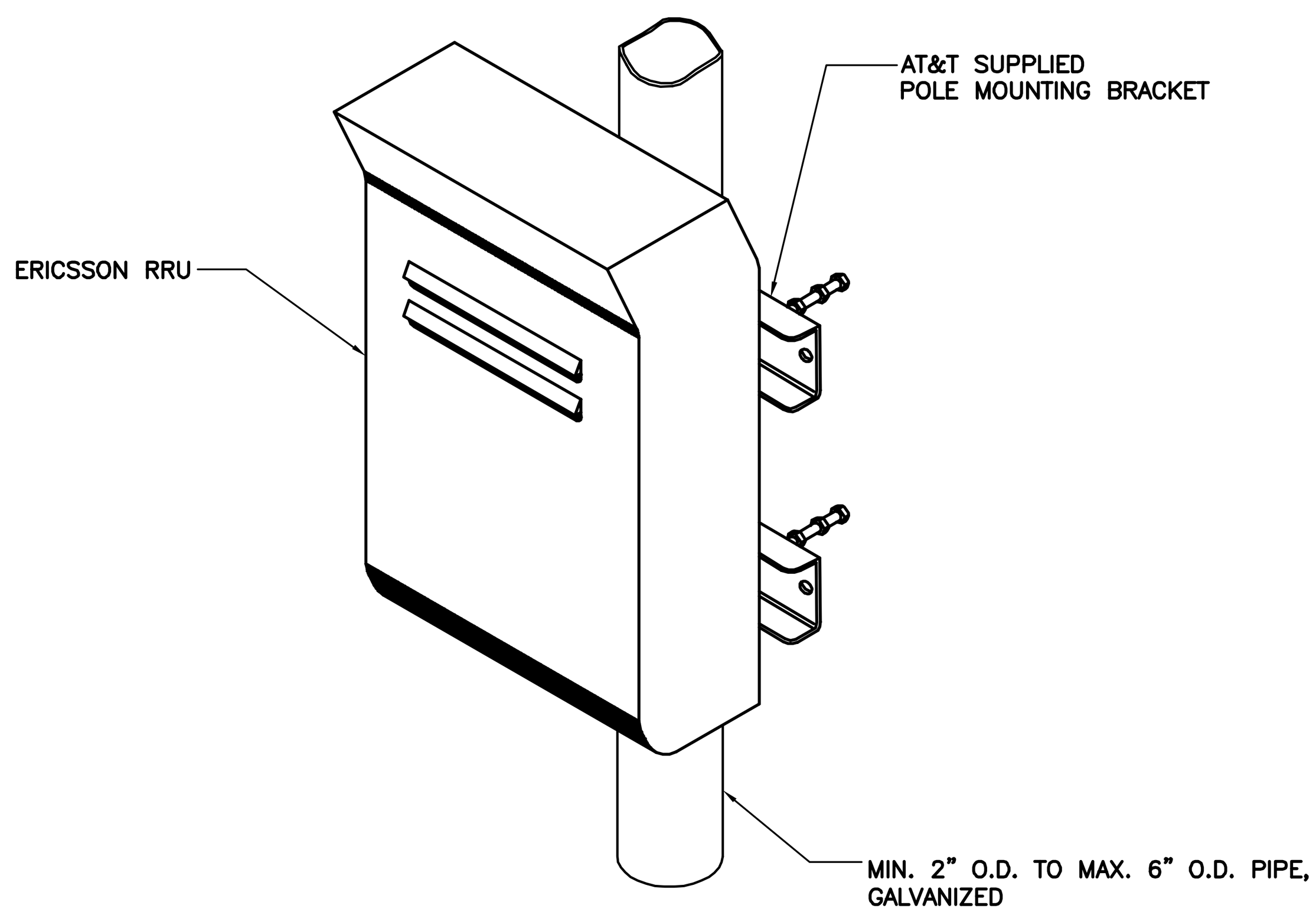
NORTH WATERBURY
CT1125 - LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

ANTENNA CONFIGURATION DETAILS

C-2

Sheet No. 4 of 9

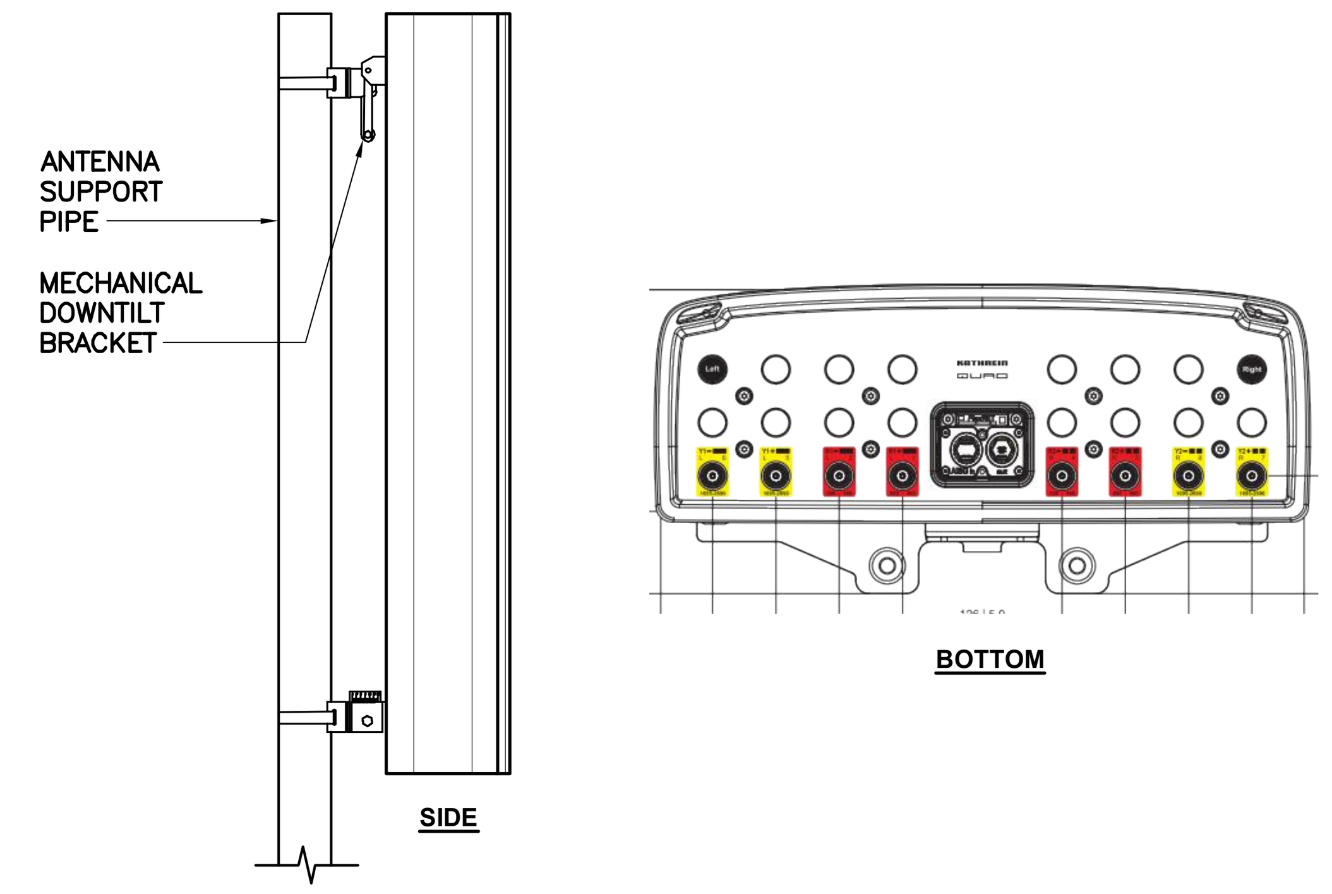


ISOMETRIC VIEW

NOTES:

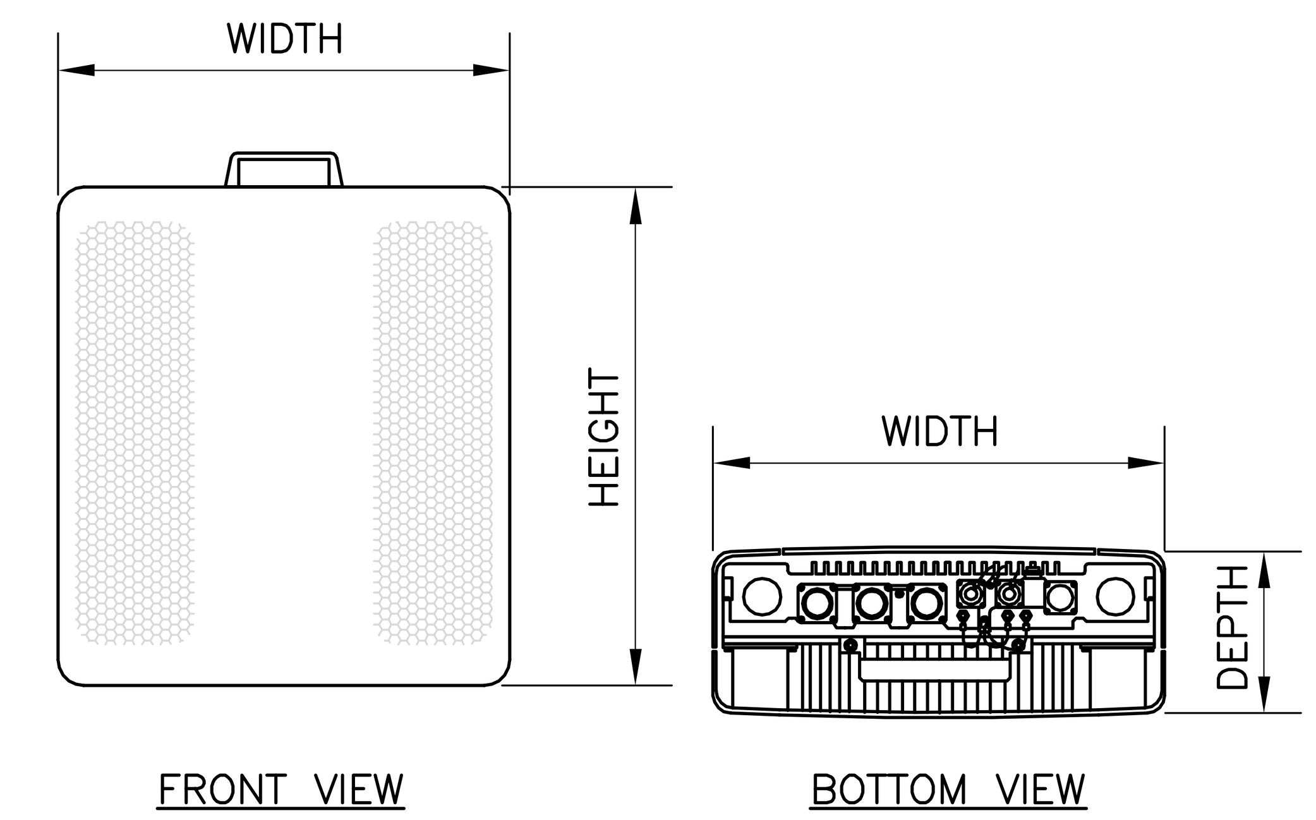
1. AT&T SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 (C–3) TYPICAL RRUS MOUNTING DETAILS
NOT TO SCALE



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KATHREIN MODEL: 800–10965	78.7"L x 20"W x 6.9"D	108.6 LBS.

2 (C–3) PROPOSED ANTENNA DETAIL
NOT TO SCALE



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS–12	20.4"L x 18.5"W x 7.5"D	59.52 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS–E2	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

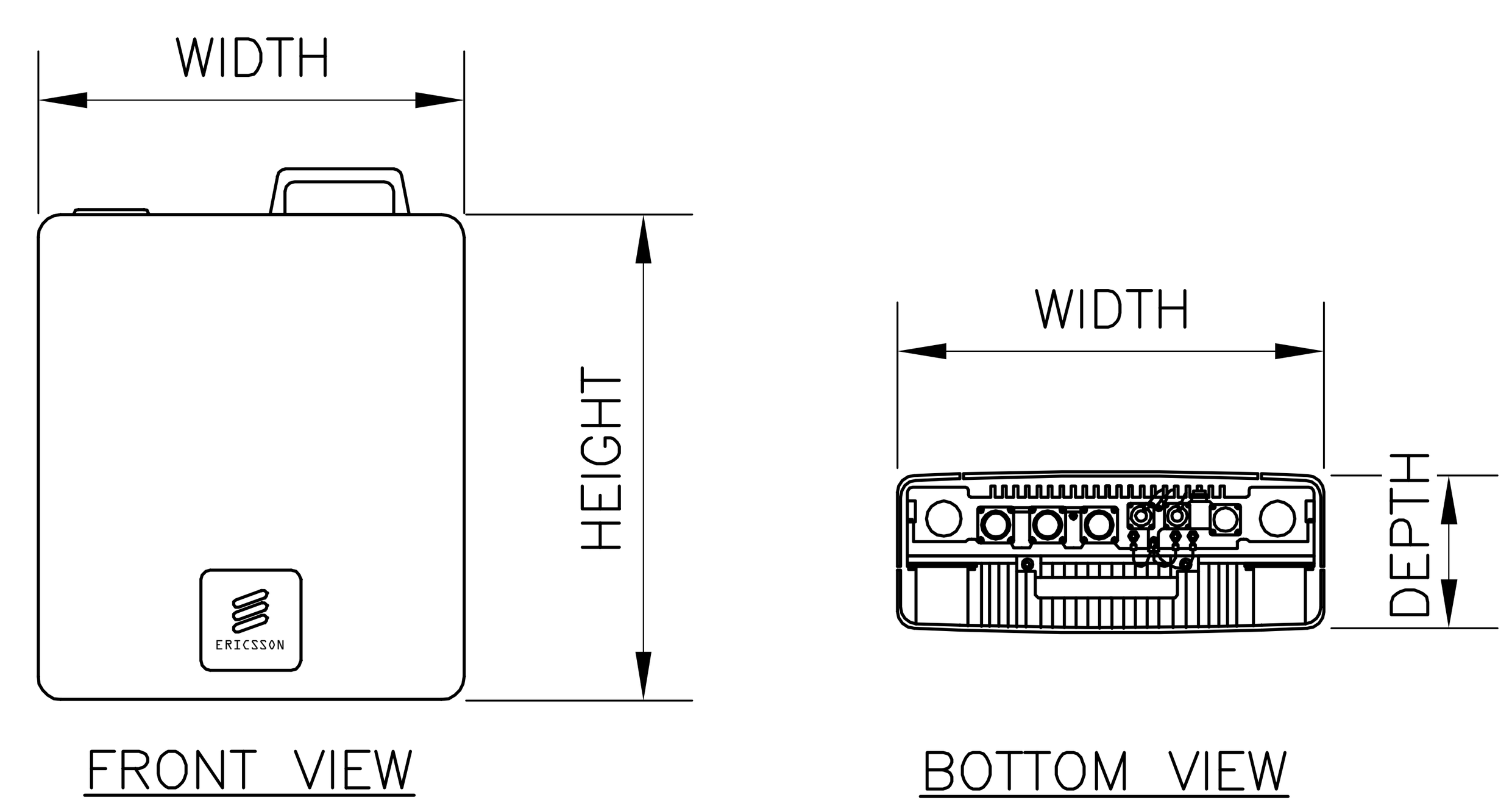
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 (C–3) ERICSSON RRUS 12 AND E2 DETAIL
NOT TO SCALE

SURGE ARESSTOR		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ANDREW MODEL: APTDC–BDFDM–DB	3.46"H x 3.46"W x 1.65"D	1.32 LBS.

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

4 (C–3) ANDREW APTDC-BDFDM-DB DETAIL
NOT TO SCALE



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: B14 4478	14.9"L x 13.1"W x 7.3"D	60 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.

5 (C–3) ERICSSON B14 4478 DETAIL
NOT TO SCALE

LOW BAND COMBINER

DIPLEXER 700/850		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KAELUS MODEL: DBC0061F1V51–2	8"H x 6.45"W x 6.2"D	18.3 LBS.

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

6 (C–3) KAELUS DBC0061F1V51-2 DETAIL
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAMJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

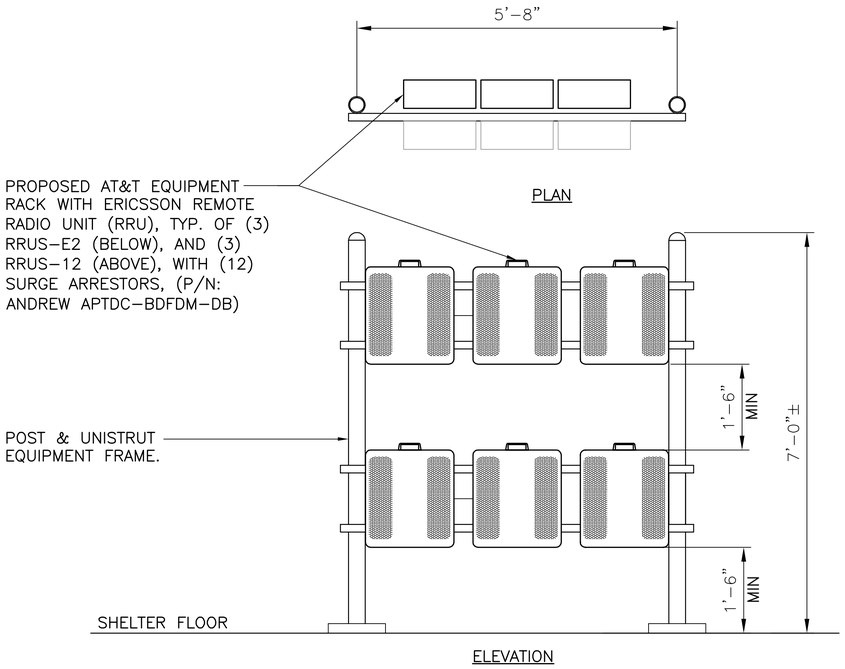
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NORTH WATERBURY
CT1125 – LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

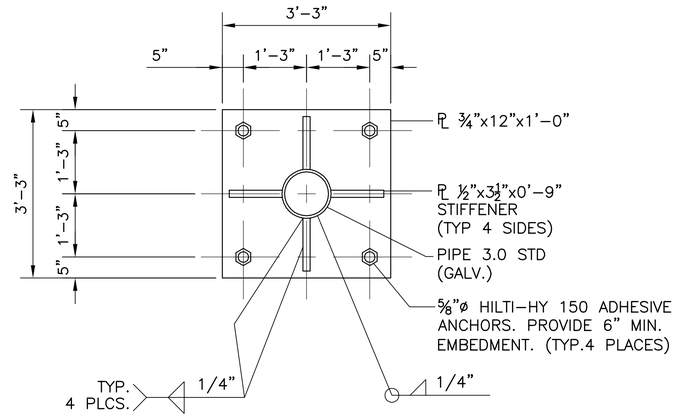
DETAILS

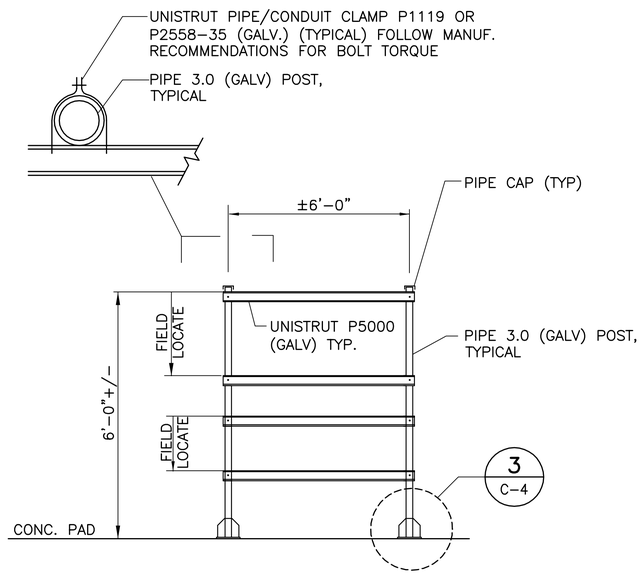
C–3

Sheet No. 5 of 9

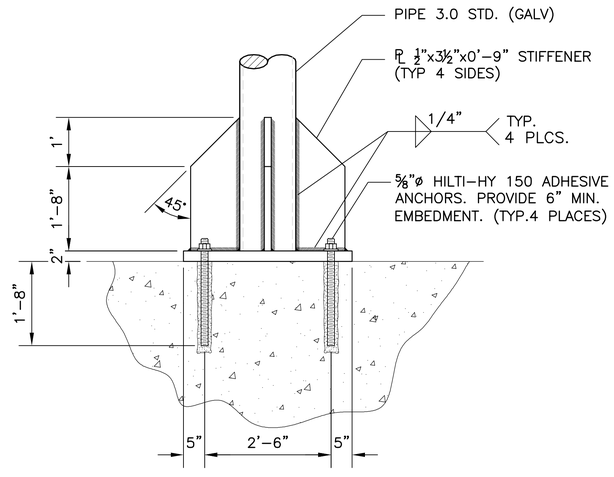


1 / C-4 **TYPICAL RRUS RACK MOUNTING DETAILS**
NOT TO SCALE





2 / C-4 **EQUIPMENT MOUNTING FRAME DETAIL**
NOT TO SCALE



3 / C-4 **FRAME TO CONCRETE CONNECTION DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAW/JR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

