



January 11, 2017

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

Regarding: Notice of Exempt Modification – Swap out Diplexers for  
Triplexers  
Property Address: 204 Burwell Road, West Haven, CT 06516  
AT&T Site: CT2064

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 155 foot self-support tower at the above-referenced address, latitude 41.295322, longitude -72.973314. Said self-support is owned by American Tower Corporation. The existing equipment shelter is 25.66' by 25.66', totaling 658.44 square feet.

AT&T desires to modify its existing telecommunications facility by swapping six diplexers with triplexers. The centerline height of said antennas is and will remain at 158 feet. Antennas are mounted utilizing a sector frame.

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 The Honorable Edward M. O'Brien, Mayor of the City of West Haven. A copy of this letter is also being sent to the tower and property owner American Tower Corporation.

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). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The antennas to be swapped will be installed at the existing height of 158 feet on the 155-foot self-support tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.
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 Federal Communications Commission (FCC) safety standard. An RF emissions calculation (attached) for AT&T's modified facility is herein provided.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The self-support tower and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by American Tower dated December 29, 2016).

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

Sincerely,

*Sarah Snell*

Sarah Snell  
Site Acquisition Specialist

cc: The Honorable Edward M. O'Brien, Mayor of the City of West Haven (municipality)  
American Tower Corporation (landowner & tower owner)

# 204 BURWELL RD

**Location** 204 BURWELL RD

**Mblu** 64/ 314/ CELL/ A/

**Acct#** 00022806

**Owner** AMERICAN TOWERS INC.

**Assessment** \$555,730

**Appraisal** \$793,900

**PID** 102787

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$793,900	\$0	\$793,900

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$555,730	\$0	\$555,730

## Owner of Record

**Owner** AMERICAN TOWERS INC.  
**Co-Owner** ATTN TAX DEPT  
**Address** PO BOX 723597  
ATLANTA, GA 31139

**Sale Price** \$0  
**Certificate**  
**Book & Page** 000/ 000  
**Sale Date** 10/01/2010

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
AMERICAN TOWERS INC.	\$0		000/ 000	10/01/2010

## Building Information

### Building 1 : Section 1

**Year Built:**  
**Living Area:** 0  
**Replacement Cost:** \$0  
**Building Percent Good:**  
**Replacement Cost Less Depreciation:** \$0

Building Attributes	
Field	Description
Style	Outbuildings

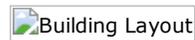
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

### Building Photo



(<http://images.vgsi.com/photos/WestHavenCTPhotos//\00\02\7>)

### Building Layout



Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

### Extra Features

Extra Features	Legend
No Data for Extra Features	

### Land

#### Land Use

**Use Code** 431V  
**Description** TEL REL TW MDL-00  
**Zone**  
**Neighborhood**  
**Alt Land Appr** No  
**Category**

#### Land Line Valuation

**Size (Acres)** 0  
**Frontage**  
**Depth**  
**Assessed Value** \$0  
**Appraised Value** \$0

### Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #

CELL	TOWER	TW		3 SITES	\$528,300	1
SHD7	CELL SHED			168 S.F.	\$45,400	1
SHD7	CELL SHED			676 S.F.	\$152,100	1
SHD7	CELL SHED			240 S.F.	\$64,800	1
FN4	FENCE-8' CHAIN			312 L.F.	\$3,300	1

### Valuation History

<b>Appraisal</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2014	\$793,900	\$0	\$793,900
2013	\$793,900	\$0	\$793,900
2012	\$793,900	\$0	\$793,900

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2014	\$555,730	\$0	\$555,730
2013	\$555,730	\$0	\$555,730
2012	\$555,730	\$0	\$555,730

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# City of West Haven

## Geographic Information System (GIS)



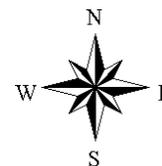
Date Printed: 1/11/2017



### **MAP DISCLAIMER - NOTICE OF LIABILITY**

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The City of West Haven and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 150 feet





# WIRELESS COMMUNICATIONS FACILITY

## CT2064 - LTE 4C/5C

### BANM WESTHAVEN

#### AMERICAN TOWER SITE NO.: 302505

#### 1 BURWELL ROAD

#### WEST HAVEN, CT 06516

### 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.

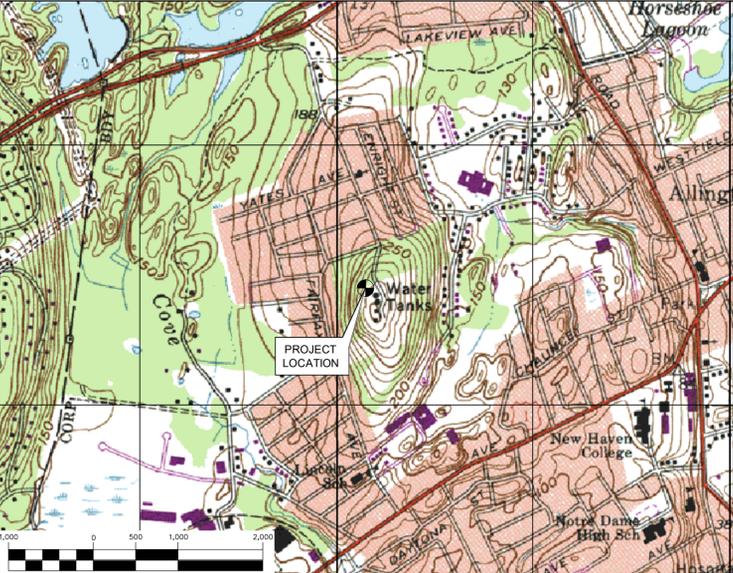
### SITE DIRECTIONS

<b>FROM:</b> 500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	<b>TO:</b> 1 BURWELL ROAD WEST HAVEN, 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 29.25 MI
5. MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TPKE ON THE LEFT TOWARD NYC 2.33 MI
6. TAKE THE CT-122/1ST AVE EXIT, EXIT 43 0.18 MI
7. TURN RIGHT ONTO CAMPBELL AVE/CT-122 0.38 MI
8. TURN SLIGHT LEFT ONTO FOREST RD/CT-122 0.17 MI
9. TAKE THE 2ND LEFT ONTO BURWELL PL 0.06 MI
10. TURN RIGHT ONTO HEMLOCK ST 0.13 MI
11. TAKE THE 1ST LEFT ONTO SPRUCE ST. 0.13 MI
12. SPRUCE STREET BECOMES BURWELL RD 0.19 MI

### VICINITY MAP

SCALE: 1" = 1000'



### PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
  - A. INSTALL (3) NEW RRUS-11s (LTE 850 MHz) AND (3) NEW RRUS-E2s (LTE 700 D/E MHz) ON NEW EQUIPMENT RACK/FAME INSTALLED WITHIN EXISTING EQUIPMENT ROOM.
  - B. INSTALL (2) NEW TRIPLEXERS BEHIND POSITION 2 ANTENNA, (2) PER SECTOR/(6) TOTAL.
  - C. INSTALL (6) NEW TRIPLEXERS WITHIN EXISTING EQUIPMENT ROOM.

### PROJECT INFORMATION

AT&T SITE NUMBER:	CT2064
AT&T SITE NAME:	BANM WESTHAVEN
SITE ADDRESS:	AMERICAN TOWER SITE NO.: 302505 1 BURWELL ROAD WEST HAVEN, CT 06516
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENITEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-17'-43.10" N LONGITUDE: 72°-58'-23.90" W GROUND ELEVATION: ±320' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

### SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
N-1	NOTES AND SPECIFICATIONS	1
C-1	PLANS AND ELEVATION	1
C-2	LTE 4C/5C EQUIPMENT DETAILS	1
C-3	LTE 4C/5C EQUIPMENT DETAILS AND PLANS	1
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	1

REV.	DATE	BY	CHK'D	DESCRIPTION
1	01/11/17	KAWJR	CAG	ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL



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

AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**BANM WESTHAVEN**  
CT2064 - LTE 4C/5C  
1 BURWELL ROAD  
WEST HAVEN, CT 06516

DATE: 01/05/17  
SCALE: AS NOTED  
JOB NO. 16071.86

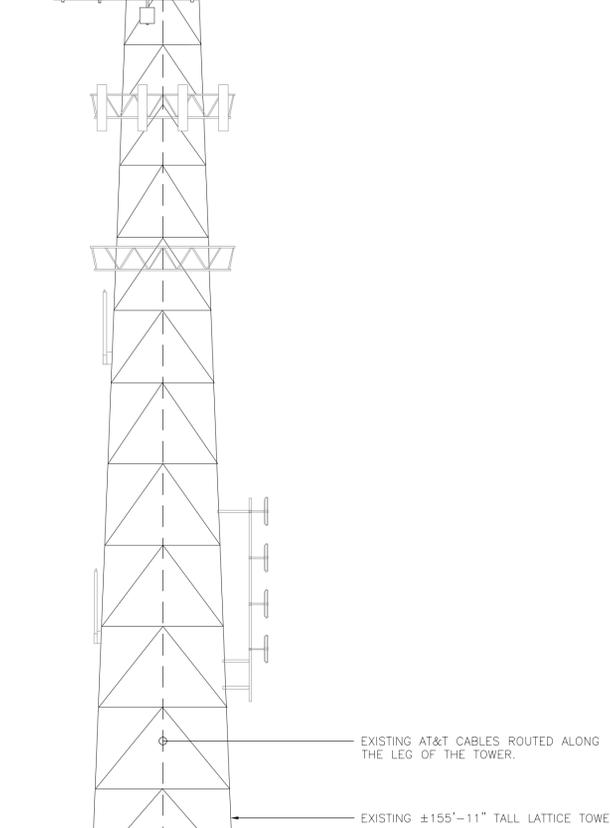
TITLE SHEET

**T-1**  
Sheet No. 1 of 6



TOP OF EXISTING LATTICE TOWER  
EL. ±155'-11" A.G.L.

AT&T ANTENNAS  
EL. ±154'-0" A.G.L.

