



December 14, 2016

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

Regarding: Notice of Exempt Modification – Antenna Swap &  
Addition of Six Radio Heads & DC/Fiber Squid  
Property Address: 80 Shuttle Meadow Road, Southington, CT 06489  
AT&T Site: CT1004 - Southington

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 150-foot monopole at the above-referenced address, latitude 41.6385750, longitude -72.8411381. Said monopole is owned by American Tower Corporation. The existing equipment shelter is 21.7' x 25' totaling 542.5 square feet.

AT&T desires to modify its existing telecommunications facility by swapping three (3) remote-radio heads ("RRHs"). The centerline height of said antennas is and will remain at 153'. Antennas are mounted utilizing a platform with hand rails.

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 Garry Brumback, Town Manager of Southington. 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 153 feet on the 150-foot monopole.
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 monopole and its foundation can support AT&T's proposed modifications (please see attached structural analysis completed by American Tower dated November 28, 2016).

For the foregoing reasons, AT&T respectfully requests that the proposed radio head 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: Gary Brumback, Town Manager, Southington CT  
American Tower Corporation

# 80 SHUTTLE MEADOW RD

**Location** 80 SHUTTLE MEADOW RD

**Mblu** 184/ / 019/ /

**Acct#** 11918

**Owner** SOUTHERN NEW ENGLAND  
TELEPHONE CO

**Assessment** \$172,490

**Appraisal** \$246,420

**PID** 16574

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$18,560	\$227,860	\$246,420

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$12,990	\$159,500	\$172,490

## Owner of Record

**Owner** SOUTHERN NEW ENGLAND TELEPHONE CO  
**Co-Owner** SITE# 302475 - STTN SOUTHTON CT  
**Address** C/O AMERICAN TOWER LAND MNGMT  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801

**Sale Price** \$0  
**Certificate**  
**Book & Page** 331/ 320  
**Sale Date** 02/14/1983  
**Instrument** 25

## Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
SOUTHERN NEW ENGLAND TELEPHONE CO	\$0		331/ 320	25	02/14/1983

## Building Information

### Building 1 : Section 1

**Year Built:**

**Living Area:** 0

**Building Percent**

**Good:**

Building Attributes	
Field	Description
Style	Vacant Ind

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:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Total Kitchens	
Fireplaces	
Whirlpool Tubs	
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Garages	
.	
Attic Type	
Cath Ceiling	

### Building Photo



184 019 05/24/2015

(<http://images.vgsi.com/photos2/SouthingtonCTPhotos//\00\04>)

### Building Layout

 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

Land Line Valuation

**Use Code** 433V  
**Description** Radio, Television Trans Ld  
**Zone** R-80  
**Alt Land Appr** No  
**Category**

**Size (Acres)** 0.17  
**Depth**

**Outbuildings**

<b>Outbuildings</b>					<b>Legend</b>
<b>Code</b>	<b>Description</b>	<b>Sub Code</b>	<b>Sub Description</b>	<b>Size</b>	<b>Bldg #</b>
FN1	Fence - Chain			2600 L.F.	1

**Valuation History**

<b>Appraisal</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2015	\$18,560	\$227,860	\$246,420
2014	\$18,410	\$244,780	\$263,190
2013	\$18,410	\$244,780	\$263,190
2012	\$18,410	\$244,780	\$263,190

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2015	\$12,990	\$159,500	\$172,490
2014	\$12,890	\$171,350	\$184,240
2013	\$12,890	\$171,350	\$184,240
2012	\$12,890	\$171,350	\$184,240

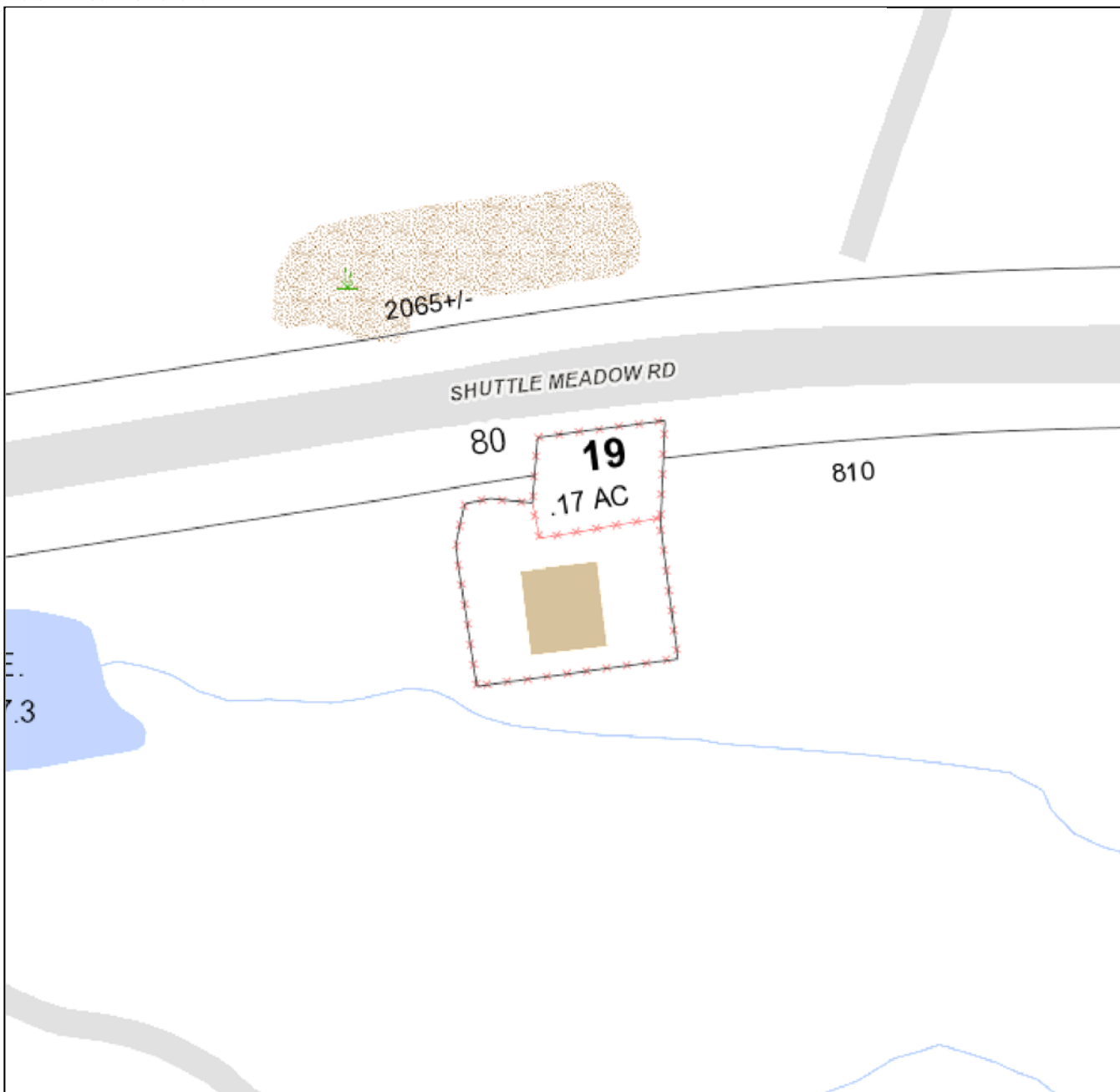
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# Town of Southington

Geographic Information System (GIS)



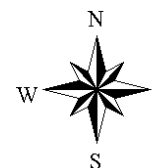
Date Printed: 12/14/2016



**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 Town of Southington and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 50 feet





# WIRELESS COMMUNICATIONS FACILITY

## CT1004 - LTE BWE

### SOUTHINGTON

### AMERICAN TOWER SITE NO.: 302475

### SHUTTLE MEADOW ROAD

### SOUTHINGTON, CT 06489

#### 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

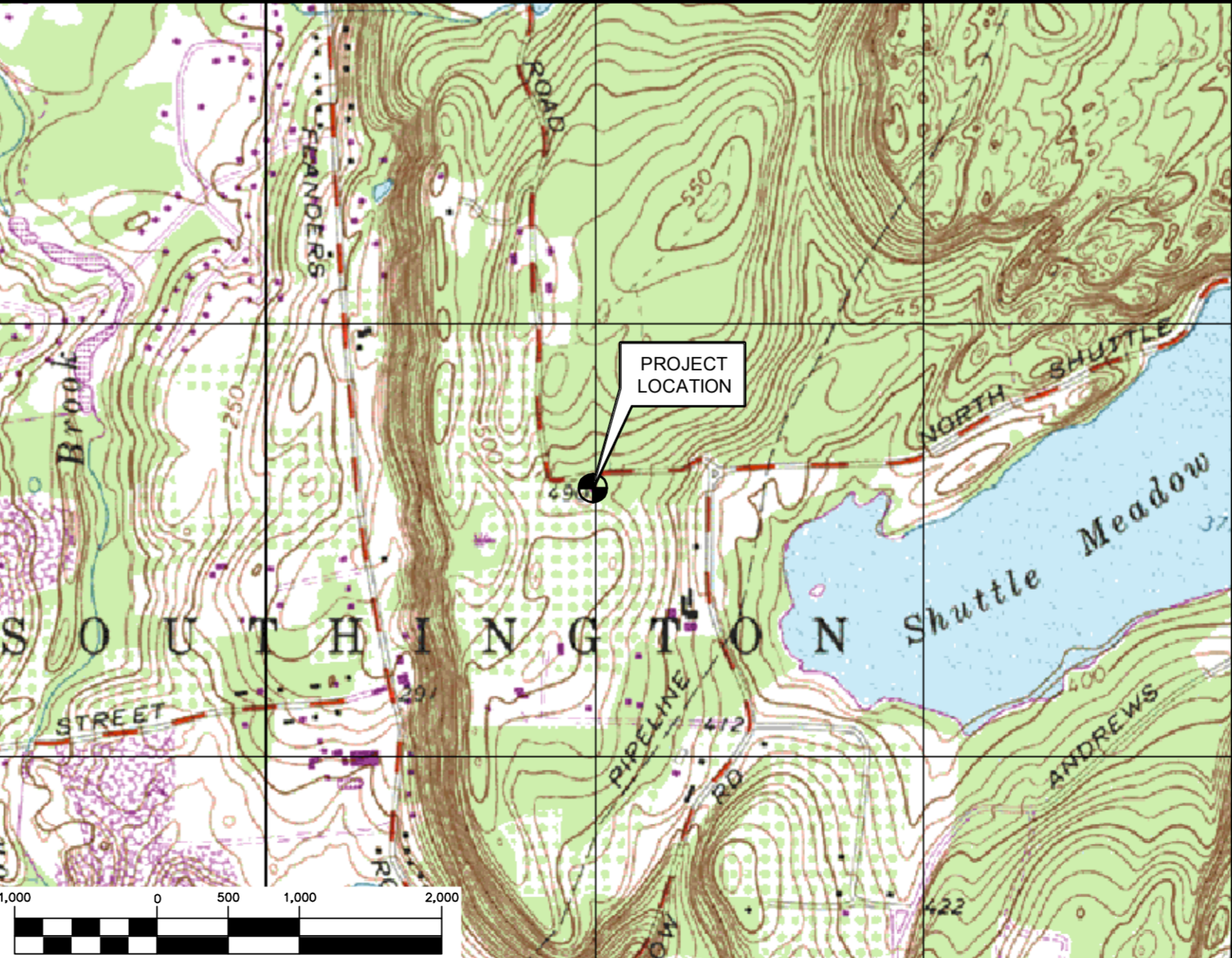
**FROM:** 500 ENTERPRISE DRIVE  
ROCKY HILL, CONNECTICUT

**TO:** SHUTTLE MEADOW ROAD  
SOUTHINGTON, CONNECTICUT

1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD 0.31 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 1.63 MI
5. MERGE ONTO CT-9 N via EXIT 22N TOWARD NEW BRITAIN 4.78 MI
6. MERGE ONTO CT-571 via EXIT 24 ON THE LEFT TOWARD CT-71/CT-372/KENSINGTON 1.65 MI
7. CT-571 BECOMES CORBIN AVE/CT-372 0.43 MI
8. TURN LEFT ON SHUTTLE MEADOW AVE.

#### VICINITY MAP

SCALE: 1" = 1000'



#### PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
  - A. REMOVE AND REPLACE (3) EXISTING RRUS-12+A2'S FOR (3) NEW RRUS-32 B2'S.

#### PROJECT INFORMATION

**AT&T SITE NUMBER:** CT1004

**AT&T SITE NAME:** SOUTHINGTON

**SITE ADDRESS:** AMERICAN TOWER SITE NO.: 302475  
SHUTTLE MEADOW ROAD  
SOUTHINGTON, CT 06489

**LESSEE/APPLICANT:** AT&T MOBILITY  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06489

**ENGINEER:** CENTEK ENGINEERING, INC.  
63-2 NORTH BRANFORD RD.  
BRANFORD, CT 06405

**PROJECT COORDINATES:** LATITUDE: 41°-38'-18.87" N  
LONGITUDE: 72°-50'-28.09" W  
GROUND ELEVATION: ±500' AMSL  
SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

#### SHEET INDEX

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

REV.	DATE	BY	CHK'D	CAG	ISSUED FOR
0	12/03/16	KAWUR	BY		CONSTRUCTION DOCUMENTS



**AT&T MOBILITY**  
WIRELESS COMMUNICATIONS FACILITY  
**SOUTHINGTON**  
CT1004 - LTE BWE  
SHUTTLE MEADOW ROAD  
SOUTHINGTON, CT 06489

DATE: 11/14/16  
SCALE: AS NOTED  
JOB NO. 16071.69

TITLE SHEET

**T-1**  
Sheet No. 1 of 5

**NOTES AND SPECIFICATIONS**

**DESIGN BASIS:**

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

1. DESIGN CRITERIA:
  - WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90-105 MPH (3 SECOND GUST)
  - RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
  - NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (V<sub>asd</sub>) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
  - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

**GENERAL NOTES:**

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

**STRUCTURAL STEEL**

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

**PAINT NOTES**

**PAINTING SCHEDULE:**

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

**EXAMINATION AND PREPARATION:**

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

**CLEANING:**

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

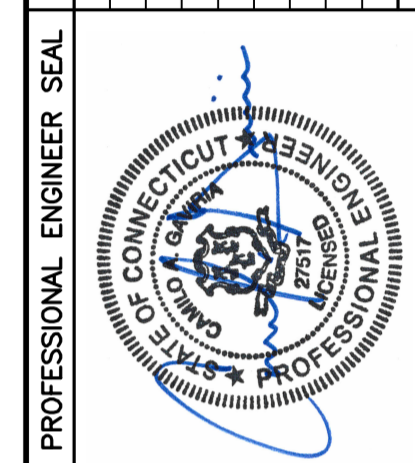
**APPLICATION:**

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

**COMPLETED WORK:**

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

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 SOUTHINGTON, CT 06489

DATE: 11/14/16  
 SCALE: AS NOTED  
 JOB NO. 16071.69

NOTES AND SPECIFICATIONS



TOP OF EXISTING MONOPOLE  
EL. ±155' A.G.L.

AT&T ANTENNAS  
EL. ±153' A.G.L.

EXISTING ±155' TALL MONOPOLE

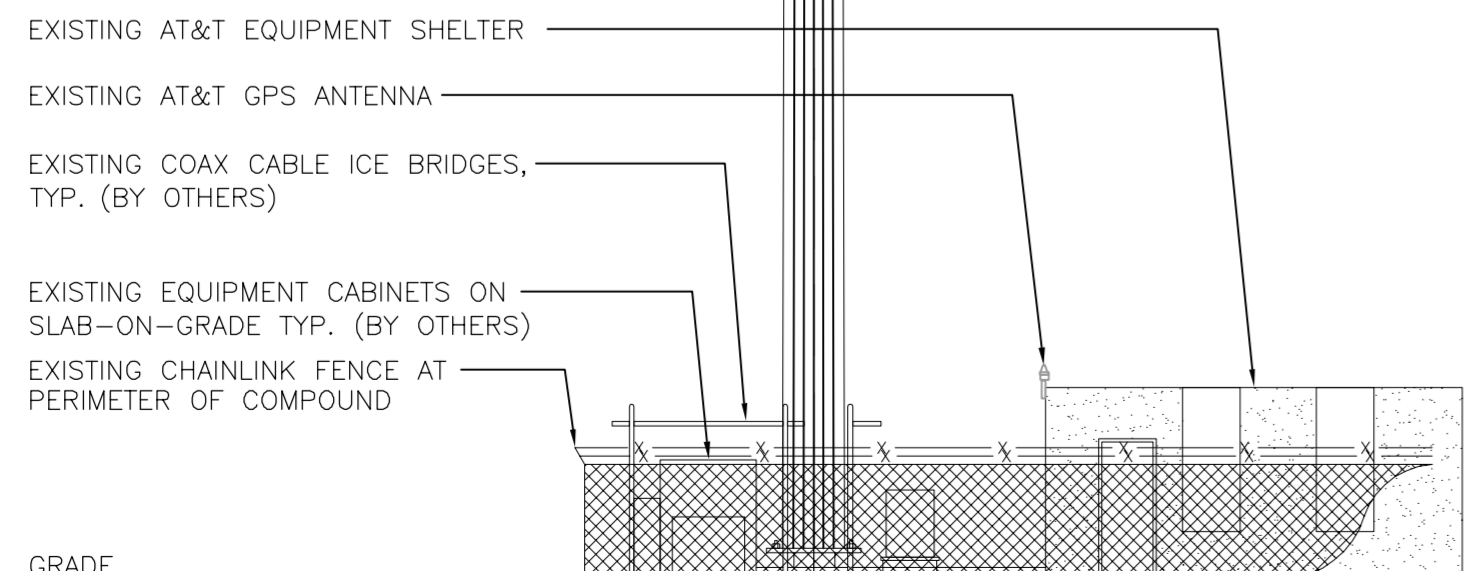
EXISTING AT&T CABLES  
ROUTED INSIDE MONOPOLE.