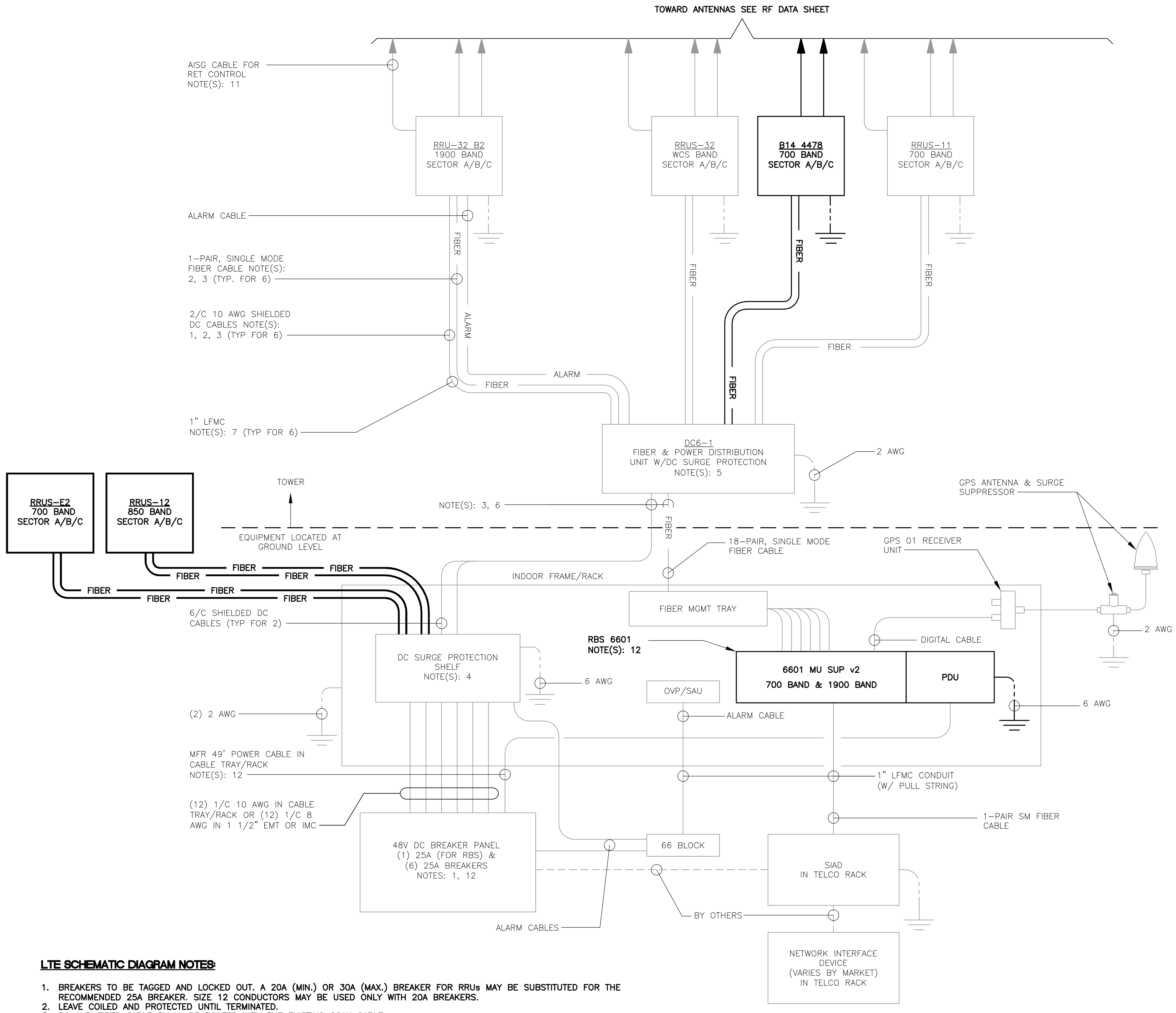
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

NORTH WATERBURY
CT1125 - LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

DETAILS

C-4



LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

1 / E-1 **LTE SCHEMATIC DIAGRAM**
NOT TO SCALE

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAWJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

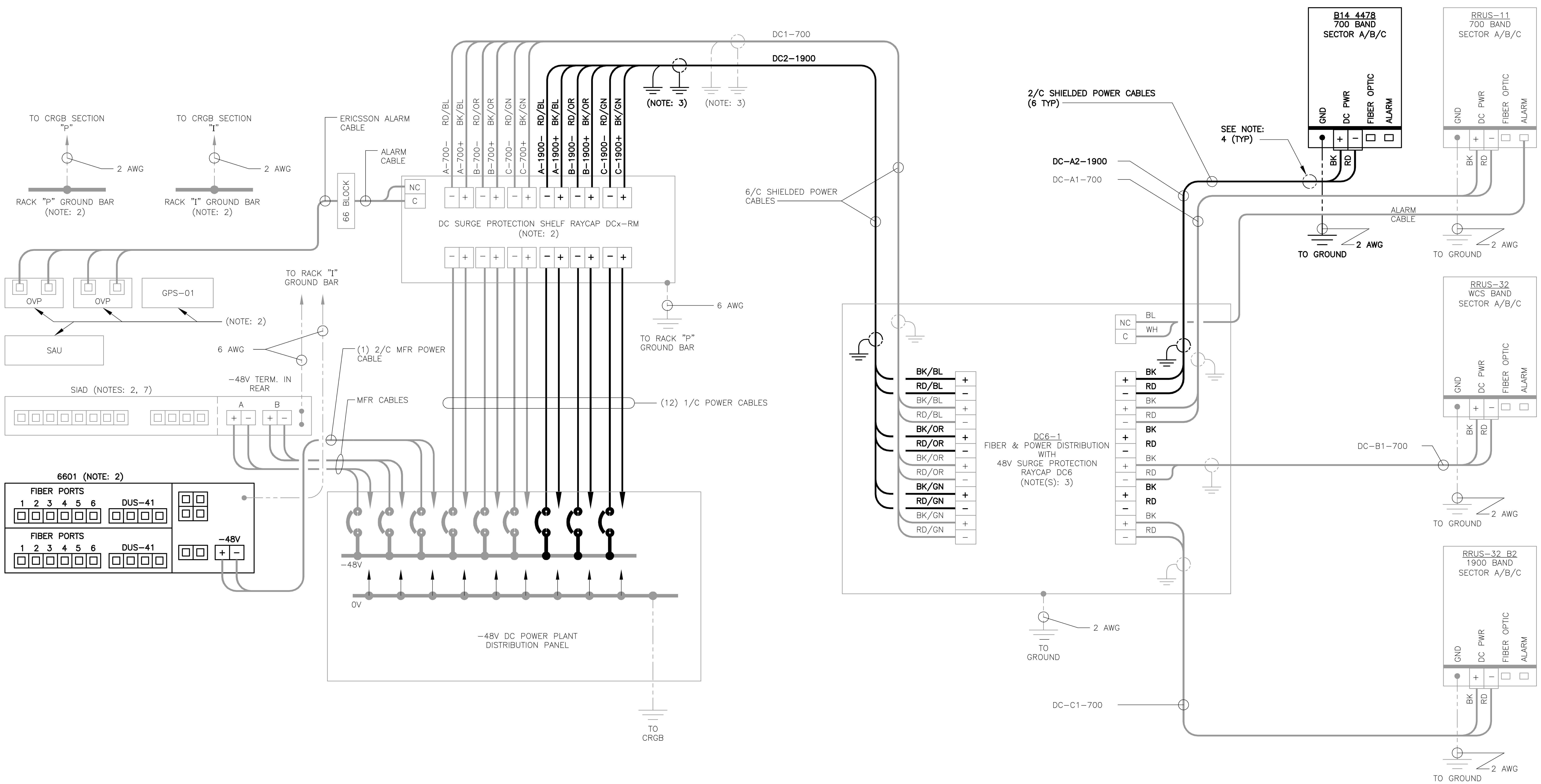
CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NORTH WATERBURY
CT1125 - LTE 4C/5C/6C FIRSTNET
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

SCHEMATIC DIAGRAM AND NOTES

E-1



1 / E-2

LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAMJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

NORTH WATERBURY

CT1125 - LTE 4C/5C/6C FIRSTNET

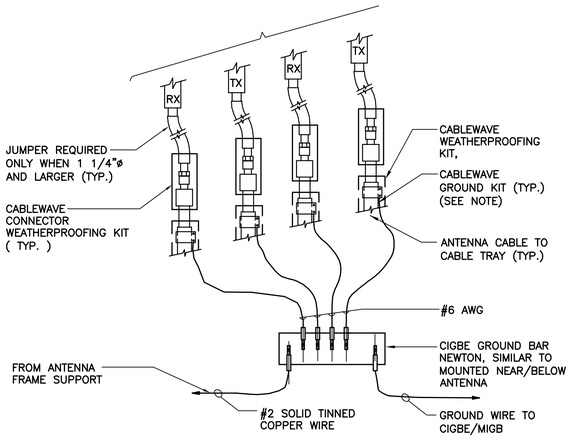
299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

WIRING DIAGRAM

E-2

Sheet No. 8 of 9



NOTE:

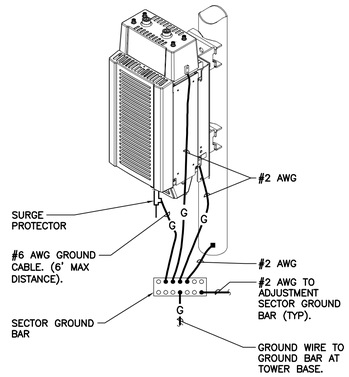
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 E-3 CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE

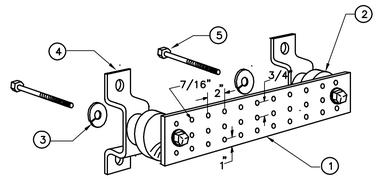
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



2 E-3 RRU POLE MOUNT GROUNDING

NOT TO SCALE

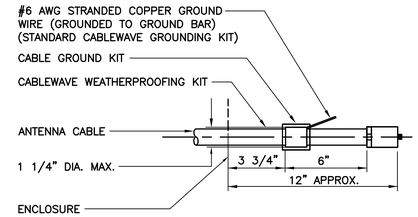


LEGEND

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 E-3 GROUND BAR DETAIL

NOT TO SCALE

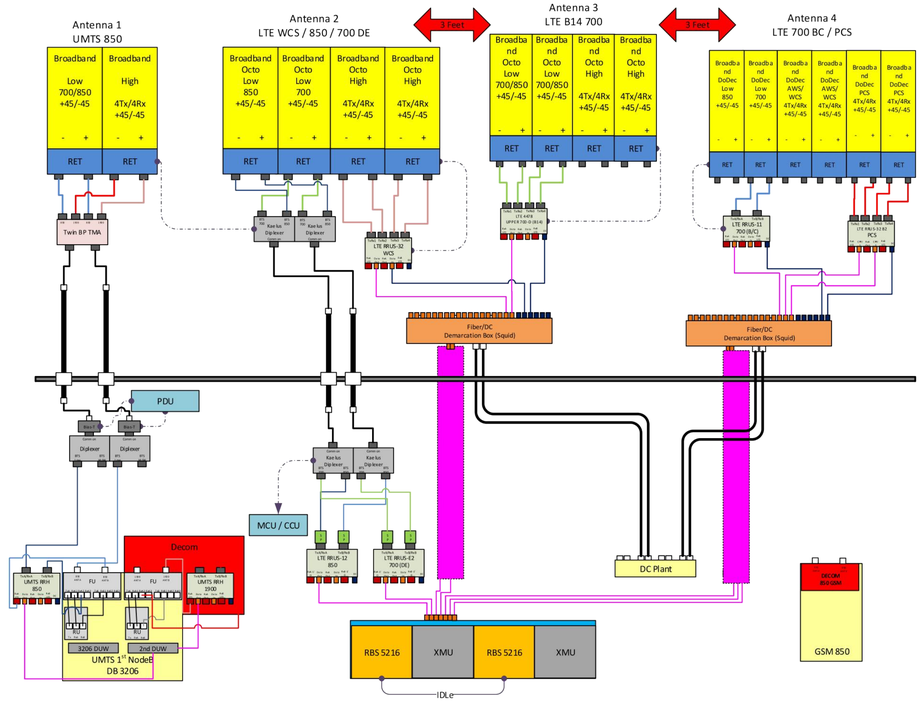


NOTE:

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

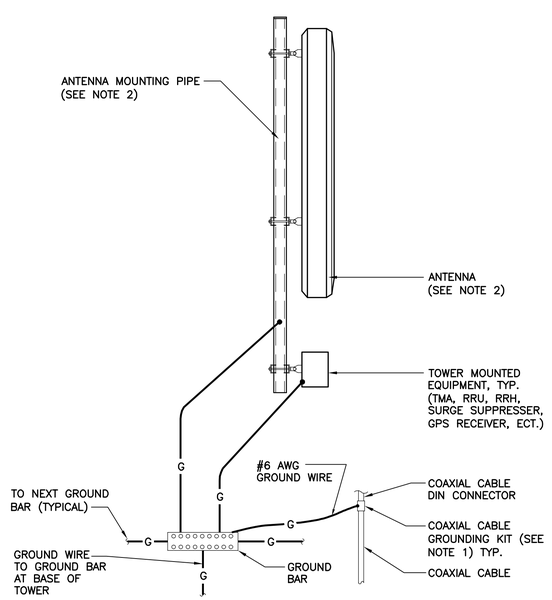
4 E-3 ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE



5 E-3 RF PLUMBING DIAGRAM

NOT TO SCALE



NOTES:

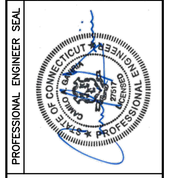
1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

6 E-3 TYPICAL ANTENNA GROUNDING DETAIL

NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/11/18	KAWJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

NORTH WATERBURY
CT1125 – LTE 4C/5C/6C FIRSTNET

299 SHEFFIELD STREET
WATERBURY, CT 06704

DATE: 03/13/18
SCALE: AS NOTED
JOB NO. 18000.04

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 9 of 9

TES
Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 158 ft. SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02722-S

Customer Site Name: Waterbury

Carrier Name: AT&T

Carrier Site ID / Name: CT1125 / Waterbury-299 Sheffield St

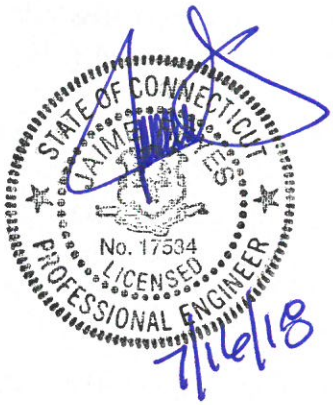
Site Location: 299 Sheffield Street

Waterbury, CT

New Haven County

Latitude: 41.594089

Longitude: -73.050567



Analysis Result:

Max Structural Usage: 66.7% [Pass]

Max Foundation Usage: 52.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Delu Zhou

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 158 ft. SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02722-S

Customer Site Name: Waterbury

Carrier Name: AT&T

Carrier Site ID / Name: CT1125 / Waterbury-299 Sheffield St

Site Location: 299 Sheffield Street

Waterbury, CT

New Haven County

Latitude: 41.594089

Longitude: -73.050567

Analysis Result:

Max Structural Usage: 66.7% [Pass]

Max Foundation Usage: 52.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Delu Zhou

Introduction

The purpose of this report is to summarize the analysis results on the 158 ft. SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Summit Manufacturing, LLC. DWG.No. 9302-01, dated 08/23/2000.
Foundation Drawing	Summit Manufacturing, LLC. Job No. 9302-A530, dated 08/23/2000.
Geotechnical Report	N/A
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Conneticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	S_S = 0.189, S_1 = 0.064

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	158.0	3	RFS APXV18-206517S-C	(1) Low Profile Platform	(6) 1-5/8"	MetroPCS
2	148.0	1	Andrew - LNX-4514DS-A1M - Panel	(1) Low Profile Platform	(12) 1-5/8" (1) 1-5/8" Hybrid	Verizon
3		2	Andrew - LNX-6514DS-A1M - Panel			
4		6	Andrew - DB844G65VTZASX - Panel			
5		6	Commscope - HBXX-6517DS-A2M - Panel			
6		3	Alcatel - RRH4X45-AWS – RRH			
7		3	Alcatel - RRH2X60-PCS – RRH			
8		1	RFS - DB-T1-6Z-8AB-0Z - COVP			
-	137.0	3	Quintel QS66512-2 – Panel	(1) Platform w/ Hand Rails [MTC3607])	(12) 1-5/8" Coax (2) 1/2" Fiber (4) 3/4" DC	AT&T
-		3	CCI HPA-65R-BUU-H8 – Panel			
-		3	CCI OPA-65R-LCUU-H6 – Panel			
-		3	KMW AM-X-CD-16-65-OOT – Panel			
-		6	CCI DTMABP7819VG12A – TMA			
-		6	Ericsson RRUS-11 – RRU			
-		6	Ericsson RRUS-12 – RRU			
-		3	Ericsson RRUS 32 B2 – RRU			
-		3	Ericsson RRUS-32 – RRU			
-		6	Ericsson RRU A2 – RRU			
-		3	Raycap DC6-48-60-18-8F			
23	127.0	3	Nokia - AAHC - Panel	(1) Low Profile Platform (1) Reinforcement kit [PRK-1245L] (1) Vertical brace kit [PRK-SFS-L]	(1) 1-5/8" Fiber (3) 1-1/4" Fiber (2) 1/2"	Sprint Nextel
24		3	Commscope - NNVV-65B-R4 - Panel			
25		2	DragonWave - A-ANT-23G-2-C - Dish			
26		3	ALU - 1900MHz - RRU			
27		6	ALU - 800 MHz - RRU			
-	122.0	1	Nokia CS72188.01 – Omni	Direct Mount	(1) 1/2" Coax	AT&T

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
9	137.0	3	Quintel – QS66512-2 - Panel	(1) Platform w/ Hand Rails [MTC3607]	(12) 1-5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
10		3	CCI - OPA-65R-LCUU-H6 - Panel			
11		3	KMW - AM-X-CD-16-65-00T-RET - Panel			
12		3	Kathrein Scala - 800 10965 - Panel			
13		6	CCI - DTMABP7819VG12A - TMA			
14		6	Kaelus - DBC0037F1V2-1 - Diplexer			
15		6	Ericsson - RRUS-11 - RRU			
16		6	Ericsson - RRUS-12 - RRU			
17		3	Ericsson - RRUS 32 B2 - RRU			
18		3	Ericsson - RRUS-32 - RRU			
19		3	Ericsson - B14 4478 - RRU			
20		3	Ericsson - RRU A2 - RRU			
21		6	Kaelus - DBC0061F1V51-2 - Combiners			
22		3	Raycap - DC6-48-60-18-8F - COVP			
28	122.0	1	CS72188.01 Omni - Whip	Direct Mount	(1) 1/2"	

All transmission lines are considered running inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**66.7%**	**64.1%**	**47.1%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	5150.0	44.0
Analysis Reactions	4431.0	38.4
Factored Reactions*	6952.5	59.4
% of Design Reactions	63.7%	64.6%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.1719 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