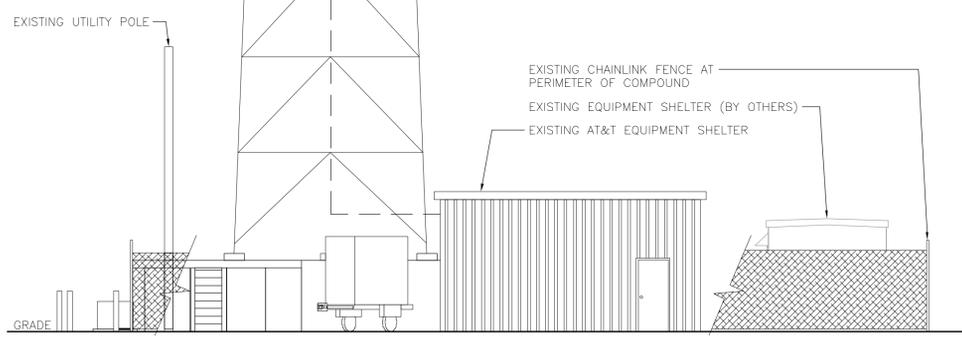


**TOWER STRUCTURAL NOTES:**

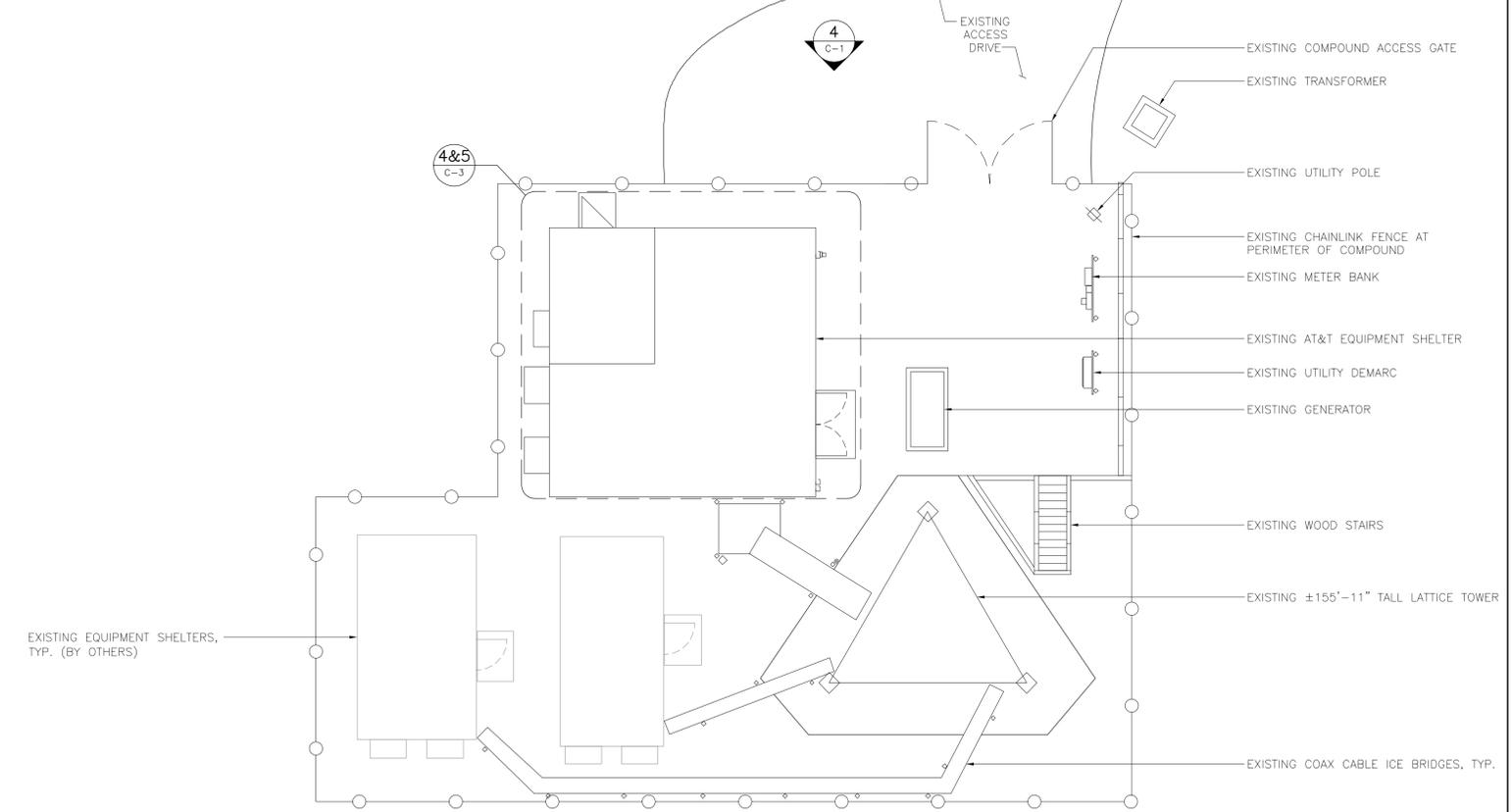
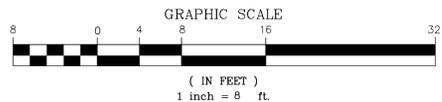
- TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
- ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER,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

**NOTES:**

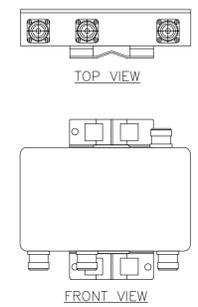
- A.G.L. = ABOVE GRADE LEVEL



**4 SOUTH ELEVATION**  
C-1 SCALE: 1" = 8'

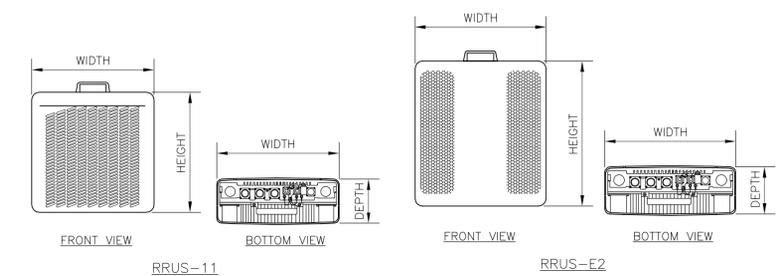


**1 COMPOUND PLAN**  
C-1 SCALE: 1/8" = 1'-0" TRUE NORTH



TRIPLEXER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: TPX-070821	5.83"H x 9.65"W x 2.05"D	7.5 LBS.

**3 TRIPLEXER DETAIL**  
C-1 SCALE: NONE



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 11	17.8"H x 17.3"W x 7.2"D	50 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	59.52 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.

**2 ERICSSON RRU DETAILS**  
C-1 SCALE: 1" = 1'-0"

REV.	DATE	BY	CHK'D	DESCRIPTION
1	01/11/17	KAWJR	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL



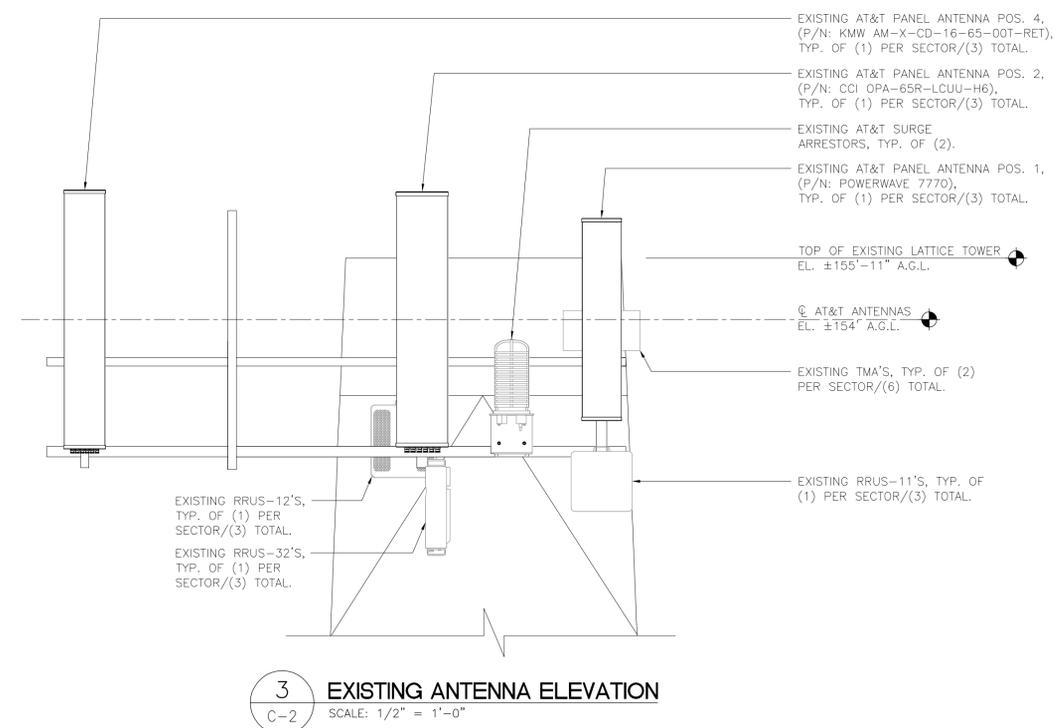
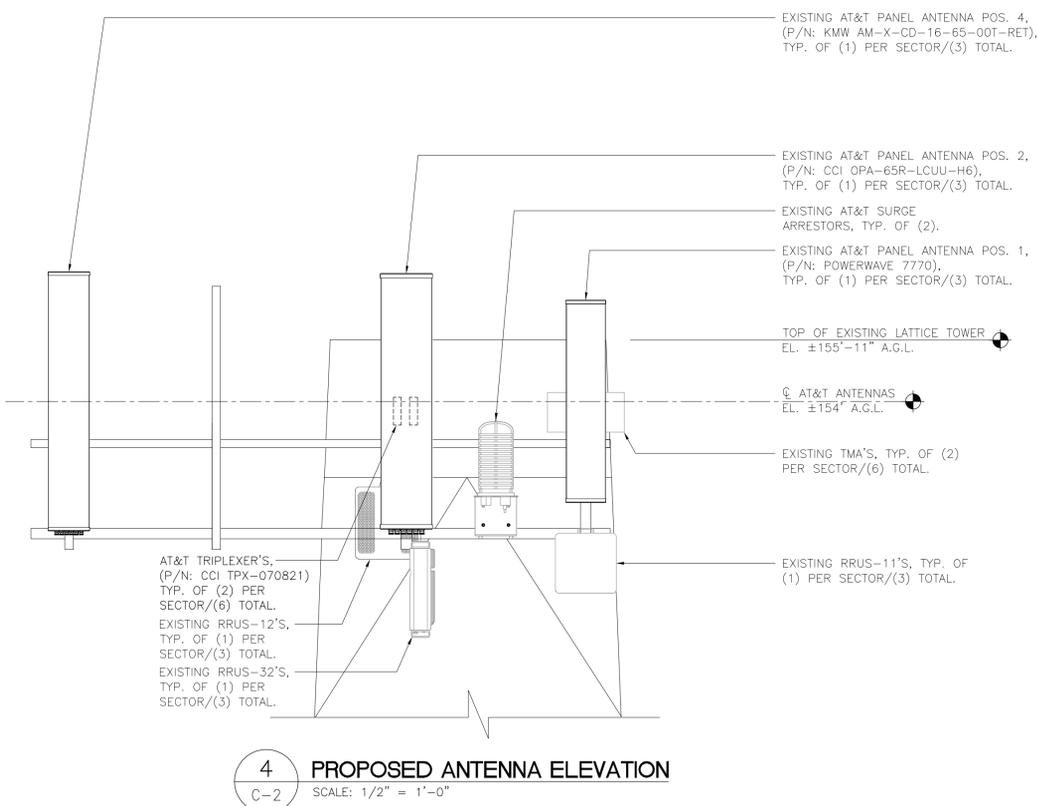
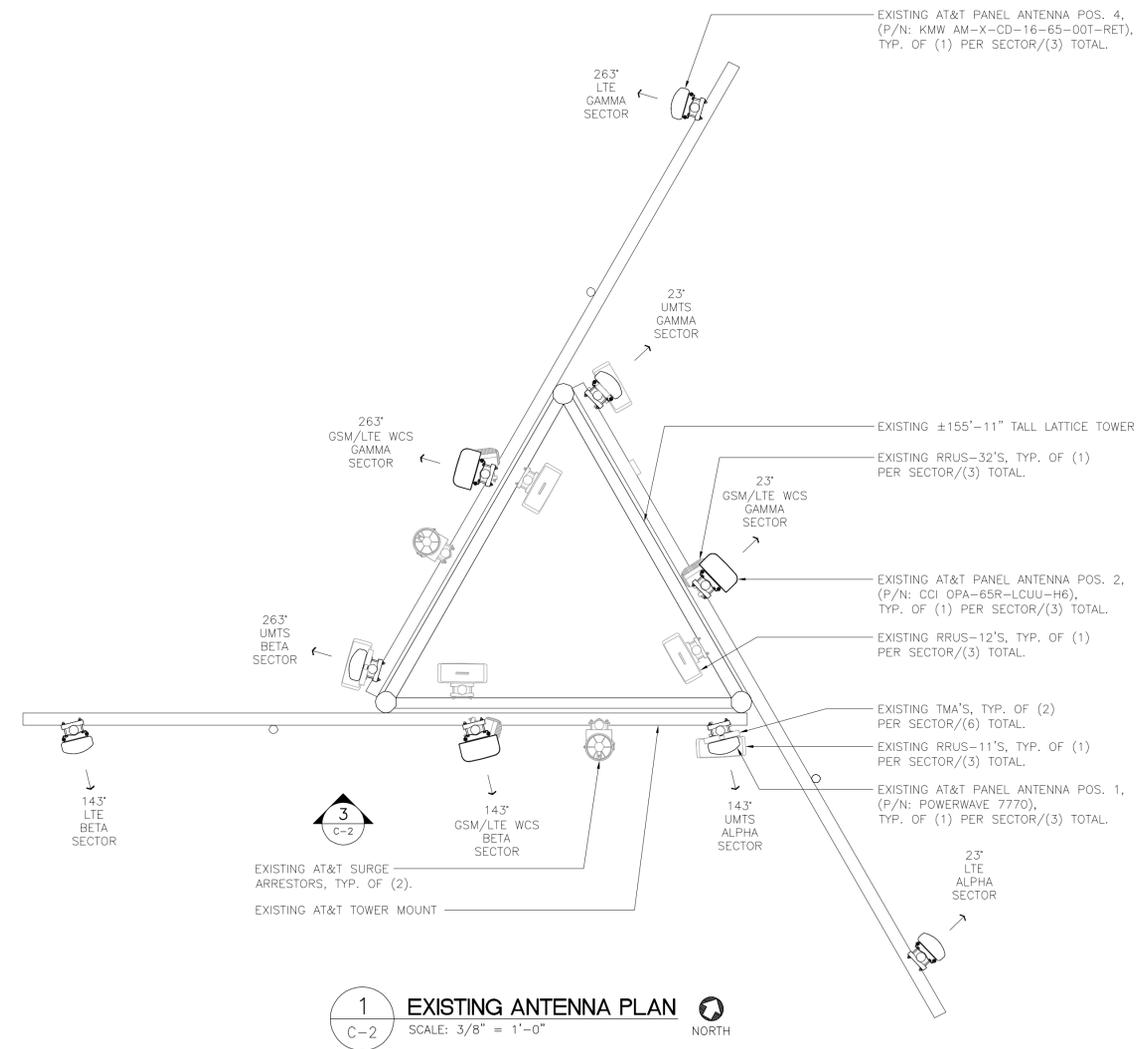
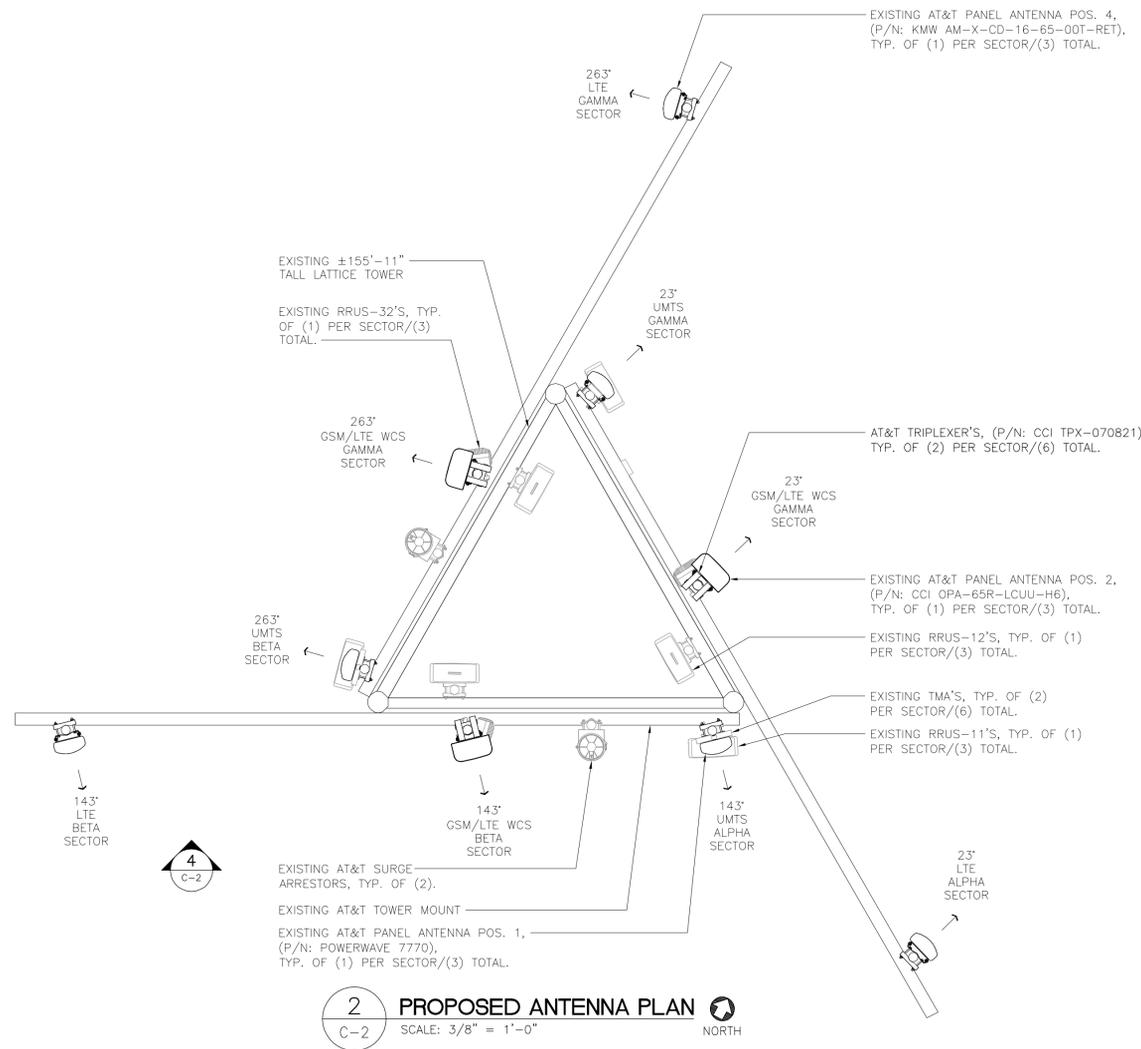
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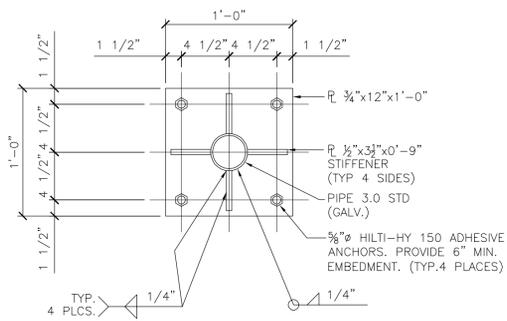
DATE: 01/05/17  
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PLANS AND ELEVATION