**TOWER STRUCTURAL NOTES:**

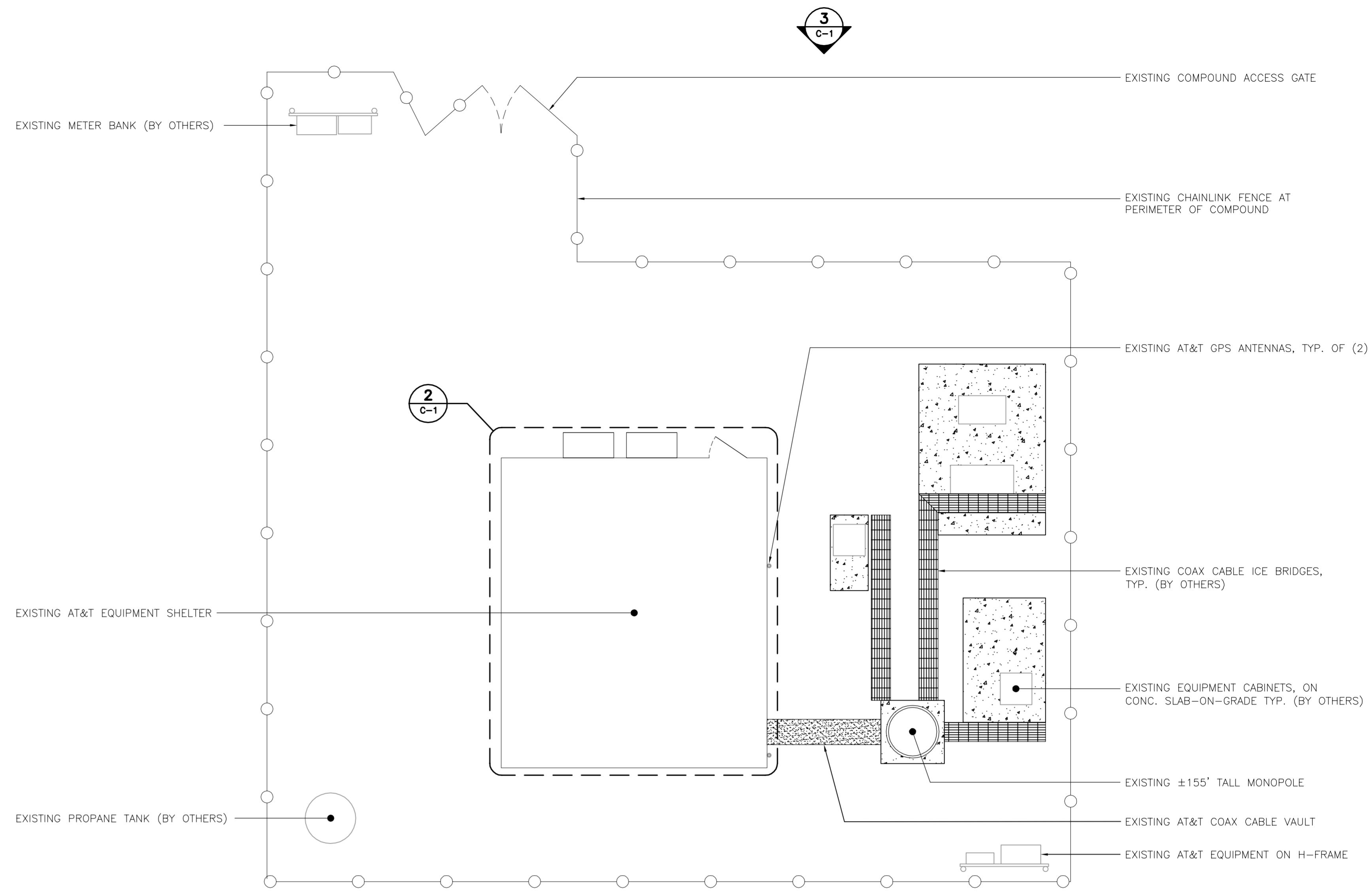
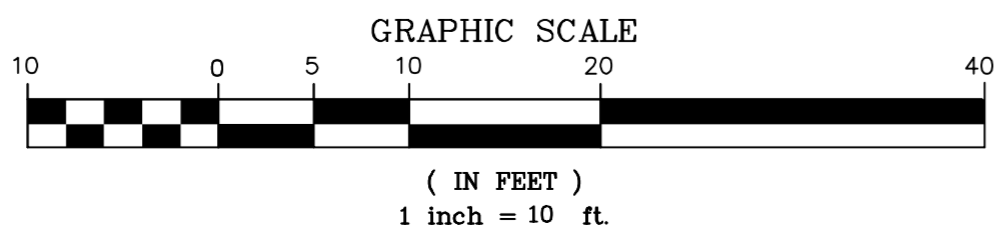
- TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
- ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER CO.,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

**NOTES:**

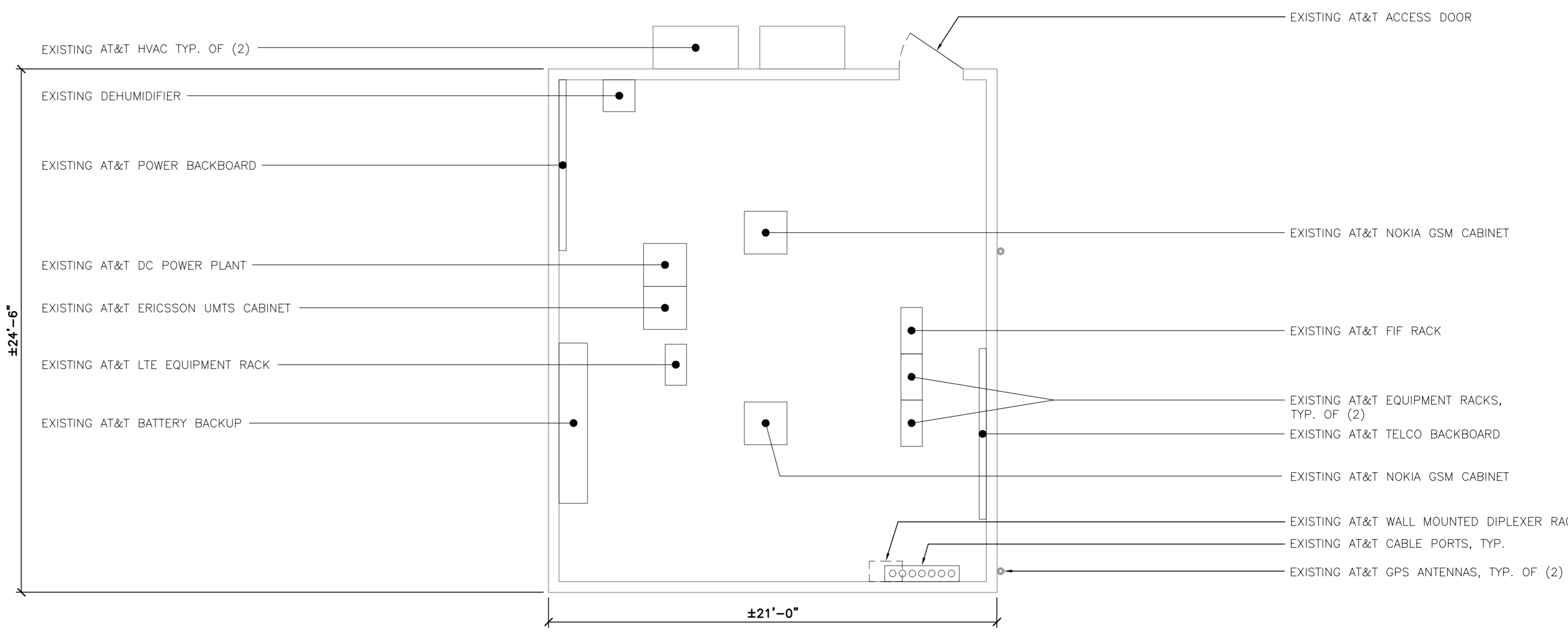
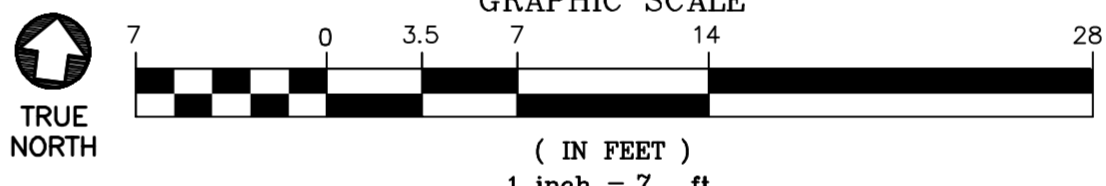
- A.G.L. = ABOVE GRADE LEVEL



**3 SOUTH TOWER ELEVATION**  
C-1 SCALE: 1" = 10"



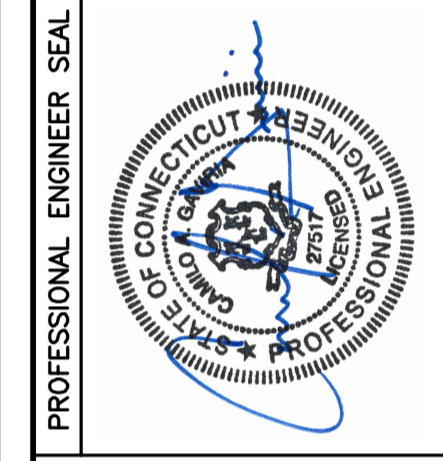
**1 COMPOUND PLAN**  
C-1 SCALE: 1" = 7"



**2 EQUIPMENT LAYOUT PLAN**  
C-1 SCALE: 1/4" = 1'-0"



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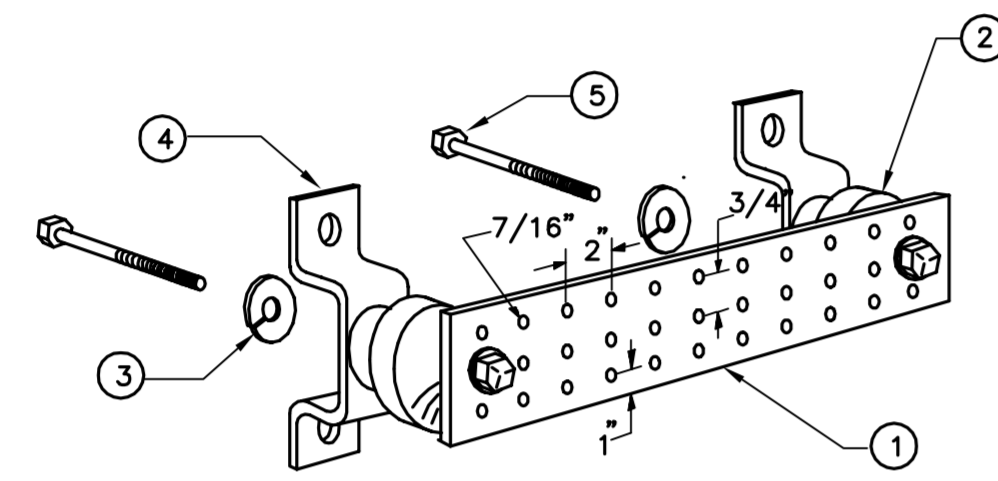
**AT&T MOBILITY**  
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PLANS AND ELEVATION

**C-1**

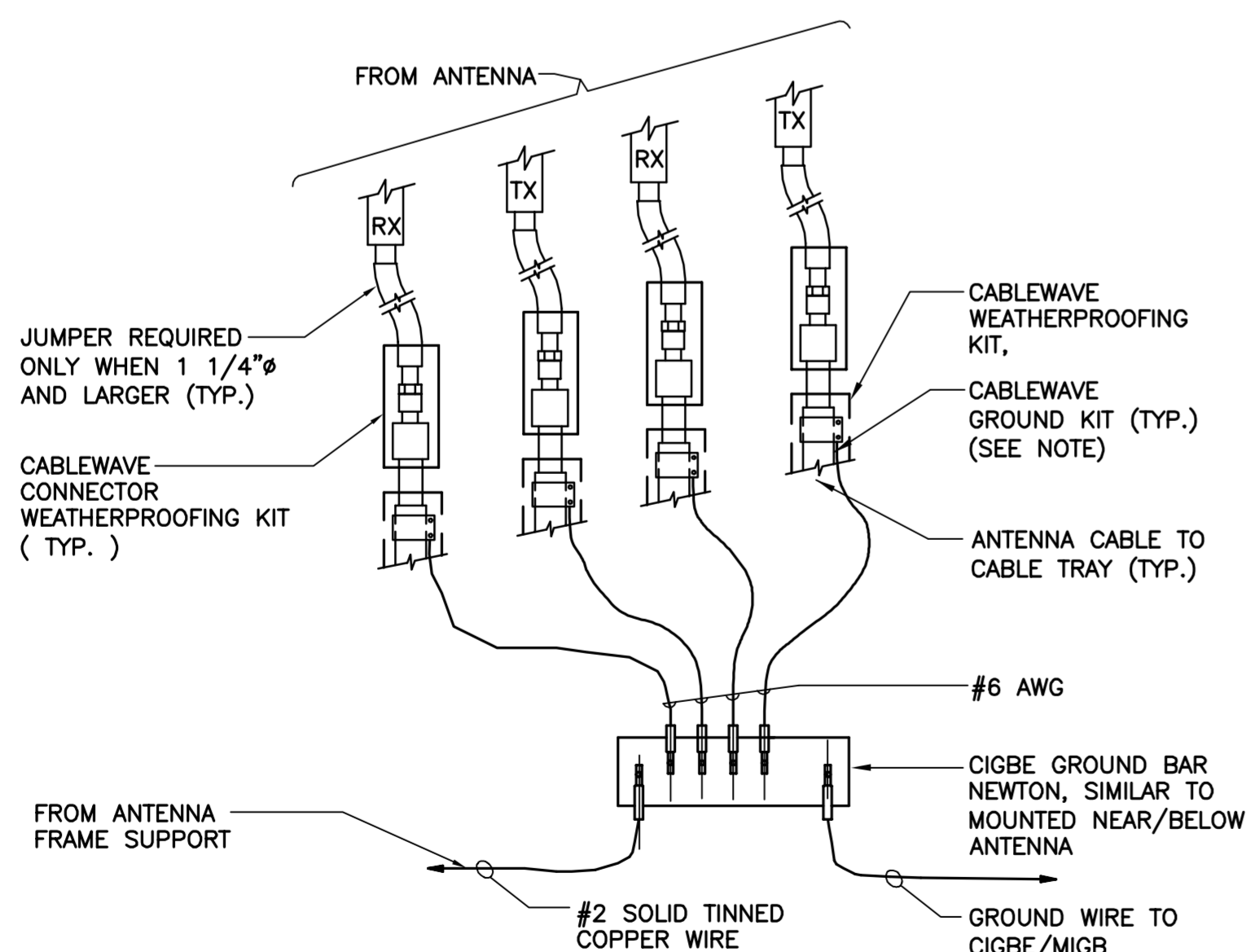




**LEGEND**

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. 3/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

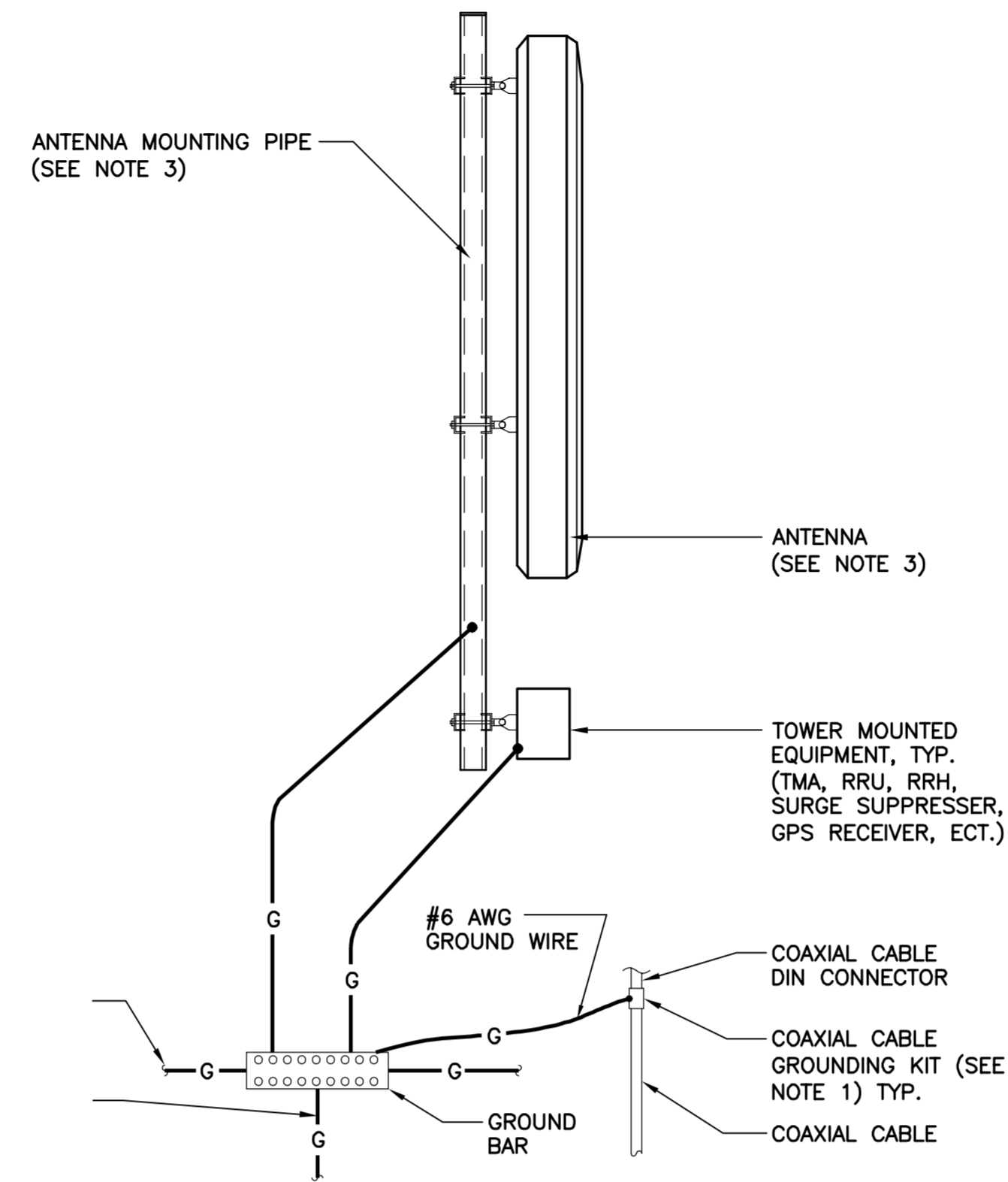
**2 GROUND BAR DETAIL**  
E-1 NOT TO SCALE



**NOTE:**

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

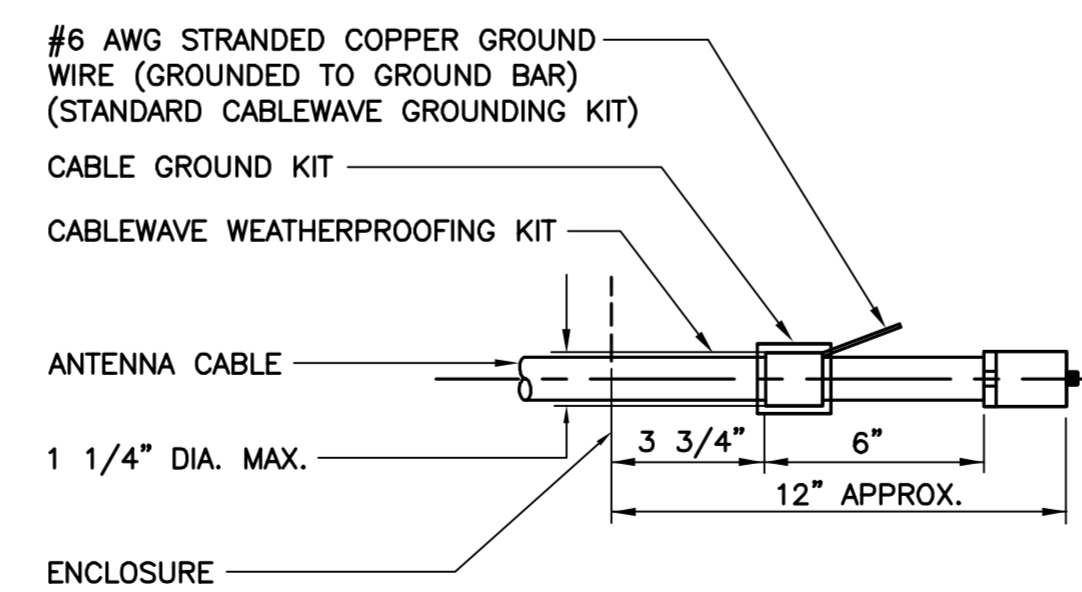
**4 CONNECTION OF GROUND WIRES TO GROUND BAR**  
E-1 NOT TO SCALE



**NOTES:**

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

**1 TYPICAL ANTENNA GROUNDING DETAIL**  
E-1 NOT TO SCALE



**NOTE:**

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

**3 ANTENNA CABLE GROUNDING DETAIL**  
E-1 NOT TO SCALE

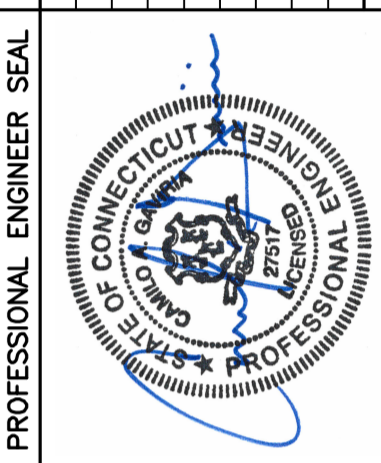
**ELECTRICAL NOTES**

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 SHALL 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	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION
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DATE: 11/14/16  
SCALE: AS NOTED  
JOB NO. 16071.69

TYPICAL ELECTRICAL DETAILS & NOTES



**AMERICAN TOWER®**  
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## Structural Analysis Report

**Structure** : 150 ft Monopole  
**ATC Site Name** : Sttn - Southington, CT  
**ATC Site Number** : 302475  
**Engineering Number** : OAA690479\_C3\_02  
**Proposed Carrier** : AT&T Mobility  
**Carrier Site Name** : Southington  
**Carrier Site Number** : CT1004  
**Site Location** : 80 Shuttle Meadow Road  
Southington, CT 06489-1313  
41.638583,-72.841100  
**County** : Hartford  
**Date** : November 28, 2016  
**Max Usage** : 94%  
**Result** : Pass

Prepared By:  
Brendan M. Smith, E.I.  
Structural Engineer II

Reviewed By:

COA: PEC.0001553



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by AT&T Mobility.