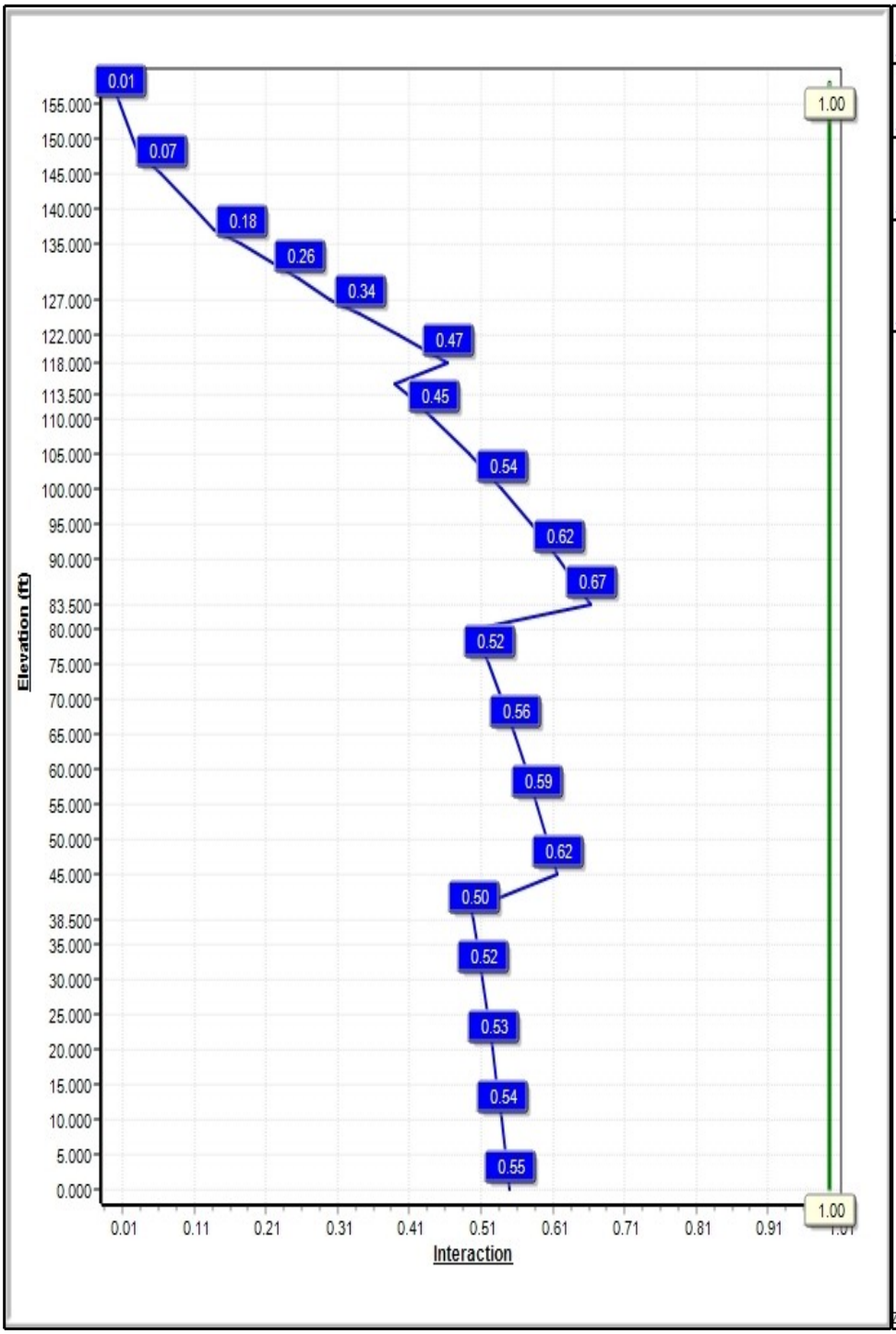
Usage Diagram - Max Ratio 66.72% at 83.5ft

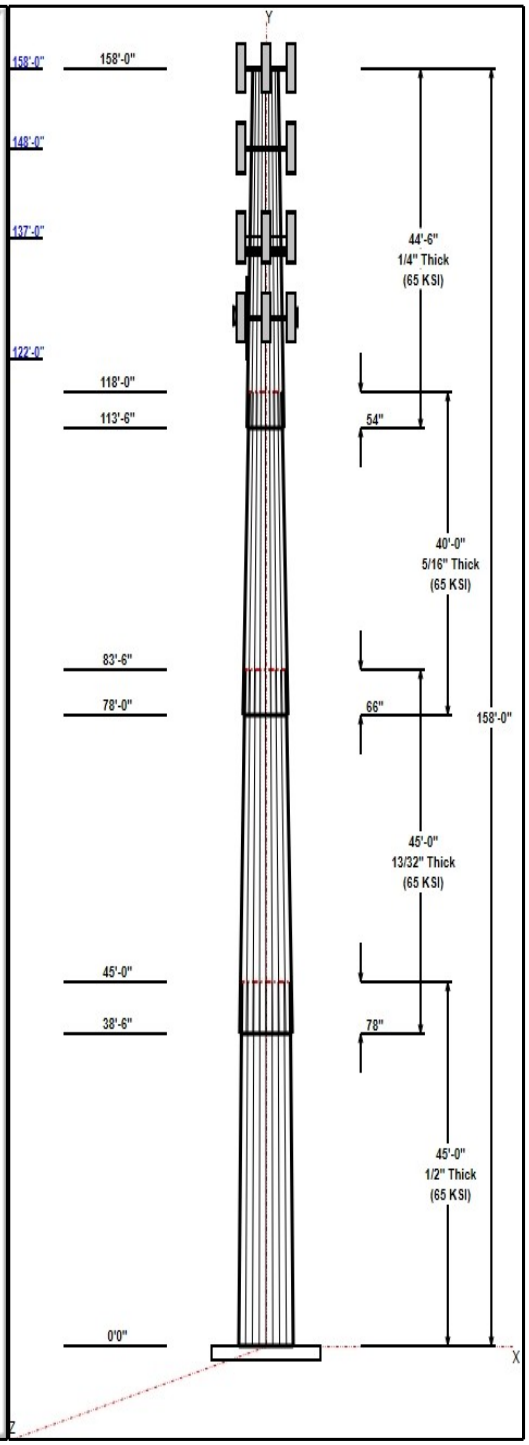
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	23
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 97 mph Wind





Structure: CT02722-S-SBA

Type: Tapered
Site Name: Waterbury
Height: 158.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23998

7/16/2018

Tower Engineering Solutions

Shaft Properties

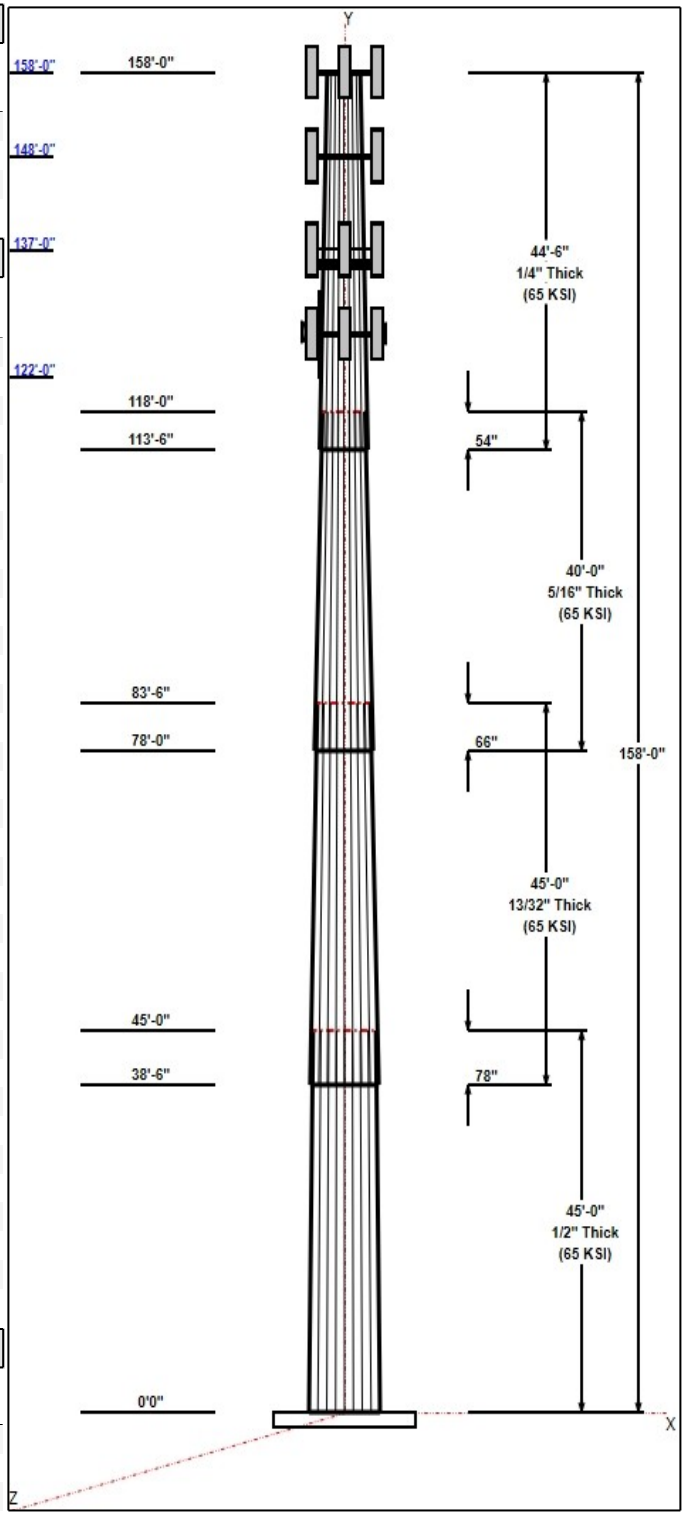
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	49.18	59.98	0.500		0.23998	65
2	45.00	40.75	51.55	0.406	Slip	0.23998	65
3	40.00	33.10	42.70	0.313	Slip	0.23998	65
4	44.50	24.00	34.68	0.250	Slip	0.23998	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
158.00	158.00	3	APXV18-206517S-C	Metro PCS
158.00	158.00	1	Low Profile Platform	Metro PCS
148.00	148.00	6	HBXX-6517DS-A2M	Verizon
148.00	148.00	6	DB844G65VTZASX	Verizon
148.00	148.00	1	LNX-4514DS-A1M	Verizon
148.00	148.00	2	LNX-6514DS-A1M	Verizon
148.00	148.00	1	DB-T1-6Z-8AB-0Z	Verizon
148.00	148.00	3	RRH4X45-AWS	Verizon
148.00	148.00	3	RRH2X60-PCS	Verizon
148.00	148.00	1	Low Profile Platform	Verizon
137.00	137.00	3	Raycap - DC6-48-60-18-8F	AT&T
137.00	137.00	1	Platform w/ Hand Rails	AT&T
137.00	137.00	3	800 10965	AT&T
137.00	137.00	6	Kaelus - DBC0037F1V2-1	AT&T
137.00	137.00	3	Ericsson - B14 4478 - RRU	AT&T
137.00	137.00	6	Kaelus - DBC0061F1V51-2	AT&T
137.00	137.00	6	CCI -	AT&T
137.00	137.00	6	Ericsson - RRUS-11 - RRU	AT&T
137.00	137.00	6	Ericsson - RRUS-12 - RRU	AT&T
137.00	137.00	3	Ericsson - RRU A2 - RRU	AT&T
137.00	137.00	3	Ericsson - RRUS-32 - RRU	AT&T
137.00	137.00	3	Quintel - QS66512-2	AT&T
137.00	137.00	3	CCI - OPA-65R-LCUU-H6	AT&T
137.00	137.00	3	KMW -	AT&T
137.00	137.00	3	Ericsson - RRUS 32 B2 -	AT&T
127.00	127.00	2	A-ANT-23G-2-C	Sprint Nextel
127.00	127.00	3	AAHC	Sprint Nextel
127.00	127.00	3	NNVV-65B-R4	Sprint Nextel
127.00	127.00	1	PRK-1245 Reinforcement	Sprint Nextel
127.00	127.00	1	PRK-SFS-L Brace Kit	Sprint Nextel
127.00	127.00	3	ALU - 1900MHz - RRU	Sprint Nextel
127.00	127.00	6	ALU - 800 MHz - RRU	Sprint Nextel
127.00	127.00	1	Low Profile Platform	AT&T
122.00	127.00	1	CS72188.01 Omni	AT&T

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	158.00	Inside	1-5/8"	Metro PCS
0.00	148.00	Inside	1-5/8"	Verizon
0.00	148.00	Inside	1-5/8" Hybrid	Verizon
0.00	137.00	Inside	1-5/8" Coax	AT&T
0.00	137.00	Inside	1/2" Fiber	AT&T
0.00	137.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	127.00	Inside	1-5/8" Fiber	Sprint Nextel



0.00	127.00	Inside	1/2"	Sprint Nextel
0.00	122.00	Inside	1/2" Coax	AT&T

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.2500	66.0	60.0	Clipped

Reactions

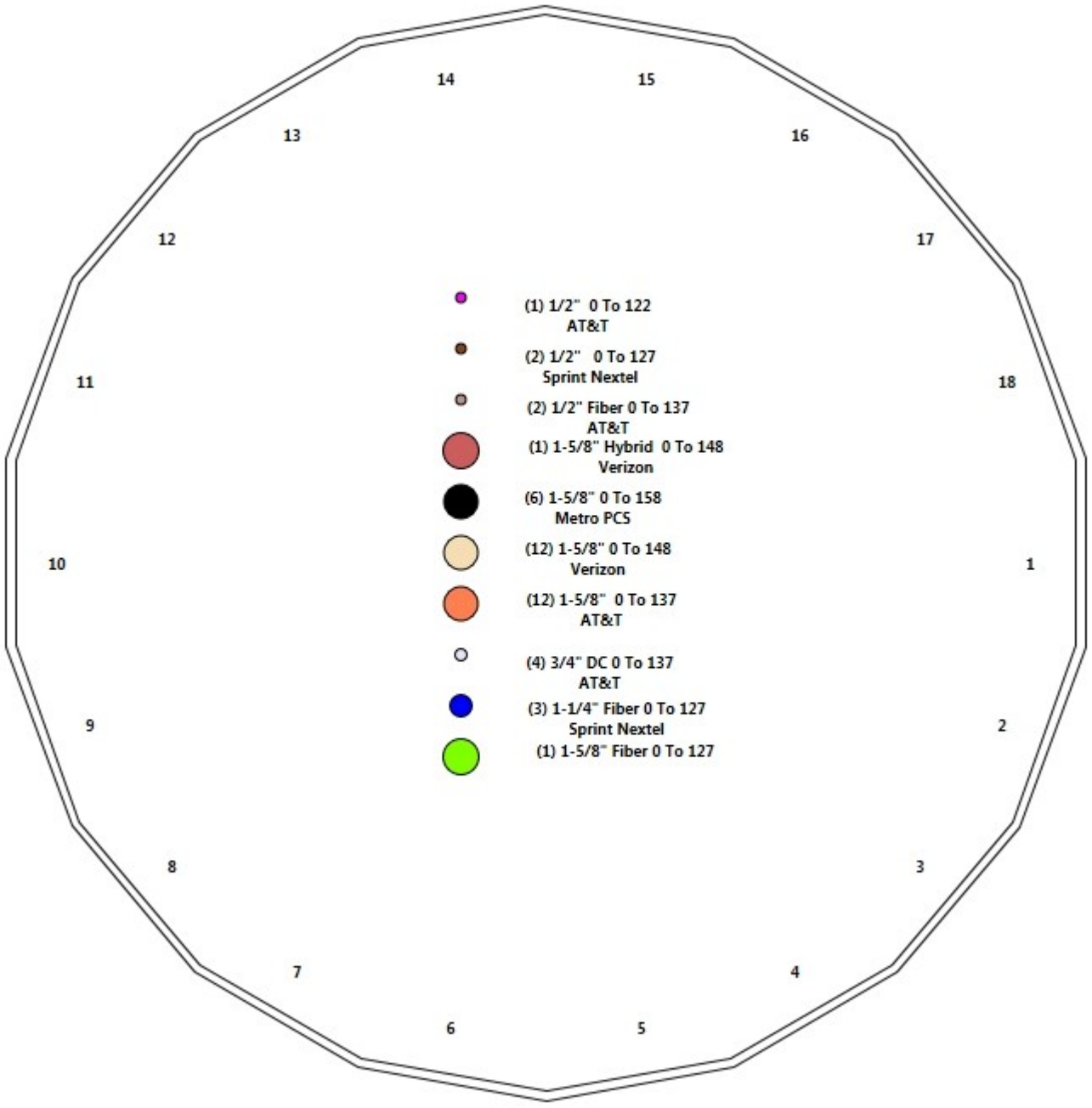
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	4431.0	38.4	56.7
0.9D + 1.6W 97 mph Wind	4392.7	38.3	42.5
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1232.0	10.8	83.2
1.2D + 1.0E	230.2	2.0	56.8
0.9D + 1.0E	227.9	2.0	42.6
1.0D + 1.0W 60 mph Wind	1054.5	9.2	47.3

Structure: CT02722-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Waterbury
Height: 158.00 (ft)

7/16/2018

Tower Engineering Solutions



Shaft Properties

Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	7/16/2018
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.5000	65		0.00	13,142
2	18	45.000	0.4063	65	Slip	78.00	9,033
3	18	40.000	0.3125	65	Slip	66.00	5,074
4	18	44.500	0.2500	65	Slip	54.00	3,495
					Total Shaft Weight:		**30,744**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	59.98	0.00	94.39	42191.72	19.74	119.96	49.18	45.00	77.25	23130.4	15.93	98.36	0.239985
2	51.55	38.50	65.96	21799.61	20.96	126.88	40.75	83.50	52.03	10701.4	16.28	100.3	0.239985
3	42.70	78.00	42.04	9542.68	22.68	136.64	33.10	118.00	32.52	4416.67	17.27	105.9	0.239985
4	34.68	113.5	27.32	4091.38	23.05	138.72	24.00	158.00	18.84	1343.00	15.52	96.00	0.239985

Load Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	158.00	APXV18-206517S-C	3	26.40	5.17	0.74	119.73	7.557	0.74	0.00	0.00
2	158.00	Low Profile Platform	1	1200.00	25.00	1.00	2252.58	46.052	1.00	0.00	0.00
3	148.00	HBXX-6517DS-A2M	6	40.80	8.55	0.77	216.81	11.465	0.77	0.00	0.00
4	148.00	DB844G65VTZASX	6	16.00	4.33	0.93	171.80	6.312	0.93	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	29.54	6.79	0.71	132.24	8.825	0.71	0.00	0.00
6	148.00	LNX-6514DS-A1M	2	38.80	8.17	0.83	216.68	10.989	0.83	0.00	0.00
7	148.00	DB-T1-6Z-8AB-0Z	1	44.00	4.10	0.91	287.56	4.900	0.91	0.00	0.00
8	148.00	RRH4X45-AWS	3	64.00	2.54	0.82	147.45	3.303	0.83	0.00	0.00
9	148.00	RRH2X60-PCS	3	55.00	2.20	0.89	139.39	2.835	0.89	0.00	0.00
10	148.00	Low Profile Platform	1	1200.00	25.00	1.00	2245.72	45.914	1.00	0.00	0.00
11	137.00	Raycap - DC6-48-60-18-8F - COVP	3	32.80	1.47	0.80	95.99	2.163	0.80	0.00	0.00
12	137.00	Platform w/ Hand Rails [MTC3607]	1	2000.00	40.00	1.00	4075.36	60.754	1.00	0.00	0.00
13	137.00	800 10965	3	97.40	10.22	0.77	392.46	15.376	0.75	0.00	0.00
14	137.00	Kaelus - DBC0037F1V2-1 - Diplexer	6	6.60	0.38	0.67	16.58	0.832	0.67	0.00	0.00
15	137.00	Ericsson - B14 4478 - RRU	3	60.00	1.65	0.67	101.51	2.164	0.67	0.00	0.00
16	137.00	Kaelus - DBC0061F1V51-2 -	6	18.30	0.33	0.67	35.14	0.622	0.67	0.00	0.00
17	137.00	CCI - DTMABP7819VG12A	6	19.00	1.14	0.67	44.03	1.903	0.67	0.00	0.00
18	137.00	Ericsson - RRUS-11 - RRU	6	55.00	2.52	0.67	132.24	3.148	0.67	0.00	0.00
19	137.00	Ericsson - RRUS-12 - RRU	6	58.00	3.15	0.67	152.34	3.857	0.67	0.00	0.00
20	137.00	Ericsson - RRU A2 - RRU	3	22.00	1.86	0.67	59.14	2.825	0.67	0.00	0.00
21	137.00	Ericsson - RRUS-32 - RRU	3	77.00	3.87	0.67	189.35	4.098	0.67	0.00	0.00
22	137.00	Quintel - QS66512-2	3	111.00	8.13	0.90	327.77	9.412	0.90	0.00	0.00
23	137.00	CCI - OPA-65R-LCUU-H6	3	73.00	9.66	0.79	302.31	11.013	0.79	0.00	0.00
24	137.00	KMW - AM-X-CD-16-65-00T-RET	3	48.50	8.02	0.75	209.31	10.789	0.75	0.00	0.00
25	137.00	Ericsson - RRUS 32 B2 - RRU	3	53.00	2.74	0.67	140.02	3.462	0.67	0.00	0.00
26	127.00	A-ANT-23G-2-C	2	12.30	8.43	1.00	56.17	10.108	1.00	0.00	0.00
27	127.00	AAHC	3	103.70	4.21	0.75	207.58	5.008	0.75	0.00	0.00
28	127.00	NNVV-65B-R4	3	84.70	12.27	0.74	392.03	13.702	0.75	0.00	0.00
29	127.00	PRK-1245 Reinforcement Kit	1	464.91	9.50	1.00	784.10	19.284	1.00	0.00	0.00
30	127.00	PRK-SFS-L Brace Kit	1	261.72	6.75	1.00	567.19	13.238	1.00	0.00	0.00
31	127.00	ALU - 1900MHz - RRU	3	60.00	2.77	0.67	142.06	4.018	0.68	0.00	0.00
32	127.00	ALU - 800 MHz - RRU	6	53.00	2.49	0.67	125.74	3.615	0.67	0.00	0.00
33	127.00	Low Profile Platform	1	1200.00	25.00	1.00	2229.84	45.597	1.00	0.00	0.00
34	122.00	CS72188.01 Omni	1	25.00	3.00	1.00	99.50	6.533	1.00	0.00	5.00
		Totals:	**106**	**11,033.07**			**27,486.10**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	158.00	(6) 1-5/8"	0.00	Inside
0.00	148.00	(12) 1-5/8"	0.00	Inside
0.00	148.00	(1) 1-5/8" Hybrid	0.00	Inside
0.00	137.00	(12) 1-5/8" Coax	0.00	Inside
0.00	137.00	(2) 1/2" Fiber	0.00	Inside
0.00	137.00	(4) 3/4" DC	0.00	Inside
0.00	127.00	(3) 1-1/4" Fiber	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	127.00	(1) 1-5/8" Fiber			0.00	Inside					
0.00	127.00	(2) 1/2"			0.00	Inside					
0.00	122.00	(1) 1/2" Coax			0.00	Inside					