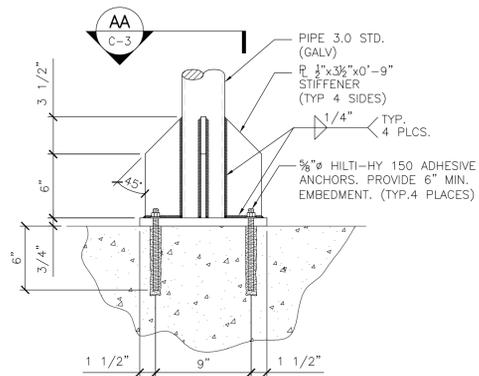
**C-1**  
Sheet No. 3 of 6



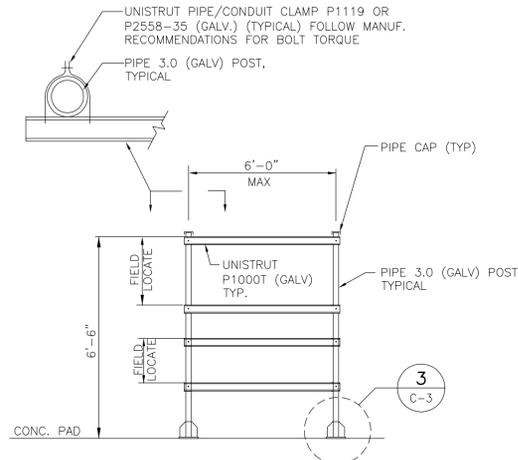
REV.	DATE	DRAWN BY/CHK'D BY	CAG	ISSUED FOR CLIENT REVIEW
1	01/11/17	KAWJR		
PRELIMINARY CDS -				
PROFESSIONAL ENGINEER SEAL				
 (203) 489-0360 (203) 489-8387 Fax 632 North Branford Road Branford, CT 06405 www.CentekEng.com				
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY <b>BANM WESTHAVEN</b> CT2064 - LTE 4C/5C 1 BURWELL ROAD WEST HAVEN, CT 06516				
DATE: 01/05/17				
SCALE: AS NOTED				
JOB NO. 16071.86				
<b>LTE 4C/5C EQUIPMENT DETAILS</b>				
<b>C-2</b> Sheet No. 4 of 6				