## Supporting Documents

<b>Tower Drawings</b>	SpectraSite Mapping Site #CT-0011, dated May 29, 2002 AT&T Technologies Project #AT-8935, dated April 13, 1984
<b>Foundation Drawing</b>	Girard & Co. Engineers Project #38922, dated May 18, 1983
<b>Geotechnical Report</b>	GeoTechnologies Project #1-02-0934-EA, dated July 12, 2002
<b>Modifications</b>	ATC Job #40480332, dated May 25, 2007 ATC Job #42608538, dated April 22, 2009

## 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/ 1" 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>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.18$ , $S_1 = 0.06$
<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					
149.0	153.0	6	CCI TPX-070821	Platform w/ Handrails	(12) 7/8" Coax (4) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3" Conduit	AT&T Mobility
		2	Raycap DC6-48-60-18-8F (23.5" Height)			
		6	CCI DTMABP7819VG12A (w/ Bracket)			
		3	Ericsson RRUS-11 (50 lbs.)			
		3	Ericsson RRUS-32 (77 lbs)			
		3	Powerwave 7770.00			
		2	KMW AM-X-CD-16-65-00T-RET			
		3	Quintel QS66512-3 (112 lbs.)			
		1	Andrew SBNH-1D6565C (60.8 lbs)			
130.0	132.0	3	RFS APXV18-206517S-C	Site-Pro UWS6-NPs	(12) 1 5/8" Coax	Metro PCS
		3	Andrew LNX-6515DS-VTM			
	130.0	3	Kathrein Smart Bias Tee			
120.0	120.0	1	DragonWave Horizon Compact	Leg	(6) 5/16" Coax (1) 2" Conduit (1) 1/2" Coax	Clearwire
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		1	DragonWave A-ANT-11G-2.5-C			
100.0	104.0	1	DB Systems 5100A	Side Arms	(6) 7/8" Coax	ITT
		1	VertexRSI 101V VPD			
		4	DB Systems 5100A-D			

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
153.0	153.0	3	Ericsson RRUS 12 w/ RRUS A2	-	(2) 1 5/8" Coax	AT&T Mobility
		1	10' Omni			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
149.0	153.0	3	Ericsson RRUS 32 B2	Platform w/ Handrails	-	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
Anchor Bolts	64%	Pass
Shaft	94%	Pass
Base Plate	53%	Pass
Flanges	77%	Pass
Reinforcement	70%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,078.1	79%
Axial (Kips)	67.4	43%
Shear (Kips)	21.3	23%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
149.0	Ericsson RRUS 32 B2	AT&T Mobility	2.637	2.210
120.0	DragonWave A-ANT-11G-2.5-C	Clearwire Corporation	1.595	1.814

\*Deflection 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:

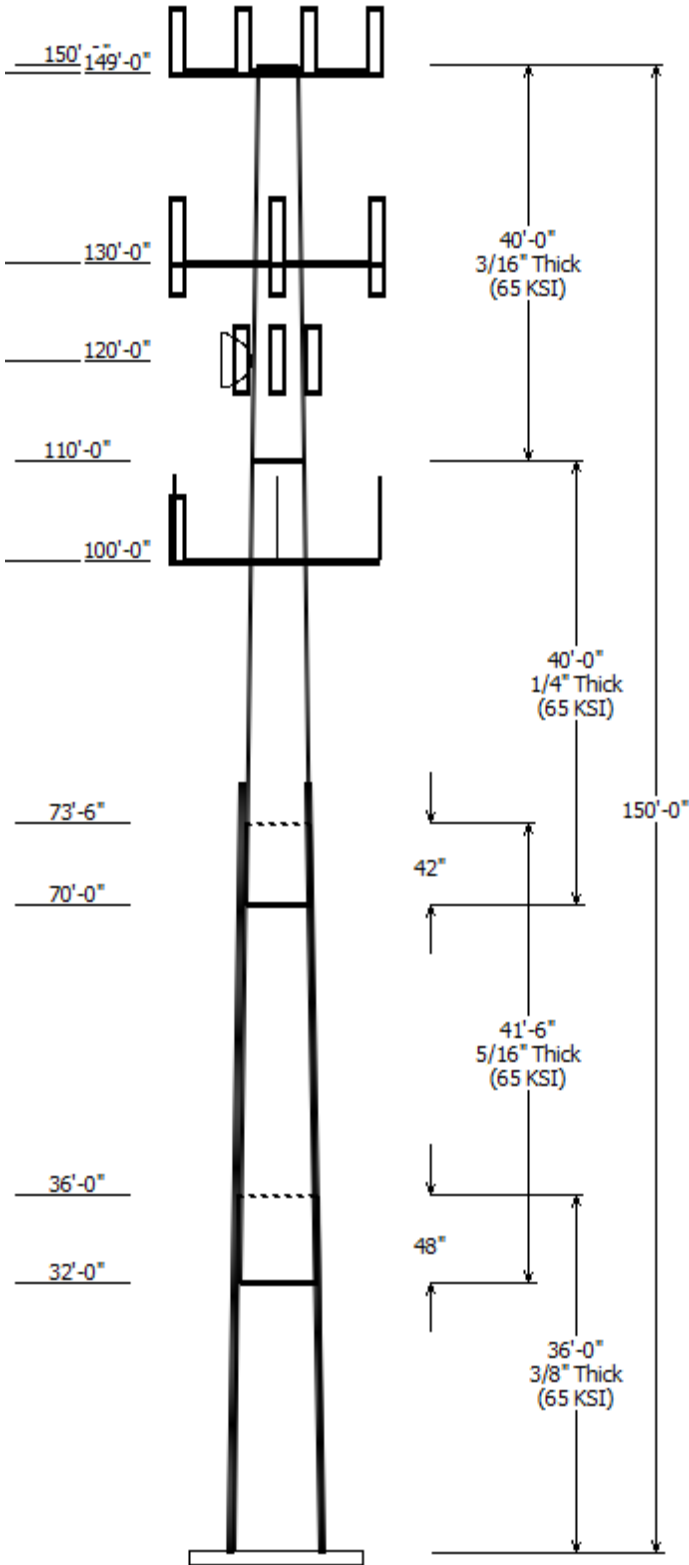
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements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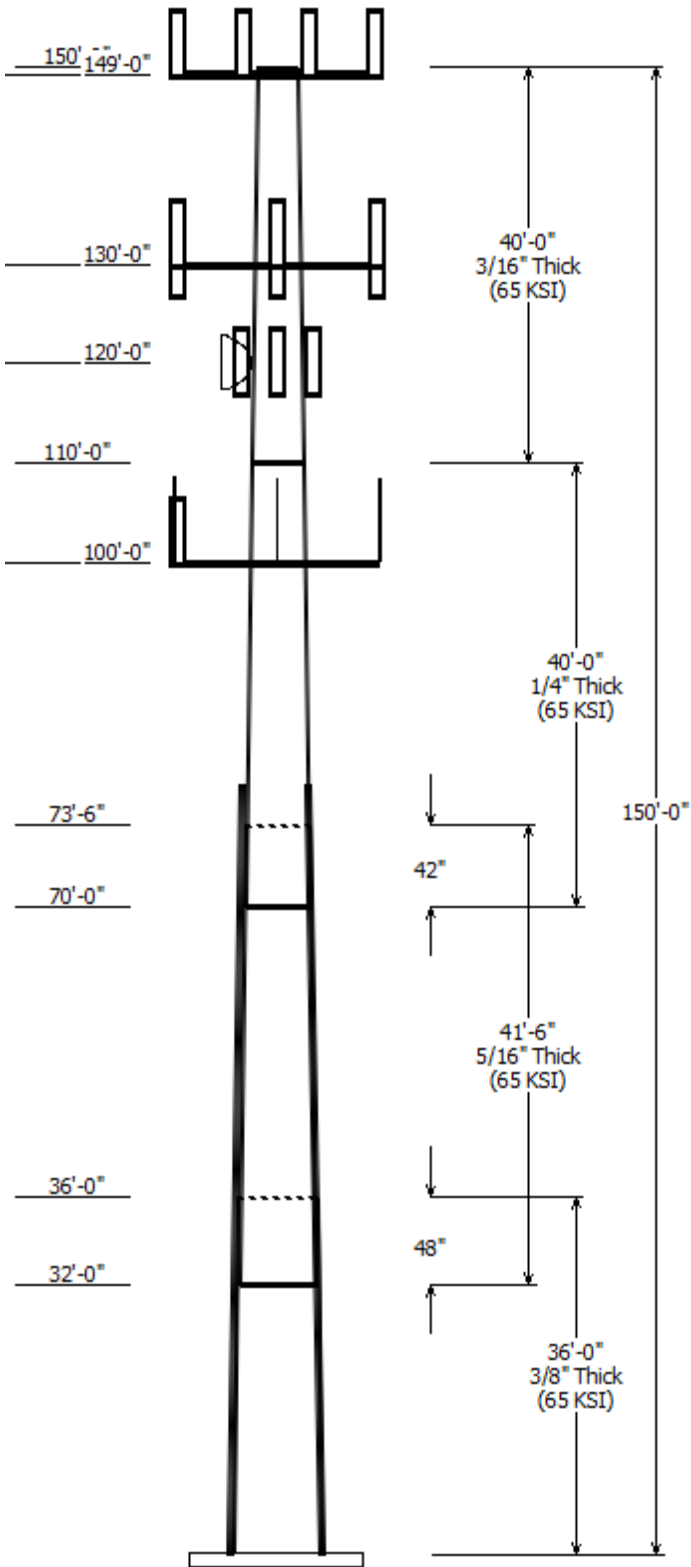


Job Information	
Pole :	302475
Code :	ANSI/TIA-222-G
Description :	150' ITT Meyer Type "B" Monopole
Client :	AT&T Mobility
Struct Class :	II
Location :	Sstn - Southington, CT
Shape :	12 Sides
Exposure :	B
Height :	150.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.15083@in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Top	Bottom					
1	36.000	30.57	36.00	0.375		0.000	0.150800	65
2	41.500	25.53	31.79	0.313	Slip Joint	48.000	0.150800	65
3	40.000	20.53	26.56	0.250	Slip Joint	42.000	0.150800	65
4	40.000	14.50	20.53	0.188	Butt Joint	0.000	0.150800	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
149.000	153.000	3	Ericsson RRUS 32 B2
149.000	149.000	1	Round Platform w/ Handrails
149.000	153.000	1	Andrew SBNH-1D6565C (60.8
149.000	153.000	3	Quintel QS66512-3 (112 lbs.)
149.000	153.000	2	KMW AM-X-CD-16-65-00T-RET
149.000	153.000	3	Powerwave Allgon 7770.00
149.000	153.000	3	Ericsson RRUS-32 (77 lbs)
149.000	153.000	3	Ericsson RRUS-11 (50 lbs.)
149.000	153.000	6	CCI DTMABP7819VG12A (w/
149.000	153.000	2	Raycap DC6-48-60-18-8F (23.5"
149.000	153.000	6	CCI TPX-070821
130.000	132.000	3	Andrew LNX-6515DS-VTM
130.000	130.000	3	Kathrein Smart Bias Tee
130.000	130.000	3	Site-Pro UWS6-NP
130.000	132.000	3	RFS APXV18-206517S-C
120.000	120.000	1	DragonWave A-ANT-11G-2.5-C
120.000	120.000	3	Argus LLPX310R
120.000	120.000	1	DragonWave Horizon Compact
120.000	120.000	3	NextNet BTS-2500
120.000	120.000	1	Clearwire Mount
100.000	104.000	1	DB Systems 5100A
100.000	104.000	1	VertexRSI 101V VPD
100.000	104.000	4	DB Systems 5100A-D
100.000	100.000	3	Round Side Arm

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	82.500	#20 Dywidag Bars	Yes
0.000	100.0	7/8" Coax	Yes
0.000	120.0	1/2" Coax	Yes
0.000	120.0	2" Conduit	Yes
0.000	120.0	5/16" Coax	Yes
0.000	130.0	1 5/8" Coax	Yes
0.000	130.0	1 5/8" Coax	Yes
0.000	149.0	0.39" Fiber Trunk	No
0.000	149.0	0.78" 8 AWG 6	No
0.000	149.0	3" Conduit	No
0.000	149.0	7/8" Coax	No

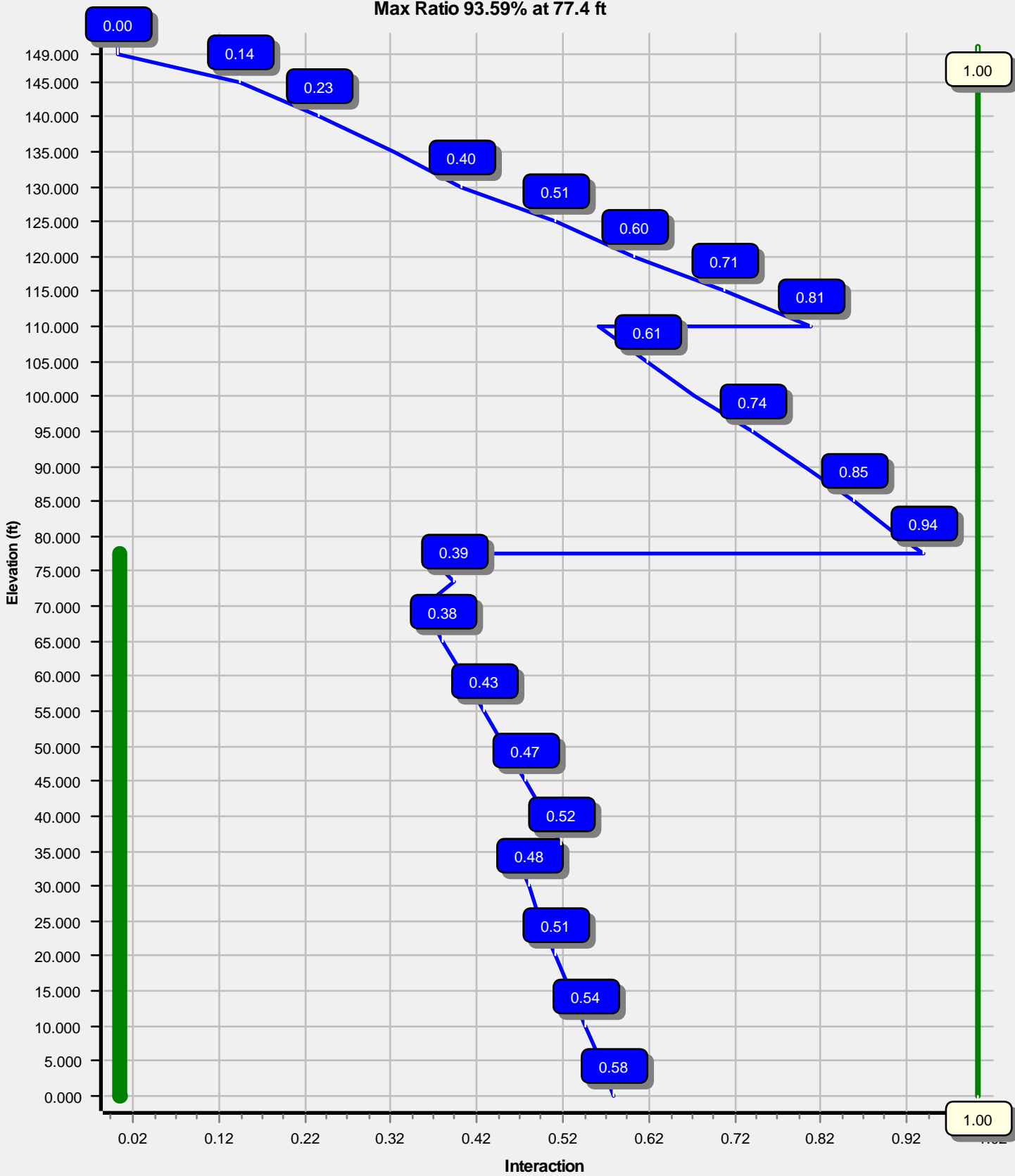


Load Cases	
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2078.10	21.32	32.83
0.9D + 1.6W	1981.53	19.97	24.61
1.2D + 1.0Di + 1.0Wi	559.07	4.95	67.39
(1.2 + 0.2Sds) * DL + E ELFM	134.32	1.07	32.45
(1.2 + 0.2Sds) * DL + E EMAM	212.28	1.79	32.45
(0.9 - 0.2Sds) * DL + E ELFM	131.69	1.07	22.54
(0.9 - 0.2Sds) * DL + E EMAM	207.72	1.79	22.54
1.0D + 1.0W	477.28	4.78	27.39

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	19.139	1.814

Load Case : 1.2D + 1.6W  
Max Ratio 93.59% at 77.4 ft



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

Analysis Parameters

Location:	Hartford County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	150
Shape:	12 Sides	Base Diameter (in):	36.00
Pole Type:	Taper	Top Diameter (in):	14.50
Pole Manufacturer:	ITT Meyer	Taper (in/ft) :	0.151

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.74		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.184	S <sub>1</sub> :	0.064
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.196	S <sub>d1</sub> :	0.102
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		C <sub>s</sub> Min:	0.030

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	36.000	0.3750	65		0.00	4,868	36.00	0.00	43.02	6968.5	23.58	96.00	30.57	36.00	36.46	4243.1	19.70	81.52	0.150830
2-12	41.500	0.3125	65	Slip	48.00	4,029	31.79	32.00	31.68	4009.1	25.12	101.76	25.53	73.50	25.38	2061.9	19.75	81.72	0.150830
3-12	40.000	0.2500	65	Slip	42.00	2,553	26.56	70.00	21.19	1872.8	26.33	106.27	20.53	110.00	16.33	857.5	19.86	82.13	0.150830
4-12	40.000	0.1875	65	Butt	0.00	1,424	20.53	110.00	12.28	649.1	27.20	109.51	14.50	150.00	8.64	226.0	18.58	77.34	0.150830
Shaft Weight						12,874													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
149.00	Andrew SBNH-1D6565C (60.8	1	60.80	11.440	1.00	432.98	13.672	1.00	0.000	4.000
149.00	CCI DTMABP7819VG12A (w/	6	19.20	1.370	0.50	84.42	2.055	0.50	0.000	4.000
149.00	CCI TPX-070821	6	7.50	0.550	0.50	36.46	0.925	0.50	0.000	4.000
149.00	Ericsson RRUS 32 B2	3	53.00	2.740	0.67	179.70	3.740	0.67	0.000	4.000
149.00	Ericsson RRUS-11 (50 lbs.)	3	50.00	2.570	0.50	167.20	3.463	0.50	0.000	4.000
149.00	Ericsson RRUS-32 (77 lbs)	3	77.00	3.310	0.50	206.68	5.019	0.50	0.000	4.000
149.00	KMW AM-X-CD-16-65-00T-	2	48.50	8.020	0.68	316.75	9.780	0.68	0.000	4.000
149.00	Powerwave Allgon 7770.00	3	35.00	5.510	0.65	228.49	6.943	0.65	0.000	4.000
149.00	Quintel QS66512-3 (112 lbs.)	3	112.00	8.130	0.74	432.10	9.896	0.74	0.000	4.000
149.00	Raycap DC6-48-60-18-8F	2	20.00	1.110	0.67	136.00	2.754	0.67	0.000	4.000
149.00	Round Platform w/ Handrails	1	2000.00	27.200	1.00	3,727.76	59.793	1.00	0.000	0.000
130.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.70	416.80	13.630	0.70	0.000	2.000
130.00	Kathrein Smart Bias Tee	3	3.31	0.090	0.50	14.82	0.321	0.50	0.000	0.000
130.00	RFS APXV18-206517S-C	3	26.40	5.160	0.68	195.30	6.824	0.68	0.000	2.000
130.00	Site-Pro UWS6-NP	3	92.00	1.500	0.67	193.10	3.176	0.67	0.000	0.000
120.00	Argus LLPX310R	3	28.60	4.290	0.63	179.18	5.485	0.63	0.000	0.000
120.00	Clearwire Mount	1	560.00	8.500	1.00	1,170.40	17.765	1.00	0.000	0.000
120.00	DragonWave A-ANT-11G-2.5-	1	47.60	8.670	1.00	213.84	10.922	1.00	0.000	0.000
120.00	DragonWave Horizon	1	10.60	0.430	0.50	54.82	0.774	0.50	0.000	0.000
120.00	NextNet BTS-2500	3	35.00	1.820	0.50	117.03	2.596	0.50	0.000	0.000
100.00	DB Systems 5100A	1	21.00	2.070	1.00	151.44	3.861	1.00	0.000	4.000
100.00	DB Systems 5100A-D	4	38.00	3.110	1.00	243.78	4.965	1.00	0.000	4.000
100.00	Round Side Arm	3	150.00	5.200	0.67	243.61	8.677	0.67	0.000	0.000
100.00	VertexRSI 101V VPD	1	4.00	2.540	0.90	102.06	3.252	0.90	0.000	4.000
Totals		63	5294.03			16,181.23			Number of Loadings : 24	