Shaft Section Properties

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	59.980	94.391	42191.7	19.74	119.96	78.2	1385.	0.0
5.00		0.5000	58.780	92.487	39689.4	19.32	117.56	78.7	1329.	1589.8
10.00		0.5000	57.580	90.583	37288.1	18.90	115.16	79.2	1275.	1557.4
15.00		0.5000	56.380	88.679	34985.6	18.47	112.76	79.7	1222.	1525.0
20.00		0.5000	55.180	86.775	32779.9	18.05	110.36	80.2	1170.	1492.6
25.00		0.5000	53.980	84.870	30668.9	17.63	107.96	80.7	1119.	1460.2
30.00		0.5000	52.780	82.966	28650.5	17.20	105.56	81.2	1069.	1427.8
35.00		0.5000	51.581	81.062	26722.7	16.78	103.16	81.7	1020.	1395.4
38.50	Bot - Section 2	0.5000	50.741	79.729	25426.0	16.48	101.48	82.0	987.0	957.5
40.00		0.5000	50.381	79.158	24883.4	16.36	100.76	82.2	972.8	741.0
45.00	Top - Section 1	0.4063	49.993	63.945	19865.3	20.29	123.05	0.0	0.0	2431.7
50.00		0.4063	48.793	62.398	18457.8	19.76	120.09	78.2	745.1	1074.8
55.00		0.4063	47.593	60.850	17118.4	19.24	117.14	78.8	708.4	1048.5
60.00		0.4063	46.394	59.303	15845.4	18.72	114.19	79.4	672.7	1022.1
65.00		0.4063	45.194	57.755	14637.1	18.20	111.23	80.0	637.9	995.8
70.00		0.4063	43.994	56.208	13491.9	17.68	108.28	80.6	604.0	969.5
75.00		0.4063	42.794	54.661	12408.0	17.16	105.33	81.2	571.1	943.2
78.00	Bot - Section 3	0.4063	42.074	53.732	11786.5	16.85	103.55	81.6	551.8	553.3
80.00		0.4063	41.594	53.113	11383.8	16.64	102.37	81.8	539.1	648.1
83.50	Top - Section 2	0.3125	41.379	40.731	8678.7	21.94	132.41	0.0	0.0	1116.2
85.00		0.3125	41.019	40.374	8452.4	21.73	131.26	75.8	405.9	207.0
90.00		0.3125	39.819	39.184	7726.8	21.06	127.42	76.6	382.2	676.8
95.00		0.3125	38.619	37.994	7043.9	20.38	123.58	77.4	359.2	656.5
100.00		0.3125	37.419	36.804	6402.5	19.70	119.74	78.2	337.0	636.3
105.00		0.3125	36.219	35.614	5801.2	19.03	115.90	79.0	315.5	616.1
110.00		0.3125	35.019	34.424	5238.9	18.35	112.06	79.8	294.7	595.8
113.50	Bot - Section 4	0.3125	34.179	33.590	4867.6	17.87	109.37	80.4	280.5	405.0
115.00		0.3125	33.819	33.233	4714.1	17.67	108.22	80.6	274.5	309.3
118.00	Top - Section 3	0.2500	33.599	26.462	3718.3	22.29	134.40	0.0	0.0	608.7
120.00		0.2500	33.119	26.081	3560.1	21.95	132.48	75.6	211.7	178.8
122.00		0.2500	32.639	25.700	3406.4	21.61	130.56	76.0	205.6	176.2
125.00		0.2500	31.919	25.129	3184.3	21.10	127.68	76.6	196.5	259.4
127.00		0.2500	31.440	24.748	3041.7	20.76	125.76	77.0	190.6	169.7
130.00		0.2500	30.720	24.177	2835.9	20.26	122.88	77.6	181.8	249.7
135.00		0.2500	29.520	23.225	2513.8	19.41	118.08	78.6	167.7	403.2
137.00		0.2500	29.040	22.844	2392.2	19.07	116.16	79.0	162.2	156.8
140.00		0.2500	28.320	22.273	2217.2	18.56	113.28	79.6	154.2	230.3
145.00		0.2500	27.120	21.320	1944.8	17.72	108.48	80.6	141.2	370.8
148.00		0.2500	26.400	20.749	1792.6	17.21	105.60	81.2	133.7	214.7
150.00		0.2500	25.920	20.368	1695.7	16.87	103.68	81.6	128.9	139.9
155.00		0.2500	24.720	19.416	1468.9	16.02	98.88	82.5	117.0	338.4
158.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	195.3
										30744.2

Wind Loading - Shaft

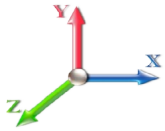
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1907.7
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1868.8
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1830.0
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1791.1
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1752.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1713.3
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1674.5
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	1149.0
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	889.2
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2918.0
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	1289.7
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	1258.2
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	1226.6
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	1195.0
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	1163.4
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	1131.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	663.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	777.7
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1339.4
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	248.4
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	812.2
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	787.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	763.6
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	739.3
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	715.0
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	486.0
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	371.1
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	730.4
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	214.5
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	211.4
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	311.3
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	203.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	299.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	483.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	2.00	4.955	3.22	175.4	0.0	188.1
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	3.00	7.281	4.73	258.9	0.0	276.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	445.0
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	257.7
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	167.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	406.1
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	234.3
								Totals:	**158.00**			**16,692.6**		**36,893.1**

Discrete Appurtenance Forces

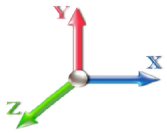
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	APXV18-206517S-C	3	31.888	35.077	0.74	1.00	11.48	95.04	0.000	0.000	644.15	0.00	0.00
2	158.00	Low Profile Platform	1	31.888	35.077	1.00	1.00	25.00	1440.00	0.000	0.000	1403.09	0.00	0.00
3	148.00	LNX-6514DS-A1M	2	31.452	34.598	0.66	0.80	10.85	93.12	0.000	0.000	600.60	0.00	0.00
4	148.00	HBXX-6517DS-A2M	6	31.452	34.598	0.62	0.80	31.60	293.76	0.000	0.000	1749.30	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	31.452	34.598	0.57	0.80	3.86	35.45	0.000	0.000	213.49	0.00	0.00
6	148.00	DB844G65VTZASX	6	31.452	34.598	0.74	0.80	19.33	115.20	0.000	0.000	1069.99	0.00	0.00
7	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	25.00	1440.00	0.000	0.000	1383.91	0.00	0.00
8	148.00	RRH4X45-AWS	3	31.452	34.598	0.66	0.80	5.00	230.40	0.000	0.000	276.71	0.00	0.00
9	148.00	RRH2X60-PCS	3	31.452	34.598	0.71	0.80	4.70	198.00	0.000	0.000	260.13	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	31.452	34.598	0.73	0.80	2.98	52.80	0.000	0.000	165.23	0.00	0.00
11	137.00	Ericsson - RRUS-11 -	6	30.945	34.040	0.54	0.80	8.10	396.00	0.000	0.000	441.39	0.00	0.00
12	137.00	Kaelus -	6	30.945	34.040	0.54	0.80	1.06	131.76	0.000	0.000	57.80	0.00	0.00
13	137.00	CCI -	6	30.945	34.040	0.54	0.80	3.67	136.80	0.000	0.000	199.68	0.00	0.00
14	137.00	Ericsson - RRUS-32 -	3	30.945	34.040	0.54	0.80	6.22	277.20	0.000	0.000	338.92	0.00	0.00
15	137.00	Ericsson - RRUS-12 -	6	30.945	34.040	0.54	0.80	10.13	417.60	0.000	0.000	551.74	0.00	0.00
16	137.00	Ericsson - RRU A2 - RRU	3	30.945	34.040	0.54	0.80	2.99	79.20	0.000	0.000	162.89	0.00	0.00
17	137.00	Quintel - QS66512-2	3	30.945	34.040	0.72	0.80	17.56	399.60	0.000	0.000	956.42	0.00	0.00
18	137.00	Ericsson - B14 4478 -	3	30.945	34.040	0.54	0.80	2.65	216.00	0.000	0.000	144.50	0.00	0.00
19	137.00	800 10965	3	30.945	34.040	0.62	0.80	18.89	350.64	0.000	0.000	1028.63	0.00	0.00
20	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	2400.00	0.000	0.000	2178.54	0.00	0.00
21	137.00	Raycap -	3	30.945	34.040	0.64	0.80	2.82	118.08	0.000	0.000	153.72	0.00	0.00
22	137.00	Ericsson - RRUS 32 B2 -	3	30.945	34.040	0.54	0.80	4.41	190.80	0.000	0.000	239.96	0.00	0.00
23	137.00	KMW -	3	30.945	34.040	0.60	0.80	14.44	174.60	0.000	0.000	786.24	0.00	0.00
24	137.00	CCI - OPA-65R-LCUU-H6	3	30.945	34.040	0.63	0.80	18.32	262.80	0.000	0.000	997.52	0.00	0.00
25	137.00	Kaelus - DBC0037F1V2-1	6	30.945	34.040	0.54	0.80	1.22	47.52	0.000	0.000	66.56	0.00	0.00
26	127.00	ALU - 800 MHz - RRU	6	30.455	33.501	0.54	0.80	8.01	381.60	0.000	0.000	429.23	0.00	0.00
27	127.00	AAHC	3	30.455	33.501	0.60	0.80	7.58	373.32	0.000	0.000	406.19	0.00	0.00
28	127.00	NNVV-65B-R4	3	30.455	33.501	0.59	0.80	21.79	304.92	0.000	0.000	1168.06	0.00	0.00
29	127.00	ALU - 1900MHz - RRU	3	30.455	33.501	0.54	0.80	4.45	216.00	0.000	0.000	238.75	0.00	0.00
30	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1440.00	0.000	0.000	1340.03	0.00	0.00
31	127.00	PRK-1245 Reinforcement	1	30.455	33.501	1.00	1.00	9.50	557.89	0.000	0.000	509.21	0.00	0.00
32	127.00	PRK-SFS-L Brace Kit	1	30.455	33.501	1.00	1.00	6.75	314.06	0.000	0.000	361.81	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	30.455	33.501	1.00	1.00	16.86	29.52	0.000	0.000	903.72	0.00	0.00
34	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	30.00	0.000	5.000	160.80	0.00	804.02
							Totals:		**13,239.68**			**21,588.93**		

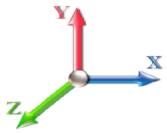
Total Applied Force Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		559.02	2139.69	0.00	0.00
10.00		547.73	2100.81	0.00	0.00
15.00		536.43	2061.93	0.00	0.00
20.00		557.19	2023.06	0.00	0.00
25.00		571.43	1984.18	0.00	0.00
30.00		580.73	1945.30	0.00	0.00
35.00		586.40	1906.42	0.00	0.00
38.50		410.62	1311.36	0.00	0.00
40.00		178.14	958.74	0.00	0.00
45.00		599.46	3150.01	0.00	0.00
50.00		598.37	1521.72	0.00	0.00
55.00		595.66	1490.13	0.00	0.00
60.00		591.57	1458.53	0.00	0.00
65.00		586.26	1426.94	0.00	0.00
70.00		579.88	1395.35	0.00	0.00
75.00		572.53	1363.76	0.00	0.00
78.00		338.70	803.09	0.00	0.00
80.00		227.14	870.46	0.00	0.00
83.50		394.86	1501.79	0.00	0.00
85.00		167.43	317.98	0.00	0.00
90.00		554.15	1044.13	0.00	0.00
95.00		543.85	1019.83	0.00	0.00
100.00		532.94	995.53	0.00	0.00
105.00		521.44	971.23	0.00	0.00
110.00		509.42	946.94	0.00	0.00
113.50		348.67	648.40	0.00	0.00
115.00		149.41	440.69	0.00	0.00
118.00		295.74	869.57	0.00	0.00
120.00		194.37	307.34	0.00	0.00
122.00	(1) attachments	353.04	334.23	0.00	804.02
125.00		284.55	449.93	0.00	0.00
127.00	(20) attachments	5543.80	3913.38	0.00	0.00
130.00		276.24	422.86	0.00	0.00
135.00		449.74	689.21	0.00	0.00
137.00	(58) attachments	8479.94	5868.84	0.00	0.00
140.00		258.92	347.69	0.00	0.00
145.00		420.18	563.93	0.00	0.00
148.00	(23) attachments	5963.79	2787.76	0.00	0.00
150.00		159.75	182.87	0.00	0.00
155.00		389.23	443.57	0.00	0.00
158.00	(4) attachments	2272.83	1791.85	0.00	0.00
	Totals:	**38,281.53**	**56,771.05**	**0.00**	**804.02**

Calculated Forces

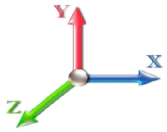
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-56.72	-38.36	0.00	-4431.0	0.00	4431.04	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.554
5.00	-54.48	-37.93	0.00	-4239.2	0.00	4239.27	6549.09	3274.55	15672.1	7847.74	0.08	-0.146	0.000	0.549
10.00	-52.29	-37.51	0.00	-4049.6	0.00	4049.61	6454.83	3227.41	15125.8	7574.18	0.31	-0.295	0.000	0.543
15.00	-50.13	-37.10	0.00	-3862.0	0.00	3862.04	6358.86	3179.43	14585.0	7303.35	0.70	-0.446	0.000	0.537
20.00	-48.01	-36.65	0.00	-3676.5	0.00	3676.55	6261.18	3130.59	14049.8	7035.38	1.25	-0.599	0.000	0.530
25.00	-45.94	-36.18	0.00	-3493.2	0.00	3493.29	6161.80	3080.90	13520.6	6770.39	1.96	-0.754	0.000	0.524
30.00	-43.90	-35.70	0.00	-3312.3	0.00	3312.38	6060.71	3030.36	12997.7	6508.52	2.84	-0.912	0.000	0.516
35.00	-41.92	-35.18	0.00	-3133.9	0.00	3133.90	5957.92	2978.96	12481.2	6249.90	3.88	-1.072	0.000	0.509
38.50	-40.57	-34.80	0.00	-3010.7	0.00	3010.79	5884.95	2942.47	12123.6	6070.85	4.71	-1.187	0.000	0.503
40.00	-39.55	-34.67	0.00	-2958.5	0.00	2958.59	5853.42	2926.71	11971.4	5994.64	5.09	-1.237	0.000	0.500
45.00	-36.32	-34.11	0.00	-2785.2	0.00	2785.22	4462.52	2231.26	9089.55	4551.53	6.47	-1.401	0.000	0.620
50.00	-34.71	-33.58	0.00	-2614.6	0.00	2614.69	4388.93	2194.47	8721.58	4367.27	8.03	-1.567	0.000	0.607
55.00	-33.12	-33.05	0.00	-2446.7	0.00	2446.79	4313.64	2156.82	8357.61	4185.02	9.78	-1.762	0.000	0.593
60.00	-31.57	-32.52	0.00	-2281.5	0.00	2281.52	4236.64	2118.32	7997.90	4004.90	11.73	-1.959	0.000	0.577
65.00	-30.05	-31.99	0.00	-2118.9	0.00	2118.90	4157.93	2078.96	7642.72	3827.04	13.89	-2.156	0.000	0.561
70.00	-28.57	-31.46	0.00	-1958.9	0.00	1958.95	4077.51	2038.76	7292.30	3651.57	16.25	-2.354	0.000	0.544
75.00	-27.15	-30.90	0.00	-1801.6	0.00	1801.67	3995.39	1997.70	6946.91	3478.62	18.82	-2.553	0.000	0.525
78.00	-26.31	-30.57	0.00	-1708.9	0.00	1708.97	3945.30	1972.65	6742.20	3376.11	20.46	-2.673	0.000	0.513
80.00	-25.39	-30.35	0.00	-1647.8	0.00	1647.83	3911.57	1955.78	6606.80	3308.31	21.60	-2.754	0.000	0.505
83.50	-23.86	-29.93	0.00	-1541.5	0.00	1541.59	2771.30	1385.65	4677.52	2342.24	23.67	-2.894	0.000	0.667
85.00	-23.47	-29.81	0.00	-1496.7	0.00	1496.71	2755.69	1377.84	4610.09	2308.47	24.59	-2.954	0.000	0.657
90.00	-22.34	-29.29	0.00	-1347.6	0.00	1347.68	2702.54	1351.27	4386.89	2196.71	27.82	-3.194	0.000	0.622
95.00	-21.24	-28.77	0.00	-1201.2	0.00	1201.24	2647.69	1323.84	4166.29	2086.24	31.29	-3.428	0.000	0.584
100.00	-20.17	-28.26	0.00	-1057.3	0.00	1057.38	2591.13	1295.56	3948.53	1977.20	35.00	-3.656	0.000	0.543
105.00	-19.13	-27.75	0.00	-916.09	0.00	916.09	2532.86	1266.43	3733.89	1869.72	38.95	-3.876	0.000	0.498
110.00	-18.14	-27.23	0.00	-777.37	0.00	777.37	2472.89	1236.44	3522.60	1763.92	43.12	-4.083	0.000	0.449
113.50	-17.47	-26.86	0.00	-682.08	0.00	682.08	2429.89	1214.95	3376.84	1690.93	46.16	-4.222	0.000	0.411
115.00	-17.00	-26.70	0.00	-641.79	0.00	641.79	2411.21	1205.60	3314.94	1659.93	47.50	-4.280	0.000	0.394
118.00	-16.12	-26.37	0.00	-561.68	0.00	561.68	1790.62	895.31	2454.63	1229.14	50.22	-4.389	0.000	0.467
120.00	-15.79	-26.17	0.00	-508.94	0.00	508.94	1774.20	887.10	2396.85	1200.21	52.07	-4.458	0.000	0.434
122.00	-15.44	-25.82	0.00	-455.79	0.00	455.79	1757.50	878.75	2339.36	1171.42	53.96	-4.535	0.000	0.399
125.00	-14.98	-25.52	0.00	-378.34	0.00	378.34	1731.94	865.97	2253.71	1128.53	56.84	-4.640	0.000	0.345
127.00	-11.51	-19.69	0.00	-327.30	0.00	327.30	1714.56	857.28	2197.01	1100.14	58.79	-4.703	0.000	0.305
130.00	-11.08	-19.40	0.00	-268.23	0.00	268.23	1687.98	843.99	2112.62	1057.88	61.77	-4.786	0.000	0.261
135.00	-10.40	-18.91	0.00	-171.23	0.00	171.23	1642.31	821.15	1973.86	988.40	66.85	-4.896	0.000	0.180
137.00	-5.28	-9.96	0.00	-133.42	0.00	133.42	1623.56	811.78	1919.06	960.96	68.90	-4.931	0.000	0.142
140.00	-4.95	-9.67	0.00	-103.55	0.00	103.55	1594.93	797.47	1837.67	920.20	72.01	-4.973	0.000	0.116
145.00	-4.41	-9.21	0.00	-55.18	0.00	55.18	1545.85	772.93	1704.31	853.42	77.25	-5.024	0.000	0.068
148.00	-2.16	-3.02	0.00	-27.56	0.00	27.56	1515.59	757.79	1625.76	814.09	80.41	-5.042	0.000	0.035
150.00	-1.99	-2.85	0.00	-21.51	0.00	21.51	1495.07	747.53	1574.03	788.19	82.52	-5.050	0.000	0.029
155.00	-1.58	-2.42	0.00	-7.27	0.00	7.27	1442.53	721.26	1447.04	724.60	87.81	-5.062	0.000	0.011
158.00	0.00	-2.27	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	90.98	-5.064	0.000	0.000

Wind Loading - Shaft

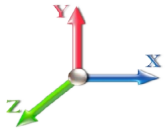
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1430.8
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1401.6
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1372.5
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1343.3
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1314.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1285.0
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1255.8
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	861.7
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	666.9
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2188.5
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	967.3
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	943.6
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	919.9
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	896.2
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	872.5
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	848.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	497.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	583.3
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1004.6
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	186.3
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	609.1
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	590.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	572.7
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	554.4
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	536.2
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	364.5
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	278.3
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	547.8
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	160.9
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	158.6
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	233.5
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	152.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	224.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	362.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	2.00	4.955	3.22	175.4	0.0	141.1
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	3.00	7.281	4.73	258.9	0.0	207.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	333.8
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	193.3
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	125.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	304.6
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	175.8
								Totals:	**158.00**			**16,692.6**		**27,669.8**