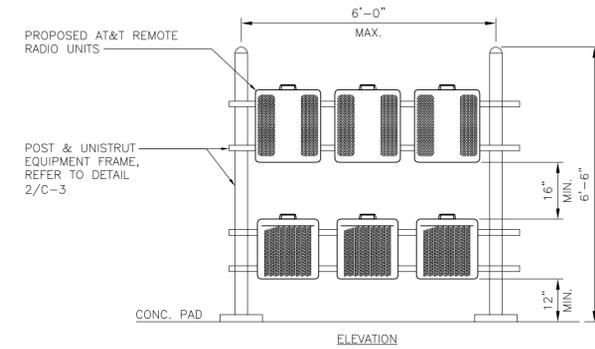
**AA** FRAME BASE PLATE PLAN DETAIL  
C-3 NOT TO SCALE



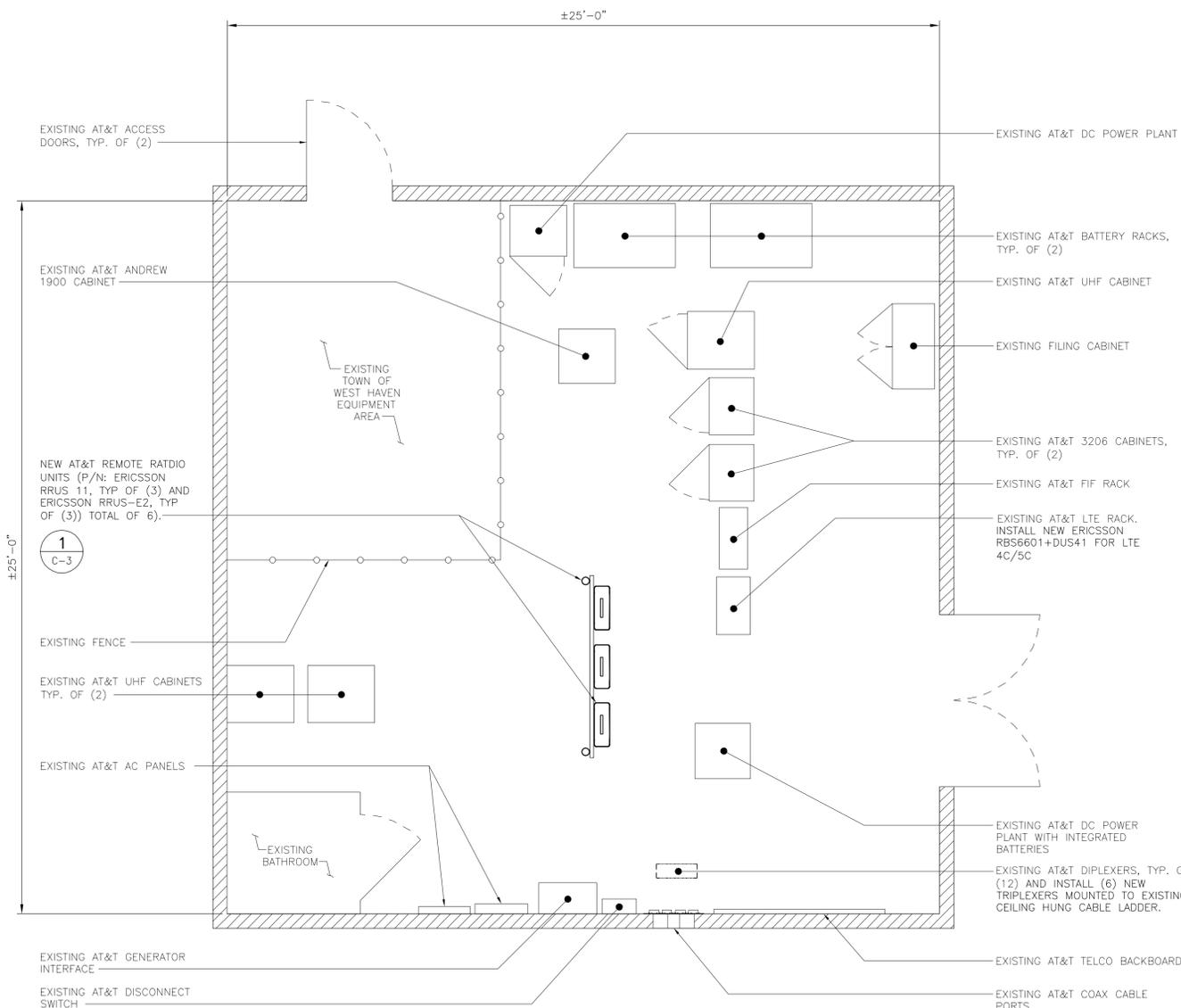
**3** FRAME TO CONCRETE CONNECTION DETAIL  
C-3 NOT TO SCALE



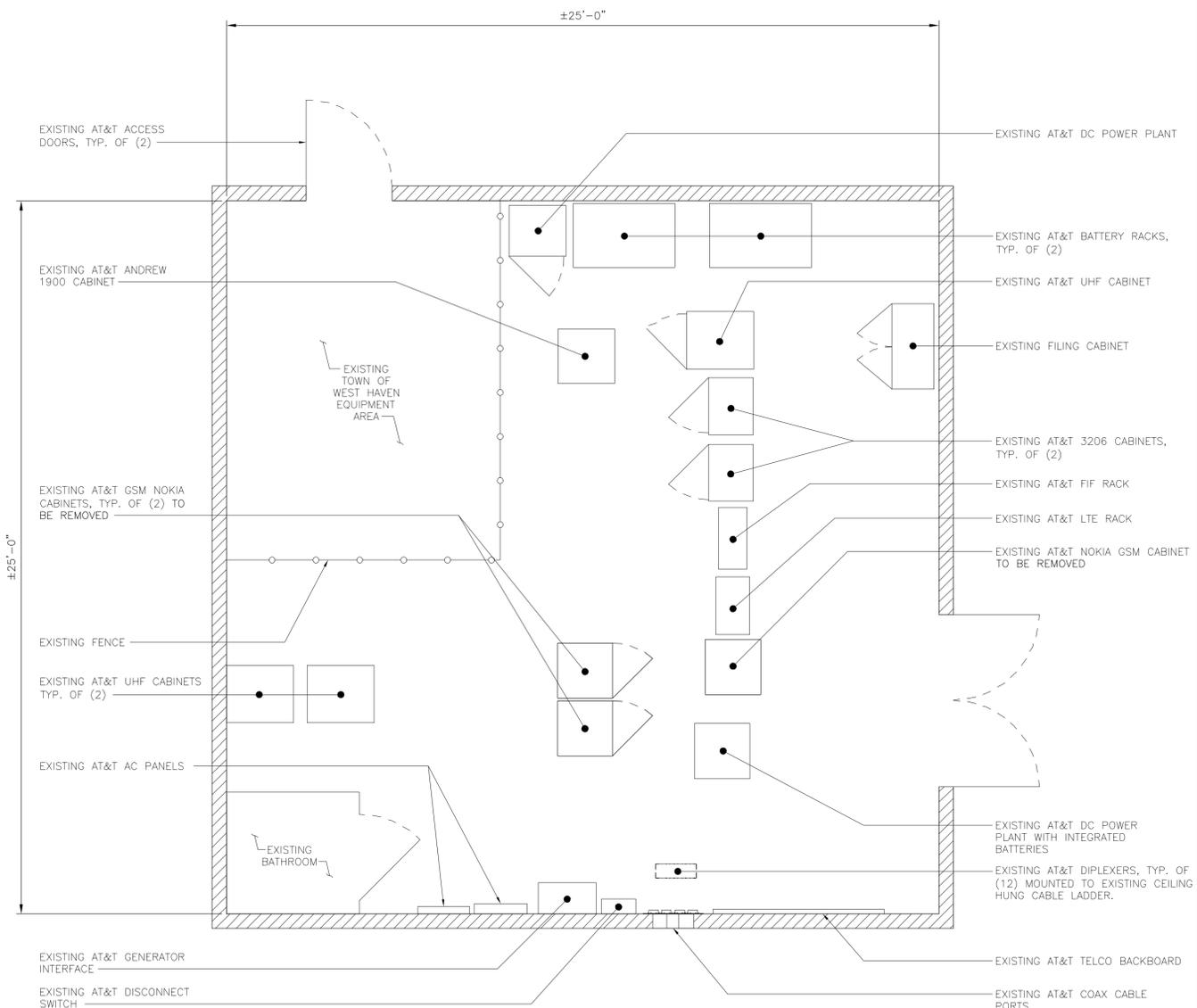
**2** EQUIPMENT MOUNTING FRAME DETAIL  
C-3 NOT TO SCALE



**1** EQUIPMENT MOUNTING FRAME DETAIL  
C-3 NOT TO SCALE



**5** EQUIPMENT LAYOUT PLAN - PROPOSED  
C-3 SCALE: 1/4" = 1'-0" TRUE NORTH



**4** EQUIPMENT LAYOUT PLAN - EXISTING  
C-3 SCALE: 1/4" = 1'-0" TRUE NORTH

REV.	DATE	BY	CHK'D	DESCRIPTION
1	01/11/17	KAWJR	CAG	PRELIMINARY CDs - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL



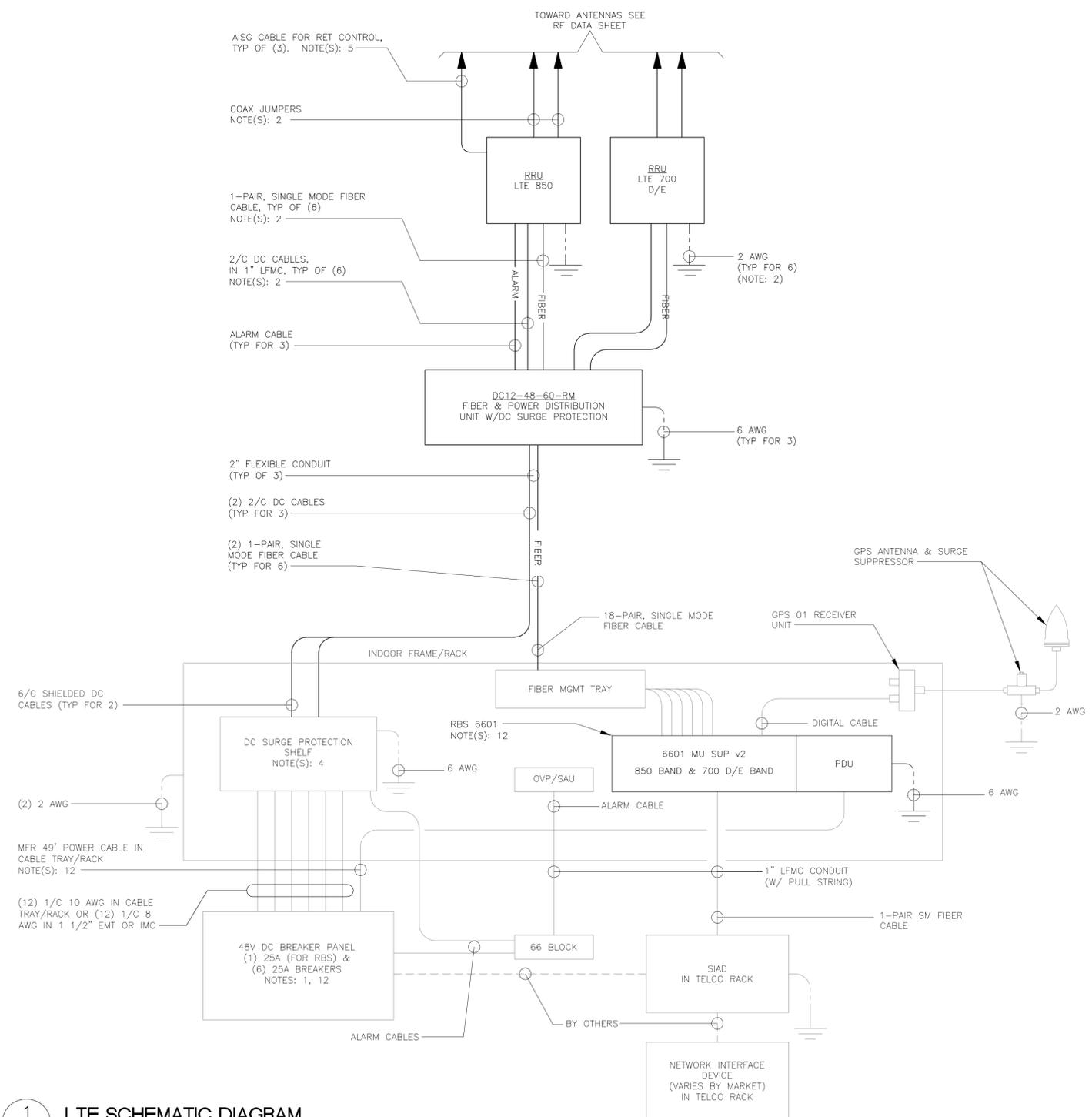
**CENTEK** engineering  
Centek on Solutions  
(203) 489-0360  
(203) 489-8387 Fax  
632 North Branford Road  
Branford, CT 06405  
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AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**BANM WESTHAVEN**  
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DATE: 01/05/17  
SCALE: AS NOTED  
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LTE 4C/5C  
EQUIPMENT  
DETAILS

**C-3**  
Sheet No. 5 of 6



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

**LTE SCHEMATIC DIAGRAM NOTES:**

- 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.
- LEAVE COILED AND PROTECTED UNTIL TERMINATED.
- DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
- DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
- FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-BF.
- 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.
- CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
- 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.
- 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.
- FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
- RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
- 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.

**ELECTRICAL NOTES**

- 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.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- 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.
- 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.
- 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.
- PROVIDE AND INSTALL GROUNDING KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- 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.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- 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.
- 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.
- 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.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- 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**

- 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:
    - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
    - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
    - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- 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.
- 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.
- CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

PROFESSIONAL ENGINEER SEAL	DATE	01/05/17
	SCALE	AS NOTED
	JOB NO.	16071.86
<b>LTE SCHEMATIC DIAGRAM AND NOTES</b> <b>E-1</b>		
Sheet No. 6 of 6		

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## Structural Analysis Report

**Structure** : 155 ft Self Supported Tower  
**ATC Site Name** : Wshn - West Haven, CT  
**ATC Site Number** : 302505  
**Engineering Number** : OAA692174\_C3\_01  
**Proposed Carrier** : AT&T Mobility  
**Carrier Site Name** : Banm West Haven  
**Carrier Site Number** : CT2064  
**Site Location** : 204 Burwell Street  
West Haven, CT 06516-1105  
41.295322,-72.973314  
**County** : New Haven  
**Date** : December 29, 2016  
**Max Usage** : 75%  
**Result** : Pass

Prepared By:  
Charles Dalton Wally, E.I.  
Structural Engineer I

Reviewed By:

*Charles D. Wally*

**COA: PEC.0001553**



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 155 ft self supported tower to reflect the change in loading by AT&T Mobility.