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	149.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	149.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	149.00	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	149.00	12	7/8" Coax	1.09	0.33	N	0.00	N	AT&T Mobility
0.00	130.00	6	1 5/8" Coax	1.98	0.82	N	1.98	Y	Metro PCS
0.00	130.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Metro PCS
0.00	120.00	1	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire Corporation
0.00	120.00	1	2" Conduit	2.38	3.65	N	2.38	Y	Clearwire Corporation
0.00	120.00	6	5/16" Coax	0.31	0.05	N	0.00	Y	Clearwire Corporation
0.00	100.00	6	7/8" Coax	1.09	0.33	N	0.00	Y	ITT Corporation
0.00	82.50	4	#20 Dywidag Bars	2.72	0.00	N	1.66	Y	

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	77.44	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes

**Segment Properties** (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)	Additional Reinforcing		
												Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	Weight (lb)
0.00		0.3750	36.000	43.017	6,968.5	23.58	96.00	79.0	373.9	0.0	0.0	19.64	4,521	0.0
5.00		0.3750	35.246	42.107	6,535.2	23.04	93.99	79.6	358.2	0.0	724.1	19.64	4,364	334.0
10.00		0.3750	34.492	41.196	6,120.3	22.50	91.98	80.2	342.8	0.0	708.6	19.64	4,209	334.0
15.00		0.3750	33.738	40.285	5,723.4	21.96	89.97	80.8	327.7	0.0	693.2	19.64	4,057	334.0
20.00		0.3750	32.983	39.375	5,343.9	21.42	87.96	81.3	313.0	0.0	677.7	19.64	3,908	334.0
25.00		0.3750	32.229	38.464	4,981.7	20.89	85.94	81.9	298.6	0.0	662.2	19.64	3,762	334.0
30.00		0.3750	31.475	37.553	4,636.2	20.35	83.93	81.9	284.6	0.0	646.7	19.64	3,619	334.0
32.00	Bot - Section 2	0.3750	31.173	37.189	4,502.6	20.13	83.13	81.9	279.0	0.0	254.3	19.64	3,562	133.6
35.00		0.3750	30.721	36.643	4,307.0	19.81	81.92	81.9	270.8	0.0	698.0	19.64	3,595	200.4
36.00	Top - Section 1	0.3125	31.195	31.076	3,783.0	24.60	99.82	77.9	234.3	0.0	230.4	19.64	3,566	66.8
40.00		0.3125	30.592	30.469	3,565.6	24.09	97.89	78.4	225.2	0.0	418.8	19.64	3,454	267.2
45.00		0.3125	29.838	29.710	3,305.7	23.44	95.48	79.1	214.0	0.0	511.9	19.64	3,317	334.0
50.00		0.3125	29.083	28.951	3,058.8	22.79	93.07	79.9	203.2	0.0	499.0	19.64	3,182	334.0
55.00		0.3125	28.329	28.192	2,824.6	22.15	90.65	80.6	192.6	0.0	486.1	19.64	3,051	334.0
60.00		0.3125	27.575	27.433	2,602.5	21.50	88.24	81.3	182.3	0.0	473.2	19.64	2,922	334.0
65.00		0.3125	26.821	26.674	2,392.5	20.85	85.83	81.9	172.3	0.0	460.3	19.64	2,796	334.0
70.00	Bot - Section 3	0.3125	26.067	25.915	2,194.0	20.21	83.41	81.9	162.6	0.0	447.4	19.64	2,672	334.0
73.50	Top - Section 2	0.2500	26.039	20.760	1,762.3	25.76	104.16	76.6	130.7	0.0	555.3	19.64	2,668	233.8
75.00		0.2500	25.813	20.578	1,716.3	25.52	103.25	76.9	128.5	0.0	105.5	19.64	2,631	100.2
77.44	Reinf. Top	0.2500	25.445	20.282	1,643.3	25.13	101.78	77.3	124.8	0.0	169.6	19.64	2,572	163.0
80.00		0.2500	25.059	19.971	1,568.9	24.71	100.23	77.8	120.9	0.0	175.3			
85.00		0.2500	24.304	19.364	1,430.1	23.91	97.22	78.6	113.7	0.0	334.6			
90.00		0.2500	23.550	18.757	1,299.8	23.10	94.20	79.5	106.6	0.0	324.3			
95.00		0.2500	22.796	18.150	1,177.6	22.29	91.18	80.4	99.8	0.0	314.0			
100.0		0.2500	22.042	17.543	1,063.3	21.48	88.17	81.3	93.2	0.0	303.6			
105.0		0.2500	21.288	16.935	956.7	20.67	85.15	81.9	86.8	0.0	293.3			
110.0	Top - Section 3	0.2500	20.534	16.328	857.5	19.86	82.13	81.9	80.7	0.0	283.0			
110.0	Bot - Section 4	0.1875	20.534	12.284	649.1	27.20	109.51	75.0	61.1	0.0				
115.0		0.1875	19.780	11.829	579.5	26.12	105.49	76.2	56.6	0.0	205.1			
120.0		0.1875	19.025	11.373	515.2	25.04	101.47	77.4	52.3	0.0	197.4			
125.0		0.1875	18.271	10.918	455.7	23.97	97.45	78.6	48.2	0.0	189.6			
130.0		0.1875	17.517	10.463	401.1	22.89	93.42	79.8	44.2	0.0	181.9			
135.0		0.1875	16.763	10.007	350.9	21.81	89.40	80.9	40.4	0.0	174.1			
140.0		0.1875	16.009	9.552	305.2	20.73	85.38	81.9	36.8	0.0	166.4			
145.0		0.1875	15.255	9.097	263.6	19.66	81.36	81.9	33.4	0.0	158.6			
149.0		0.1875	14.651	8.733	233.2	18.79	78.14	81.9	30.7	0.0	121.3			
150.0		0.1875	14.500	8.641	226.0	18.58	77.34	81.9	30.1	0.0	29.6			
											12,874.5			5,173.0



<b>Load Case:</b> 1.2D + 1.6W	97 mph with No Ice	28 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		257.7	0.0					0.0	0.0	257.7	0.0	0.0	0.0
5.00		512.2	869.0					0.0	580.3	512.2	1,449.2	0.0	0.0
10.00		505.8	850.4					0.0	580.3	505.8	1,430.6	0.0	0.0
15.00		499.3	831.8					0.0	580.3	499.3	1,412.0	0.0	0.0
20.00		492.9	813.2					0.0	580.3	492.9	1,393.5	0.0	0.0
25.00		486.5	794.6					0.0	580.3	486.5	1,374.9	0.0	0.0
30.00		338.4	776.0					0.0	580.3	338.4	1,356.3	0.0	0.0
32.00	Bot - Section 2	247.1	305.2					0.0	232.1	247.1	537.3	0.0	0.0
35.00		201.0	837.5					0.0	348.2	201.0	1,185.7	0.0	0.0
36.00	Top - Section 1	254.2	276.5					0.0	116.1	254.2	392.5	0.0	0.0
40.00		462.9	502.6					0.0	464.2	462.9	966.8	0.0	0.0
45.00		523.6	614.3					0.0	580.3	523.6	1,194.6	0.0	0.0
50.00		510.1	598.8					0.0	580.3	510.1	1,179.1	0.0	0.0
55.00		491.8	583.3					99.7	580.3	591.5	1,163.6	0.0	0.0
60.00		490.8	567.8					102.3	580.3	593.1	1,148.1	0.0	0.0
65.00		488.4	552.3					104.7	580.3	593.2	1,132.6	0.0	0.0
70.00	Bot - Section 3	416.0	536.9					107.1	580.3	523.0	1,117.1	0.0	0.0
73.50	Top - Section 2	246.1	666.3					76.3	406.2	322.4	1,072.5	0.0	0.0
75.00		192.8	126.6					33.0	174.1	225.8	300.7	0.0	0.0
77.44	Reinf. Top	243.6	203.5					54.1	283.2	297.7	486.7	0.0	0.0
80.00		365.0	210.4					57.3	91.9	422.3	302.3	0.0	0.0
85.00		483.4	401.5					97.8	179.5	581.2	581.0	0.0	0.0
90.00		485.0	389.1					0.0	179.5	485.0	568.6	0.0	0.0
95.00		483.7	376.8					0.0	179.5	483.7	556.2	0.0	0.0
100.00	Appertunance(s)	481.7	364.4	956.8	0.0	2,163.2	752.4	0.0	179.5	1,438.5	1,296.2	0.0	0.0
105.00		460.2	352.0					0.0	167.6	460.2	519.5	0.0	0.0
110.00	Top - Section 3	434.6	339.6					88.6	167.6	523.2	507.1	0.0	0.0
115.00		424.0	246.2					89.7	167.6	513.8	413.7	0.0	0.0
120.00	Appertunance(s)	380.2	236.9	1,017.9	0.0	0.0	970.8	90.9	167.6	1,489.0	1,375.2	0.0	0.0
125.00		339.0	227.6					0.0	143.2	339.0	370.7	0.0	0.0
130.00	Appertunance(s)	327.5	218.3	1,291.8	0.0	2,380.3	622.8	0.0	143.2	1,619.3	984.3	0.0	0.0
135.00		313.5	209.0					0.0	84.1	313.5	293.1	0.0	0.0
140.00		302.5	199.7					0.0	84.1	302.5	283.8	0.0	0.0
145.00		263.1	190.4					0.0	84.1	263.1	274.5	0.0	0.0
149.00	Appertunance(s)	142.7	145.6	3,664.1	0.0	9,803.8	4,006.8	0.0	67.3	3,806.8	4,219.7	0.0	0.0
150.00		28.1	35.5					0.0	0.0	28.1	35.5	0.0	0.0
Totals:										21,507.5	32,875.2	0.00	0.00

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:25 PM

Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

97 mph with No Ice

28 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

**Calculated Forces**

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 (deg)	Ratio
0.00	-32.83	-21.32	0.00	-2,078.10	0.00	2,078.10	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.576
5.00	-31.29	-20.94	0.00	-1,971.48	0.00	1,971.48	3,015.96	1,507.98	4,329.28	2,138.07	0.13	-0.25	0.560
10.00	-29.77	-20.56	0.00	-1,866.76	0.00	1,866.76	2,972.53	1,486.26	4,173.67	2,061.22	0.53	-0.50	0.544
15.00	-28.28	-20.17	0.00	-1,763.97	0.00	1,763.97	2,928.13	1,464.06	4,019.46	1,985.06	1.19	-0.75	0.527
20.00	-26.81	-19.77	0.00	-1,663.13	0.00	1,663.13	2,882.77	1,441.38	3,866.74	1,909.64	2.11	-1.00	0.509
25.00	-25.36	-19.37	0.00	-1,564.27	0.00	1,564.27	2,835.18	1,417.59	3,713.97	1,834.19	3.29	-1.25	0.492
30.00	-23.95	-19.07	0.00	-1,467.44	0.00	1,467.44	2,768.06	1,384.03	3,539.19	1,747.87	4.73	-1.50	0.477
32.00	-23.38	-18.86	0.00	-1,429.30	0.00	1,429.30	2,741.21	1,370.60	3,470.46	1,713.93	5.38	-1.59	0.471
35.00	-22.17	-18.66	0.00	-1,372.73	0.00	1,372.73	2,700.94	1,350.47	3,368.63	1,663.64	6.43	-1.74	0.455
36.00	-21.75	-18.44	0.00	-1,354.07	0.00	1,354.07	2,178.16	1,089.08	2,770.79	1,368.39	6.80	-1.79	0.516
40.00	-20.73	-18.03	0.00	-1,280.32	0.00	1,280.32	2,151.08	1,075.54	2,682.35	1,324.71	8.38	-1.98	0.497
45.00	-19.48	-17.54	0.00	-1,190.19	0.00	1,190.19	2,116.36	1,058.18	2,572.65	1,270.54	10.60	-2.23	0.473
50.00	-18.25	-17.06	0.00	-1,102.47	0.00	1,102.47	2,080.68	1,040.34	2,464.00	1,216.88	13.07	-2.48	0.449
55.00	-17.04	-16.49	0.00	-1,017.16	0.00	1,017.16	2,044.03	1,022.02	2,356.47	1,163.77	15.80	-2.72	0.425
60.00	-15.86	-15.91	0.00	-934.71	0.00	934.71	2,006.42	1,003.21	2,250.16	1,111.27	18.77	-2.96	0.401
65.00	-14.70	-15.31	0.00	-855.19	0.00	855.19	1,966.16	983.08	2,143.32	1,058.50	21.99	-3.19	0.377
70.00	-13.57	-14.77	0.00	-778.64	0.00	778.64	1,910.22	955.11	2,022.41	998.79	25.45	-3.41	0.356
73.50	-12.49	-14.41	0.00	-726.95	0.00	726.95	1,431.47	715.74	1,521.25	751.29	28.01	-3.57	0.390
75.00	-12.18	-14.18	0.00	-705.34	0.00	705.34	1,423.81	711.90	1,499.70	740.65	29.14	-3.63	0.381
77.44	-11.69	-13.87	0.00	-670.74	0.00	670.74	1,411.16	705.58	1,464.78	723.40	31.03	-3.74	0.366
77.44	-11.69	-13.87	0.00	-670.74	0.00	670.74	1,411.16	705.58	1,464.78	723.40	31.03	-3.74	0.936
80.00	-11.34	-13.50	0.00	-635.22	0.00	635.22	1,397.65	698.83	1,428.30	705.38	33.06	-3.85	0.909
85.00	-10.68	-12.98	0.00	-567.73	0.00	567.73	1,370.53	685.26	1,357.58	670.46	37.39	-4.40	0.855
90.00	-10.03	-12.54	0.00	-502.84	0.00	502.84	1,342.44	671.22	1,287.64	635.92	42.28	-4.93	0.799
95.00	-9.42	-12.09	0.00	-440.13	0.00	440.13	1,313.39	656.70	1,218.57	601.80	47.71	-5.45	0.739
100.00	-8.18	-10.60	0.00	-377.50	0.00	377.50	1,283.38	641.69	1,150.46	568.17	53.68	-5.94	0.671
105.00	-7.63	-10.15	0.00	-324.50	0.00	324.50	1,248.31	624.16	1,079.86	533.30	60.14	-6.41	0.615
110.00	-7.12	-9.62	0.00	-273.75	0.00	273.75	1,203.56	601.78	1,003.39	495.54	67.08	-6.86	0.559
110.00	-7.12	-9.62	0.00	-273.75	0.00	273.75	829.71	414.85	695.98	343.72	67.08	-6.86	0.806
115.00	-6.70	-9.12	0.00	-225.63	0.00	225.63	811.47	405.73	655.22	323.59	74.47	-7.27	0.706
120.00	-5.47	-7.51	0.00	-180.04	0.00	180.04	792.27	396.13	614.86	303.65	82.34	-7.77	0.600
125.00	-5.10	-7.16	0.00	-142.50	0.00	142.50	772.10	386.05	574.98	283.96	90.69	-8.21	0.509
130.00	-4.33	-5.44	0.00	-104.34	0.00	104.34	750.97	375.48	535.68	264.55	99.48	-8.60	0.400
135.00	-4.06	-5.10	0.00	-77.15	0.00	77.15	728.87	364.44	497.06	245.48	108.63	-8.93	0.320
140.00	-3.81	-4.78	0.00	-51.63	0.00	51.63	704.09	352.04	458.06	226.22	118.09	-9.19	0.234
145.00	-3.57	-4.48	0.00	-27.76	0.00	27.76	670.52	335.26	415.19	205.05	127.77	-9.37	0.141
149.00	-0.03	-0.03	0.00	-0.03	0.00	0.03	643.68	321.84	382.41	188.86	135.63	-9.45	0.000
150.00	0.00	-0.03	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	137.60	-9.45	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sstn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:25 PM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

### Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		216.6	0.0					0.0	0.0	216.6	0.0	0.0	0.0
5.00		428.6	651.7					0.0	435.2	428.6	1,086.9	0.0	0.0
10.00		419.4	637.8					0.0	435.2	419.4	1,073.0	0.0	0.0
15.00		410.3	623.8					0.0	435.2	410.3	1,059.0	0.0	0.0
20.00		401.1	609.9					0.0	435.2	401.1	1,045.1	0.0	0.0
25.00		391.9	596.0					0.0	435.2	391.9	1,031.1	0.0	0.0
30.00		270.6	582.0					0.0	435.2	270.6	1,017.2	0.0	0.0
32.00	Bot - Section 2	195.9	228.9					0.0	174.1	195.9	403.0	0.0	0.0
35.00		158.9	628.2					0.0	261.1	158.9	889.3	0.0	0.0
36.00	Top - Section 1	200.8	207.3					0.0	87.0	200.8	294.4	0.0	0.0
40.00		364.0	377.0					0.0	348.2	364.0	725.1	0.0	0.0
45.00		407.6	460.7					0.0	435.2	407.6	895.9	0.0	0.0
50.00		450.4	449.1					0.0	435.2	450.4	884.3	0.0	0.0
55.00		491.8	437.5					99.7	435.2	591.5	872.7	0.0	0.0
60.00		490.8	425.9					102.3	435.2	593.1	861.1	0.0	0.0
65.00		488.4	414.3					104.7	435.2	593.2	849.5	0.0	0.0
70.00	Bot - Section 3	416.0	402.6					107.1	435.2	523.0	837.8	0.0	0.0
73.50	Top - Section 2	246.1	499.7					76.3	304.6	322.4	804.4	0.0	0.0
75.00		192.8	94.9					33.0	130.6	225.8	225.5	0.0	0.0
77.44	Reinf. Top	243.6	152.7					54.1	212.4	297.7	365.0	0.0	0.0
80.00		365.0	157.8					57.3	68.9	422.3	226.7	0.0	0.0
85.00		438.4	301.2					97.8	134.6	536.1	435.8	0.0	0.0
90.00		392.2	291.9					0.0	134.6	392.2	426.5	0.0	0.0
95.00		385.6	282.6					0.0	134.6	385.6	417.2	0.0	0.0
100.00	Appertunance(s)	378.3	273.3	956.8	0.0	2,163.2	564.3	0.0	134.6	1,335.1	972.2	0.0	0.0
105.00		407.2	264.0					0.0	125.7	407.2	389.7	0.0	0.0
110.00	Top - Section 3	434.6	254.7					88.6	125.7	523.2	380.4	0.0	0.0
115.00		424.0	184.6					89.7	125.7	513.8	310.3	0.0	0.0
120.00	Appertunance(s)	378.9	177.6	1,017.9	0.0	0.0	728.1	90.9	125.7	1,487.7	1,031.4	0.0	0.0
125.00		334.3	170.7					0.0	107.4	334.3	278.0	0.0	0.0
130.00	Appertunance(s)	324.1	163.7	1,291.8	0.0	2,380.3	467.1	0.0	107.4	1,615.9	738.2	0.0	0.0
135.00		313.5	156.7					0.0	63.1	313.5	219.8	0.0	0.0
140.00		302.5	149.8					0.0	63.1	302.5	212.8	0.0	0.0
145.00		263.1	142.8					0.0	63.1	263.1	205.9	0.0	0.0
149.00	Appertunance(s)	142.7	109.2	3,664.1	0.0	9,803.8	3,005.1	0.0	50.5	3,806.8	3,164.8	0.0	0.0
150.00		28.1	26.6					0.0	0.0	28.1	26.6	0.0	0.0
Totals:										20,130.3	24,656.4	0.00	0.00

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:27 PM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