Discrete Appurtenance Forces

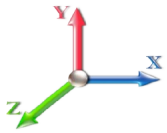
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	APXV18-206517S-C	3	31.888	35.077	0.74	1.00	11.48	71.28	0.000	0.000	644.15	0.00	0.00
2	158.00	Low Profile Platform	1	31.888	35.077	1.00	1.00	25.00	1080.00	0.000	0.000	1403.09	0.00	0.00
3	148.00	LNX-6514DS-A1M	2	31.452	34.598	0.66	0.80	10.85	69.84	0.000	0.000	600.60	0.00	0.00
4	148.00	HBXX-6517DS-A2M	6	31.452	34.598	0.62	0.80	31.60	220.32	0.000	0.000	1749.30	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	31.452	34.598	0.57	0.80	3.86	26.59	0.000	0.000	213.49	0.00	0.00
6	148.00	DB844G65VTZASX	6	31.452	34.598	0.74	0.80	19.33	86.40	0.000	0.000	1069.99	0.00	0.00
7	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	25.00	1080.00	0.000	0.000	1383.91	0.00	0.00
8	148.00	RRH4X45-AWS	3	31.452	34.598	0.66	0.80	5.00	172.80	0.000	0.000	276.71	0.00	0.00
9	148.00	RRH2X60-PCS	3	31.452	34.598	0.71	0.80	4.70	148.50	0.000	0.000	260.13	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	31.452	34.598	0.73	0.80	2.98	39.60	0.000	0.000	165.23	0.00	0.00
11	137.00	Ericsson - RRUS-11 -	6	30.945	34.040	0.54	0.80	8.10	297.00	0.000	0.000	441.39	0.00	0.00
12	137.00	Kaelus -	6	30.945	34.040	0.54	0.80	1.06	98.82	0.000	0.000	57.80	0.00	0.00
13	137.00	CCI -	6	30.945	34.040	0.54	0.80	3.67	102.60	0.000	0.000	199.68	0.00	0.00
14	137.00	Ericsson - RRUS-32 -	3	30.945	34.040	0.54	0.80	6.22	207.90	0.000	0.000	338.92	0.00	0.00
15	137.00	Ericsson - RRUS-12 -	6	30.945	34.040	0.54	0.80	10.13	313.20	0.000	0.000	551.74	0.00	0.00
16	137.00	Ericsson - RRU A2 - RRU	3	30.945	34.040	0.54	0.80	2.99	59.40	0.000	0.000	162.89	0.00	0.00
17	137.00	Quintel - QS66512-2	3	30.945	34.040	0.72	0.80	17.56	299.70	0.000	0.000	956.42	0.00	0.00
18	137.00	Ericsson - B14 4478 -	3	30.945	34.040	0.54	0.80	2.65	162.00	0.000	0.000	144.50	0.00	0.00
19	137.00	800 10965	3	30.945	34.040	0.62	0.80	18.89	262.98	0.000	0.000	1028.63	0.00	0.00
20	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	1800.00	0.000	0.000	2178.54	0.00	0.00
21	137.00	Raycap -	3	30.945	34.040	0.64	0.80	2.82	88.56	0.000	0.000	153.72	0.00	0.00
22	137.00	Ericsson - RRUS 32 B2 -	3	30.945	34.040	0.54	0.80	4.41	143.10	0.000	0.000	239.96	0.00	0.00
23	137.00	KMW -	3	30.945	34.040	0.60	0.80	14.44	130.95	0.000	0.000	786.24	0.00	0.00
24	137.00	CCI - OPA-65R-LCUU-H6	3	30.945	34.040	0.63	0.80	18.32	197.10	0.000	0.000	997.52	0.00	0.00
25	137.00	Kaelus - DBC0037F1V2-1	6	30.945	34.040	0.54	0.80	1.22	35.64	0.000	0.000	66.56	0.00	0.00
26	127.00	ALU - 800 MHz - RRU	6	30.455	33.501	0.54	0.80	8.01	286.20	0.000	0.000	429.23	0.00	0.00
27	127.00	AAHC	3	30.455	33.501	0.60	0.80	7.58	279.99	0.000	0.000	406.19	0.00	0.00
28	127.00	NNVV-65B-R4	3	30.455	33.501	0.59	0.80	21.79	228.69	0.000	0.000	1168.06	0.00	0.00
29	127.00	ALU - 1900MHz - RRU	3	30.455	33.501	0.54	0.80	4.45	162.00	0.000	0.000	238.75	0.00	0.00
30	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1080.00	0.000	0.000	1340.03	0.00	0.00
31	127.00	PRK-1245 Reinforcement	1	30.455	33.501	1.00	1.00	9.50	418.42	0.000	0.000	509.21	0.00	0.00
32	127.00	PRK-SFS-L Brace Kit	1	30.455	33.501	1.00	1.00	6.75	235.55	0.000	0.000	361.81	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	30.455	33.501	1.00	1.00	16.86	22.14	0.000	0.000	903.72	0.00	0.00
34	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	22.50	0.000	5.000	160.80	0.00	804.02
							Totals:		**9,929.76**			**21,588.93**		

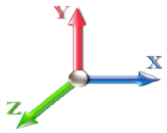
Total Applied Force Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		559.02	1604.77	0.00	0.00
10.00		547.73	1575.61	0.00	0.00
15.00		536.43	1546.45	0.00	0.00
20.00		557.19	1517.29	0.00	0.00
25.00		571.43	1488.13	0.00	0.00
30.00		580.73	1458.98	0.00	0.00
35.00		586.40	1429.82	0.00	0.00
38.50		410.62	983.52	0.00	0.00
40.00		178.14	719.06	0.00	0.00
45.00		599.46	2362.50	0.00	0.00
50.00		598.37	1141.29	0.00	0.00
55.00		595.66	1117.59	0.00	0.00
60.00		591.57	1093.90	0.00	0.00
65.00		586.26	1070.21	0.00	0.00
70.00		579.88	1046.51	0.00	0.00
75.00		572.53	1022.82	0.00	0.00
78.00		338.70	602.32	0.00	0.00
80.00		227.14	652.85	0.00	0.00
83.50		394.86	1126.34	0.00	0.00
85.00		167.43	238.48	0.00	0.00
90.00		554.15	783.10	0.00	0.00
95.00		543.85	764.87	0.00	0.00
100.00		532.94	746.65	0.00	0.00
105.00		521.44	728.43	0.00	0.00
110.00		509.42	710.20	0.00	0.00
113.50		348.67	486.30	0.00	0.00
115.00		149.41	330.52	0.00	0.00
118.00		295.74	652.18	0.00	0.00
120.00		194.37	230.50	0.00	0.00
122.00	(1) attachments	353.04	250.67	0.00	804.02
125.00		284.55	337.45	0.00	0.00
127.00	(20) attachments	5543.80	2935.04	0.00	0.00
130.00		276.24	317.14	0.00	0.00
135.00		449.74	516.91	0.00	0.00
137.00	(58) attachments	8479.94	4401.63	0.00	0.00
140.00		258.92	260.77	0.00	0.00
145.00		420.18	422.95	0.00	0.00
148.00	(23) attachments	5963.79	2090.82	0.00	0.00
150.00		159.75	137.15	0.00	0.00
155.00		389.23	332.68	0.00	0.00
158.00	(4) attachments	2272.83	1343.89	0.00	0.00
	Totals:	**38,281.53**	**42,578.29**	**0.00**	**804.02**

Calculated Forces

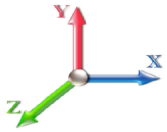
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.53	-38.34	0.00	-4392.6	0.00	4392.66	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.547
5.00	-40.83	-37.88	0.00	-4200.9	0.00	4200.98	6549.09	3274.55	15672.1	7847.74	0.08	-0.145	0.000	0.542
10.00	-39.16	-37.43	0.00	-4011.5	0.00	4011.58	6454.83	3227.41	15125.8	7574.18	0.31	-0.292	0.000	0.536
15.00	-37.52	-36.98	0.00	-3824.4	0.00	3824.45	6358.86	3179.43	14585.0	7303.35	0.70	-0.442	0.000	0.530
20.00	-35.91	-36.50	0.00	-3639.5	0.00	3639.56	6261.18	3130.59	14049.8	7035.38	1.24	-0.593	0.000	0.523
25.00	-34.33	-36.01	0.00	-3457.0	0.00	3457.04	6161.80	3080.90	13520.6	6770.39	1.94	-0.747	0.000	0.516
30.00	-32.78	-35.50	0.00	-3276.9	0.00	3276.99	6060.71	3030.36	12997.7	6508.52	2.81	-0.903	0.000	0.509
35.00	-31.28	-34.96	0.00	-3099.5	0.00	3099.51	5957.92	2978.96	12481.2	6249.90	3.84	-1.062	0.000	0.501
38.50	-30.26	-34.57	0.00	-2977.1	0.00	2977.15	5884.95	2942.47	12123.6	6070.85	4.66	-1.175	0.000	0.496
40.00	-29.48	-34.44	0.00	-2925.2	0.00	2925.29	5853.42	2926.71	11971.4	5994.64	5.04	-1.224	0.000	0.493
45.00	-27.03	-33.86	0.00	-2753.1	0.00	2753.12	4462.52	2231.26	9089.55	4551.53	6.41	-1.387	0.000	0.611
50.00	-25.80	-33.31	0.00	-2583.8	0.00	2583.83	4388.93	2194.47	8721.58	4367.27	7.95	-1.551	0.000	0.598
55.00	-24.59	-32.77	0.00	-2417.2	0.00	2417.27	4313.64	2156.82	8357.61	4185.02	9.68	-1.744	0.000	0.584
60.00	-23.41	-32.22	0.00	-2253.4	0.00	2253.43	4236.64	2118.32	7997.90	4004.90	11.61	-1.938	0.000	0.568
65.00	-22.25	-31.67	0.00	-2092.3	0.00	2092.32	4157.93	2078.96	7642.72	3827.04	13.74	-2.133	0.000	0.552
70.00	-21.12	-31.13	0.00	-1933.9	0.00	1933.96	4077.51	2038.76	7292.30	3651.57	16.08	-2.328	0.000	0.535
75.00	-20.04	-30.57	0.00	-1778.3	0.00	1778.33	3995.39	1997.70	6946.91	3478.62	18.63	-2.524	0.000	0.516
78.00	-19.40	-30.23	0.00	-1686.6	0.00	1686.64	3945.30	1972.65	6742.20	3376.11	20.25	-2.643	0.000	0.505
80.00	-18.70	-30.01	0.00	-1626.1	0.00	1626.17	3911.57	1955.78	6606.80	3308.31	21.38	-2.723	0.000	0.497
83.50	-17.55	-29.59	0.00	-1521.1	0.00	1521.13	2771.30	1385.65	4677.52	2342.24	23.42	-2.861	0.000	0.656
85.00	-17.24	-29.46	0.00	-1476.7	0.00	1476.75	2755.69	1377.84	4610.09	2308.47	24.33	-2.921	0.000	0.646
90.00	-16.37	-28.93	0.00	-1329.4	0.00	1329.46	2702.54	1351.27	4386.89	2196.71	27.52	-3.157	0.000	0.612
95.00	-15.52	-28.41	0.00	-1184.8	0.00	1184.81	2647.69	1323.84	4166.29	2086.24	30.95	-3.388	0.000	0.574
100.00	-14.70	-27.89	0.00	-1042.7	0.00	1042.78	2591.13	1295.56	3948.53	1977.20	34.62	-3.613	0.000	0.534
105.00	-13.91	-27.37	0.00	-903.35	0.00	903.35	2532.86	1266.43	3733.89	1869.72	38.52	-3.829	0.000	0.489
110.00	-13.16	-26.85	0.00	-766.51	0.00	766.51	2472.89	1236.44	3522.60	1763.92	42.64	-4.034	0.000	0.440
113.50	-12.65	-26.49	0.00	-672.53	0.00	672.53	2429.89	1214.95	3376.84	1690.93	45.65	-4.171	0.000	0.403
115.00	-12.30	-26.33	0.00	-632.80	0.00	632.80	2411.21	1205.60	3314.94	1659.93	46.96	-4.228	0.000	0.387
118.00	-11.63	-26.01	0.00	-553.80	0.00	553.80	1790.62	895.31	2454.63	1229.14	49.66	-4.335	0.000	0.458
120.00	-11.38	-25.81	0.00	-501.78	0.00	501.78	1774.20	887.10	2396.85	1200.21	51.49	-4.403	0.000	0.425
122.00	-11.12	-25.46	0.00	-449.35	0.00	449.35	1757.50	878.75	2339.36	1171.42	53.35	-4.480	0.000	0.391
125.00	-10.77	-25.16	0.00	-372.98	0.00	372.98	1731.94	865.97	2253.71	1128.53	56.19	-4.583	0.000	0.338
127.00	-8.26	-19.41	0.00	-322.66	0.00	322.66	1714.56	857.28	2197.01	1100.14	58.13	-4.645	0.000	0.299
130.00	-7.94	-19.12	0.00	-264.43	0.00	264.43	1687.98	843.99	2112.62	1057.88	61.07	-4.727	0.000	0.255
135.00	-7.44	-18.64	0.00	-168.81	0.00	168.81	1642.31	821.15	1973.86	988.40	66.08	-4.836	0.000	0.176
137.00	-3.76	-9.82	0.00	-131.53	0.00	131.53	1623.56	811.78	1919.06	960.96	68.11	-4.870	0.000	0.139
140.00	-3.52	-9.54	0.00	-102.06	0.00	102.06	1594.93	797.47	1837.67	920.20	71.18	-4.911	0.000	0.113
145.00	-3.13	-9.09	0.00	-54.34	0.00	54.34	1545.85	772.93	1704.31	853.42	76.35	-4.962	0.000	0.066
148.00	-1.56	-2.97	0.00	-27.07	0.00	27.07	1515.59	757.79	1625.76	814.09	79.47	-4.979	0.000	0.034
150.00	-1.44	-2.80	0.00	-21.13	0.00	21.13	1495.07	747.53	1574.03	788.19	81.55	-4.987	0.000	0.028
155.00	-1.14	-2.38	0.00	-7.14	0.00	7.14	1442.53	721.26	1447.04	724.60	86.78	-4.999	0.000	0.011
158.00	0.00	-2.27	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	89.92	-5.001	0.000	0.000

Wind Loading - Shaft

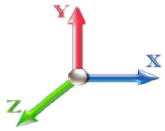
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	26.158	31.39	178.4	467.0	2374.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.725	30.87	175.5	491.3	2360.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	25.263	30.32	172.3	501.7	2331.6
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.789	29.75	179.4	505.9	2297.0
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.308	29.17	184.4	506.7	2258.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.823	28.59	187.8	505.1	2218.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.335	28.00	190.0	501.8	2176.2
38.50	Bot - Section 2	1.00	1.04	6.294	6.92	0.00	1.200	1.523	3.50	16.041	19.25	133.3	349.1	1498.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	1.50	6.903	8.28	57.8	151.5	1040.6
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.695	27.23	194.9	499.5	3417.5
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	22.201	26.64	194.9	493.2	1782.9
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	21.706	26.05	194.4	486.2	1744.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	21.210	25.45	193.5	478.6	1705.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.713	24.86	192.1	470.5	1665.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	20.215	24.26	190.5	462.0	1625.4
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.717	23.66	188.5	453.0	1584.8
78.00	Bot - Section 3	1.00	1.20	7.303	8.03	0.00	1.200	1.635	3.00	11.589	13.91	111.7	268.5	932.4
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	2.00	7.732	9.28	74.9	180.1	957.7
83.50	Top - Section 2	1.00	1.22	7.408	8.15	0.00	1.200	1.646	3.50	13.340	16.01	130.4	310.5	1649.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	1.50	5.642	6.77	55.4	132.2	380.6
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	18.483	22.18	183.6	430.8	1242.9
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.983	21.58	180.7	420.7	1208.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	17.482	20.98	177.6	410.3	1173.9
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.981	20.38	174.3	399.7	1139.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	16.480	19.78	170.8	389.0	1103.9
113.50	Bot - Section 4	1.00	1.30	7.903	8.69	0.00	1.200	1.697	3.50	11.237	13.48	117.2	266.9	752.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	1.50	4.804	5.76	50.3	115.0	486.1
118.00	Top - Section 3	1.00	1.31	7.968	8.76	0.00	1.200	1.704	3.00	9.473	11.37	99.6	226.0	956.4
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	2.00	6.215	7.46	65.6	148.9	363.4
122.00	Appurtenance(s)	1.00	1.32	8.024	8.83	0.00	1.200	1.710	2.00	6.134	7.36	65.0	147.1	358.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	3.00	9.051	10.86	96.4	216.5	527.9
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.934	7.12	63.4	142.5	346.2
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	8.750	10.50	93.9	209.7	509.3
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	14.183	17.02	153.5	337.9	821.8
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	2.00	5.532	6.64	60.0	133.3	321.4
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	8.147	9.78	88.8	195.7	472.0
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	13.178	15.81	144.7	314.3	759.3
148.00	Appurtenance(s)	1.00	1.37	8.357	9.19	0.00	1.200	1.743	3.00	7.665	9.20	84.6	184.3	441.9
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	2.00	5.009	6.01	55.4	120.9	288.8
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	12.172	14.61	135.6	290.2	696.3
158.00	Appurtenance(s)	1.00	1.39	8.473	9.32	0.00	1.200	1.754	3.00	7.061	8.47	79.0	169.7	404.1
								Totals:	**158.00**			**5,520.1**		**50,376.5**

Discrete Appurtenance Forces

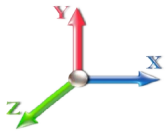
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	APXV18-206517S-C	3	8.473	9.320	0.74	1.00	16.78	295.23	0.000	0.000	156.36	0.00	0.00
2	158.00	Low Profile Platform	1	8.473	9.320	1.00	1.00	46.05	2192.58	0.000	0.000	429.21	0.00	0.00
3	148.00	LNX-6514DS-A1M	2	8.357	9.193	0.66	0.80	14.59	348.67	0.000	0.000	134.16	0.00	0.00
4	148.00	HBXX-6517DS-A2M	6	8.357	9.193	0.62	0.80	42.37	1047.42	0.000	0.000	389.53	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	8.357	9.193	0.57	0.80	5.01	83.99	0.000	0.000	46.08	0.00	0.00
6	148.00	DB844G65VTZASX	6	8.357	9.193	0.74	0.80	28.17	1049.97	0.000	0.000	259.00	0.00	0.00
7	148.00	Low Profile Platform	1	8.357	9.193	1.00	1.00	45.91	2185.72	0.000	0.000	422.08	0.00	0.00
8	148.00	RRH4X45-AWS	3	8.357	9.193	0.66	0.80	6.58	480.74	0.000	0.000	60.48	0.00	0.00
9	148.00	RRH2X60-PCS	3	8.357	9.193	0.71	0.80	6.06	451.16	0.000	0.000	55.67	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	8.357	9.193	0.73	0.80	3.57	289.26	0.000	0.000	32.79	0.00	0.00
11	137.00	Ericsson - RRUS-11 -	6	8.222	9.044	0.54	0.80	10.12	787.43	0.000	0.000	91.55	0.00	0.00
12	137.00	Kaelus -	6	8.222	9.044	0.54	0.80	2.00	247.78	0.000	0.000	18.10	0.00	0.00
13	137.00	CCI -	6	8.222	9.044	0.54	0.80	6.12	241.96	0.000	0.000	55.34	0.00	0.00
14	137.00	Ericsson - RRUS-32 -	3	8.222	9.044	0.54	0.80	6.59	614.27	0.000	0.000	59.61	0.00	0.00
15	137.00	Ericsson - RRUS-12 -	6	8.222	9.044	0.54	0.80	12.40	983.64	0.000	0.000	112.20	0.00	0.00
16	137.00	Ericsson - RRU A2 - RRU	3	8.222	9.044	0.54	0.80	4.54	162.41	0.000	0.000	41.09	0.00	0.00
17	137.00	Quintel - QS66512-2	3	8.222	9.044	0.72	0.80	20.33	998.92	0.000	0.000	183.88	0.00	0.00
18	137.00	Ericsson - B14 4478 -	3	8.222	9.044	0.54	0.80	3.48	314.12	0.000	0.000	31.47	0.00	0.00
19	137.00	800 10965	3	8.222	9.044	0.60	0.80	27.68	1235.83	0.000	0.000	250.32	0.00	0.00
20	137.00	Platform w/ Hand Rails	1	8.222	9.044	1.00	1.00	60.75	3875.36	0.000	0.000	549.48	0.00	0.00
21	137.00	Raycap -	3	8.222	9.044	0.64	0.80	4.15	257.56	0.000	0.000	37.57	0.00	0.00
22	137.00	Ericsson - RRUS 32 B2 -	3	8.222	9.044	0.54	0.80	5.57	451.87	0.000	0.000	50.34	0.00	0.00
23	137.00	KMW -	3	8.222	9.044	0.60	0.80	19.42	517.54	0.000	0.000	175.64	0.00	0.00
24	137.00	CCI - OPA-65R-LCUU-H6	3	8.222	9.044	0.63	0.80	20.88	950.74	0.000	0.000	188.86	0.00	0.00
25	137.00	Kaelus - DBC0037F1V2-1	6	8.222	9.044	0.54	0.80	2.68	91.78	0.000	0.000	24.20	0.00	0.00
26	127.00	ALU - 800 MHz - RRU	6	8.092	8.901	0.54	0.80	11.63	691.44	0.000	0.000	103.48	0.00	0.00
27	127.00	AAHC	3	8.092	8.901	0.60	0.80	9.01	609.95	0.000	0.000	80.24	0.00	0.00
28	127.00	NNVV-65B-R4	3	8.092	8.901	0.60	0.80	24.66	1051.42	0.000	0.000	219.54	0.00	0.00
29	127.00	ALU - 1900MHz - RRU	3	8.092	8.901	0.54	0.80	6.56	390.47	0.000	0.000	58.36	0.00	0.00
30	127.00	Low Profile Platform	1	8.092	8.901	1.00	1.00	45.60	2169.84	0.000	0.000	405.87	0.00	0.00
31	127.00	PRK-1245 Reinforcement	1	8.092	8.901	1.00	1.00	19.28	781.99	0.000	0.000	171.65	0.00	0.00
32	127.00	PRK-SFS-L Brace Kit	1	8.092	8.901	1.00	1.00	13.24	315.29	0.000	0.000	117.84	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	8.092	8.901	1.00	1.00	20.22	-52.34	0.000	0.000	179.96	0.00	0.00
34	122.00	CS72188.01 Omni	1	8.092	8.901	1.00	1.00	6.53	82.80	0.000	5.000	58.15	0.00	290.74
							Totals:		**26,196.82**			**5,250.09**		