## Supporting Documents

<b>Tower Drawings</b>	Stainless Report #2940-3, dated August 14, 1981
<b>Foundation Drawing</b>	Mapping by TEP Project #03290, dated July 28, 2003
<b>Geotechnical Report</b>	GEOServices Project #21-07254, dated November 28, 2007
<b>Modifications</b>	SpectraSite Dwg #CT-0041-E1, dated August 08, 2003 ATC Project #53874032, dated July 23, 2013

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	97 mph (3-Second Gust, $V_{asd}$ ) / 125 mph (3-Second Gust, $V_{ult}$ )
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	3
<b>Crest Height:</b>	112 ft
<b>Spectral Response:</b>	$S_s = 0.19$ , $S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
154.0	158.0	3	CCI OPA-65R-LCUU-H6	Sector Frames	(12) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (2) 3" Conduit	AT&T Mobility
		3	Ericsson RRUS-32 (77 lbs)			
		6	Ericsson RRUS 12			
		12	Powerwave LGP21401			
		6	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
	3	Ericsson RRUS-11				
	154.0	1	Commscope WCS-IMFQ-AMT			
		3	Ericsson RRUS A2 Module (15.1" Height)			
3		Raycap DC6-48-60-18-8F				
141.0	141.0	4	Andrew 844G45VTZASX	Sector Frames	(12) 1 1/4" Coax	Sprint Nextel
		8	Decibel DB844H90E-XY			
130.0	130.0	-	-	Empty Sector Frames	-	-
122.0	122.0	2	6' Ice Shield	Leg	-	City Of West Haven
118.0	118.0	4	Radio/ODU	Leg	(4) 0.41" CNT-400	
		2	3' HP Dish			
106.0	112.0	1	10' Omni	Stand-Off	(1) 7/8" Coax	
103.0	110.0	1	9' Omni	Stand-Off	(1) 1/2" Coax	
93.0	100.0	1	RFI Antennas BA80-67	Stand-Off	(1) 7/8" Coax	
82.0	86.0	1	8' Omni	Side Arms	(1) 1/2" Coax	Other
	94.0	1	Andrew DB224		(1) 7/8" Coax	Southern Connecticut Gas
70.0	71.0	2	Andrew ASPR766P	Side Arms	(1) 7/8" Coax	

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
154.0	154.0	3	Diplexer / Coupler	-	-	AT&T Mobility

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
154.0	154.0	6	CCI TPX-070821	Sector Frames	-	AT&T Mobility

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	75%	Pass
Diagonals	67%	Pass
Horizontals	48%	Pass
Anchor Bolts	23%	Pass
Leg Bolts	53%	Pass

**Foundations**

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Uplift (Kips)	190.0	256.5	195.3	76%
Axial (Kips)	223.0	301.1	227.3	76%
Shear (Kips)	23.0	31.1	23.1	74%

\* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

**Deflection, Twist and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
154.0	CCI TPX-070821	AT&T Mobility	0.273	0.324	0.525
118.0	3' HP Dish	City of West Haven	0.143	0.217	0.158

\*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



## Standard Conditions

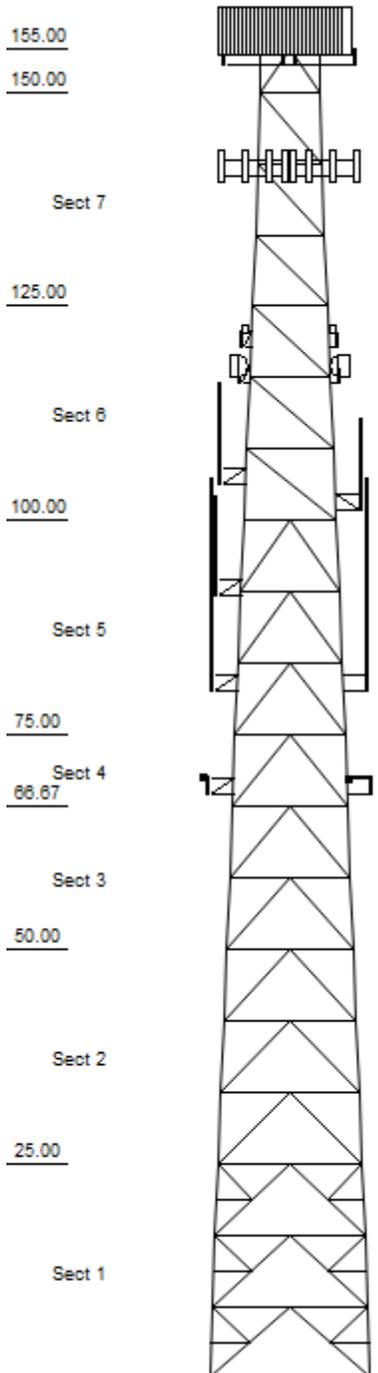
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



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Loads: 97 mph no ice  
 50 mph w/ 3/4" radial ice  
 Site Class: D Ss: 0.19 S1: 0.06  
 60 mph Serviceability

Job Information			
Tower : 302505	Location : Wshn - West Haven, CT		
Code : ANSI/TIA-222-G	Shape : Triangle	Base Width : 19.00 ft	
Client : AT&T Mobility	Top Width : 7.00 ft		

Sections Properties			
Section	Leg Members	Diagonal Members	Horizontal Members
1 - 2	PSP 50 ksi 5" OD x .500"	PSP 50 ksi STLSS 3" OD X0.25"	DAL 36 ksi 3X2.5X0.25
3	PSP 50 ksi 5" OD x .500"	PSP 50 ksi STLSS 2.75" OD	SAE 36 ksi 3X3X0.25
4	PSP 50 ksi 5" OD x .500"	PSP 50 ksi STLSS 2.75" OD	DAL 36 ksi 3X2.5X0.25
5	PSP 50 ksi 5" OD x .300"	PSP 50 ksi STLSS 2.75" OD	DAL 36 ksi 3X2.5X0.25
6	PSP 50 ksi STLSS 5" OD	PSP 50 ksi STLSS 3" OD X0.25"	DAL 36 ksi 3X2.5X0.25
7	PSP 50 ksi STLSS 5" OD	PSP 50 ksi STLSS 2.75" OD	SAE 36 ksi 3X3X0.25
8	PSP 50 ksi STLSS 5" OD	DAL 36 ksi 2.5X2X0.1875	CHN 36 ksi C4 x 5.4

Redundant Secondary Bracing						
Section	Sub Diag 1	Sub Horiz 1	Sub Diag 2	Sub Horiz 2	Sub Diag 3	Sub Horiz 3
1	P2.5" OD x	P2.5" OD x	-	-	-	-
2 - 8	-	-	-	-	-	-

Discrete Appurtenance			
Elev (ft)	Type	Qty	Description
154.00	Panel	1	Commscope WCS-IMFQ-AMT
154.00	Panel	3	CCI OPA-65R-LCUU-H6
154.00	Panel	3	Ericsson RRUS-32 (77 lbs)
154.00	Panel	6	Ericsson RRUS 12
154.00	Panel	3	Ericsson RRUS A2 Module (15.1")
154.00	Panel	12	Powerwave Allgon LGP21401
154.00	Panel	3	Raycap DC6-48-60-18-8F
154.00	Panel	6	CCI TPX-070821
154.00	Panel	6	Powerwave Allgon 7770.00
154.00	Panel	3	KMW AM-X-CD-16-65-00T-RET
154.00	Panel	3	Ericsson RRUS-11
154.00	Mounting Frame	3	Flat Light Sector Frame
141.00	Mounting Frame	3	Flat Light Sector Frame
141.00	Panel	4	Andrew 844G45VTZASX
141.00	Panel	8	Decibel DB844H90E-XY
130.00	Mounting Frame	3	Empty Round Sector Frame
122.00	Panel	2	6' Ice Shield
118.00	Panel	4	Radio/ODU
118.00	Dish	2	3' HP Dish
106.00	Straight Arm	1	Stand-Off
106.00	Whip	1	10' Omni
103.00	Straight Arm	1	Stand-Off
103.00	Whip	1	9' Omni
93.00	Straight Arm	1	Stand-Off
93.00	Whip	1	RFI Antennas BA80-67
82.00	Whip	1	8' Omni
82.00	Straight Arm	2	Flat Side Arm
82.00	Whip	1	Andrew DB224
70.00	Straight Arm	2	Flat Side Arm
70.00	Yagi	2	Andrew ASPR766P

Linear Appurtenance			
Elev (ft)		Qty	Description
From	To		
0.00	155.00	1	Climbing Ladder
5.00	154.00	1	Waveguide
5.00	154.00	2	3" Conduit
5.00	154.00	12	1 5/8" Coax
5.00	154.00	4	0.78" 8 AWG 6
5.00	154.00	2	0.39" Fiber Trunk
5.00	141.00	1	Waveguide
5.00	141.00	12	1 1/4" Coax

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Job Information		
Tower : 302505	Location : Wshn - West Haven, CT	
Code : ANSI/TIA-222-G	Shape : Triangle	Base Width : 19.00 ft
Client : AT&T Mobility	Top Width : 7.00 ft	

0.00	118.00	2	0.41" CNT-400
0.00	118.00	2	0.41" CNT-400
0.00	106.00	1	7/8" Coax
0.00	103.00	1	1/2" Coax
0.00	93.00	1	7/8" Coax
0.00	82.00	1	7/8" Coax
0.00	82.00	1	1/2" Coax
0.00	70.00	1	7/8" Coax

Global Base Foundation Design Loads			
Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	3,486.99	46.28	39.54
DL + WL + IL	1,159.98	116.56	13.79

Individual Base Foundation Design Loads		
Vertical (kip)	Uplift (kip)	Horizontal (kip)
227.34	195.33	23.05

### Analysis Parameters

Location:	New Haven County, CT	Height (ft):	155
Code:	ANSI/TIA-222-G	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	19.00
Tower Manufacturer:	Stainless Inc.	Top Face Width (ft):	7.00
Tower Type:	Self Support	Anchor Bolt Detail Type	c

### Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	97 mph
Exposure Category:	B	Design Windspeed With Ice:	50 mph
Topographic Category:	3	Operational Windspeed:	60 mph
Crest Height:	112.0 ft	Design Ice Thickness:	0.75 in

### Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	0.85				
$T_L$ (sec):	6	p:	1.3	$C_S$ :	0.040
$S_S$ :	0.189	$S_1$ :	0.063	$C_S$ , Max:	0.040
$F_a$ :	1.600	$F_V$ :	2.400	$C_S$ , Min:	0.030
$S_{ds}$ :	0.202	$S_{d1}$ :	0.101		

### Load Cases

1.2D + 1.6W Normal	97 mph Normal to Face with No Ice
1.2D + 1.6W 60 deg	97 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	97 mph 90 degree with No Ice
1.2D + 1.6W 120 deg	97 mph 120 degree with No Ice
1.2D + 1.6W 180 deg	97 mph 180 degree with No Ice
1.2D + 1.6W 210 deg	97 mph 210 degree with No Ice
1.2D + 1.6W 240 deg	97 mph 240 degree with No Ice
1.2D + 1.6W 300 deg	97 mph 300 degree with No Ice
1.2D + 1.6W 330 deg	97 mph 330 degree with No Ice
0.9D + 1.6W Normal	97 mph Normal to Face with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	97 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	97 mph 90 deg with No Ice (Reduced DL)
0.9D + 1.6W 120 deg	97 mph 120 deg with No Ice (Reduced DL)
0.9D + 1.6W 180 deg	97 mph 180 deg with No Ice (Reduced DL)
0.9D + 1.6W 210 deg	97 mph 210 deg with No Ice (Reduced DL)
0.9D + 1.6W 240 deg	97 mph 240 deg with No Ice (Reduced DL)
0.9D + 1.6W 300 deg	97 mph 300 deg with No Ice (Reduced DL)
0.9D + 1.6W 330 deg	97 mph 330 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 0.75 in Radial Ice