**Calculated Forces**

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 (deg)	Ratio
0.00	-24.61	-19.97	0.00	-1,981.53	0.00	1,981.53	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.548
5.00	-23.45	-19.63	0.00	-1,881.70	0.00	1,881.70	3,015.96	1,507.98	4,329.28	2,138.07	0.13	-0.24	0.533
10.00	-22.30	-19.30	0.00	-1,783.54	0.00	1,783.54	2,972.53	1,486.26	4,173.67	2,061.22	0.51	-0.48	0.518
15.00	-21.16	-18.97	0.00	-1,687.04	0.00	1,687.04	2,928.13	1,464.06	4,019.46	1,985.06	1.14	-0.72	0.502
20.00	-20.05	-18.63	0.00	-1,592.21	0.00	1,592.21	2,882.77	1,441.38	3,866.74	1,909.64	2.02	-0.96	0.486
25.00	-18.95	-18.30	0.00	-1,499.04	0.00	1,499.04	2,835.18	1,417.59	3,713.97	1,834.19	3.14	-1.19	0.470
30.00	-17.88	-18.06	0.00	-1,407.54	0.00	1,407.54	2,768.06	1,384.03	3,539.19	1,747.87	4.52	-1.43	0.457
32.00	-17.45	-17.89	0.00	-1,371.42	0.00	1,371.42	2,741.21	1,370.60	3,470.46	1,713.93	5.14	-1.53	0.451
35.00	-16.53	-17.73	0.00	-1,317.76	0.00	1,317.76	2,700.94	1,350.47	3,368.63	1,663.64	6.14	-1.67	0.436
36.00	-16.21	-17.56	0.00	-1,300.03	0.00	1,300.03	2,178.16	1,089.08	2,770.79	1,368.39	6.50	-1.71	0.494
40.00	-15.43	-17.23	0.00	-1,229.80	0.00	1,229.80	2,151.08	1,075.54	2,682.35	1,324.71	8.02	-1.90	0.476
45.00	-14.48	-16.85	0.00	-1,143.67	0.00	1,143.67	2,116.36	1,058.18	2,572.65	1,270.54	10.13	-2.14	0.454
50.00	-13.55	-16.42	0.00	-1,059.43	0.00	1,059.43	2,080.68	1,040.34	2,464.00	1,216.88	12.50	-2.38	0.431
55.00	-12.64	-15.84	0.00	-977.34	0.00	977.34	2,044.03	1,022.02	2,356.47	1,163.77	15.11	-2.61	0.408
60.00	-11.75	-15.25	0.00	-898.13	0.00	898.13	2,006.42	1,003.21	2,250.16	1,111.27	17.97	-2.84	0.384
65.00	-10.88	-14.66	0.00	-821.87	0.00	821.87	1,966.16	983.08	2,143.32	1,058.50	21.06	-3.06	0.361
70.00	-10.02	-14.12	0.00	-748.57	0.00	748.57	1,910.22	955.11	2,022.41	998.79	24.37	-3.27	0.341
73.50	-9.21	-13.77	0.00	-699.15	0.00	699.15	1,431.47	715.74	1,521.25	751.29	26.83	-3.42	0.374
75.00	-8.98	-13.54	0.00	-678.49	0.00	678.49	1,423.81	711.90	1,499.70	740.65	27.91	-3.48	0.365
77.44	-8.61	-13.24	0.00	-645.44	0.00	645.44	1,411.16	705.58	1,464.78	723.40	29.72	-3.59	0.351
77.44	-8.61	-13.24	0.00	-645.44	0.00	645.44	1,411.16	705.58	1,464.78	723.40	29.72	-3.59	0.899
80.00	-8.34	-12.85	0.00	-611.54	0.00	611.54	1,397.65	698.83	1,428.30	705.38	31.67	-3.70	0.873
85.00	-7.83	-12.36	0.00	-547.29	0.00	547.29	1,370.53	685.26	1,357.58	670.46	35.82	-4.22	0.822
90.00	-7.33	-12.00	0.00	-485.49	0.00	485.49	1,342.44	671.22	1,287.64	635.92	40.51	-4.74	0.769
95.00	-6.85	-11.64	0.00	-425.50	0.00	425.50	1,313.39	656.70	1,218.57	601.80	45.74	-5.23	0.713
100.00	-5.93	-10.26	0.00	-365.14	0.00	365.14	1,283.38	641.69	1,150.46	568.17	51.47	-5.71	0.648
105.00	-5.50	-9.86	0.00	-313.82	0.00	313.82	1,248.31	624.16	1,079.86	533.30	57.69	-6.17	0.593
110.00	-5.12	-9.34	0.00	-264.51	0.00	264.51	1,203.56	601.78	1,003.39	495.54	64.36	-6.60	0.538
110.00	-5.12	-9.34	0.00	-264.51	0.00	264.51	829.71	414.85	695.98	343.72	64.36	-6.60	0.776
115.00	-4.80	-8.83	0.00	-217.82	0.00	217.82	811.47	405.73	655.22	323.59	71.47	-7.00	0.680
120.00	-3.91	-7.25	0.00	-173.68	0.00	173.68	792.27	396.13	614.86	303.65	79.05	-7.48	0.577
125.00	-3.63	-6.91	0.00	-137.42	0.00	137.42	772.10	386.05	574.98	283.96	87.09	-7.91	0.489
130.00	-3.10	-5.23	0.00	-100.49	0.00	100.49	750.97	375.48	535.68	264.55	95.55	-8.28	0.384
135.00	-2.90	-4.90	0.00	-74.36	0.00	74.36	728.87	364.44	497.06	245.48	104.36	-8.59	0.307
140.00	-2.72	-4.58	0.00	-49.88	0.00	49.88	704.09	352.04	458.06	226.22	113.47	-8.84	0.225
145.00	-2.55	-4.29	0.00	-27.00	0.00	27.00	670.52	335.26	415.19	205.05	122.80	-9.02	0.136
149.00	-0.02	-0.03	0.00	-0.03	0.00	0.03	643.68	321.84	382.41	188.86	130.36	-9.10	0.000
150.00	0.00	-0.03	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	132.26	-9.10	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:27 PM

Customer: AT&T Mobility

**Load Case:** 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

27 Iterations

Gust Response Factor : 1.10

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Ice Importance Factor : 1.00

Wind Load Factor : 1.00

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		46.8	0.0					0.0	0.0	46.8	0.0	0.0	0.0
5.00		93.1	1,236.9					0.0	997.0	93.1	2,233.9	0.0	0.0
10.00		91.9	1,254.6					0.0	1,054.2	91.9	2,308.8	0.0	0.0
15.00		90.4	1,249.3					0.0	1,084.1	90.4	2,333.4	0.0	0.0
20.00		88.8	1,236.6					0.0	1,105.0	88.8	2,341.6	0.0	0.0
25.00		87.2	1,219.9					0.0	1,121.3	87.2	2,341.3	0.0	0.0
30.00		60.4	1,200.8					0.0	1,134.8	60.4	2,335.7	0.0	0.0
32.00	Bot - Section 2	43.8	475.7					0.0	457.2	43.8	933.0	0.0	0.0
35.00		35.6	1,096.8					0.0	689.1	35.6	1,785.9	0.0	0.0
36.00	Top - Section 1	45.1	363.0					0.0	230.5	45.1	593.5	0.0	0.0
40.00		81.9	845.0					0.0	925.9	81.9	1,770.9	0.0	0.0
45.00		92.1	1,037.4					0.0	1,165.5	92.1	2,202.9	0.0	0.0
50.00		92.9	1,016.8					0.0	1,173.6	92.9	2,190.4	0.0	0.0
55.00		93.4	995.5					51.1	1,181.1	144.5	2,176.6	0.0	0.0
60.00		93.6	973.7					52.8	1,188.0	146.4	2,161.7	0.0	0.0
65.00		93.6	951.4					54.4	1,194.4	148.0	2,145.8	0.0	0.0
70.00	Bot - Section 3	80.0	928.7					55.9	1,200.3	135.8	2,129.1	0.0	0.0
73.50	Top - Section 2	47.4	942.2					40.0	843.6	87.3	1,785.8	0.0	0.0
75.00		37.2	244.3					17.3	362.3	54.6	606.7	0.0	0.0
77.44	Reinf. Top	47.1	393.0					28.5	590.4	75.6	983.5	0.0	0.0
80.00		70.9	407.1					30.2	415.6	101.1	822.7	0.0	0.0
85.00		93.2	776.9					50.5	748.2	143.7	1,525.1	0.0	0.0
90.00		92.3	756.2					0.0	684.8	92.3	1,441.0	0.0	0.0
95.00		91.3	735.1					0.0	688.5	91.3	1,423.7	0.0	0.0
100.00	Appertunance(s)	90.2	713.9	257.7	0.0	569.9	2,009.8	0.0	692.0	347.9	3,415.8	0.0	0.0
105.00		88.9	692.5					0.0	592.9	88.9	1,285.4	0.0	0.0
110.00	Top - Section 3	87.5	670.9					45.1	595.6	132.6	1,266.4	0.0	0.0
115.00		86.0	568.0					45.8	598.1	131.8	1,166.2	0.0	0.0
120.00	Appertunance(s)	84.4	549.2	266.1	0.0	0.0	2,930.1	46.5	600.6	397.0	4,079.9	0.0	0.0
125.00		82.7	530.2					0.0	437.0	82.7	967.2	0.0	0.0
130.00	Appertunance(s)	80.9	511.0	280.4	0.0	487.0	1,897.9	0.0	438.4	361.3	2,847.3	0.0	0.0
135.00		79.1	491.8					0.0	84.1	79.1	575.9	0.0	0.0
140.00		77.1	472.4					0.0	84.1	77.1	556.5	0.0	0.0
145.00		67.8	452.8					0.0	84.1	67.8	537.0	0.0	0.0
149.00	Appertunance(s)	37.0	349.1	976.6	0.0	2,134.9	9,618.1	0.0	67.3	1,013.6	10,034.5	0.0	0.0
150.00		7.3	86.0					0.0	0.0	7.3	86.0	0.0	0.0
Totals:										4,957.74	67,390.5	0.00	0.00

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:29 PM

Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

27 Iterations

Gust Response Factor : 1.10

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

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 (deg)	Ratio
0.00	-67.39	-4.95	0.00	-559.07	0.00	559.07	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.168
5.00	-65.15	-4.93	0.00	-534.31	0.00	534.31	3,015.96	1,507.98	4,329.28	2,138.07	0.04	-0.07	0.165
10.00	-62.83	-4.91	0.00	-509.65	0.00	509.65	2,972.53	1,486.26	4,173.67	2,061.22	0.14	-0.14	0.161
15.00	-60.49	-4.89	0.00	-485.08	0.00	485.08	2,928.13	1,464.06	4,019.46	1,985.06	0.32	-0.20	0.157
20.00	-58.15	-4.86	0.00	-460.64	0.00	460.64	2,882.77	1,441.38	3,866.74	1,909.64	0.57	-0.27	0.153
25.00	-55.80	-4.83	0.00	-436.35	0.00	436.35	2,835.18	1,417.59	3,713.97	1,834.19	0.90	-0.34	0.149
30.00	-53.46	-4.80	0.00	-412.22	0.00	412.22	2,768.06	1,384.03	3,539.19	1,747.87	1.29	-0.41	0.145
32.00	-52.53	-4.78	0.00	-402.63	0.00	402.63	2,741.21	1,370.60	3,470.46	1,713.93	1.47	-0.44	0.144
35.00	-50.74	-4.75	0.00	-388.30	0.00	388.30	2,700.94	1,350.47	3,368.63	1,663.64	1.76	-0.48	0.139
36.00	-50.14	-4.73	0.00	-383.54	0.00	383.54	2,178.16	1,089.08	2,770.79	1,368.39	1.86	-0.49	0.158
40.00	-48.37	-4.69	0.00	-364.62	0.00	364.62	2,151.08	1,075.54	2,682.35	1,324.71	2.30	-0.55	0.153
45.00	-46.16	-4.63	0.00	-341.18	0.00	341.18	2,116.36	1,058.18	2,572.65	1,270.54	2.91	-0.62	0.147
50.00	-43.96	-4.57	0.00	-318.03	0.00	318.03	2,080.68	1,040.34	2,464.00	1,216.88	3.60	-0.69	0.141
55.00	-41.78	-4.44	0.00	-295.20	0.00	295.20	2,044.03	1,022.02	2,356.47	1,163.77	4.36	-0.76	0.134
60.00	-39.62	-4.32	0.00	-272.98	0.00	272.98	2,006.42	1,003.21	2,250.16	1,111.27	5.20	-0.83	0.127
65.00	-37.47	-4.18	0.00	-251.41	0.00	251.41	1,966.16	983.08	2,143.32	1,058.50	6.10	-0.90	0.121
70.00	-35.34	-4.04	0.00	-230.52	0.00	230.52	1,910.22	955.11	2,022.41	998.79	7.08	-0.96	0.115
73.50	-33.56	-3.94	0.00	-216.37	0.00	216.37	1,431.47	715.74	1,521.25	751.29	7.80	-1.01	0.127
75.00	-32.95	-3.89	0.00	-210.45	0.00	210.45	1,423.81	711.90	1,499.70	740.65	8.12	-1.03	0.124
77.44	-31.96	-3.82	0.00	-200.96	0.00	200.96	1,411.16	705.58	1,464.78	723.40	8.66	-1.06	0.120
77.44	-31.96	-3.82	0.00	-200.96	0.00	200.96	1,411.16	705.58	1,464.78	723.40	8.66	-1.06	0.300
80.00	-31.14	-3.76	0.00	-191.18	0.00	191.18	1,397.65	698.83	1,428.30	705.38	9.24	-1.10	0.293
85.00	-29.60	-3.67	0.00	-172.40	0.00	172.40	1,370.53	685.26	1,357.58	670.46	10.47	-1.26	0.279
90.00	-28.16	-3.62	0.00	-154.08	0.00	154.08	1,342.44	671.22	1,287.64	635.92	11.88	-1.42	0.263
95.00	-26.73	-3.56	0.00	-135.98	0.00	135.98	1,313.39	656.70	1,218.57	601.80	13.46	-1.58	0.246
100.00	-23.31	-3.18	0.00	-117.60	0.00	117.60	1,283.38	641.69	1,150.46	568.17	15.19	-1.74	0.225
105.00	-22.02	-3.10	0.00	-101.72	0.00	101.72	1,248.31	624.16	1,079.86	533.30	17.09	-1.88	0.208
110.00	-20.76	-2.98	0.00	-86.20	0.00	86.20	1,203.56	601.78	1,003.39	495.54	19.14	-2.02	0.191
110.00	-20.76	-2.98	0.00	-86.20	0.00	86.20	829.71	414.85	695.98	343.72	19.14	-2.02	0.276
115.00	-19.59	-2.85	0.00	-71.33	0.00	71.33	811.47	405.73	655.22	323.59	21.32	-2.15	0.245
120.00	-15.52	-2.34	0.00	-57.07	0.00	57.07	792.27	396.13	614.86	303.65	23.66	-2.31	0.208
125.00	-14.55	-2.25	0.00	-45.39	0.00	45.39	772.10	386.05	574.98	283.96	26.16	-2.45	0.179
130.00	-11.72	-1.78	0.00	-33.67	0.00	33.67	750.97	375.48	535.68	264.55	28.79	-2.58	0.143
135.00	-11.15	-1.70	0.00	-24.74	0.00	24.74	728.87	364.44	497.06	245.48	31.55	-2.68	0.116
140.00	-10.59	-1.61	0.00	-16.26	0.00	16.26	704.09	352.04	458.06	226.22	34.40	-2.76	0.087
145.00	-10.06	-1.52	0.00	-8.23	0.00	8.23	670.52	335.26	415.19	205.05	37.32	-2.82	0.055
149.00	-0.09	-0.01	0.00	-0.01	0.00	0.01	643.68	321.84	382.41	188.86	39.70	-2.84	0.000
150.00	0.00	-0.01	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	40.29	-2.84	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sstn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:29 PM

Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

26 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

### Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		51.8	0.0					0.0	0.0	51.8	0.0	0.0	0.0
5.00		102.5	724.1					0.0	483.5	102.5	1,207.7	0.0	0.0
10.00		100.3	708.6					0.0	483.5	100.3	1,192.2	0.0	0.0
15.00		98.1	693.2					0.0	483.5	98.1	1,176.7	0.0	0.0
20.00		95.9	677.7					0.0	483.5	95.9	1,161.2	0.0	0.0
25.00		93.7	662.2					0.0	483.5	93.7	1,145.7	0.0	0.0
30.00		64.7	646.7					0.0	483.5	64.7	1,130.2	0.0	0.0
32.00	Bot - Section 2	46.9	254.3					0.0	193.4	46.9	447.8	0.0	0.0
35.00		38.0	698.0					0.0	290.1	38.0	988.1	0.0	0.0
36.00	Top - Section 1	48.0	230.4					0.0	96.7	48.0	327.1	0.0	0.0
40.00		87.1	418.8					0.0	386.8	87.1	805.7	0.0	0.0
45.00		97.5	511.9					0.0	483.5	97.5	995.5	0.0	0.0
50.00		107.7	499.0					0.0	483.5	107.7	982.6	0.0	0.0
55.00		117.6	486.1					23.8	483.5	141.4	969.7	0.0	0.0
60.00		117.4	473.2					24.5	483.5	141.8	956.7	0.0	0.0
65.00		116.8	460.3					25.0	483.5	141.8	943.8	0.0	0.0
70.00	Bot - Section 3	99.5	447.4					25.6	483.5	125.1	930.9	0.0	0.0
73.50	Top - Section 2	58.8	555.3					18.2	338.5	77.1	893.7	0.0	0.0
75.00		46.1	105.5					7.9	145.1	54.0	250.6	0.0	0.0
77.44	Reinf. Top	58.3	169.6					12.9	236.0	71.2	405.6	0.0	0.0
80.00		87.3	175.3					13.7	76.6	101.0	251.9	0.0	0.0
85.00		104.8	334.6					23.4	149.6	128.2	484.2	0.0	0.0
90.00		93.8	324.3					0.0	149.6	93.8	473.8	0.0	0.0
95.00		92.2	314.0					0.0	149.6	92.2	463.5	0.0	0.0
100.00	Appertunance(s)	90.5	303.6	228.8	0.0	517.3	627.0	0.0	149.6	319.3	1,080.2	0.0	0.0
105.00		97.4	293.3					0.0	139.7	97.4	433.0	0.0	0.0
110.00	Top - Section 3	103.9	283.0					21.2	139.7	125.1	422.6	0.0	0.0
115.00		101.4	205.1					21.5	139.7	122.9	344.8	0.0	0.0
120.00	Appertunance(s)	90.6	197.4	243.4	0.0	0.0	809.0	21.7	139.7	355.8	1,146.0	0.0	0.0
125.00		79.9	189.6					0.0	119.3	79.9	308.9	0.0	0.0
130.00	Appertunance(s)	77.5	181.9	308.9	0.0	569.2	519.0	0.0	119.3	386.4	820.2	0.0	0.0
135.00		75.0	174.1					0.0	70.1	75.0	244.2	0.0	0.0
140.00		72.3	166.4					0.0	70.1	72.3	236.5	0.0	0.0
145.00		62.9	158.6					0.0	70.1	62.9	228.7	0.0	0.0
149.00	Appertunance(s)	34.1	121.3	876.2	0.0	2,344.4	3,339.0	0.0	56.1	910.3	3,516.4	0.0	0.0
150.00		6.7	29.6					0.0	0.0	6.7	29.6	0.0	0.0
Totals:										4,813.83	27,396.0	0.00	0.00