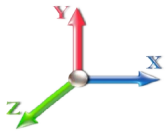
Total Applied Force Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		178.45	2606.72	0.00	0.00
10.00		175.49	2592.09	0.00	0.00
15.00		172.34	2563.59	0.00	0.00
20.00		179.43	2528.98	0.00	0.00
25.00		184.41	2490.84	0.00	0.00
30.00		187.80	2450.35	0.00	0.00
35.00		190.02	2408.19	0.00	0.00
38.50		133.27	1660.45	0.00	0.00
40.00		57.82	1110.24	0.00	0.00
45.00		194.85	3649.52	0.00	0.00
50.00		194.89	2014.92	0.00	0.00
55.00		194.40	1976.33	0.00	0.00
60.00		193.47	1937.15	0.00	0.00
65.00		192.15	1897.46	0.00	0.00
70.00		190.48	1857.32	0.00	0.00
75.00		188.50	1816.80	0.00	0.00
78.00		111.72	1071.60	0.00	0.00
80.00		74.93	1050.53	0.00	0.00
83.50		130.45	1812.25	0.00	0.00
85.00		55.38	450.16	0.00	0.00
90.00		183.62	1474.90	0.00	0.00
95.00		180.70	1440.49	0.00	0.00
100.00		177.57	1405.84	0.00	0.00
105.00		174.27	1370.97	0.00	0.00
110.00		170.79	1335.90	0.00	0.00
113.50		117.22	915.31	0.00	0.00
115.00		50.25	555.69	0.00	0.00
118.00		99.63	1095.58	0.00	0.00
120.00		65.59	456.22	0.00	0.00
122.00	(1) attachments	123.12	534.11	0.00	290.74
125.00		96.36	666.48	0.00	0.00
127.00	(20) attachments	1400.31	6396.67	0.00	0.00
130.00		93.92	632.53	0.00	0.00
135.00		153.45	1027.08	0.00	0.00
137.00	(58) attachments	1929.68	12134.71	0.00	0.00
140.00		88.83	543.37	0.00	0.00
145.00		144.74	878.20	0.00	0.00
148.00	(23) attachments	1484.35	6450.22	0.00	0.00
150.00		55.41	303.78	0.00	0.00
155.00		135.58	733.74	0.00	0.00
158.00	(4) attachments	664.54	2914.34	0.00	0.00
	Totals:	**10,770.16**	**83,211.61**	**0.00**	**290.74**

Calculated Forces

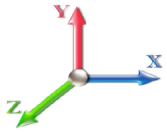
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-83.21	-10.80	0.00	-1231.9	0.00	1231.95	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.164
5.00	-80.59	-10.68	0.00	-1177.9	0.00	1177.96	6549.09	3274.55	15672.1	7847.74	0.02	-0.041	0.000	0.162
10.00	-77.99	-10.56	0.00	-1124.5	0.00	1124.57	6454.83	3227.41	15125.8	7574.18	0.09	-0.082	0.000	0.161
15.00	-75.42	-10.43	0.00	-1071.7	0.00	1071.79	6358.86	3179.43	14585.0	7303.35	0.20	-0.124	0.000	0.159
20.00	-72.89	-10.30	0.00	-1019.6	0.00	1019.62	6261.18	3130.59	14049.8	7035.38	0.35	-0.166	0.000	0.157
25.00	-70.39	-10.16	0.00	-968.10	0.00	968.10	6161.80	3080.90	13520.6	6770.39	0.55	-0.209	0.000	0.154
30.00	-67.93	-10.02	0.00	-917.28	0.00	917.28	6060.71	3030.36	12997.7	6508.52	0.79	-0.253	0.000	0.152
35.00	-65.52	-9.86	0.00	-867.19	0.00	867.19	5957.92	2978.96	12481.2	6249.90	1.08	-0.297	0.000	0.150
38.50	-63.85	-9.74	0.00	-832.68	0.00	832.68	5884.95	2942.47	12123.6	6070.85	1.31	-0.329	0.000	0.148
40.00	-62.74	-9.71	0.00	-818.06	0.00	818.06	5853.42	2926.71	11971.4	5994.64	1.41	-0.343	0.000	0.147
45.00	-59.08	-9.54	0.00	-769.50	0.00	769.50	4462.52	2231.26	9089.55	4551.53	1.80	-0.388	0.000	0.182
50.00	-57.06	-9.38	0.00	-721.80	0.00	721.80	4388.93	2194.47	8721.58	4367.27	2.23	-0.434	0.000	0.178
55.00	-55.08	-9.22	0.00	-674.90	0.00	674.90	4313.64	2156.82	8357.61	4185.02	2.71	-0.488	0.000	0.174
60.00	-53.13	-9.06	0.00	-628.79	0.00	628.79	4236.64	2118.32	7997.90	4004.90	3.25	-0.542	0.000	0.170
65.00	-51.23	-8.90	0.00	-583.48	0.00	583.48	4157.93	2078.96	7642.72	3827.04	3.85	-0.597	0.000	0.165
70.00	-49.37	-8.74	0.00	-538.98	0.00	538.98	4077.51	2038.76	7292.30	3651.57	4.50	-0.651	0.000	0.160
75.00	-47.55	-8.56	0.00	-495.30	0.00	495.30	3995.39	1997.70	6946.91	3478.62	5.22	-0.706	0.000	0.154
78.00	-46.47	-8.46	0.00	-469.62	0.00	469.62	3945.30	1972.65	6742.20	3376.11	5.67	-0.739	0.000	0.151
80.00	-45.42	-8.40	0.00	-452.70	0.00	452.70	3911.57	1955.78	6606.80	3308.31	5.98	-0.761	0.000	0.148
83.50	-43.60	-8.26	0.00	-423.32	0.00	423.32	2771.30	1385.65	4677.52	2342.24	6.56	-0.799	0.000	0.197
85.00	-43.15	-8.23	0.00	-410.92	0.00	410.92	2755.69	1377.84	4610.09	2308.47	6.81	-0.816	0.000	0.194
90.00	-41.67	-8.07	0.00	-369.77	0.00	369.77	2702.54	1351.27	4386.89	2196.71	7.70	-0.882	0.000	0.184
95.00	-40.22	-7.91	0.00	-329.41	0.00	329.41	2647.69	1323.84	4166.29	2086.24	8.66	-0.946	0.000	0.173
100.00	-38.81	-7.75	0.00	-289.85	0.00	289.85	2591.13	1295.56	3948.53	1977.20	9.68	-1.009	0.000	0.162
105.00	-37.44	-7.59	0.00	-251.08	0.00	251.08	2532.86	1266.43	3733.89	1869.72	10.77	-1.069	0.000	0.149
110.00	-36.10	-7.43	0.00	-213.12	0.00	213.12	2472.89	1236.44	3522.60	1763.92	11.92	-1.126	0.000	0.135
113.50	-35.18	-7.31	0.00	-187.13	0.00	187.13	2429.89	1214.95	3376.84	1690.93	12.76	-1.164	0.000	0.125
115.00	-34.62	-7.26	0.00	-176.18	0.00	176.18	2411.21	1205.60	3314.94	1659.93	13.13	-1.180	0.000	0.121
118.00	-33.53	-7.15	0.00	-154.40	0.00	154.40	1790.62	895.31	2454.63	1229.14	13.88	-1.210	0.000	0.144
120.00	-33.07	-7.09	0.00	-140.10	0.00	140.10	1774.20	887.10	2396.85	1200.21	14.39	-1.229	0.000	0.135
122.00	-32.54	-6.97	0.00	-125.63	0.00	125.63	1757.50	878.75	2339.36	1171.42	14.91	-1.250	0.000	0.126
125.00	-31.87	-6.87	0.00	-104.73	0.00	104.73	1731.94	865.97	2253.71	1128.53	15.71	-1.279	0.000	0.111
127.00	-25.50	-5.33	0.00	-91.00	0.00	91.00	1714.56	857.28	2197.01	1100.14	16.25	-1.296	0.000	0.098
130.00	-24.87	-5.24	0.00	-74.99	0.00	74.99	1687.98	843.99	2112.62	1057.88	17.07	-1.319	0.000	0.086
135.00	-23.85	-5.07	0.00	-48.81	0.00	48.81	1642.31	821.15	1973.86	988.40	18.47	-1.350	0.000	0.064
137.00	-11.76	-2.85	0.00	-38.67	0.00	38.67	1623.56	811.78	1919.06	960.96	19.04	-1.360	0.000	0.047
140.00	-11.22	-2.76	0.00	-30.10	0.00	30.10	1594.93	797.47	1837.67	920.20	19.90	-1.373	0.000	0.040
145.00	-10.34	-2.59	0.00	-16.33	0.00	16.33	1545.85	772.93	1704.31	853.42	21.34	-1.388	0.000	0.026
148.00	-3.93	-0.95	0.00	-8.55	0.00	8.55	1515.59	757.79	1625.76	814.09	22.22	-1.393	0.000	0.013
150.00	-3.63	-0.89	0.00	-6.65	0.00	6.65	1495.07	747.53	1574.03	788.19	22.80	-1.395	0.000	0.011
155.00	-2.90	-0.74	0.00	-2.21	0.00	2.21	1442.53	721.26	1447.04	724.60	24.27	-1.399	0.000	0.005
158.00	0.00	-0.66	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	25.15	-1.400	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.38	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	28.46	
10.00		1557.3	0.01	0.05	0.03	41.22	
15.00		1524.9	0.02	0.06	0.04	47.09	
20.00		1492.5	0.03	0.07	0.04	49.59	
25.00		1460.1	0.05	0.07	0.04	50.50	
30.00		1427.7	0.07	0.07	0.04	50.75	
35.00		1395.3	0.09	0.07	0.04	50.79	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	35.41	
40.00		740.96	0.12	0.07	0.03	27.58	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	92.23	
50.00		1074.7	0.19	0.06	0.02	41.11	
55.00		1048.4	0.23	0.06	0.02	39.59	
60.00		1022.1	0.27	0.05	0.01	36.73	
65.00		995.81	0.32	0.04	0.01	32.00	
70.00		969.48	0.37	0.03	0.01	25.00	
75.00		943.15	0.43	0.01	0.01	15.68	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	5.48	
80.00		648.06	0.48	-0.01	0.01	3.27	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-4.33	
85.00		206.99	0.55	-0.03	0.01	-1.60	
90.00		676.80	0.61	-0.06	0.02	-13.42	
95.00		656.55	0.68	-0.08	0.03	-19.27	
100.00		636.30	0.76	-0.10	0.04	-22.24	
105.00		616.05	0.83	-0.12	0.06	-22.13	
110.00		595.80	0.92	-0.12	0.09	-19.09	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-10.70	
115.00		309.25	1.00	-0.11	0.13	-7.20	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-9.55	
120.00		178.79	1.09	-0.08	0.18	-1.73	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.58	
125.00		259.44	1.18	-0.01	0.24	2.26	
127.00	Appurtenance(s)	3184.1	1.22	0.03	0.27	55.50	
130.00		249.72	1.28	0.09	0.32	7.98	
135.00		403.24	1.38	0.25	0.41	24.20	
137.00	Appurtenance(s)	4822.2	1.42	0.32	0.45	350.17	
140.00		230.28	1.48	0.46	0.52	21.42	
145.00		370.84	1.59	0.75	0.66	48.59	
148.00	Appurtenance(s)	2263.6	1.66	0.97	0.75	353.78	
150.00		139.91	1.70	1.14	0.82	24.37	
155.00		338.44	1.82	1.63	1.01	75.31	
158.00	Appurtenance(s)	1474.4	1.89	1.98	1.14	374.66	
	Totals:	**41,777.3**				**1,878.9**	**Total Wind:** **38,281.5**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 21

Gust Response Factor	1.10			**Sds**	0.20			**Ss**	0.19
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.38	**SA**	0.04	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-56.77	-2.01	0.00	-230.16	0.00	230.16	6641.65	3320.83	16223.6	8123.90		0.00	0.00	0.037
5.00	-54.63	-1.99	0.00	-220.09	0.00	220.09	6549.09	3274.55	15672.1	7847.74		0.00	-0.01	0.036
10.00	-52.53	-1.96	0.00	-210.13	0.00	210.13	6454.83	3227.41	15125.8	7574.18		0.02	-0.02	0.036
15.00	-50.47	-1.92	0.00	-200.34	0.00	200.34	6358.86	3179.43	14585.0	7303.35		0.04	-0.02	0.035
20.00	-48.44	-1.87	0.00	-190.75	0.00	190.75	6261.18	3130.59	14049.8	7035.38		0.06	-0.03	0.035
25.00	-46.46	-1.83	0.00	-181.38	0.00	181.38	6161.80	3080.90	13520.6	6770.39		0.10	-0.04	0.034
30.00	-44.51	-1.78	0.00	-172.24	0.00	172.24	6060.71	3030.36	12997.7	6508.52		0.15	-0.05	0.034
35.00	-42.61	-1.74	0.00	-163.33	0.00	163.33	5957.92	2978.96	12481.2	6249.90		0.20	-0.06	0.033
38.50	-41.30	-1.70	0.00	-157.25	0.00	157.25	5884.95	2942.47	12123.6	6070.85		0.24	-0.06	0.033
40.00	-40.34	-1.68	0.00	-154.70	0.00	154.70	5853.42	2926.71	11971.4	5994.64		0.26	-0.06	0.033
45.00	-37.19	-1.59	0.00	-146.31	0.00	146.31	4462.52	2231.26	9089.55	4551.53		0.34	-0.07	0.040
50.00	-35.67	-1.55	0.00	-138.38	0.00	138.38	4388.93	2194.47	8721.58	4367.27		0.42	-0.08	0.040
55.00	-34.18	-1.51	0.00	-130.63	0.00	130.63	4313.64	2156.82	8357.61	4185.02		0.51	-0.09	0.039
60.00	-32.72	-1.48	0.00	-123.06	0.00	123.06	4236.64	2118.32	7997.90	4004.90		0.61	-0.10	0.038
65.00	-31.29	-1.45	0.00	-115.66	0.00	115.66	4157.93	2078.96	7642.72	3827.04		0.72	-0.11	0.038
70.00	-29.89	-1.43	0.00	-108.40	0.00	108.40	4077.51	2038.76	7292.30	3651.57		0.85	-0.12	0.037
75.00	-28.53	-1.42	0.00	-101.25	0.00	101.25	3995.39	1997.70	6946.91	3478.62		0.98	-0.14	0.036
78.00	-27.73	-1.41	0.00	-97.00	0.00	97.00	3945.30	1972.65	6742.20	3376.11		1.07	-0.14	0.036
80.00	-26.86	-1.41	0.00	-94.18	0.00	94.18	3911.57	1955.78	6606.80	3308.31		1.13	-0.15	0.035
83.50	-25.35	-1.41	0.00	-89.25	0.00	89.25	2771.30	1385.65	4677.52	2342.24		1.24	-0.15	0.047
85.00	-25.04	-1.41	0.00	-87.14	0.00	87.14	2755.69	1377.84	4610.09	2308.47		1.29	-0.16	0.047
90.00	-23.99	-1.41	0.00	-80.09	0.00	80.09	2702.54	1351.27	4386.89	2196.71		1.46	-0.17	0.045
95.00	-22.97	-1.42	0.00	-73.02	0.00	73.02	2647.69	1323.84	4166.29	2086.24		1.65	-0.19	0.044
100.00	-21.98	-1.42	0.00	-65.95	0.00	65.95	2591.13	1295.56	3948.53	1977.20		1.86	-0.20	0.042
105.00	-21.00	-1.42	0.00	-58.86	0.00	58.86	2532.86	1266.43	3733.89	1869.72		2.07	-0.21	0.040
110.00	-20.06	-1.42	0.00	-51.77	0.00	51.77	2472.89	1236.44	3522.60	1763.92		2.30	-0.23	0.037
113.50	-19.41	-1.42	0.00	-46.80	0.00	46.80	2429.89	1214.95	3376.84	1690.93		2.48	-0.24	0.036
115.00	-18.97	-1.42	0.00	-44.67	0.00	44.67	2411.21	1205.60	3314.94	1659.93		2.55	-0.24	0.035
118.00	-18.10	-1.42	0.00	-40.41	0.00	40.41	1790.62	895.31	2454.63	1229.14		2.70	-0.25	0.043
120.00	-17.79	-1.42	0.00	-37.58	0.00	37.58	1774.20	887.10	2396.85	1200.21		2.81	-0.25	0.041
122.00	-17.46	-1.42	0.00	-34.74	0.00	34.74	1757.50	878.75	2339.36	1171.42		2.92	-0.26	0.040
125.00	-17.01	-1.42	0.00	-30.49	0.00	30.49	1731.94	865.97	2253.71	1128.53		3.08	-0.27	0.037
127.00	-13.09	-1.34	0.00	-27.65	0.00	27.65	1714.56	857.28	2197.01	1100.14		3.20	-0.27	0.033
130.00	-12.67	-1.34	0.00	-23.62	0.00	23.62	1687.98	843.99	2112.62	1057.88		3.37	-0.28	0.030
135.00	-11.98	-1.31	0.00	-16.95	0.00	16.95	1642.31	821.15	1973.86	988.40		3.67	-0.29	0.024
137.00	-6.11	-0.93	0.00	-14.33	0.00	14.33	1623.56	811.78	1919.06	960.96		3.79	-0.29	0.019
140.00	-5.77	-0.91	0.00	-11.54	0.00	11.54	1594.93	797.47	1837.67	920.20		3.98	-0.30	0.016
145.00	-5.20	-0.86	0.00	-7.00	0.00	7.00	1545.85	772.93	1704.31	853.42		4.29	-0.30	0.012
148.00	-2.42	-0.49	0.00	-4.44	0.00	4.44	1515.59	757.79	1625.76	814.09		4.49	-0.31	0.007
150.00	-2.23	-0.46	0.00	-3.46	0.00	3.46	1495.07	747.53	1574.03	788.19		4.62	-0.31	0.006
155.00	-1.79	-0.38	0.00	-1.15	0.00	1.15	1442.53	721.26	1447.04	724.60		4.94	-0.31	0.003
158.00	0.00	-0.37	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		5.14	-0.31	0.000

Seismic Segment Forces (Factored)