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## Analysis Parameters

1.2D + 1.0Di + 1.0Wi 120 deg	50 mph 120 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 180 deg	50 mph 180 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 210 deg	50 mph 210 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 240 deg	50 mph 240 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 300 deg	50 mph 300 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 330 deg	50 mph 330 deg with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 deg
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 deg
(1.2 + 0.2Sds) * DL + E 120 deg	Seismic 120 deg
(1.2 + 0.2Sds) * DL + E 180 deg	Seismic 180 deg
(1.2 + 0.2Sds) * DL + E 210 deg	Seismic 210 deg
(1.2 + 0.2Sds) * DL + E 240 deg	Seismic 240 deg
(1.2 + 0.2Sds) * DL + E 300 deg	Seismic 300 deg
(1.2 + 0.2Sds) * DL + E 330 deg	Seismic 330 deg
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 deg
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 deg
(0.9 - 0.2Sds) * DL + E 120 deg	Seismic (Reduced DL) 120 deg
(0.9 - 0.2Sds) * DL + E 180 deg	Seismic (Reduced DL) 180 deg
(0.9 - 0.2Sds) * DL + E 210 deg	Seismic (Reduced DL) 210 deg
(0.9 - 0.2Sds) * DL + E 240 deg	Seismic (Reduced DL) 240 deg
(0.9 - 0.2Sds) * DL + E 300 deg	Seismic (Reduced DL) 300 deg
(0.9 - 0.2Sds) * DL + E 330 deg	Seismic (Reduced DL) 330 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg
1.0D + 1.0W Service 120 deg	Serviceability - 60 mph Wind 120 deg
1.0D + 1.0W Service 180 deg	Serviceability - 60 mph Wind 180 deg
1.0D + 1.0W Service 210 deg	Serviceability - 60 mph Wind 210 deg
1.0D + 1.0W Service 240 deg	Serviceability - 60 mph Wind 240 deg
1.0D + 1.0W Service 300 deg	Serviceability - 60 mph Wind 300 deg
1.0D + 1.0W Service 330 deg	Serviceability - 60 mph Wind 330 deg

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Site Number: 302505

Code:

ANSI/TIA-222-G

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Site Name: Wshn - West Haven, CT

Engineering Number: OAA692174\_C3\_01

12/29/2016 2:13:02 PM

Customer: AT&T Mobility

### Tower Loading

#### Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
154.0	CCI TPX-070821	6	8	0.6	0.8	5.8	2.1	0.80	0.50	0.0	0.0	24.31	44	65
154.0	Powerwave Allgon	12	14	1.1	1.2	9.2	2.6	0.80	0.50	4.0	700.4	24.39	175	244
154.0	Commscope WCS-	1	30	1.2	0.9	10.6	6.9	0.80	0.50	0.0	0.0	24.31	15	42
154.0	Raycap DC6-48-60-	3	32	1.3	2.0	11.0	11.0	0.80	1.00	0.0	0.0	24.31	102	137
154.0	Ericsson RRUS A2	3	22	2.1	1.3	16.4	3.3	0.80	0.50	0.0	0.0	24.31	82	95
154.0	Ericsson RRUS 12	6	50	3.2	1.7	18.5	7.5	0.80	0.67	4.0	1343.9	24.39	336	432
154.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.67	4.0	706.1	24.39	177	333
154.0	Ericsson RRUS-11	3	55	3.8	2.1	18.2	6.7	0.80	0.67	4.0	808.5	24.39	202	238
154.0	Powerwave Allgon	6	35	5.5	4.6	11.0	5.0	0.80	0.77	4.0	2701.6	24.39	675	302
154.0	KMW AM-X-CD-16-	3	49	8.0	6.0	11.8	5.9	0.80	0.79	4.0	2017.2	24.39	504	210
154.0	CCI OPA-65R-LCUU-	3	73	9.7	6.0	14.8	7.4	0.80	0.79	4.0	2429.7	24.39	607	315
154.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.31	999	1728
141.0	Decibel DB844H90E-	8	14	3.6	4.0	6.5	8.0	0.80	0.92	0.0	0.0	24.07	696	161
141.0	Andrew	4	15	6.2	4.0	15.0	8.5	0.80	0.81	0.0	0.0	24.07	523	86
141.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.07	989	1728
130.0	Empty Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	23.90	790	1296
122.0	6' Ice Shield	2	450	3.9	1.2	100.0	48.0	1.00	1.00	0.0	0.0	23.79	252	1296
118.0	Radio/ODU	4	30	1.6	1.3	12.0	8.0	1.00	1.00	0.0	0.0	23.75	207	173
118.0	3' HP Dish	2	140	8.9	3.0	0.0	0.0	1.00	1.00	0.0	0.0	23.75	576	403
106.0	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.64	80	108
106.0	10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	6.0	579.8	23.68	97	36
103.0	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.62	80	108
103.0	9' Omni	1	25	2.7	9.0	3.0	3.0	1.00	1.00	7.0	608.3	23.67	87	36
93.00	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.57	80	108
93.00	RFI Antennas BA80-	1	18	3.3	9.8	2.0	2.0	1.00	1.00	7.0	752.6	23.60	108	25
82.00	8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	307.7	23.57	77	36
82.00	Andrew DB224	1	38	6.1	23.0	3.0	3.0	1.00	1.00	12.0	2327.8	23.58	194	55
82.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.57	404	432
70.00	Andrew ASPR766P	2	2	0.9	1.0	30.0	0.0	1.00	1.00	1.0	59.7	23.60	60	5
70.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.61	405	432
	Totals	92	7407	442.2										

#### Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
154.0	CCI TPX-070821	6	8	0.6	0.8	5.8	2.1	0.80	0.50	0.0	0.0	24.31	44	36
154.0	Powerwave Allgon	12	14	1.1	1.2	9.2	2.6	0.80	0.50	4.0	700.4	24.39	175	137
154.0	Commscope WCS-	1	30	1.2	0.9	10.6	6.9	0.80	0.50	0.0	0.0	24.31	15	24
154.0	Raycap DC6-48-60-	3	32	1.3	2.0	11.0	11.0	0.80	1.00	0.0	0.0	24.31	102	77
154.0	Ericsson RRUS A2	3	22	2.1	1.3	16.4	3.3	0.80	0.50	0.0	0.0	24.31	82	53
154.0	Ericsson RRUS 12	6	50	3.2	1.7	18.5	7.5	0.80	0.67	4.0	1343.9	24.39	336	243
154.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.67	4.0	706.1	24.39	177	187
154.0	Ericsson RRUS-11	3	55	3.8	2.1	18.2	6.7	0.80	0.67	4.0	808.5	24.39	202	134
154.0	Powerwave Allgon	6	35	5.5	4.6	11.0	5.0	0.80	0.77	4.0	2701.6	24.39	675	170
154.0	KMW AM-X-CD-16-	3	49	8.0	6.0	11.8	5.9	0.80	0.79	4.0	2017.2	24.39	504	118
154.0	CCI OPA-65R-LCUU-	3	73	9.7	6.0	14.8	7.4	0.80	0.79	4.0	2429.7	24.39	607	177
154.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.31	999	972
141.0	Decibel DB844H90E-	8	14	3.6	4.0	6.5	8.0	0.80	0.92	0.0	0.0	24.07	696	91
141.0	Andrew	4	15	6.2	4.0	15.0	8.5	0.80	0.81	0.0	0.0	24.07	523	49
141.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.07	989	972
130.0	Empty Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	23.90	790	729

Site Number: 302505

Code:

ANSI/TIA-222-G

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Site Name: Wshn - West Haven, CT

Engineering Number: OAA692174\_C3\_01

12/29/2016 2:13:02 PM

Customer: AT&T Mobility

### Tower Loading

122.0	6' Ice Shield	2	450	3.9	1.2	100.0	48.0	1.00	1.00	0.0	0.0	23.79	252	729
118.0	Radio/ODU	4	30	1.6	1.3	12.0	8.0	1.00	1.00	0.0	0.0	23.75	207	97
118.0	3' HP Dish	2	140	8.9	3.0	0.0	0.0	1.00	1.00	0.0	0.0	23.75	576	227
106.0	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.64	80	61
106.0	10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	6.0	579.8	23.68	97	20
103.0	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.62	80	61
103.0	9' Omni	1	25	2.7	9.0	3.0	3.0	1.00	1.00	7.0	608.3	23.67	87	20
93.00	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.57	80	61
93.00	RFI Antennas BA80-	1	18	3.3	9.8	2.0	2.0	1.00	1.00	7.0	752.6	23.60	108	14
82.00	8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	307.7	23.57	77	20
82.00	Andrew DB224	1	38	6.1	23.0	3.0	3.0	1.00	1.00	12.0	2327.8	23.58	194	31
82.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.57	404	243
70.00	Andrew ASPR766P	2	2	0.9	1.0	30.0	0.0	1.00	1.00	1.0	59.7	23.60	60	3
70.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.61	405	243
Totals		92	7407	442.2										

### Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
154.0	CCI TPX-070821	6	27	0.8	0.8	5.8	2.1	0.80	0.50	0.0	0.0	6.46	11	202
154.0	Powerwave Allgon	12	49	1.6	1.2	9.2	2.6	0.80	0.50	4.0	166.6	6.48	42	744
154.0	Commscope WCS-	1	74	1.4	0.9	10.6	6.9	0.80	0.50	0.0	0.0	6.46	3	96
154.0	Raycap DC6-48-60-	3	127	2.9	2.0	11.0	11.0	0.80	1.00	0.0	0.0	6.46	38	482
154.0	Ericsson RRUS A2	3	79	2.7	1.3	16.4	3.3	0.80	0.50	0.0	0.0	6.46	18	299
154.0	Ericsson RRUS 12	6	148	3.9	1.7	18.5	7.5	0.80	0.67	4.0	275.1	6.48	69	1139
154.0	Ericsson RRUS-32	3	194	4.1	2.5	13.3	9.5	0.80	0.67	4.0	146.1	6.48	37	753
154.0	Ericsson RRUS-11	3	163	4.6	2.1	18.2	6.7	0.80	0.67	4.0	162.9	6.48	41	627
154.0	Powerwave Allgon	6	174	6.6	4.6	11.0	5.0	0.80	0.77	4.0	536.3	6.48	134	1303
154.0	KMW AM-X-CD-16-	3	243	9.3	6.0	11.8	5.9	0.80	0.79	4.0	390.4	6.48	98	909
154.0	CCI OPA-65R-LCUU-	3	311	11.1	6.0	14.8	7.4	0.80	0.79	4.0	462.0	6.48	115	1173
154.0	Flat Light Sector	3	709	33.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.46	309	2839
141.0	Decibel DB844H90E-	8	127	3.9	4.0	6.5	8.0	0.80	0.92	0.0	0.0	6.40	126	1250
141.0	Andrew	4	191	7.2	4.0	15.0	8.5	0.80	0.81	0.0	0.0	6.40	102	929
141.0	Flat Light Sector	3	707	33.3	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.40	306	2835
130.0	Empty Round Sector	3	676	31.3	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.35	285	2649
122.0	6' Ice Shield	2	1298	8.1	1.2	100.0	48.0	1.00	1.00	0.0	0.0	6.32	87	3332
118.0	Radio/ODU	4	94	2.1	1.3	12.0	8.0	1.00	1.00	0.0	0.0	6.31	46	479
118.0	3' HP Dish	2	325	10.7	3.0	0.0	0.0	1.00	1.00	0.0	0.0	6.31	115	848
106.0	Stand-Off	1	112	3.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.28	20	153
106.0	10' Omni	1	161	6.0	10.0	3.0	3.0	1.00	1.00	6.0	191.7	6.29	32	200
103.0	Stand-Off	1	112	3.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.27	20	153
103.0	9' Omni	1	148	5.2	9.0	3.0	3.0	1.00	1.00	7.0	193.9	6.29	28	183
93.00	Stand-Off	1	112	3.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.26	20	153
93.00	RFI Antennas BA80-	1	123	5.3	9.8	2.0	2.0	1.00	1.00	7.0	197.6	6.27	28	152
82.00	8' Omni	1	135	4.4	8.0	3.0	3.0	1.00	1.00	4.0	94.5	6.26	24	168
82.00	Andrew DB224	1	344	15.2	23.0	3.0	3.0	1.00	1.00	12.0	972.8	6.26	81	422
82.00	Flat Side Arm	2	224	8.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.26	94	610
70.00	Andrew ASPR766P	2	42	2.7	1.0	30.0	0.0	1.00	1.00	1.0	29.0	6.27	29	102
70.00	Flat Side Arm	2	224	8.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.27	94	610
Totals		92	20012	680.7										

Site Number: 302505

Code: ANSI/TIA-222-G

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Site Name: Wshn - West Haven, CT