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:31 PM

Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

26 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

**Calculated Forces**

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 (deg)	Ratio
0.00	-27.39	-4.78	0.00	-477.28	0.00	477.28	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.137
5.00	-26.18	-4.70	0.00	-453.40	0.00	453.40	3,015.96	1,507.98	4,329.28	2,138.07	0.03	-0.06	0.133
10.00	-24.98	-4.62	0.00	-429.91	0.00	429.91	2,972.53	1,486.26	4,173.67	2,061.22	0.12	-0.12	0.129
15.00	-23.80	-4.54	0.00	-406.80	0.00	406.80	2,928.13	1,464.06	4,019.46	1,985.06	0.27	-0.17	0.125
20.00	-22.64	-4.47	0.00	-384.08	0.00	384.08	2,882.77	1,441.38	3,866.74	1,909.64	0.49	-0.23	0.121
25.00	-21.49	-4.39	0.00	-361.74	0.00	361.74	2,835.18	1,417.59	3,713.97	1,834.19	0.76	-0.29	0.117
30.00	-20.36	-4.33	0.00	-339.79	0.00	339.79	2,768.06	1,384.03	3,539.19	1,747.87	1.09	-0.34	0.114
32.00	-19.91	-4.29	0.00	-331.12	0.00	331.12	2,741.21	1,370.60	3,470.46	1,713.93	1.24	-0.37	0.113
35.00	-18.92	-4.26	0.00	-318.24	0.00	318.24	2,700.94	1,350.47	3,368.63	1,663.64	1.48	-0.40	0.109
36.00	-18.59	-4.22	0.00	-313.99	0.00	313.99	2,178.16	1,089.08	2,770.79	1,368.39	1.57	-0.41	0.123
40.00	-17.78	-4.14	0.00	-297.13	0.00	297.13	2,151.08	1,075.54	2,682.35	1,324.71	1.93	-0.46	0.119
45.00	-16.78	-4.05	0.00	-276.44	0.00	276.44	2,116.36	1,058.18	2,572.65	1,270.54	2.44	-0.52	0.113
50.00	-15.79	-3.95	0.00	-256.20	0.00	256.20	2,080.68	1,040.34	2,464.00	1,216.88	3.02	-0.57	0.108
55.00	-14.82	-3.81	0.00	-236.46	0.00	236.46	2,044.03	1,022.02	2,356.47	1,163.77	3.65	-0.63	0.102
60.00	-13.86	-3.67	0.00	-217.41	0.00	217.41	2,006.42	1,003.21	2,250.16	1,111.27	4.34	-0.68	0.096
65.00	-12.92	-3.53	0.00	-199.06	0.00	199.06	1,966.16	983.08	2,143.32	1,058.50	5.08	-0.74	0.091
70.00	-11.99	-3.40	0.00	-181.41	0.00	181.41	1,910.22	955.11	2,022.41	998.79	5.88	-0.79	0.085
73.50	-11.09	-3.32	0.00	-169.51	0.00	169.51	1,431.47	715.74	1,521.25	751.29	6.48	-0.83	0.094
75.00	-10.84	-3.26	0.00	-164.54	0.00	164.54	1,423.81	711.90	1,499.70	740.65	6.74	-0.84	0.092
77.44	-10.44	-3.19	0.00	-156.58	0.00	156.58	1,411.16	705.58	1,464.78	723.40	7.17	-0.87	0.088
77.44	-10.44	-3.19	0.00	-156.58	0.00	156.58	1,411.16	705.58	1,464.78	723.40	7.17	-0.87	0.224
80.00	-10.18	-3.10	0.00	-148.41	0.00	148.41	1,397.65	698.83	1,428.30	705.38	7.65	-0.89	0.218
85.00	-9.69	-2.98	0.00	-132.92	0.00	132.92	1,370.53	685.26	1,357.58	670.46	8.65	-1.02	0.205
90.00	-9.22	-2.90	0.00	-118.00	0.00	118.00	1,342.44	671.22	1,287.64	635.92	9.79	-1.15	0.192
95.00	-8.75	-2.82	0.00	-103.50	0.00	103.50	1,313.39	656.70	1,218.57	601.80	11.05	-1.27	0.179
100.00	-7.67	-2.49	0.00	-88.90	0.00	88.90	1,283.38	641.69	1,150.46	568.17	12.44	-1.38	0.162
105.00	-7.24	-2.39	0.00	-76.46	0.00	76.46	1,248.31	624.16	1,079.86	533.30	13.95	-1.49	0.149
110.00	-6.81	-2.27	0.00	-64.49	0.00	64.49	1,203.56	601.78	1,003.39	495.54	15.57	-1.60	0.136
110.00	-6.81	-2.27	0.00	-64.49	0.00	64.49	829.71	414.85	695.98	343.72	15.57	-1.60	0.196
115.00	-6.47	-2.15	0.00	-53.15	0.00	53.15	811.47	405.73	655.22	323.59	17.30	-1.70	0.172
120.00	-5.33	-1.77	0.00	-42.41	0.00	42.41	792.27	396.13	614.86	303.65	19.14	-1.81	0.146
125.00	-5.02	-1.69	0.00	-33.57	0.00	33.57	772.10	386.05	574.98	283.96	21.10	-1.92	0.125
130.00	-4.21	-1.28	0.00	-24.56	0.00	24.56	750.97	375.48	535.68	264.55	23.15	-2.01	0.098
135.00	-3.97	-1.20	0.00	-18.17	0.00	18.17	728.87	364.44	497.06	245.48	25.30	-2.09	0.079
140.00	-3.73	-1.12	0.00	-12.17	0.00	12.17	704.09	352.04	458.06	226.22	27.52	-2.15	0.059
145.00	-3.51	-1.05	0.00	-6.56	0.00	6.56	670.52	335.26	415.19	205.05	29.79	-2.19	0.037
149.00	-0.03	-0.01	0.00	-0.01	0.00	0.01	643.68	321.84	382.41	188.86	31.64	-2.21	0.000
150.00	0.00	-0.01	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	32.10	-2.21	0.000



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

### Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.74
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	27.40 k
Seismic Base Shear (E):	1.07 k

#### Load Case (1.2 + 0.2Sds) \* DL + E ELFM

#### Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
35	149.50	30	661	0.003	4	37
34	147.00	177	3,834	0.020	21	220
33	142.50	229	4,645	0.024	25	283
32	137.50	236	4,471	0.023	25	293
31	132.50	244	4,288	0.022	24	303
30	127.50	301	4,896	0.025	27	373
29	122.50	309	4,636	0.024	25	383
28	117.50	337	4,653	0.024	26	418
27	112.50	345	4,364	0.022	24	427
26	107.50	423	4,884	0.025	27	524
25	102.50	433	4,549	0.023	25	537
24	97.50	453	4,308	0.022	24	562
23	92.50	464	3,966	0.020	22	574
22	87.50	474	3,628	0.019	20	587
21	82.50	484	3,295	0.017	18	600
20	78.72	252	1,561	0.008	9	312
19	76.22	406	2,356	0.012	13	503
18	74.25	251	1,381	0.007	8	311
17	71.75	894	4,601	0.024	25	1,108
16	67.50	931	4,242	0.022	23	1,154
15	62.50	944	3,687	0.019	20	1,170
14	57.50	957	3,163	0.016	17	1,186
13	52.50	970	2,673	0.014	15	1,202

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

12	47.50	983	2,217	0.011	12	1,218
11	42.50	995	1,798	0.009	10	1,234
10	38.00	806	1,163	0.006	6	998
9	35.50	327	412	0.002	2	405
8	33.50	988	1,109	0.006	6	1,224
7	31.00	448	430	0.002	2	555
6	27.50	1,130	855	0.004	5	1,401
5	22.50	1,146	580	0.003	3	1,420
4	17.50	1,161	356	0.002	2	1,439
3	12.50	1,177	184	0.001	1	1,458
2	7.50	1,192	67	0.000	0	1,477
1	2.50	1,208	8	0.000	0	1,497
CCI TPX-070821	149.00	45	999	0.005	5	56
Raycap DC6-48-60-18-	149.00	40	888	0.005	5	50
CCI DTMAPB7819VG12A	149.00	115	2,558	0.013	14	143
Ericsson RRUS-11 (50	149.00	150	3,330	0.017	18	186
Ericsson RRUS 32 B2	149.00	159	3,530	0.018	19	197
Ericsson RRUS-32 (77	149.00	231	5,128	0.026	28	286
Powerwave Allgon 777	149.00	105	2,331	0.012	13	130
KMW AM-X-CD-16-65-00	149.00	97	2,153	0.011	12	120
Quintel QS66512-3 (1	149.00	336	7,460	0.038	41	416
Andrew SBNH-1D6565C	149.00	61	1,350	0.007	7	75
Round Platform w/ Ha	149.00	2,000	44,402	0.228	244	2,479
Kathrein Smart Bias	130.00	10	168	0.001	1	12
Site-Pro UWS6-NP	130.00	276	4,664	0.024	26	342
RFS APXV18-206517S-C	130.00	79	1,338	0.007	7	98
Andrew LNX-6515DS-VT	130.00	154	2,601	0.013	14	191
DragonWave Horizon C	120.00	11	153	0.001	1	13
NextNet BTS-2500	120.00	105	1,512	0.008	8	130
Argus LLPX310R	120.00	86	1,236	0.006	7	106
Clearwire Mount	120.00	560	8,064	0.041	44	694
DragonWave A-ANT-11G	120.00	48	685	0.004	4	59
DB Systems 5100A	100.00	21	210	0.001	1	26
VertexRSI 101V VPD	100.00	4	40	0.000	0	5
DB Systems 5100A-D	100.00	152	1,520	0.008	8	188
Round Side Arm	100.00	450	4,500	0.023	25	558
		27,396	194,740	1.000	1,068	33,951

Load Case (0.9 - 0.2Sds) \* DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
35	149.50	30	661	0.003	4	25
34	147.00	177	3,834	0.020	21	153
33	142.50	229	4,645	0.024	25	197
32	137.50	236	4,471	0.023	25	204
31	132.50	244	4,288	0.022	24	210
30	127.50	301	4,896	0.025	27	259
29	122.50	309	4,636	0.024	25	266
28	117.50	337	4,653	0.024	26	290
27	112.50	345	4,364	0.022	24	297
26	107.50	423	4,884	0.025	27	364
25	102.50	433	4,549	0.023	25	373
24	97.50	453	4,308	0.022	24	390
23	92.50	464	3,966	0.020	22	399
22	87.50	474	3,628	0.019	20	408
21	82.50	484	3,295	0.017	18	417
20	78.72	252	1,561	0.008	9	217
19	76.22	406	2,356	0.012	13	349
18	74.25	251	1,381	0.007	8	216

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

17	71.75	894	4,601	0.024	25	769
16	67.50	931	4,242	0.022	23	801
15	62.50	944	3,687	0.019	20	812
14	57.50	957	3,163	0.016	17	824
13	52.50	970	2,673	0.014	15	835
12	47.50	983	2,217	0.011	12	846
11	42.50	995	1,798	0.009	10	857
10	38.00	806	1,163	0.006	6	693
9	35.50	327	412	0.002	2	282
8	33.50	988	1,109	0.006	6	850
7	31.00	448	430	0.002	2	385
6	27.50	1,130	855	0.004	5	973
5	22.50	1,146	580	0.003	3	986
4	17.50	1,161	356	0.002	2	1,000
3	12.50	1,177	184	0.001	1	1,013
2	7.50	1,192	67	0.000	0	1,026
1	2.50	1,208	8	0.000	0	1,040
CCI TPX-070821	149.00	45	999	0.005	5	39
Raycap DC6-48-60-18-	149.00	40	888	0.005	5	34
CCI DTMAPB7819VG12A	149.00	115	2,558	0.013	14	99
Ericsson RRUS-11 (50	149.00	150	3,330	0.017	18	129
Ericsson RRUS 32 B2	149.00	159	3,530	0.018	19	137
Ericsson RRUS-32 (77	149.00	231	5,128	0.026	28	199
Powerwave Allgon 777	149.00	105	2,331	0.012	13	90
KMW AM-X-CD-16-65-00	149.00	97	2,153	0.011	12	83
Quintel QS66512-3 (1	149.00	336	7,460	0.038	41	289
Andrew SBNH-1D6565C	149.00	61	1,350	0.007	7	52
Round Platform w/ Ha	149.00	2,000	44,402	0.228	244	1,721
Kathrein Smart Bias	130.00	10	168	0.001	1	9
Site-Pro UWS6-NP	130.00	276	4,664	0.024	26	238
RFS APXV18-206517S-C	130.00	79	1,338	0.007	7	68
Andrew LNX-6515DS-VT	130.00	154	2,601	0.013	14	132
DragonWave Horizon C	120.00	11	153	0.001	1	9
NextNet BTS-2500	120.00	105	1,512	0.008	8	90
Argus LLPX310R	120.00	86	1,236	0.006	7	74
Clearwire Mount	120.00	560	8,064	0.041	44	482
DragonWave A-ANT-11G	120.00	48	685	0.004	4	41
DB Systems 5100A	100.00	21	210	0.001	1	18
VertexRSI 101V VPD	100.00	4	40	0.000	0	3
DB Systems 5100A-D	100.00	152	1,520	0.008	8	131
Round Side Arm	100.00	450	4,500	0.023	25	387
		27,396	194,740	1.000	1,068	23,581

Site Number: 302475

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

Load Case (1.2 + 0.2Sds) \* DL + E ELFM

Seismic Equivalent Lateral Forces Method

Calculated Forces

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 (deg)	Ratio
0.00	-32.45	-1.07	0.00	-134.32	0.00	134.32	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.044
5.00	-30.98	-1.08	0.00	-128.96	0.00	128.96	3,015.96	1,507.98	4,329.28	2,138.07	0.01	-0.02	0.043
10.00	-29.52	-1.09	0.00	-123.56	0.00	123.56	2,972.53	1,486.26	4,173.67	2,061.22	0.03	-0.03	0.042
15.00	-28.08	-1.09	0.00	-118.12	0.00	118.12	2,928.13	1,464.06	4,019.46	1,985.06	0.08	-0.05	0.041
20.00	-26.66	-1.10	0.00	-112.65	0.00	112.65	2,882.77	1,441.38	3,866.74	1,909.64	0.14	-0.07	0.040
25.00	-25.26	-1.10	0.00	-107.17	0.00	107.17	2,835.18	1,417.59	3,713.97	1,834.19	0.22	-0.08	0.039
30.00	-24.70	-1.10	0.00	-101.69	0.00	101.69	2,768.06	1,384.03	3,539.19	1,747.87	0.31	-0.10	0.039
32.00	-23.48	-1.09	0.00	-99.49	0.00	99.49	2,741.21	1,370.60	3,470.46	1,713.93	0.36	-0.11	0.038
35.00	-23.07	-1.09	0.00	-96.21	0.00	96.21	2,700.94	1,350.47	3,368.63	1,663.64	0.43	-0.12	0.037
36.00	-22.07	-1.09	0.00	-95.11	0.00	95.11	2,178.16	1,089.08	2,770.79	1,368.39	0.45	-0.12	0.042
40.00	-20.84	-1.08	0.00	-90.76	0.00	90.76	2,151.08	1,075.54	2,682.35	1,324.71	0.56	-0.13	0.041
45.00	-19.62	-1.07	0.00	-85.35	0.00	85.35	2,116.36	1,058.18	2,572.65	1,270.54	0.71	-0.15	0.039
50.00	-18.42	-1.06	0.00	-79.99	0.00	79.99	2,080.68	1,040.34	2,464.00	1,216.88	0.88	-0.17	0.037
55.00	-17.23	-1.04	0.00	-74.68	0.00	74.68	2,044.03	1,022.02	2,356.47	1,163.77	1.07	-0.19	0.036
60.00	-16.06	-1.03	0.00	-69.46	0.00	69.46	2,006.42	1,003.21	2,250.16	1,111.27	1.27	-0.21	0.034
65.00	-14.91	-1.00	0.00	-64.33	0.00	64.33	1,966.16	983.08	2,143.32	1,058.50	1.50	-0.22	0.032
70.00	-13.80	-0.98	0.00	-59.32	0.00	59.32	1,910.22	955.11	2,022.41	998.79	1.74	-0.24	0.031
73.50	-13.49	-0.97	0.00	-55.91	0.00	55.91	1,431.47	715.74	1,521.25	751.29	1.92	-0.25	0.034
75.00	-12.99	-0.96	0.00	-54.45	0.00	54.45	1,423.81	711.90	1,499.70	740.65	2.00	-0.26	0.034
77.44	-12.68	-0.95	0.00	-52.12	0.00	52.12	1,411.16	705.58	1,464.78	723.40	2.13	-0.26	0.033
77.44	-12.68	-0.95	0.00	-52.12	0.00	52.12	1,411.16	705.58	1,464.78	723.40	2.13	-0.26	0.081
80.00	-12.08	-0.93	0.00	-49.70	0.00	49.70	1,397.65	698.83	1,428.30	705.38	2.27	-0.27	0.079
85.00	-11.49	-0.92	0.00	-45.04	0.00	45.04	1,370.53	685.26	1,357.58	670.46	2.58	-0.32	0.076
90.00	-10.91	-0.90	0.00	-40.45	0.00	40.45	1,342.44	671.22	1,287.64	635.92	2.94	-0.36	0.072
95.00	-10.35	-0.88	0.00	-35.95	0.00	35.95	1,313.39	656.70	1,218.57	601.80	3.34	-0.40	0.068
100.00	-9.04	-0.82	0.00	-31.55	0.00	31.55	1,283.38	641.69	1,150.46	568.17	3.78	-0.44	0.063
105.00	-8.51	-0.79	0.00	-27.46	0.00	27.46	1,248.31	624.16	1,079.86	533.30	4.26	-0.48	0.058
110.00	-8.09	-0.77	0.00	-23.49	0.00	23.49	1,203.56	601.78	1,003.39	495.54	4.78	-0.52	0.054
110.00	-8.09	-0.77	0.00	-23.49	0.00	23.49	829.71	414.85	695.98	343.72	4.78	-0.52	0.078
115.00	-7.67	-0.75	0.00	-19.64	0.00	19.64	811.47	405.73	655.22	323.59	5.35	-0.55	0.070
120.00	-6.28	-0.65	0.00	-15.91	0.00	15.91	792.27	396.13	614.86	303.65	5.95	-0.60	0.060
125.00	-5.91	-0.62	0.00	-12.67	0.00	12.67	772.10	386.05	574.98	283.96	6.60	-0.64	0.052
130.00	-4.96	-0.54	0.00	-9.57	0.00	9.57	750.97	375.48	535.68	264.55	7.29	-0.67	0.043
135.00	-4.67	-0.51	0.00	-6.87	0.00	6.87	728.87	364.44	497.06	245.48	8.01	-0.70	0.034
140.00	-4.39	-0.49	0.00	-4.29	0.00	4.29	704.09	352.04	458.06	226.22	8.75	-0.72	0.025
145.00	-4.17	-0.46	0.00	-1.86	0.00	1.86	670.52	335.26	415.19	205.05	9.52	-0.74	0.015
149.00	0.00	0.00	0.00	0.00	0.00	0.00	643.68	321.84	382.41	188.86	10.14	-0.74	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	10.30	-0.74	0.000

Site Number: 302475

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

Load Case (0.9 - 0.2Sds) \* DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

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 (deg)	Ratio
0.00	-22.54	-1.07	0.00	-131.69	0.00	131.69	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.041
5.00	-21.51	-1.08	0.00	-126.34	0.00	126.34	3,015.96	1,507.98	4,329.28	2,138.07	0.01	-0.02	0.040
10.00	-20.50	-1.08	0.00	-120.95	0.00	120.95	2,972.53	1,486.26	4,173.67	2,061.22	0.03	-0.03	0.039
15.00	-19.50	-1.08	0.00	-115.55	0.00	115.55	2,928.13	1,464.06	4,019.46	1,985.06	0.08	-0.05	0.039
20.00	-18.52	-1.09	0.00	-110.13	0.00	110.13	2,882.77	1,441.38	3,866.74	1,909.64	0.14	-0.06	0.038
25.00	-17.54	-1.08	0.00	-104.70	0.00	104.70	2,835.18	1,417.59	3,713.97	1,834.19	0.21	-0.08	0.037
30.00	-17.16	-1.08	0.00	-99.28	0.00	99.28	2,768.06	1,384.03	3,539.19	1,747.87	0.31	-0.10	0.036
32.00	-16.31	-1.08	0.00	-97.11	0.00	97.11	2,741.21	1,370.60	3,470.46	1,713.93	0.35	-0.10	0.036
35.00	-16.02	-1.08	0.00	-93.87	0.00	93.87	2,700.94	1,350.47	3,368.63	1,663.64	0.42	-0.11	0.035
36.00	-15.33	-1.07	0.00	-92.80	0.00	92.80	2,178.16	1,089.08	2,770.79	1,368.39	0.44	-0.12	0.039
40.00	-14.47	-1.07	0.00	-88.50	0.00	88.50	2,151.08	1,075.54	2,682.35	1,324.71	0.55	-0.13	0.038
45.00	-13.63	-1.06	0.00	-83.18	0.00	83.18	2,116.36	1,058.18	2,572.65	1,270.54	0.69	-0.15	0.037
50.00	-12.79	-1.04	0.00	-77.90	0.00	77.90	2,080.68	1,040.34	2,464.00	1,216.88	0.86	-0.17	0.035
55.00	-11.97	-1.03	0.00	-72.69	0.00	72.69	2,044.03	1,022.02	2,356.47	1,163.77	1.04	-0.18	0.033
60.00	-11.16	-1.01	0.00	-67.56	0.00	67.56	2,006.42	1,003.21	2,250.16	1,111.27	1.24	-0.20	0.032
65.00	-10.35	-0.98	0.00	-62.53	0.00	62.53	1,966.16	983.08	2,143.32	1,058.50	1.46	-0.22	0.030
70.00	-9.59	-0.96	0.00	-57.62	0.00	57.62	1,910.22	955.11	2,022.41	998.79	1.70	-0.23	0.029
73.50	-9.37	-0.95	0.00	-54.27	0.00	54.27	1,431.47	715.74	1,521.25	751.29	1.87	-0.24	0.032
75.00	-9.02	-0.94	0.00	-52.85	0.00	52.85	1,423.81	711.90	1,499.70	740.65	1.95	-0.25	0.031
77.44	-8.80	-0.93	0.00	-50.56	0.00	50.56	1,411.16	705.58	1,464.78	723.40	2.08	-0.26	0.030
77.44	-8.80	-0.93	0.00	-50.56	0.00	50.56	1,411.16	705.58	1,464.78	723.40	2.08	-0.26	0.076
80.00	-8.39	-0.91	0.00	-48.19	0.00	48.19	1,397.65	698.83	1,428.30	705.38	2.22	-0.27	0.074
85.00	-7.98	-0.90	0.00	-43.63	0.00	43.63	1,370.53	685.26	1,357.58	670.46	2.52	-0.31	0.071
90.00	-7.58	-0.88	0.00	-39.15	0.00	39.15	1,342.44	671.22	1,287.64	635.92	2.87	-0.35	0.067
95.00	-7.19	-0.86	0.00	-34.76	0.00	34.76	1,313.39	656.70	1,218.57	601.80	3.26	-0.39	0.063
100.00	-6.28	-0.79	0.00	-30.48	0.00	30.48	1,283.38	641.69	1,150.46	568.17	3.68	-0.43	0.059
105.00	-5.91	-0.77	0.00	-26.51	0.00	26.51	1,248.31	624.16	1,079.86	533.30	4.15	-0.47	0.054
110.00	-5.61	-0.75	0.00	-22.67	0.00	22.67	1,203.56	601.78	1,003.39	495.54	4.66	-0.50	0.050
110.00	-5.61	-0.75	0.00	-22.67	0.00	22.67	829.71	414.85	695.98	343.72	4.66	-0.50	0.073
115.00	-5.32	-0.72	0.00	-18.94	0.00	18.94	811.47	405.73	655.22	323.59	5.21	-0.54	0.065
120.00	-4.36	-0.63	0.00	-15.34	0.00	15.34	792.27	396.13	614.86	303.65	5.80	-0.58	0.056
125.00	-4.10	-0.60	0.00	-12.21	0.00	12.21	772.10	386.05	574.98	283.96	6.43	-0.62	0.048
130.00	-3.45	-0.52	0.00	-9.22	0.00	9.22	750.97	375.48	535.68	264.55	7.09	-0.65	0.039
135.00	-3.24	-0.50	0.00	-6.61	0.00	6.61	728.87	364.44	497.06	245.48	7.79	-0.68	0.031
140.00	-3.05	-0.47	0.00	-4.13	0.00	4.13	704.09	352.04	458.06	226.22	8.51	-0.70	0.023
145.00	-2.89	-0.45	0.00	-1.79	0.00	1.79	670.52	335.26	415.19	205.05	9.26	-0.72	0.013
149.00	0.00	0.00	0.00	0.00	0.00	0.00	643.68	321.84	382.41	188.86	9.86	-0.72	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	10.01	-0.72	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

### Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.20
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	2.74
Redundancy Factor ( $\rho$ ):	1.30

#### Load Case (1.2 + 0.2Sds) \* DL + E EMAM

#### Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
35	149.50	30	1.877	1.914	1.116	0.362	9	37
34	147.00	177	1.815	1.608	1.004	0.322	50	220
33	142.50	229	1.706	1.144	0.823	0.255	51	283
32	137.50	236	1.588	0.742	0.654	0.189	39	293
31	132.50	244	1.475	0.441	0.513	0.131	28	303
30	127.50	301	1.366	0.222	0.397	0.081	21	373
29	122.50	309	1.261	0.069	0.302	0.039	10	383
28	117.50	337	1.160	-0.030	0.226	0.005	1	418
27	112.50	345	1.063	-0.088	0.165	-0.022	-7	427
26	107.50	423	0.971	-0.116	0.117	-0.040	-15	524
25	102.50	433	0.883	-0.121	0.081	-0.051	-19	537
24	97.50	453	0.799	-0.112	0.053	-0.054	-21	562
23	92.50	464	0.719	-0.092	0.034	-0.049	-20	574
22	87.50	474	0.643	-0.068	0.020	-0.037	-15	587
21	82.50	484	0.572	-0.043	0.012	-0.020	-8	600
20	78.72	252	0.521	-0.024	0.008	-0.004	-1	312
19	76.22	406	0.488	-0.012	0.007	0.006	2	503
18	74.25	251	0.463	-0.003	0.006	0.013	3	311
17	71.75	894	0.432	0.008	0.006	0.022	17	1,108
16	67.50	931	0.383	0.023	0.007	0.035	28	1,154
15	62.50	944	0.328	0.039	0.010	0.046	38	1,170
14	57.50	957	0.278	0.050	0.014	0.053	44	1,186
13	52.50	970	0.232	0.058	0.019	0.056	47	1,202
12	47.50	983	0.190	0.064	0.025	0.056	48	1,218
11	42.50	995	0.152	0.068	0.030	0.056	48	1,234
10	38.00	806	0.121	0.070	0.034	0.055	38	998
9	35.50	327	0.106	0.071	0.036	0.054	15	405
8	33.50	988	0.094	0.071	0.038	0.054	46	1,224
7	31.00	448	0.081	0.072	0.040	0.053	21	555
6	27.50	1,130	0.064	0.072	0.041	0.052	51	1,401
5	22.50	1,146	0.043	0.070	0.042	0.051	50	1,420
4	17.50	1,161	0.026	0.067	0.040	0.048	49	1,439
3	12.50	1,177	0.013	0.059	0.034	0.044	45	1,458
2	7.50	1,192	0.005	0.044	0.025	0.035	36	1,477

Site Number: 302475

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Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

1	2.50	1,208	0.001	0.018	0.010	0.017	17	1,497
CCI TPX-070821	149.00	45	1.865	1.850	1.093	0.354	14	56
Raycap DC6-48-60-18-	149.00	40	1.865	1.850	1.093	0.354	12	50
CCI DTMAPB7819VG12A	149.00	115	1.865	1.850	1.093	0.354	35	143
Ericsson RRUS-11 (50	149.00	150	1.865	1.850	1.093	0.354	46	186
Ericsson RRUS 32 B2	149.00	159	1.865	1.850	1.093	0.354	49	197
Ericsson RRUS-32 (77	149.00	231	1.865	1.850	1.093	0.354	71	286
Powerwave Allgon 777	149.00	105	1.865	1.850	1.093	0.354	32	130
KMW AM-X-CD-16-65-00	149.00	97	1.865	1.850	1.093	0.354	30	120
Quintel QS66512-3 (1	149.00	336	1.865	1.850	1.093	0.354	103	416
Andrew SBNH-1D6565C	149.00	61	1.865	1.850	1.093	0.354	19	75
Round Platform w/ Ha	149.00	2,000	1.865	1.850	1.093	0.354	614	2,479
Kathrein Smart Bias	130.00	10	1.420	0.322	0.452	0.105	1	12
Site-Pro UWS6-NP	130.00	276	1.420	0.322	0.452	0.105	25	342
RFS APXV18-206517S-C	130.00	79	1.420	0.322	0.452	0.105	7	98
Andrew LNX-6515DS-VT	130.00	154	1.420	0.322	0.452	0.105	14	191
DragonWave Horizon C	120.00	11	1.210	0.014	0.262	0.021	0	13
NextNet BTS-2500	120.00	105	1.210	0.014	0.262	0.021	2	130
Argus LLPX310R	120.00	86	1.210	0.014	0.262	0.021	2	106
Clearwire Mount	120.00	560	1.210	0.014	0.262	0.021	10	694
DragonWave A-ANT-11G	120.00	48	1.210	0.014	0.262	0.021	1	59
DB Systems 5100A	100.00	21	0.840	-0.118	0.066	-0.054	-1	26
VertexRSI 101V VPD	100.00	4	0.840	-0.118	0.066	-0.054	0	5
DB Systems 5100A-D	100.00	152	0.840	-0.118	0.066	-0.054	-7	188
Round Side Arm	100.00	450	0.840	-0.118	0.066	-0.054	-21	558
		27,396	57.513	27.592	21.395	6.116	1,803	33,951

**Load Case (0.9 - 0.2Sds) \* DL + E EMAM**

**Seismic (Reduced DL) Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
35	149.50	30	1.877	1.914	1.116	0.362	9	25
34	147.00	177	1.815	1.608	1.004	0.322	50	153
33	142.50	229	1.706	1.144	0.823	0.255	51	197
32	137.50	236	1.588	0.742	0.654	0.189	39	204
31	132.50	244	1.475	0.441	0.513	0.131	28	210
30	127.50	301	1.366	0.222	0.397	0.081	21	259
29	122.50	309	1.261	0.069	0.302	0.039	10	266
28	117.50	337	1.160	-0.030	0.226	0.005	1	290
27	112.50	345	1.063	-0.088	0.165	-0.022	-7	297
26	107.50	423	0.971	-0.116	0.117	-0.040	-15	364
25	102.50	433	0.883	-0.121	0.081	-0.051	-19	373
24	97.50	453	0.799	-0.112	0.053	-0.054	-21	390
23	92.50	464	0.719	-0.092	0.034	-0.049	-20	399
22	87.50	474	0.643	-0.068	0.020	-0.037	-15	408
21	82.50	484	0.572	-0.043	0.012	-0.020	-8	417
20	78.72	252	0.521	-0.024	0.008	-0.004	-1	217
19	76.22	406	0.488	-0.012	0.007	0.006	2	349
18	74.25	251	0.463	-0.003	0.006	0.013	3	216
17	71.75	894	0.432	0.008	0.006	0.022	17	769
16	67.50	931	0.383	0.023	0.007	0.035	28	801
15	62.50	944	0.328	0.039	0.010	0.046	38	812
14	57.50	957	0.278	0.050	0.014	0.053	44	824
13	52.50	970	0.232	0.058	0.019	0.056	47	835
12	47.50	983	0.190	0.064	0.025	0.056	48	846
11	42.50	995	0.152	0.068	0.030	0.056	48	857
10	38.00	806	0.121	0.070	0.034	0.055	38	693
9	35.50	327	0.106	0.071	0.036	0.054	15	282
8	33.50	988	0.094	0.071	0.038	0.054	46	850

Site Number: 302475

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7	31.00	448	0.081	0.072	0.040	0.053	21	385
6	27.50	1,130	0.064	0.072	0.041	0.052	51	973
5	22.50	1,146	0.043	0.070	0.042	0.051	50	986
4	17.50	1,161	0.026	0.067	0.040	0.048	49	1,000
3	12.50	1,177	0.013	0.059	0.034	0.044	45	1,013
2	7.50	1,192	0.005	0.044	0.025	0.035	36	1,026
1	2.50	1,208	0.001	0.018	0.010	0.017	17	1,040
CCI TPX-070821	149.00	45	1.865	1.850	1.093	0.354	14	39
Raycap DC6-48-60-18-	149.00	40	1.865	1.850	1.093	0.354	12	34
CCI DTMAPB7819VG12A	149.00	115	1.865	1.850	1.093	0.354	35	99
Ericsson RRUS-11 (50	149.00	150	1.865	1.850	1.093	0.354	46	129
Ericsson RRUS 32 B2	149.00	159	1.865	1.850	1.093	0.354	49	137
Ericsson RRUS-32 (77	149.00	231	1.865	1.850	1.093	0.354	71	199
Powerwave Allgon 777	149.00	105	1.865	1.850	1.093	0.354	32	90
KMW AM-X-CD-16-65-00	149.00	97	1.865	1.850	1.093	0.354	30	83
Quintel QS66512-3 (1	149.00	336	1.865	1.850	1.093	0.354	103	289
Andrew SBNH-1D6565C	149.00	61	1.865	1.850	1.093	0.354	19	52
Round Platform w/ Ha	149.00	2,000	1.865	1.850	1.093	0.354	614	1,721
Kathrein Smart Bias	130.00	10	1.420	0.322	0.452	0.105	1	9
Site-Pro UWS6-NP	130.00	276	1.420	0.322	0.452	0.105	25	238
RFS APXV18-206517S-C	130.00	79	1.420	0.322	0.452	0.105	7	68
Andrew LNX-6515DS-VT	130.00	154	1.420	0.322	0.452	0.105	14	132
DragonWave Horizon C	120.00	11	1.210	0.014	0.262	0.021	0	9
NextNet BTS-2500	120.00	105	1.210	0.014	0.262	0.021	2	90
Argus LLPX310R	120.00	86	1.210	0.014	0.262	0.021	2	74
Clearwire Mount	120.00	560	1.210	0.014	0.262	0.021	10	482
DragonWave A-ANT-11G	120.00	48	1.210	0.014	0.262	0.021	1	41
DB Systems 5100A	100.00	21	0.840	-0.118	0.066	-0.054	-1	18
VertexRSI 101V VPD	100.00	4	0.840	-0.118	0.066	-0.054	0	3
DB Systems 5100A-D	100.00	152	0.840	-0.118	0.066	-0.054	-7	131
Round Side Arm	100.00	450	0.840	-0.118	0.066	-0.054	-21	387
		27,396	57.513	27.592	21.395	6.116	1,803	23,581



Site Number: 302475

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

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Customer: AT&T Mobility

Load Case (1.2 + 0.2Sds) \* DL + E EMAM

Seismic Equivalent Modal Analysis Method

Calculated Forces

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 (deg)	Ratio
0.00	-32.45	-1.79	0.00	-212.28	0.00	212.28	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.065
5.00	-30.98	-1.77	0.00	-203.32	0.00	203.32	3,015.96	1,507.98	4,329.28	2,138.07	0.01	-0.03	0.064
10.00	-29.52	-1.74	0.00	-194.47	0.00	194.47	2,972.53	1,486.26	4,173.67	2,061.22	0.05	-0.05	0.063
15.00	-28.08	-1.70	0.00	-185.78	0.00	185.78	2,928.13	1,464.06	4,019.46	1,985.06	0.12	-0.08	0.061
20.00	-26.66	-1.66	0.00	-177.28	0.00	177.28	2,882.77	1,441.38	3,866.74	1,909.64	0.22	-0.10	0.060
25.00	-25.25	-1.62	0.00	-168.98	0.00	168.98	2,835.18	1,417.59	3,713.97	1,834.19	0.34	-0.13	0.058
30.00	-24.70	-1.60	0.00	-160.89	0.00	160.89	2,768.06	1,384.03	3,539.19	1,747.87	0.49	-0.16	0.058
32.00	-23.47	-1.56	0.00	-157.69	0.00	157.69	2,741.21	1,370.60	3,470.46	1,713.93	0.56	-0.17	0.057
35.00	-23.07	-1.55	0.00	-153.01	0.00	153.01	2,700.94	1,350.47	3,368.63	1,663.64	0.67	-0.19	0.056
36.00	-22.07	-1.51	0.00	-151.46	0.00	151.46	2,178.16	1,089.08	2,770.79	1,368.39	0.71	-0.19	0.063
40.00	-20.84	-1.47	0.00	-145.41	0.00	145.41	2,151.08	1,075.54	2,682.35	1,324.71	0.88	-0.21	0.062
45.00	-19.62	-1.43	0.00	-138.07	0.00	138.07	2,116.36	1,058.18	2,572.65	1,270.54	1.12	-0.24	0.060
50.00	-18.42	-1.38	0.00	-130.95	0.00	130.95	2,080.68	1,040.34	2,464.00	1,216.88	1.39	-0.27	0.058
55.00	-17.23	-1.34	0.00	-124.04	0.00	124.04	2,044.03	1,022.02	2,356.47	1,163.77	1.68	-0.30	0.056
60.00	-16.06	-1.31	0.00	-117.33	0.00	117.33	2,006.42	1,003.21	2,250.16	1,111.27	2.01	-0.33	0.054
65.00	-14.91	-1.28	0.00	-110.80	0.00	110.80	1,966.16	983.08	2,143.32	1,058.50	2.37	-0.36	0.053
70.00	-13.80	-1.26	0.00	-104.41	0.00	104.41	1,910.22	955.11	2,022.41	998.79	2.76	-0.39	0.051
73.50	-13.49	-1.26	0.00	-100.00	0.00	100.00	1,431.47	715.74	1,521.25	751.29	3.05	-0.41	0.058
75.00	-12.98	-1.26	0.00	-98.11	0.00	98.11	1,423.81	711.90	1,499.70	740.65	3.18	-0.42	0.057
77.44	-12.67	-1.26	0.00	-95.05	0.00	95.05	1,411.16	705.58	1,464.78	723.40	3.40	-0.43	0.056
77.44	-12.67	-1.26	0.00	-95.05	0.00	95.05	1,411.16	705.58	1,464.78	723.40	3.40	-0.43	0.140
80.00	-12.07	-1.27	0.00	-91.83	0.00	91.83	1,397.65	698.83	1,428.30	705.38	3.64	-0.45	0.139
85.00	-11.48	-1.30	0.00	-85.47	0.00	85.47	1,370.53	685.26	1,357.58	670.46	4.15	-0.53	0.136
90.00	-10.90	-1.33	0.00	-78.98	0.00	78.98	1,342.44	671.22	1,287.64	635.92	4.75	-0.61	0.132
95.00	-10.34	-1.36	0.00	-72.34	0.00	72.34	1,313.39	656.70	1,218.57	601.80	5.43	-0.69	0.128
100.00	-9.02	-1.40	0.00	-65.55	0.00	65.55	1,283.38	641.69	1,150.46	568.17	6.20	-0.78	0.122
105.00	-8.50	-1.42	0.00	-58.54	0.00	58.54	1,248.31	624.16	1,079.86	533.30	7.06	-0.86	0.117
110.00	-8.07	-1.43	0.00	-51.43	0.00	51.43	1,203.56	601.78	1,003.39	495.54	8.00	-0.94	0.110
110.00	-8.07	-1.43	0.00	-51.43	0.00	51.43	829.71	414.85	695.98	343.72	8.00	-0.94	0.159
115.00	-7.65	-1.44	0.00	-44.26	0.00	44.26	811.47	405.73	655.22	323.59	9.03	-1.02	0.146
120.00	-6.26	-1.40	0.00	-37.08	0.00	37.08	792.27	396.13	614.86	303.65	10.16	-1.12	0.130
125.00	-5.89	-1.38	0.00	-30.10	0.00	30.10	772.10	386.05	574.98	283.96	11.38	-1.21	0.114
130.00	-4.94	-1.29	0.00	-23.21	0.00	23.21	750.97	375.48	535.68	264.55	12.70	-1.30	0.094
135.00	-4.65	-1.25	0.00	-16.77	0.00	16.77	728.87	364.44	497.06	245.48	14.09	-1.37	0.075
140.00	-4.37	-1.19	0.00	-10.53	0.00	10.53	704.09	352.04	458.06	226.22	15.56	-1.42	0.053
145.00	-4.15	-1.14	0.00	-4.56	0.00	4.56	670.52	335.26	415.19	205.05	17.07	-1.46	0.028
149.00	0.00	0.00	0.00	0.00	0.00	0.00	643.68	321.84	382.41	188.86	18.30	-1.47	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	18.60	-1.47	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sctn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:32 PM

Customer: AT&T Mobility

Load Case (0.9 - 0.2Sds) \* DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-22.54	-1.79	0.00	-207.72	0.00	207.72	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.062
5.00	-21.51	-1.76	0.00	-198.77	0.00	198.77	3,015.96	1,507.98	4,329.28	2,138.07	0.01	-0.03	0.061
10.00	-20.50	-1.73	0.00	-189.96	0.00	189.96	2,972.53	1,486.26	4,173.67	2,061.22	0.05	-0.05	0.059
15.00	-19.50	-1.69	0.00	-181.32	0.00	181.32	2,928.13	1,464.06	4,019.46	1,985.06	0.12	-0.08	0.058
20.00	-18.51	-1.64	0.00	-172.89	0.00	172.89	2,882.77	1,441.38	3,866.74	1,909.64	0.21	-0.10	0.057
25.00	-17.54	-1.60	0.00	-164.68	0.00	164.68	2,835.18	1,417.59	3,713.97	1,834.19	0.33	-0.13	0.055
30.00	-17.15	-1.58	0.00	-156.69	0.00	156.69	2,768.06	1,384.03	3,539.19	1,747.87	0.48	-0.15	0.054
32.00	-16.30	-1.54	0.00	-153.53	0.00	153.53	2,741.21	1,370.60	3,470.46	1,713.93	0.55	-0.16	0.054
35.00	-16.02	-1.52	0.00	-148.92	0.00	148.92	2,700.94	1,350.47	3,368.63	1,663.64	0.66	-0.18	0.053
36.00	-15.33	-1.49	0.00	-147.40	0.00	147.40	2,178.16	1,089.08	2,770.79	1,368.39	0.70	-0.19	0.060
40.00	-14.47	-1.44	0.00	-141.45	0.00	141.45	2,151.08	1,075.54	2,682.35	1,324.71	0.86	-0.21	0.058
45.00	-13.62	-1.40	0.00	-134.25	0.00	134.25	2,116.36	1,058.18	2,572.65	1,270.54	1.09	-0.23	0.057
50.00	-12.79	-1.35	0.00	-127.26	0.00	127.26	2,080.68	1,040.34	2,464.00	1,216.88	1.35	-0.26	0.055
55.00	-11.97	-1.31	0.00	-120.50	0.00	120.50	2,044.03	1,022.02	2,356.47	1,163.77	1.64	-0.29	0.053
60.00	-11.15	-1.27	0.00	-113.94	0.00	113.94	2,006.42	1,003.21	2,250.16	1,111.27	1.96	-0.32	0.052
65.00	-10.35	-1.25	0.00	-107.57	0.00	107.57	1,966.16	983.08	2,143.32	1,058.50	2.31	-0.35	0.050
70.00	-9.58	-1.23	0.00	-101.33	0.00	101.33	1,910.22	955.11	2,022.41	998.79	2.69	-0.38	0.049
73.50	-9.37	-1.23	0.00	-97.03	0.00	97.03	1,431.47	715.74	1,521.25	751.29	2.98	-0.40	0.055
75.00	-9.02	-1.22	0.00	-95.19	0.00	95.19	1,423.81	711.90	1,499.70	740.65	3.10	-0.41	0.054
77.44	-8.80	-1.23	0.00	-92.20	0.00	92.20	1,411.16	705.58	1,464.78	723.40	3.32	-0.42	0.053
77.44	-8.80	-1.23	0.00	-92.20	0.00	92.20	1,411.16	705.58	1,464.78	723.40	3.32	-0.42	0.134
80.00	-8.38	-1.24	0.00	-89.06	0.00	89.06	1,397.65	698.83	1,428.30	705.38	3.55	-0.44	0.132
85.00	-7.97	-1.26	0.00	-82.87	0.00	82.87	1,370.53	685.26	1,357.58	670.46	4.04	-0.51	0.129
90.00	-7.57	-1.29	0.00	-76.57	0.00	76.57	1,342.44	671.22	1,287.64	635.92	4.62	-0.59	0.126
95.00	-7.18	-1.31	0.00	-70.13	0.00	70.13	1,313.39	656.70	1,218.57	601.80	5.29	-0.67	0.122
100.00	-6.26	-1.36	0.00	-63.56	0.00	63.56	1,283.38	641.69	1,150.46	568.17	6.04	-0.75	0.117
105.00	-5.90	-1.38	0.00	-56.75	0.00	56.75	1,248.31	624.16	1,079.86	533.30	6.87	-0.84	0.111
110.00	-5.60	-1.39	0.00	-49.86	0.00	49.86	1,203.56	601.78	1,003.39	495.54	7.79	-0.91	0.105
110.00	-5.60	-1.39	0.00	-49.86	0.00	49.86	829.71	414.85	695.98	343.72	7.79	-0.91	0.152
115.00	-5.31	-1.39	0.00	-42.92	0.00	42.92	811.47	405.73	655.22	323.59	8.79	-0.99	0.139
120.00	-4.34	-1.35	0.00	-35.97	0.00	35.97	792.27	396.13	614.86	303.65	9.88	-1.09	0.124
125.00	-4.08	-1.33	0.00	-29.19	0.00	29.19	772.10	386.05	574.98	283.96	11.07	-1.18	0.108
130.00	-3.43	-1.25	0.00	-22.52	0.00	22.52	750.97	375.48	535.68	264.55	12.35	-1.26	0.090
135.00	-3.22	-1.21	0.00	-16.27	0.00	16.27	728.87	364.44	497.06	245.48	13.70	-1.33	0.071
140.00	-3.02	-1.16	0.00	-10.21	0.00	10.21	704.09	352.04	458.06	226.22	15.12	-1.38	0.049
145.00	-2.87	-1.11	0.00	-4.42	0.00	4.42	670.52	335.26	415.19	205.05	16.59	-1.42	0.026
149.00	0.00	0.00	0.00	0.00	0.00	0.00	643.68	321.84	382.41	188.86	17.78	-1.42	0.000
150.00	0.00	0.00	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	18.08	-1.42	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: OAA690479\_C3\_02

11/28/2016 1:42:32 PM

Customer: AT&T Mobility

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	21.32	0.00	32.83	0.00	0.00	2078.10	77.44	0.94
0.9D + 1.6W	19.97	0.00	24.61	0.00	0.00	1981.53	77.44	0.90
1.2D + 1.0Di + 1.0Wi	4.95	0.00	67.39	0.00	0.00	559.07	77.44	0.30
(1.2 + 0.2Sds) * DL + E ELFM	1.07	0.00	32.45	0.00	0.00	134.32	77.44	0.08
(1.2 + 0.2Sds) * DL + E EMAM	1.79	0.00	32.45	0.00	0.00	212.28	110.00	0.16
(0.9 - 0.2Sds) * DL + E ELFM	1.07	0.00	22.54	0.00	0.00	131.69	77.44	0.08
(0.9 - 0.2Sds) * DL + E EMAM	1.79	0.00	22.54	0.00	0.00	207.72	110.00	0.15
1.0D + 1.0W	4.78	0.00	27.39	0.00	0.00	477.28	77.44	0.22

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Applied (kips)	phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	77.4	(4) SOL-#20 All Thre	261.8	7.9	16.8	151.5	12.0	13	12	0.0	12.0	0	0	231.0	330.5	0.699

<b>Base/Flange Plate</b>	Plate Type	<b>Baseplate</b>
	Pole Diameter	36 in
	Pole Thickness	0.375 in
	Plate Length	44 in
	Plate Thickness	2.5 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	$\phi_s$ Resistance	1584.05 k-in
	Applied	834.72 k-in
<b>Stiffeners</b>	#	0

Code Rev. **G**

Date 11/28/2016  
 Engineer BMS  
 Site # 302475  
 Carrier AT&T

Moment 2078.1 k-ft  
 Axial 32.8 k

<b>Bolts</b>	#	8
	Bolt Circle	44 in
	(R)adial / (S)quare	S
	Bolt Gap	6 in
	Diameter	2.25 in
	Hole Diameter	2.375 in
	Type	A615
	Fy	75 ksi
	Fu	100 ksi
	$\phi_s$ Resistance	259.82 k
Applied	166.94 k	
<b>Reinforcement</b>	#	4
	DYW. Circle	43 in
	Offset Angle	15°
	Type	#20
	Diameter	2.5 in
Fu	100 ksi	
<b>Extra Bolts O</b>	#	0

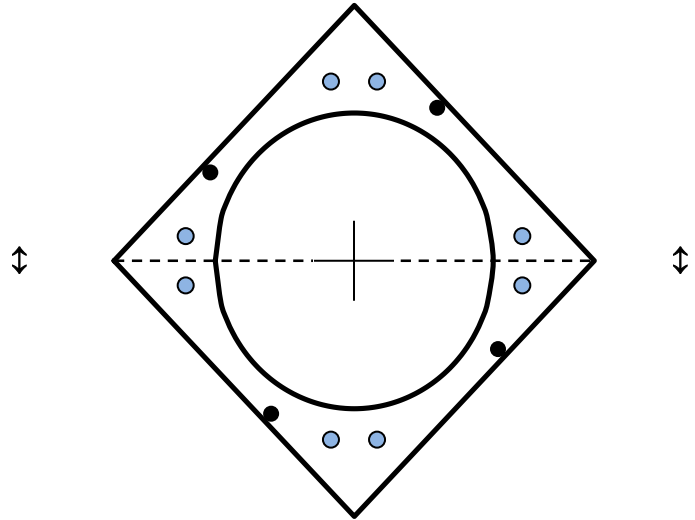


Plate Stress Ratio:  
**0.53** (Pass)

Bolt Stress Ratio:  
**0.64** (Pass)

<b>Base/Flange Plate</b>	Plate Type	<b>Flange @ 110.0 ft</b>
	Pole Diameter	20.53 in
	Pole Thickness	0.1875 in
	Plate Diameter	28.5 in
	Plate Thickness	1 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	$\phi_s$ Resistance	376.31 k-in
	Applied	72.71 k-in
	<b>Stiffeners</b>	#
Thickness	0.75 in	
Length	3 in	
Height	6 in	
Chamfer	0.75 in	
Offset Angle	0°	
Fy	50 ksi	

Code Rev. **G**

Date **11/28/2016**  
 Engineer **BMS**  
 Site # **302475**  
 Carrier **AT&T**

Moment **273.8 k-ft**  
 Axial **7.1 k**

<b>Bolts</b>	#	<b>12</b>
	Bolt Circle	25.75 in
	(R)adial / (S)quare	R
	Diameter	1 in
	Hole Diameter	1.125 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	$\phi_s$ Resistance	54.52 k
	Applied	41.91 k
<b>Reinforcement</b>	#	<b>0</b>
<b>Extra Bolts</b>	#	<b>0</b>

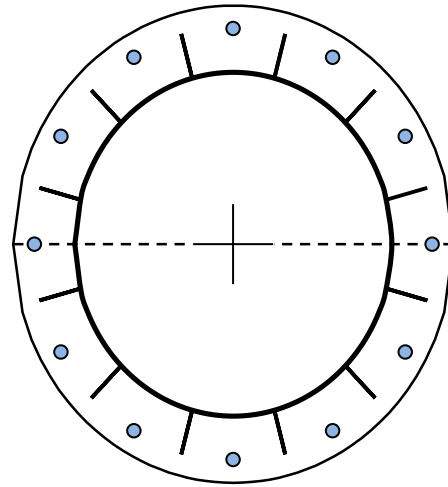
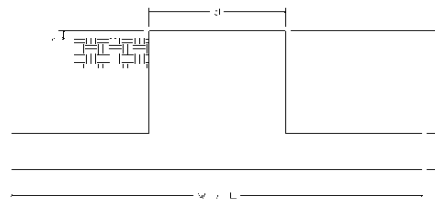


Plate Stress Ratio:  
**0.19** (Pass)

Bolt Stress Ratio:  
**0.77** (Pass)

Site Name: STTN - Southington, CT  
 Site Number: 302475  
 Engineering Number: 64793522  
 Engineer: Brendan M Smith  
 Date: 11/28/16  
 Tower Type: MP

Program Last Updated: 5/13/2014



**Design Loads (Factored) - Analysis per TIA-222-G Standards**

**Design / Analysis / Mapping:**

	Analysis
Compression/Leg:	32.8 k
Uplift/Leg:	0.0 k
Total Shear:	21.3 k
Moment:	2078.1 k-ft
Tower + Appurtenance Weight:	18.2 k
Depth to Base of Foundation (l + t - h):	8.00 ft
Diameter of Pier (d):	4.33 ft
Height of Pier above Ground (h):	0.50
Width of Pad (W):	18.00 ft
Length of Pad (L):	18.00 ft
Thickness of Pad (t):	3.00 ft
Tower Leg Center to Center:	0.00 ft
Number of Tower Legs:	1.0 (1 if MP or GT)
Tower Center from Mat Center:	0.00 ft
Depth Below Ground Surface to Water Table:	9.00 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	115.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	53.0 pcf
Friction Angle of Uplift:	0.0 Degrees
Ultimate Coefficient of Shear Friction:	0.35
Ultimate Compressive Bearing Pressure:	12000.0 psf
Ultimate Passive Pressure on Pad Face:	0.0 psf
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9
$\phi_{\text{Soil}}$ :	0.75

Concrete Strength ( $f'_c$ ):	3000 psi
Pad Tension Steel Depth:	32.00 in
$\phi_{\text{Shear}}$ :	0.75
$\phi_{\text{Flexure / Tension}}$ :	0.90
$\phi_{\text{Compression}}$ :	0.65
$\beta$ :	0.85
Bottom Pad Rebar Size #:	10
# of Bottom Pad Rebar:	36
Pad Bottom Steel Area:	45.72 in <sup>2</sup>
Pad Steel $F_y$ :	60000 psi
Top Pad Rebar Size #:	5
# of Top Pad Rebar:	36
Pad Top Steel Area:	11.16 in <sup>2</sup>
Pier Rebar Size #:	11
Pier Steel Area (Single Bar):	1.56 in <sup>2</sup>
# of Pier Rebar:	36
Pier Steel $F_y$ :	60000 psi
Pier Cage Diameter:	44.0 in
Rebar Strain Limit:	0.008
Steel Elastic Modulus:	29000 ksi
Tie Rebar Size #:	4
Tie Steel Area (Single Bar):	0.20 in <sup>2</sup>
Tie Spacing:	12 in
Tie Steel $F_y$ :	60000 psi

**Overturning Moment Usage**

Design OTM:	2259.3 k-ft
OTM Resistance:	2842.5 k-ft
Design OTM / OTM Resistance:	0.79 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	3839 psf
Factored Nominal Bearing Pressure:	9000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.43 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

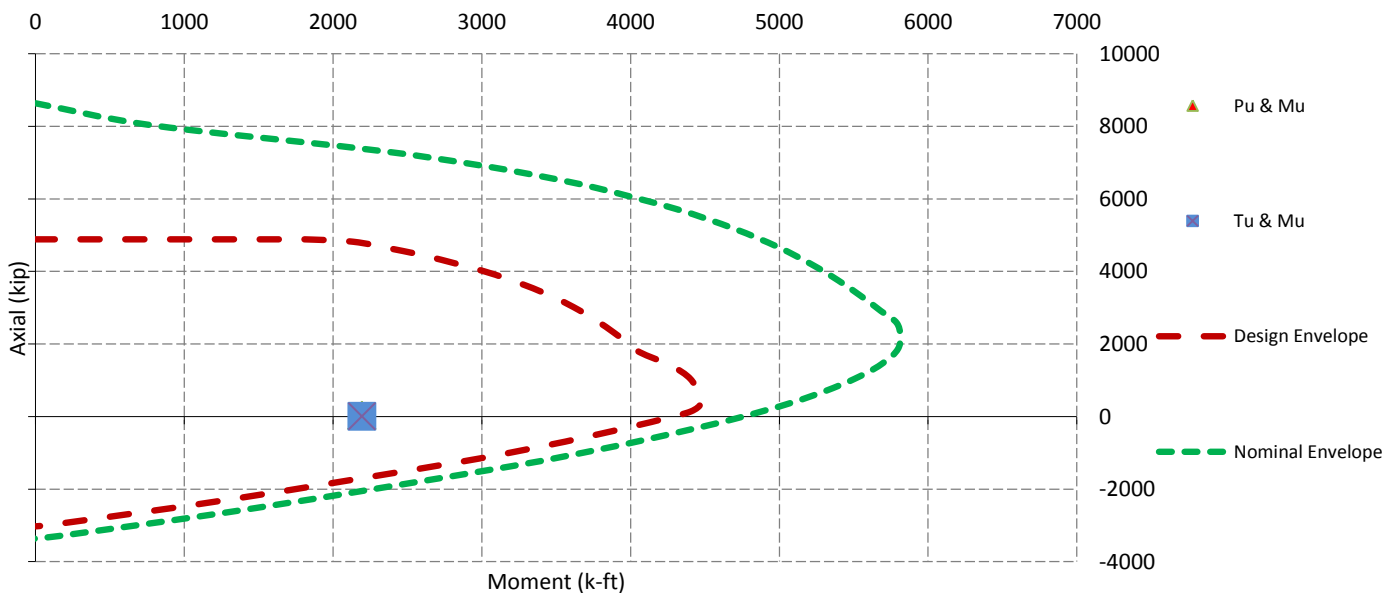
**Sliding Factor of Safety**

Total Factored Sliding Resistance:	92.1 k
Sliding Design / Sliding Resistance:	0.23 Result: OK

## One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear ( $V_u$ ):	144.5 k
One Way Shear Capacity ( $\phi V_c$ ):	498.2 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.29 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	855.9 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	6148.2 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.14 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	639.4 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	1581.1 k-ft
$M_u / \phi M_n$ :	0.40 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0066 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	0.0 k
Nominal Punching Shear Capacity ( $\phi_c V_n$ ):	1386.9 k - ACI11.12.2.1
$V_u / \phi_c V_n$ :	0.00 Result: OK
Factored Moment in Pier ( $M_u$ ):	2195.4 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	5432.9 k-ft
$M_u / \phi M_n$ :	0.40 Result: OK
Factored Shear in Pier ( $V_u$ ):	21.3 k
Pier Shear Capacity ( $\phi V_n$ ):	175.6 k
$V_u / \phi V_n$ :	0.12 Result: OK
Pier Shear Reinforcement Ratio:	0.0009 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0 k
Pier Tension Capacity ( $\phi T_n$ ):	3032.6 k
$T_u / \phi T_n$ :	0.00 Result: OK
Factored Compression in Pier ( $P_u$ ):	32.8 k
Pier Compression Capacity ( $\phi P_n$ ):	2737.2 k - ACI10.3.6.2
$P_u / \phi P_n$ :	0.01 Result: OK
Pier Compression Reinforcement Ratio:	0.026 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.40 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads





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

AT&T Existing Facility

Site ID: CT1004

Southington  
Shuttle Meadow Road  
Southington, CT 06489

**December 9, 2016**

**EBI Project Number: 6216005641**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>4.94 %</b>





December 9, 2016

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

## Emissions Analysis for Site: **CT1004 – Southington**

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

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

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

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

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



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **Shuttle Meadow Road, Southington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Powerwave 7770, KMW AM-X-CD-16-65-00T-RET, Commscope SBNH-1D6565C and the Quintel QS66512-2** 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.
- 10) The antenna mounting height centerlines of the proposed antennas are **153 feet** above ground level (AGL) for **Sector A**, **153 feet** above ground level (AGL) for **Sector B** and **153 feet** above ground level (AGL) for Sector C.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



## AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	<b>153 feet</b>	Height (AGL):	<b>153 feet</b>	Height (AGL):	<b>153 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	<b>0.46 %</b>	Antenna B1 MPE%	<b>0.46 %</b>	Antenna C1 MPE%	<b>0.46 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	Commscope SBNH-1D6565C
Gain:	13.35 dBd	Gain:	13.35 dBd	Gain:	13.35 dBd
Height (AGL):	<b>153 feet</b>	Height (AGL):	<b>153 feet</b>	Height (AGL):	<b>153 feet</b>
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,595.26	ERP (W):	2,595.26	ERP (W):	2,780.87
Antenna A2 MPE%	<b>0.92 %</b>	Antenna B2 MPE%	<b>0.92 %</b>	Antenna C2 MPE%	<b>0.99 %</b>
Antenna #:	<b>3</b>	Antenna #:	<b>3</b>	Antenna #:	<b>3</b>
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	11.35 / 14.85 / 13.85 dBd	Gain:	11.35 / 14.85 / 13.85 dBd	Gain:	11.35 / 14.85 / 13.85 dBd
Height (AGL):	<b>153 feet</b>	Height (AGL):	<b>153 feet</b>	Height (AGL):	<b>153 feet</b>
Frequency Bands	850 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	Frequency Bands	850 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)	Frequency Bands	850 MHz / 2300 MHz (WCS) / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	300 Watts	Total TX Power(W):	300 Watts	Total TX Power(W):	300 Watts
ERP (W):	7,396.59	ERP (W):	7,396.59	ERP (W):	7,396.59
Antenna A3 MPE%	<b>1.33 %</b>	Antenna B3 MPE%	<b>1.33 %</b>	Antenna C3 MPE%	<b>1.33 %</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>2.79 %</b>
Clearwire	0.14 %
T-Mobile	2.01 %
<b>Site Total MPE %:</b>	<b>4.94 %</b>

AT&T Sector A Total:	2.72 %
AT&T Sector B Total:	2.72 %
AT&T Sector C Total:	2.79 %
<b>Site Total:</b>	<b>4.94 %</b>

AT&T Frequency Band / Technology Max Power Values (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	153	1.38	850 MHz	567	0.24%
AT&T 1900 MHz (PCS) UMTS	2	656.33	153	2.18	1900 MHz (PCS)	1000	0.22%
AT&T 700 MHz LTE	2	1,390.44	153	4.63	700 MHz	467	0.99%
AT&T 850 MHz GSM	2	409.37	153	1.36	850 MHz	567	0.24%
AT&T 2300 MHz (WCS) LTE	2	1,832.95	153	6.10	2300 MHz (WCS)	1000	0.61%
AT&T 1900 MHz (PCS) LTE	2	1,455.97	153	4.84	1900 MHz (PCS)	1000	0.48%
						<b>Total*:</b>	<b>2.79%</b>

\*NOTE: Totals may vary by 0.01% due to summing of remainders



## Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	2.72 %
Sector B:	2.72 %
Sector C:	2.79 %
AT&T Maximum Total (per sector):	2.79 %
Site Total:	4.94 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **4.94 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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