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	20
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.38	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	28.46	
10.00		1557.3	0.01	0.05	0.03	41.22	
15.00		1524.9	0.02	0.06	0.04	47.09	
20.00		1492.5	0.03	0.07	0.04	49.59	
25.00		1460.1	0.05	0.07	0.04	50.50	
30.00		1427.7	0.07	0.07	0.04	50.75	
35.00		1395.3	0.09	0.07	0.04	50.79	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	35.41	
40.00		740.96	0.12	0.07	0.03	27.58	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	92.23	
50.00		1074.7	0.19	0.06	0.02	41.11	
55.00		1048.4	0.23	0.06	0.02	39.59	
60.00		1022.1	0.27	0.05	0.01	36.73	
65.00		995.81	0.32	0.04	0.01	32.00	
70.00		969.48	0.37	0.03	0.01	25.00	
75.00		943.15	0.43	0.01	0.01	15.68	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	5.48	
80.00		648.06	0.48	-0.01	0.01	3.27	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-4.33	
85.00		206.99	0.55	-0.03	0.01	-1.60	
90.00		676.80	0.61	-0.06	0.02	-13.42	
95.00		656.55	0.68	-0.08	0.03	-19.27	
100.00		636.30	0.76	-0.10	0.04	-22.24	
105.00		616.05	0.83	-0.12	0.06	-22.13	
110.00		595.80	0.92	-0.12	0.09	-19.09	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-10.70	
115.00		309.25	1.00	-0.11	0.13	-7.20	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-9.55	
120.00		178.79	1.09	-0.08	0.18	-1.73	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.58	
125.00		259.44	1.18	-0.01	0.24	2.26	
127.00	Appurtenance(s)	3184.1	1.22	0.03	0.27	55.50	
130.00		249.72	1.28	0.09	0.32	7.98	
135.00		403.24	1.38	0.25	0.41	24.20	
137.00	Appurtenance(s)	4822.2	1.42	0.32	0.45	350.17	
140.00		230.28	1.48	0.46	0.52	21.42	
145.00		370.84	1.59	0.75	0.66	48.59	
148.00	Appurtenance(s)	2263.6	1.66	0.97	0.75	353.78	
150.00		139.91	1.70	1.14	0.82	24.37	
155.00		338.44	1.82	1.63	1.01	75.31	
158.00	Appurtenance(s)	1474.4	1.89	1.98	1.14	374.66	
	Totals:	**41,777.3**				**1,878.9**	**Total Wind:** **38,281.5**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.20			**Ss**	0.19
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.38	**SA**	0.04	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.58	-2.01	0.00	-227.93	0.00	227.93	6641.65	3320.83	16223.6	8123.90		0.00	0.00	0.034
5.00	-40.97	-1.99	0.00	-217.87	0.00	217.87	6549.09	3274.55	15672.1	7847.74		0.00	-0.01	0.034
10.00	-39.40	-1.95	0.00	-207.92	0.00	207.92	6454.83	3227.41	15125.8	7574.18		0.02	-0.02	0.034
15.00	-37.85	-1.91	0.00	-198.16	0.00	198.16	6358.86	3179.43	14585.0	7303.35		0.04	-0.02	0.033
20.00	-36.33	-1.86	0.00	-188.61	0.00	188.61	6261.18	3130.59	14049.8	7035.38		0.06	-0.03	0.033
25.00	-34.84	-1.82	0.00	-179.29	0.00	179.29	6161.80	3080.90	13520.6	6770.39		0.10	-0.04	0.032
30.00	-33.39	-1.77	0.00	-170.19	0.00	170.19	6060.71	3030.36	12997.7	6508.52		0.15	-0.05	0.032
35.00	-31.96	-1.72	0.00	-161.34	0.00	161.34	5957.92	2978.96	12481.2	6249.90		0.20	-0.06	0.031
38.50	-30.97	-1.69	0.00	-155.31	0.00	155.31	5884.95	2942.47	12123.6	6070.85		0.24	-0.06	0.031
40.00	-30.25	-1.66	0.00	-152.77	0.00	152.77	5853.42	2926.71	11971.4	5994.64		0.26	-0.06	0.031
45.00	-27.89	-1.57	0.00	-144.45	0.00	144.45	4462.52	2231.26	9089.55	4551.53		0.33	-0.07	0.038
50.00	-26.75	-1.53	0.00	-136.59	0.00	136.59	4388.93	2194.47	8721.58	4367.27		0.41	-0.08	0.037
55.00	-25.63	-1.50	0.00	-128.92	0.00	128.92	4313.64	2156.82	8357.61	4185.02		0.50	-0.09	0.037
60.00	-24.54	-1.46	0.00	-121.43	0.00	121.43	4236.64	2118.32	7997.90	4004.90		0.60	-0.10	0.036
65.00	-23.47	-1.43	0.00	-114.11	0.00	114.11	4157.93	2078.96	7642.72	3827.04		0.72	-0.11	0.035
70.00	-22.42	-1.41	0.00	-106.94	0.00	106.94	4077.51	2038.76	7292.30	3651.57		0.84	-0.12	0.035
75.00	-21.40	-1.40	0.00	-99.88	0.00	99.88	3995.39	1997.70	6946.91	3478.62		0.97	-0.13	0.034
78.00	-20.79	-1.39	0.00	-95.69	0.00	95.69	3945.30	1972.65	6742.20	3376.11		1.06	-0.14	0.034
80.00	-20.14	-1.39	0.00	-92.91	0.00	92.91	3911.57	1955.78	6606.80	3308.31		1.12	-0.14	0.033
83.50	-19.01	-1.39	0.00	-88.04	0.00	88.04	2771.30	1385.65	4677.52	2342.24		1.23	-0.15	0.044
85.00	-18.78	-1.39	0.00	-85.96	0.00	85.96	2755.69	1377.84	4610.09	2308.47		1.28	-0.16	0.044
90.00	-17.99	-1.39	0.00	-79.01	0.00	79.01	2702.54	1351.27	4386.89	2196.71		1.45	-0.17	0.043
95.00	-17.23	-1.39	0.00	-72.05	0.00	72.05	2647.69	1323.84	4166.29	2086.24		1.63	-0.18	0.041
100.00	-16.48	-1.40	0.00	-65.08	0.00	65.08	2591.13	1295.56	3948.53	1977.20		1.83	-0.20	0.039
105.00	-15.75	-1.40	0.00	-58.10	0.00	58.10	2532.86	1266.43	3733.89	1869.72		2.05	-0.21	0.037
110.00	-15.04	-1.40	0.00	-51.11	0.00	51.11	2472.89	1236.44	3522.60	1763.92		2.28	-0.22	0.035
113.50	-14.55	-1.40	0.00	-46.22	0.00	46.22	2429.89	1214.95	3376.84	1690.93		2.44	-0.23	0.033
115.00	-14.22	-1.40	0.00	-44.12	0.00	44.12	2411.21	1205.60	3314.94	1659.93		2.52	-0.24	0.032
118.00	-13.57	-1.40	0.00	-39.93	0.00	39.93	1790.62	895.31	2454.63	1229.14		2.67	-0.25	0.040
120.00	-13.34	-1.40	0.00	-37.14	0.00	37.14	1774.20	887.10	2396.85	1200.21		2.78	-0.25	0.038
122.00	-13.09	-1.40	0.00	-34.35	0.00	34.35	1757.50	878.75	2339.36	1171.42		2.88	-0.26	0.037
125.00	-12.75	-1.39	0.00	-30.16	0.00	30.16	1731.94	865.97	2253.71	1128.53		3.05	-0.26	0.034
127.00	-9.82	-1.33	0.00	-27.37	0.00	27.37	1714.56	857.28	2197.01	1100.14		3.16	-0.27	0.031
130.00	-9.50	-1.32	0.00	-23.39	0.00	23.39	1687.98	843.99	2112.62	1057.88		3.33	-0.28	0.028
135.00	-8.98	-1.29	0.00	-16.79	0.00	16.79	1642.31	821.15	1973.86	988.40		3.62	-0.29	0.022
137.00	-4.58	-0.92	0.00	-14.21	0.00	14.21	1623.56	811.78	1919.06	960.96		3.75	-0.29	0.018
140.00	-4.32	-0.90	0.00	-11.44	0.00	11.44	1594.93	797.47	1837.67	920.20		3.93	-0.29	0.015
145.00	-3.90	-0.85	0.00	-6.95	0.00	6.95	1545.85	772.93	1704.31	853.42		4.24	-0.30	0.011
148.00	-1.81	-0.48	0.00	-4.41	0.00	4.41	1515.59	757.79	1625.76	814.09		4.43	-0.30	0.007
150.00	-1.67	-0.46	0.00	-3.44	0.00	3.44	1495.07	747.53	1574.03	788.19		4.56	-0.30	0.005
155.00	-1.34	-0.38	0.00	-1.15	0.00	1.15	1442.53	721.26	1447.04	724.60		4.88	-0.31	0.003
158.00	0.00	-0.37	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		5.07	-0.31	0.000

Wind Loading - Shaft

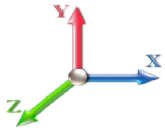
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	280.76	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	275.14	0.650	0.000	5.00	25.123	16.33	133.7	0.0	1589.8
10.00		1.00	0.85	7.442	8.19	269.53	0.650	0.000	5.00	24.616	16.00	131.0	0.0	1557.4
15.00		1.00	0.85	7.442	8.19	263.91	0.650	0.000	5.00	24.108	15.67	128.3	0.0	1525.0
20.00		1.00	0.90	7.896	8.69	266.06	0.650	0.000	5.00	23.600	15.34	133.2	0.0	1492.6
25.00		1.00	0.95	8.276	9.10	266.46	0.650	0.000	5.00	23.093	15.01	136.6	0.0	1460.2
30.00		1.00	0.98	8.600	9.46	265.58	0.650	0.000	5.00	22.585	14.68	138.9	0.0	1427.8
35.00		1.00	1.01	8.883	9.77	263.79	0.650	0.000	5.00	22.077	14.35	140.2	0.0	1395.4
38.50	Bot - Section 2	1.00	1.04	9.064	9.97	262.11	0.650	0.000	3.50	15.152	9.85	98.2	0.0	957.5
40.00		1.00	1.04	9.137	10.05	261.30	0.650	0.000	1.50	6.521	4.24	42.6	0.0	741.0
45.00	Top - Section 1	1.00	1.07	9.366	10.30	258.26	0.650	0.000	5.00	21.406	13.91	143.3	0.0	2431.7
50.00		1.00	1.09	9.576	10.53	259.09	0.650	0.000	5.00	20.898	13.58	143.1	0.0	1074.8
55.00		1.00	1.12	9.770	10.75	255.26	0.650	0.000	5.00	20.390	13.25	142.4	0.0	1048.5
60.00		1.00	1.14	9.951	10.95	251.12	0.650	0.000	5.00	19.883	12.92	141.5	0.0	1022.1
65.00		1.00	1.16	10.120	11.13	246.69	0.650	0.000	5.00	19.375	12.59	140.2	0.0	995.8
70.00		1.00	1.17	10.279	11.31	242.02	0.650	0.000	5.00	18.867	12.26	138.7	0.0	969.5
75.00		1.00	1.19	10.430	11.47	237.14	0.650	0.000	5.00	18.360	11.93	136.9	0.0	943.2
78.00	Bot - Section 3	1.00	1.20	10.516	11.57	234.11	0.650	0.000	3.00	10.772	7.00	81.0	0.0	553.3
80.00		1.00	1.21	10.572	11.63	232.06	0.650	0.000	2.00	7.186	4.67	54.3	0.0	648.1
83.50	Top - Section 2	1.00	1.22	10.668	11.73	228.40	0.650	0.000	3.50	12.379	8.05	94.4	0.0	1116.2
85.00		1.00	1.22	10.708	11.78	230.32	0.650	0.000	1.50	5.229	3.40	40.0	0.0	207.0
90.00		1.00	1.24	10.838	11.92	224.93	0.650	0.000	5.00	17.101	11.12	132.5	0.0	676.8
95.00		1.00	1.25	10.962	12.06	219.39	0.650	0.000	5.00	16.593	10.79	130.1	0.0	656.5
100.00		1.00	1.27	11.081	12.19	213.73	0.650	0.000	5.00	16.086	10.46	127.4	0.0	636.3
105.00		1.00	1.28	11.195	12.31	207.94	0.650	0.000	5.00	15.578	10.13	124.7	0.0	616.1
110.00		1.00	1.29	11.305	12.44	202.04	0.650	0.000	5.00	15.070	9.80	121.8	0.0	595.8
113.50	Bot - Section 4	1.00	1.30	11.380	12.52	197.84	0.650	0.000	3.50	10.247	6.66	83.4	0.0	405.0
115.00		1.00	1.30	11.412	12.55	196.03	0.650	0.000	1.50	4.379	2.85	35.7	0.0	309.3
118.00	Top - Section 3	1.00	1.31	11.474	12.62	192.38	0.650	0.000	3.00	8.621	5.60	70.7	0.0	608.7
120.00		1.00	1.32	11.514	12.67	192.84	0.650	0.000	2.00	5.646	3.67	46.5	0.0	178.8
122.00	Appurtenance(s)	1.00	1.32	11.554	12.71	190.37	0.650	0.000	2.00	5.564	3.62	46.0	0.0	176.2
125.00		1.00	1.33	11.614	12.78	186.65	0.650	0.000	3.00	8.194	5.33	68.0	0.0	259.4
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	184.15	0.650	0.000	2.00	5.361	3.48	44.7	0.0	169.7
130.00		1.00	1.34	11.710	12.88	180.38	0.650	0.000	3.00	7.890	5.13	66.1	0.0	249.7
135.00		1.00	1.35	11.803	12.98	174.02	0.650	0.000	5.00	12.743	8.28	107.5	0.0	403.2
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	171.46	0.650	0.000	2.00	4.955	3.22	41.9	0.0	156.8
140.00		1.00	1.36	11.894	13.08	167.59	0.650	0.000	3.00	7.281	4.73	61.9	0.0	230.3
145.00		1.00	1.37	11.982	13.18	161.08	0.650	0.000	5.00	11.728	7.62	100.5	0.0	370.8
148.00	Appurtenance(s)	1.00	1.37	12.034	13.24	157.14	0.650	0.000	3.00	6.793	4.42	58.5	0.0	214.7
150.00		1.00	1.38	12.068	13.27	154.50	0.650	0.000	2.00	4.427	2.88	38.2	0.0	139.9
155.00		1.00	1.39	12.152	13.37	147.86	0.650	0.000	5.00	10.713	6.96	93.1	0.0	338.4
158.00	Appurtenance(s)	1.00	1.39	12.201	13.42	143.84	0.650	0.000	3.00	6.184	4.02	53.9	0.0	195.3
								Totals:	**158.00**			**3,991.7**		**30,744.2**

Discrete Appurtenance Forces

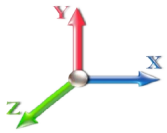
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	APXV18-206517S-C	3	12.201	13.421	0.74	1.00	11.48	79.20	0.000	0.000	154.04	0.00	0.00
2	158.00	Low Profile Platform	1	12.201	13.421	1.00	1.00	25.00	1200.00	0.000	0.000	335.52	0.00	0.00
3	148.00	LNX-6514DS-A1M	2	12.034	13.238	0.66	0.80	10.85	77.60	0.000	0.000	143.62	0.00	0.00
4	148.00	HBXX-6517DS-A2M	6	12.034	13.238	0.62	0.80	31.60	244.80	0.000	0.000	418.32	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	12.034	13.238	0.57	0.80	3.86	29.54	0.000	0.000	51.05	0.00	0.00
6	148.00	DB844G65VTZASX	6	12.034	13.238	0.74	0.80	19.33	96.00	0.000	0.000	255.87	0.00	0.00
7	148.00	Low Profile Platform	1	12.034	13.238	1.00	1.00	25.00	1200.00	0.000	0.000	330.94	0.00	0.00
8	148.00	RRH4X45-AWS	3	12.034	13.238	0.66	0.80	5.00	192.00	0.000	0.000	66.17	0.00	0.00
9	148.00	RRH2X60-PCS	3	12.034	13.238	0.71	0.80	4.70	165.00	0.000	0.000	62.21	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	12.034	13.238	0.73	0.80	2.98	44.00	0.000	0.000	39.51	0.00	0.00
11	137.00	Ericsson - RRUS-11 -	6	11.840	13.024	0.54	0.80	8.10	330.00	0.000	0.000	105.55	0.00	0.00
12	137.00	Kaelus -	6	11.840	13.024	0.54	0.80	1.06	109.80	0.000	0.000	13.82	0.00	0.00
13	137.00	CCI -	6	11.840	13.024	0.54	0.80	3.67	114.00	0.000	0.000	47.75	0.00	0.00
14	137.00	Ericsson - RRUS-32 -	3	11.840	13.024	0.54	0.80	6.22	231.00	0.000	0.000	81.05	0.00	0.00
15	137.00	Ericsson - RRUS-12 -	6	11.840	13.024	0.54	0.80	10.13	348.00	0.000	0.000	131.94	0.00	0.00
16	137.00	Ericsson - RRU A2 - RRU	3	11.840	13.024	0.54	0.80	2.99	66.00	0.000	0.000	38.95	0.00	0.00
17	137.00	Quintel - QS66512-2	3	11.840	13.024	0.72	0.80	17.56	333.00	0.000	0.000	228.71	0.00	0.00
18	137.00	Ericsson - B14 4478 -	3	11.840	13.024	0.54	0.80	2.65	180.00	0.000	0.000	34.56	0.00	0.00
19	137.00	800 10965	3	11.840	13.024	0.62	0.80	18.89	292.20	0.000	0.000	245.98	0.00	0.00
20	137.00	Platform w/ Hand Rails	1	11.840	13.024	1.00	1.00	40.00	2000.00	0.000	0.000	520.96	0.00	0.00
21	137.00	Raycap -	3	11.840	13.024	0.64	0.80	2.82	98.40	0.000	0.000	36.76	0.00	0.00
22	137.00	Ericsson - RRUS 32 B2 -	3	11.840	13.024	0.54	0.80	4.41	159.00	0.000	0.000	57.38	0.00	0.00
23	137.00	KMW -	3	11.840	13.024	0.60	0.80	14.44	145.50	0.000	0.000	188.01	0.00	0.00
24	137.00	CCI - OPA-65R-LCUU-H6	3	11.840	13.024	0.63	0.80	18.32	219.00	0.000	0.000	238.54	0.00	0.00
25	137.00	Kaelus - DBC0037F1V2-1	6	11.840	13.024	0.54	0.80	1.22	39.60	0.000	0.000	15.92	0.00	0.00
26	127.00	ALU - 800 MHz - RRU	6	11.653	12.818	0.54	0.80	8.01	318.00	0.000	0.000	102.64	0.00	0.00
27	127.00	AAHC	3	11.653	12.818	0.60	0.80	7.58	311.10	0.000	0.000	97.13	0.00	0.00
28	127.00	NNVV-65B-R4	3	11.653	12.818	0.59	0.80	21.79	254.10	0.000	0.000	279.32	0.00	0.00
29	127.00	ALU - 1900MHz - RRU	3	11.653	12.818	0.54	0.80	4.45	180.00	0.000	0.000	57.09	0.00	0.00
30	127.00	Low Profile Platform	1	11.653	12.818	1.00	1.00	25.00	1200.00	0.000	0.000	320.45	0.00	0.00
31	127.00	PRK-1245 Reinforcement	1	11.653	12.818	1.00	1.00	9.50	464.91	0.000	0.000	121.77	0.00	0.00
32	127.00	PRK-SFS-L Brace Kit	1	11.653	12.818	1.00	1.00	6.75	261.72	0.000	0.000	86.52	0.00	0.00
33	127.00	A-ANT-23G-2-C	2	11.653	12.818	1.00	1.00	16.86	24.60	0.000	0.000	216.11	0.00	0.00
34	122.00	CS72188.01 Omni	1	11.653	12.818	1.00	1.00	3.00	25.00	0.000	5.000	38.45	0.00	192.27
							Totals:		**11,033.07**			**5,162.62**		

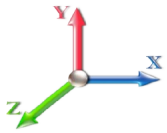
Total Applied Force Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		133.68	1783.08	0.00	0.00
10.00		130.98	1750.68	0.00	0.00
15.00		128.28	1718.28	0.00	0.00
20.00		133.24	1685.88	0.00	0.00
25.00		136.65	1653.48	0.00	0.00
30.00		138.87	1621.08	0.00	0.00
35.00		140.23	1588.69	0.00	0.00
38.50		98.19	1092.80	0.00	0.00
40.00		42.60	798.95	0.00	0.00
45.00		143.35	2625.01	0.00	0.00
50.00		143.09	1268.10	0.00	0.00
55.00		142.44	1241.77	0.00	0.00
60.00		141.46	1215.44	0.00	0.00
65.00		140.19	1189.12	0.00	0.00
70.00		138.67	1162.79	0.00	0.00
75.00		136.91	1136.46	0.00	0.00
78.00		80.99	669.24	0.00	0.00
80.00		54.32	725.38	0.00	0.00
83.50		94.43	1251.49	0.00	0.00
85.00		40.04	264.98	0.00	0.00
90.00		132.51	870.11	0.00	0.00
95.00		130.05	849.86	0.00	0.00
100.00		127.44	829.61	0.00	0.00
105.00		124.69	809.36	0.00	0.00
110.00		121.82	789.11	0.00	0.00
113.50		83.38	540.33	0.00	0.00
115.00		35.73	367.24	0.00	0.00
118.00		70.72	724.65	0.00	0.00
120.00		46.48	256.12	0.00	0.00
122.00	(1) attachments	84.42	278.52	0.00	192.27
125.00		68.04	374.95	0.00	0.00
127.00	(20) attachments	1325.70	3261.15	0.00	0.00
130.00		66.06	352.38	0.00	0.00
135.00		107.55	574.34	0.00	0.00
137.00	(58) attachments	2027.83	4890.70	0.00	0.00
140.00		61.92	289.74	0.00	0.00
145.00		100.48	469.94	0.00	0.00
148.00	(23) attachments	1426.14	2323.13	0.00	0.00
150.00		38.20	152.39	0.00	0.00
155.00		93.08	369.64	0.00	0.00
158.00	(4) attachments	543.51	1493.21	0.00	0.00
	Totals:	**9,154.37**	**47,309.21**	**0.00**	**192.27**