Engineering Number: OAA692174\_C3\_01

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Customer: AT&T Mobility

### Tower Loading

**Discrete Appurtenance Properties** 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
154.0	CCI TPX-070821	6	8	0.6	0.8	5.8	2.1	0.80	0.50	0.0	0.0	9.30	10	45
154.0	Powerwave Allgon	12	14	1.1	1.2	9.2	2.6	0.80	0.50	4.0	167.5	9.33	42	169
154.0	Commscope WCS-	1	30	1.2	0.9	10.6	6.9	0.80	0.50	0.0	0.0	9.30	4	30
154.0	Raycap DC6-48-60-	3	32	1.3	2.0	11.0	11.0	0.80	1.00	0.0	0.0	9.30	24	95
154.0	Ericsson RRUS A2	3	22	2.1	1.3	16.4	3.3	0.80	0.50	0.0	0.0	9.30	20	66
154.0	Ericsson RRUS 12	6	50	3.2	1.7	18.5	7.5	0.80	0.67	4.0	321.4	9.33	80	300
154.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.67	4.0	168.8	9.33	42	231
154.0	Ericsson RRUS-11	3	55	3.8	2.1	18.2	6.7	0.80	0.67	4.0	193.3	9.33	48	165
154.0	Powerwave Allgon	6	35	5.5	4.6	11.0	5.0	0.80	0.77	4.0	646.0	9.33	162	210
154.0	KMW AM-X-CD-16-	3	49	8.0	6.0	11.8	5.9	0.80	0.79	4.0	482.4	9.33	121	146
154.0	CCI OPA-65R-LCUU-	3	73	9.7	6.0	14.8	7.4	0.80	0.79	4.0	581.0	9.33	145	219
154.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	9.30	239	1200
141.0	Decibel DB844H90E-	8	14	3.6	4.0	6.5	8.0	0.80	0.92	0.0	0.0	9.21	166	112
141.0	Andrew	4	15	6.2	4.0	15.0	8.5	0.80	0.81	0.0	0.0	9.21	125	60
141.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	9.21	236	1200
130.0	Empty Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	9.14	189	900
122.0	6' Ice Shield	2	450	3.9	1.2	100.0	48.0	1.00	1.00	0.0	0.0	9.10	60	900
118.0	Radio/ODU	4	30	1.6	1.3	12.0	8.0	1.00	1.00	0.0	0.0	9.09	49	120
118.0	3' HP Dish	2	140	8.9	3.0	0.0	0.0	1.00	1.00	0.0	0.0	9.09	138	280
106.0	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.04	19	75
106.0	10' Omni	1	25	3.0	10.0	3.0	3.0	1.00	1.00	6.0	138.7	9.06	23	25
103.0	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.04	19	75
103.0	9' Omni	1	25	2.7	9.0	3.0	3.0	1.00	1.00	7.0	145.5	9.06	21	25
93.00	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.02	19	75
93.00	RFI Antennas BA80-	1	18	3.3	9.8	2.0	2.0	1.00	1.00	7.0	180.0	9.03	26	18
82.00	8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	73.6	9.02	18	25
82.00	Andrew DB224	1	38	6.1	23.0	3.0	3.0	1.00	1.00	12.0	556.7	9.02	46	38
82.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.02	97	300
70.00	Andrew ASPR766P	2	2	0.9	1.0	30.0	0.0	1.00	1.00	1.0	14.3	9.03	14	4
70.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.03	97	300
	Totals	92	7407	442.2										

Site Number: 302505

Code: ANSI/TIA-222-G

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Site Name: Wshn - West Haven, CT

Engineering Number: OAA692174\_C3\_01

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Customer: AT&T Mobility

## Tower Loading

### Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	155.0	Climbing Ladder	1	1.00	6.90	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
5.00	154.0	0.39" Fiber Trunk	2	0.39	0.06	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	154.0	0.78" 8 AWG 6	4	0.78	0.59	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	154.0	1 5/8" Coax	12	1.98	0.82	50	3	Block	0.00	N	0.00	1.00	0.00
5.00	154.0	3" Conduit	2	3.50	7.58	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	154.0	Waveguide	1	1.00	6.00	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	141.0	1 1/4" Coax	12	1.55	0.63	50	3	Block	0.00	N	0.00	1.00	0.00
5.00	141.0	Waveguide	1	1.00	6.00	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	118.0	0.41" CNT-400	2	0.41	0.07	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	118.0	0.41" CNT-400	2	0.41	0.07	100	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	106.0	7/8" Coax	1	1.09	0.33	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	103.0	1/2" Coax	1	0.63	0.15	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	93.00	7/8" Coax	1	1.09	0.33	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	82.00	1/2" Coax	1	0.63	0.15	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	82.00	7/8" Coax	1	1.09	0.33	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	70.00	7/8" Coax	1	1.09	0.33	0	Lin App	Individual	0.00	N	1.00	1.00	0.00

Site Number: 302505

Code: ANSI/TIA-222-G

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Site Name: Wshn - West Haven, CT

Engineering Number: OAA692174\_C3\_01

12/29/2016 2:13:03 PM

Customer: AT&T Mobility

### Force/Stress Summary

Section: 1		1		Bot Elev (ft): 0.00				Height (ft): 25.000							
		Pu	Len	Bracing %			F'y	Phic	Pn	Num	Shear	Bear	Use		
Max Compression Member		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls
LEG	PSP - 5" OD x .500"	-214.20	1.2D + 1.6W	8.34	50	50	31.3	50.0	296.21	0	0	0.00	0.00	72	Member X
	HORIZDAL - 3X2.5X0.25	-7.75	0.9D + 1.6W 90	9.167	100	67	50	122.9	36.0	38.47	4	2	49.72	69.60	20 Member Y
DIAG	PSP - STLSS 3" OD X0	-11.10	1.2D + 1.6W 90	12.63	50	100	50	155.4	50.0	20.21	1	0	0.00	31.20	54 Member Y

Max Tension Member		Pu	Load Case	Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use		Controls
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes		(kip)	(kip)	%		
LEG	PSP - 5" OD x .500"	182.56	0.9D + 1.6W 60	50	65	318.15	0	0	0.00	0.00	57	Member		
	HORIZ DAL - 3X2.5X0.25	7.88	1.2D + 1.6W 90	36	58	73.57	4	2	49.72	55.68	15	Bolt Shear		
DIAG	PSP - STLSS 3" OD X0	10.53	0.9D + 1.6W 90	50	65	97.20	1	0	0.00	19.01	55	Bolt Bear		

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num	Bolt Type	
		(kip)		(kip)	%	Bolts		
Top Tension		160.68	0.9D + 1.6W 180	0.00	0	0		
Top Compression		187.14	1.2D + 1.6W	0.00	0			
Bot Tension		196.38	0.9D + 1.6W 180	1025.70	23	6 1 3/4 A325		
Bot Compression		227.73	1.2D + 1.6W	0.00	0			

Section: 2		2		Bot Elev (ft): 25.00				Height (ft): 25.000							
		Pu	Len	Bracing %			F'y	Phic	Pn	Num	Shear	Bear	Use		
Max Compression Member		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls
LEG	PSP - 5" OD x .500"	-174.51	1.2D + 1.6W	8.34	100	100	62.5	50.0	239.05	0	0	0.00	0.00	73	Member X
	HORIZDAL - 3X2.5X0.25	-6.73	1.2D + 1.6W 90	8.167	100	67	50	110.7	36.0	44.69	4	2	49.72	69.60	15 Member Y
DIAG	PSP - STLSS 3" OD X0	-10.29	1.2D + 1.6W 90	11.90	100	100	100	146.4	50.0	22.78	1	0	0.00	31.20	45 Member X

Max Tension Member		Pu	Load Case	Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use		Controls
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes		(kip)	(kip)	%		
LEG	PSP - 5" OD x .500"	149.88	0.9D + 1.6W 180	50	65	318.15	0	0	0.00	0.00	47	Member		
	HORIZ DAL - 3X2.5X0.25	6.95	1.2D + 1.6W 90	36	58	73.57	4	2	49.72	55.68	13	Bolt Shear		
DIAG	PSP - STLSS 3" OD X0	9.73	0.9D + 1.6W 90	50	65	97.20	1	0	0.00	19.01	51	Bolt Bear		

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num	Bolt Type	
		(kip)		(kip)	%	Bolts		
Top Tension		126.94	0.9D + 1.6W 180	0.00	0	0		
Top Compression		147.76	1.2D + 1.6W	0.00	0			
Bot Tension		160.68	0.9D + 1.6W 180	436.16	37	8 1 A325		
Bot Compression		187.14	1.2D + 1.6W	0.00	0			

### Force/Stress Summary

Section: 3      3 (bot 2 bays)      Bot Elev (ft): 50.00      Height (ft): 16.667															
		Pu	Len		Bracing %			F'y	Phic Pn	Num	Shear		Bear		Use
		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%
Max Compression Member															Controls
LEG	PSP - 5" OD x .500"	-135.25	1.2D + 1.6W	8.34	100	100	100	62.5	50.0	239.05	0	0	0.00	0.00	56 Member X
HORIZ	SAE - 3X3X0.25	-5.91	1.2D + 1.6W 90	7.167	100	67	67	108.7	36.0	25.06	2	1	24.86	34.80	23 Bolt Shear
DIAG	PSP - STLSS 2.75" OD	-9.59	1.2D + 1.6W 90	11.21	100	100	100	147.9	50.0	14.98	1	0	0.00	22.46	64 Member X

Section: 3      3 (bot 2 bays)      Bot Elev (ft): 50.00      Height (ft): 16.667														
		Pu	Len		Fy	Fu	Phit Pn	Num	Num	Shear	Bear		Use	Controls
		(kip)	Load Case	(ft)	(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	(kip)	%	Controls
Max Tension Member										(kip)	(kip)			
LEG	PSP - 5" OD x .500"	116.10	0.9D + 1.6W 180	50	65	318.15	0	0	0	0.00	0.00	36	Member	
HORIZ	SAE - 3X3X0.25	6.06	1.2D + 1.6W 90	36	58	40.86	2	1	1	24.86	27.84	24	Bolt Shear	
DIAG	PSP - STLSS 2.75" OD	9.17	0.9D + 1.6W 90	50	65	65.25	1	0	0	0.00	13.69	67	Bolt Bear	

Section: 3      3 (bot 2 bays)      Bot Elev (ft): 50.00      Height (ft): 16.667														
		Pu	Len		phiRnt	Use	Num	Bolt Type						
		(kip)	Load Case	(ft)	(kip)	%	Bolts							
Max Splice Forces														
Top Tension		104.28	0.9D + 1.6W 180		0.00	0	0							
Top Compression		121.91	1.2D + 1.6W		0.00	0								
Bot Tension		126.94	0.9D + 1.6W 180		240.80	53	8	3/4 A325						
Bot Compression		147.76	1.2D + 1.6W		0.00	0								

Section: 4      3 (top bay)      Bot Elev (ft): 66.67      Height (ft): 8.333															
		Pu	Len		Bracing %			F'y	Phic Pn	Num	Shear		Bear		Use
		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%
Max Compression Member															Controls
LEG	PSP - 5" OD x .500"	-109.60	1.2D + 1.6W	8.34	100	100	100	62.5	50.0	239.05	0	0	0.00	0.00	45 Member X
HORIZ	DAL - 3X2.5X0.25	-5.28	1.2D + 1.6W 90	6.500	100	67	50	87.1	36.0	57.13	4	2	49.72	69.60	10 Bolt Shear
DIAG	PSP - STLSS 2.75" OD	-9.11	1.2D + 1.6W 90	10.77	100	100	100	142.1	50.0	16.22	1	0	0.00	22.46	56 Member X

Section: 4      3 (top bay)      Bot Elev (ft): 66.67      Height (ft): 8.333														
		Pu	Len		Fy	Fu	Phit Pn	Num	Num	Shear	Bear		Use	Controls
		(kip)	Load Case	(ft)	(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	(kip)	%	Controls
Max Tension Member										(kip)	(kip)			
LEG	PSP - 5" OD x .500"	93.72	0.9D + 1.6W 180	50	65	318.15	0	0	0	0.00	0.00	29	Member	
HORIZ	DAL - 3X2.5X0.25	5.43	1.2D + 1.6W 90	36	58	73.57	4	2	2	49.72	55.68	10	Bolt Shear	
DIAG	PSP - STLSS 2.75" OD	8.66	0.9D + 1.6W 90	50	65	65.25	1	0	0	0.00	13.69	63	Bolt Bear	

Section: 4      3 (top bay)      Bot Elev (ft): 66.67      Height (ft): 8.333														
		Pu	Len		phiRnt	Use	Num	Bolt Type						
		(kip)	Load Case	(ft)	(kip)	%	Bolts							
Max Splice Forces														
Top Tension		93.37	0.9D + 1.6W 180		0.00	0	0							
Top Compression		109.23	1.2D + 1.6W		0.00	0								
Bot Tension		104.28	0.9D + 1.6W 180		0.00	0								
Bot Compression		121.91	1.2D + 1.6W		0.00	0								

### Force/Stress Summary

Section: 5		4	Bot Elev (ft): 75.00				Height (ft): 25.000								
		Pu	Len	Bracing %			F'y	Phic	Pn Num	Num	Shear	Bear	Use		
		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%	Controls
<b>Max Compression Member</b>															
LEG	PSP - 5" OD x .300"	-96.76	1.2D + 1.6W	8.34	100	100	100	60.1	50.0	153.05	0	0	0.00	0.00	63 Member X
HORIZDAL	- 3X2.5X0.25	-7.46	1.2D + 1.6W	5.500	100	67	50	73.7	36.0	64.00	4	2	49.72	69.60	15 Bolt Shear
DIAG	PSP - STLSS 2.75" OD	-8.83	1.2D + 1.6W 90	10.57	100	100	100	139.4	50.0	16.86	1	0	0.00	22.46	52 Member X

		Pu	Load Case	Fy	Fu	Phit	Pn Num	Num	Shear	Bear	Use		Controls
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%		
<b>Max Tension Member</b>													
LEG	PSP - 5" OD x .300"	82.39	0.9D + 1.6W 180	50	65	199.35	0	0	0.00	0.00	41		Member
HORIZ DAL	- 3X2.5X0.25	8.25	1.2D + 1.6W 90	36	58	73.57	4	2	49.72	55.68	16		Bolt Shear
DIAG	PSP - STLSS 2.75" OD	8.50	1.2D + 1.6W 210	50	65	65.25	1	0	0.00	13.69	62		Bolt Bear

		Pu	Load Case	phiRnt	Use	Num	Bolt Type	
		(kip)		(kip)	%	Bolts		
<b>Max Splice Forces</b>								
Top Tension		60.54	0.9D + 1.6W 180	0.00	0	0		
Top Compression		71.81	1.2D + 1.6W	0.00	0			
Bot Tension		93.37	0.9D + 1.6W 180	240.80	39	8	3/4 A325	
Bot Compression		109.23	1.2D + 1.6W	0.00	0			

Section: 6		5	Bot Elev (ft): 100.0				Height (ft): 25.000								
		Pu	Len	Bracing %			F'y	Phic	Pn Num	Num	Shear	Bear	Use		
		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%	Controls
<b>Max Compression Member</b>															
LEG	PSP - STLSS 5" OD X0	-66.06	1.2D + 1.6W	8.34	100	100	100	58.6	50.0	87.89	0	0	0.00	0.00	75 Member X
HORIZDAL	- 3X2.5X0.25	-7.23	1.2D + 1.6W	10.33	100	100	50	160.7	36.0	23.00	4	2	49.72	69.60	31 Member Y
DIAG	PSP - STLSS 3" OD X0	-10.48	1.2D + 1.6W 90	13.53	100	100	100	166.4	50.0	17.61	1	0	0.00	31.20	59 Member X

		Pu	Load Case	Fy	Fu	Phit	Pn Num	Num	Shear	Bear	Use		Controls
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%		
<b>Max Tension Member</b>													
LEG	PSP - STLSS 5" OD X0	55.54	0.9D + 1.6W 180	50	65	112.95	0	0	0.00	0.00	49		Member
HORIZ DAL	- 3X2.5X0.25	7.99	1.2D + 1.6W 90	36	58	73.57	4	2	49.72	55.68	16		Bolt Shear
DIAG	PSP - STLSS 3" OD X0	9.18	1.2D + 1.6W	50	65	97.20	1	0	0.00	19.01	48		Bolt Bear

		Pu	Load Case	phiRnt	Use	Num	Bolt Type	
		(kip)		(kip)	%	Bolts		
<b>Max Splice Forces</b>								
Top Tension		29.04	0.9D + 1.6W 180	0.00	0	0		
Top Compression		36.96	1.2D + 1.6W	0.00	0			
Bot Tension		60.54	0.9D + 1.6W 180	120.40	50	4	3/4 A325	
Bot Compression		71.81	1.2D + 1.6W	0.00	0			

Site Number: 302505

Code: ANSI/TIA-222-G

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Site Name: Wshn - West Haven, CT

Engineering Number: OAA692174\_C3\_01

12/29/2016 2:13:03 PM

Customer: AT&T Mobility

### Force/Stress Summary

Section: 7		6	Bot Elev (ft): 125.0				Height (ft): 25.000								
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear				
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Boles	Holes	phiRnv	phiRn	Use	Controls	
		Load Case		KL/R			(ksi)				(kip)	(kip)	%		
<b>Max Compression Member</b>															
LEG	PSP - STLSS 5" OD X0	-31.07	1.2D + 1.6W	8.34	100	100	100	58.6	50.0	87.89	0	0	0.00	0.00	35 Member X
HORIZ	SAE - 3X3X0.25	-5.47	1.2D + 1.6W	8.333	100	100	100	168.9	36.0	11.40	2	1	24.86	34.80	48 Member Z
DIAG	PSP - STLSS 2.75" OD	-8.84	1.2D + 1.6W 90	12.02	100	100	100	158.6	50.0	13.03	1	0	0.00	22.46	67 Member X
<b>Max Tension Member</b>															
LEG	PSP - STLSS 5" OD X0	23.93	1.2D + 1.6W 180	50	65	112.95	0	0	0.00	0.00	21	Member			
HORIZ	SAE - 3X3X0.25	5.88	1.2D + 1.6W 90	36	58	40.86	2	1	24.86	27.84	23	Bolt Shear			
DIAG	PSP - STLSS 2.75" OD	7.68	1.2D + 1.6W 120	50	65	65.25	1	0	0.00	13.69	56	Bolt Bear			
<b>Max Splice Forces</b>															
Top Tension		3.62	0.9D + 1.6W 180		0.00	0	0								
Top Compression		6.84	1.2D + 1.6W		0.00	0									
Bot Tension		29.04	0.9D + 1.6W 180		120.40	24	4	3/4 A325							
Bot Compression		36.96	1.2D + 1.6W		0.00	0									

Section: 8		7	Bot Elev (ft): 150.0				Height (ft): 5.000								
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear				
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Boles	Holes	phiRnv	phiRn	Use	Controls	
		Load Case		KL/R			(ksi)				(kip)	(kip)	%		
<b>Max Compression Member</b>															
LEG	PSP - STLSS 5" OD X0	-3.29	1.2D + 1.0Di +	5.00	100	100	100	35.1	50.0	103.22	0	0	0.00	0.00	3 Member X
HORIZ	CHN - C4 x 5.4	-1.80	1.2D + 1.6W	3.500	100	100	100	100.2	36.0	30.38	2	2	24.86	44.36	7 Bolt Shear
DIAG	DAL - 2.5X2X0.1875	-3.18	1.2D + 1.6W	6.103	100	100	50	116.8	36.0	25.58	2	2	24.86	26.10	12 Bolt Shear
<b>Max Tension Member</b>															
LEG		0.00		0	0	0.00	0	0	0.00	0.00	0				
HORIZ	CHN - C4 x 5.4	2.32	1.2D + 1.6W 180	36	58	36.28	2	2	24.86	35.49	9	Bolt Shear			
DIAG	DAL - 2.5X2X0.1875	3.04	1.2D + 1.6W	36	58	43.68	2	2	24.86	15.66	19	Bolt Bear			
<b>Max Splice Forces</b>															
Top Tension		0.00			0.00	0	0								
Top Compression		3.29	1.2D + 1.0Di +		0.00	0									
Bot Tension		3.62	0.9D + 1.6W 180		120.40	3	4	3/4 A325							
Bot Compression		6.84	1.2D + 1.6W		0.00	0									



# Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2064

BANM West Haven  
204 Burwell Road  
West Haven, CT 6516

**January 9, 2017**

**Centerline Communications Project Number: 950006-011**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>5.01 %</b>



January 9, 2017

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

### Emissions Analysis for Site: **CT2064 – BANM West Haven**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **204 Burwell Road, West Haven, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.



## CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **204 Burwell Road, West Haven, 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	60
LTE	2300 MHz (WCS)	2	60
LTE	700 MHz	4	60
LTE	1900 MHz (PCS)	2	60

*Table 1: Channel Data Table*



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) 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	Powerwave 7770	154
A	2	CCI OPA-65R-LCUU-H6	154
A	3	KMW AM-X-CD-16-65-00T-RET	154
B	1	Powerwave 7770	154
B	2	CCI OPA-65R-LCUU-H6	154
B	3	KMW AM-X-CD-16-65-00T-RET	154
C	1	Powerwave 7770	154
C	2	CCI OPA-65R-LCUU-H6	154
C	3	KMW AM-X-CD-16-65-00T-RET	154

*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	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.24
Antenna A2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS) / 700 MHz	12.45 / 15.45 / 11.65	6	360	8,073.14	1.92
Antenna A3	KMW AM-X-CD-16-65-00T-RET	700 MHz / 1900 MHz (PCS)	13.35 / 15.25	4	240	6,614.85	1.57
Sector A Composite MPE%							<b>3.73</b>
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.24
Antenna B2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS) / 700 MHz	12.45 / 15.45 / 11.65	6	360	8,073.14	1.92
Antenna B3	KMW AM-X-CD-16-65-00T-RET	700 MHz / 1900 MHz (PCS)	13.35 / 15.25	4	240	6,614.85	1.57
Sector B Composite MPE%							<b>3.73</b>
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.24
Antenna C2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS) / 700 MHz	12.45 / 15.45 / 11.65	6	360	8,073.14	1.92
Antenna C3	KMW AM-X-CD-16-65-00T-RET	700 MHz / 1900 MHz (PCS)	13.35 / 15.25	4	240	6,614.85	1.57
Sector C Composite MPE%							<b>3.73</b>

*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.

<b>Site Composite MPE%</b>	
<b>Carrier</b>	<b>MPE%</b>
AT&T – Max Sector Value	<b>3.73 %</b>
SoCT Gas	0.49 %
WHvn Police	0.03 %
Sprint	0.76 %
<b>Site Total MPE %:</b>	<b>5.01 %</b>

*Table 4: All Carrier MPE Contributions*

AT&T Sector A Total:	3.73 %
AT&T Sector B Total:	3.73 %
AT&T Sector C Total:	3.73 %
<b>Site Total:</b>	<b>5.01 %</b>

*Table 5: Site MPE Summary*



Per FCC OET 65, 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	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	154	1.36	850 MHz	567	0.24%
AT&T 850 MHz LTE	2	1,054.75	154	3.46	850 MHz	567	0.61%
AT&T 2300 MHz (WCS) LTE	2	2,104.51	154	6.91	2300 MHz (WCS)	1000	0.69%
AT&T 700 MHz LTE	2	877.31	154	2.88	700 MHz	467	0.62%
AT&T 700 MHz LTE	2	1,297.63	154	4.26	700 MHz	467	0.91%
AT&T 1900 MHz (PCS) LTE	2	2,009.79	154	6.60	1900 MHz (PCS)	1000	0.66%
						Total:	3.73%

*Table 6: AT&T Maximum Sector MPE Power Values*



## Summary

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

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	3.73 %
Sector B:	3.73 %
Sector C:	3.73 %
AT&T Maximum Total (per sector):	3.73 %
Site Total:	5.01 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **5.01 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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

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