Calculated Forces

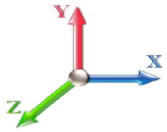
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.31	-9.17	0.00	-1054.5	0.00	1054.53	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.137
5.00	-45.52	-9.06	0.00	-1008.6	0.00	1008.69	6549.09	3274.55	15672.1	7847.74	0.02	-0.035	0.000	0.135
10.00	-43.76	-8.96	0.00	-963.38	0.00	963.38	6454.83	3227.41	15125.8	7574.18	0.07	-0.070	0.000	0.134
15.00	-42.04	-8.85	0.00	-918.60	0.00	918.60	6358.86	3179.43	14585.0	7303.35	0.17	-0.106	0.000	0.132
20.00	-40.35	-8.74	0.00	-874.34	0.00	874.34	6261.18	3130.59	14049.8	7035.38	0.30	-0.142	0.000	0.131
25.00	-38.69	-8.63	0.00	-830.63	0.00	830.63	6161.80	3080.90	13520.6	6770.39	0.47	-0.179	0.000	0.129
30.00	-37.06	-8.51	0.00	-787.50	0.00	787.50	6060.71	3030.36	12997.7	6508.52	0.68	-0.217	0.000	0.127
35.00	-35.47	-8.38	0.00	-744.98	0.00	744.98	5957.92	2978.96	12481.2	6249.90	0.92	-0.255	0.000	0.125
38.50	-34.37	-8.29	0.00	-715.65	0.00	715.65	5884.95	2942.47	12123.6	6070.85	1.12	-0.282	0.000	0.124
40.00	-33.57	-8.26	0.00	-703.22	0.00	703.22	5853.42	2926.71	11971.4	5994.64	1.21	-0.294	0.000	0.123
45.00	-30.94	-8.12	0.00	-661.95	0.00	661.95	4462.52	2231.26	9089.55	4551.53	1.54	-0.333	0.000	0.152
50.00	-29.67	-7.99	0.00	-621.35	0.00	621.35	4388.93	2194.47	8721.58	4367.27	1.91	-0.373	0.000	0.149
55.00	-28.42	-7.86	0.00	-581.40	0.00	581.40	4313.64	2156.82	8357.61	4185.02	2.33	-0.419	0.000	0.146
60.00	-27.20	-7.73	0.00	-542.09	0.00	542.09	4236.64	2118.32	7997.90	4004.90	2.79	-0.466	0.000	0.142
65.00	-26.01	-7.60	0.00	-503.43	0.00	503.43	4157.93	2078.96	7642.72	3827.04	3.30	-0.513	0.000	0.138
70.00	-24.84	-7.48	0.00	-465.40	0.00	465.40	4077.51	2038.76	7292.30	3651.57	3.86	-0.560	0.000	0.134
75.00	-23.70	-7.34	0.00	-428.03	0.00	428.03	3995.39	1997.70	6946.91	3478.62	4.48	-0.607	0.000	0.129
78.00	-23.03	-7.26	0.00	-406.00	0.00	406.00	3945.30	1972.65	6742.20	3376.11	4.87	-0.635	0.000	0.126
80.00	-22.30	-7.21	0.00	-391.47	0.00	391.47	3911.57	1955.78	6606.80	3308.31	5.14	-0.655	0.000	0.124
83.50	-21.05	-7.11	0.00	-366.23	0.00	366.23	2771.30	1385.65	4677.52	2342.24	5.63	-0.688	0.000	0.164
85.00	-20.78	-7.08	0.00	-355.56	0.00	355.56	2755.69	1377.84	4610.09	2308.47	5.85	-0.702	0.000	0.162
90.00	-19.90	-6.96	0.00	-320.16	0.00	320.16	2702.54	1351.27	4386.89	2196.71	6.61	-0.759	0.000	0.153
95.00	-19.05	-6.83	0.00	-285.37	0.00	285.37	2647.69	1323.84	4166.29	2086.24	7.44	-0.815	0.000	0.144
100.00	-18.21	-6.71	0.00	-251.21	0.00	251.21	2591.13	1295.56	3948.53	1977.20	8.32	-0.869	0.000	0.134
105.00	-17.40	-6.59	0.00	-217.65	0.00	217.65	2532.86	1266.43	3733.89	1869.72	9.26	-0.921	0.000	0.123
110.00	-16.61	-6.47	0.00	-184.71	0.00	184.71	2472.89	1236.44	3522.60	1763.92	10.25	-0.970	0.000	0.111
113.50	-16.07	-6.38	0.00	-162.07	0.00	162.07	2429.89	1214.95	3376.84	1690.93	10.98	-1.003	0.000	0.102
115.00	-15.70	-6.34	0.00	-152.50	0.00	152.50	2411.21	1205.60	3314.94	1659.93	11.30	-1.017	0.000	0.098
118.00	-14.97	-6.27	0.00	-133.47	0.00	133.47	1790.62	895.31	2454.63	1229.14	11.94	-1.043	0.000	0.117
120.00	-14.72	-6.22	0.00	-120.94	0.00	120.94	1774.20	887.10	2396.85	1200.21	12.38	-1.059	0.000	0.109
122.00	-14.44	-6.13	0.00	-108.32	0.00	108.32	1757.50	878.75	2339.36	1171.42	12.83	-1.078	0.000	0.101
125.00	-14.06	-6.06	0.00	-89.91	0.00	89.91	1731.94	865.97	2253.71	1128.53	13.52	-1.103	0.000	0.088
127.00	-10.83	-4.68	0.00	-77.79	0.00	77.79	1714.56	857.28	2197.01	1100.14	13.98	-1.118	0.000	0.077
130.00	-10.47	-4.61	0.00	-63.75	0.00	63.75	1687.98	843.99	2112.62	1057.88	14.69	-1.137	0.000	0.066
135.00	-9.90	-4.49	0.00	-40.70	0.00	40.70	1642.31	821.15	1973.86	988.40	15.90	-1.164	0.000	0.047
137.00	-5.05	-2.37	0.00	-31.71	0.00	31.71	1623.56	811.78	1919.06	960.96	16.39	-1.172	0.000	0.036
140.00	-4.76	-2.30	0.00	-24.61	0.00	24.61	1594.93	797.47	1837.67	920.20	17.13	-1.182	0.000	0.030
145.00	-4.29	-2.19	0.00	-13.11	0.00	13.11	1545.85	772.93	1704.31	853.42	18.37	-1.194	0.000	0.018
148.00	-2.00	-0.72	0.00	-6.53	0.00	6.53	1515.59	757.79	1625.76	814.09	19.13	-1.198	0.000	0.009
150.00	-1.85	-0.68	0.00	-5.10	0.00	5.10	1495.07	747.53	1574.03	788.19	19.63	-1.200	0.000	0.008
155.00	-1.48	-0.57	0.00	-1.72	0.00	1.72	1442.53	721.26	1447.04	724.60	20.89	-1.203	0.000	0.003
158.00	0.00	-0.54	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	21.64	-1.204	0.000	0.000

Final Analysis Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	7/16/2018	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	38.4	0.00	56.72	0.00	0.00	4431.04
0.9D + 1.6W 97 mph Wind	38.3	0.00	42.53	0.00	0.00	4392.66
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.8	0.00	83.21	0.00	0.00	1231.95
1.2D + 1.0E	2.0	0.00	56.77	0.00	0.00	230.16
0.9D + 1.0E	2.0	0.00	42.58	0.00	0.00	227.93
1.0D + 1.0W 60 mph Wind	9.2	0.00	47.31	0.00	0.00	1054.53

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-23.86	-29.93	0.00	-1541.5	0.00	-1541.5	2771.30	1385.6	4677.52	2342.24	83.50	0.667
0.9D + 1.6W 97 mph Wind	-17.55	-29.59	0.00	-1521.1	0.00	-1521.1	2771.30	1385.6	4677.52	2342.24	83.50	0.656
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-43.60	-8.26	0.00	-423.32	0.00	-423.32	2771.30	1385.6	4677.52	2342.24	83.50	0.197
1.2D + 1.0E	-25.35	-1.41	0.00	-89.25	0.00	-89.25	2771.30	1385.6	4677.52	2342.24	83.50	0.047
0.9D + 1.0E	-19.01	-1.39	0.00	-88.04	0.00	-88.04	2771.30	1385.6	4677.52	2342.24	83.50	0.044
1.0D + 1.0W 60 mph Wind	-21.05	-7.11	0.00	-366.23	0.00	-366.23	2771.30	1385.6	4677.52	2342.24	83.50	0.164

Base Plate Summary

Structure:	CT02722-S-SB		**Code:**	EIA/TIA-222-G	7/16/2018
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Tower Engineering Solutions

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	60.00	**Bolt Circle:**	67.00
Moment (kip-ft):	5150.00	**Width (in):**	66.00	**Number Bolts:**	20.00
Axial (kip):	41.00	**Style:**	Clipped	**Bolt Type:**	2.25" 18J
Shear (kip):	44.00	**Polygon Sides:**	4.00	**Bolt Diameter (in):**	2.25
Analysis		**Clip Length (in):**	12.00	**Yield (ksi):**	75.00
Moment (kip-ft):	4431.04	**Effective Len (in):**	8.52	**Ultimate (ksi):**	100.00
Axial (kip):	83.21	**Moment (kip-in):**	571.72	**Arrangement:**	Clustered
Shear (kip):	38.36	**Allow Stress (ksi):**	81.00	**Cluster Dist (in):**	5.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	45.00
Moment Design %:	86.04	**Stress Ratio:**	0.47	Compression	
				Force (kip):	162.88
				Allowable (kip):	260.00
				Ratio:	0.64
				Tension	
				Force (kip):	154.56
				Allowable (kip):	260.00
				Ratio:	0.61

Monopole Mat Foundation Design

				Date
				7/16/2018
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	158
Site Number:	CT02722-S-SBA	**Engineer Name:**	D. Zhou
Engr. Number:	56208	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

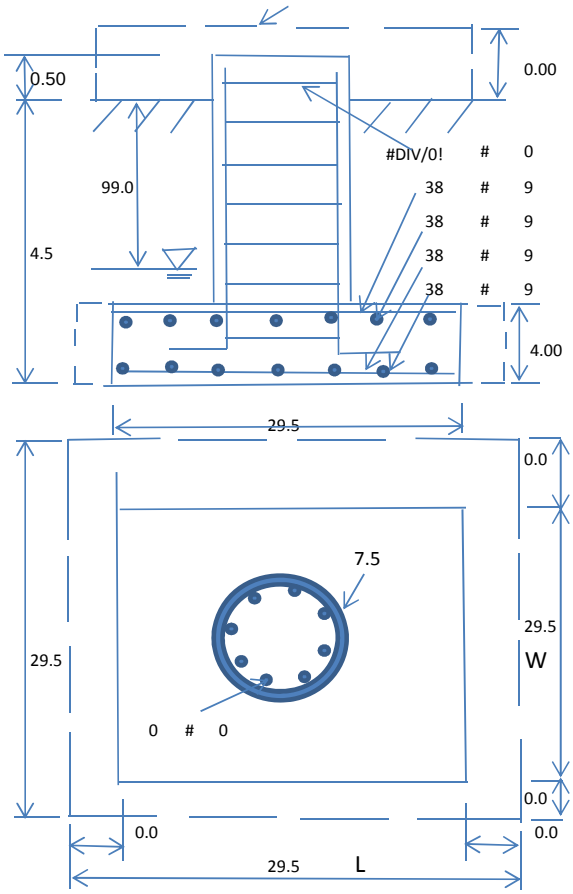
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	83.2	Shear Force (Kips):	38.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4431.0
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.5	Depth of Base BG (ft.):	4.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	29.5	Width of Pad (ft.):	29.5
Final Length of pad (ft)	29.5	Final width of pad (ft):	29.5
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:		Tie / Stirrup Size #:		
Qty. of Vertical Rebars:		Tie Spacing (in):		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	40000	Ultimate Skin Friction:		Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	413.04	Total Dry Soil Weight (Kips):	51.63
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	51.63	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3525.18	Total Dry Concrete Weight (Kips):	528.78
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	528.78	Total Vertical Load on Base (Kips):	663.61

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1991	<	Allowable Factored Soil Bearing (psf): 30000	0.07	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8932.1	>	Design Factored Momont (kips-ft): 4623	0.52	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.93	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	#N/A	Tie / Stirrup Area (sq. in./each):	#N/A		
Calculated Moment Capacity (Mn,Kips-Ft):	#N/A	#N/A Design Factored Moment (Mu, Kips-Ft	4469.4	#N/A	####
Calculated Shear Capacity (Kips):	#N/A	#N/A Design Factored Shear (Kips):	38.4	#N/A	####
Calculated Tension Capacity (Tn, Kips):	#N/A	#N/A Design Factored Tension (Tu Kips):	0.0	#N/A	####
Calculated Compression Capacity (Pn, Kips):	#N/A	#N/A Design Factored Axial Load (Pu Kips):	83.2	#N/A	####
Moment & Axial Strength Combination:	#N/A	#N/A Check Tie Spacing (Design/Required):		#DIV/0!	####
Pier Reinforcement Ratio:	#N/A	#N/A			

(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1292.4	>	One-Way Factored Shear (L-D. Kips):	250.9	0.19	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1292.4	>	One-Way Factored Shear (W-D., Kips)	250.9	0.19	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1499.2	>	One-Way Factored Shear (C-C, Kips):	245.5	0.16	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0024		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7382.9	>	Moment at Bottom (L-Direct. K-Ft):	915.5	0.12	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7382.9	>	Moment at Bottom (W-Direct. K-Ft):	915.5	0.12	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10374.0	>	Moment at Bottom (C-C Dir. K-Ft):	1294.7	0.12	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0024		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	7382.9	>	Moment at the top (L-Dir Kips-Ft):	78.5	0.01	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	7382.9	>	Moment at the top (W-Dir Kips-Ft):	78.5	0.01	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10374.0	>	Moment at the top (C-C Direc. K-Ft):	572.5	0.06	OK!

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1125

FA#: 10035415
USID: 15071

North Waterbury
299 Sheffield Street
Waterbury, CT 06704

April 18, 2018

Centerline Communications Project Number: 950006-113

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.73 %**

April 18, 2018

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

Emissions Analysis for Site: **CT1125 – North Waterbury**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **299 Sheffield Street, Waterbury, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general 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 ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **299 Sheffield Street, Waterbury, 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
LTE	850 MHz	2	40
LTE	2300 MHz (WCS)	4	30
LTE	700 MHz	4	40
LTE	700 MHz (Band 14)	4	40
LTE	1900 MHz (PCS)	4	40

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, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) 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	KMW AM-X-CD-16-65-00T-RET	137
A	2	CCI OPA-65R-LCUU-H6	137
A	3	Kathrein 800-10965	137
A	4	Quintel QS66512-2	137
B	1	KMW AM-X-CD-16-65-00T-RET	137
B	2	CCI OPA-65R-LCUU-H6	137
B	3	Kathrein 800-10965	137
B	4	Quintel QS66512-2	137
C	1	KMW AM-X-CD-16-65-00T-RET	137
C	2	CCI OPA-65R-LCUU-H6	137
C	3	Kathrein 800-10965	137
C	4	Quintel QS66512-2	137

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	KMW AM-X-CD-16-65-00T-RET	850 MHz	13.85	2	60	1,455.97	0.54
Antenna A2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS) / 700 MHz	12.45 / 15.45 / 11.65	8	280	6,785.10	1.93
Antenna A3	Kathrein 800-10965	700 MHz (Band 14)	12.65	4	160	2,945.24	1.32
Antenna A4	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	240	4,855.52	1.25
						Sector A Composite MPE%	**5.04**
Antenna B1	KMW AM-X-CD-16-65-00T-RET	850 MHz	13.85	2	60	1,455.97	0.54
Antenna B2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS) / 700 MHz	12.45 / 15.45 / 11.65	8	280	6,785.10	1.93
Antenna B3	Kathrein 800-10965	700 MHz (Band 14)	12.65	4	160	2,945.24	1.32
Antenna B4	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	240	4,855.52	1.25
						Sector B Composite MPE%	**5.04**
Antenna C1	KMW AM-X-CD-16-65-00T-RET	850 MHz	13.85	2	60	1,455.97	0.54
Antenna C2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS) / 700 MHz	12.45 / 15.45 / 11.65	8	280	6,785.10	1.93
Antenna C3	Kathrein 800-10965	700 MHz (Band 14)	12.65	4	160	2,945.24	1.32
Antenna C4	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	240	4,855.52	1.25
						Sector C Composite MPE%	**5.04**

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, all three sectors have the same configuration yielding the same results on all three sectors. *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	**5.04 %**
MetroPCS	0.53 %
Verizon Wireless	2.03 %
Sprint	3.14 %
Clearwire	0.05 %
Nextel	0.94 %
Site Total MPE %:	**11.73 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.04 %
AT&T Sector B Total:	5.04 %
AT&T Sector C Total:	5.04 %
Site Total:	11.73 %

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, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (PER SECTOR)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz Technology (Antenna 1)	2	727.98	137	3.05	850 MHz	567	0.54%
AT&T 850 MHz LTE (Antenna 2)	2	703.17	137	2.95	850 MHz	567	0.52%
AT&T 2300 MHz (WCS) LTE (Antenna 2)	4	1,052.26	137	8.82	2300 MHz (WCS)	1000	0.88%
AT&T 700 MHz LTE (Antenna 2)	2	584.87	137	2.45	700 MHz	467	0.52%
AT&T 700 MHz LTE – Band 14 (Antenna 3)	4	736.31	137	6.17	700 MHz	467	1.32%
AT&T 700 MHz LTE (Antenna 4)	2	486.47	137	2.04	700 MHz	467	0.44%
AT&T 1900 MHz (PCS) LTE (Antenna 4)	4	970.64	137	8.13	1900 MHz (PCS)	1000	0.81%
						Total:	**5.04%**

Table 6: AT&T Maximum Sector MPE Power Values (Per Sector)

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:	5.04 %
Sector B:	5.04 %
Sector C:	5.04 %
AT&T Maximum Total (per sector):	5.04 %
Site Total:	11.73 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.73 %** 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.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

USPS Tracking®

FAQs > (http://faq.usps.com/?articleId=220900)

Track Another Package +

Remove ×

Tracking Number: 70163010000078291186

Expected Delivery on

MONDAY

23 JULY 2018 ⓘ

by **8:00pm** ⓘ

Delivered

July 23, 2018 at 2:15 pm
Delivered, Left with Individual
WATERBURY, CT 06706

Get Updates ⌄

Text & Email Updates ⌄

Tracking History ⌄

Product Information

See Less

Can’t find what you’re looking for?

Go to our FAQs section to find answers to your tracking questions.

FAQs (http://faq.usps.com/?articleId=220900)

The easiest tracking number is the one you don't have to know.

With Informed Delivery®, you never have to type in another tracking number. Sign up to:

- See images* of incoming mail.
- Automatically track the packages you're expecting.
- Set up email and text alerts so you don't need to enter tracking numbers.
- Enter USPS Delivery Instructions™ for your mail carrier.

Sign Up

(https://reg.usps.com/entreg/RegistrationAction_input?

*NOTE: Black and white (grayscale) images show the outside, front of letter-sized envelopes and mailpieces that are processed through USPS automated equipment. **app=UspsTools&appURL=https%3A%2F%2Ftools.usps.com%2Fgo%2FTrackConfirmActi**

USPS Tracking®

FAQs > (http://faq.usps.com/?articleId=220900)

Track Another Package +

Tracking Number: 70163010000078291193

Remove ×

Your item was delivered to the front desk or reception area at 11:58 am on July 23, 2018 in WATERBURY, CT 06702.

Delivered

July 23, 2018 at 11:58 am
Delivered, Front Desk/Reception
WATERBURY, CT 06702

Get Updates

Text & Email Updates

Tracking History

Product Information

See Less

Can’t find what you’re looking for?

Go to our FAQs section to find answers to your tracking questions.

FAQs (http://faq.usps.com/?articleId=220900)

The easiest tracking number is the one you don't have to know.

With Informed Delivery®, you never have to type in another tracking number. Sign up to:

- See images* of incoming mail.
- Automatically track the packages you're expecting.
- Set up email and text alerts so you don't need to enter tracking numbers.
- Enter USPS Delivery Instructions™ for your mail carrier.

Sign Up

(https://reg.usps.com/entreg/RegistrationAction_input?

*NOTE: Black and white (grayscale) images show the outside, front of letter-sized envelopes and mailpieces that are processed through USPS automated equipment. **app=UspsTools&appURL=https%3A%2F%2Ftools.usps.com%2Fgo%2FTrackConfirmActi**

USPS Tracking®

FAQs > (http://faq.usps.com/?articleId=220900)

Track Another Package +

Remove ×

Tracking Number: 70180360000162905097

Expected Delivery on

WEDNESDAY

1 AUGUST 2018 ⓘ

by **8:00pm** ⓘ

Delivered

August 1, 2018 at 2:02 pm
Delivered, Left with Individual
WATERBURY, CT 06704

Get Updates ⌄

Text & Email Updates ⌄

Tracking History ⌄

Product Information

See Less

Can’t find what you’re looking for?

Go to our FAQs section to find answers to your tracking questions.

FAQs (http://faq.usps.com/?articleId=220900)

The easiest tracking number is the one you don't have to know.

With Informed Delivery®, you never have to type in another tracking number. Sign up to:

- See images* of incoming mail.
- Automatically track the packages you're expecting.
- Set up email and text alerts so you don't need to enter tracking numbers.
- Enter USPS Delivery Instructions™ for your mail carrier.

Sign Up

(https://reg.usps.com/entreg/RegistrationAction_input?

*NOTE: Black and white (grayscale) images show the outside, front of letter-sized envelopes and mailpieces that are processed through USPS automated equipment. **app=UspsTools&appURL=https%3A%2F%2Ftools.usps.com%2Fgo%2FTrackConfirmActi**

R: COMPLETE THIS SECTION

lete items 1, 2, and 3.
ur name and address on the reverse
e can return the card to you.
ard to the back of the mailpiece,
ront if space permits.

dressed to:

Mr. O'Leary, Mayor
235 Grand
Waterbury, CT 06

9590 9402 3676 7335 2344 89

2. Article Number *(Transfer from service label)*
7016 3010 0000 7829 1193

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X P. Correia ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* P. CORREIA
C. Date of Delivery 9-23-18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt